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By [redacted] Zoning, [redacted], Dec 30, 2019

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December 30, 2019

BY EMAIL

Chair Robin Kramer
and Members of the Zoning Board of Appeals
Village of Mamaroneck
169 Mt. Pleasant Avenue
Mamaroneck, NY 10543

Re: East Coast North Properties, LLC
Submission of Draft Environmental Impact Statement
Premises: 416 Waverly Avenue, Mamaroneck, New York

Dear Chair Kramer and Members of the Zoning Board of Appeals:

On behalf of East Coast North Properties, LLC (the "Applicant" or "Project Sponsor"), we respectfully submit the enclosed electronic copy of the Draft Environmental Impact Statement ("DEIS") in accordance with Article 8 of the New York State Environmental Conservation Law and the rules and regulations promulgated thereunder at 6 N.Y.C.R.R. Part 617 (collectively "SEQRA"). As confirmed with Betty-Ann Sherer, Village Land Use Coordinator, on December 24th, the Applicant will submit hard copies of the enclosed DEIS to the ZBA on January 2, 2020.

The Zoning Board of Appeals ("ZBA" or "Lead Agency") adopted a positive declaration on June 6, 2019 in determining significance of the proposed expansion of the existing self-storage facility located at the above captioned Premises (the "Project" or "Proposed Action"). On June 19th, the Applicant submitted a Draft Scope in response to the positive declaration and a Scoping Session was held at a Special Meeting of the ZBA on July 31st. On September 5th, the ZBA adopted the Final Scoping Outline and in accordance with 6 NYCRR 617.9(a)(1), the Applicant provides the enclosed DEIS.

Pursuant to 6 NYCRR 617.9(a)(2), we respectfully request that the ZBA commence its completeness review of the enclosed DEIS and determine within 45 days of receipt of this submission, whether the DEIS is adequate with respect to the scope and content for the purpose of commencing public review.

East Coast North Properties, LLC looks forward to appearing before the ZBA at its Special Meeting on January 21st to discuss the DEIS. Thank you for your courtesy in this regard.

Very truly yours,

Anthony B. Gioffre / KM

Anthony B. Gioffre III

Enclosure

cc: Frank Tavolacci, Acting Village Building Inspector
Greg Cutler, AICP, Village Planner
Betty-Ann Sherer, Village Land Use Coordinator
Christy Mason, Esq., Zoning Board of Appeals Attorney
Ashley Ley, AICP, AKRF, Inc.
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KTM Architect
Provident Design Engineering, PLLC
HydroEnvironmental Solutions, Inc.

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By ~~Planning~~, Zoning, ~~HCZMC at 5:01 pm~~, Dec 30, 2019

MAMARONECK
SELF-STORAGE
BUILDING ADDITON

Draft Environmental Impact Statement

Lead Agency:

Village of Mamaroneck – Zoning Board of Appeals

December, 2019

Mamaroneck Self-Storage Building Addition
Waverly Avenue/Fenimore Road
Village of Mamaroneck
Westchester County, New York
(Tax Map #8-111-29-42)

DRAFT ENVIRONMENTAL IMPACT STATEMENT

SEQRA Classification:
Unlisted Action

Lead Agency:
Village of Mamaroneck
Zoning Board of Appeals
Attn: Robin Kramer
169 Mt. Pleasant Avenue
Mamaroneck, New York 10543
(914) 825-8758

Project Sponsor:
East Coast North Properties, LLC
416 Waverly Avenue
Mamaroneck, New York 10543
(914) 777-5777

Submission Date:
November, 2019

Date of Acceptance: ____________
Public Hearing Date: ____________

Consultants Contributing to the Preparation of the DGEIS:

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Chapter I.

Executive Summary

I. EXECUTIVE SUMMARY

1.) DESCRIPTION OF THE PROPOSED ACTION

This Draft Environmental Impact Statement (DEIS) analyzes the potential significant adverse impacts and mitigation measures associated with the proposed expansion of the existing Mamaroneck Self Storage facility located at 416 Waverly Avenue in the Village of Mamaroneck by East Coast North Properties, LLC (the "Applicant"). The proposed development consists of the construction of a new 56,328 square foot, 4-story addition to the existing 40,492 square foot self-storage building that was completed in 2015. The new addition would accommodate 321 additional storage units as well as a 700 square foot retail space where storage related supplies can be purchased by customers. The area of the Site where the building addition is proposed is presently occupied by several existing industrial buildings, which will be demolished. The existing 2-story stucco building located on the corner of Fenimore Road and Waverly Avenue will be utilized by Murphy Brothers Contracting as its office. Upon completion of the development, the Site would support only the expanded self-storage building, and the Murphy Brothers Contracting office building. The Site is currently nearly entirely covered by buildings or paved areas. The proposed development will result in a net reduction in impervious surfaces.

Site improvements include the reconfiguration of the existing surface parking lot, enhanced traffic circulation, the elimination of curb cuts on Waverly Avenue and Fenimore Road, new stormwater management, landscaping and associated Site improvements.

The architectural treatment of the building addition will be identical to that of the existing self-storage building. A brick base, matching colored precast walls and a distinctive roof mansard articulated with parapet detailing is proposed. The building addition would extend to Fenimore Road, so that façade will include windows, an awning and goose neck lighting fixtures to establish an appealing building presence along the streetscape.

The Applicant has demonstrated a long-standing commitment to Green Building. The existing Mamaroneck Self Storage facility was built as the first state-of-the-art, first-of-its-kind "green" self-storage facility in Westchester County. The Proposed Action will incorporate the same energy-efficient measures as the existing building. It is the goal of the Applicant to operate a net-zero facility. Additionally, the Applicant is proposing a Community Solar System, pursuant to NYSERDA's Community Solar Program, consisting of the installation of roof-mounted photovoltaic solar arrays.

2.) REQUIRED PERMITS AND APPROVALS

The following permits and approvals are required for the Proposed Action

Table I. -1
Project Reviews and Approvals

Involved Agency	Approval/Review
Village of Mamaroneck	
Zoning Board of Appeals	▪ SEQRA review and adoption of Findings, variance approval
Planning Board	▪ Site Plan approval
Architectural Review Board	▪ ARB approval
Building & Engineering Department	▪ SWPPP ▪ Building Permits ▪ Flood Plain Development Permit
Department of Public Works	▪ Street/Sidewalk Opening Permit
Harbor & Coastal Zone Management Committee	▪ LWRP Consistency Review
Westchester County	
Health Department	▪ Sanitary sewer and water supply approval
Planning Board	▪ 239-m referral
New York State	
Department of Environmental Conservation	▪ SWPPP
Parks Recreation & Historic Preservation	▪ Cultural resources review

3.) INVOLVED AND INTERESTED AGENCIES

Pursuant to the provisions of SEQRA, Involved Agencies are those agencies which have an approval authority in conjunction with the Proposed Action. Interested Agencies are those other agencies that have some interest in the Proposed Action, but not a direct approval role. Involved and Interested Agencies for the Proposed Action include:

Lead Agency:
Village of Mamaroneck Zoning Board of Appeals
Village Hall
169 Mount Pleasant Avenue
Mamaroneck, New York 10543

Involved Agencies:
Village of Mamaroneck Planning Board
Village Hall
169 Mount Pleasant Avenue
Mamaroneck, New York 10543

Village of Mamaroneck Board of Architectural Review
Village Hall
169 Mount Pleasant Avenue
Mamaroneck, New York 10543

Westchester County Planning Board
Westchester County Department of Planning
148 Martine Avenue, Room 432
White Plains, New York 10601

Westchester County Department of Health
25 Moore Avenue
Mount Kisco, New York 10549

New York State Department of Environmental Conservation
21 South Putt Corners Road
New Paltz, New York 12561

New York State Department of Environmental Conservation
625 Broadway
Albany, New York, 12207

New York State Office of Parks Recreation and Historic Preservation
HP Field Services Bureau
Peebles Island
P.O. Box 189
Waterford, New York, 12188

Interested Agencies:
Village of Mamaroneck Police Department
Police Headquarters
169 Mount Pleasant Avenue
Mamaroneck, New York 10543

Village of Mamaroneck Fire Department
Fire Department Headquarters
146 Palmer Avenue
Mamaroneck, New York 10543

Notices Only:
Environmental Notice Bulletin – Environmental Permits (enb@dec.state.ny.us)

4.) ANTICIPATED IMPACTS AND MITIGATION MEASURES

(A.) Land Use, Zoning & Community Plans:

The Project Site lies within the heart of the Village's "Industrial Area" as defined in the 2012 Comprehensive Plan. The Site and the majority of the parcels immediately surrounding the Site are classified as "Manufacturing, Industrial and Warehousing." The traditional industrial character of the Industrial Area has been evolving for many years, and today includes a fairly broad array of industrial, commercial and non-residential uses.

The Project Site currently supports 5 buildings. The south side of the Site supports the 4-story, 40,492 square foot Mamaroneck Self Storage facility. The north side of the Site is characteristic of the balance of Waverly Avenue, and supports a group of one and two-story, ageing warehouse buildings.

The land uses immediately adjacent to the Project Site are characteristic of the Industrial Area. As a corner lot, the Site is bounded by Waverly Avenue to the west, Fenimore Road to the north, and a CSX railroad spur to the east. Surrounding land uses include office, warehouse, light industrial, multi-family residential and auto-related uses.

The Project Site is regulated by the M-1 – Manufacturing Zoning District, which is located in an area of the Village known as "The Flats." With the exception of an application for a new office building that is currently pending for 526 Fayette Avenue, no significant recent development activity has taken place within the M-1 district.

Development activity has occurred in proximity to the M-1 District, primarily within the C-1 District; including The Mason (270 Waverly), Decadent Ales (139 Hoyt), Grand Street Lofts (690 Mamaroneck Avenue), Aquatots Swim School (120 Madison) and Mamaroneck Center (805 Mamaroneck Avenue).

Several land used plans provide guidance regarding the future use of the Site, including the Village of Mamaroneck Comprehensive Plan (2012), the Comprehensive Plan Update, First Draft (October, 2019), the Village of Mamaroneck Local Waterfront Revitalization Plan, Waverly Avenue Design Study, Patterns for Westchester: The Land and the People and Westchester 2025. As documented in Chapter IV.A., the Proposed Action is wholly consistent with the existing and anticipated land use of this area. The proposed expansion of the low-impact warehouse use, results in significantly lower impacts than a traditional industrial or commercial use. Notably, the 2012 Comprehensive Plan recognizes that the majority of uses in the area are auto service related, manufacturing/warehouse or general services/ sales, which have far greater neighborhood impacts than a self-storage operation. As demonstrated by the continued operation of the existing self-storage facility, and as more fully documented throughout this DEIS, a self-storage operation generates minimal traffic, generates no detectable odors or fumes, does not produce pollution, and in this instance will consume no energy, as a net zero project. Therefore, the low-impact self-storage use is entirely compatible with the existing surrounding uses.

The existing self-storage facility obtained variances for F.A.R., number of stories, off-street parking and off-street loading. The Proposed Action will also require variances as documented in Table I. -2.

Table I.-2
Zoning Compliance

Zoning Provision	Required	Existing	Proposed	Variance
Minimum Lot Area	10,000 sqft	44,156 sqft	44,156 sqft	-
Minimum Lot Width & Frontage	50’	134’	134’	-
Building Coverage	22,078 sqft 50%	20,891 sqft 45%	25,834 sqft 59%	3,756 sqft 9%
Maximum F.A.R.	1.0	1.34	2.43	1.43
Maximum Gross Floor Area	44,146 sqft	59,081 sqft	107,087 sqft	62,932 sqft
Impervious Surface Coverage	N/A (Area) N/A (%)	41,653 sqft 94.3%	40,383 sqft 91.5%	-
Maximum Building Height (Note 1)	3 Stories	4 Stories	4 Stories	1-Story

	45'	45'	45'	
Minimum Front Yard (Waverly)	Note 2	0'	N/A	-
Minimum Front Yard (Fenimore) (Note 3)	10'	0.4'	0.4'	7' 8"
Minimum Side Yard	None	2'	2'	-
Minimum Rear Yard	None	3'	3'	-
Off-Street Parking	137	25	25	112
Off-Street Loading (Notes 4 & 5)	8	0	4	4

It is the Applicant's opinion that the proposed expansion will not have an undesirable effect on the character of the neighborhood or an adverse impact on the physical and environmental conditions or otherwise result in an adverse impact to the health, safety and welfare of the community. Furthermore, the Proposed Action incorporates mitigation measures to ensure the that no adverse land use or zoning impacts result; including:

- The creation of an architecturally distinctive structure, which employs varied materials, colors, and structural elements to effectively disguise the self-storage use within the building. The building presents itself as a well-maintained commercial or office building, rather than a self-storage facility, and is the distinguishing architectural feature along Waverly Avenue.

- The demolition of the Barn (Building A) which will remove an aged and unsightly structure from the area. Additionally, two other concrete block buildings onsite ("Buildings C & D"), which have open storage areas for construction vehicles, as well as one large storage area will be demolished. The Applicant is not simply proposing to remove several unsightly buildings, it is proposing to construct a new state-of-the-art green self-storage building to the industrial area while preserving a low-impact industrial use and adding ratables for the Village.

- To further improve conditions within the area, the Applicant is proposing to install lighting at the rear of the proposed building to illuminate Railroad Way during evening hours.

- The Proposed Action will incorporate the same energy-efficient measures as the existing building. It is the goal of the Applicant to develop and operate a net-zero facility.

- The Applicant is proposing a Community Solar System, pursuant to NYSERDA's Community Solar Program, consisting of the installation of roof-mounted photovoltaic solar arrays. This system will provide clean energy to local residents. This effort addresses the recommendation in the Comprehensive Plan which calls for "improving utilities and power services to the entire Industrial Area."

- Various land use initiatives identify flood mitigation as a critical issue the Industrial Area, also known as "The Flats." Since most of this area is within the 100-year floodplain, the reduction in onsite impervious surface, as well as improved stormwater management measures will improve the flooding conditions and increase the storage of flood water on-Site. Additionally, the Proposed Action will exceed the 100-year floodplain development requirements set forth in the Village Flood Damage Prevention Code and the FEMA regulations for non-residential floodplain development.

- Various land use initiatives, and specifically the Waverly Avenue Design Study, identifies streetscape improvements as important to improve pedestrian safety and streetscape access. The Proposed Action involves eliminating two curb cuts, one along Fenimore Road and one on Waverly Avenue, thereby improving pedestrian safety and traffic circulation.

- To further improve the Fenimore Road streetscape, the Applicant is also proposing landscaping enhancements along Fenimore Road and Waverly Avenue.

(B.) Natural Resources:

The Project Site is located within the Coastal Long Island Sound Watershed and the Sheldrake River Drainage Basin. No surface water features are located on, or in the immediate vicinity of the Site. The nearest surface water feature is the Sheldrake River, located approximately 800' to the north and west. 94% of the1.01-acre Site is covered by impervious surfaces. Stormwater runoff from these surfaces flows overland to either an existing catch basin located in the center of the parking lot or a catch basin in Waverly Avenue, where it is collected and conveyed via pipe to an existing hydrodynamic separator before entering the Village's drainage system in Fenimore Road.

The Proposed Action will reduce the amount of impervious surfaces on the Site from 41,390 square feet to 40,675 square feet, or a reduction of 715 square feet of impervious surface. The Proposed Action will not alter the grades or elevation of the Site, and runoff patterns and direction will remain unchanged. As no surface water features are located on or near the Site, drainage patterns will remain unchanged, and a full stormwater management plan is proposed to mitigate drainage flows, and the amount of impervious surfaces will be reduced, it can be concluded that no adverse surface water impacts will result from the Proposed Action.

The Project Site is not located above an aquifer. The closest aquifer is located approximately 300' northwest of the Site, on the north side of Fenimore Road. A subsurface investigation consisting of soil borings in the vicinity of the proposed foundation revealed that groundwater is present beneath the Site at a depth of 3.1 feet to 4.8 feet below grade.

The proposed building extension will utilize the same construction as the existing self-storage building. Basements are not feasible due to the Site's location within the floodplain. The first-floor elevation will be set 2' above the base flood elevation. As a result, minimal excavation is required. As the Proposed Action does not involve the use of wells, subsurface sanitary disposal systems, or require extensive excavation, no impacts to groundwater will occur.

The Project Site, and all of lower Westchester County, is located within the New England Upland Physiographic Province, and its extension the Manhattan Prong. The principal bedrock that underlies and influences the topography includes Fordham gneiss, Manhattan schist and Inwood marble.

The soils on the Project Site are composed entirely of Urban Land (Uf). Urban land soils consist of areas where at least 60% of the land surface is covered by buildings or impervious surfaces.

Soil samples revealed that the first 4 feet consists primarily of ash, slag and brick fill material and some sand. Generally, from 4 to 6 feet, subsurface soil conditions consist of medium rounded gravel and medium sand.

The topography of the Site is relatively level. The Site slopes from a high point of approximately 27 feet along the southern property line behind the existing self-storage building, to a low point of approximately 22 feet along Fenimore Road.

No significant alteration of the existing site grades is necessary to accommodate the proposed building addition. As the building has no basement and will be constructed on a slab foundation, minimal excavation is anticipated, projected to be approximately 550 cubic yards of soil/fill of which 330 cubic yards would be reused on the Site as fill. However, as the Site was previously impacted by spill incidents that were administratively closed in 2004, a foundation excavation plan has been prepared in accordance with NYSDEC regulations pertaining to environmentally impacted sites. An Excavation Work Plan will be implemented to ensure that no significant adverse impacts to geology, soils or topography will result from the Proposed Action.

(C.) **Hazardous Materials & Public Health:**

Two spill incidents were reported to the NYSDEC concerning the Project Site. In November of 2003 a spill incident was reported in conjunction with the removal of a UST of unknown size (Spill #0304697). In February 2004 a spill incident was reported in conjunction with the removal of 550-gallon UST (Spill #0304698). The cause of both reports was "Tank Test Failure" and the amount or type of product spilled was not recorded. The NYSDEC reported that both spill incidents were closed on August 29, 2004, indicating that the necessary clean-up was completed, and no further remedial activities were necessary.

Given their age, the existing buildings on the Site that are slated for demolition may contain asbestos, lead paint or PCBs, which would require abatement or proper disposal during the demolition process.

(D.) **Flooding and Flood Zone Impacts:**

The elevation of the Project Site varies from 22' to just over 27' above sea level. The majority of the Site is located in Special Flood Hazard Zone (AE), or an area with a 1% chance of flooding in any year (the 100-year floodplain). The modeled base flood elevation in this zone varies from 26' to 27'. The southwest corner of the Site, which sits just above elevation 27', extends into the 500-year floodplain, or the area with a 2% chance of flooding in any given year.

Because the Site is located within the AE zone, flood insurance is mandatory as is compliance with floodplain management standards.

(E.) **Historic Resources:**

No designated historic resources are located on, or in the immediate vicinity of the Project Site. As a result, no adverse impacts will result from the Proposed Action.

(F.) Visual Resources:

The physical character and visual appearance of the Industrial Area has long been identified as a challenging condition. Planning initiatives such as the Village Comprehensive Plan, the Waverly Avenue Design Study and the Westchester County Planning Department's Industrial Area Study, all pointed to the lack of a unifying character, a deteriorating streetscape and a number of unattractive buildings and properties.

The Project Site currently supports 5 buildings. The south side of the Site supports the 4-story, 40,492 square foot Mamaroneck Self Storage facility. The north side of the Site is characteristic of the balance of Waverly Avenue, and supports a group of one and two-story, ageing warehouse buildings.

The construction of the existing Mamaroneck Self-Storage facility not only involved the construction of the architecturally appropriate and attractive building, but also included the renovation of the Waverly Avenue streetscape in accordance with the Waverly Avenue Design Guidelines, including new concrete sidewalks, brick pavers, granite curbs, street trees and associated landscaping.

The proposed expansion to the existing self-storage facility is designed to seamlessly integrate into the existing building and precisely conform to the existing height, design aesthetic, building materials and color of the existing self-storage building.

Three of the four remaining buildings on the Site would be demolished to accommodate the new building addition (Buildings A, C and D). The existing 2-story Murphy Brothers Contracting office building located in the northwest corner of the Site adjacent to the Waverly Avenue/Fenimore Road intersection would remain. At the time of the development of the self-storage building, this building was renovated and repainted to reflect the colors and materials of the self-storage building. With the removal of the other buildings and the reconfiguration of the parking lot, the corner office building will anchor the northwest corner of the Site with a lower-scale building that provides definition and a historical identity for the Site.

Viewshed analyses and visual simulations were provided from 6 viewpoints which document the potential visual impacts of the Proposed Action. The existing Mamaroneck Self Storage building has established the perceptual visual character of the Site. The proposed addition is a continuation of this character. The building addition will extend the building across the eastern edge of the Site to Fenimore Road. While the building addition will be taller than the surrounding buildings, as documented in the viewshed analysis, there are no significant views, or viewsheds that would be blocked or disturbed by the construction of the building. The Project Site is located in the approximate center of the Industrial Area, which consists of typical one and two-story utilitarian industrial buildings. Compared to the existing industrial buildings, which in most cases, are not architecturally distinctive, attractive, or often well maintained, the existing Mamaroneck Self Storage building is the only new building constructed in the area in years, and is architecturally appropriate and very well maintained. The proposed building extension will eliminate the remaining industrial buildings on the Site, thereby further improving the visual appearance of the Site.

Because no significant adverse visual impacts will result from the Proposed Action, no specific mitigation measures are proposed. However, the design of the building addition itself represents the Applicant's commitment to enhancing the visual character of the area. The architectural treatment of the building addition will be identical to that of the existing self-storage building. A brick base, matching colored precast walls and a distinctive roof mansard articulated with parapet detailing is proposed. The building addition would extend to Fenimore Road, so that façade will include windows, a commercial awning, signage, goose neck lighting fixtures, new sidewalks and landscaping to establish an appealing building presence along the streetscape.

(G.) Utilities

The Site currently operates with minor demands on utility services. Upon completion of the Proposed Action, water and sanitary sewer generation will be reduced from approximately 270 gpd to 150 gpd.

The Proposed Action will incorporate the same energy-efficient measures as the existing building. It is the goal of the Applicant to operate a net-zero facility. As a "net zero" building, the building will effectively have *no* carbon footprint. This is perhaps the most definitive measure the Applicant can take to minimize the overall impact on climate change, including sea level rise and flooding.

(H.) Traffic & Transportation

The existing traffic operating conditions at the Waverly Avenue/Fenimore Road intersection, as well as at the 3 existing Site driveways, range between Levels-of-Service A and C, representing acceptable conditions with nominal delays. These operating conditions reflect the current full occupancy of the Project Site.

The proposed expansion of the self-storage facility will result in very low vehicle trip generation numbers. During the AM peak hour 8 vehicle trips will be generated (or 4 inbound and 4 outbound trips, likely by the same vehicle). During the PM peak hour 10 vehicle trip will be generated (5 inbound and 5 outbound). These same trip generation rates would apply during the weekend peak hour as well. This minimal volume of traffic reflects a reduction in traffic generation below the existing conditon, resulting from the elimination of the contractor and other businesses currently operating out of the buildings on the Site. The volume of traffic generated by the Proposed Action will have no impact upon traffic operating conditions in the area.

The number of curb cuts on the Site will be reduced from four to two under the Proposed Action. The curb cut along Waverly Avenue currently serving the northern portion of the Site will be closed. The curb cut that currently serves the southern portion of the Site along Waverly Avenue will remain.

The curb cut along Fenimore Road between the barn and the front building will remain an exit only driveway (right turns only). The curb cut that serves the barn will be removed. All of the driveways will remain unsignalized under STOP control.

In addition to the modifications to the driveways, the internal vehicular circulation of the Site will also be improved. Elimination of some of the buildings will improve traffic flow. In addition, as illustrated on the Site Plan, circulation will become more organized and striped islands will be provided to provide clearer direction. Site signage will also be upgraded to improve traffic control. The northern portion will now be connected with the southern portion of the Site. These improvements will significantly improve traffic flow throughout the Site as well as improve circulation to and from Waverly Avenue and Fenimore Road by reducing the number of curb cuts.

Currently, there are no designated truck loading spaces on the Site. The proposed reconfigured parking lot plan includes 4 designated truck loading spaces, 2 at the north end of the building addition, 1 in the central area, and 1 toward the southern end, near the existing self-storage building.

A self-storage facility of a total of 590 units, based upon the Institute of Transportation Engineers' (ITE) publication "Parking Generation", 4th Edition, would generate a peak parking demand of 8 spaces. The 700-sf retail space is estimated to generate a parking demand of approximately two parking spaces but would actually require much less as the retail will be limited to self-storage supplies and be sold to the self-storage patrons. In addition, the employee for the self-storage supplies will be the same as the employee for the self-storage facility.

In addition to the parking for Murphy Brothers Contracting, approximately 19 other contractors/workers currently park at the Site. These 19 vehicles will be removed from the Site to accommodate the new self-storage building addition. As a result, there will be less vehicles parking on the Site.

With the proposed self-storage facility addition and the modifications to the layout of the Site, there will be 25 parking spaces provided on-site along with four (4) loading spaces, in addition to the on-street parking spaces along Waverly Avenue. The four loading spaces will be utilized by the patrons of the self-storage facility, thus freeing up even more parking spaces.

The Project Site is located adjacent to a rail spur owned by CSX. To ensure no impacts to the CSX rail spur will result from the Proposed Action, CSX has requested that the Applicant:

- Ensure that no impediments are placed in the required clearance envelope when CSX crews are operating on the tracks.

- Contact the CSX Trainmaster prior to construction to alert crews of construction activities.

Additionally, to ensure that the construction of the self-storage building addition and its foundation do not impact the rail spur, the following mitigation measures will be implemented:

- The Applicant will hire an engineering consultant prior to construction to verify exact parameters of all excavation and concrete work along the CSX tracks to preserve the current integrity of the tracks.

- CSX, MARVAL Industries and Spatz Properties will be notified prior to any construction activity in or about Railroad Way and the intersection of Fenimore Road and Railroad Way to make sure

CSX, MARVAL Industries and Spatz Properties are aware of any construction activities.

- During the course of construction, the Applicant will not interfere with the egress and ingress of the tracks utilized by CSX and MARVAL.

- Should any work and/or labor require the partial closing and/or impeded access to Railroad Way from Fenimore Road, MBC will perform the aforementioned work in the evening hours between 6pm and 5am with prior consent and authority granted by the Municipality and in coordination with CSX train schedules.

- The Applicant will indemnify the Village of Mamaroneck, Marval Industries, and the Spatz Properties when performing construction near or about railroad way and within any Village right-of-way.

(I.) Economic & Fiscal Resources

The Market Study prepared for the Proposed Action revealed that there is a market demand for over 500,000 square feet of self-storage space within the 5-zip code area surrounding the Site. The average household income in this same area is $192,157, which indicates that the residents in this area have adequate income to accommodate a monthly storage expense.

The Mamaroneck Self Storage facility is the only use of its kind from the north end of New Rochelle to the south end of Port Chester, and from Tuckahoe to the Long Island Sound, encompassing the 5 zip codes noted above. Prevailing zoning use restrictions coupled with extremely high barriers to entry are significant deterrents to potential competitors.

The Site currently generates $79,865.72 annually in real estate taxes to all jurisdictions. Upon completion of the Proposed Action, it is projected that the Project Site will generate $81,604.61 in real estate taxes annually.

As the Proposed Action results in extremely low demands on municipal services, this tax revenue – particularly the taxes accruing to the Mamaroneck School District, represents a significant benefit.

As suggested by their name, self-storage uses do not require a large number of employees to operate the facility. Upon completion of the Proposed Action, the Mamaroneck Self-Storage facility will employ 4 full-time employees.

Currently, there are 7 rentable spaces on the Project Site, that house various contractors (electrician, custom glass business, etc.) and warehouse uses (holiday storage, etc.). These 7 uses would be displaced as the existing buildings that house them would be demolished to accommodate the self-storage building expansion. All 7 of these tenants operate businesses that are permitted in the M-1 – Manufacturing zoning district, and are characteristic of the uses in the Industrial Area. It is anticipated that all 7 businesses would find suitable sites to relocate to in the immediate vicinity of the Project Site.

It is the opinion of the Applicant that the Proposed Action would meet a significant market gap, and would result in significant tax revenue benefits, while incurring negligible demands on municipal services.

(J.) Building Demolition & Construction

The Proposed Action involves the demolition of three existing buildings and the construction in their place of the self-storage building addition and associated Site improvements. Short-term construction related impacts are anticipated. All of these short-term impacts can be appropriately mitigated through the implementation of a Construction Management Plan, Construction Staging Plan and various mitigation measures addressing site security, construction traffic, parking, air quality and fugitive dust, noise reduction, excavation and erosion control. Blasting will not be necessary as excavation will be minimal. Approximately 220 cubic yards of excavated material will need to be removed from the Site, requiring 14 truck trips. Unique to this project, the Applicant will also serve as the general contractor. No significant adverse construction and building demolition impacts are anticipated.

5.) ALTERNATIVES

The following alternatives have been evaluated in this DEIS:

A. No Action Alternative
B. Redevelopment of the Project Site with a zoning compliant storage facility
C. Alternative site plan redevelopment proposals:
   1. Smaller square footage of proposed addition;
   2. Proposed addition with one less floor; and
   3. Adaptative reuse of the Project Site buildings as a storage facility.

Table I. – 3 presents a summary comparison of the various alternatives.

Table I. - 3
Comparison of Alternatives

Project Element	Proposed Action	(Alt. A) No Action (Existing Condition)	(Alt. B) Zoning Compliant Building	(Alt. C-1) Smaller Square Footage	(Alt. C-2) One Less Floor	(Alt. C-3) Re-Use of Existing Buildings
Building Coverage	25,834 sqft 59%	20,891 sqft 45%	22,078 sqft 50%	22,078 sqft 50%	25,834 sqft 59%	20,081 sqft 45%
Gross Floor Area	107,087 sqft	59,081 sqft	40,492 sqft	95,818 sqft	93,005 sqft	59,081 sqft
F.A.R.	2.43	1.34	0.92	2.17	2.11	1.34
Building Height	4 stories 45’	4 stories 45’	4 stories 45’	4 stories 45’	3 stories 36’	4 stories 45’
# Parking Spaces	25	25	55	34	25	52
# Loading Spaces	4	0	4	4	4	0
Peak Hour Traffic	8 AM Trips	5 AM Trips	4 AM trips	7 AM Trips	7 AM Trips	5 AM Trips

	10 PM Trips	8 PM Trips	5 PM Trips	9 PM Trips	9 PM Trips	8 PM Trips
Net Cut/Fill	550 c.y. Net 220 c.y.	0	0	375 c.y.	400 c.y.	0
Impervious Area	40,383 sqft 91.5%	41,653 sqft 94.3%	40,492 sqft 91.5%	36,627 sqft 82.9%	40,383 sqft 91.5%	41,653 sqft 94.3%
Water Usage	24.9 gpd	27.7 gpd	10.4 gpd	24.4 gpd	23.9 gpd	15.2 gpd
Wastewater Generation	150 gpd	270 gpd	60.7 gpd	143.7 gpd	139.5 gpd	88.6 gpd

Chapter II

Description of the Proposed Action

II - DESCRIPTION OF THE PROPOSED ACTION

INTRODUCTION

This Draft Environmental Impact Statement (DEIS) analyzes the potential significant adverse impacts and mitigation measures associated with the proposed expansion of the existing Mamaroneck Self Storage facility located at 416 Waverly Avenue in the Village of Mamaroneck by East Coast North Properties, LLC (the “Applicant”). The proposed development consists of the construction of a new 56,328 square foot, 4-story addition to the existing 40,492 square foot self-storage building that was completed in 2015. The new addition would accommodate 321 additional storage units as well as a 700 square foot retail space where storage related supplies can be purchased by customers. The area of the site where the building addition is proposed is presently occupied by several existing industrial buildings, which will be demolished. The existing 2-story stucco building located on the corner of Fenimore Road and Waverly Avenue will be utilized by Murphy Brothers Contracting as its office. Upon completion of the development, the site would support only the expanded self-storage building, and the Murphy Brothers Contracting office building. The site is currently nearly entirely covered by buildings or paved areas. The proposed development will result in a net reduction in impervious surfaces.

Site improvements include the reconfiguration of the existing surface parking lot, enhanced traffic circulation, the elimination of curb cuts on Waverly Avenue and Fenimore Road, new stormwater management, landscaping and associated site improvements.

The proposed development will require Site Plan approval and a Floodplain Development Permit from the Planning Board, Local Waterfront Revitalization Plan Consistency Review by the Harbor and Coastal Zone Management Commission, review by the Village Board of Architectural Review, Village Department of Public Works approval for the closure of cub cuts, as well as area variances from the Zoning Board of Appeals, who has also been designated as the Lead Agency for the SEQR review of this Unlisted Action (the “Proposed Action”).

A.) Project Location:

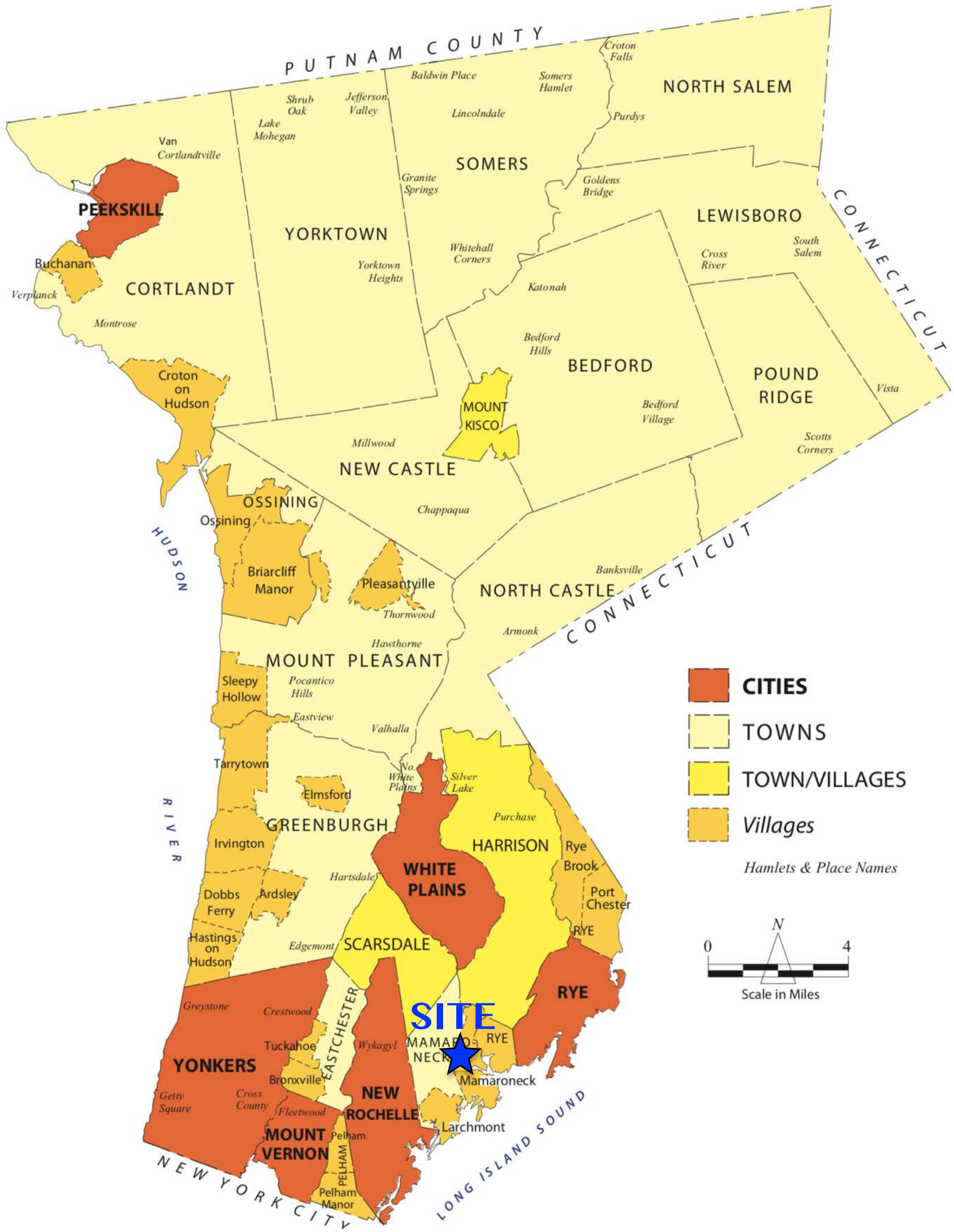
The project site is located in the south-western portion of the Village of Mamaroneck, Westchester County, on the east side of Waverly Avenue, south of Fenimore Road. (Figures II-1 – Regional Location Map, II-2 – Site Location Map, II-3 - Site Aerial Photograph). The Comprehensive Plan has designated this portion of the Village as the "Industrial Area." The property is identified on the Westchester County GIS Municipal Tax Parcel Viewer as 560 Fenimore Road, however, prior applications have identified the site from its western street frontage or 416 Waverly Avenue. The site more specifically known and identified as Tax Map Number 8-25-70 (the "Project Site" or "Site").

B.) Project Sponsor:

East Coast North Properties, LLC is a limited liability company owned by Murphy Brothers Contracting ("MBC"), a family owned business that has been operated by brothers and partners Chris and Sean Murphy for 40 years. For the past 19 years, MBC's headquarters has been at the Project Site, the former East Coast Lumber Yard.

Murphy Brothers Contracting in known throughout the greater Westchester, Hudson Valley, southern Fairfield region for building and renovating beautifully designed custom homes as well as private clubs and other commercial developments, offering their clients the highest level of quality and professionalism in the industry.

Chris and Sean Murphy are also principals in East Coast North Properties, LLC, the entity that owns the Mamaroneck Self Storage facility that began operating on the Site in 2015. Mamaroneck Self Storage's current facility is a 40,620 square foot building serving the self-storage needs of the Mamaroneck-Larchmont area as the community's "local storage solution." The original self-storage building benefitted from a Westchester County IDA sales tax exemption which was used to redirect savings into environmentally sustainable energy-efficient upgrades, making it one of the only green self-storage facility of its kind in the county.



Source: Westchester County Department of Planning

Scale: As Shown CLEARY CONSULTING	**Regional Location Map**	N W E S	Figure II - 1

Source: Village of Mamaroneck GIS Geoportal

Scale: N.T.S.

Site Location Map

Figure

II -2

Source: Google Earth

Scale: N.T.S.	**Site Aerial Photograph**	N W E S	Figure II -3
CLEARY CONSULTING			

The original Mamaroneck Self-Storage facility was recognized with a regional NAHB award for Best Green Commercial Building, Best of BOMA Westchester County's Signature Award and a Westchester County 2017 Earth Day Award for the development of energy-efficient features built into the facility design. Operational energy savings exceed $30,000 annually. The existing Mamaroneck Self-Storage facility currently spends less than 4-cents per square foot each month on energy costs, about the same as a 6,000 square foot single-family home. The proposed building addition has been designed with the same energy saving technology and features.

The Mamaroneck Self-Storage facility is the only one of its kind from the north end of New Rochelle to the south end of Port Chester, and from Tuckahoe to the Long Island Sound. Upon opening its doors several years ago, community reaction was and continues to be overwhelmingly positive including local elected officials as well as both the Mamaroneck and Larchmont Chambers of Commerce. The many apartment and co-op residents in the community, both down-sizers and newcomers, are taking advantage of the facility, as do, to a limited extent, local businesses.

During the construction of the existing facility, the Applicant was awarded a New York State Prize Grant to research incorporating a "community-microgrid" system within the new building that would provide electrical service to the immediate neighborhood as an alternative power source when needed. The Applicant is planning the integration of an "Emergency Distribution Center" into the new addition to be available to local first responders and officials in the event of future natural or man-made disasters, providing an alternative for the storage and distribution of vital supplies.

Construction of the addition to the existing facility and the redesign of the Site will involve at least 200 local tradespeople. The Applicant is also in discussions with the Westchester County IDA to host a "Westchester County IDA Day" at the facility to meet with prospective minority-owned and women-owned businesses with a view toward hiring them for the additional construction.

C.) Description of the Site's Existing Character:

The Project Site is a 1.01 acre rectangularly shaped parcel of land with approximately 138.37' of frontage along Fenimore Road and 312.28' of frontage along Waverly Avenue.

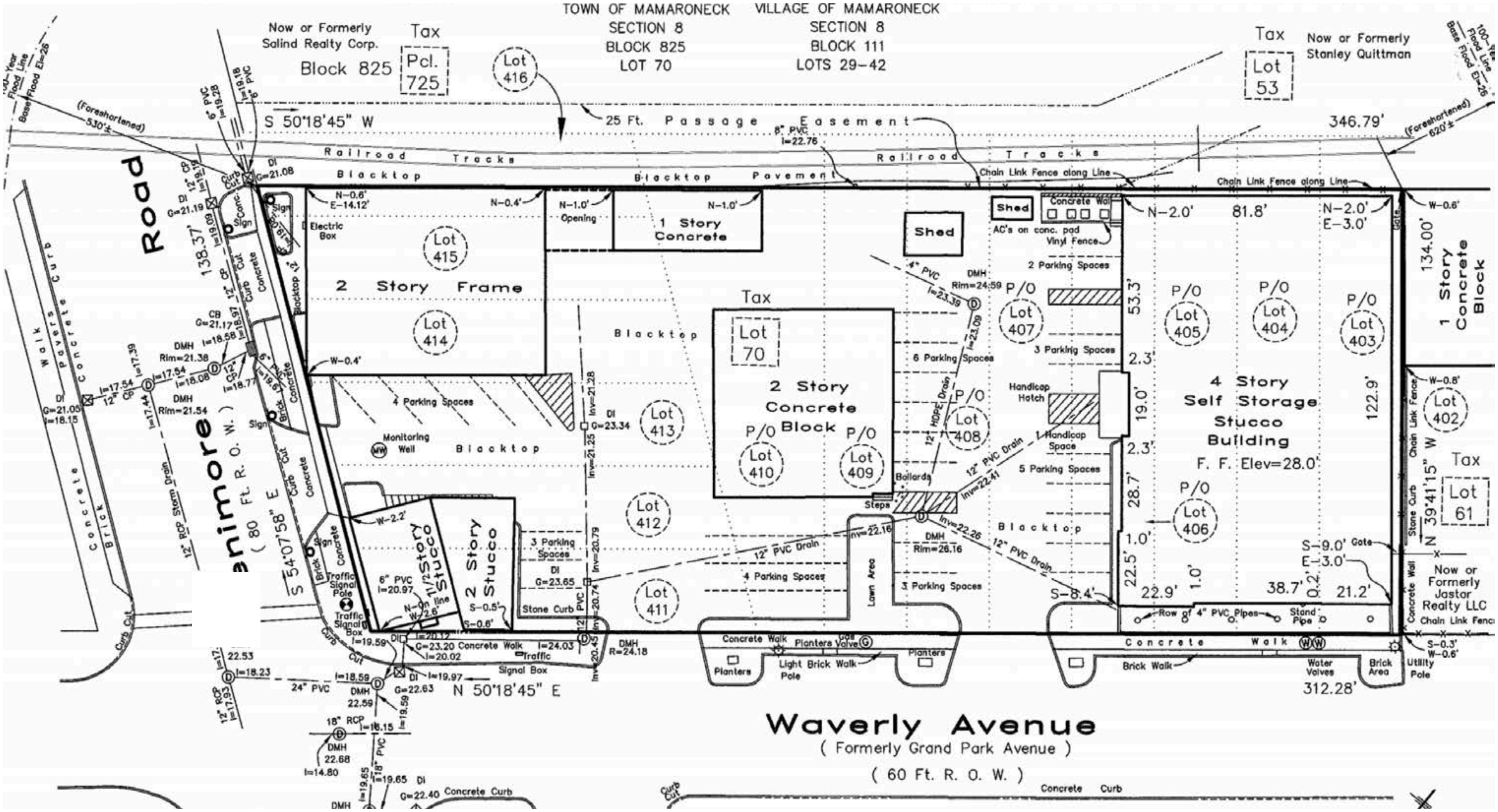
The Project Site is perceptually divided between the Self-Storage business operation located on the south site of the property, and the Murphy Brothers contracting business and other warehouse tenants located on the north side of the property.

The self-storage building is an architecturally distinctive structure, which employs varied materials, colors, and structural elements to effectively disguise the self-storage use within the building. The building presents itself as a well-maintained commercial or office building, rather than a self-storage facility, and is the distinguishing architectural feature along Waverly Avenue, which hosts a mix of non-descript industrial buildings, including the remaining existing buildings located on the north side of the Site.

While the Site's existing character is not currently inconsistent with the industrial nature of Waverly Avenue and the surrounding area, the existing self-storage building represents a distinct change to that character, which in many ways is a tangible improvement. Now that the self-storage building has been established, the jumble of buildings and uses on the north side of the Site appear inconsistent with the newly established character of the Site. Even though efforts have been made to establish a degree of uniformity throughout the Site (for example, by painting all the buildings on the Site the same color as the self-storage building), the incongruity among Site buildings remains obvious.

D.) Inventory of Existing Structures:

The Project Site currently supports 5 buildings. The south side of the Site supports the 4-story, 40,620 square foot Mamaroneck Self Storage facility, along with an adjacent 25 space off-street parking area, accessed via a separate driveway curb cut on Waverly Avenue accented by new ADA accessible sidewalks, brick pavers and streetscape and building foundation landscaping.



Source: The Munson Company

Scale: N.T.S.

Site Survey

E S N W

Figure
II-4

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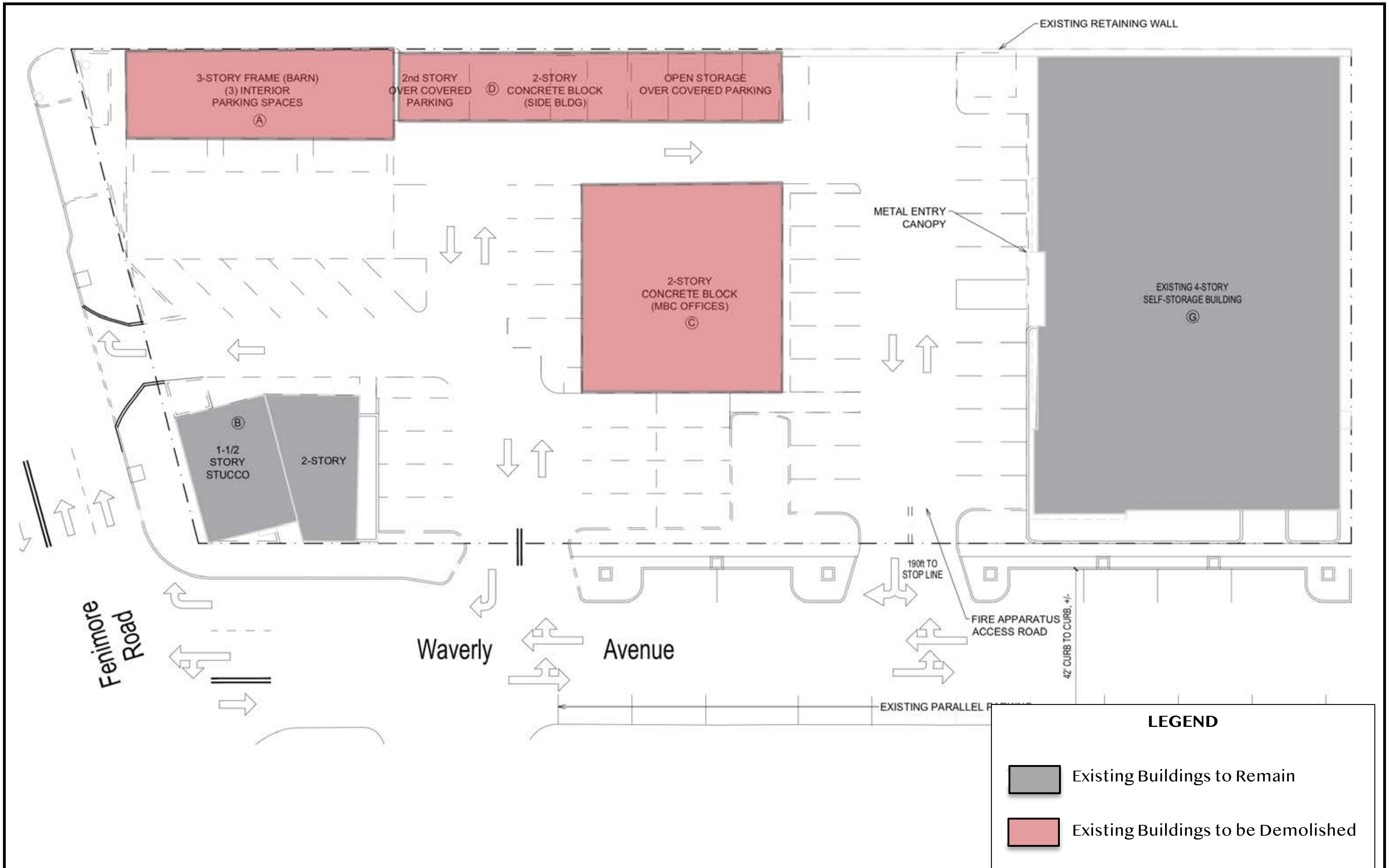
The north side of the Site is characteristic of the balance of Waverly Avenue, and supports a group of one and two-story, aging warehouse buildings. As illustrated on Figure II-5, Building C is a 2-story 2,985 square foot concrete block building located in the center of the site, which houses the Murphy Brothers Contracting office and warehouse space. Along the eastern edge of the central portion of the Site is the remnant of the former lumber yard's storage racks and a 2-story, 1,734 square foot concrete block building (Building D) which houses a custom glass contractor. Building A is located in the northeast corner of the site, and is an 8,322 square foot, 2-story wood frame "barn" that supports two electrical contractor companies and storage, a window/floral display company and storage and Murphy Brothers Contracting storage. In the northwest corner of the site, adjacent to the Waverly Avenue/Fenimore Road intersection is Building B - a 1 ½ story to 2-story, 2,485 square foot stucco building that contains the Murphy Brothers Storefront and Murphy Brothers Contractors office and warehouse space. The area between these buildings is paved, and provides off-street parking for the various uses. The eastern side of the Site is bounded by a CSX freight rail spur. The following images document the existing structures on the Site:



Source: Village of Mamaroneck Geoportal

Scale:
0 15' 30'

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Existing Buildings/Demolition Plan

E S N W

Figure
II-5

E.) Description of Site and Surrounding Land Use:

The land use on the Project Site is classified as "Manufacturing, Industrial and Warehousing." This is the predominant land use along Waverly Avenue, Fenimore Road, and the general area surrounding the Project Site. This portion of the Village has been designated as the "Industrial Area" in the Comprehensive Plan. Refer to Chapter IV.A. for a more in-depth discussion of land use.

F.) Project Description:

The Proposed Action involves the expansion of the existing 4-story, 40,492 square foot Mamaroneck Self Storage facility that opened in 2015. The building addition is also a 4-story building with a 14,082 square foot footprint, containing a total of 56,328 square feet of gross floor area. The building addition will intersect the northeast corner of the existing self-storage building, and extend along the eastern property line a distance of approximately 240' toward Fenimore Road. The building addition contains 321 storage units to meet expanded customer demand for storage space.

In order to accommodate the new building addition, all of the existing structures on the Site will be demolished, with the exception of Building B - the 1 ½ story – 2-

story office building located adjacent to the Waverly Avenue/Fenimore Road intersection. In total 13,041 square feet of existing buildings will be demolished.

To support the expanded self-storage facility as well as Building B, a reconfigured off-street parking lot is proposed containing 25 off-street parking spaces and 4 loading spaces. Access to the new parking lot is provided from the existing two-way driveway curb cut currently serving the self-storage facility on Waverly Avenue. An existing curb cut on Fenimore Road will be used for one-way egress, and restricted to right turns only. The existing curb cut on the northern portion of the Site on Waverly Avenue will be closed, as will the existing curb cut serving the Barn on Fenimore Road.

The architectural treatment of the building addition will be identical to that of the existing self-storage building. A brick base, matching colored precast walls and a distinctive roof mansard articulated with parapet detailing is proposed. The building addition would extend to Fenimore Road, so that façade will include windows, an awning and goose neck lighting fixtures to establish an appealing building presence along the streetscape.

The Applicant has demonstrated a long-standing commitment to Green Building. The existing Mamaroneck Self Storage facility was built as the first state-of-the-art, first-of-its-kind "green" self-storage facility in Westchester County. Energy efficiency was a priority. The Applicant enrolled the project in NYSERDA's New Construction Program (NCP), which required compliance with rigorous energy-efficiency and sustainability standards set by the program. The Applicant partnered with high performance building consultants Steven Winter Associates to develop the project to incorporate sustainable features and realize energy cost savings from their investment. Notable energy conservation measures incorporated into the existing building include:

- High-efficiency HVAC equipment including Variable Frequency Flow (VRF) heat pumps for heating and cooling, a 65% Efficient Energy Recovery Ventilation system (ERV) for mechanical ventilation;
- High-efficiency interior and exterior LED lighting on motion sensors;

- All water-saving devices;
- 8.5Kw solar shingle array on the SE & SW sides of the building;
- The building envelop consisting of 4" rigid insulation, 4" close cell spray foam with 8" close-cell spray foam in the ceiling.

Energy savings were 52% over the baseline standard building code with over $30,000 annual electric-cost savings. The existing Mamaroneck Self Storage energy bills currently run from $1,400 - $1,800 monthly (similar to the cost of the average 6,000 square foot residential home).

The Mamaroneck Self Storage project was the recipient of three prestigious awards for its energy-efficient construction:

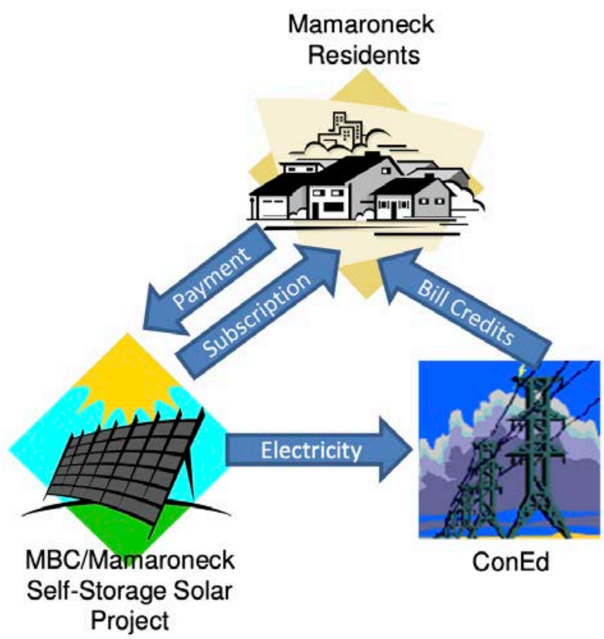
- HBRA-CT HOBI Award: Best Green Commercial Project;
- Best of BOMA Westchester County Signature Award;
- Westchester County Earth Day Award.

As construction was completed on the existing facility, the Applicant was awarded a NYSERDA Community Microgrid Project grant to investigate how a Community Microgrid system could be incorporated into future expansion plans in order to provide necessary affordable energy to the surrounding neighborhood in the event of natural or man-made disaster.

The Proposed Action will incorporate the same energy-efficient measures as the existing building. It is the goal of the Applicant to operate a net-zero facility. Additionally, the Applicant is proposing a Community Solar System, pursuant to NYSERDA's Community Solar Program, consisting of the installation of roof-mounted photovoltaic solar arrays. The Applicant will partner with a NYSERDA approved Community Solar Developer to oversee the engineering, permitting, installation and operation of the Community Solar System. The Community Solar System program is designed to provide clean energy to local residents. The Applicant will install roof mounted photovoltaic solar arrays as follows:

- Existing self-storage building – 121.5 kW dc (810 m^2);
- Proposed self-storage building – 149.2 kW dc (995 m^2);
- Existing Murphy Brothers office – 11.6 kW dc (78 m^2).

These solar arrays are connected to the existing ConEd electrical grid via a separate service connection on the Site adjacent to the existing electric meter. Electricity produced from the solar panels is sent directly into the ConEd grid. The Applicant then offers subscriptions to Mamaroneck residents for a portion of that electricity, resulting in reductions in their ConEd bills. This system democratizes solar, and affords everyone access to clean energy, even those who cannot install a solar system on their own property.



Mamaroneck Self Storage is currently enrolled in the Green Building Partnership's Green Building Certification Program, which measures the sustainability of a business's daily operation. Mamaroneck Self Storage strives to be a model of sustainability for Westchester County, in both the construction of the building as well as the operation of the business.

The landscaping scheme installed when the self-storage building was constructed will be extended throughout the Site. New plantings are proposed around the perimeter of the Site consisting of azaleas, dwarf mountain pine and boxwood, along with new flowering cherry and black gum street trees. Perennial foundation plantings are also proposed. A rain garden is proposed along Fenimore Road.

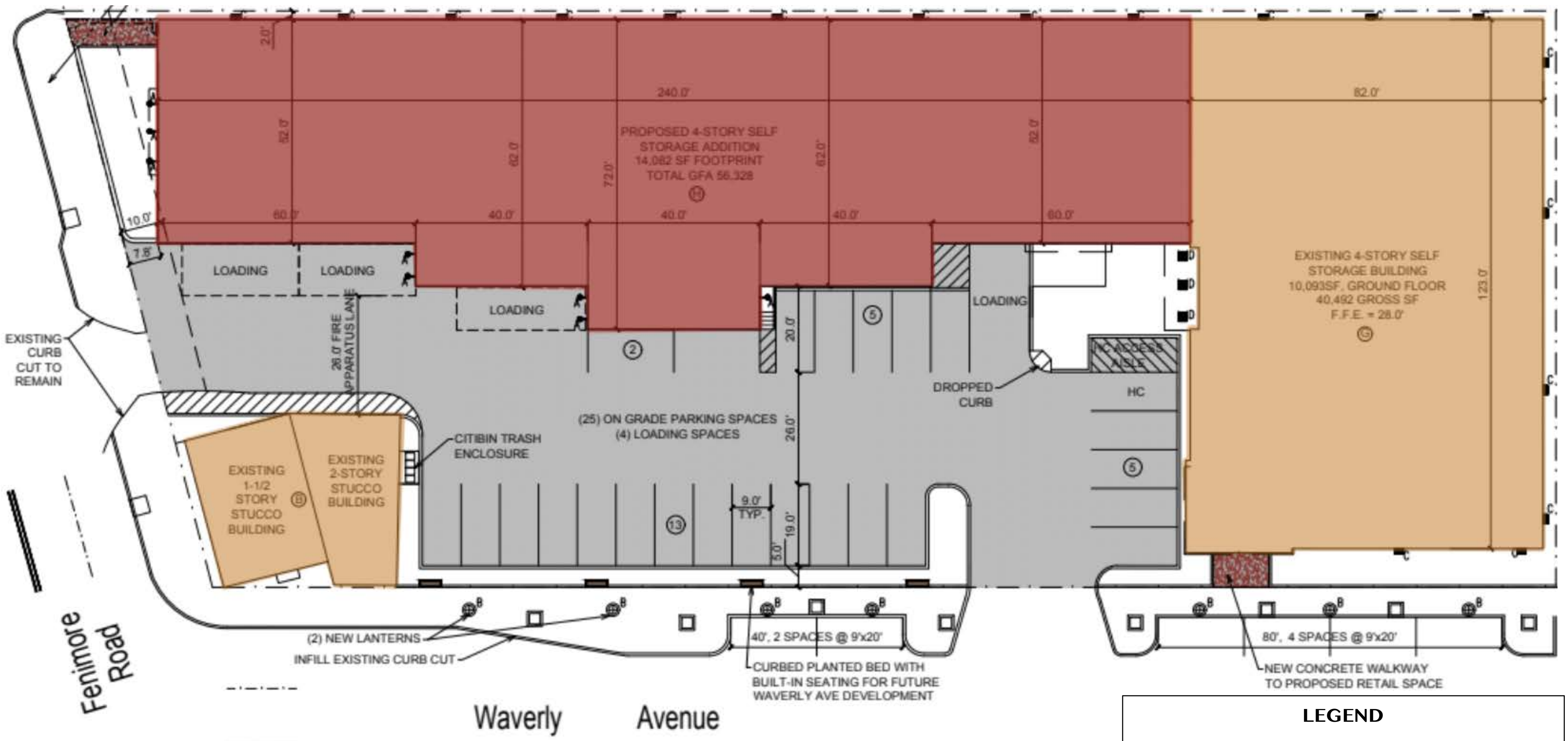
Refer to Figures II-7 Site Plan, II-8 Traffic Management Plan, II-9 Landscaping Plan, II-10 First Floor Plan, II-11 Second to Fourth Floor Plan, II-12 Exterior Elevations, II-13 Site Context Elevations, II-14 Site Details, II-15 Massing from Fenimore Road, II-16 Massing from Waverly Avenue, II-17 Neighborhood Context Massing.

G.) Description of Utilities & Stormwater Management

The self-storage building addition will be served by public sewer and water services through connections from the existing self-storage building. No new sewer or water service connections are required to Waverly Avenue or Fenimore Road are required. The Proposed Action will result in a total water demand of approximately 150 gpd and a similar generation of sanitary wastewater. This represents a decrease of 120 gpd from the Site's current existing hydrologic load of 270 gpd. Water is provided from the 6" water main in Waverly Avenue by the Westchester Joint Waterworks. Sanitary Wastewater is discharged into the 8" sewer main in Waverly Road, which is part of the Mamaroneck Sewer District, ultimately discharging through the Mamaroneck Sewage Treatment Plant.

The facility is being designed as a net zero building, and will be self-sustaining with regard to the electricity. The proposed Community Solar System will generate electricity that will be transmitted into the ConEd grid.

A stormwater management plan has been developed for the Proposed Action. Given the Site's location within the 100-year floodplain, a design involving percolation is not feasible. Instead the stormwater management plan consists of collecting and channeling runoff to hydrodynamic separators before connecting into the Village's drainage system.



LEGEND

- Existing Buildings to Remain
- Proposed Building Addition
- Parking Lot

Source: KTM Architect

Scale: 0 15' 30'

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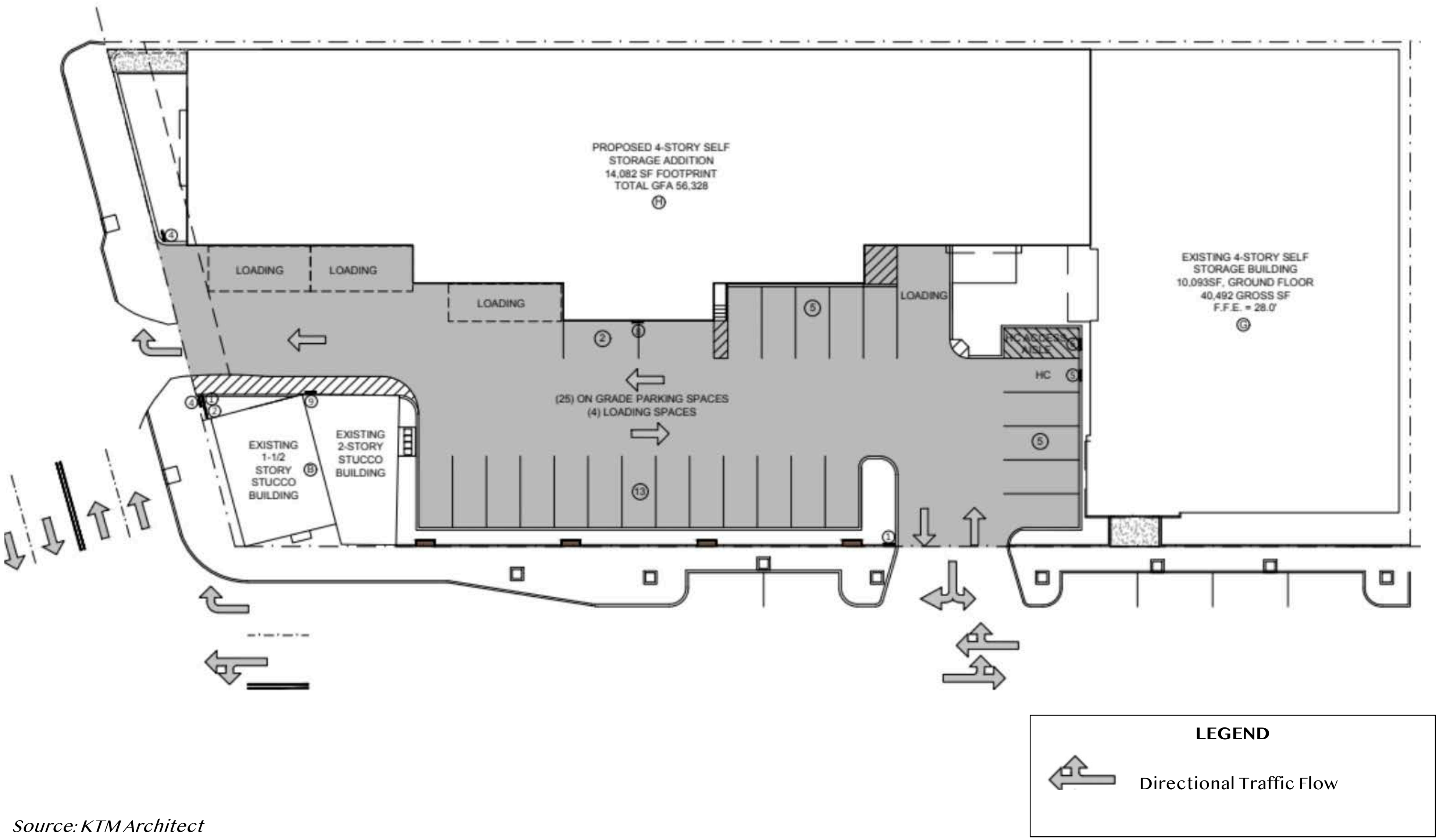
Proposed Site Plan

E S N W

Figure II-7



Source: KTM Architect

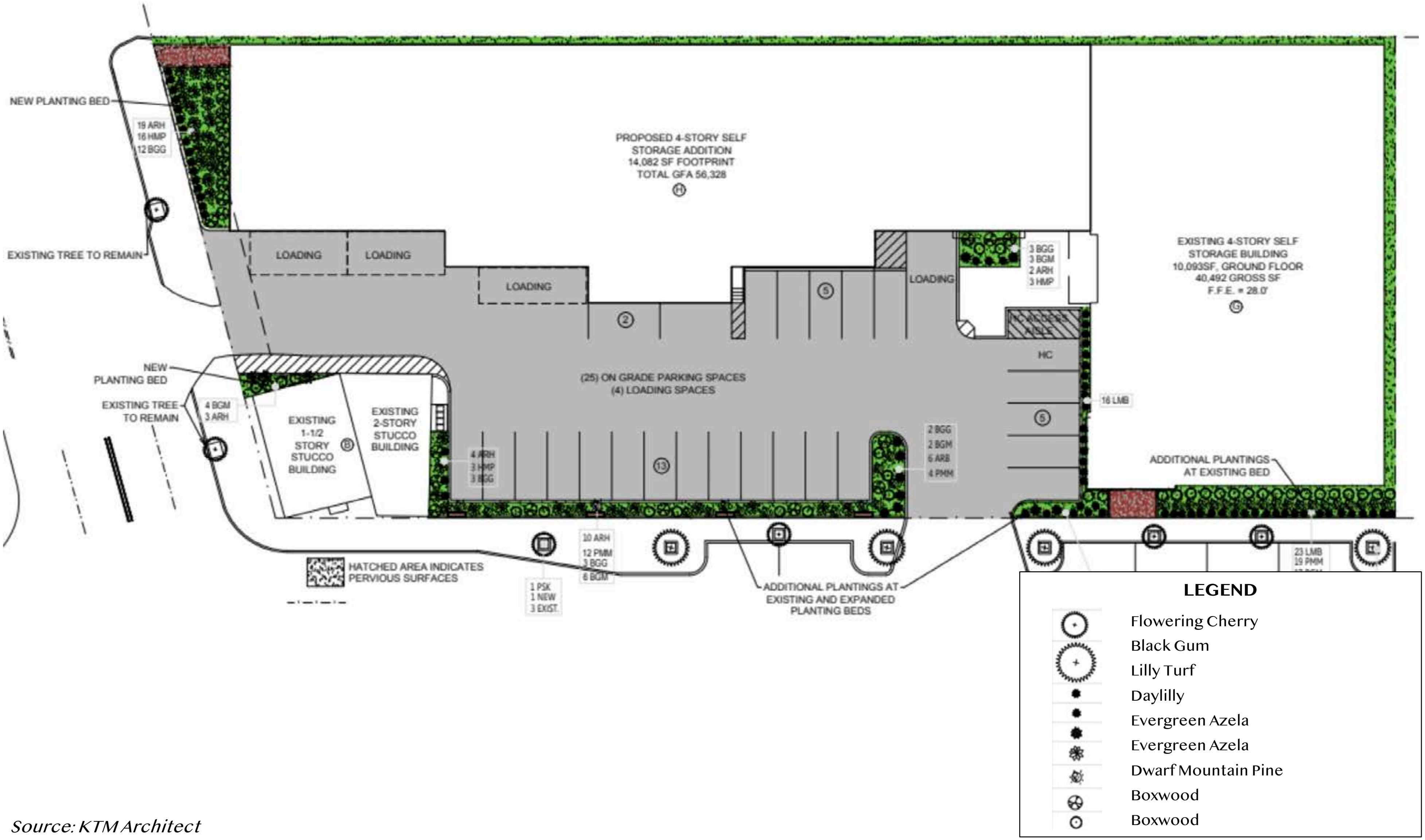
Scale: 0 15' 30'

CLEARY CONSULTING

Traffic Management Plan

E S N W

Figure II-8



Source: KTM Architect

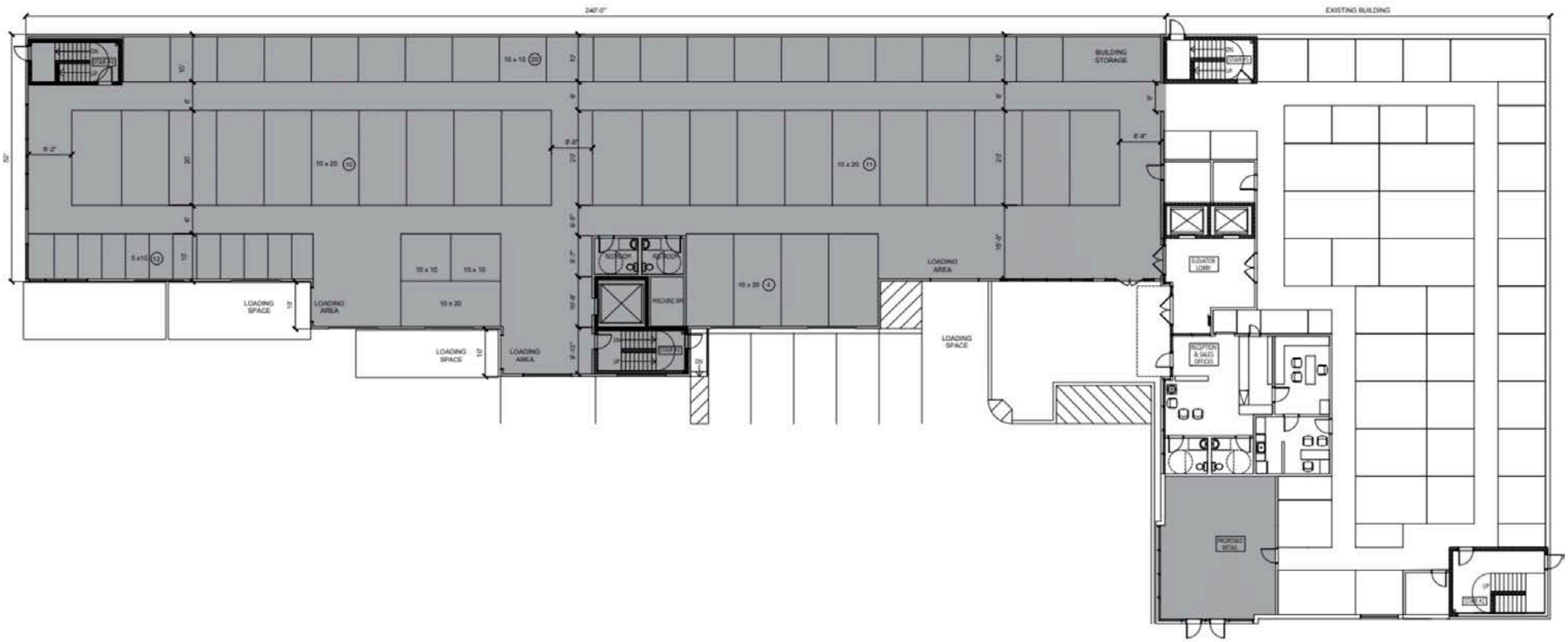
Scale:
0 15' 30'

CLEARY CONSULTING

Landscape Plan

E S N W

Figure II-9



Source: KTM Architect

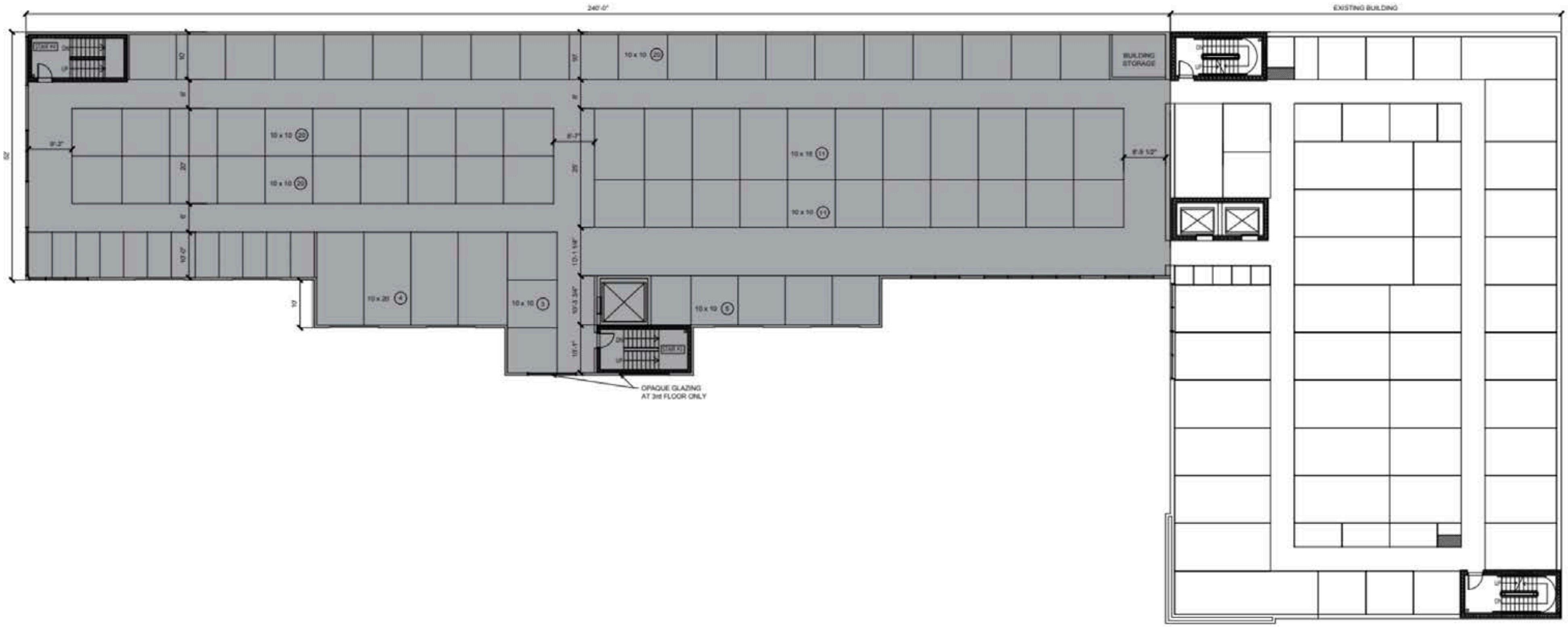
Scale:
0 15' 30'

CLEARY CONSULTING

First Floor Plan

E S N W

Figure
II-10



LEGEND

Existing Floor Area

Proposed Floor Area

Source: KTM Architect

Scale:

0 15' 30'

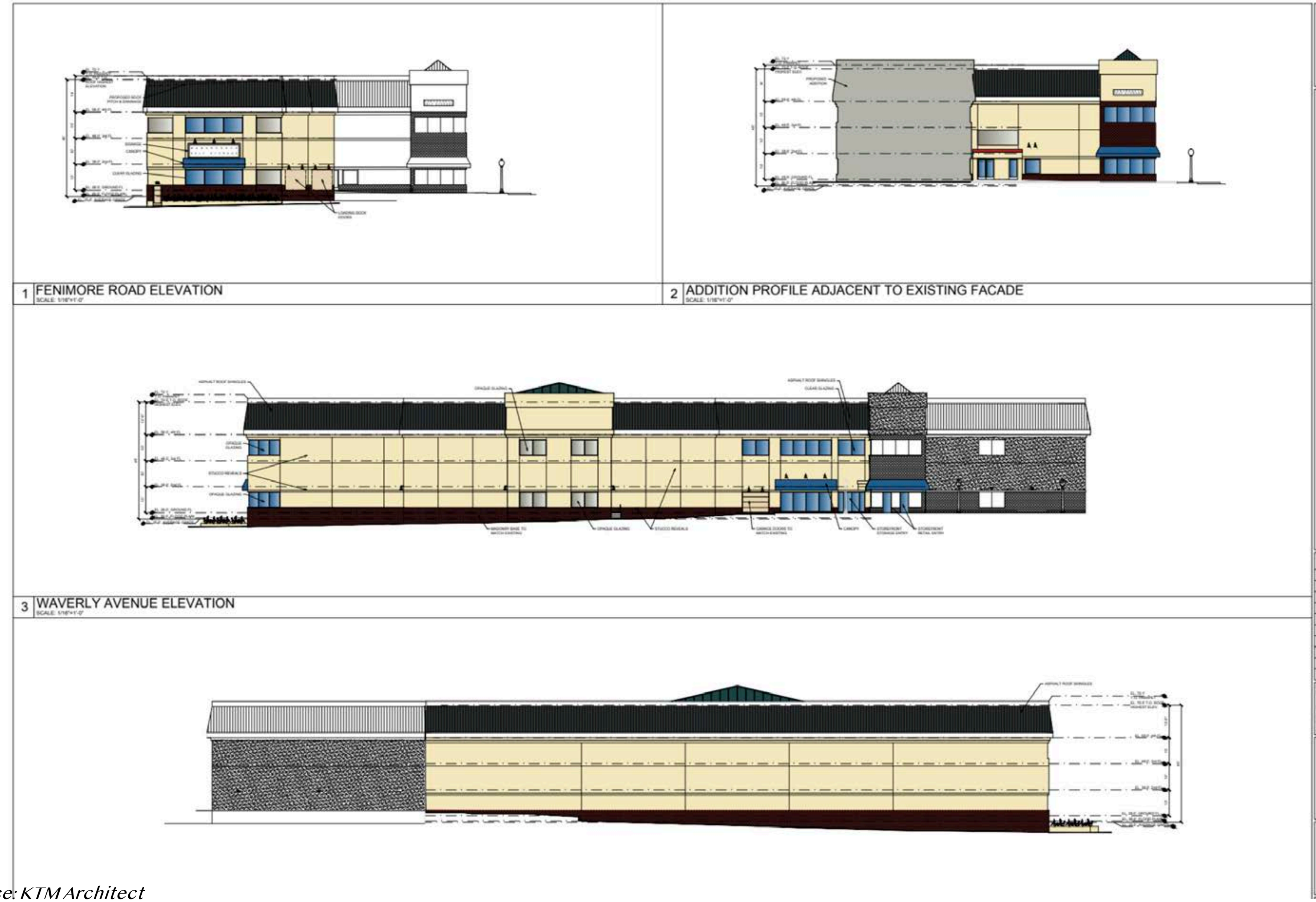
CLEARY CONSULTING

2nd to 4th Floor Plans

E S N W

Figure

II-11



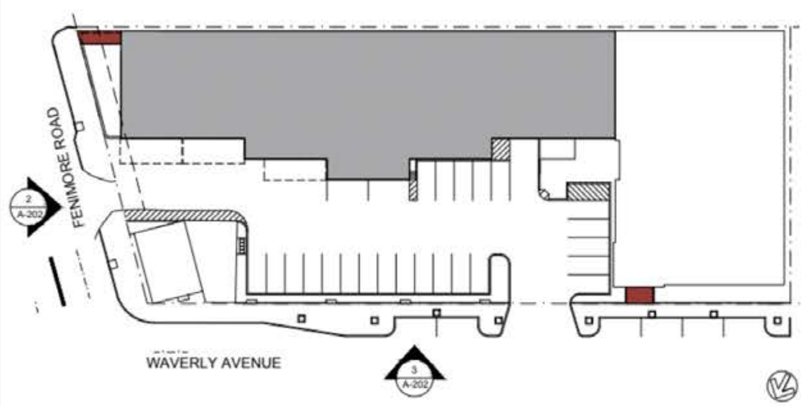
Source: KTM Architect

Scale:
N.T.S.

CLEARY CONSULTING

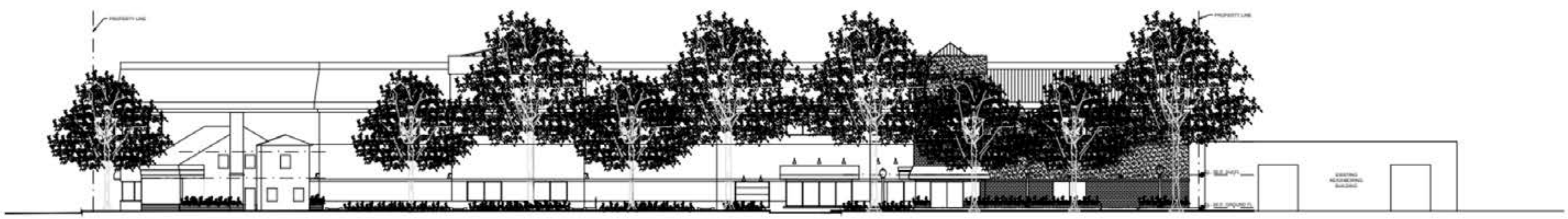
Exterior Elevations

Figure
II-12



1 KEY SITE PLAN

2 FENIMORE ROAD: EXISTING CONDITIONS & PROPOSED IMPROVEMENTS



3 WAVERLY AVENUE: EXISTING CONDITIONS & PROPOSED IMPROVEMENTS

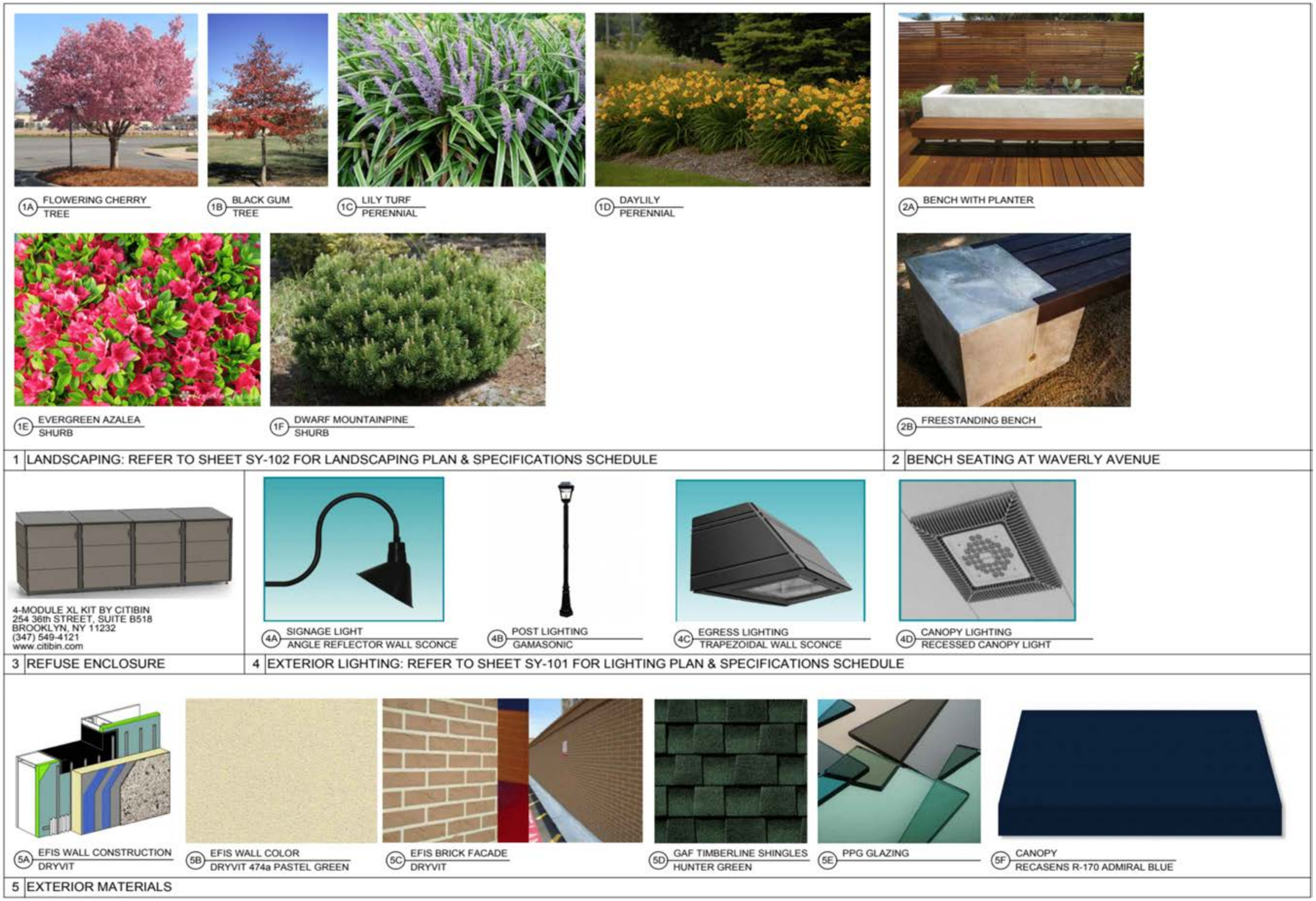
Source: KTM Architect

Scale:
N.T.S.

CLEARY CONSULTING

Site Context Elevations

Figure
II-13



Source: KTM Architect

Scale:
N.T.S.

CLEARY CONSULTING

Site Details

Figure
II-14

Source: KTM Architect

Scale:
N.T.S.

CLEARY CONSULTING

Massing from Fenimore Road

Figure
II-15

Source: KTM Architect

Scale:
N.T.S.

CLEARY CONSULTING

Massing from Waverly Avenue

Figure
II-16

Source: KTM Architect

Scale:
N.T.S.

CLEARY CONSULTING

Neighborhood Context Massing

S W E N

Figure
II-17

H.) Construction Schedule:

Construction of the proposed building addition is anticipated to be completed within 12 months. During that period, the existing self-storage facility, as well as the Murphy Brothers Contracting store front and offices in Building B will remain open and operational. Construction phasing and adjustments to off-street parking will be coordinated with the Village Building Department to ensure adequate parking remains available and to protect public safety throughout the construction phase of the development.

The Applicant has coordinated the proposed development with CSX, and the Proposed Action will not interfere with the operation of the railroad right-of-way spur siding adjacent to the Site, ensuring unimpeded railway access to the MARVAL Industries and Spatz Properties.

I.) Purpose, Need & Benefits of the Proposed Action:

An average of 10% of the households in the United States utilize self-storage facilities, with an average unit size of 100 square feet. The customer ratio is 80% residential, 20% commercial (with higher residential ratios in more urban settings).[1] Running along with the current boom in apartment development in Westchester County, is a corresponding increased demand for self-storage facilities.

Currently, the Mamaroneck Self-Storage facility supports a unit occupancy rate of 84.48%. Nearly 80% of the customers leasing space within the existing facility come from 5 surrounding zip code areas. Within that geographic area, which supports very high average household incomes, there are no competitive self-storage facilities. Based on an analysis by Chiswell & Associates, the 46,034 households within the 5 surrounding zip code areas represent a potential demand for self-storage space of 664,936 square feet. If based on the per capita demand, the 125,723 residents within the 5 zip code areas represent a potential demand for self-storage space of 880,061 square feet. These square footages are based on an industry standard factor of 7.0 square feet of storage space per person. It can be concluded

[1] Chiswell & Associates, LLC, Storage Feasibility Memorandum, December 2017.

that the proposed addition of 56,328 square feet of self-storage space could easily be absorbed by the local market, with a significant surplus demand remaining.

Aside from meeting a portion of the existing demand for self-storage space, the Proposed Action will benefit the Village by completing the redevelopment of the Project Site and eliminating the existing jumble of existing businesses and buildings that occupy the balance of the Site. The existing Mamaroneck Self- Storage building is one of the more architecturally attractive buildings within the Village's "Industrial Area" and the proposed addition will extend that distinctive character throughout the Site, thereby unifying the center core of the "Industrial Area as recommended in the Village's Comprehensive Plan." "Cleaning-up" the Waverly Avenue/Fenimore Road intersection is expected to serve as a catalyst fostering additional compatible improvements in the neighborhood. The Proposed Action will remove three existing buildings that are currently impacted by periodic flooding, to be replaced by a new building constructed above the base flood elevation. The facility will be an extremely low impact facility from a use (visitor trips) and operational standpoint (the design objective is to achive a net-zero building). The Site will demand few municipal services, while contributing significant tax revenue to all taxing jurisdictions.

The Proposed Action is consistent with, and supports the vision of the Village as articulated in the 2012 Comprehensive Plan, LWRP, Waverly Avenue Design Guidelines, Patterns for Westchester, and Westchester 2025.

Chapter III

Required Permits & Approvals
Involved & Interested Agencies

III - REQUIRED PERMITS & APPROVALS, INVOLVED AND INTERESTED AGENCIES

A.) Approvals:

Pursuant to the provisions of SEQRA, Involved Agencies are those agencies which have an approval authority in conjunction with the Proposed Action. Interested Agencies are those other agencies that have some interest in the Proposed Action, but not a direct approval role. Project reviews and approvals by Involved Agencies and reviews by Interested Agencies are identified in Table III-1, below.

Table III-1
Project Reviews and Approvals

Involved Agency	Approval/Review
Village of Mamaroneck	
Zoning Board of Appeals	▪ SEQRA review and adoption of Findings, variance approval
Planning Board	▪ Site Plan approval
Architectural Review Board	▪ ARB approval
Building & Engineering Department	▪ SWPPP ▪ Building Permits ▪ Flood Plain Development Permit
Department of Public Works	▪ Street/Sidewalk Opening Permit
Harbor & Coastal Zone Management Committee	▪ LWRP Consistency Review
Westchester County	
Health Department	▪ Sanitary sewer and water supply approval
Planning Board	▪ 239-m referral
New York State	
Department of Environmental Conservation	▪ SWPPP
Parks Recreation & Historic Preservation	▪ Cultural resources review

The list of Involved and Interested Agencies for the Proposed Action include:

Lead Agency:
Village of Mamaroneck Zoning Board of Appeals
Village Hall
169 Mount Pleasant Avenue
Mamaroneck, New York 10543

Involved Agencies:
Village of Mamaroneck Planning Board
Village Hall
169 Mount Pleasant Avenue
Mamaroneck, New York 10543

Village of Mamaroneck Board of Architectural Review
Village Hall
169 Mount Pleasant Avenue
Mamaroneck, New York 10543

Westchester County Planning Board
Westchester County Department of Planning
148 Martine Avenue, Room 432
White Plains, New York 10601

Westchester County Department of Health
25 Moore Avenue
Mount Kisco, New York 10549

New York State Department of Environmental Conservation
21 South Putt Corners Road

New Paltz, New York 12561

New York State Department of Environmental Conservation
625 Broadway
Albany, New York, 12207

New York State Office of Parks Recreation and Historic Preservation
HP Field Services Bureau
Peebles Island
P.O. Box 189
Waterford, New York, 12188

Interested Agencies:
Village of Mamaroneck Police Department
Police Headquarters
169 Mount Pleasant Avenue
Mamaroneck, New York 10543

Village of Mamaroneck Fire Department
Fire Department Headquarters
146 Palmer Avenue
Mamaroneck, New York 10543

Notices Only:
Environmental Notice Bulletin – Environmental Permits (enb@dec.state.ny.us)

Chapter IV.A

Land Use, Zoning & Community Plans

IV. A. - LAND USE, ZONING & COMMUNITY PLANS

INTRODUCTION

This section of the DEIS evaluates the potential impacts of the Proposed Action on existing patterns of land use in and around the Project Site. This section also compares the Proposed Action to the recommendations for the Site and surrounding area as set forth in the Village of Mamaroneck Comprehensive Plan, and other long-range comprehensive plans. The Proposed Action's consistency with the existing M-1 zoning regulations will also be evaluated.

1.) EXISTING CONDITIONS

(a.) Generalized Land Use

The Project Site lies within the Village's "Industrial Area" as defined in the 2012 Comprehensive Plan. As illustrated on Figure IV.A -1, the site and the majority of the parcels immediately surrounding the Site are classified as "Manufacturing, Industrial and Warehousing." Figure IV.A – 2 depicts the land use pattern within ¼ of the Site, which clearly demonstrates that the Project Site lies in the heart of the Industrial Area. The Metro North, New Haven Line serves to distinctly define the eastern edge of the Industrial Area from the residential neighborhoods to the east. The traditional industrial character of the Industrial Area has been evolving for many years, and today includes a fairly broad array of industrial, commercial and non-residential uses.

(b.) On-Site Land Uses:

The Project Site currently supports 5 buildings. The south side of the Site supports the 4-story, 40,492 square foot Mamaroneck Self Storage facility. The north side of the Site is characteristic of the balance of Waverly Avenue, and supports a group of one and two-story, ageing warehouse buildings. As illustrated on Figure II-5, Building C is a 2-story 2,985 square foot concrete block building located in the center of the site, which houses the Murphy Brothers Contracting office and warehouse space. Along the eastern edge of the central portion of the Site is the remnant of the former lumber yard's storage racks and a 2-story, 1,734 square foot concrete block building (Building D) which houses an auto glass business. Building A is located in the

Source: Village of Mamaroneck Geoportal

Scale: 0 50' 100'

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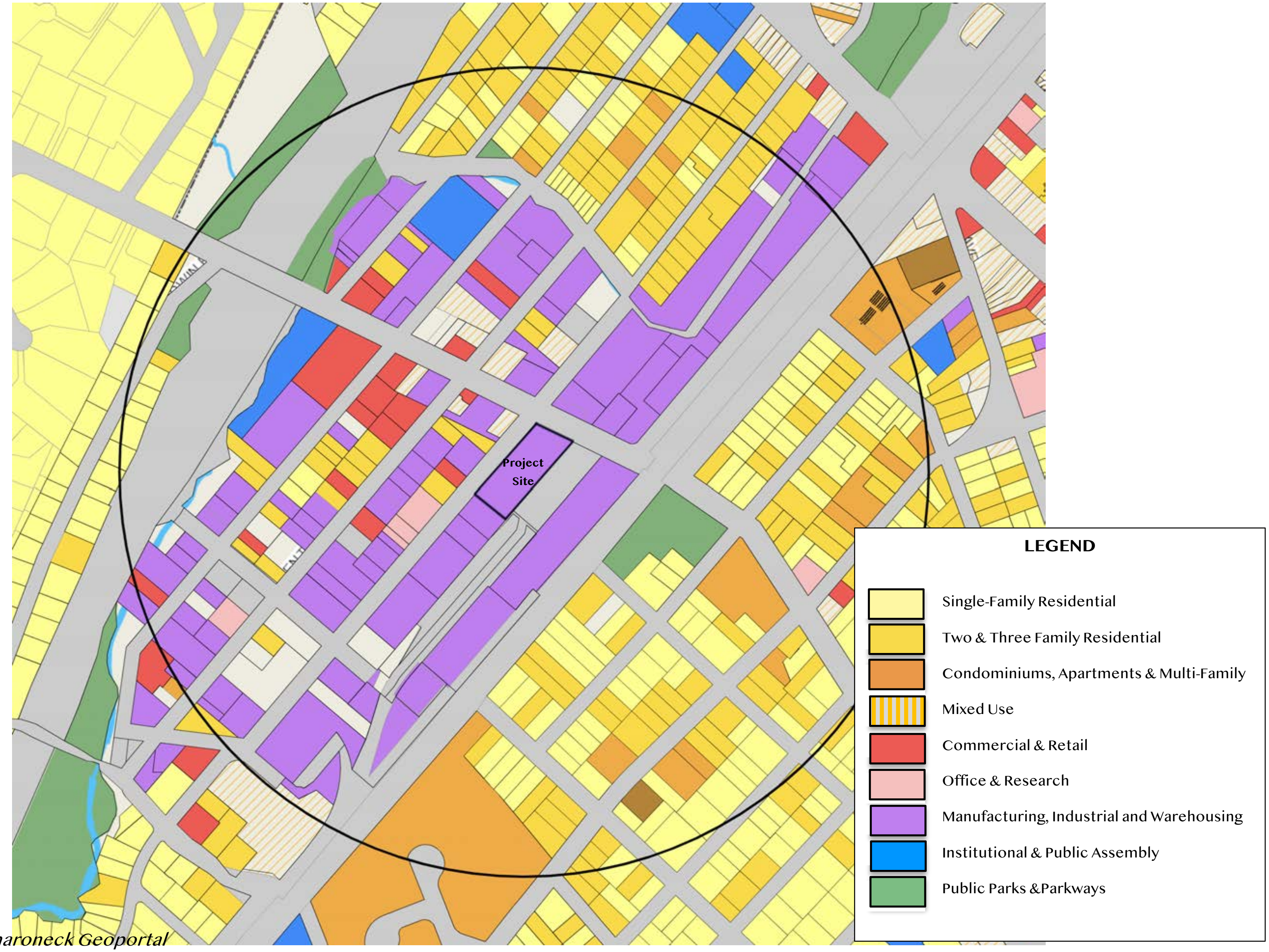
Generalized Land Use

Figure IV.A-1



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Land Use within ¼ Mile of Site

Figure IV.A-2

northeast corner of the Site, and is an 8,322 square foot, 2-story wood frame "barn" that supports a holiday storage facility, an electrician's office and storage and Murphy Brothers Contracting storage. In the northwest corner of the Site, adjacent to the Waverly Avenue/Fenimore Road intersection is Building B - a 1 ½ story to 2-story, 2,485 square foot stucco building that contains the Murphy Brothers Storefront and Murphy Brothers Contractors office and warehouse space.

(c.) **Neighboring Land Uses:**

The uses immediately adjacent to the Project Site are characteristic of the Industrial Area. As a corner lot, the Site is bounded by Waverly Avenue to the west, Fenimore Road to the north, and a CSX railroad spur to the east. Across the street to the north at 545 Fenimore Road, is a one-story, 4,500 square foot office building. Moving to the east at 525 Fenimore Road is a two-story, 7,138 office building. Located to the east, across the CXS railroad spur, is a one-story, 16,000 square foot warehouse building. To the west of the project Site, across Waverly Avenue is a one-story light industrial building. Moving south on Waverly the next building is a 2 ½ story, multi-family apartment building, containing 4 dwelling units. The next building to the south is a one-story, 6,050 square foot industrial building that supports the Hudson Valley Baking Company. The last building across from the southern end of the Site is 427 Waverly Avenue, a one-story, 980 square foot building that supports C&S Foreign & Domestic Car Service. Finally, directly south of the Project Site is a one-story, 7,988 square foot building housing Wish Auto and National Photo Color Corp.

(d.) **Industrial Uses Within ¼ Mile of the Site:**

A variety of typical light industrial uses are located within ¼ mile of the Project Site. By far, the most predominate uses are auto body shops and auto dealer storage lots. Other uses in the area consist of contractor and building supply lots, lawn, landscape design (Blondies Treehouse located in the old Gutta-Percha Rubber factory) and tree care business, home remodeling businesses, printers and sign companies, athletic and fitness facilities including Westchester Squash, Westchester Judo Club and a UFC Gym, the Optimum facility, as well as the Village's Recycling Center and Department of Public Works.

(e.) **Development Trends and Approval Activity:**

No significant recent development activity has taken place in the M-1 district. An application for a new office building has been submitted for 526 Fayette Avenue[1].

Development activity has occurred in proximity to the M-1 District, primarily within the C-1 District; including The Mason (270 Waverly), Decadent Ales (139 Hoyt), Grand Street Lofts (690 Mamaroneck Avenue), Aquatots Swim School (120 Madison) and Mamaroneck Center (805 Mamaroneck Avenue).

It is anticipated that once adopted, The Maker Zone will facilitate additional development in the Industrial Area.

(f.) **Existing M-1 Zoning:**

The M-1 – Manufacturing District is located in an area of the Village known as "The Flats" and extends from Rockland Avenue in the south, to Plaza Avenue in the north, and from then Metro North New Haven railroad line in the east to the New England Thruway in the west.

The following uses are permitted in the M-1 District:

Principal Uses:

- Manufacturing, assembling, converting, altering, finishing, cleaning or other processing and incidental storage of products and materials, provided that only gas, oil or electricity is used as a fuel, except as permitted by the Building Inspector upon his finding that such other heating installation is expected to be free of nuisance characteristics and will have no adverse effect on neighboring uses.
- Wholesaling, storage and warehousing, but not the storage or housing of livestock or other animals, junk, scrap, paper, rags or any similar materials, gasoline, fuel oil, fuel gas and kerosene, except incident to and in amounts not exceeding those customarily required for a motor vehicle filling station.

[1] According to Greg Cutler, Village Planner.

- Printing and publishing
- Off-street parking lots or garages
- Business, professional or governmental offices and banks
- Research laboratories
- Any municipal uses of the Village of Mamaroneck
- Transformer stations and customary accessory uses
- Retail uses, including restaurants within 150 feet of the center line of Fenimore Road

Accessory Uses:

- Off-street parking and loading and signs as permitted by the Village Sign Ordinance
- Fences, walls or retaining walls
- Underground motor-fuel storage tanks, accessory to permitted principal uses
- Retail uses, including restaurants

Special Permit Uses:

- Home improvement design centers
- Indoor recreation facilities
- Art and film studios and dance and music instruction
- Adult uses
- Motor vehicle filling/service stations, public garages and motor vehicle repair/body shops

These uses are governed by the following dimensional, height and bulk regulations, as set forth in the Schedule of Minimum Requirements for Non-Residential Districts, §342, Attachment 3 of the Zoning Code.

Table IV.A-1
M-1 Manufacturing District - Dimensional Regulations

Minimum Lot Area	Minimum Lot Width/ Frontage	Maximum Building Coverage	Maximum F.A.R.	Maximum Height	Front Yard	Side Yard	Rear Yard
10,000 sqft	50’	50%	1.0	3 stories 45’	None(3)	None	None

(3) – Footnote 3 in §342, Attachment 3 reads: *“In the case of corner lots, the Planning Board shall establish reasonable setbacks from the street under the provisions of §342-79. A minimum front yard of 10 feet shall be maintained along Fenimore Road.”*

(g.) **Existing Variances:**

On October 3, 2013, the Zoning Board of Appeals granted the following variances to allow for the construction of the existing Mamaroneck Self Storage facility:

- Article VI, Section 342-38 – Schedule of Minimum Requirements – Floor Area Ratio of 1.0 permitted, 1.34 proposed – **variance granted.**

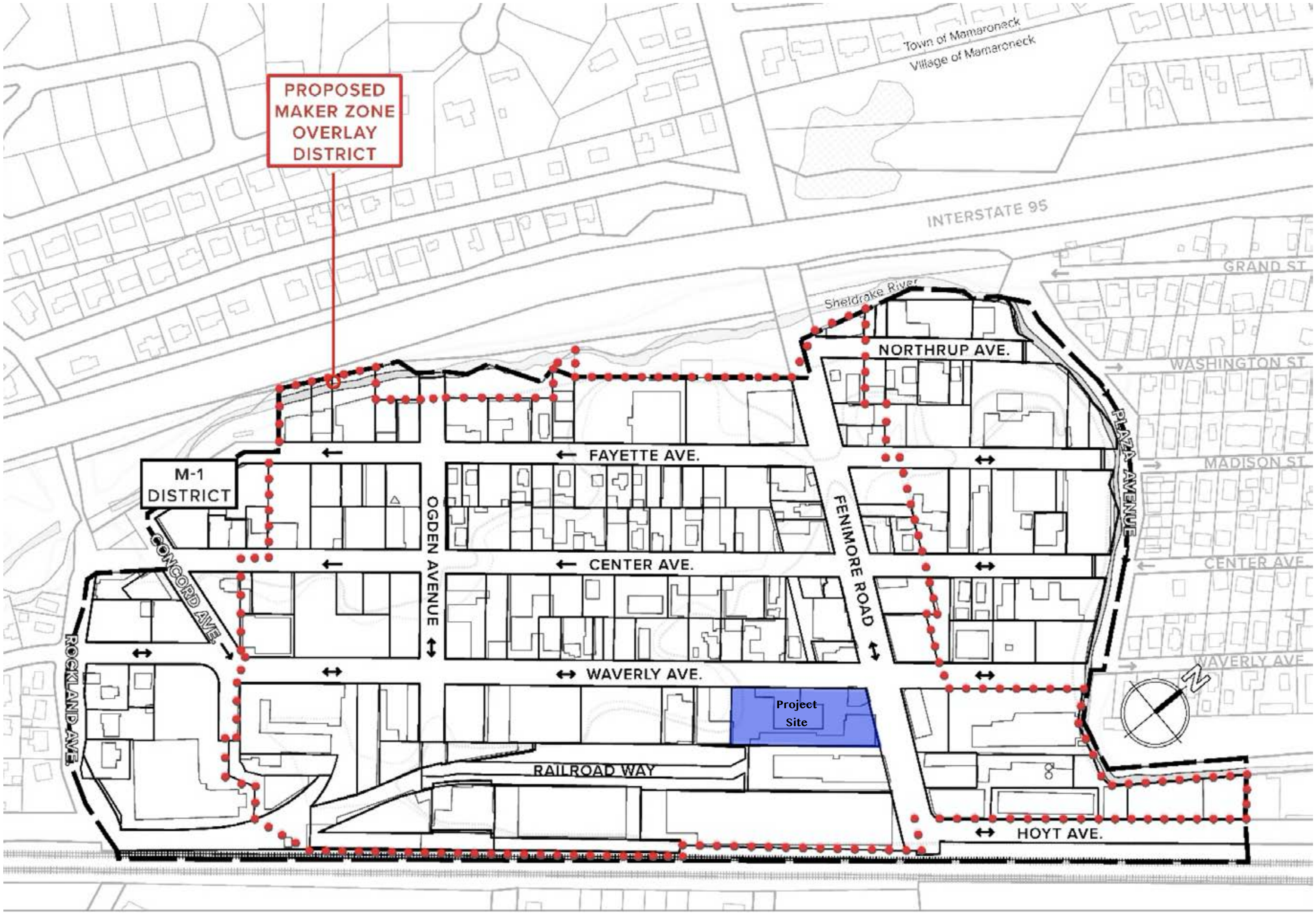
- Article VI, Section 342-38 – Schedule of Minimum Requirements – Number of stories, 3 permitted, 4 proposed – **variance granted.**

- Article VIII, Section 342-57 – Schedule of Off-Street Loading Requirements – Loading spaces, 5 required, 0 proposed – **variance granted.**

- Article VIII, Section 342-56 – Schedule of Off-Street Parking Requirements – Parking spaces, 89 required, 52 proposed – **variance granted.**

(h.) **Proposed Maker Zone Overlay District:**

The purpose of the proposed Maker Zone Overlay District (MZOD) (Figure IV.A-3) is to create incentives to grow the "maker" economy in Mamaroneck while enhancing the industrial uses that currently exist within the area. The maker economy is characterized by creation, learning, collaboration, and a vibrant public life. The new uses and related provisions in the proposed MZOD will serve as an economic engine for jobs, diversify the existing business environment, increase tax revenue, and promote environmentally-sensitive development. The MZOD is based upon recommendations from nearly five years of research conducted by Village staff, the Industrial Area Land Use Subcommittee (IAC), and two teams of consultants, with full participation and guidance from the public.



Source: Harriman/The Chazen Companies

Scale: N.T.S.

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Maker Zone

E S N W

Figure IV.A-3

The Maker Zone is proposed as an overlay district, meaning all of the existing uses permitted in the M-1 district remain intact, and an array of new uses are also allowed; including the following:

Principal Uses:

- Maker space and small-scale production
  - [1] Maker spaces
  - [2] Fabrication labs
  - [3] Micro-alcohol establishments
  - [4] Kitchen incubators
- Innovative office environments
  - [1] Co-working spaces
  - [2] Business incubators
  - [3] Innovation offices
- Education uses
  - [1] STEM education programs
  - [2] Workforce development programs
  - [3] Satellite campuses
- Arts uses
  - [1] Work-only artist studio
  - [2] Work/live artist studio
  - [3] Art galleries
  - [4] Music and dance studios and schools
  - [5] Theaters and performance spaces
- Retail uses (<10,000 sqft)
- Food service establishments (<5,000 sqft)
- Outdoor dining (<500 sqft)
- Indoor recreation facilities (<40,000 sqft)
- Flex space

Accessory Uses:

- Tasting room
- Public art

Special Permit Uses:

- Art uses
- Public life
- Indoor recreation facilities (>40,000 sqft)
- Pet day care facilities
- Retail use (>10,000 sqft)
- Food service establishment (>5,000 sqft)

- Outdoor dining (>500 sqft)

The following dimensional regulations have been established for the proposed Maker Zone:

Table IV.A-2
Maker Zone - Dimensional Regulations

Minimum Lot Area	Minimum Lot Width/ Frontage	Maximum Building Coverage	Maximum F.A.R.	Maximum Height	Front Yard	Side Yard	Rear Yard
10,000 sqft	50'	50%(13)	1.0(14)	45' above base flood elevation	None(15)	None	None

The following footnotes to §342, Attachment 3 as associated with the maker Zone:

13 – May be increased to a maximum of 75%, if required criteria is met and the Planning Board grants the bonus.

14 - May be increased to a maximum of 1.5, if required criteria is met and the Planning Board grants the bonus.

15 – 10' minimum front yard for Fenimore Road. 10' maximum front yard for Waverly Avenue, may be waived, if required criteria is met and the Planning Board grants the bonus.

The Maker Zone also includes new off-street parking requirements for the uses described above.

(i.) Land Use Plans & Policies:

1. Village of Mamaroneck Comprehensive Plan (2012)

In 2012, the Village of Mamaroneck Comprehensive Plan was adopted, replacing the previous Master Plan adopted in 1985. Section 1.4 of the

Comprehensive Plan sets forth a series of overall Goals and Objectives, one of which reads:

> *"Make better use of industrial areas but exercise care in relation to adjacent residential areas."*

The Committee charged with overseeing the preparation of the Comprehensive Plan indicated that:

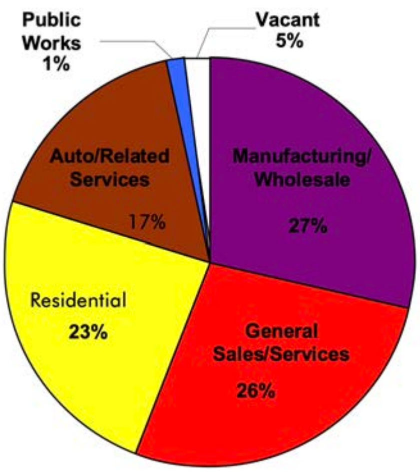
> *"…the industrial area warrants further study with an emphasis on understanding whether it remains a viable manufacturing district and what economic benefits are conferred to the Village."*

The Comprehensive Plan addressed the Industrial Area in significant detail, in part due to the finding in Section 5.4 that:

> *"Industry, including manufacturing and transportation and warehousing , has been declining in the Northeast and the U.S. as a whole since the end of World War II, and this trend is expected to continue for the foreseeable future."*

The Comprehensive Plan studied manufacturing trends, the labor force, streetscape and building conditions, flooding issues, and land use. Chart IV.A-1 presents the Industrial Area's Land Use as recorded in the Comprehensive Plan.

Chart IV.A-1
Industrial Area Land Uses[2]



The following specific Goals and Objectives were established for the Industrial Area:

Goals:

- *Encourage industrial and office uses within the appropriate established zones and where negative environmental and community design impacts can be minimized.*
- *Encourage those commercial and industrial establishments which are compatible with existing Village uses and with Village development goals.*

Objectives:

- *Examine market demand for the Industrial Area.*
- *Review studies of M-1 district, integrating relevant elements into the Plan, and consider potential rezoning of portions of the district, including along Hoyt Avenue.*

[2] Village of Mamaroneck Comprehensive Plan, 2012.

- *Identify optimum uses for this district and improvements needed to provide for such uses.*

The following recommendations for the Industrial Area established in the Comprehensive Plan:

Parking:

- Improve parking enforcement to eliminate double parking and storage of vehicles in the public right-of-way. This will aid the free flow of traffic including pedestrian and vehicular traffic through the district.
- Encourage private property owners to upgrade open parking lots and auto-related uses.
- Analyze industrial area for potential public parking sites for acquisition that would address parking shortages.
- Encourage private property owners to provide appropriate screening for all parking areas.

Auto-Related Uses:

- Encourage the screening and buffering of unsightly auto-related uses.

Hi-Tech Business:

- Promote the industrial area for continued growth in new hi-tech businesses. This includes working with service providers to upgrade utilities such as power supply and cable services necessary for hi- tech businesses to flourish.

Waverly Avenue:

- Implement the streetscape improvements recommended in the 2004 study to Waverly Avenue. This includes sidewalk widening, elimination of multiple curb cuts, the addition of street trees and street lighting.

Truck Traffic:

- Review the industrial area in terms of physical constraints to truck access. Opportunities to improve street configurations and alter parking controls may provide better access for commercial truck traffic, especially on Waverly Avenue.

Residential Zoning:

- Review the suitability of rezoning a portion of Hoyt Avenue to residential use. This includes a number of commercial lots that were vacated after the spring 2007 floods. Hoyt Avenue has close proximity to the train station and the Village's downtown, similar to other recent high-density residential developments, including the Sweetwater apartment building on Bishop Avenue.

Economic Development:

- Create a salaried downtown coordinator position for the Village's retail and industrial area that would be funded by public and private money. Focus on retaining and attracting new businesses to these areas.

Flood Mitigation and Open Space:

- Develop strategies to acquire private lands adjacent to the Sheldrake River as part of the Village's open space network and for flood mitigation. See Chapter 6 for more detail on current plans to address flooding.

Utilities:

- Work with Con Ed and Verizon to improve utilities and power services to the entire Industrial Area.

2. **Comprehensive Plan Update, First Draft October, 2019**

This update fulfills the recommendation set forth in the 2012 Comprehensive Plan, to review the plan after 5 years to keep it dynamic and to reflect the evolving needs and values of the community. This effort also provides more focused attention on resiliency and environmental sustainability and residential neighborhood character.

The Plan consists of the following sections:

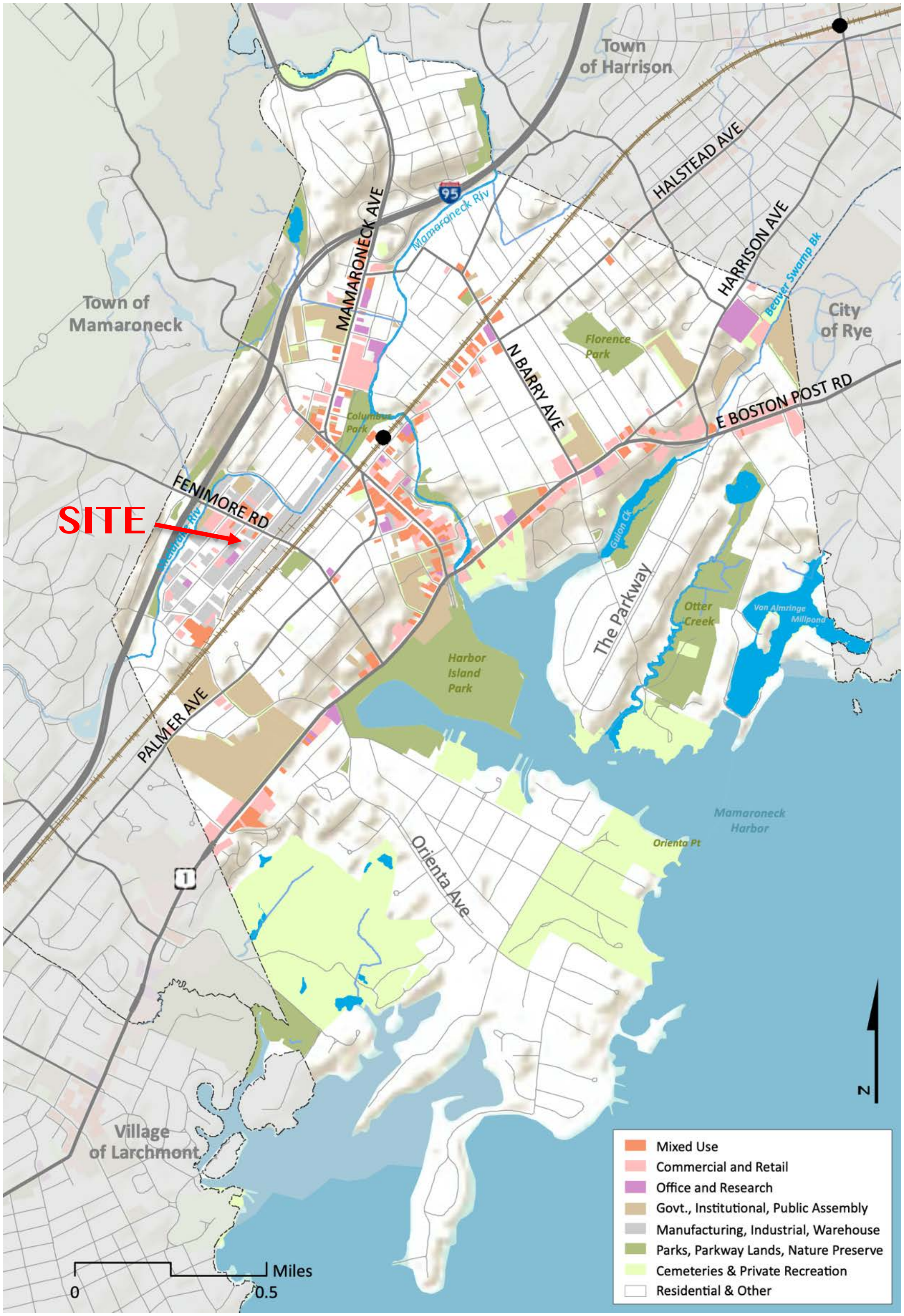
- A Framework for a Sustainable Village;
- Residential Neighborhood Character;
- Land Use & Development;
- Historic Preservation;
- Transportation Systems;
- Environmental Protection, Open Space & Resilience; and
- Municipal, Parks & Recreation and Cultural Facilities.

The draft Plan provides clearer and broader overall Village-wide goals and objectives, and addresses issues not fully covered in the 2012 Plan, such as sustainability and resiliency.

In evaluating the progress of implementing the 2012 Plan, the current draft Plan addresses the Industrial Area by recognizing the development of the Maker-Zone Vision Plan (2016) and the Industrial Area Rezoning Project (2019), and indicates that these initiatives would address the goals and objective for the Industrial Area. The draft Plan makes no other recommendations for the Industrial Area. The future land use plan for the Village as reflected on the Land Use Map (Figure IV.A-4) includes the Project Site within the "Manufacturing, Industrial, Warehouse" land use category.

3. Village of Mamaroneck Local Waterfront Revitalization Plan (Adopted)

The Village's Local Waterfront Revitalization Plan (LWRP) adopted in 1984, provided a framework for the projection of the Village "Coastal Zone" – which was defined as the entire Village. As a result of this designation, properties far removed from the waterfront are regulated by the provisions of the LWRP.



Source: Village of Mamaroneck, Comprehensive Plan Update – First Fill Draft 10/4/19

Scale: As Shown	Regional Location Map		Figure IV.A-4
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Of the plans and policies set forth in the LWRP, none specifically apply to the Project Site or vicinity. Four policies have some degree of applicability to the Project Site, summarized as follows:

> **Policy 11** – Buildings sited in the Coastal Zone shall be sited to avoid flooding.
>
> **Policy 18** - Major actions shall be undertaken in the Coastal Zone only if they conform to State and national water quality standards.
>
> **Policy 23** - Best Management Practices shall be used to control runoff into coastal waters.
>
> **Policy 38** – Groundwater shall be protected.

The LWRP also designated the Site as a parcel in the Riverine Flood Hazard Area.

4. Village of Mamaroneck Local Waterfront Revitalization Plan (Draft)

The current draft LWRP is an update of the 1984 plan, and provides a more in-depth inventory of conditions within the Coastal Zone – which was re-confirmed to correspond to the entire Village - particularly regarding flooding conditions.

The draft LWRP also revisited the Policies section, which is summarized as follows:

> **Policy 1** – This policy was expanded to ensure that all development in the Coastal Zone will enhance existing uses, is compatible with the character of the area, will not overburden existing infrastructure and will enhance the economic base of the community.

Policy 5 - Establishes that redevelopment should occur only when public services and facilities are adequate.

Policy 11 - Requires that flood hazards be minimized, and now include standards to achieve this.

Policy 18 - Broadened the criteria to determine if the Coastal Zone is being protected to include land use, environmental and economic interests.

Policy 33 – Stormwater Best Management Practices have been clarified.

Policy 38 – The groundwater protection policy remains unchanged.

In this version of the LWRP, the Industrial Area is specifically identified, and its characteristics noted. The Proposed Projects, section d. "Continue to Implement Flood Mitigation Measures" references the 2016 USACOE "General Reevaluation Report" which addressed the 2007 flooding, and proposed various mitigation measures, not only along the Sound, but along the Mamaroneck and Sheldrake Rivers.

5. **Waverly Avenue Design Study**

The Waverly Avenue Design Study, prepared by Buckhurst Fish & Jacquemart and adopted in 2004, evaluated the streetscape conditions along Waverly Avenue from Concord Road on the south to Plaza Avenue in the north. The Study addressed land use, street edge conditions, signage, utilities, parking and urban design concerns. The Study included 5 goals for improving the streetscape; including:

- Eliminating privately stored cars along the public right-of-way and on individual property "front yards" unless they are part of a planned or approved parking lot.

- Providing clearly marked parallel parking spaces on both sides of the Avenue.
- Improving pedestrian access through the creation of sidewalks and curbing.
- Limiting the number of driveways onto Waverly Avenue. Where possible, each business should have a maximum of one driveway that opens directly onto Waverly Avenue. Supplemental driveways can be provided off of side streets where access is available.
- Improving the appearance of the street through tree planting, new lighting and other landscape treatment, ensuring coordination with the streetscape proposals for Fenimore Road.

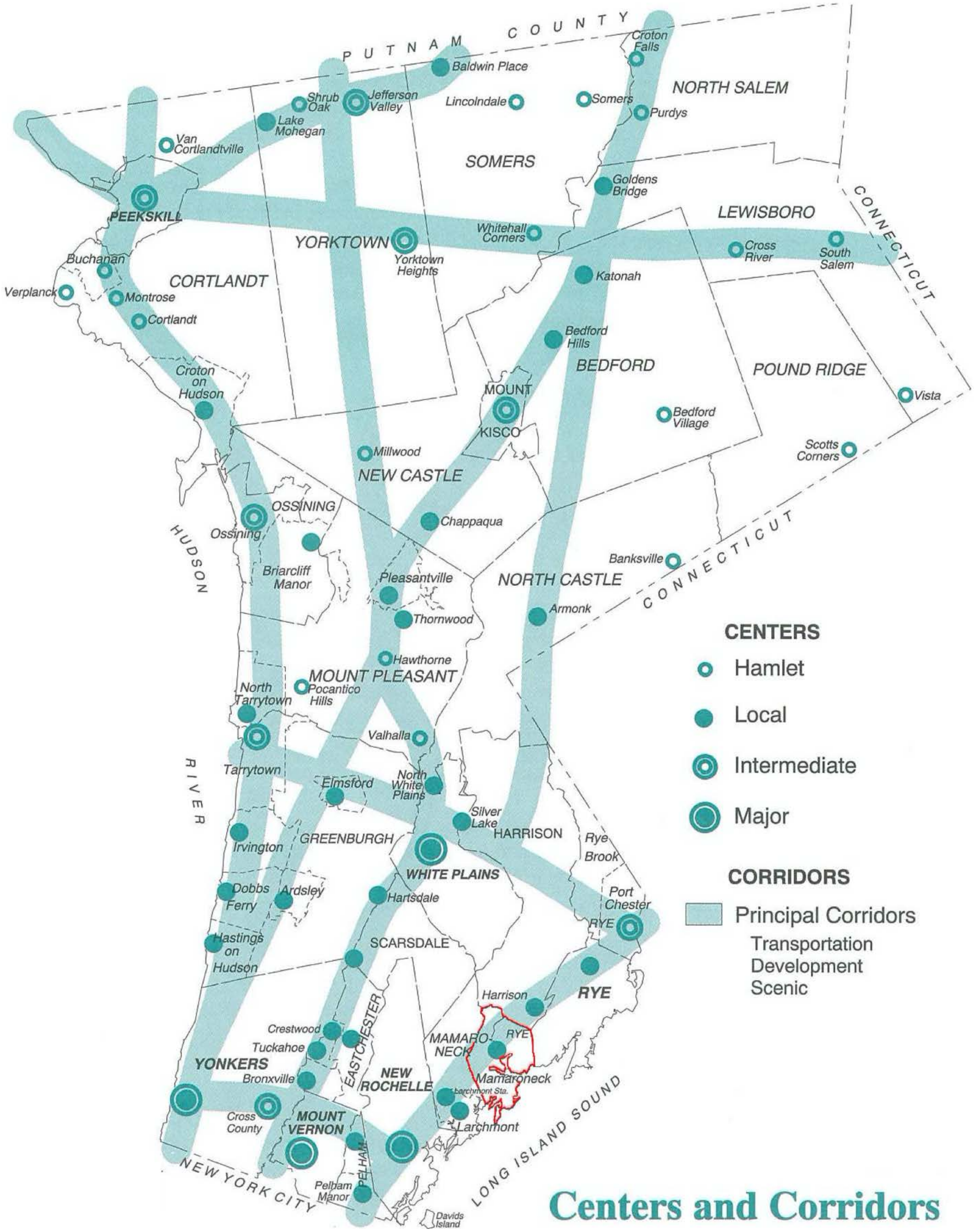
6. Patterns for Westchester

In 1996, Westchester County adopted *"Patterns for Westchester: The Land and the People*" (Patterns). Patterns serves as a policy document designed to guide sustainable development that "balances economic and environmental concerns and serves the needs of a changing population." Patterns offers a broader vision and context for local-level planning initiatives.

Mamaroneck is identified by Patterns as a "Local Center", within a "Principal Corridor" (Figure IV.A-5).

7. Westchester 2025

In 2006, the Westchester County Planning Board began a review of the County's planning policies in the context of the challenges currently facing the region. While the board found that Patterns continues to provide a solid foundation for the county's development, new critical issues require specific acknowledgement and action. As a result, the County has created Westchester 2025, an Internet-based, interactive framework for a planning partnership between Westchester and its 45 municipalities. Westchester 2025 is intended to help create a single regional vision, and to assist the Westchester County Planning Board carry out its principal responsibilities of long-range planning, advising the County Executive and Legislature on



Source: Patterns for Westchester: The Land and The People

Scale: N.T.S.

Patterns – Centers & Corridors

N W E S

Figure IV.A-5

capital spending and bringing the County's perspective to bear on planning and zoning referrals from municipal governments.

While Westchester 2025 has not developed specific recommendations for the Village of Mamaroneck, its policies reflect the Village's land use and development goals.

2.) FUTURE CONDITIONS WITHOUT THE PROPOSED ACTION

If the Proposed Acton is not developed, the Project Site would continue to operate as it operates today. The existing warehouse buildings would remain in place, accommodating various tenants. Murphy Brothers Contracting would continue to operate their businesses from the Site and the self-storage building would continue to function as it does today. No improvements to the existing buildings would be undertaken, the site and streetscape would remain unchanged, and it is unlikely that the Community Solar project would be undertaken.

3.) ANTICIPATED IMPACTS

A. <u>Zoning:</u>

The Proposed Action involves of the development of an addition to the existing 4-story, 40,492 square foot self-storage building consisting of a 4-story, 56,328 square foot structure containing 321 additional storage units and 700 square feet of ancillary retail space.

Table IV.A-3 documents the Proposed Action's zoning compliance.

Table IV.A-3 Zoning Compliance				
Zoning Provision	**Required**	**Existing**	**Proposed**	**Variance**
Minimum Lot Area	10,000 sqft	44,156 sqft	44,156 sqft	-
Minimum Lot Width & Frontage	50'	134'	134'	-
Building Coverage	22,078 sqft 50%	20,891 sqft 45%	25,834 sqft 59%	3,756 sqft 9%
Maximum F.A.R.	1.0	1.34	2.43	1.43
Maximum Gross Floor Area	44,146 sqft	59,081 sqft	107,087 sqft	62,932 sqft
Impervious Surface Coverage	N/A (Area) N/A (%)	41,653 sqft 94.3%	40,383 sqft 91.5%	-
Maximum Building Height (Note 1)	3 Stories 45'	4 Stories 45'	4 Stories 45'	1-Story
Minimum Front Yard (Waverly)	Note 2	0'	N/A	-
Minimum Front Yard (Fenimore) (Note 3)	10'	0.4'	0.4'	7' 8"
Minimum Side Yard	None	2'	2'	-
Minimum Rear Yard	None	3'	3'	-
Off-Street Parking	137	25	25	112
Off-Street Loading (Notes 4 & 5)	8	0	4	4

Note 1 – HEIGHT BUILDING – The vertical distance to the highest level of the highest point of the roof if the roof is flat or mansard, or to the median level between the eaves and the highest point of the roof if the roof is of any other type, measured from the average level of the existing grade prior to construction adjacent to the exterior walls of the building.

Note 2 – In the case of corner lots, the Planning Board shall establish reasonable setbacks from the street under the provisions of §342-79.

Note 3 – Front yard setback from Fenimore Road is an existing non-conforming condition: the addition at Fenimore is proposed within the 10' setback.

Note 4 – Existing off-street parking associated with site buildings to remain shall not be reduced in accordance with §342-55, existing uses shall not be required to comply with current off-street parking requirements.

The building addition has been designed to match the physical characteristics of the existing self-storage building. However, the Proposed Action will require area variances for building coverage, F.A.R., impervious surface coverage, building height, front yard setback, off-street parking and off-street loading. As set forth in the Village Code §342-92(B)(2) and (3), in making its determination whether to grant these area variances:

> *"The Board of Appeals shall take into consideration the benefit to the applicant if the variance is granted, as weighed against the detriment to the health, safety and welfare of the neighborhood or community by such grant."*

The Zoning Board must apply a five-part test when evaluating the variance request. An analysis of the five-part test demonstrates that the proposed expansion will not have an undesirable effect on the character of the neighborhood or an adverse impact on the physical and environmental conditions or otherwise result in an adverse inpat to the health, safety and welfare of the community. Impacts related to the five-part test are addressed as follows:

1. ***Whether an undesirable change will be produced in the character of the neighborhood or a detriment to nearby properties will be created by the granting of the area variance:***

   In the Applicant's opinion, the Proposed Action will not result in an undesirable change to the character of the neighborhood. The Site is located in the heart of the Village's Industrial Area, within the M-1 Manufacturing Zone, which is the least restrictive zone in the Village. In large measure, the character of the neighborhood was notably improved when the existing self-storage building was constructed. It represents a well-designed, architecturally appropriate building that anchors the haphazardly situated, older industrial buildings in the area, some of which are in disrepair, including buildings on the Project Site. By eliminating the majority of the remaining industrial buildings on the Site, and accommodating the building expansion, which has been designed to seamlessly blend in with the existing self-storage building, the character of the area will be further improved. Furthermore, eliminating the existing businesses that currently occupy the balance of the Site, and constructing the expansion of the self-storage facility, will actually *reduce* vehicle trip generation from the Site. The building addition will in no way result in any detriment to nearby properties, which support industrial operations. Once completed, the Proposed Action will serve to anchor the Waverly Avenue, Fenimore Road intersection, further enhancing the character of the surrounding area.

2. ***Whether the benefit sought by the applicant can be achieved by some method feasible for the applicant to pursue, other than the area variance.***

The Applicant cannot achieve the benefits sought without the requested variances. A self-storage business must be of a sufficient size to ensure a viable business. While the existing facility is successful, adequately accommodating the market demand of the surrounding community in a well-planned and organized fashion, requires that the facility be physically expanded (rather than more intensively utilizing the existing building). Additionally, eliminating the warehouse and contractor businesses located on the balance of the Site and expanding the self-storage facility will assure the economic viability of the Site while simultaneously reducing detrimental impacts associated with current operations. Parking and loading space code deficiencies are a simple reflection of the Zoning Codes failure to properly recognize that actual operational characteristics of a self-storage facility – where use and parking demands are extremely low. Constructing the required number of parking spaces would result in the creation of spaces that will never be used.

3. ***Whether the requested area variance is substantial.***

It is the Applicant's opinion that the majority of the dimensional variances relating to the proposed building extension, such as the additional floor, building and lot coverage and setback variances, are not substantial as they do not significantly exceed what would otherwise be permitted. For example, the ZBA granted the floor variance for the existing building because the building does not exceed the overall permitted height.

While the requested F.A.R. and gross floor area variances might be considered substantial from a dimensional perspective, substantiality is not measured by mathematical means alone. Instead, it must be assessed by consideration of the facts and circumstances surrounding the impact if the variances were granted. While the requested F.A.R. and gross floor area variances may be considered numerically substantial, in the Applicant's opinion, their practical impact is not. Indeed, the spatial extent of the requested variances is ameliorated by the absence of any tangible, detrimental effect that would be caused by the proposed expansion of the building. Therefore, the Applicant believes that given the totality of circumstances neither deviation should be considered substantial, absent any corresponding impacts on the neighborhood. Moreover, case law reveals that even if the variances are considered substantial, as long as the grant of the application has a rational basis and is not arbitrary and capricious, the substantial nature of the variance is not a basis for denying the application.

The Applicant has carefully considered and evaluated the required number of units that are necessary for a self-storage facility to remain as a viable long-term business. In fact, most self-storage facilities are much larger than what is being currently proposed, and the Mamaroneck Self-Storage facility is currently turning away customers.

Furthermore, the Applicant does not believe that the current contractor office and storage uses on the Site are viable long-term uses. The Murphy Brothers Contracting have found that the contracting business has changed significantly since the Site was purchased, and on-site storage, and accommodating in-house subcontractors are no longer necessary.

4. ***Whether the proposed variance will have an adverse effect or impact on the physical or environmental conditions in the neighborhood or district.***

   As documented more fully throughout this DEIS, the Proposed Action will not result in any significant adverse environmental impacts to the Site, neighborhood or district. In fact, the Proposed Action will actually reduce impacts, including a reduction in traffic, removal of older, aged, unsightly industrial buildings, stormwater management improvements and flooding mitigation measures, as well as the creation of a net-zero development that include a Community Solar facility that will return electricity to the grid, thereby benefitting the surrounding community.

5. ***Whether the alleged difficulty was self-created, with consideration shall be relevant to the decision of the Board of Appeals, but shall not necessarily preclude the granting of the area variance.***

   The Applicant is seeking area variances in order to improve conditions on the Site and provide a viable, long-term, successful commercial operation, that will benefit the Applicant and community, while at the same time causing minimal impacts. The Applicant is seeking the minimum area variances required in order to accomplish this goal, given the limitations of the Site, and the unique nature of the self-storage use. Therefore, even if the need for the variances is found to be self-created, this factor in and of itself, should not result in a denial of the variances. The Applicant believes that because the previous four factors overwhelmingly weigh in favor of granting the variances, and a true balance of neighborhood detriment against the applicants benefit tip decidedly in favor of the latter, whether or not the hardship was self-created is not determinate.

For these reasons, it is the Applicant's opinion that the requested variances will not result in a significant adverse zoning impact.

B. <u>Land Use:</u>

The Project Site is located within the heart of the Village's Industrial Area. Numerous land use plans and initiatives have addressed this area, all of which have acknowledged the changing characteristics of the area, while maintaining the "Manufacturing, Industrial, Warehouse" use as the fundamental underlying land use category. The proposed self-storage facility is wholly consistent with the existing and anticipated land use of this area.

The Proposed Action involves the expansion of a low-impact warehouse use which has significantly lower impacts than a traditional industrial or commercial use. Notably, the 2012 Comprehensive Plan recognizes that the majority of uses in the area are auto service related, manufacturing/warehouse or general services/ sales, which have far greater neighborhood impacts than a self-storage operation. As demonstrated by the continued operation of the existing self-storage facility, and as more fully documented throughout this DEIS, a self-storage operation generates minimal traffic, generates no detectable odors or fumes, does not produce pollution, and in this instance will consume no energy, as a net zero project. Therefore, the low-impact self-storage use is entirely compatible with the existing surrounding uses.

Additionally, the Proposed Action is fully consistent with the Village's low-environmental impact development goals for the Industrial Area.

- The LWRP recognizes that the majority of the Industrial Area is located within the floodplain and identifies flood mitigation as a critically important. The reduction in onsite impervious surface, as well as improved stormwater management methods will improve the flooding conditions and increase the storage of flood water on site. Additionally, the Proposed Action will exceed the 100-year floodplain development requirements set forth in the Village

Flood Damage Prevention Code[3] and the FEMA regulations[4] for non-residential floodplain development. In accordance with FEMA requirements, the first floor of the building will be at El. 28, 2-feet above the base flood elevation. The Proposed Action will also increase the volumetric storage onsite by 2,422 cubic feet, thereby exceeding the Village floodplain development requirements.

As a result, it is the Applicant's opinion that the proposed Action will not result in any significant adverse land use impacts.

4.) MITIGATION MEASURES

The following measures have been incorporated into the Proposed Action to ensure that no significant adverse zoning or land use environmental impacts will result.

- The Proposed Action creates an architecturally distinctive structure, which employs varied materials, colors, and structural elements to effectively disguise the self-storage use within the building. The building presents itself as a well-maintained commercial or office building, rather than a self-storage facility, and is the distinguishing architectural feature along Waverly Avenue.

- The Proposed Action involves demolition of the Barn (Building A) which will remove an aged and unsightly structure from the area. Additionally, two other concrete block buildings onsite ("Buildings C & D"), which have open storage areas for construction vehicles, as well as one large storage area will be demolished. The Applicant is not simply proposing to remove several unsightly buildings, it is proposing to construct a new state-of-the-art green self-storage building to the industrial area while preserving a low-impact industrial use and adding ratables for the Village.

[3] Village Code Chapter 186.

[4] 44 CFR 59, 60, 65 & 70.

- To further improve conditions within the area, the Applicant is proposing to install lighting at the rear of the proposed building to illuminate Railroad Way during evening hours.

- The Proposed Action will incorporate the same energy-efficient measures as the existing building. It is the goal of the Applicant to develop and operate a net-zero facility.

- The Applicant is proposing a Community Solar System, pursuant to NYSERDA's Community Solar Program, consisting of the installation of roof-mounted photovoltaic solar arrays. This system will provide clean energy to local residents. This effort addresses the recommendation in the Comprehensive Plan which calls for "improving utilities and power services to the entire Industrial Area."

- Various land use initiatives identify flood mitigation as a critical role the Industrial Area, also known as "The Flats" for obvious reasons, plays for the Village, since most of this area is within the 100-year floodplain. The reduction in onsite impervious surface, as well as improved stormwater management methods will improve the flooding conditions and increase the storage of flood water on site. Additionally, the Proposed Action will exceed the 100-year floodplain development requirements set forth in the Village Flood Damage Prevention Code and the FEMA regulations for non-residential floodplain development. In accordance with FEMA requirements, the first floor of the building will be at El. 28, 2-feet above the base flood elevation. The Proposed Action will also increase the volumetric storage onsite by 2,422 cubic feet, thereby exceeding the Village floodplain development requirements.

- Various land use initiatives, and specifically the Waverly Avenue Design Study, identifies streetscape improvements as important to improve pedestrian safety and streetscape access. The Proposed Action involves eliminating two curb cuts, one along Fenimore Road and one on Waverly Avenue, thereby improving pedestrian safety and traffic circulation.

- To further improve the Fenimore Road streetscape, the Applicant is also proposing landscaping enhancements along Fenimore Road and Waverly Avenue. Specifically, the existing beds along Waverly Avenue will be expanded to accommodate additional plantings and 2 new planting beds will be added along Fenimore Road. The landscaping improvements will also include a deep rain garden along the Fenimore Road facade and shallower planting beds and a new street tree along the Waverly Avenue street front adorned with contemporary bench seating. The rain garden and planting beds will include plants to attract pollinators, such as Evergreen Azalea's (Blaauw's Pink), Daylilies, Green Gem Boxwoods and Lily Turf.

Chapter IV. B

Natural Resources

IV. B. - NATURAL RESOURCES

INTRODUCTION

This section of the DEIS evaluates the potential impacts of the Proposed Action on natural resources, including surface and groundwater, geology, soils and topography.

1.) SURFACE WATER:

(a.) EXISTING CONDITIONS:

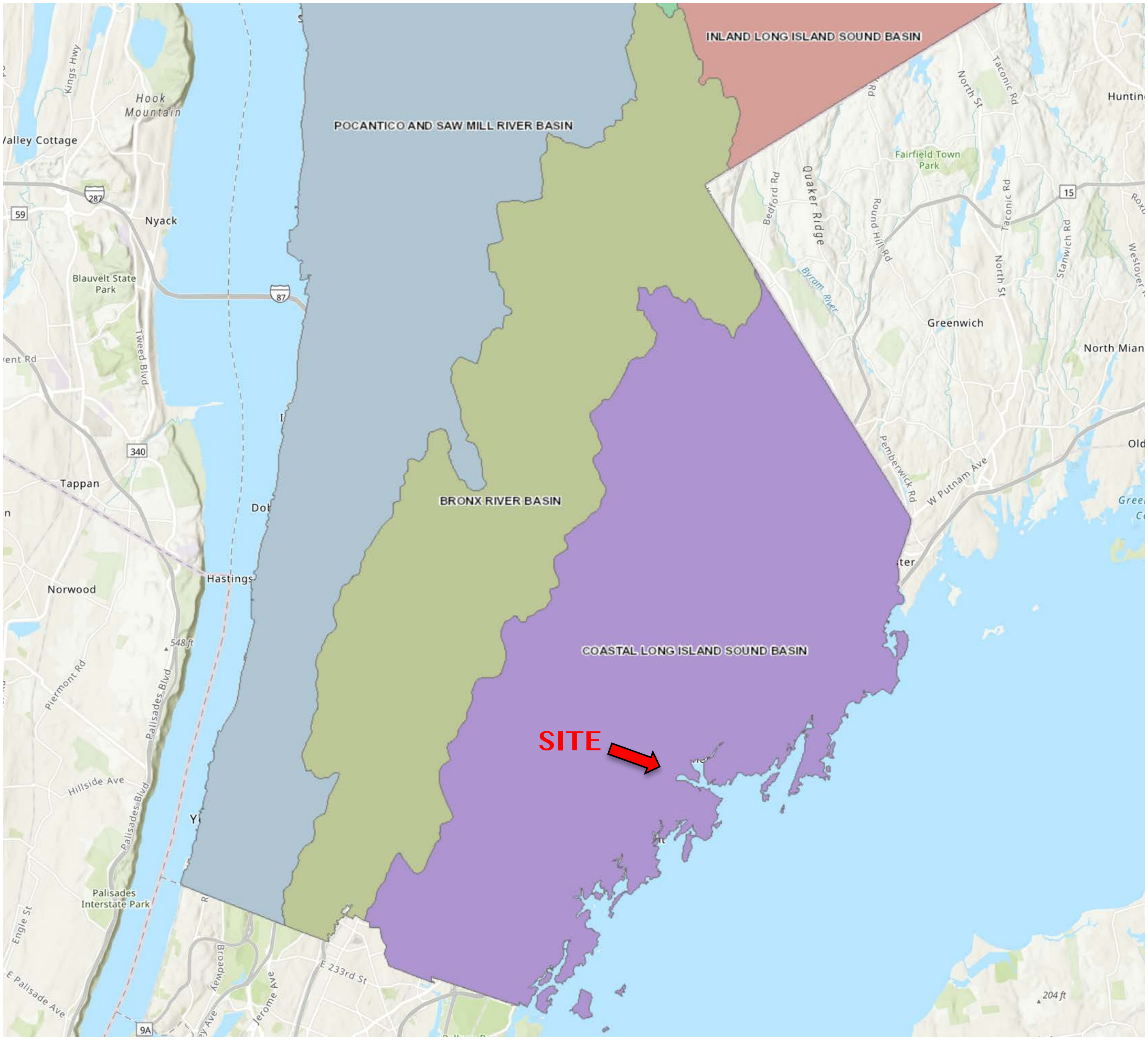
The Project Site is located within the Coastal Long Island Sound Watershed and the Sheldrake River Drainage Basin (Figures IV.B-1 and IV.B-2). No surface water features are located on, or in the immediate vicinity of the Site. The nearest surface water feature is the Sheldrake River, located approximately 800' to the north and west (Figure IV.B-3). Overland stormwater runoff from the Site travels north toward Fenimore Road, eventually intersecting the Sheldrake River, where it flows to the East Basin of Mamaroneck Harbor, and the Long Island Sound.

(b.) FUTURE CONDITIONS WITHOUT THE PROPOSED ACTION:

The Project Site is currently developed and supports five buildings, including the existing Mamaroneck Self-Storage facility. 94% of the1.01-acre Site is covered by impervious surfaces. Stormwater runoff from these surfaces flows overland to either an existing catch basin located in the center of the parking lot or a catch basin in Waverly, where it is collected and conveyed via pipe to an existing hydrodynamic separator before entering the Village's drainage system in Fenimore Road. This system operates adequately, and if the Proposed Action were not undertaken, it would remain in place, unchanged.

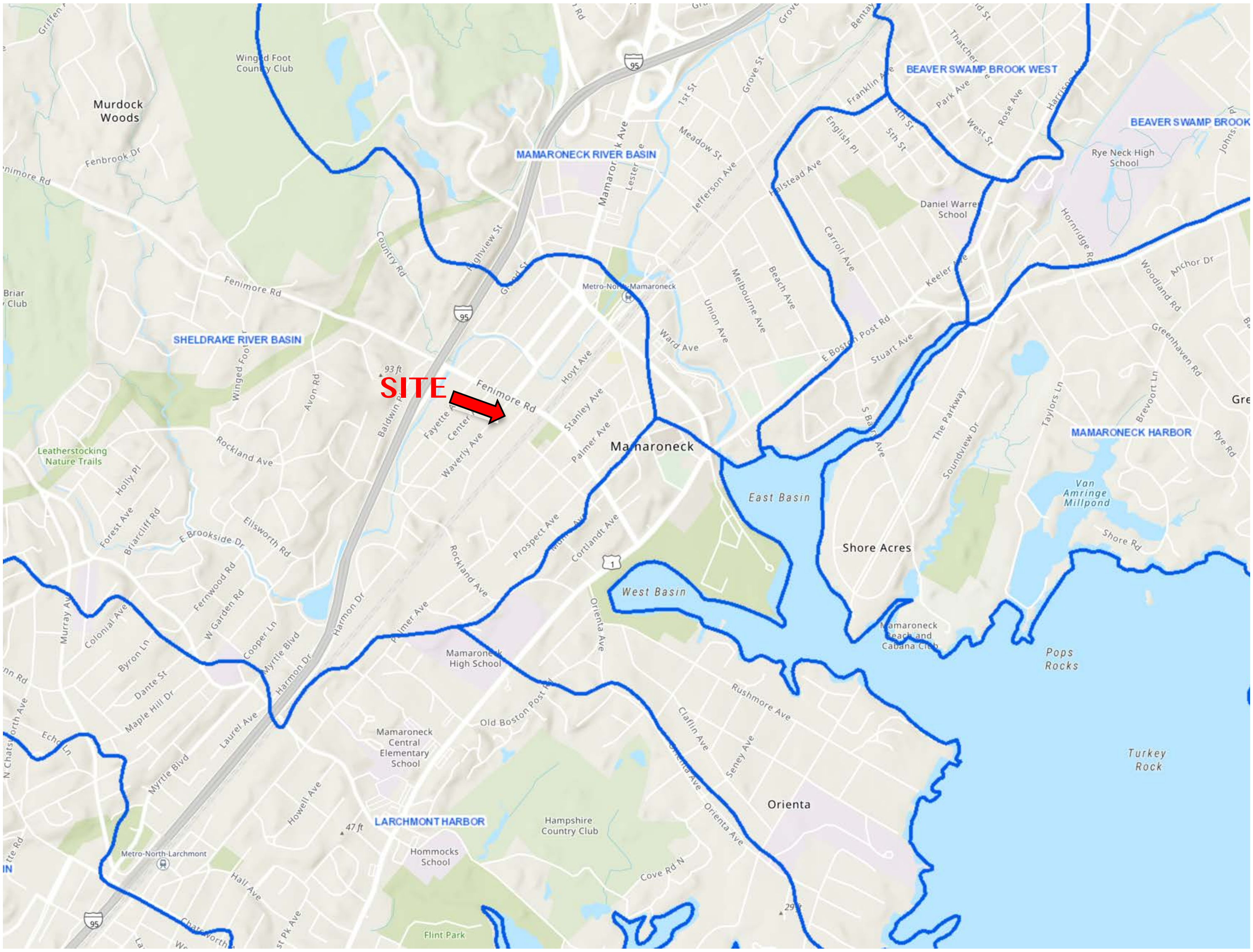
(c.) ANTICIPATED IMPACTS:

The Proposed Action will reduce the amount of impervious surfaces on the Site from 41,390 square feet to 40,675 square feet, or a reduction of 715 square feet of impervious surface.



Source: Westchester County GIS Service Center

Scale: N.T.S.	**Watersheds**	N W E S	Figure IV.B-1
CLEARY CONSULTING			



Source: Westchester County GIS Service Center

Scale: N.T.S.	**Drainage Basins**	N W E S	Figure IV.B-2
CLEARY CONSULTING			

Source: Westchester County GIS Service Center

Scale: N.T.S.	**Surface Water Features**	N S E W	Figure IV.B-3

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The Proposed Action will not alter the grades or elevation of the Site, and runoff patterns and direction will remain unchanged. As no surface water features are located on or near the Site, drainage patterns will remain unchanged, and a full stormwater management plan is proposed to mitigate drainage flows, and the amount of impervious surfaces will be reduced, it can be concluded that no adverse surface water impacts will result from the Proposed Action.

(d.) PROPOSED MITIGATION MEASURES:

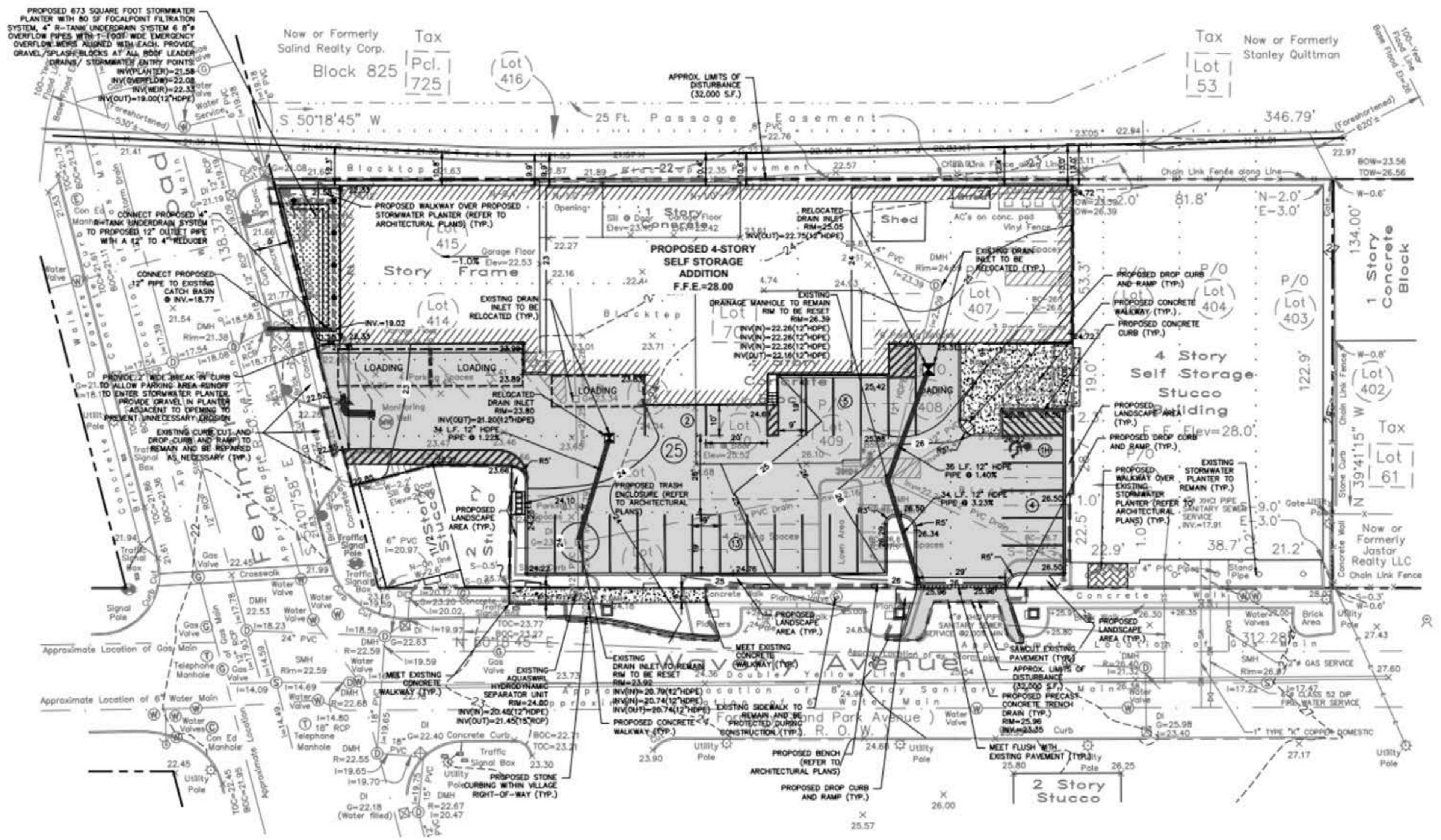
As documented in the draft Stormwater Pollution Prevention Plan (SWPPP), prepared by Hudson Engineering & Consulting, P.C., included in the Appendix, and as illustrated on the Stormwater Management Plan (Figure IV.B-4). The proposed stormwater management plan involves collecting stormwater runoff in two relocated catch basins in the parking lot, driveway trench drains or stormwater planters, where it is conveyed via 12" pipes to a hydrodynamic separator designed to accommodate and treat the entire water quality volume from the tributary area. The treated runoff is then conveyed to an existing catch basin located at the corner of Waverly Avenue and Fenimore Road, where it enters the Village's drainage system.

2.) AQUIFERS AND GROUNDWATER:

(a.) EXISTING CONDITIONS:

The Project Site is not located above an aquifer. The closest aquifer is located approximately 300' northwest of the Site, on the north side of Fenimore Road, which is classified as a stratified drift aquifer, with a yield of >100 gallons/minute (Figure IV.B-5).

A subsurface investigation by HydroEnvironmental Solutions Inc. in April of 2019 was undertaken, consisting of the installation of four soil borings in the vicinity of the proposed foundation (Figure IV.B-6) which included piezometers to measure the depth to groundwater. These piezometer readings revealed that groundwater is present beneath the Site at a depth of 3.1 feet to 4.8 feet below grade. A review of the United States Geologic Survey's National Water



Source: Hudson Engineering & Consulting, P.C.

Scale: 0 20' 40'

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Stormwater Management Plan

Figure IV.B-4

Source: Westchester County GIS Service Center

Scale:
N.T.S.

Aquifers

Figure
IV.B-5

Information System[1], four groundwater monitoring wells were installed in the vicinity of the Site (Figure IV.B-7). Ground water depths are identified in Table IV.B-1.

Table IV.B-1 USGC National Water Information System - Depth to Ground Water		
Well Number	**Well Depth**	**Ground Water Elevation(1)**
WE 141	300'	12'
WE 144	600'	28'
WE 145	450'	40'
WE 27	331'	5'

(1) – Elevation below surface grade

There are currently no wells or septic systems on the Project Site that would impact ground water resources.

(b.) <u>FUTURE CONDITIONS WITHOUT THE PROPOSED ACTION:</u>

If the Proposed Acton is not developed, the Project Site would continue to operate as it operates today, and would continue to have no impact on groundwater resources or the nearby aquifer.

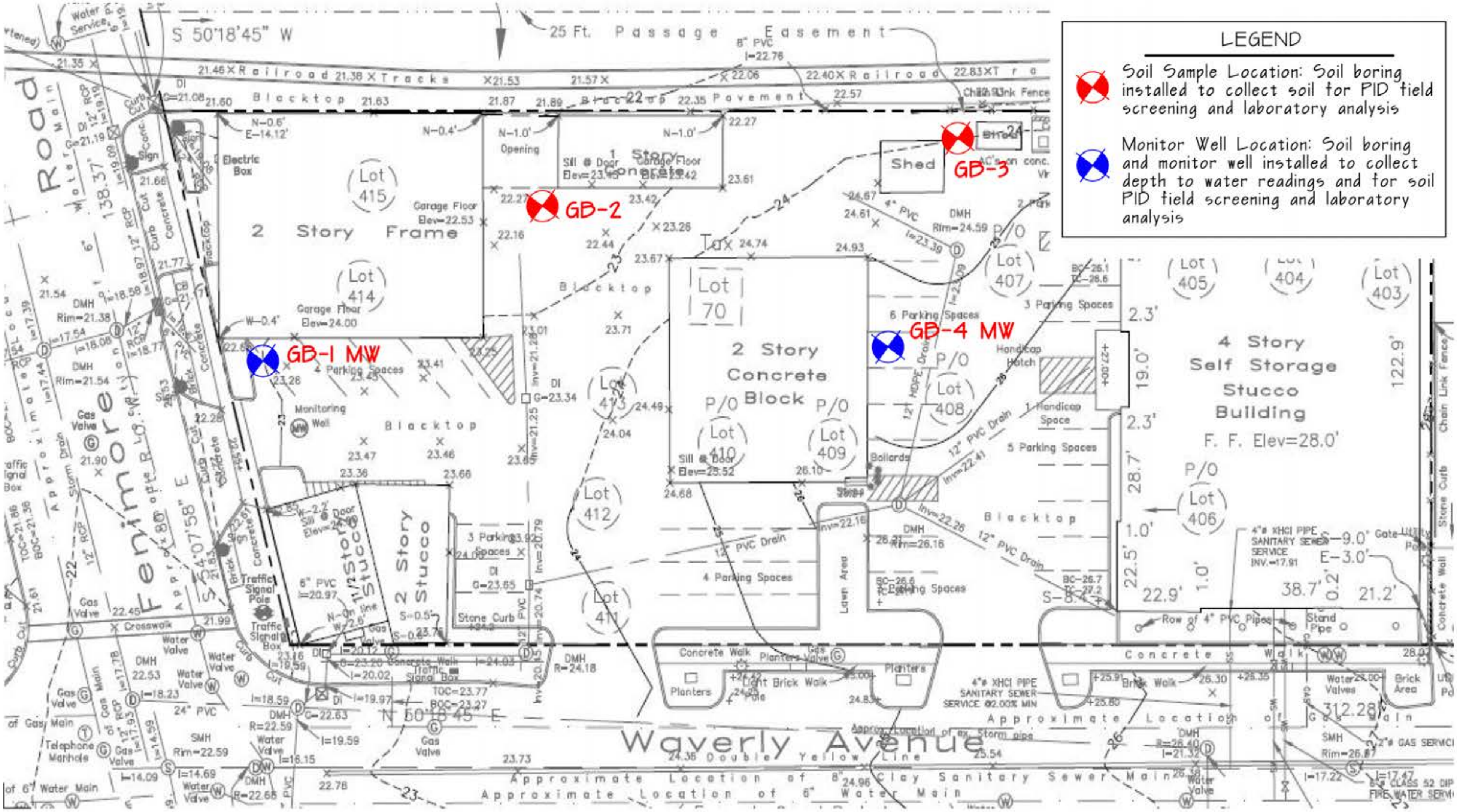
(c.) <u>ANTICIPATED IMPACTS:</u>

The proposed building extension will utilize the same construction as the existing self-storage building. Basements are not feasible due to the Site's location within the floodplain. The first-floor elevation will be set 2' above the base flood elevation. As a result, minimal excavation is required. As the Proposed Action does not involve the use of wells, subsurface sanitary disposal systems, or require extensive excavation, no impacts to groundwater will occur.

(d.) <u>PROPOSED MITIGATION MEASURES:</u>

As no impacts to groundwater resources or the nearby stratified drift aquifer will result from the Proposed Action, no specific mitigation measures are required. As noted above, the building extension will be constructed on a slab

[1] URL: https://nwis.waterdata.usgs.gov/ny



Source: HydroEnvironmental Solutions, Inc.

Scale:
0 20' 40'

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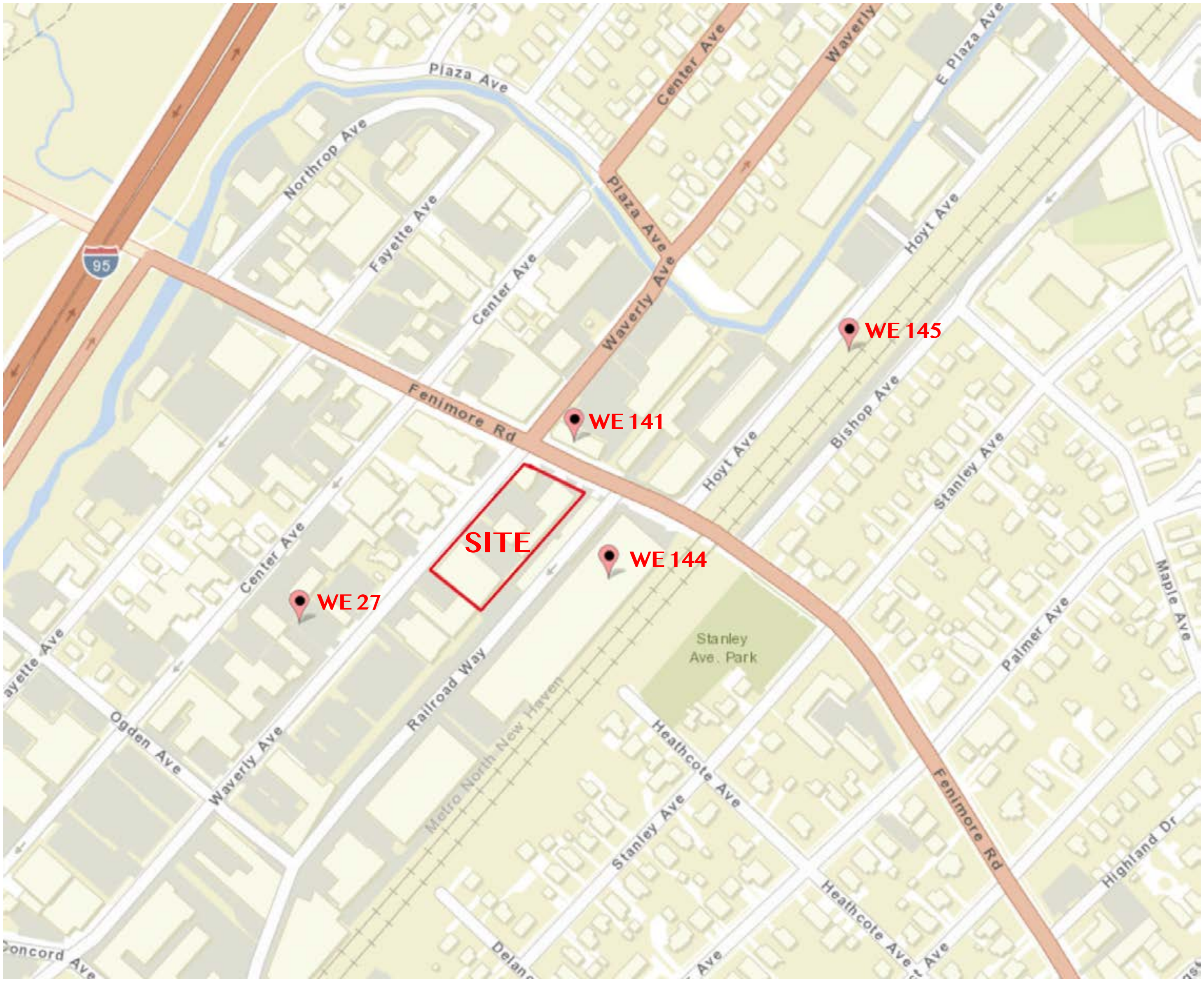
Soil Boring and Monitoring Well Locations

N W E S

Figure
IV.B-6



Source: USGS National Water Inventory System

Scale:
N.T.S.

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USGS National Water Inventory System
Depth to Ground Water

N W E S

Figure
IV.B-7

foundation, and no wells or subsurface sanitary disposal systems are proposed. As described more fully below, and erosion and sedimentation control plan is proposed to reduce or eliminate any potential impact to groundwater resources.

3. GEOLOGY, SOILS AND TOPOGRAPHY:

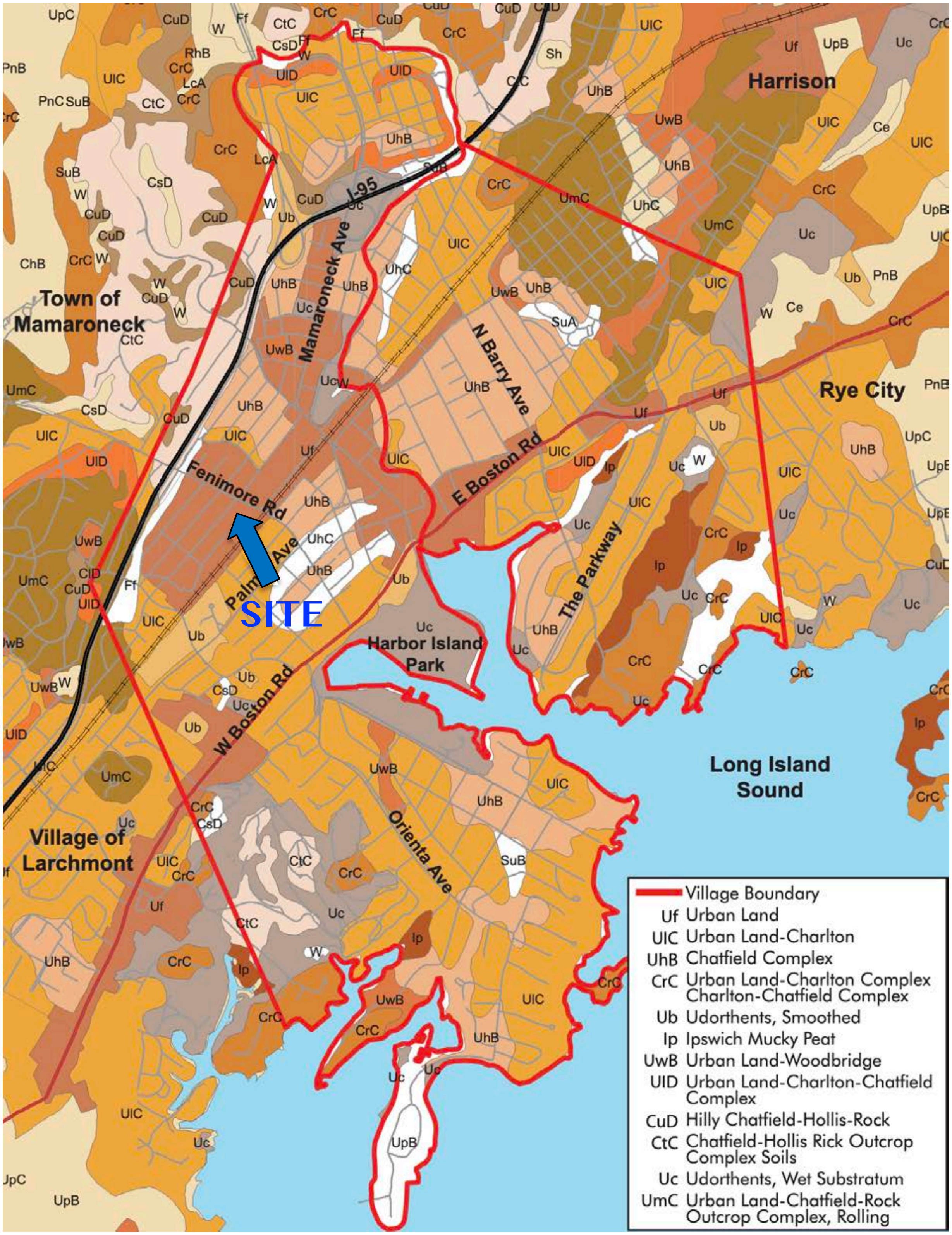
(a.) EXISTING CONDITIONS:

The Project Site, and all of lower Westchester County, is located within the New England Upland Physiographic Province, and its extension the Manhattan Prong. This province consists of a series of late pre-Cambrian to early Paleozoic metamorphic rocks. The rocks within this region are highly folded and faulted, the result of one or more past episodes of what geologists characterize as compressional deformation. These folds, faults, fractures and formations lie predominantly in a northeasterly direction. The eastern side of Westchester County rests on the upper edge of the unsubmerged portion of the Continental Shelf, which soured out to form Long Island Sound. The principal bedrock that underlies and influences the topography includes Fordham gneiss, Manhattan schist and Inwood marble.

Unconsolidated surface materials are predominately of glacial origin. Stratified drift deposits occupy the lower areas, while till deposits cover the hillsides.[2]

As documented on Figure IV.B-8, the soils on the Project Site are composed entirely of Urban Land (Uf). Urban land soils consist of areas where at least 60% of the land surface is covered by buildings or impervious surfaces. These areas have been altered to accommodate development, and consist primarily of Udorthants and fill material. The Boring Logs (included in the Appendix) for the 4 soil sample locations revealed that the first 4 feet consists primarialy of ash, slag and brick fill material and some sand. Generally, from 4 to 6 feet,

[2] USACOE, Mamaroneck & Sheldrake Rivers Flood Risk Management General Reevaluation Report for Village of Mamaroneck, Appendix C3: Geological and Soils Investigations, April, 2017.



Source: Village of Mamaroneck Comprehensive Plan

Scale: N.T.S.

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Soils Map

Figure

IV.B -8

subsurface soil conditions consist of medium rounded gravel and medium sand.

The topography of the Site is relatively level. The Site slopes from a high point of approximately 27 feet along the southern property line behind the existing self-storage building, to a low point of approximately 22 feet along Fenimore Road.

(b.) **<u>FUTURE CONDITIONS WITHOUT THE PROPOSED ACTION:</u>**

If the Proposed Acton is not developed, the Project Site would continue to operate in its current manner. No impacts on geology, soils of topography would result.

(c.) **<u>ANTICIPATED IMPACTS:</u>**

No significant alteration of the existing site grades are necessary to accommodate the proposed building addition. As the building has no basement and will be constructed on a slab foundation, minimal excavation is anticipated, projected to be approximately 550 cubic yards of soil/fill or which approximately 330 cubic yards would be reused as fill. However, as the Site was previously impacted by spill incidents that were administratively closed in 2004, a foundation excavation plan has been prepared in accordance with NYSDEC regulations pertaining to environmentally impacted sites. Implementation of this plan will ensure that no significant adverse impacts to geology, soils or topography are anticipated as a result of the Proposed Action.

(d.) **<u>PROPOSED MITIGATION MEASURES:</u>**

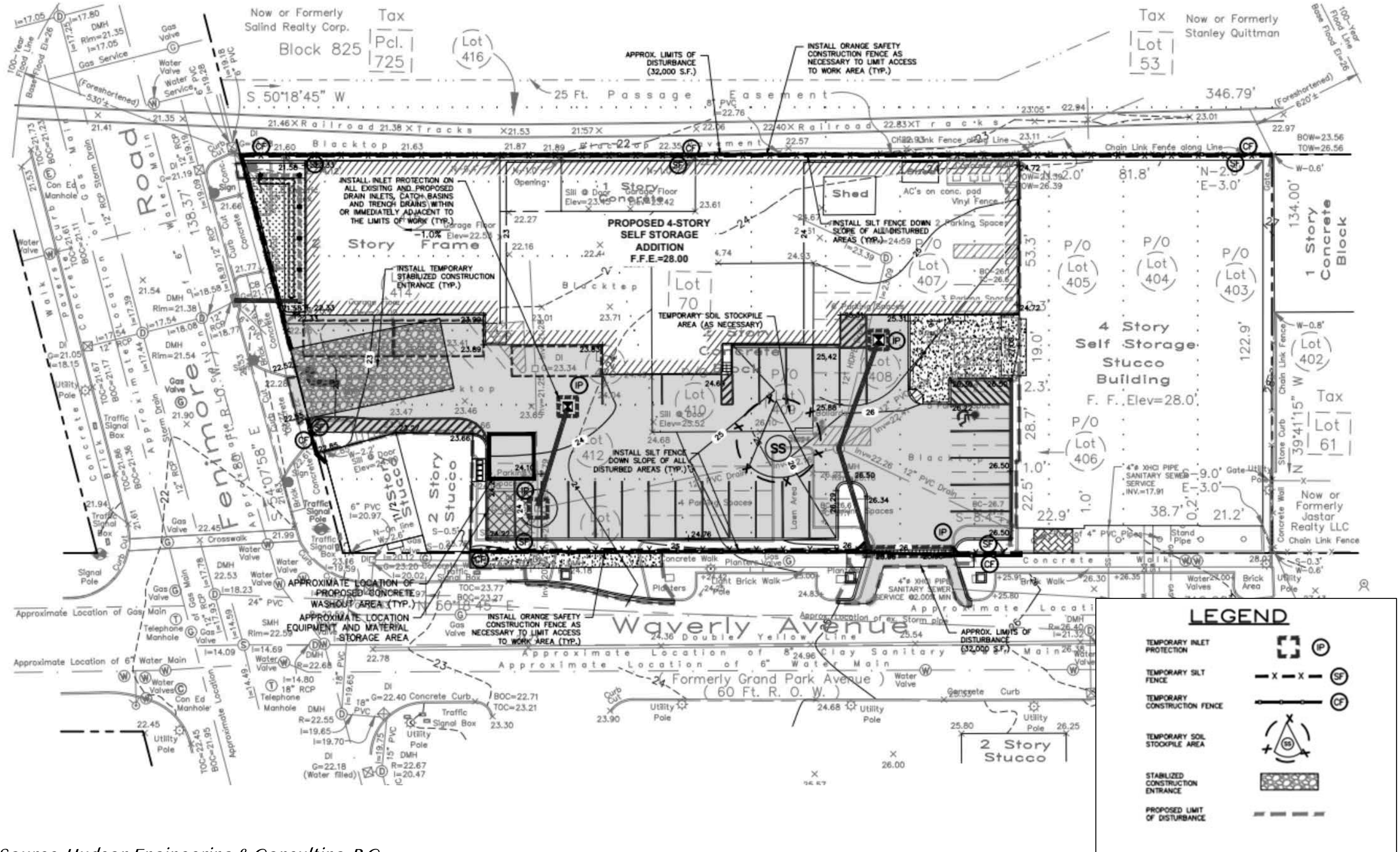
During the construction of the Proposed Action, an Excavation Work Plan will be implemented (Appendix B). The scope of the Excavation Work Plan will comply with NYSDEC Technical Guidance Document DER-10, part 375 Regulations for conducting clean-ups.

All work outlined in the Excavation Work Plan, is to be performed during the excavation of the foundation and will be conducted in accordance with a Village approved work scope unless otherwise stated. A Site-Specific

Health and Safety Plan (HASP), the Earthwork contractor's HASP, OSHA HAZWOPER training certifications and documentation, a Quality Assurance Project Plan (QAPP) and a Community Air Monitoring Plan (CAMP) will be implemented during this work as required (i.e.: if contaminated soil is encountered). In accordance with DER-10, a CAMP will be implemented to monitor air quality during all on-Site intrusive work and soil moving, loading, truck cleaning, backfilling, and stockpiling activities associated with the proposed foundation excavation in contaminated areas only. The "Work Area", which is defined as a 20-30 foot area measured from the sidewalls of the excavations (where possible, depending on the property fence line location relative to the excavation area), will be monitored continuously during excavation activities by a non-Site geologist/environmental scientist using: (1) a calibrated four gas meter (%LEL, %O2, H2S and CO); (2) photoionization detector(PID), both of which will be immediately adjacent to the excavation edge while the work is ongoing; and (3) a total of three CAMP monitors, two of which will be placed downwind and one upwind of the Work Area. Water and polyethylene sheeting (6 millimeter) will be available on-Site should dust and/or VOC/odor control become necessary during this work. All field work will be conducted in accordance with the requirements of the HASPs and all soil samples will be collected in accordance with the requirements of the QAPP. Prior to or at the start of this work, soil erosion and sediment controls and Site fencing/signage will be installed along the Site perimeter in accordance with the approved Site-wide Storm Water Pollution Prevention Plan (SWPPP) and Erosion and Sedimentation Control Plan (Figure IV.B-9). In the event that soil stockpiling is necessary, stockpile staging areas will be constructed prior to the start of excavation activities. Areas of the Site disturbed during the excavation work will be covered as necessary to control odors or fugitive dusts. Covers will be maintained in accordance with the SWPPP.

The Excavation Work Plan will address:

- NYSDEC and Village reporting requirements;
- Field monitoring;
- Stockpiling;



Source: Hudson Engineering & Consulting, P.C.

Scale:

0 30' 60'

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Sedimentation and Erosion Control Plan

N W E S

Figure

IV.B-9

- Soil excavation and direct loading;
- Tracking pad;
- Excavation protection measures;
- Identification and sampling of contaminated materials if encountered;
- Dust and odor suppression;
- Truck cleaning;
- Truck routes;
- Soil disposal off-site is required;
- Community Air Monitoring Plan (CAMP); and
- Clean fill imported for backfill if required.

Chapter IV. C

Hazardous Materials & Public Health

IV. C. - HAZARDOUS MATERIALS & PUBLIC HEALTH

INTRODUCTION

The Applicant retained HydroEnvironmental Solutions, Inc. to conduct an Environmental Site Assessment (ESA) in accordance with the American Society of Testing and Materials (ASTM) Standard Practice E 1527-13 to identify any recognized environmental Conditions (RECs) and/or environmental concerns. The findings of this assessment are presented below.

1.) EXISTING CONDITIONS

(a.) Phase I Assessment:

The Phase I ESA consisted of a review of pertinent records, a Site reconnaissance and interviews with individuals familiar with the Site's history. The ESA evaluated the Site for the following conditions:

- **Chemical, Hazardous Substances & Petroleum Product Storage & Use**:
  Hazardous chemical storage and use was observed at the Site; however, the chemicals were all stored in proper containers.

- **Waste Generation, Storage & Disposal**:
  The only waste generated at the Site is general household waste from the office use.

- **Above Ground Storage Tanks:**
  No ASTs of evidence of AST was observed at the Site.

- **Underground Storage Tanks:**
  No USTs are present on the Site. However, there was a UST of unknown size that was removed from the Site in November 2003, and a 550-gallon UST that was removed from the Site in February 2004. Two NYSDEC spill incidents were reported (#0304697 and #0304698) that were administratively closed by NYSDEC in August 2004.

- **Pits, Ponds or Lagoons:**
  There are no pits, ponds or lagoons on the Site.

- **Vapor Encroachment Screening:**
  A Tier 1 screening was conducted, which concluded that no Vapor Encroachment Conditions (VEC) exist on the Site.

- **Asbestos:**
  Due to the age of at least one of the buildings (~1920), it is likely that asbestos containing materials (ACMs) are present in areas that have not been renovated.

- **Lead-Based Paint:**
  Due to the age of at least one of the buildings (~1920), it is likely that lead-based paint is present.

- **Radon:**
  A review of the EPA map of Radon Zones indicates that the Site is in Zone 3, where average predicted radon levels are less than 2.0 pCi/L. Recognizing that the Site is served by the public water supply, the presence of radon in drinking water is not a concern.

- **PCBs**
  Although no definitive determination was made regarding the presence of PCBs, given the age of at least one of the buildings (~1920), the presence of PCBs is possible in areas that have not been renovated.

- **Mold:**
  Mold growth was not observed in the buildings on the Site.

- **Other Site-Specific Environmental Conditions:**
  No other Site-specific environmental conditions were observed.

(b.) On-Site Spill Incidents:

Two spill incidents were reported to the NYSDEC concerning the Project Site. In November of 2003 a spill incident was reported in conjunction with the removal of a UST of unknown size (Spill #0304697). In February 2004 a spill incident was reported in conjunction with the removal of 550-gallon UST (Spill #0304698). The cause of both reports was "Tank Test Failure" and the amount or type of product spilled was not recorded. The NYSDEC reported that both spill incidents were closed on August 29, 2004, indicating that the necessary clean-up was completed, and no further remedial activities were necessary.

(c.) Proximate Contaminated Sites:

As documented on Figure IV.C-1, numerous locations in the vicinity of the Project Site have experienced some form of environmental contamination. This Figure documents incidents contained within the NYSDEC Spills Incident Database (which documents most of the incidents on Figure IV.C-1 as "Hazardous Waste Sites") and the NYSDEC Environmental Site Remediation Database (which documents Superfund or Brownfield remedial sites identified on Figure IV.C-1 as "Toxic Release Inventory").

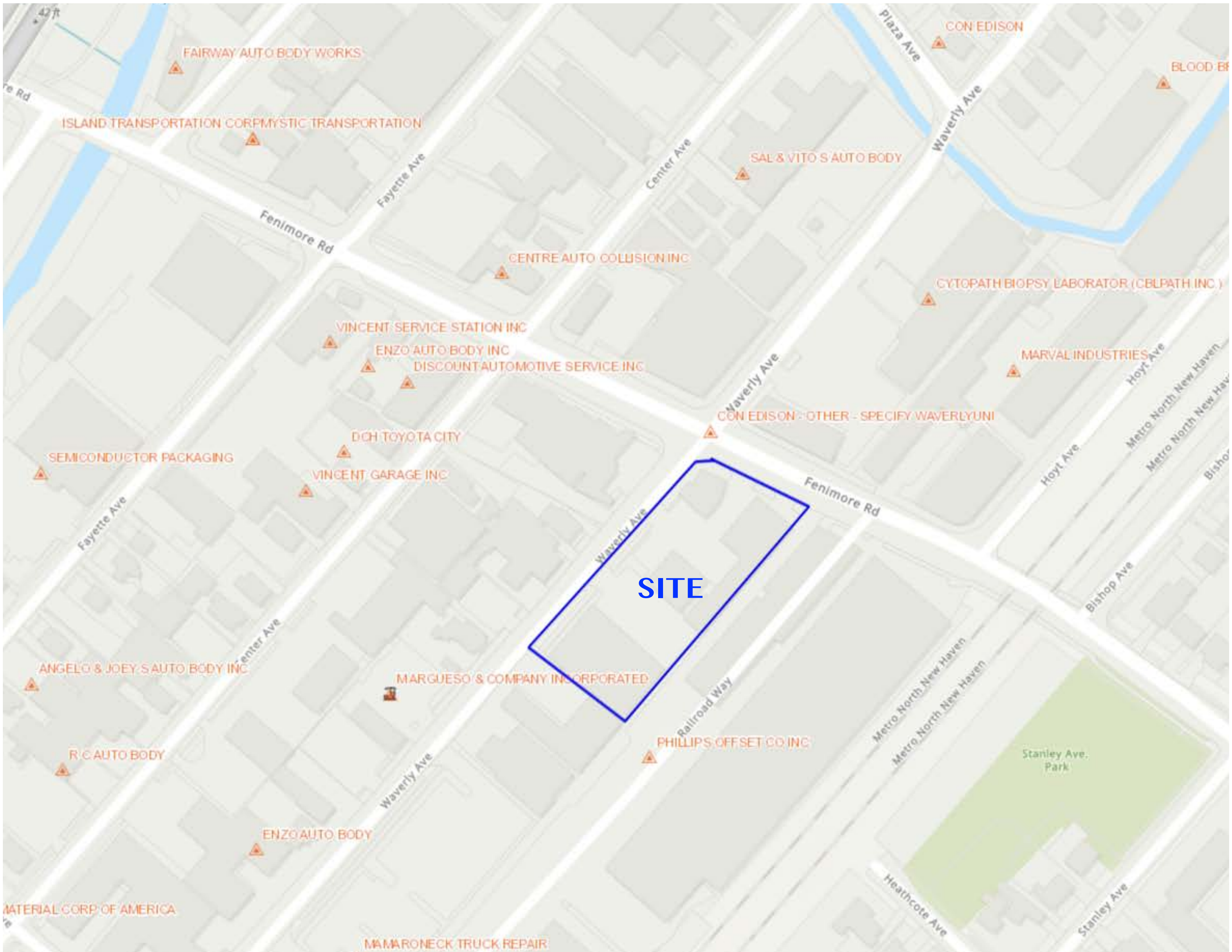
Three sites are noted in the immediate vicinity of the Site:

- Con Edison Other – Intersection of Fenimore Road and Waverly Avenue. This is a transformer leak reported in 2003.The status is closed.

- Philips Offset Co. Inc. Two incidents were reported at this location. In 1993 there was a petroleum spill. The status is closed. And in 2003 there was a 20-gallon diesel spill. The status is closed.

- M. Argueso and Company, Inc. – This is a Brownfield Clean-Up site. The site was contaminated with petroleum, volatile organic compounds and semi-volatile organic compounds. Site remediation involves on-going monitoring.

None of these three incidents affected or impacted the Project Site.



Legend

Hazardous Waste Sites

Toxic Release Inventory

Source: Westchester County GIS Service Center

Scale: N.T.S.

Hazardous Waste Sites
Toxic Release Inventory Sites

N W E S

Figure IV.C-1

2.) FUTURE CONDITIONS WITHOUT THE PROPOSED ACTION:

If the Proposed Acton is not developed, the Project Site would continue to operate as it operates today. The existing warehouse buildings would remain in place, accommodating various tenants. Murphy Brothers Contracting would continue to operate their businesses from the Site and the self-storage building would continue to function as it does today. No improvements to the existing buildings would be undertaken, the site and streetscape would remain unchanged, and it is unlikely that the Community Solar project would be undertaken.

3.) ANTICIPATED IMPACTS:

The Proposed Action will not result in any significant adverse impacts to public health or resulting from the presence of hazardous materials. The two spill incidents that occurred at the Site were fully remediated and closed by 2004. No environmentally hazardous conditions have been identified on, or in the vicinity of the Site since that time. Given their age, the existing buildings on the Site that are slated for demolition may contain asbestos, lead paint or PCBs, which would require abatement during the demolition process.

4.) MITIGATION MEASURES

The findings of the Phase I Environmental Assessment recommends that given the likely presence of asbestos, lead paint and PCBs, proper sampling and abatement should be undertaken prior to any future renovations, repairs or demolition.

Chapter IV. D

Flooding & Flood Zone Impacts

IV. D. - FLOODING AND FLOOD ZONE IMPACTS

INTRODUCTION

As a coastal community, Mamaroneck has been, and will continue to be impacted by flood events. This section of the DEIS addresses the Project Site's vulnerability to flooding, and what mitigation measures may be imposed to lessen those impacts.

1.) EXISTING CONDITIONS

(a.) Location of 100-Year and 500-Year Floodplains:

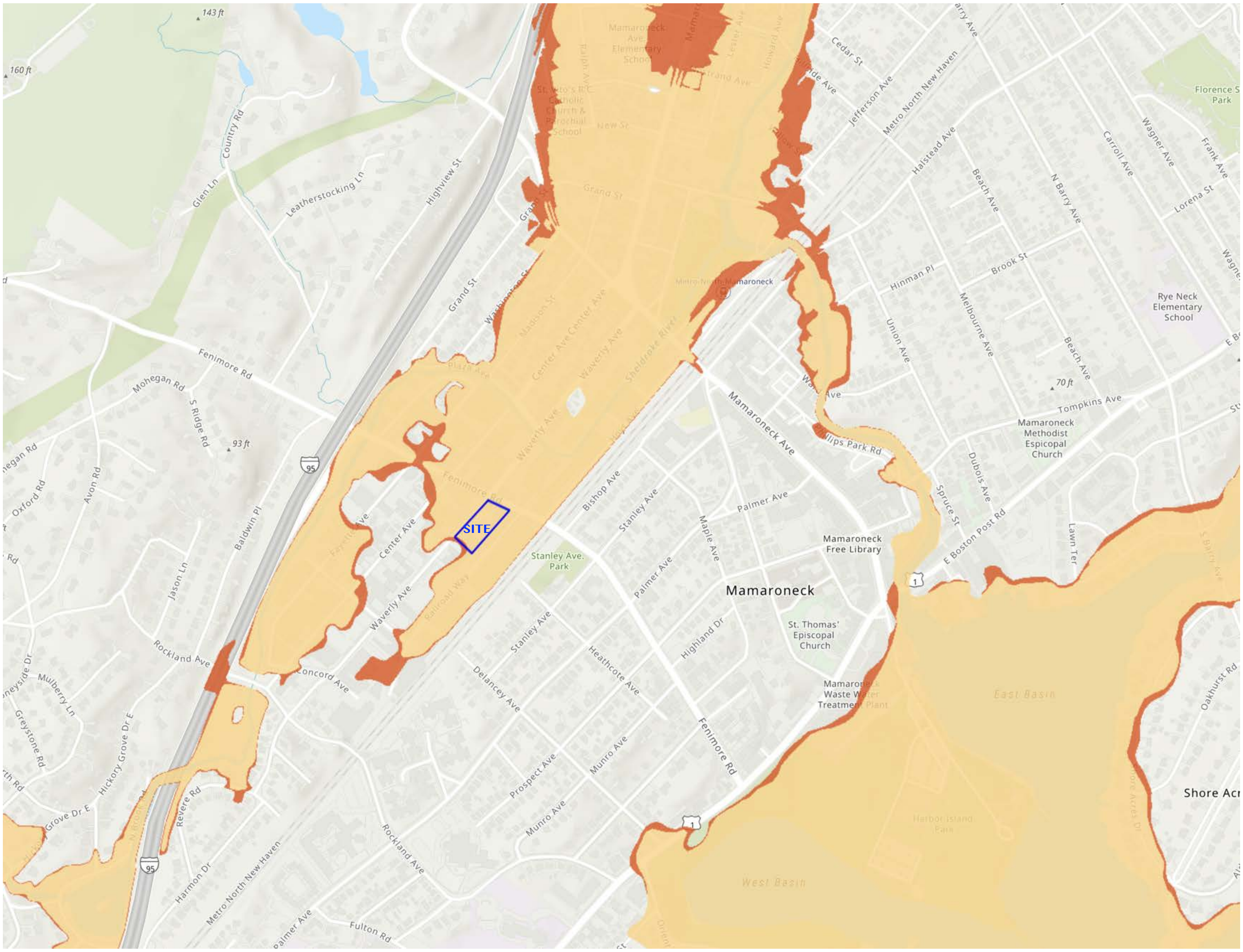
The elevation of the Project Site varies from 22' to just over 27' above sea level. As depicted on Figures IV.D-1 and IV.D-2, the majority of the Site is located in Special Flood Hazard Zone (AE), or an area with a 1% chance of flooding in any year (the 100-year floodplain). The modeled base flood elevation in this zone varies from 26' to 27'. The southwest corner of the Site, which sits just above elevation 27', extends into the 500-year floodplain, or the area with a 2% chance of flooding in any given year.

Because the Site is located within the AE zone, flood insurance is mandatory as is compliance with floodplain management standards. The Village participates in the Community Rating System, which provides incentives for exceeding minimum National Flood Insurance Program standards. Currently, Mamaroneck is a Class 8 community, which results in a 10% discount on flood insurance premiums.

All development in the floodplain must comply with Chapter 186 of the Village Code; Flood Damage Protection. A Floodplain Development Permit is required for all development in the floodplain, and all non-residential development must either:

- Have the lowest floor, including basement or cellar, elevated to or above two feet above the base flood elevation; or

- Be floodproofed so that the structure is watertight below two feet above the base flood elevation with walls substantially impermeable to



Flood Plains

100 Year Flood Plain

500 Year Flood Plain

Source: Westchester County GIS Service Center

Scale: N.T.S.

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Floodplains

Figure IV.D-1

LEGEND

(light blue)	**Special Flood Hazard Area - Zone AE (100-year flood)**
(tan)	**0.2% Annual Chance of Flood Hazard (500-year flood)**

Source: FEMA Flood Map Service Center

Scale: N.T.S.

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FEMA Flood Zones

N W E S

Figure IV.D-2

the passage of water. All structural components be located below the base flood level must be capable of resisting hydrostatic and hydrodynamic loads and the effects of buoyancy.

(b.) Flood Volume Storage:

A flood volume storage analysis was conducted by Hudson Engineering & Consulting, P.C. (Appendix C). As documented in Table IV.D-1 and Figure IV.D-3, the Site currently provides a cumulative total of 54,649 cubic feet of flood storage.

Table IV.D-1
Volumetric Analysis - Existing Conditions

Elevation	Surface Area	Incremental Storage (Cubic Feet)	Cumulative Storage (Cubic Feet)
21	0	0	0
22	388	194	194
23	2,961	1,675	1,869
24	16,517	9,739	11,608
25	21,073	18,795	30,403
26	27,420	24,247	54,649

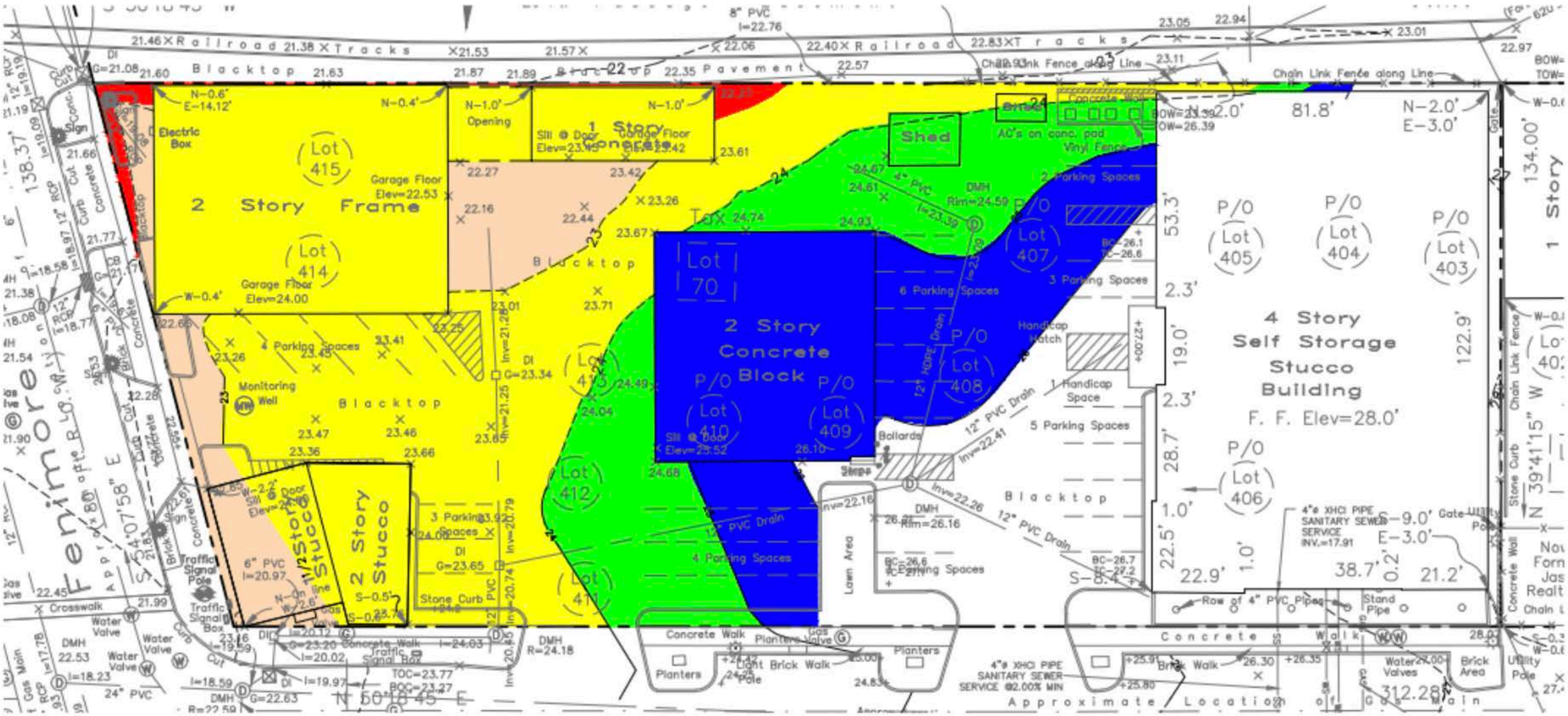
Source: Hudson Engineering & Consulting, P.C.

(c.) Local Drainage Patterns:

The topography in the vicinity of the Site trends southeast to northwest, toward the Sheldrake River. A documented more fully in the Stormwater Management Plan prepared for this Proposed Action, and the associated SWPPP, five on-site watersheds drain toward two design points. DP1 is located at the corner of Waverly Avenue and Fenimore Road. DP2 is located in the center of the Site's Fenimore Road frontage. Figure IV.D-4 illustrates the existing on-site watersheds.

2.) FUTURE CONDITIONS WITHOUT THE PROPOSED ACTION:

If the Proposed Acton is not developed, the Project Site would continue to operate as it operates today. The existing older warehouse buildings would remain in place, which include occupied space located below the base flood elevation, and as such are prone to periodic flooding. Murphy Brothers would continue to operate their



Volumetric Analysis - Existing Conditions			
Elevation	Surface Area	Incremental Storage (Cubic Feet)	Cumulative Storage (Cubic Feet)
21	0	0	0
22	388	194	194
23	2,961	1,675	1,869
24	16,517	9,739	11,608
25	21,073	18,795	30,403
26	27,420	24,247	54,649

Source: Hudson Engineering & Consulting, P.C.

Scale:
0 20' 40'

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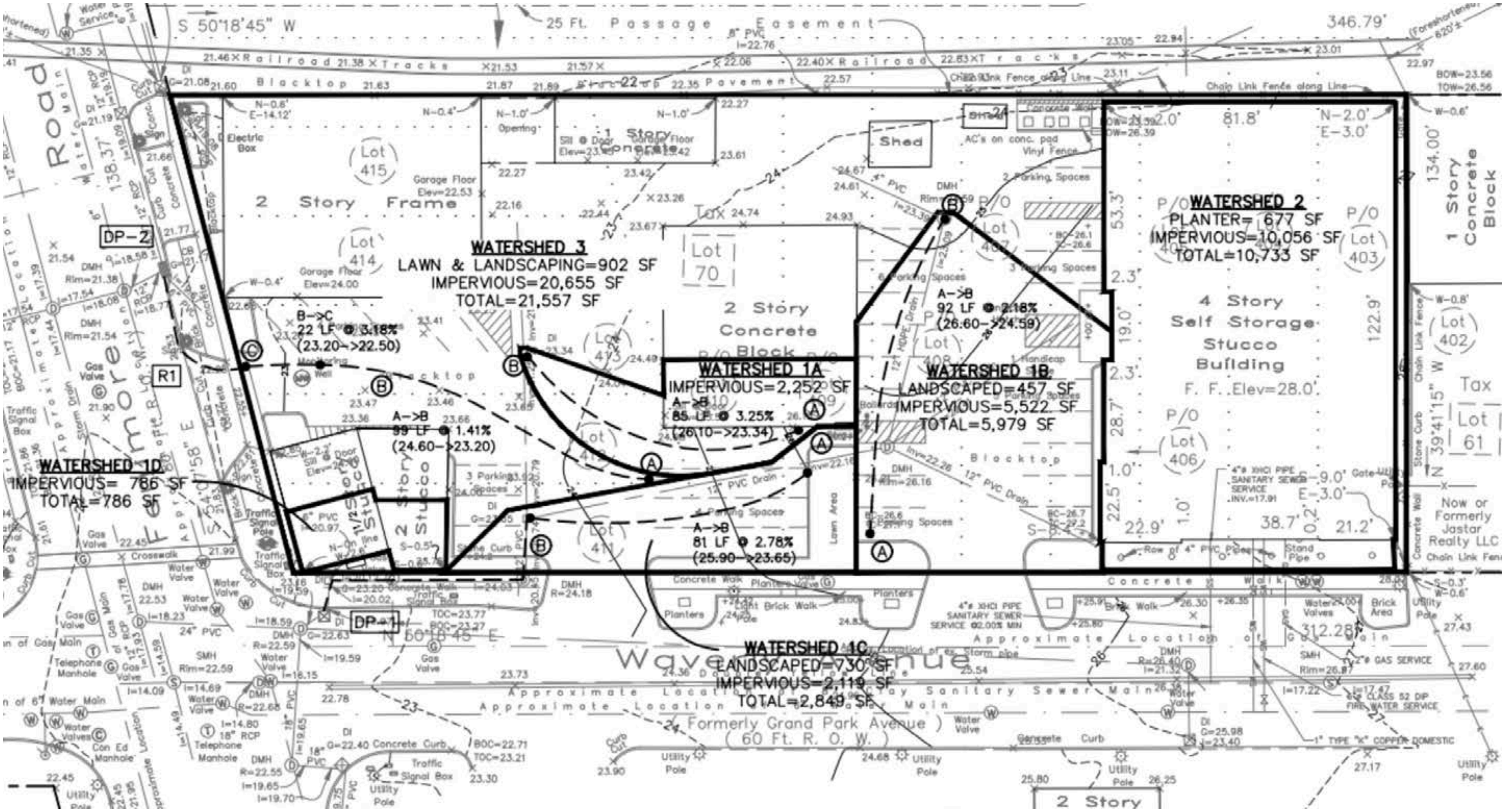
Flood Storage Volumetric Analysis
Existing Condition

E S N W

Figure
IV.D-3



Source: Hudson Engineering & Consulting, P.C.

Scale: 0 20' 40'

Existing Site Watersheds

CLEARY CONSULTING

Figure IV.D-4

businesses from the Site and the self-storage building would continue to function as it does today.

3.) ANTICIPATED IMPACTS:

The Proposed Action will take place entirely within the 100-year floodplain, Zone AE. As the Site is currently developed, and fully covered by impervious surfaces and older buildings that do not comply with current flood control standards and requirements, the Proposed Action will serve to improve flooding conditions. The Proposed Action will remove the older flood prone buildings on the Site, and replace them with a new self-storage building addition that fully complies with Chapter 186 of the Village Code; Flood Damage Protection. The first floor of the addition will be constructed 2 feet above the base-flood elevation.

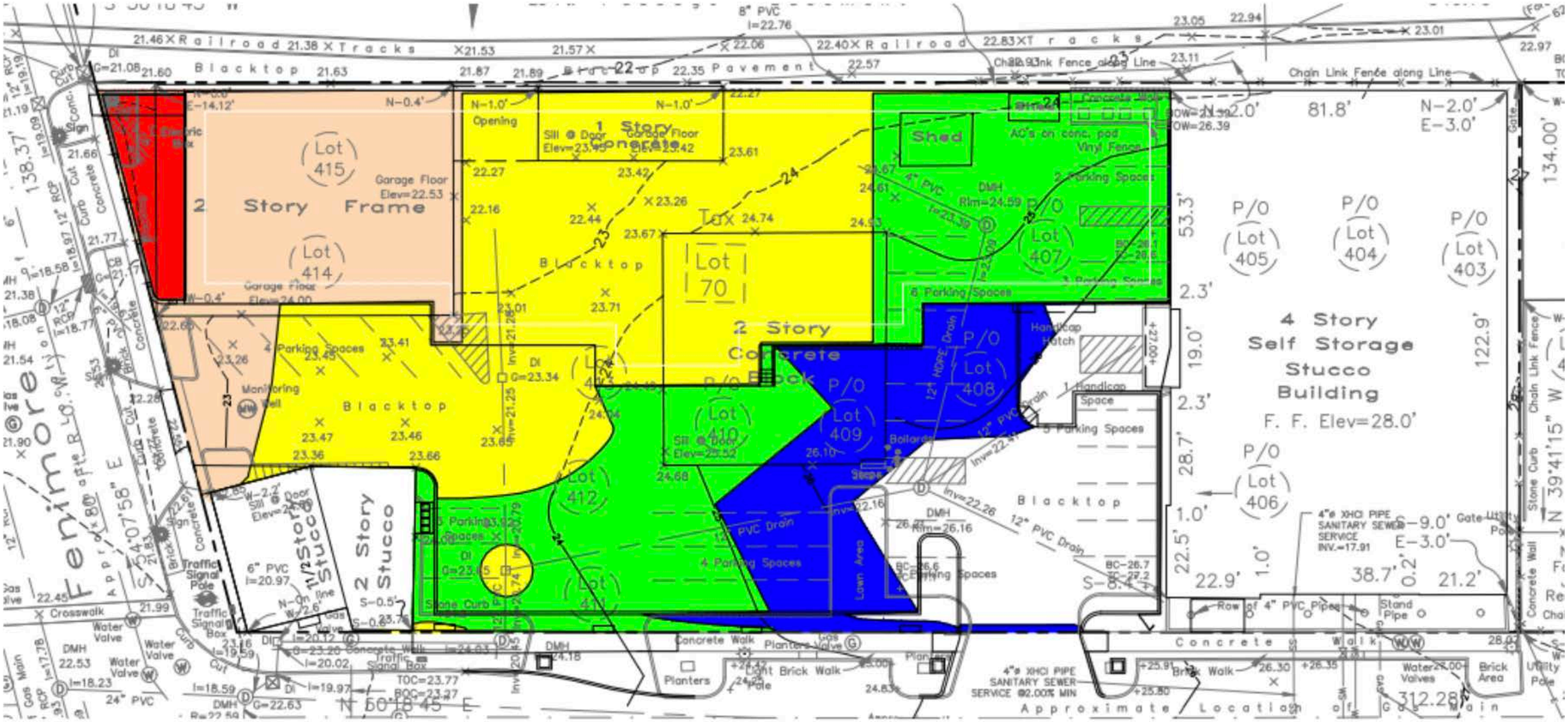
While excavation for the new building foundation is required, the amount of excavation is expected to be minimal, as a basement is not proposed. Table IV.D-2 and Figure IV.D-5 document that he Proposed Action will result in a slight net increase in flood volume storage from 56,6549 cubic feet to 57,071 cubic feet.

Table IV.D-2
Volumetric Analysis - Proposed Conditions

Elevation	Surface Area	Incremental Storage (Cubic Feet)	Cumulative Storage (Cubic Feet)
21	0	0	0
22	704	352	352
23	5,344	3,024	3,376
24	15,142	10,243	13,619
25	22,826	18,984	32,603
26	26,110	24,468	57,071

Source: Hudson Engineering & Consulting, P.C.

Figure IV.D-6 illustrates the proposed site watersheds. Table IV.D-3 illustrates the comparison between pre and post development stormwater flow rates at the Site's two design points. As can be seen, runoff flow rates will be equal to or in most cases, less than current conditions.



Volumetric Analysis - Proposed Conditions			
Elevation	Surface Area	Incremental Storage (Cubic Feet)	Cumulative Storage (Cubic Feet)
21	0	0	0
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23	5,344	3,024	3,376
24	15,142	10,243	13,619
25	22,826	18,984	32,603
26	26,110	24,468	57,071

Source: Hudson Engineering & Consulting, P.C.

Scale:

0 20' 40'

CLEARY CONSULTING

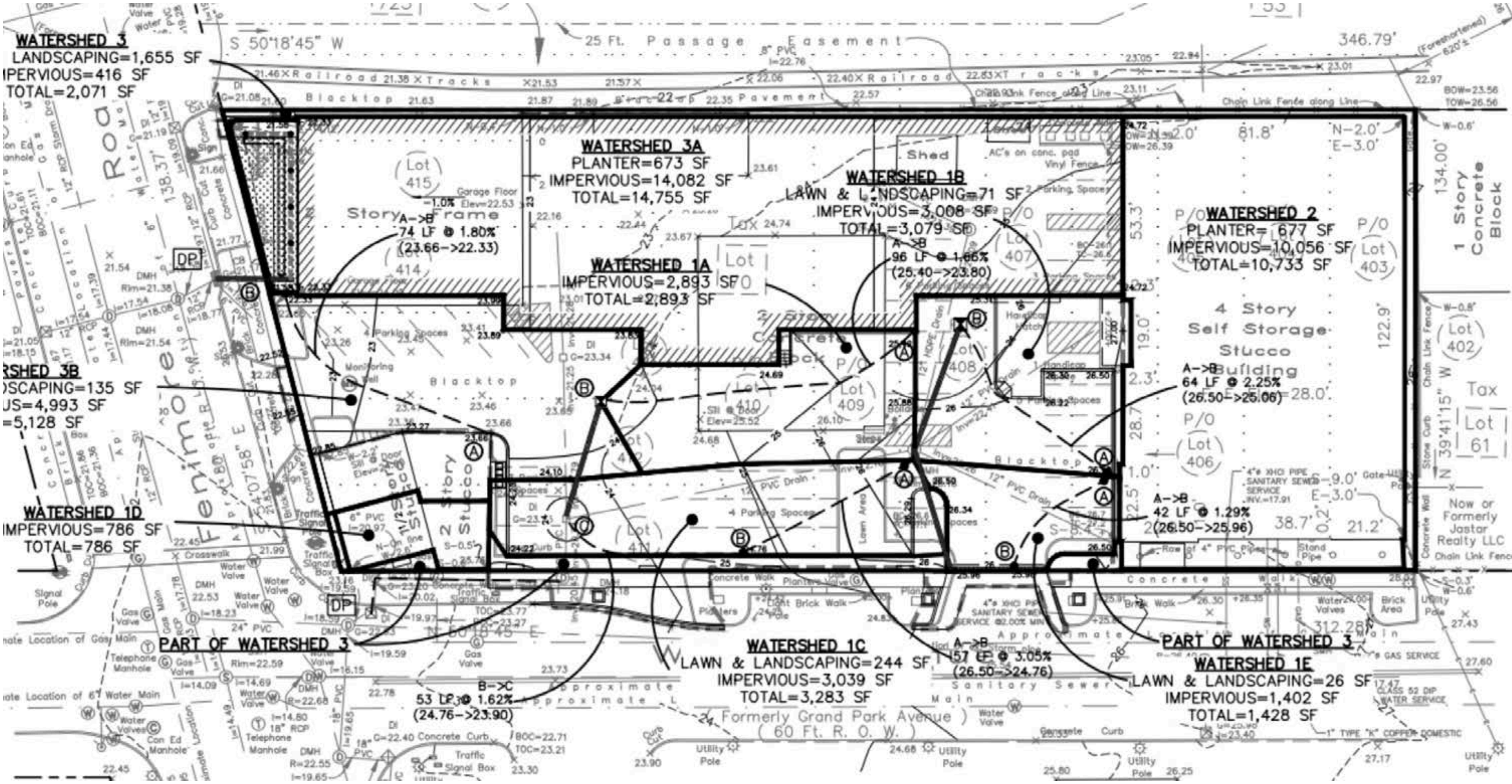
Flood Storage Volumetric Analysis

Proposed Condition

E S N W

Figure

IV.D-5



Source: Hudson Engineering & Consulting, P.C.

Scale:
0 20' 40'

CLEARY CONSULTING

Proposed Site Watersheds

E S N W

Figure
IV.D-6

Table IV.D-3 Pre and Post Development Runoff Flow Rate (CFS)						
Design Point	**1-Year**		**10-Year**		**25-Year**	
	Pre-	**Post-**	**Pre-**	**Post-**	**Pre-**	**Post-**
DP-1	0.89	0.89	3.02	2.98	3.81	3.75
DP-2	1.58	1.48	2.89	2.85	3.64	3.62

Source: Hudson Engineering & Consulting, P.C.

The Proposed Action will not result in any adverse flooding or flood zone impacts.

4.) MITIGATION MEASURES

As noted above, the first floor of the self-storage building addition will be constructed two feet above the base flood elevation. It will also be constructed in accordance with a Floodplain Development Permit, issued by the Village. The building will comply with the "Standards for All Structures" (§186-5 B.) including:

- The building will be anchored to prevent flotation, collapse or lateral movement during the base flood;
- The building shall be constructed with materials and utility equipment resistant to flood damage;
- The building shall be constructed using methods and practices that minimize flood damage;
- No enclosed spaces are proposed below the base floor elevation;
- New and replacement electrical equipment, heating, ventilating, air conditioning, plumbing connections, and other service equipment shall be located at or above the base flood elevation. Electrical wiring and outlets, switches, junction boxes and panels shall be elevated to or above the base flood elevation unless they conform to the appropriate provisions of the

electrical part of the Building Code of New York State or the Residential Code of New York State for location of such items in wet locations;

- New and replacement water supply systems shall be designed to minimize or eliminate infiltration of flood waters into the system;

- New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of flood waters. Sanitary sewer and storm drainage systems for buildings that have openings below the base flood elevation shall be provided with automatic backflow valves or other automatic backflow devices that are installed in each discharge line passing through a building's exterior wall; and

- On-site waste disposal systems shall be located to avoid impairment to them or contamination from them during flooding.

Implementing the stormwater management plan prepared in support of the Proposed Action will ensure that the rate of flow of runoff will be equal to or below the current rate, and that flood volume storage actually is slightly increased.

Importantly, the Proposed Action is designed as a "net zero" building, meaning the building will effectively have *no* carbon footprint. This is perhaps the most definitive measure the Applicant can take to minimize the overall impact on climate change, including sea level rise and flooding.

Chapter IV. E

Historic Resources

IV. E. - HISTORIC RESOURCES

INTRODUCTION

This section of the DEIS addresses the Proposed Action's impact on historic resources on and around the Site.

1.) EXISTING CONDITIONS

(a.) Historical Overview:

Mamaroneck's settlement dates back to the 17th century, when on September 23, 1661, John Richbell, a London merchant living in Oyster Bay, purchased the land on which the Town of Mamaroneck, Village of Mamaroneck, and Village of Larchmont are presently situated from the Siwanoy Indians.[1]

The Industrial Area[2] dates back to the 1880's when the area was known as the Waverly section of the Village. In 1888, a German immigrant constructed a rubber factory on Fayette Avenue. At the time the area was primarily undeveloped, except for a few modest homes for factory workers. The area became known as "Strawberry Patch" due to the abundance of wild strawberries.

The railroad, which reached this area in 1848, was another impetus for industrial development, however, it was not until the establishment of a rail yard near Waverly Avenue and the Project Site after the turn of the century, that more businesses began to locate in the Industrial Area, primarily along Waverly Avenue and Fenimore Road.

WWII brought wartime industries to the Industrial Area, producing parts and supplies, including crankshafts for PT boats and vitamins for the

[1] Mamaroneck Historical Society.

[2] Excerpted from the Mamaroneck Village Industrial Area Study, Westchester County Department of Planning, 1997.

military. By the 1950's newer industries were established in the Area, and plastics manufacturing became a dominate industry.

Construction of the Thruway in the 1950's cutoff a portion of the area, but the new transportation link allowed for easy truck access, and increased industrial development opportunities.

Automobile uses have a long history in the Industrial Area, with the Pan American Automobile Company locating in the Area in 1901. The area always hosted a number of residential uses, which were rendered non-conforming in the 1968 Zoning Code, and gradually declined.

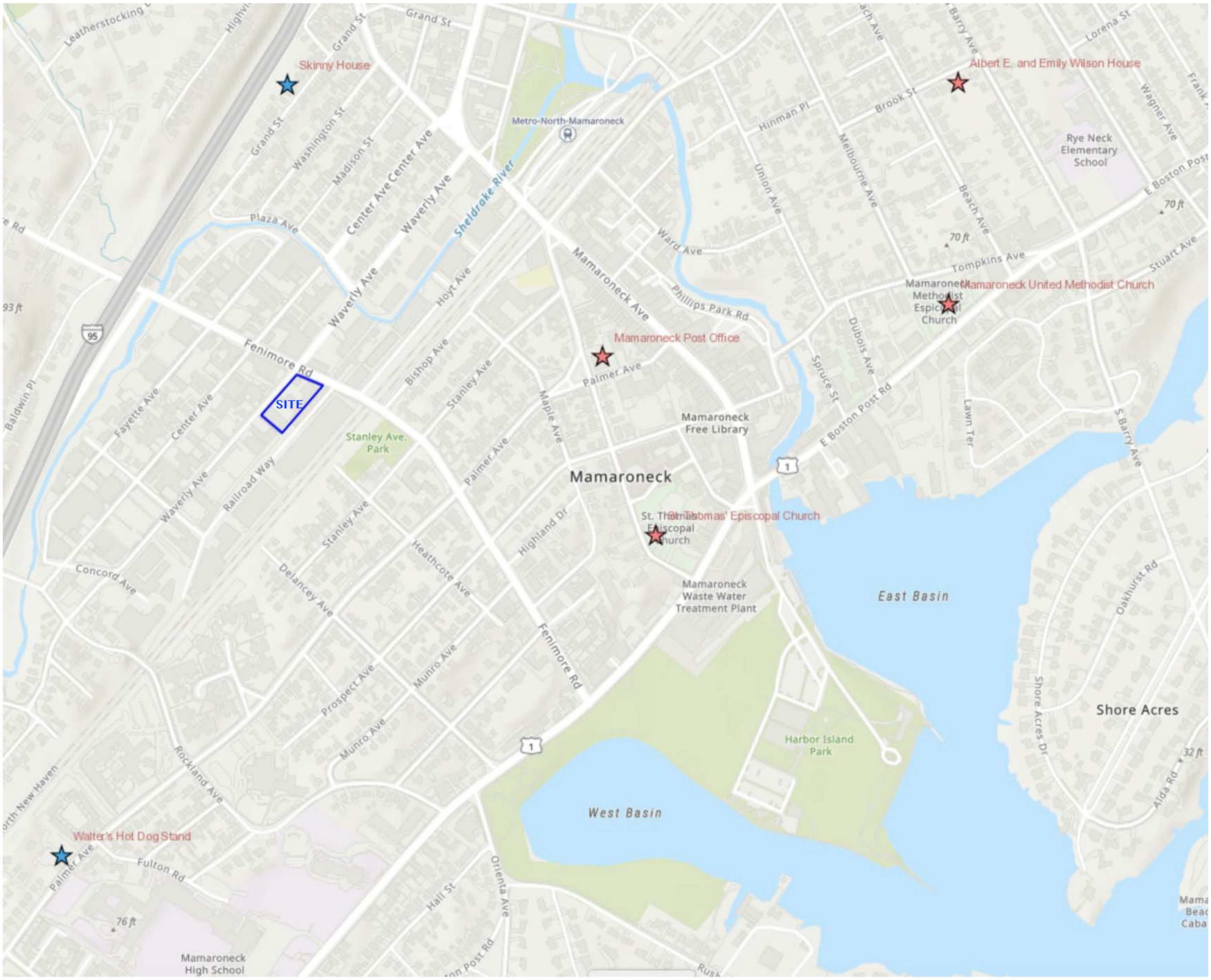
As documented on Figure IV.E-1, no sites listed on the State or National Register of Historic Places are located on or in the vicinity of the Project Site. The 4 closest sites are:

- Skinny House (.36 miles);
- Walters Hot Dog Stand (.58 miles);
- St. Thomas Episcopal Church (.43 miles); and
- Mamaroneck Post Office (.32 miles).

(b.) New York State Office of Parks Recreation and Historic Preservation Consultation:

In the Fall of 2018, the Applicant requested comment from the New York State Office of Parks Recreation and Historic Preservation (OPRHP) regarding the Proposed Action's potential impact on historic and cultural resources. In correspondence from OPRHP dated October 15, 2018, Philip A. Perazio, Historic Preservation Program Analysist – Archaeology Unit, conformed that OPRHP "has no concerns regarding the proposed project under SEQR.[3]" In subsequent emails, Mr. Perazio clarified that this opinion applies to "architectural and archaeological resources." He also noted that a recorded Native American archaeological site is located approximately 1/3 of a mile

[3] OPRHP case #18PR06551



Legend	
★ (red)	National Register Sites
★ (blue)	County Inventory of Historic Places

Source: Westchester County GIS Service Center

Scale: N.T.S.	**Historic Register and County Inventory Sites**	N W E S	Figure IV.E -1
CLEARY CONSULTING			

southeast of the Project Site, and several more a bit farther away. These sites have caused the area to be designated as archaeologically sensitive, however he concluded that "based on the amount of development in the immediate vicinity of your property, we probably would have no archaeological concerns."

2.) FUTURE CONDITIONS WITHOUT THE PROPOSED ACTION:

If the Proposed Acton is not developed, the Project Site would continue to operate as it operates today. The existing warehouse buildings would remain in place, accommodating various tenants. Murphy Brothers Contracting would continue to operate their businesses from the Site and the self-storage building would continue to function as it does today. No improvements to the existing buildings would be undertaken, the site and streetscape would remain unchanged, and it is unlikely that the Community Solar project would be undertaken.

3.) ANTICIPATED IMPACTS:

The Proposed Action will have no impact on any designated historic or archaeological resources.

4.) MITIGATION MEASURES

As the Proposed Action will have no impact on any designated historic or archaeological resources, no mitigation measures are required.

Chapter IV. F

Visual Resources

IV. F. - VISUAL RESOURCES

INTRODUCTION

This section of the DEIS evaluates the visual impact of the Proposed Action through various techniques including photographs, 3-D renderings and photo-simulations. This evaluation includes an assessment the aesthetic quality of the surrounding area.

1.) EXISTING CONDITIONS

(a.) Visual Characteristics of the Industrial Area:

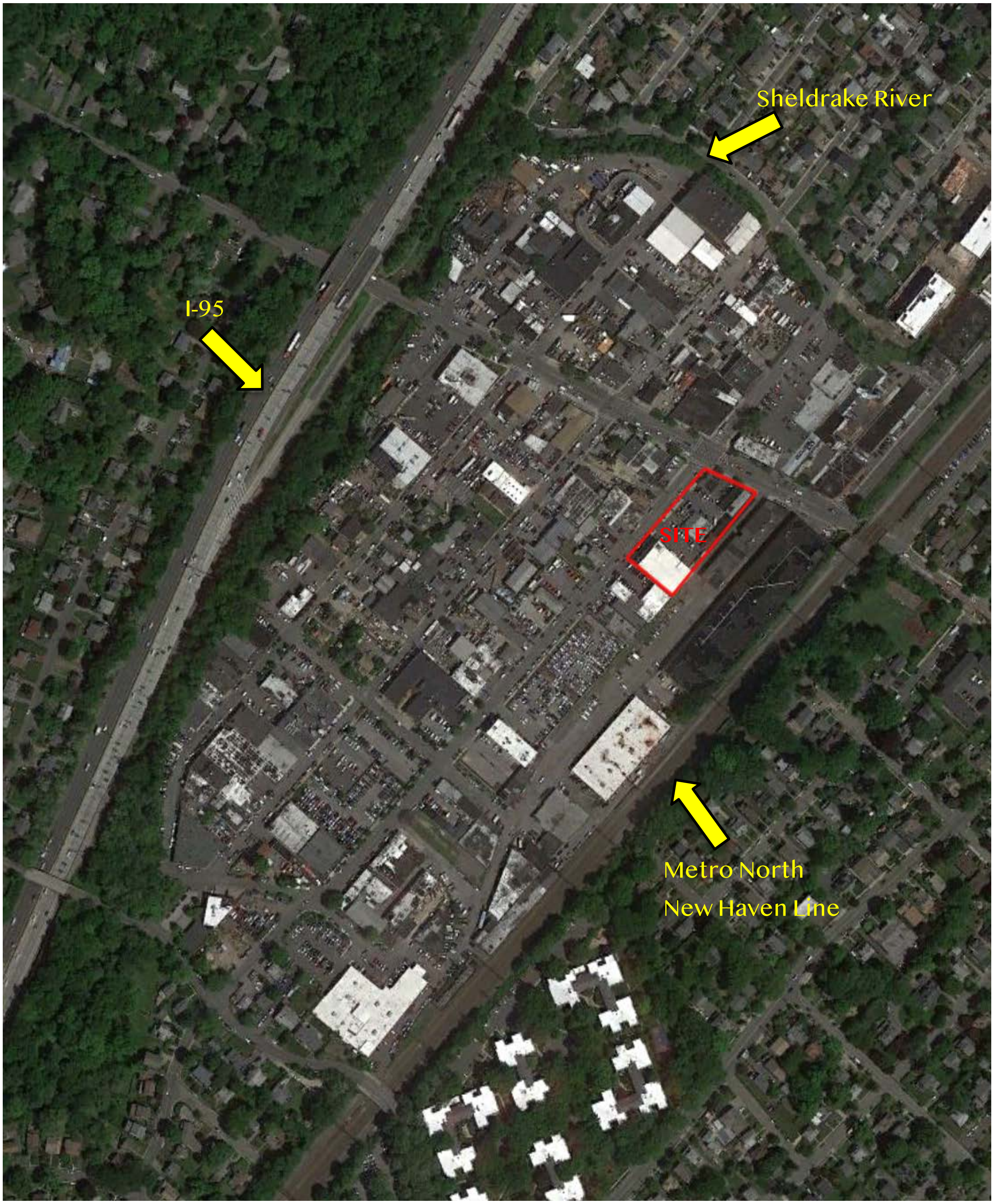
The physical character and visual appearance of the Industrial Area has long been identified as a challenging condition. Planning initiatives such as the Village Comprehensive Plan, the Waverly Avenue Design Study and the Westchester County Planning Department's Industrial Area Study, all pointed to the lack of a unifying character, a deteriorating streetscape and a number of unattractive buildings and properties.

As clearly illustrated on Figure IV.F-1, one of the reasons why the Industrial Area evolved as it has, is because it is physically distinct from the rest of the Village due to natural and man-made barriers, such as the Sheldrake River, the Metro North New Haven line tracks and I-95. While residential uses have always been a part of the Industrial Area, the predominant building type is a typical low-slung concrete block or metal sided industrial building, with overhead doors.

The following images illustrate the Fenimore Road streetscape from Hoyte Avenue in the east to Fayette Avenue in the west, and the Waverly Avenue streetscape from Plaza Avenue in the North to Ogden Avenue in the south.

The buildings along Fenimore Road are primarily one-story brick or masonry industrial buildings, with the exception of the "barn" on the on the Site which rises to the height of a 4-story building, and the Murphy Brothers Contracting office building, which is a two-story wood frame structure.

The buildings along Waverly Avenue are much more diverse in architectural character, and include one-story industrial buildings, larger two-story industrial



Source: Google Earth

Scale: N.T.S.

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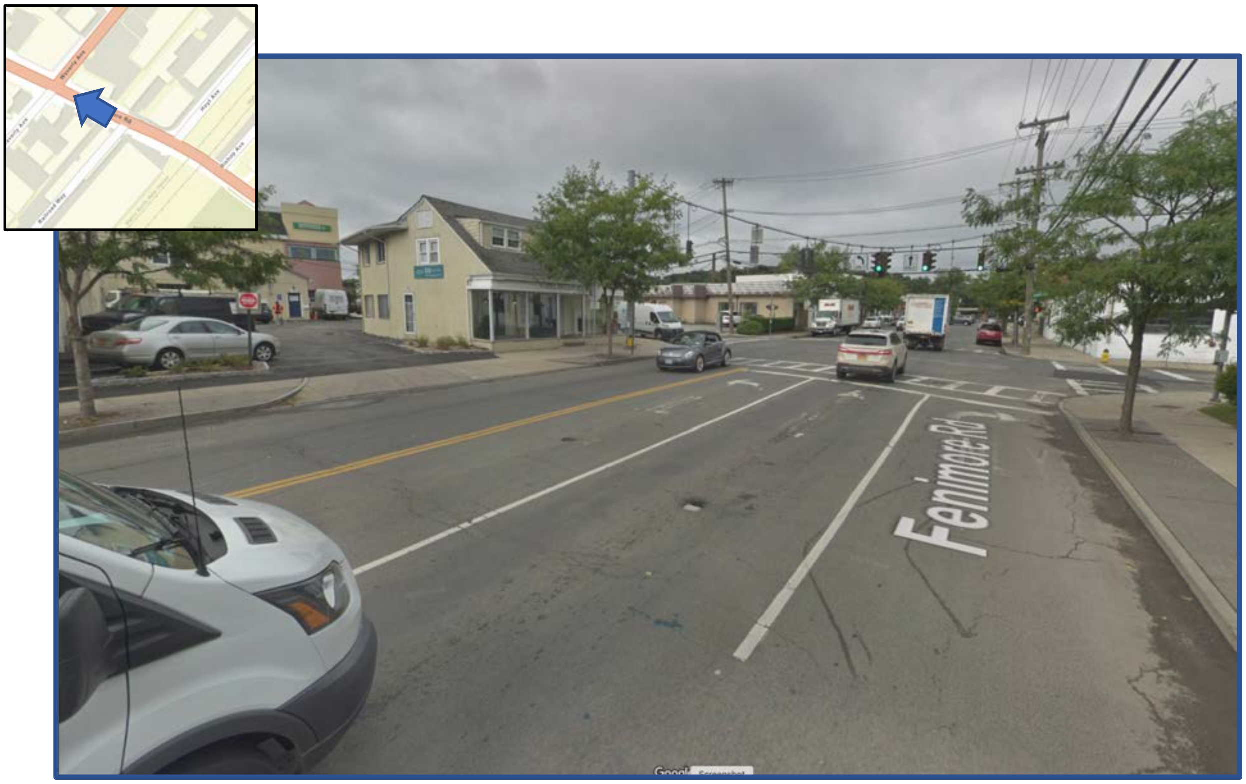
Industrial Area
Perceptual & Physical Boundary

N
W E
S

Figure
IV.F-1

and office buildings, the buildings on the Subject Site, including the 4-story self-storage building, 2 ½ story wood-frame residential buildings, and storage lots.

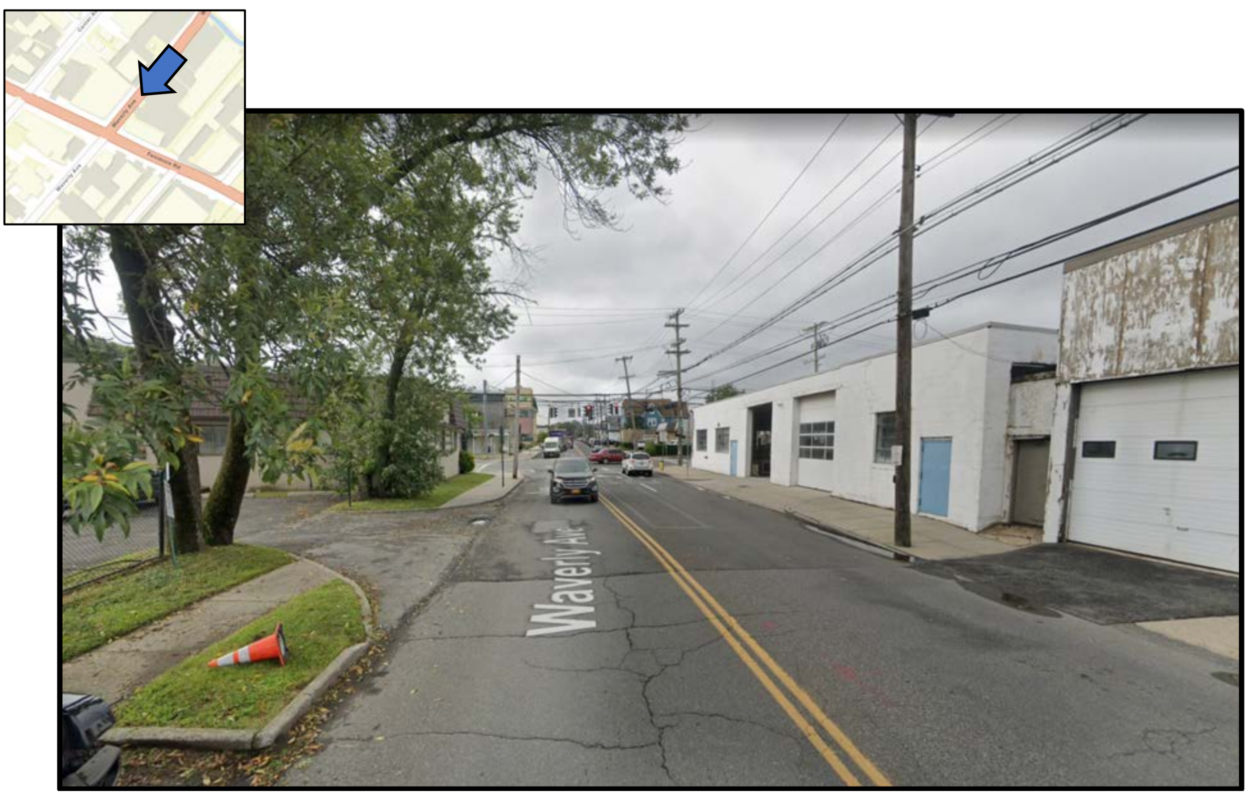

Fenimore Rd

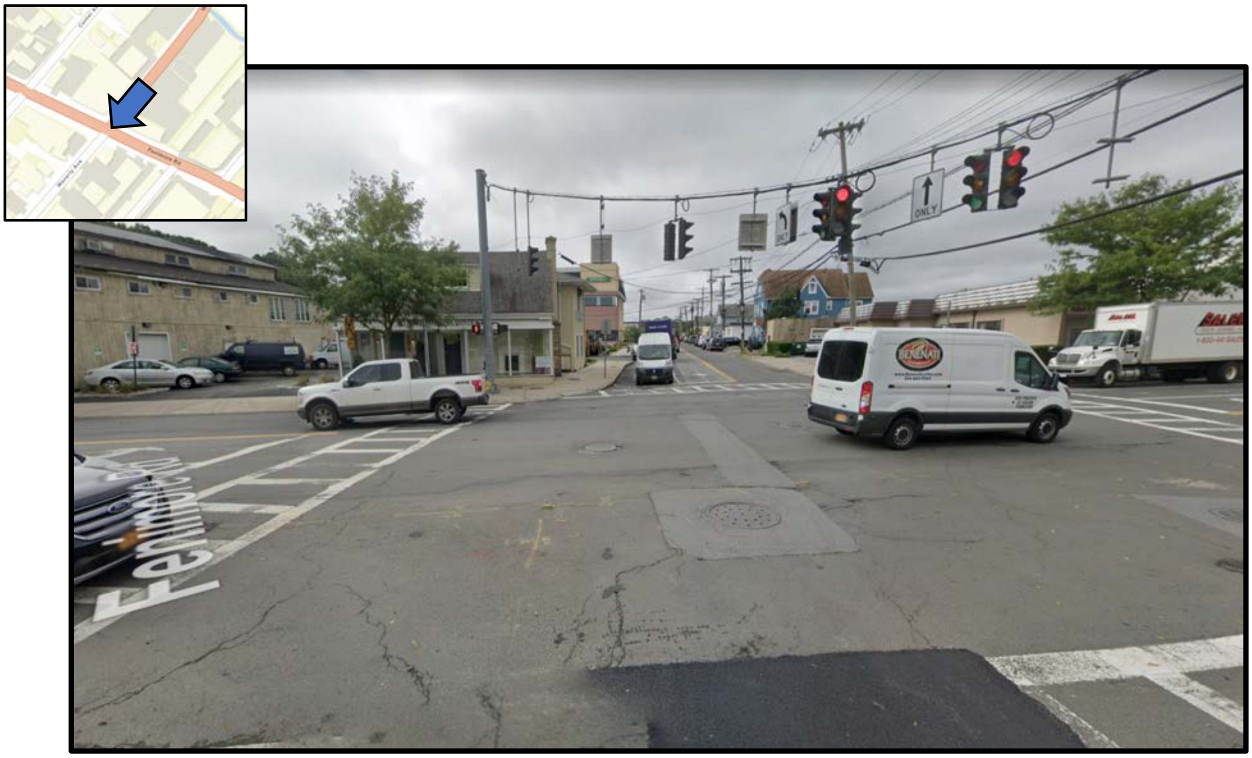

Fenimore Rd

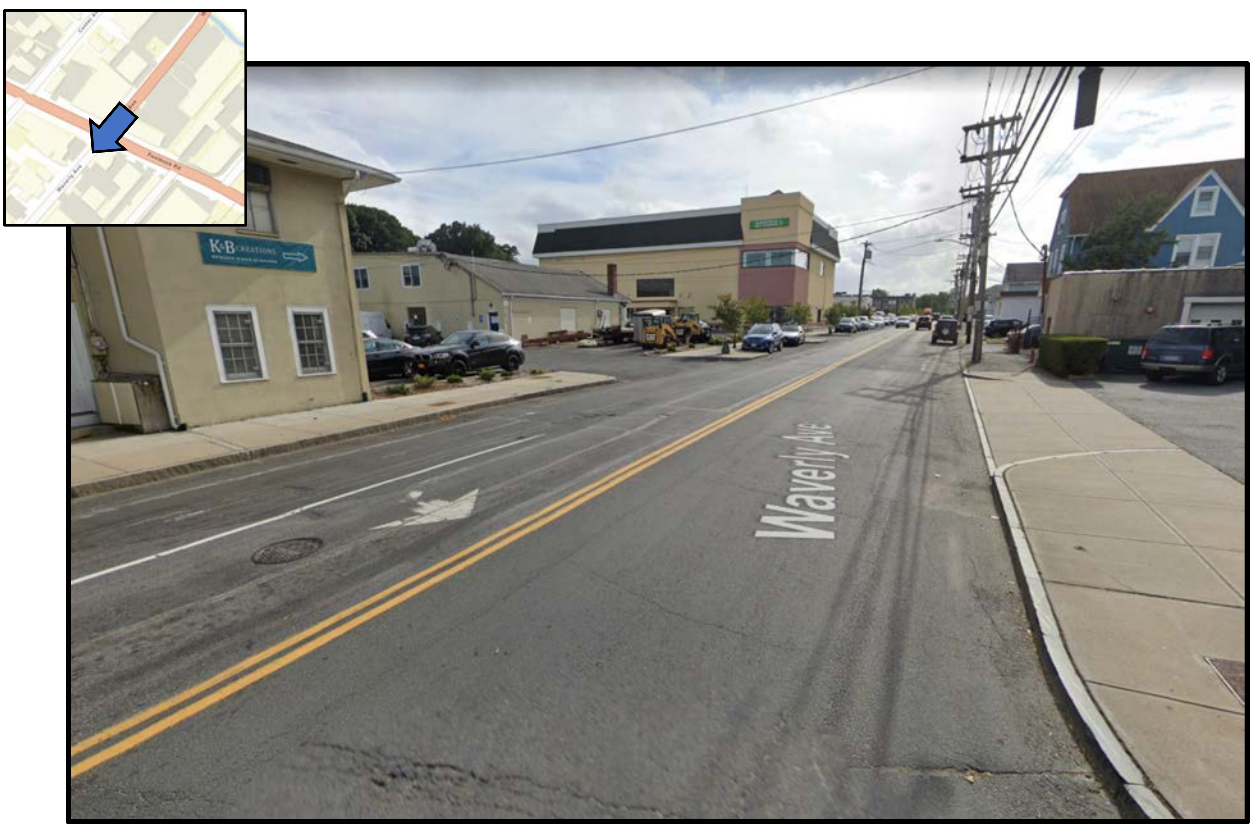

Fenimore Rd
Centro Auto
MAC


ENZO
AUTO
BODY
Fenimore Rd


Waverly Ave


Waverly Ave


Fenimore Rd
ONLY


Waverly Ave
K&B CREATIONS


MAMARONECK SELF STORAGE
Waverly Ave


Waverly Ave


Waverly Ave


Waverly Ave

(b.) **<u>Visual Characteristics of the Project Site</u>:**

The Project Site currently supports 5 buildings (Figure IV.F-2). The south side of the Site supports the 4-story, 40,492 square foot Mamaroneck Self Storage facility (Photograph 1). The north side of the Site is characteristic of the balance of Waverly Avenue, and supports a group of one and two-story, aging warehouse buildings. Building C (Photographs 2 and 3) is a 2-story 2,985 square foot concrete block building located in the center of the site, which houses the Murphy Brothers Contracting office and warehouse space. Along the eastern edge of the central portion of the Site is the remnant of the former lumber yard's storage racks (Photograph 4) and a 2-story, 1,734 square foot concrete block building (Building D) which houses a custom glass business (Photograph 5). Building A is located in the northeast corner of the site, and is an 8,322 square foot, 2-story wood frame "barn" that supports a holiday storage facility, an electrician's office

Scale:

N.T.S.

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Existing Site Buildings & Environs

E S N W

Figure

IV.F-2

and storage and Murphy Brothers Contracting storage (Photographs 6 & 7). In the northwest corner of the Site, adjacent to the Waverly Avenue/Fenimore Road intersection is Building B - a 1 ½ story to 2-story, 2,485 square foot stucco building that contains the Murphy Brothers Storefront and Murphy Brothers Contractors office and warehouse space (Photographs 8 & 9).

Photograph 1

Photograph 2

Photograph 3

Photograph 4

Photograph 5

Photograph 6

Photograph 7

Photograph 8


Photograph 9

The improvement of the Site to support the existing self-storage facility, not only involved the construction of the architecturally appropriate and attractive building, but also included the renovation of the Waverly Avenue streetscape in accordance with the Waverly Avenue Design Guidelines, including new concrete sidewalks, brick pavers, granite curbs, street trees and associated landscaping.

2.) FUTURE CONDITIONS WITHOUT THE PROPOSED ACTION:

If the Proposed Acton is not developed, the Project Site would continue to operate as it operates today. The existing warehouse buildings would remain in place, accommodating various tenants. Murphy Brothers Contracting would continue to operate its businesses from the Site and the self-storage building would continue to function as it does today. No improvements to the existing buildings would be undertaken, the site and streetscape would remain unchanged, and it is unlikely that the Community Solar project would be undertaken.

3.) ANTICIPATED IMPACTS:

a. <u>Scale of Proposed Action:</u>

The proposed expansion to the existing self-storage facility is designed to seamlessly inegrate into the existing building. As illustrated on Figure IV.F-3, the building extension precisely conforms to the existing building height, design aesthetic, building materials and color of the existing self-storage building.

Three of the four remaining buildings on the Site would be demolished to accommodate the new building addition (Buildings A, C and D). The existing 2-story Murphy Brothers Contracting office building located in the northwest corner of the Site adjacent to the Waverly Avenue/Fenimore Road intersection would remain. At the time of the development of the self-storage building, this building was renovated and repainted to reflect the colors and materials of the self-storage building. With the removal of the other buildings and the reconfiguration of the parking lot, the corner office building will anchor the northwest corner of the Site with a lower-scale building that provides definition and a historical identity for the Site.

Scale:

N.T.S.

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Proposed Building Massing & Site Integration

S W E N

Figure IV.F-3

Notably, the scale of the Industrial Area is evolving. At the northern tip of the Industrial Area, 3 new 5-story buildings have been constructed, known as The Mason at 270 Waverly Avenue. While these buildings are oriented toward the Central Business District, at well over 50' in height, they are by far the tallest buildings in the area and are located only approximately 600 feet north of the Project Site. This development is illustrative of an evolving trend that will clearly have an impact on the Industrial Area.

b. <u>View Analysis:</u>

A view analysis was conducted from the 6 viewpoints identified in the adopted Scoping Document:

i. Northwest corner of the intersection of Waverly Avenue and Fenimore Road, looking towards the Project Site.

ii. Northwest corner of the intersection of Waverly Avenue and Ogden Road, looking towards the Project Site.

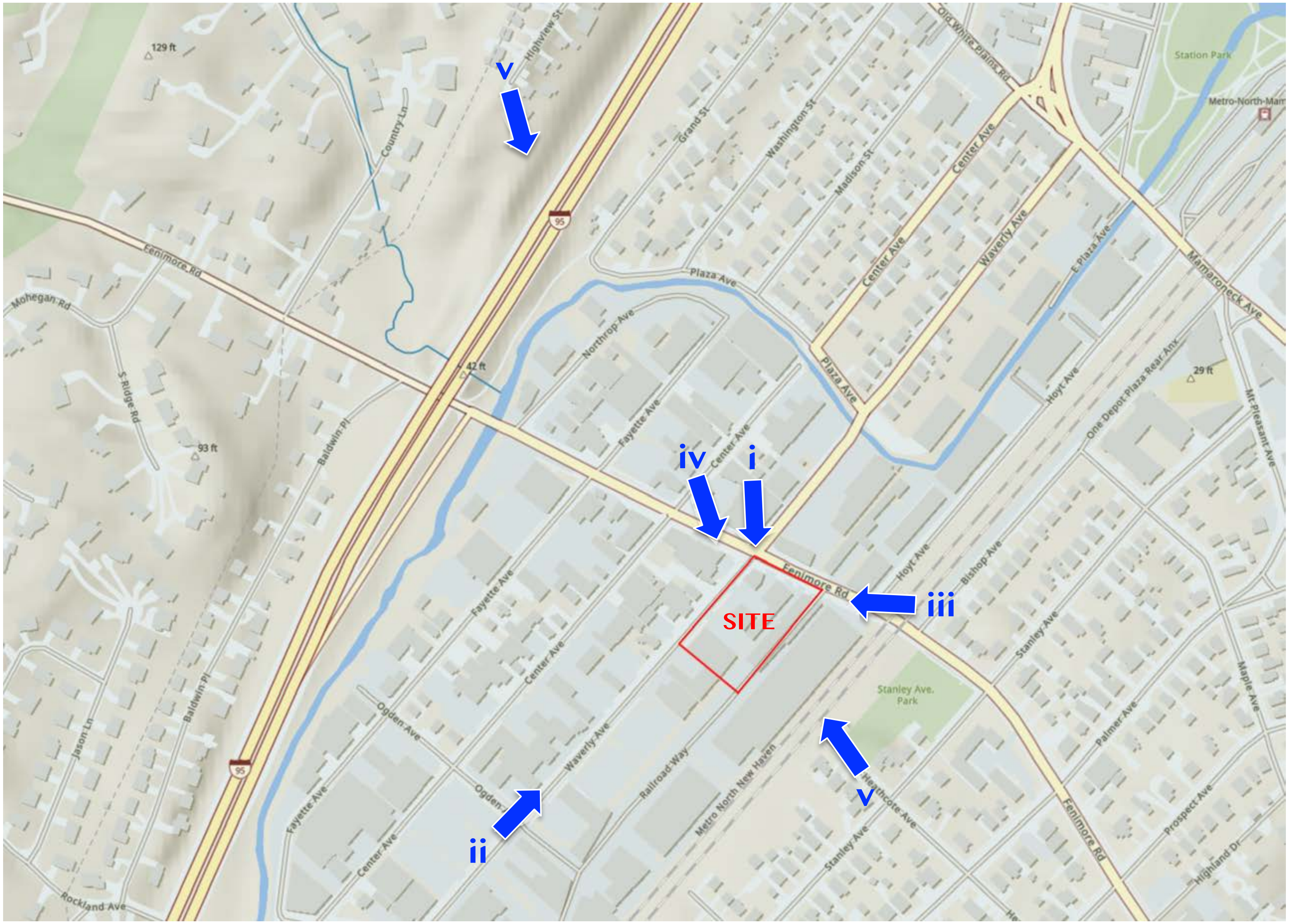
iii. Northwest corner of the intersection of Fenimore Road and Hoyt Avenue, looking towards the Project Site.

iv. North Side of Fenimore Road, midblock between Center Avenue and Waverly Avenue, looking towards the Project Site.

v. Northbound on Heathcote Avenue looking towards the Project Site.

vi. Highview Street Historic District.

Figure IV.F-4 provides a key map of the viewpoints, and Figures IV.F-5 through IV.F-10 present the views from each viewpoint, including the existing condition without the Proposed Action.



Source: Westchester County GIS Service Center

Scale: N.T.S.	Viewpoint Key Map	N W E S	Figure IV.F-

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Northwest corner of the intersection of Waverly Avenue and Fenimore Road, looking towards the Project Site.

Scale: N.T.S.	Viewpoint i – Existing Condition	Figure IV.F-5

CLEARY CONSULTING

Northwest corner of the intersection of Waverly Avenue and Ogden Road, looking towards the Project Site.

Scale:

N.T.S.

CLEARY CONSULTING

Viewpoint ii – Existing Condition

S
E
W
N

Figure

IV.F-6

Northwest corner of the intersection of Fenimore Road and Hoyt Avenue, looking towards the Project Site.

Scale:

N.T.S.

CLEARY CONSULTING

Viewpoint iii – Existing Condition

W
S
N
E

Figure

IV.F-7

Northwest corner of the intersection of Waverly Avenue and Ogden Road, looking towards the Project Site.

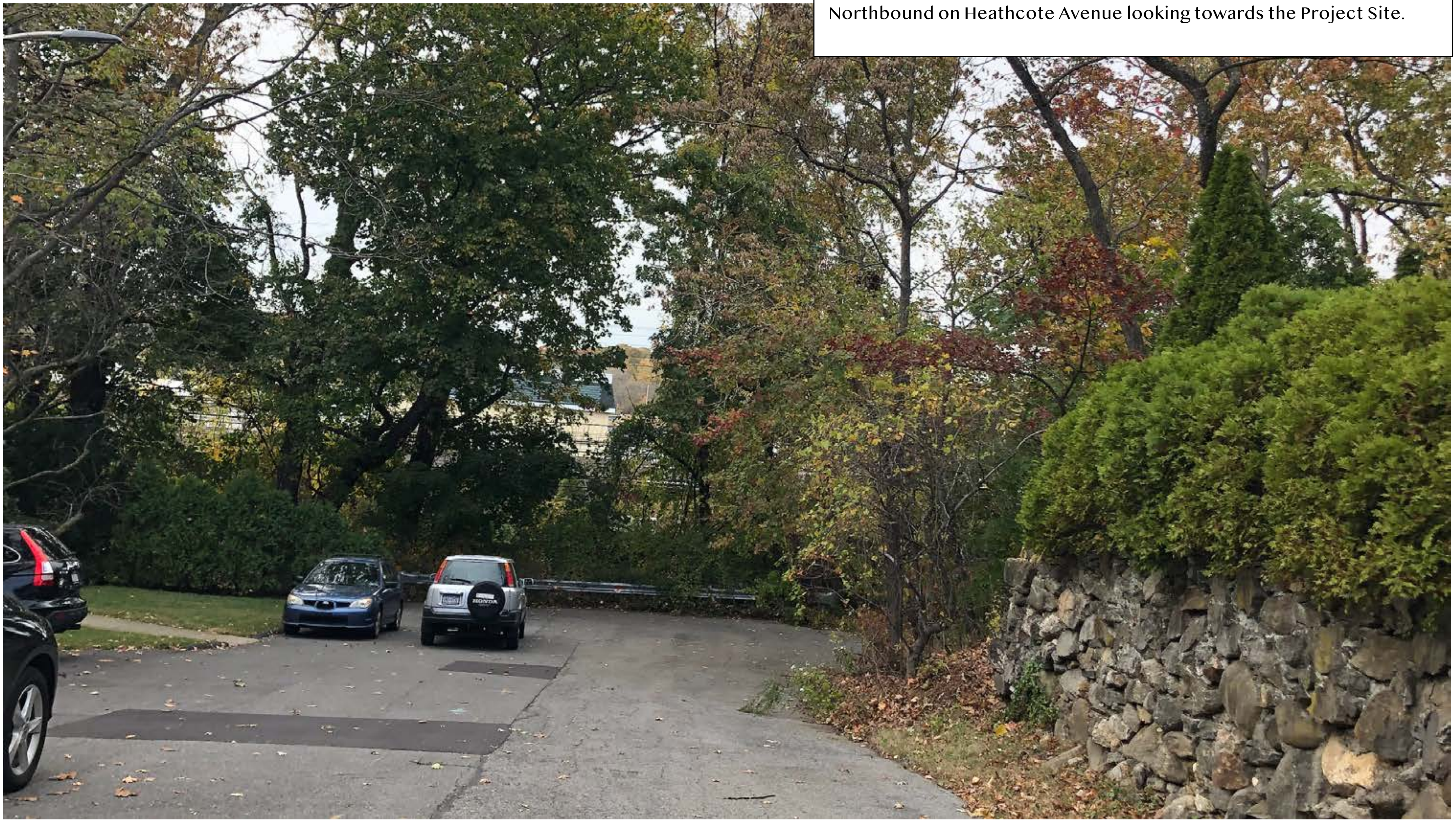
Scale:
N.T.S.

CLEARY CONSULTING

Viewpoint iv – Existing Condition

Figure
IV.F-8

Northbound on Heathcote Avenue looking towards the Project Site.



Scale:

N.T.S.

CLEARY CONSULTING

Viewpoint v. – Existing Condition

W
S
N
E

Figure

IV.F-9

Highview Street Historic District (closest point to Site)

Scale:

N.T.S.

CLEARY CONSULTING

Viewpoint vi. – Existing Condition

S
E W
N

Figure

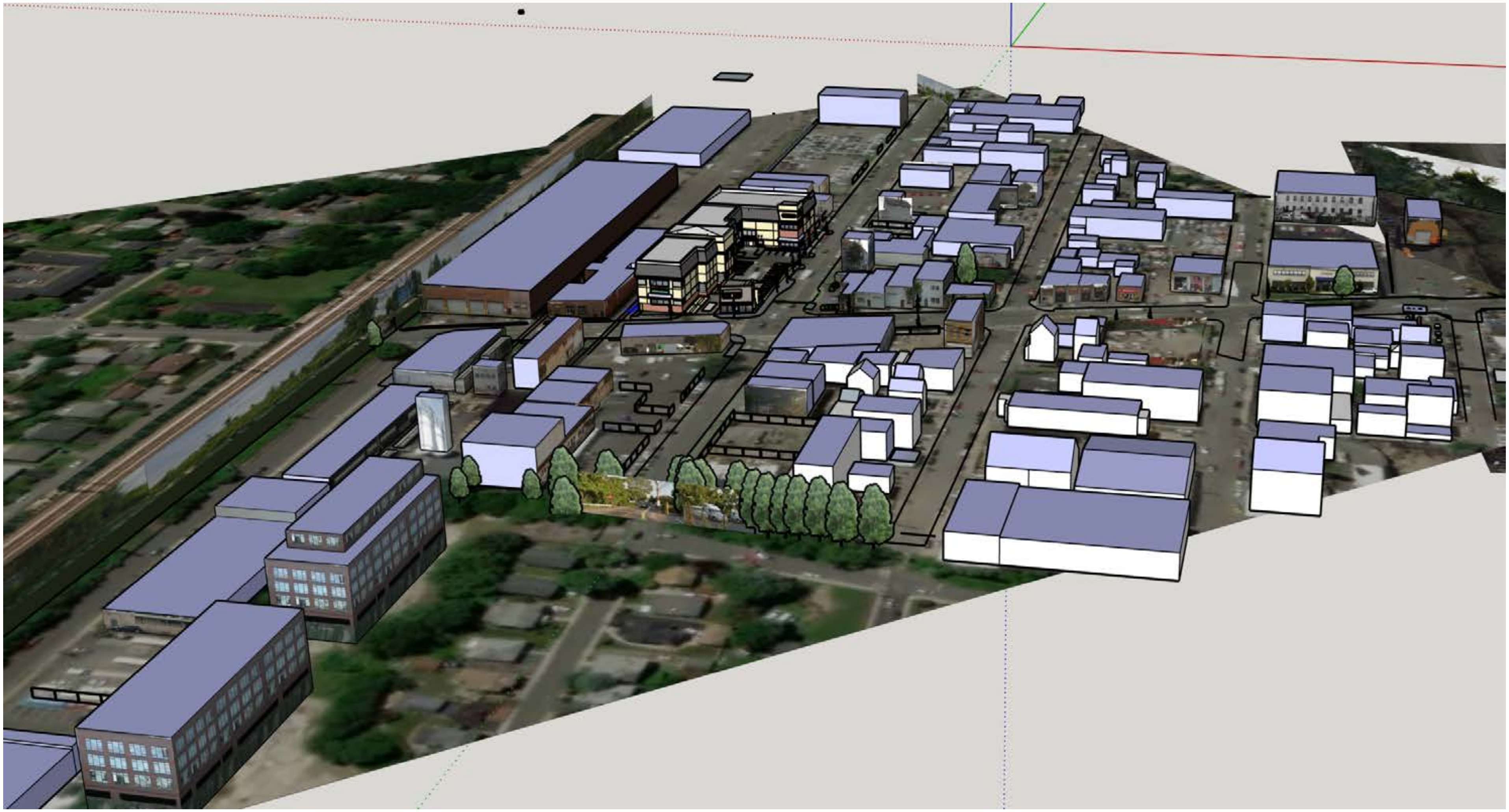
IV.F-10

c. **Aesthetic Character of Surrounding Area:**

In planning studies such as the Waverly Avenue Design Study, the Comprehensive Plan and Comprehensive Plan Update, the Village has continually identified the poor aesthetic quality of the Industrial Area as a problem. The area consists of a jumble of utilitarian industrial buildings, storage yards, interspersed with remnant residences. Very little investment in the aesthetic quality of the Area is apparent. In fact, the only notable physical improvement in the Area is the Mamaroneck Self-Storage facility that opened in 2015. While it is the tallest building in the Area, it is an architecturally appropriate and attractive building, located in the geographic center of the Industrial area, where it's height, scale and mass are fittingly appropriate. When the self-storage building was developed, the remaining out-buildings were renovated and repainted to reflect the colors and materials of the self-storage building, thereby unifying the Site and reinforcing the character of the Waverly Avenue/Fenimore Road intersection. It can be argued the redevelopment of the Project Site has established a high-quality character for the surrounding area, that is currently either inappropriate or non-existent.

d. **Relationship of Proposed Action to Surrounding Area:**

The development of the Proposed Action will result in a building addition that is taller than most buildings in the Industrial Area, with the exception of The Mason located approximately 600' to the north on Waverly Avenue. However, in terms of gross floor area, a number of other industrial buildings contain more square footage. Those single-story industrial buildings cover far larger footprints than does the Proposed Action. Figure IV.F 11 provides a representation of the massing and scale of the buildings surrounding the Project Site. This view is from the north, looking south. This image illustrates an ideal urban form, with the taller, larger building in the center of the district, with lower scale buildings surrounding it.



Scale:

N.T.S.

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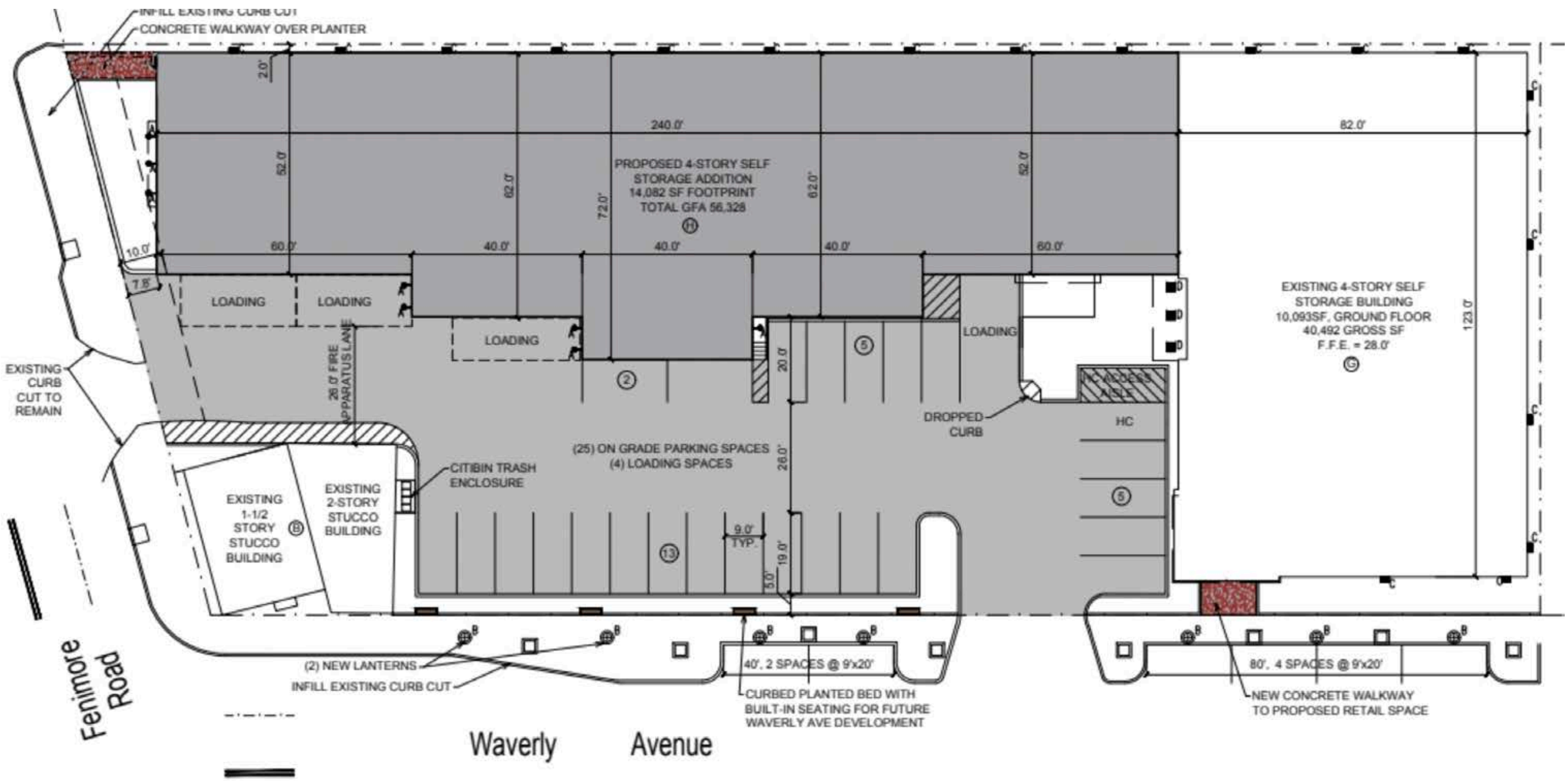
Neighborhood Massing

S W E N

Figure

IV.F-11



Source: KTM Architect

CLEARY CONSULTING

Lighting Plan

Figure IV.F-12

e. **Site Lighting & Landscaping:**

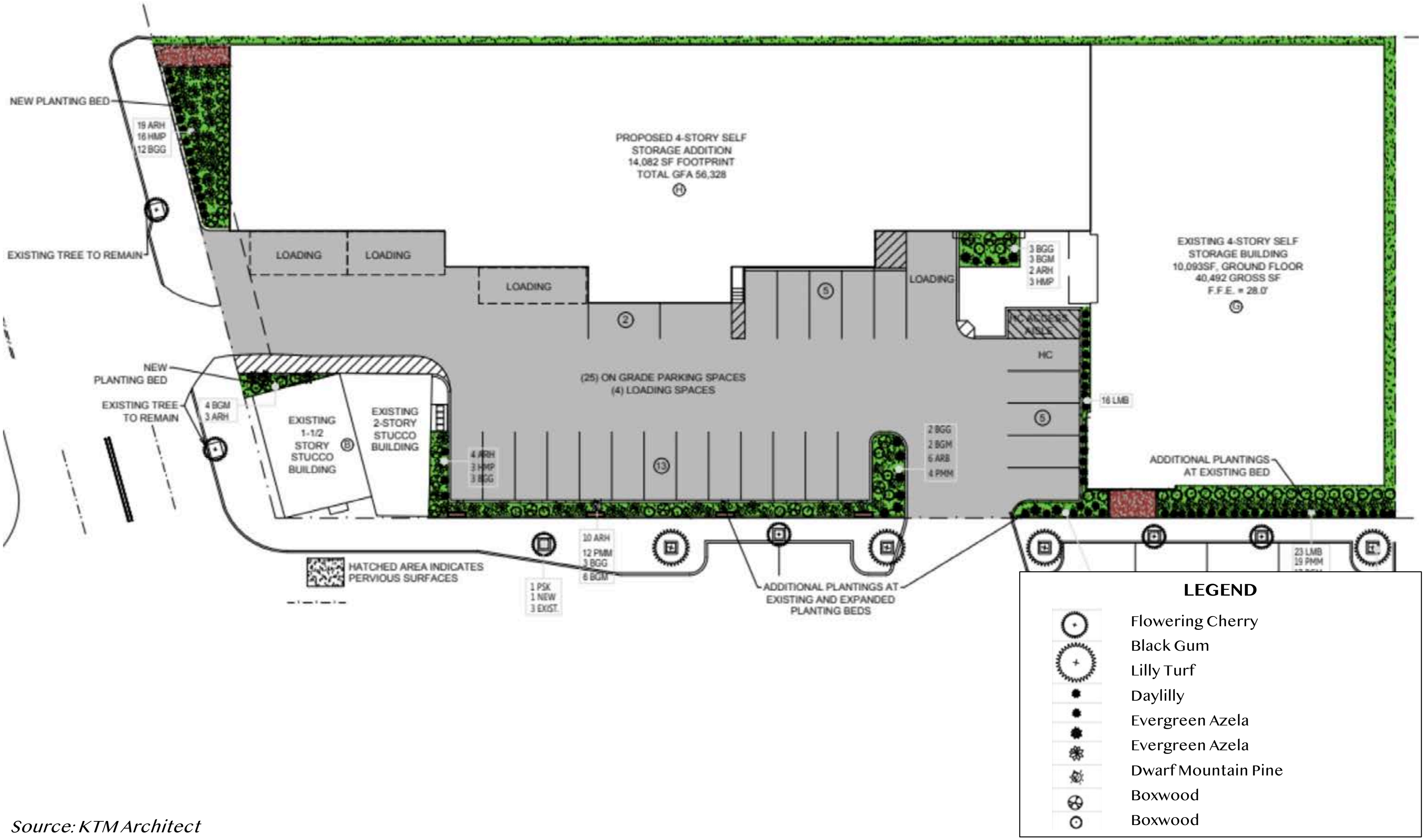
A Site Lighting Plan has been prepared by KTM, Figure IV.F-12 which includes an array of exterior light fixtures; including:

Table IV.F-1 Lighting Schedule					
Symbol	**Location**	**E-Star Partner**	**Brand Name**	**Series/ Style**	**Description**
A	At Canopies & Signage	--	Security Lighting Systems	Angle Reflector Wall Sconce	Goose Neck Wall Sconce
B1	Waverly Ave. Walkway	DLC	Gamma Sonic	Imperial II Solar Lamp	Solar-Powered Post Mounted Lantern
B2	Wavery Ave. Walkway	N/A	Gamma Sonic	Decorate Pole	Lantern Post
C	Egress & South Facade	DLC	Security Lighting Systems	Trapezoidal Wall Sconce	Wall Mounted Sconce
D	Canopy Soffits	DLC	Security Lighting Systems	LED Recessed Canopy Light	Recessed

Source: KTM

These fixtures have been selected to afford an appropriate level of site lighting, without excessive spill beyond the property line.

Figure IV.F-13 presents the proposed Landscape Plan which includes the preservation of existing street trees along Waverly Avenue and Fenimore Road, as well as the new street trees on Waverly Avenue. The existing foundation plantings along the existing self-storage building will be supplemented with additional boxwood and azaleas. The new parking lot will be screened by an array of shrubs and perennials, and three planting areas are proposed on the Fenimore Road side of the building extension, near the building entrance, and adjacent to the Murphy Brothers Contracting office building. The Landscape Plan provides plantings on all areas of the Site, not occupied by buildings or the parking lot.



Source: KTM Architect

Scale:
0 15' 30'

CLEARY CONSULTING

Landscape Plan

E S N W

Figure
IV.F-13

Table IV.F-2 provide the Planting Schedule.

Table IV.F-2
Planting Schedule

Type	Designation	Genus	Species	Cultivar	Common Name	Size @ Planting	Size @ Maturity
Tree	PSK	Prunus	Serrulata	Kanzan	Flowering Cherry	8'-10'	15'-25'
Tree	NST	Nyssa	Sylvatica	Telupo	Black Gum	12'	30'-50'
Perennial	LMB	Liriope	Muscari	Big Blue	Lilly Turf	--	1'-2'
Perennial	HMP	Hemerocallis	Middendorffii	Prarie Blue Eyes	Daylilly	--	2'-3'
Shrub	ARB	Azalea	Rhododendron	Blaauws Pink	Evergreen Azalea	2'	2'-4'
Shrub	ARH	Azalea	Rhododendron	Herbert	Evergreen Azalea	2'	2'-3'
Shrub	PMM	Pines	Mugo	Mops	Dwarf Mountain Pine	2-3'	3'-4'
Shrub	BGM	Buxus	Green Mountain	Buxaceae	Boxwood	2-3'	3'-5'
Shrub	BGG	Buxux	Green Gem	Microphlya var. Koreana Sempervirens (Hybrid)	Boxwood	2-3'	3'-5'

Source: KTM

f. <u>Visual Simulations:</u>

For each of the viewpoints presented above, the Proposed Action has been superimposed to provide photo-simulations depicted in Figures IV.F-14 through IV.F-19. The following visual conditions are observed.

i. Northwest corner of the intersection of Waverly Avenue and Fenimore Road, looking towards the Project Site.

Views of the building addition are plainly visible from this location. The existing Murphy Brothers Contracting office building is proposed to remain on the northwest corner of the Site, and will partially block views of the building addition, however, the building addition is taller and larger than the office building, so it will visually dominate the Site. The building addition is a continuation of the existing self-storage

Northwest corner of the intersection of Waverly Avenue and Fenimore Road, looking towards the Project Site.

Scale:

N.T.S.

CLEARY CONSULTING

Viewpoint i – Proposed Project

S
E
W
N

Figure

IV.F-14

Northwest corner of the intersection of Waverly Avenue and Ogden Road, looking towards the Project Site.

Scale:

N.T.S.

CLEARY CONSULTING

Viewpoint ii – Proposed Project

Figure

IV.F-15

Northwest corner of the intersection of Fenimore Road and Hoyt Avenue, looking towards the Project Site.

Scale: N.T.S.	Viewpoint iii – Proposed Project	W S N E	Figure IV.F-16
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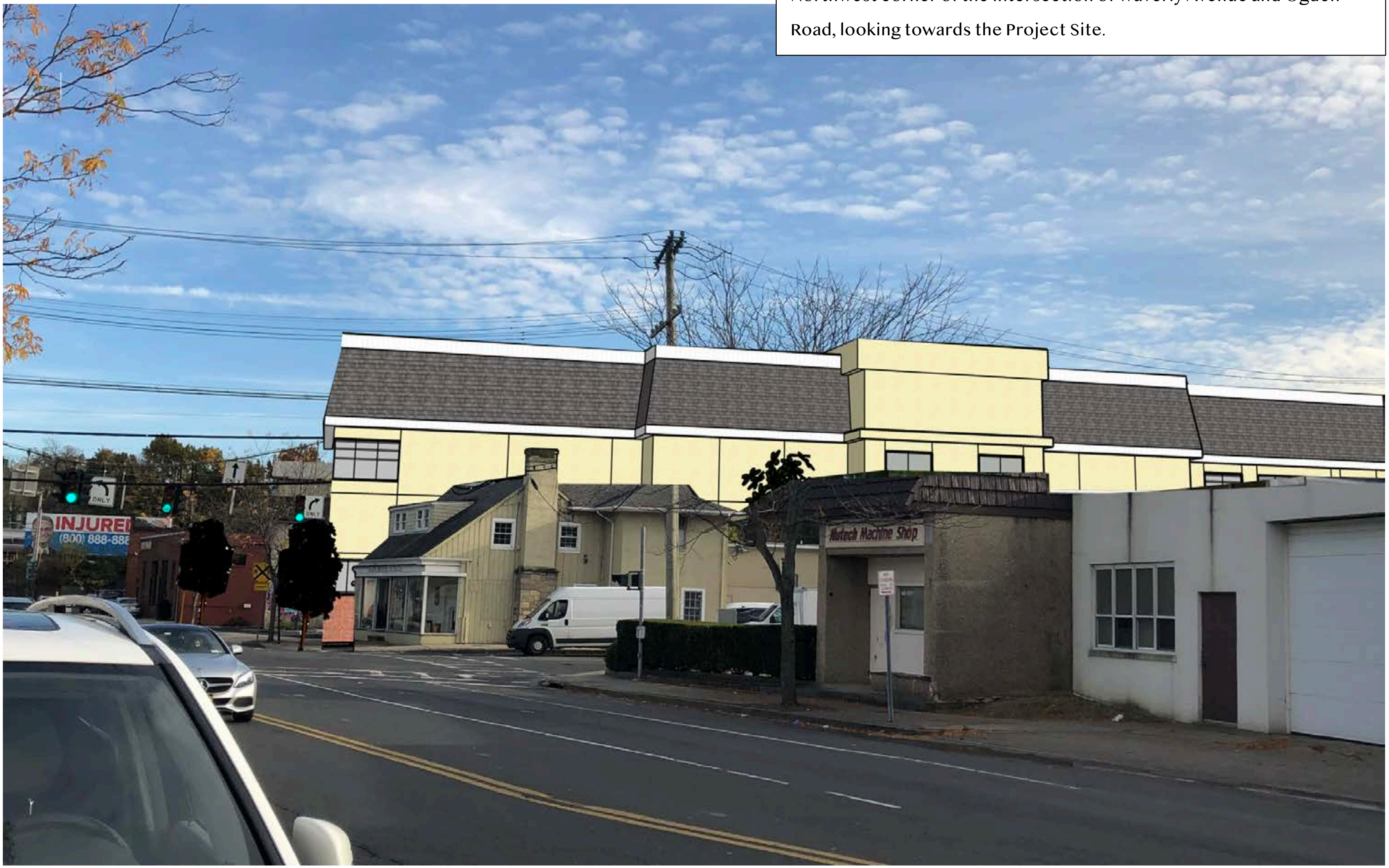
Viewpoint iii – Proposed Project

Figure IV.F-16

Northwest corner of the intersection of Waverly Avenue and Ogden Road, looking towards the Project Site.



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Viewpoint iv – Existing Condition

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Figure

IV.F-17

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Viewpoint v. – Proposed Project

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Figure

IV.F-18

Highview Street Historic District (closest point to Site)

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Viewpoint vi. – Proposed Project

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Figure

IV.F-19

building, which has established the perceptual visual character of the Site.

ii. Northwest corner of the intersection of Waverly Avenue and Ogden Road, looking towards the Project Site.

The configuration of the building addition is such that it is completely blocked by the existing self-storage building from this viewpoint. This viewpoint is illustrative of the suitability of the height, scale and mass of the existing self-storage building, as well as the proposed addition.

iii. Northwest corner of the intersection of Fenimore Road and Hoyt Avenue, looking towards the Project Site.

In this view, the existing "barn" building has been replaced by the new self-storage building addition that will extend towards Fenimore Road. The proposed building addition is taller than the barn, but it is not as wide. It clearly represents a visual change; however, it is the Applicant's opinion that the change in the visual characteristics of the Site is a positive one. The barn, while familiar, is not an attractive building, particularly its frontage along Fenimore Road. The public art recently installed on the building, highlights its aesthetic deficiencies. The new self-storage addition has been designed to create an attractive and appropriate industrial streetscape presence on Fenimore Road. Features include the use of a brick base which serves to break-up the bulk of the building, windows on the first and second floors to create a generic commercial building façade, a mansard roof to diminish the mass of the upper portion of the building, a characteristic commercial awning, signage, goose-neck lighting fixtures, new sidewalk and landscaping. Moreover, the height, scale and mass of the building addition mirrors the existing self-storage building on the Site.

iv. North Side of Fenimore Road, midblock between Center Avenue and Waverly Avenue, looking towards the Project Site.

This viewpoint affords a deeper perspective of the Project Site. While the existing buildings on the south side of Fenimore Road, and the existing Murphy Brothers Contracting office building will block the base of the building addition, its upper portion will be plainly visible.

v. Northbound on Heathcote Avenue looking towards the Project Site.

The existing self-storage building, as well as the building addition will be visible from this viewpoint across the Metro North rail lines and the intervening one-story warehouse buildings. This view will be more apparent during the full leaf-off condition. The elevation of Heathcote Avenue is notably higher than the Industrial Area, so views from this perspective overlook the area. This view is not particularly attractive, as it encompasses the bustling Industrial Area. It is assumed that is why the vegetation at the end of Heathcote Avenue remains in place, to serve as a visual buffer.

vi. Highview Street Historic District.

The Site cannot be viewed from the end of Highview Street. Views may be possible from the upper stories of the homes at the end of the street, however, no views from a public location are possible.

4.) MITIGATION MEASURES

The existing Mamaroneck Self Storage building has established the perceptual visual character of the Site. The proposed addition is a continuation of this character. The building addition will extend the building across the eastern edge of the Site to Fenimore Road. While the building addition will be taller than the surrounding buildings, there are no significant views, or viewsheds that would be blocked or disturbed by the construction of the building. The Project Site is located in the approximate center of the Industrial Area, which consists of typical one and two-story utilitarian industrial buildings. Compared to the existing industrial buildings, which in most cases, are not architecturally distinctive, attractive, or often well maintained, the existing Mamaroneck Self Storage building is the only new building constructed in the area in years, and is architecturally appropriate and very well maintained. The proposed building extension will eliminate the remaining industrial buildings on the Site, thereby further improving the visual appearance of the Site.

Because no significant adverse visual impacts will result from the Proposed Action, no specific mitigation measures are proposed. However, the design of the building addition itself represents the Applicant's commitment to enhancing the visual character of the area. The architectural treatment of the building addition will be identical to that of the existing self-storage building. A brick base, matching colored precast walls and a distinctive roof mansard articulated with parapet detailing is proposed. The building addition would extend to Fenimore Road, so that façade will include windows, a commercial awning, signage, goose neck lighting fixtures, new sidewalks and landscaping to establish an appealing building presence along the streetscape.

Chapter IV. G

Utilities

IV. G. - UTILITIES

INTRODUCTION

The impact of the Proposed Action on utility services will be evaluated in this section of the DEIS, including water supply, sanitary sewage, solid waste and energy.

1.) EXISTING CONDITIONS

(a.) Water Supply:

The Project Site is served by an existing 6-inch diameter water line located within Waverly Avenue. The existing self-storage facility is served by a 1-inch diameter domestic water service and a 6-inch diameter fire service connection.

The existing buildings to be removed and the existing self-storage facility combined have a total of 6 bathrooms, 2 service sinks, and 1 kitchen sink. Based upon the New York State Plumbing Code, Appendix E, the building is utilizing an estimated 42 (public) water supply fixture units (wsfu) per day. The peak flow rate for the facility is estimated at 27.7 gpm.

(b.) Sanitary Sewage:

The Project Site is served by an existing 4-inch sanitary service lateral to the existing 8-inch sanitary sewer line in Waverly Avenue.

Based upon the New York State Department of Environmental Conservation's Design Standards for Wastewater Treatment Works (1988), the Expected Hydraulic daily Loading is 15 gallons per person per day per shift ("office"). The existing employee load for the 7 rentable contractor units and the existing self-storage facility is approximated at 2-shifts of 9-employee (1 per each rentable contractor unit and 2 employees for the storage area) at the facility; therefore, the Total Daily Hydraulic Loading is 270 gallons per day.

(c.) Use and Conservation of Energy:

The existing Mamaroneck Self Storage facility was built as the first state-of-the-art, first-of-its-kind "green" self-storage facility in Westchester County. Energy efficiency was a priority. The Applicant enrolled the project in

NYSERDA's New Construction Program (NCP), which required compliance with rigorous energy-efficiency and sustainability standards set by the program. The Applicant partnered with high performance building consultants Steven Winter Associates to develop the project to incorporate sustainable features and realize energy cost savings from their investment. Notable energy conservation measures incorporated into the existing building include:

- High-efficiency HVAC equipment including Variable Frequency Flow (VRF) heat pumps for heating and cooling, a 65% Efficient Energy Recovery Ventilation system (ERV) for mechanical ventilation;
- High-efficiency interior and exterior LED lighting on motion sensors;
- All water-saving devices;
- 8.5Kw solar shingle array on the SE & SW sides of the building;
- The building envelop consisting of 4" rigid insulation, 4" close cell spray foam with 8" close-cell spray foam in the ceiling.

Energy savings were 52% over the baseline standard building code with over $30,000 annual electric-cost savings. The existing Mamaroneck Self Storage energy bills currently run from $1,400 - $1,800 monthly (similar to the cost of the average 6,000 square foot residential home).

The Mamaroneck Self Storage project was the recipient of three prestigious awards for its energy-efficient construction:

- HBRA-CT HOBI Award: Best Green Commercial Project;
- Best of BOMA Westchester County Signature Award;
- Westchester County Earth Day Award.

As construction was completed on the existing facility, the Applicant was awarded a NYSERDA Community Microgrid Project grant to investigate how a Community Microgrid system could be incorporated into future expansion plans in order to provide necessary affordable energy to the surrounding neighborhood in the event of natural or man-made disaster.

(d.) Solid Waste:

The volume of solid waste generated from the site is quite low. All solid waste and recycling is collected and removed from the Site by private carters.

2.) FUTURE CONDITIONS WITHOUT THE PROPOSED ACTION:

(e.) Water Supply:

If the Proposed Action is not developed, the existing water consumption rate of 27.7 gpd would continue, unchanged.

(f.) Sanitary Sewage:

If the Proposed Action is not developed, the existing sanitary wastewater rate of 270 gpd would continue, unchanged.

(g.) Use and Conservation of Energy:

If the Proposed Action is not developed, the amount of energy use at the Site would remain unchanged. Additionally, it is unlikely that the Applicant would pursue the micro-grid project.

(h.) Solid Waste:

If the Proposed Action is not developed, the existing generation and collection of solid waste would continue, unchanged.

3.) ANTICIPATED IMPACTS:

(a.) Water Supply:

The proposed building includes a total of four bathrooms, 1 service sink and 1 water fountain. Based upon the New York State Plumbing Code, Appendix E, the existing buildings to remain and the proposed storage building addition utilize an estimated 32 (public) water supply fixture units (wsfu) per day. The peak flow rate for the facility is estimated at 24.9 gpm, a reduction over existing condition. Hence, no flow testing has been performed on the Waverly Avenue water line as water usage in the proposed condition is less than in the existing. The proposed improvements result in approximately a 10% reduction in the peak flow rate (approximately a 25% reduction in the daily flow rate) from the property.

The new proposed addition water service will be provided by a connection to the existing internal water line serving the existing building. This line was sized to adequately accommodate the water line for the addition. Therefore, no new water line connection is required to the Waverly Avenue water line. Since overall water usage is decreased in the proposed condition, no storage or 'looping' of the system are required.

All fixtures installed within the proposed building addition will meet the New York State requirements for water conservation.

(b.) <u>Sanitary Sewage:</u>

Based upon the New York State Department of Environmental Conservation's Design Standards for Intermediate Sized Wastewater Treatment Systems (March 5, 2014), the Expected Hydraulic Daily Loading is 15 gallons per person per day per shift ("factory"). It is anticipated that there will be 2-shifts of 5-employee each at the facility; therefore, The Total Daily Hydraulic Loading is 150 gallons per day, less than the existing condition. Hence, the Proposed Action will not result in any impact on the sanitary sewer line in Waverly Avenue nor on the Mamaroneck Wastewater Treatment Plant. The proposed improvements result in approximately a 45% reduction in sewer flows from the Site.

The wasteline from the proposed fixtures will connect to the existing sanitary sewer service utilizing the internal plumbing system. This line was sized to adequately accommodate the sanitary line for the addition. Therefore, no new sanitary line connection is required to the Waverly Avenue water line.

(c.) <u>Use and Conservation of Energy:</u>

The proposed building addition will require energy to operate the building, provide lights, security systems HVAC equipment, etc. As noted below, the building addition is being designed as an all-electric, net-zero building.

(d.) **Solid Waste:**

It is anticipated that with the removal of the existing 7 contractor tenants on the Site, the amount of solid waste generated will be reduced. No adverse impacts are anticipated.

4.) MITIGATION MEASURES

The Proposed action will result in a decrease in water demand, sanitary wastewater and solid waste generation. This is due to the elimination of the existing on-Site buildings and the foresight incorporated into the design of the existing self-storage building. No mitigation measures are necessary.

The Proposed Action will incorporate the same energy-efficient measures as the existing building. It is the goal of the Applicant to operate a net-zero facility. Additionally, the Applicant is proposing a Community Solar System, pursuant to NYSERDA's Community Solar Program, consisting of the installation of roof-mounted photovoltaic solar arrays. The Applicant will partner with a NYSERDA approved Community Solar Developer to oversee the engineering, permitting, installation and operation of the Community Solar System. The Community Solar System program is designed to provide clean energy to local residents. The Applicant will install roof mounted photovoltaic solar arrays as follows:

- Existing self-storage building – 121.5 kW dc (810 m^2);
- Proposed self-storage building – 149.2 kW dc (995 m^2);
- Existing Murphy Brothers office – 11.6 kW dc (78 m^2).

These solar arrays are connected to the existing ConEd electrical grid via a separate service connection on the Site adjacent to the existing electric meter. Electricity produced from the solar panels is sent directly into the ConEd grid. The Applicant then offers subscriptions to Mamaroneck residents for a portion of that electricity, resulting in reductions in their ConEd bills. This system democratizes solar, and affords everyone access to clean energy, even those who cannot install a solar system on their own property.

As an all-electric, "net zero" building, the building will effectively have *no* carbon footprint. This is perhaps the most definitive measure the Applicant can take to minimize the overall impact on climate change, including sea level rise and flooding.

Chapter IV. H

Traffic &Transportation

IV. H - TRAFFIC AND TRANSPORTATION

INTRODUCTION

This section of the DEIS assesses the Proposed Actions impact of traffic, roadway operating conditions and parking conditions. The full Traffic and Parking Study, prepared by Provident Design Engineering, PLLC (PDE) is included in the Appendix.

1.) EXISTING CONDITIONS

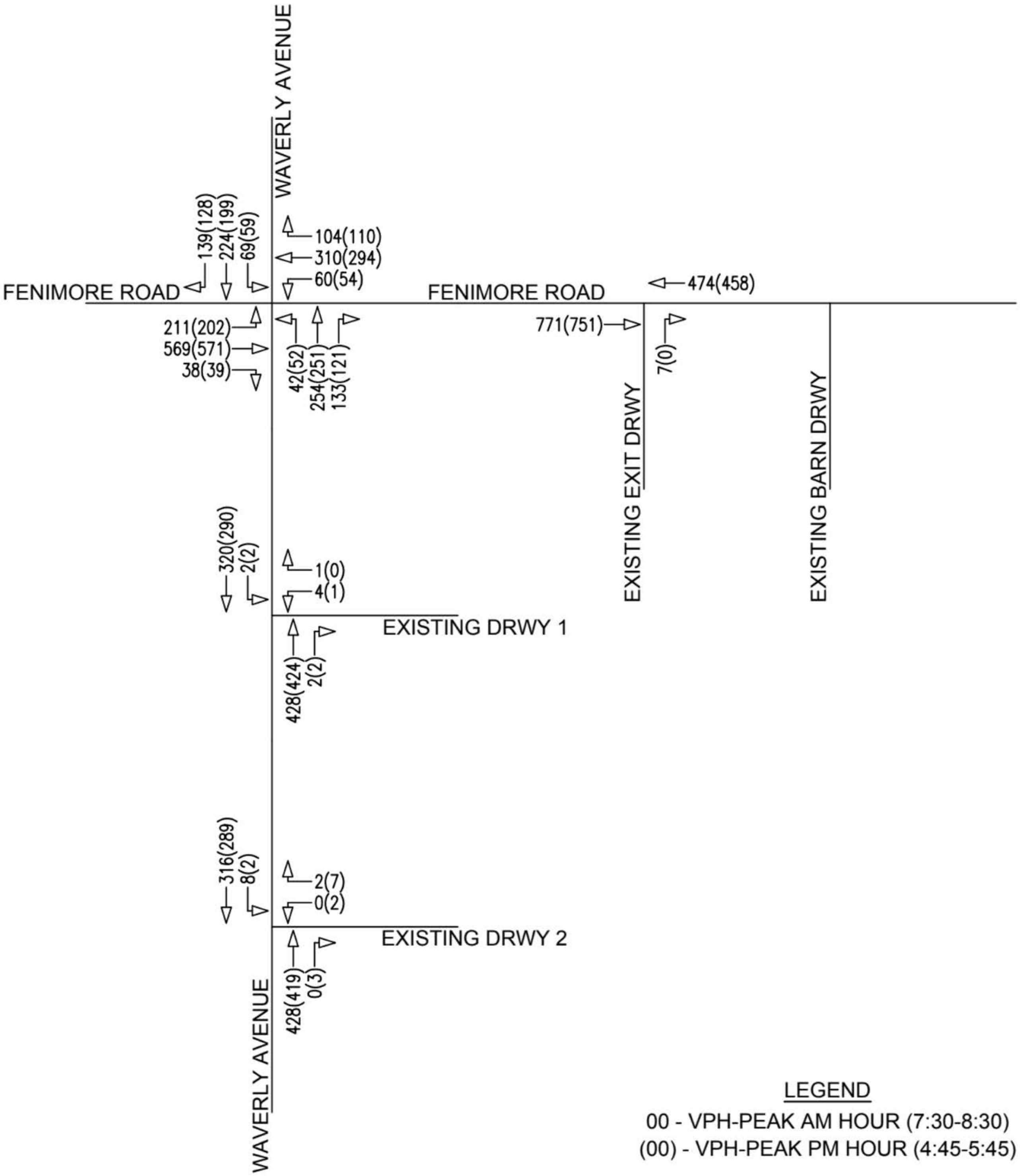
A. TRAFFIC & PARKING:

(a.) Existing Vehicle Circulation:

The Project Site was historically served by various curb cuts and driveways along both Waverly Avenue and Fenimore Road. This access was "cleaned up" with the construction of the original self-storage Building, which also improved safety along Waverly Avenue, as vehicles were previously backing-out of the Site directly onto Waverly Avenue. Along Waverly Avenue currently, the access to the northern portion of the Site is an unsignalized entrance/exit (with only right turns out permitted). A second curb cut along Waverly Avenue is located at the southern end of the Site and serves the self-storage Building and other contractor/worker parking, but does not provide a vehicular connection to the rest of the Project Site.

Along Fenimore Road, there is an existing curb cut between the barn and the front building that was converted to a right turn exiting movement only as part of the original self-storage project. An additional curb cut provides limited access to the barn area. Vehicles sometimes back out of this driveway onto Fenimore Road.

The intersection of Waverly Avenue and Fenimore Road is controlled by a multi-phase traffic signal. PDE conducted traffic counts at this intersection as well as at the Site Driveways. The Peak Hours for the intersection are 7:30 AM to 8:30 AM and 4:45 PM to 5:45 PM. The Existing Traffic Volumes are illustrated on Figure IV.H-1.



Source: Provident Design Engineering

Scale: N.T.S.

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Existing Traffic Volumes

N E W S

Figure IV.H -1

Table IV.H-1 summarizes the existing Levels of Services for the intersection and the Site Driveways.

Table IV.H-1
EXISTING LEVELS OF SERVICE

Intersection	AM Peak	PM Peak
Fenimore Road & Waverly Avenue	C	C
	22.7	21.5
Fenimore Road & Existing Exit Driveway	C	a
	15.0	0.0
Waverly Avenue & Existing Driveway 1 (Contractor Offices)	b	c
	14.7	15.0
Waverly Avenue & Existing Driveway 2 (Self-Storage)	b	b
	11.1	12.0

Source: Provident Design Engineering

Note: Signalized intersection Levels of Service are represented by Upper Case letters while unsignalized intersections are represented by lower case letters. Average Delay is provided below the Levels of Service and is illustrated in seconds per vehicle.

(b.)Truck Loading & Unloading:

Currently, truck loading for the existing self-storage facility occurs from the designated off-street parking spaces located in front of the building. These trucks are typically smaller vans. Truck loading for the various contractor and other uses on the Site occurs haphazardly, in various locations.

(c.)Existing Site Parking Conditions:

The current parking spaces on the Project Site are split between two separate lots, as well as on-street parking spaces along Waverly Avenue.

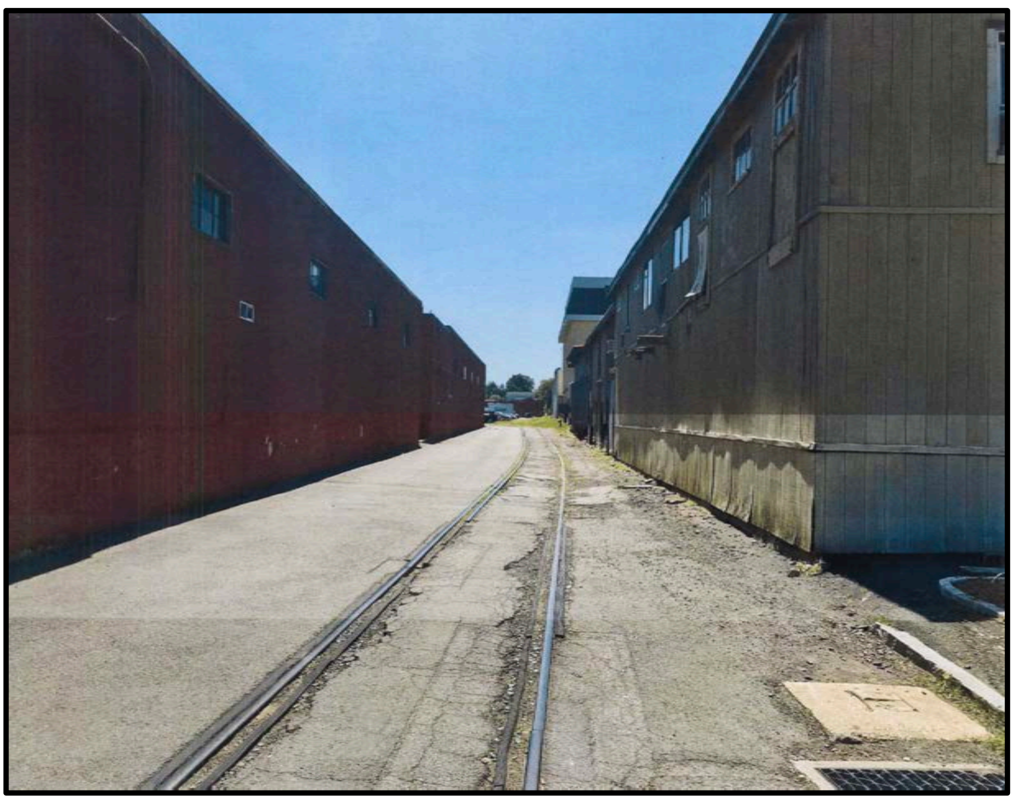
PDE conducted parking observations on various days (both weekdays and weekends) and at various times throughout the day at the Site. There were very few vehicles ever parked for the existing self-storage facility and there were never times that ample, excess parking spaces were not available on the Project Site.

In addition, PDE reviewed data for the entrance and exit into the existing self-storage facility from July 1, 2017 to August 24, 2017. These indicated that the maximum number of parking spaces for the self-storage facility utilized at any one time throughout the entire period was five spaces, which included two parking spaces utilized by employees.

B. RAIL TRANSPORTATION:

The Project Site is located adjacent to a rail spur owned by CSX. CSX is the transportation corporation that acquired the New York Central Railroad, later Conrail system, and serves much of the eastern United States.

The spur provides for occasional rail freight deliveries to neighboring properties, such as Marvel Industries. It is the Applicant's understanding that the tracks are maintained by Marvel Industries and Spatz Properties. No rail freight deliveries are made to the Project Site.



CSX Freight Rail Spur

A required clearance envelope exists around all CSX tracks. For "Industrial Side Tracks", a minimum distance of 8' 8" measured from the center-line of the tracks is required.

The closest building on the Site (the barn) is 8' 7" from the center-line of the tracks.

2.) FUTURE CONDITIONS WITHOUT THE PROPOSED ACTION:

If the Proposed Acton is not developed, the Project Site would continue to operate as it operates today. The existing warehouse buildings would remain in place, accommodating various tenants. Murphy Brothers Contracting would continue to operate their businesses from the Site and the self-storage building would continue to function as it does today. Vehicles will continue to back out of the Site onto Waverly Avenue. The Project would continue to make no use of the CSX freight rail spur, and the existing clearance envelope setback would remain unchanged.

3.) ANTICIPATED IMPACTS:

A. TRAFFIC & PARKING:

(a.) Vehicle Circulation:

PDE has reviewed the amount of traffic that is generated by the proposed self-storage facility utilizing the Institute of Transportation Engineers' (ITE) publication, "Trip Generation", 10th Edition, for this type of facility (ITE Land Use 151). The 321 additional storage units would conservatively generate approximately 3 entering vehicles and 3 exiting vehicles in the Peak AM Hour and approximately 2 entering vehicles and 3 exiting vehicles during the Peak PM Roadway Hour. During the Weekend Peak Hour, the 321 additional storage units would generate similar amounts, 3 entering vehicles and 2 exiting vehicles. This is minimal traffic and in general, the same vehicle that enters is also the vehicle that exits within the hour, as well as the occasional employee potentially entering or exiting. This minimal traffic will have no impact upon traffic operating conditions in the area. It is less traffic than utilized the previous uses of the Site.

The 700 sf of retail space will also generate minimal traffic as the retail will be limited to self-storage supplies. The ITE 10th Edition (Land Use 920) estimates that this space would conservatively generate approximately 2 entering vehicles and 0 exiting vehicles in the Weekday Peak AM Hour and approximately 2 entering vehicles and 3 exiting vehicles during the Peak PM Roadway Hour. In reality, there would be even less traffic than these amounts as the employee for the retail portion will be the same as for the self-storage portion and the customers would be the self-storage patrons. Similar conditions would be experienced during the Weekend Peak Hour. Importantly, the Proposed Acton will eliminate vehicles backing out onto Fenimore Road. Table IV.H-2 presents the additional trip generation.

Table IV.H-2 TRIP GENERATION				
Movement	**Self-Storage**		**Retail**	
	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
Enter	3	2	2	2
Exit	3	3	0	3

Source: Provident Design Engineering

PDE also conducted Level of Service capacity analyses for the intersection of Waverly Avenue and Fenimore Road and the Site Driveways. "Build" conditions were also analyzed and incorporate a background growth rate in addition to the Site modifications including the additional Self Storage units as illustrated on Figure IV.H-3.

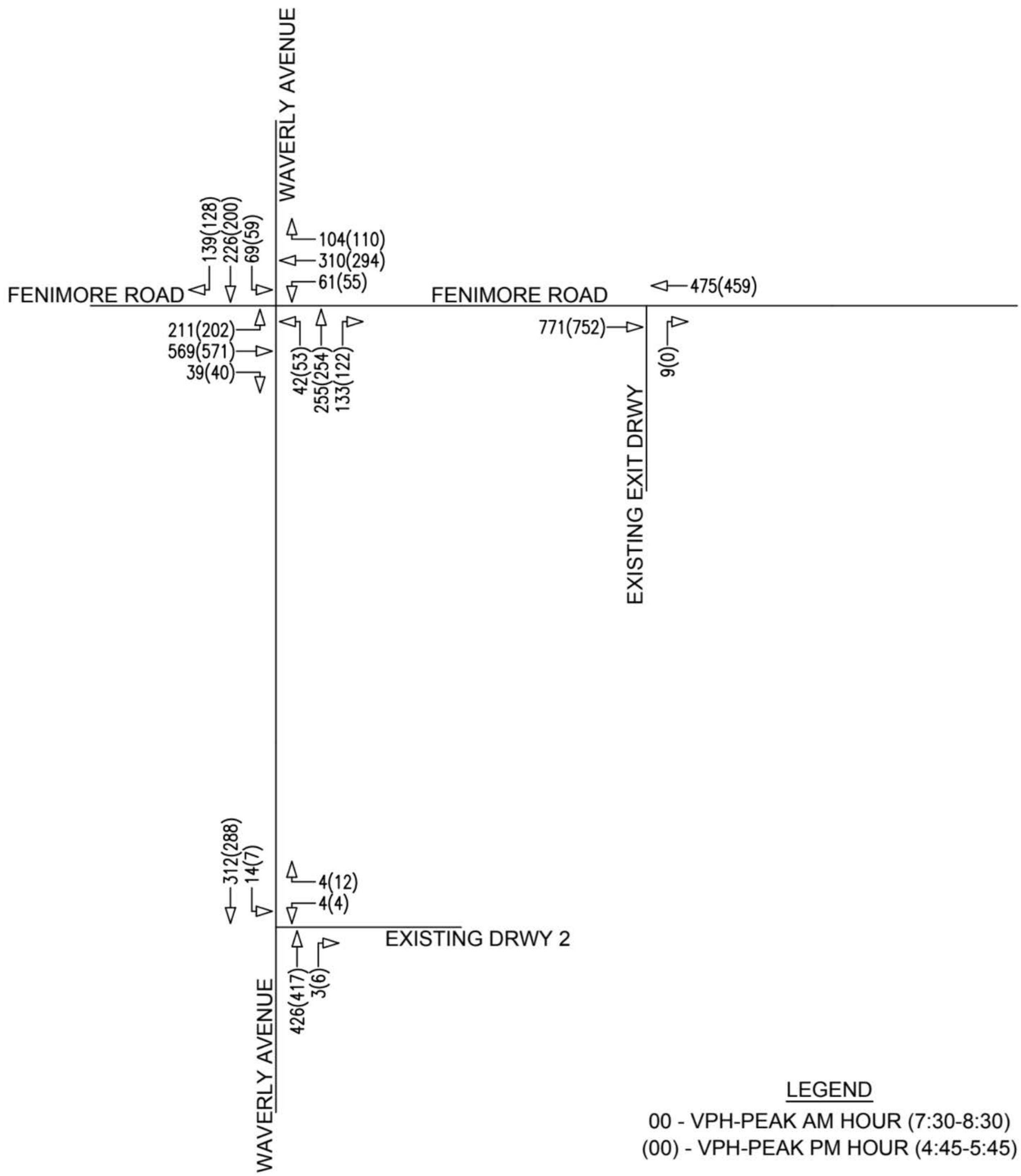
Table IV.H-2 documents the Build Condition, Levels of Service at the intersection and Site driveways.

Table IV.H-3 BUILD CONDITION LEVELS OF SERVICE		
Intersection	**AM Peak**	**PM Peak**
Fenimore Road & Waverly Avenue	C	C
	22.8	21.6
Fenimore Road & Existing Exit Driveway	c	a
	15.1	0.0
Waverly Avenue & Existing Driveway 1 (Contractor Offices)	-	-
	-	-
Waverly Avenue & Existing Driveway 2 (Self-Storage)	b	b
	13.6	12.2

Source: Provident Design Engineering

Note: To be conservative, no credit was taken for the traffic contractors/workers at the Site that will no longer be present during the Build condition.

The analysis shows that the intersection of Fenimore Road and Waverly Avenue currently operates at Level of Service C in the Peak AM and PM Hours and these Levels of Service will remain the same in the Build Condition. The Site Driveways will also continue to operate at Level of Service C or better.



Source: Provident Design Engineering

Scale: N.T.S.

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Build Traffic Volumes

Figure IV.H -2

Thus, good Levels of Service are maintained at each of the intersections/driveways. To be conservative, no credit was taken for the traffic contractors/workers at the Site that will no longer be present during the Build condition, which would remove approximately 19 vehicles. As a result, there will actually be less vehicles on the Site in the Build Condition, than present currently.

The self-storage building extension will not generate significant traffic and will not have any significant impact upon the traffic operating conditions of this intersection or on the Site Driveways and adjacent streets.

(b.) Truck Loading & Unloading:

Currently, there are no designated truck loading spaces on the Site. The proposed reconfigured parking lot plan includes 4 designated truck loading spaces, 2 at the north end of the building addition, 2 in the central area, and 1 toward the southern end, near the existing self-storage building.

(c.) Site Parking Conditions:

A self-storage facility of a total of 590 units, based upon the Institute of Transportation Engineers' (ITE) publication "Parking Generation", 4th Edition, would generate a peak parking demand of 8 spaces.

The 700-sf retail space is estimated to generate a parking demand of approximately two parking spaces but would actually require much less as the retail will be limited to self-storage supplies and be sold to the self-storage patrons. In addition, the employee for the self-storage supplies will be the same as the employee for the self-storage facility.

In addition to the parking for Murphy Brothers Contracting, approximately 19 other contractors/workers currently park at the Site. These 19 vehicles will be removed from the Site to accommodate the new self-storage building addition. As a result, there will be less vehicles parking on the Site.

To determine the parking that was to be required for the original self-storage facility at the Site, the parking requirements at other self-storage facilities in the area was reviewed. Table IV.H-4 illustrates the parking spaces provided for other self-storage facilities in Westchester.

Table IV.H-4 PARKING PROVIDED AT OTHER SELF-STORAGE FACILITIES				
Facility	**Location**	**# Units**	**Parking Spaces Required by Zoning**	**Spaces Constructed (Variances Granted)**
Westy's Self Storage	Port Chester	900	83	22
Safeguard Self Storage	Elmsford	550	68	12
Safeguard Self Storage	New Rochelle	653	48	14
Westy's Self Storage	Tuckahoe	1,500	N/A	24
Black Mountain	New Rochelle	1,182	N/A	12
Mamaroneck Self Storage	*Mamaroneck*	*590*	*137*	*12*

Source: Provident Design Engineering

Table IV.H-5 provides a comparison of parking spaces per unit as well as the number of units per parking space for other self-storage facilities in the area.

Table IV.H-5 PARKING RATIOS FOR OTHER SELF-STORAGE FACILITIES				
Facility	**Location**	**# Units**	**Parking Spaces per Unit**	**Units per Parking Space**
Westy's Self Storage	Port Chester	900	0.0244	41
Safeguard Self Storage	Elmsford	550	0.0218	46
Safeguard Self Storage	New Rochelle	653	0.0214	47
Westy's Self Storage	Tuckahoe	1,500	0.0160	63
Black Mountain	New Rochelle	1,182	0.0101	99
Mamaroneck Self Storage	*Mamaroneck*	*590*	*0.0424*	*24*

Source: Provident Design Engineering

As illustrated in the above Tables, some of these other facilities in the area have significantly more storage units yet provide a similar number of parking spaces as proposed for the Mamaroneck Self Storage facility expansion. Observations of the parking in these lots indicate minimal vehicles are parked there.

The Mamaroneck Self Storage facility currently has 1-2 employees on-site at any one time. With additional units, this could increase to a maximum of 3 employees on-site at times. A self-storage facility of a total of 590 units, based upon the Institute of Transportation Engineers' (ITE) publication "Parking Generation", 4th Edition, would generate a peak parking demand of 8 spaces.

The 700-sf retail space is estimated to require approximately two parking spaces based upon the potential use of Site. The Murphy Brothers Contracting portion of the Site will have four full time employees and two Project Managers on-site which are projected to utilize six parking spaces. Murphy Brothers Contracting will generally not generate any visits from the general public or contractors. The other nineteen contractors/workers that currently park on the Site will no longer be parking there as that usage will be replaced by the expansion of the self-storage facility and thus the overall parking demand will be reduced.

With the proposed self-storage facility addition and the modifications to the layout of the Site, there will be 25 parking spaces provided on-site along with four (4) loading spaces, in addition to the on-street parking spaces along Waverly Avenue. The four loading spaces will be utilized by the patrons of the self-storage facility, thus freeing up even more parking spaces.

It is the Applicant's opinion that the parking to be provided will be sufficient to support the operation of the Site. No significant adverse parking impacts are anticipated.

B. RAIL TRANSPORTATION:

The Proposed Action involves demolishing the existing buildings bordering the CSX rail spur, and the construction of the new self-storage building extension.

The demolition of the existing buildings will eliminate the pre-existing non-conforming clearance envelope setback (8' 7" exists where 8' 8" is required). The proposed eastern wall of the new building abutting the CSX spur will be setback 10' 7", which exceeds the required setback. In correspondence from CSX dated July 9, 2018, the Regional Manager for Site Design indicated that "CSX is OK with that proposal."

4.) MITIGATION MEASURES

The proposed expansion of the self-storage facility will result in very low vehicle trip generation numbers. During the AM peak hour 8 vehicle trips will be generated (or 4 inbound and 4 outbound trips, likely by the same vehicle). During the PM peak hour 10 vehicle trip will be generated (5 inbound and 5 outbound). These same trip generation rates would apply during the weekend peak hour as well. This minimal volume of traffic reflects a reduction in traffic generation below the existing conditon, resulting from the elimination of the contractor and other businesses currently operating out of the buildings on the Site. The volume of traffic generated by the Proposed Action will have no impact upon traffic operating conditions in the area. The development of the Site as proposed to support the self-storage building expansion is, in and of itself, a traffic mitigation measure.

The number of curb cuts will be reduced from four to two under the Proposed Action. The curb cut along Waverly Avenue currently serving the northern portion of the Site will be closed. The curb cut that currently serves the southern portion of the Site along Waverly Avenue will remain.

The curb cut along Fenimore Road between the barn and the front building will remain an exit only driveway (right turns only). The curb cut that serves the barn will be removed.

All of the driveways will remain unsignalized under STOP control.

In addition to the modifications to the driveways, the internal circulation of the Site will also be improved. Elimination of some of the buildings will improve traffic flow.

In addition, as illustrated on the Site Plan, circulation will become more organized and striped islands will be provided to provide clearer direction. Site signage will also be upgraded to improve traffic control. The northern portion will now be connected with the southern portion of the Site. These improvements will significantly improve traffic flow throughout the Site as well as improve circulation to and from Waverly Avenue and Fenimore Road by reducing the number of curb cuts.

To ensure no impacts to the CSX rail spur will result from the Proposed Action, CSX has requested that the Applicant:

- Ensure that no impediments are placed in the required clearance envelope when CSX crews are operating on the tracks.

- Contact the CSX Trainmaster prior to construction to alert crews of construction activities.

Additionally, to ensure that the construction of the self-storage building addition and its foundation do not impact the rail spur, the following mitigation measures will be implemented:

- The Applicant will hire an engineering consultant prior to construction to verify exact parameters of all excavation and concrete work along the CSX tracks to preserve the current integrity of the tracks.

- CSX, MARVAL Industries and Spatz Properties will be notified prior to any construction activity in or about Railroad Way and the intersection of Fenimore Road and Railroad Way to make sure CSX, MARVAL Industries and Spatz Properties are aware of any construction activities.

- During the course of construction, the Applicant will not interfere with the egress and ingress of the tracks utilized by CSX and MARVAL.

- Should any work and/or labor require the partial closing and/or impeded access to Railroad Way from Fenimore Road, MBC will perform the aforementioned work in the evening hours between 6pm and 5am with prior consent and authority granted by the Municipality and in coordination with CSX train schedules.

- The Applicant will indemnify the Village of Mamaroneck, Marval Industries, and the Spatz Properties when performing construction near or about railroad way and within any Village right-of-way.

Chapter IV.1

Economic & Fiscal Analysis

IV. I - ECONOMIC & FISCAL ANALYSIS

INTRODUCTION

This section of the DEIS provides an economic and fiscal analysis of the Proposed Action. Portions of the material presented in this section of the DEIS has been excerpted from a feasibility report prepared by Chiswell & Associates, LLC, included in full in the Appendix.

1.) EXISTING CONDITIONS

(a.) Existing Tax Generation:

The Project Site currently generates $79,865.72 annually in real estate taxes. Table IV. I-1 provides a breakdown of existing tax generation per taxing jurisdiction.

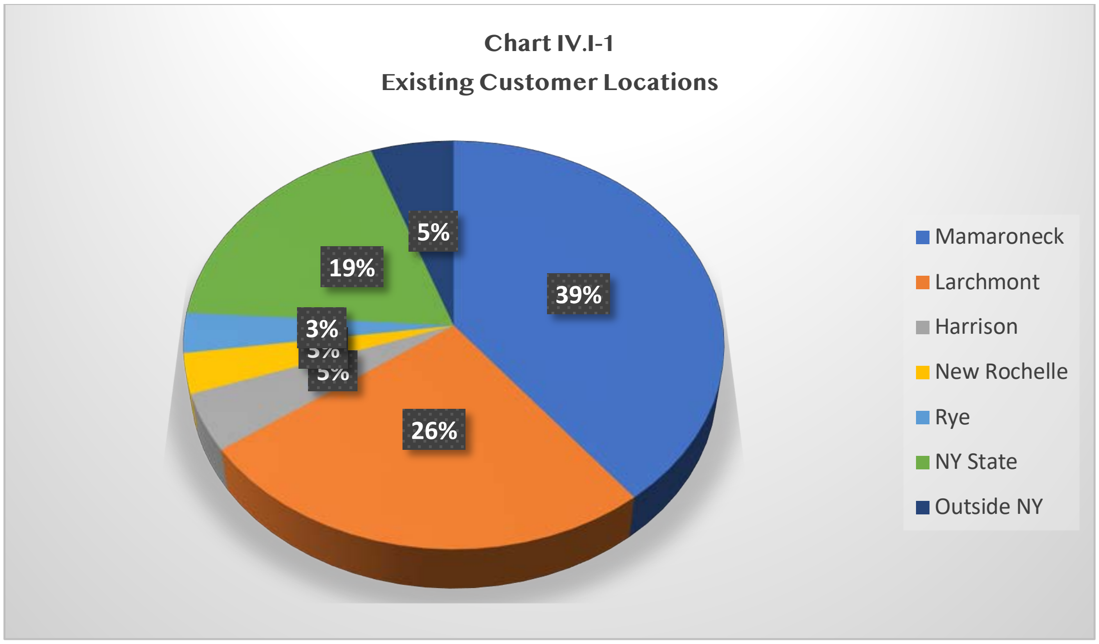
Table IV.I-1
Existing Tax Generation (2019)

Taxing Jurisdiction	Assessed Value (AV)	Tax Rate per $1,000/AV	Taxes
Westchester County	$3,215,000	3.17600100	$10,210.84
Town of Mamaroneck	$3,215,000	0.47296900	$1,520.60
Village of Mamaroneck	$3,215,000	6.76380000	$21,745.98
Ambulance District	$3,215,000	0.06991800	$224.79
Refuse District	$3,215,000	0.26811300	$861.98
Mamaroneck Sewer	$3,215,000	0.56396300	$1,813.14
Mamaroneck School District	$3,215,000	13.52671400	$43,488.39
		Total	***$79,865.72***

(b.) Economic Feasibility Analysis:

i. Customer Analysis:

To determine the "marketing reach" of the proposed self-storage facility expansion, the zip code of the 221 existing customers at the Mamaroneck Self Storage facility were identified. A total of 76.02% of all current customers come from five nearby zip codes, including Mamaroneck (10543), Larchmont (10538), Harrison (10528), Rye (10580) and New Rochelle (10804). 18.55% of existing customers come from elsewhere in New York State outside of the 5 closest zip codes, and 5.43% of existing customers come from outside New York State (Chart IV.I-1).



Source: Chiswell & Associates

An average of 10% of households in the United States use self-storage facilities. These customers are on average using storage at a rate of 1.3 units per household, with an average unit size of 120 square feet. In urban settings the average unit size is closer to 100 square feet. The national customer ratio is 80% residential and 20% commercial. In urban settings this ratio of 90%/10%.

Another method to assess market demand is by applying an industry standard 7.0 square feet per person.

Chiswell & Associates has calculated the market demand for self-storage facilities using both the total household (Table IV.I-2) and population (Table IV.I-3) methods.

Table IV.I-2 Self-Storage Facility Demand Potential - Households	
Total Households in 5 Zip Codes	46,034
% of Users	10%
Total Users	4,603
Units Per User	1.3
Total Units Used	5,984
Square Feet of Unit	100
Total Residential Sq. Ft. (90%)	598,442
Total Commercial Sq. Ft. (10%)	66,494
Total Square Footage Demand Potential	***664,936***

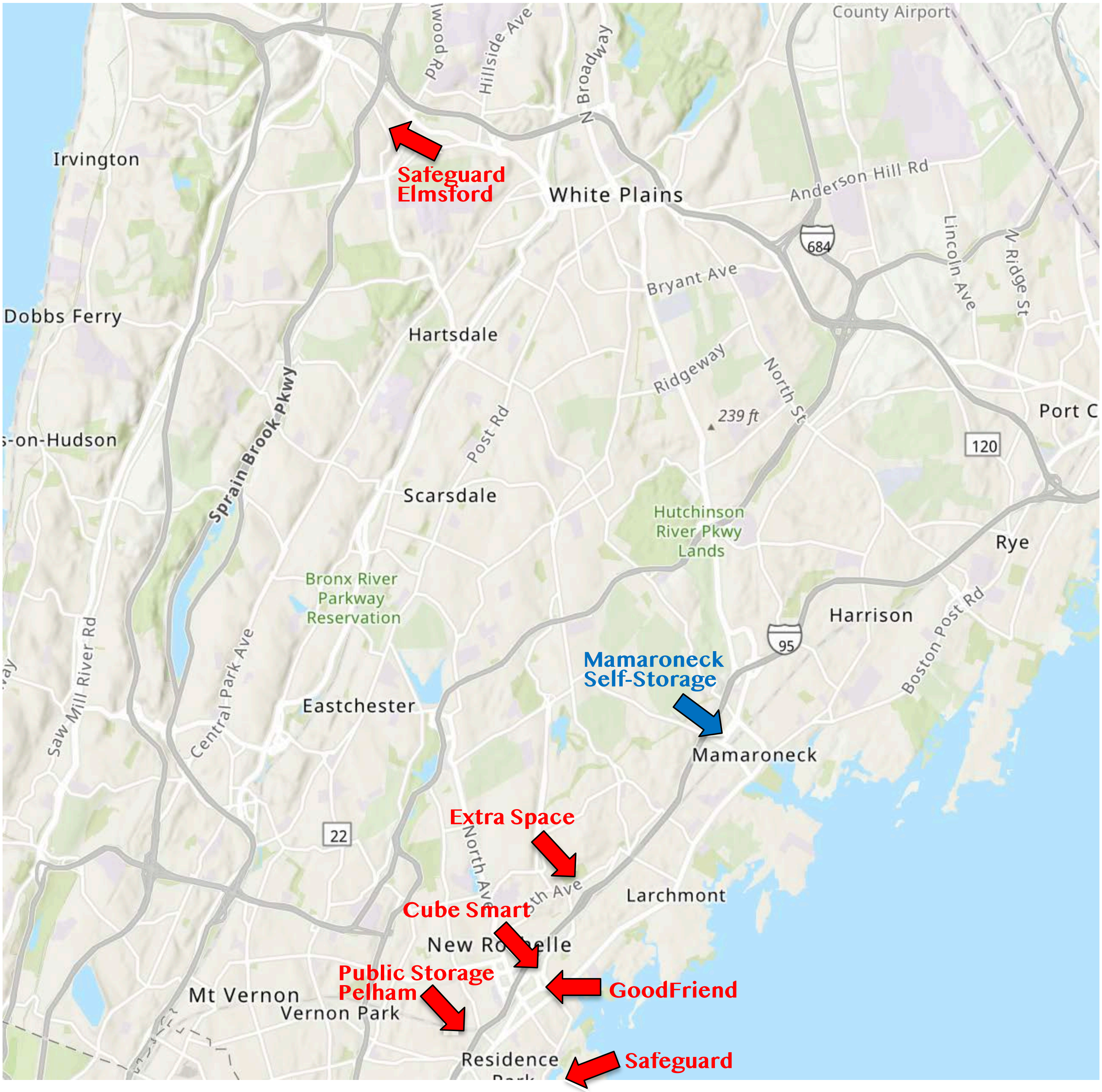
Source: Chiswell & Associates

Table IV.I-3 Self-Storage Facility Demand Potential - Population	
Population in 5 Zip Codes	125,723
Square feet Per Capita	7
Total Square Footage Demand Potential	***880,061***

Source: Chiswell & Associates

The demand potential for the Proposed Action is apparent when considering that there are currently no competing self-storage facilities located with the 5 zip codes. Deducting the approximately 70,000 square feet of existing and proposed storage space at the Mamaroneck Self-Storage facility, a residential demand for over 500,000 square feet of self-storage space exists.

The households located in the 5 zip codes are affluent. Table IV.I-4 documents population and household incomes.



Source: Westchester County GIS Service Center

Scale: N.T.S.	**Existing Self-Storage Facility Locations**	N W E S	Figure IV.I -1
CLEARY CONSULTING			

Table IV.I-4
5 Zip Code Population and Income

	Mamaroneck	Larchmont	Harrison	Rye	New Rochelle	Total
Households	8,171	6,430	4,366	11,073	15,994	46,034
Population	21,111	17,208	12,305	30,558	44,541	125,723
Average Household Income	$148,847	$222,394	$169,335	$206,160	$214,047	$192,157

Source: Chiswell & Associates

The average household income across the 5 zip codes of $192,157 demonstrates that the residents in these communities have adequate income to accommodate a monthly storage expense.

ii. <u>Competition Evaluation</u>:

Across the United States, the self-storage industry has evolved over the past 40 years from a niche real estate market, to a fully recognized asset class within the broader real estate market place. Total industry revenues in 2017 reached $32 billion.

The Mamaroneck Self Storage facility is the only use of its kind from the north end of New Rochelle to the south end of Port Chester, and from Tuckahoe to the Long Island Sound, encompassing the 5 zip codes noted above (Figure IV.I-1).

Prevailing zoning use restrictions coupled with extremely high barriers to entry are significant deterrents to potential competitors.

2.) FUTURE CONDITIONS WITHOUT THE PROPOSED ACTION:

If the Proposed Acton is not developed, the Project Site would continue to operate as it operates today. The market demand for self-storage space as documented above, would continue to go unmet.

3.) ANTICIPATED IMPACTS:

(a.) Projected Taxes:

Upon completion of the Proposed Action, the Town of Mamaroneck Tax Assessor has projected that the Project Site will generate $81,604.61 in property taxes annually[1]. As the Proposed Action results in extremely low demands on municipal services, this tax revenue – particularly the taxes accruing to the Mamaroneck School District, represents a significant benefit.

(b.) Employment:

As suggested by their name, self-storage uses do not require a large number of employees to operate the facility. Upon completion of the Proposed Action, the Mamaroneck Self-Storage facility will employ 4 full-time employees.

(c.) Business Displacement:

Currently, there are 7 rentable spaces on the Project Site. Two spaces are currently vacant and the remaining five house two electrical contractors, one window/floral display company, one real estate office and one custom glass contractor. These 5 businesses would be displaced as the existing buildings that house them would be demolished to accommodate the self-storage building expansion.

All 5 of these tenants operate businesses that are permitted in the M-1 – Manufacturing zoning district, and are characteristic of the uses in the Industrial Area. It is anticipated that all 5 businesses would find suitable sites to relocate to in the immediate vicinity of the Project Site.

(d.) Neighborhood Impacts:

The Proposed Action will impact the character of the neighborhood. It is the Applicant's opinion that this impact however, will be a positive one, as the existing older buildings on the Site that are operated haphazardly, would be replaced by a modern, well-designed, architecturally appropriate self-storage building addition. The building addition will be taller than the buildings on surrounding

[1] Correspondence from Town of Mamaroneck Assessor, December 19, 2019.

properties, but no taller than the existing self-storage building. As the neighborhood supports various industrial and warehouse uses, the development of the Proposed Action would have no bearing on the continued operation of these surrounding uses. The Proposed Action will not generate traffic, congestion, noise, pollution or any other impact that could affect the operation of adjacent businesses.

4.) MITIGATION MEASURES

As the Proposed Action will not result in any significant adverse impacts on economic and fiscal resources, no mitigation measures are required.

Chapter IV. J

Building Demolition & Construction

IV. J. - BUILDING DEMOLITION & CONSTRUCTION

INTRODUCTION

This section of the DEIS addresses the potential impacts associated with the demolition of the existing buildings on the Site, and the construction of the self-storage building addition.

1.) ANTICIPATED IMPACTS:

(a.) Construction Phasing Plan:

The construction of the Proposed Action will occur in a single phase consisting of 12 discreet elements. It is the objective of the Applicant to construct the building addition rapidly to minimize the disruption to the existing self-storage facility and Murphy Brothers Contracting which will relocate to the corner building, both of which will remain open and operational during construction. Construction will consist of:

- Installation of erosion control measures;
- Demolition of existing buildings A, C & D;
- Excavate for building foundation;
- Pour foundation and all concrete work;
- Install steel superstructure;
- Complete exterior building finishes;
- Install mechanical, electrical and plumbing equipment;
- Install insulation;
- Complete interior finishes;
- Install hardscape;
- Install landscaping; and
- Install solar equipment

(b.) Building Demolition:

The Proposed Action requires the demolition of the following buildings:

- Building C – 2-story 2,985 square foot concrete block building housing Murphy Brothers Contracting office and warehouse space.

- Building D – 1,734 square foot concrete block building housing auto glass business, and the adjacent lumber storage racks.

- Building A – The "Barn", an 8,322 square foot, 2-story wood frame building housing an electrician, a holiday storage facility and Murphy Brothers storage.

In addition to the buildings, portions of the existing parking lot will also need to be removed.

Existing utility services would be disconnected from each building, and any asbestos, lead paint or PCB's identified within the buildings would be removed from the Site in accordance with all applicable requirements and/or fully abated prior to demolition.

(c.) Construction Activities & Need for Blasting:

It is unlikely that blasting will be required for the Proposed Action. Blasting was not necessary when the existing self-storage building was constructed. As the building addition will not have a basement and will be built on a slab foundation, minimal excavation is anticipated, projected to be less than 400 cubic yards.

The following sequence of construction activities is proposed:

- Disconnect utilities;
- Install erosion control, anti-tracking pad and construction fence protection, establish material staging areas and construction worker parking areas;
- Disassemble buildings A, C and D;
- Excavation for foundation footings;
- Pour footings and foundation walls, concrete slab, elevator and stairwells;
- Install drainage system and backfill;
- Install structural steel;

- Finish exterior-side insulation (rigid board), siding and roofing, windows and doors;
- Install electrical and HVAC roughing and finish;
- Install interior-side insulation (spray foam);
- Install elevators, security system wiring, sprinkler system;
- Install interior finishes, metal walls and roll-up doors, drywall, paint;
- Install lighting fixtures;
- Install plumbing fixtures, toilets and sinks;
- Install miscellaneous door hardware, mirrors, shelving, etc.;
- Install and connect solar photovoltaic system;
- Install hardscape including driveway, parking lot, curbing and sidewalks; and
- Install landscaping including shrubbery, trees and miscellaneous plantings.

(d.) Short-Term Construction Impacts:

Both the existing self-storage facility, and the Murphy Brothers Contracting business operations will remain open during the construction of the building addition. As a result, construction activities will be staged to allow for required parking to remain operational on-site.

(i.) Noise:

Local daytime ambient noise levels would increase both on and off-Site during demolition activities, foundation preparation, installation of infrastructure and the construction of the self-storage building addition. Construction activities and the operation of construction equipment are an anticipated and necessary short-term consequence of any development of the Site, and cannot be avoided. As a result, construction related short-term noise impacts are expected.

Noise impacts resulting from construction related activities are an intermittent, short-term, temporary impact, dependent upon the construction activity and the proximity of that activity to local receptors, which would cease upon completion of the construction phase of the Project. Table IV.J-1 presents representative noise levels for construction equipment and activities at a range of receptor distances.

Table IV.J-1 Construction Noise Levels (dBA)				
Equipment/Activity	50 Feet	200 Feet	500 Feet	1,000 feet
Backhoe	82-84	70-72	62-64	56-58
Blasting	88-120	76-108	68-100	62-94
Concrete Pump	74-84	62-72	54-64	48-58
Generator	71-87	59-75	51-67	45-61
Hailer	83-86	71-74	63-66	57-60
Loader	86-90	74-78	66-70	60-64
Rock Drill	83-99	71-87	63-79	57-73
Trucks	81-87	69-75	61-67	55-61

Source: US Department of Transportation, Federal Highway Administration

(ii.) Air Quality:

Construction related impacts to air quality would vary based on the proximity of the construction activities to adjacent properties and the type and amount of construction equipment used for each project phase.

Construction related air emissions would result from the use of diesel fuel for construction vehicles and equipment. While well maintained diesel engines are more efficient than gasoline engines, pollution from these engines produce exhaust from the combustion process resulting in the release of hydrocarbons, carbon monoxide, nitrogen oxides and particulate matter.

General construction activities on the Site would have a potential impact on the local air quality through the generation of fugitive or airborne dust. Fugitive dust is generated during demolition, ground clearing and excavation activities. Throughout the construction period, the passage of delivery trucks and other vehicles over exposed soil surfaces also generates fugitive dust.

(iii.) Erosion:

Sedimentation resulting from erosion of disturbed soils during construction is a potential impact. The Proposed Action has the potential to increase the volume and velocity of stormwater runoff resulting from land clearing and the conversion of existing impervious surfaces. If not properly controlled, these activities could lead to accelerated erosion and sedimentation during construction. Sedimentation of receiving waterbodies could result in increased turbidity, nutrient enrichment and increased transport of pollutants.

(iv.) Construction Traffic:

The development of the Proposed Action will result in temporary construction truck traffic. Construction traffic would be generated initially during the demolition of the existing buildings, construction of the building foundation, site infrastructure and the building itself.

Truck deliveries will occur periodically throughout the course of construction as materials are brought to the Site including concrete, steel, framing materials and related building materials.

The number of truck trips generated per day during construction would vary depending on the phase and pace of construction, weather conditions and seasonal variations. Types of construction vehicles that will routinely come to the Site include dump trucks, delivery vehicles, pick-up trucks, concrete trucks, backhoes and construction worker vehicles. Bulldozers, skid steers, track excavators, front end loaders, graders and pneumatic rock breakers will be delivered to the Site on flatbeds. Much of this equipment will be brought to the Site and remain there until it is no longer required, and will not make daily trips to and from the Site. Depending on the phase of construction, between 10-20 construction workers would be present on the Site at any one time.

(e.) Impacts to Sensitive Receptors:

The Project Site is located in the geographic center of the Village's Industrial Area. While several residential uses are located on the west side of Waverly Avenue in the vicinity of the Site, they are entirely surrounded by industrial type uses, and are not considered to be sensitive receptors. No schools, hospitals, daycare facilities, senior housing or convalescent facilities are located anywhere near the Project Site.

(f.) Site Security Measures:

During construction, the existing self-storage facility, and the Murphy Brothers Contracting business will remain operational. The portion of the Site where construction is occurring will be fenced, and when construction is not occurring, a locked gate will prevent unauthorized access. Video surveillance and/or on-site security personnel may be deployed during periods when valuable equipment or supplies are present, or if otherwise found to be necessary. As construction will be limited to the daytime hours prescribed by Village Code, no temporary site lighting will be required in the construction zone.

(g.) Excavation Impacts:

The excavation of the foundation will require the removal of approximately 550 cubic yards of material, of which 330 cubic yards would be reused on Site as fill, leaving 220 cubic yards of material that would need to be removed from the Site. Utilizing haul trucks with a 16 cubic yard capacity, approximately 14 truck trips would be required to remove this excess material, which will be exported in accordance with all applicable regulations to a suitable location(s).

2.) MITIGATION MEASURES

(a.) Construction Management Plan:

A Construction Management Plan will be submitted along with the Building Permit. This plan will provide for the coordination of the workforce, distribution of construction related traffic, staging of equipment and materials and the efficient use of construction crews and equipment. The Construction Management Plan for the Proposed Action will be simplified because the

Applicant will also serve as the general contractor for the Project. The Construction Management Plan will include the following elements:

- Construction Manager – Murphy Brothers Contracting, Chris Murphy, Principal;
- Work Schedule – Monday – Saturday 7 AM – 6 PM (no Sundays or holidays);
- Site prep, demolition and excavation – Murphy Brothers Contracting, in-house;
- Subcontractor coordination for all other trades;
- Construction log book;
- Weekly timeline updates and progress reports;
- Weekly on-site safety meetings;
- Building Department inspections and other inspections as needed.

During the construction period, security fencing would be installed around active work areas before building demolition, excavation or construction activities commence to separate the Project Site from the general public. Additionally, construction traffic will be scheduled to avoid conflicts with daily vehicle circulation patterns on the surrounding roadways.

(b.) Construction Staging Plan:

Construction staging will be carefully addressed in order to maintain the active use of the Site while the building addition is constructed. The Construction Staging Plan will consist of the following elements:

- Dismantled buildings A, C and D to be placed into containers and carted off the Site;
- Excavated soil will be placed in designated stockpile location;
- All construction vehicles to be parked on-Site;
- All construction materials to be delivered as needed and stored on-Site; and
- Construction debris and clean-up to be carted off the premises weekly.

(c.) Demolition Mitigation Measures:

The demolition of buildings A, C and D will be undertaken pursuant to a strict demolition protocol. Initial steps involve disconnecting all utilities (water, gas and electric) as well as sewer. Anti-tracking pads will be installed at the construction entrances. Debris will be wetted down to minimize fugitive dust, and all dumpsters and containers will have covers. The demolition of the buildings along Railroad Way will be accomplished in a manner that ensures the continuation of its use and commence.

(d.) Construction Mitigation Measures:

The emission of particulate matter and other airborne pollutants generated during construction can be minimized through the proper tuning of vehicle engines and maintenance of air pollution controls thereby minimizing their contribution to site generated air pollution during construction.

Minimizing fugitive dust can be accomplished through the following methods:

- Minimizing the extent of exposed soil at any one time.
- Minimizing vehicle movement over areas of exposed soil.
- Covering all haul trucks transporting soil with tarpaulins.
- Spraying water on unpaved areas and areas of construction vehicle traffic to reduce dust generation.

(e.) Noise Reduction:

While construction noise is an unavoidable short-term impact, the following measures will be employed to mitigate noise impacts:

- All construction equipment shall be maintained in good working order.
- All construction equipment shall include appropriate muffler systems.
- Stationary equipment (such as generators) shall be shielded and sound attenuated.
- If comparable equipment is available, the use of quieter equipment shall be specified; electric powered equipment is typically quieter than diesel, and hydraulic powered equipment is quieter than pneumatic power.

(f.) Excavation Plan:

The primary impact associated with excavation is erosion. The Erosion Control Plan prepared for the Proposed Action and the preliminary SWPPP included in the Appendix, document in detail all proposed erosion control measures. Soil exposure is limited for any phase of construction, in accordance with NYSDEC SPDES General Permit (GP-0-15-002) for Stormwater Discharges from Construction Activities. The erosion and sedimentation control measures specified on the Plan have been developed specifically for this Project to provide both temporary controls during construction and permanent controls that will be in place and functioning upon final stabilization of the Site.

In addition to the NYSDEC requirements, all construction activities will meet the requirements of the Village Code, Chapters 120 - Blasting, 172 – Excavations, 254 – Noise and 294 Stormwater Management and Erosion and Sediment Control.

The overall intent of the Erosion Control Plan is to minimize the potential for soil erosion from areas exposed during construction and prevent sediment form entering downgradient watercourses and waterbodies. Prior to the commencement of and construction activities or disturbance of any soils, the erosion and sediment control measures will be installed in accordance with the specifications in the SWPPP. The SWPPP has been developed in accordance with New York State Standards and Specifications for Erosion Control and incorporates applicable elements of the New York State Stormwater Design Manual.

The construction contractor would be responsible for complying with all specifications and conditions of the SWPPP. In addition, the Applicant will engage a Certified Professional in Erosion and Sediment Control/Certified Professional in Stormwater Quality or equally qualified professional to oversee the implementation of the SWPPP.

The objectives of the Erosion Control Plan are:

- Control erosion at its source with temporary control measures.

- Minimize the amount of sediment laden runoff from areas of disturbance, and control runoff prior to discharge to off-site areas.
- De-concentrate and distribute stormwater runoff through natural vegetation or structural measures before discharging to critical zones such as streams or wetlands.

Following construction, erosion would be prevented by re-establishing vegetation, and new landscaping and through the installation of the permanent stormwater management devices and facilities as depicted on the Site Plan.

In the Applicant's opinion, potential impacts resulting from the construction of the Proposed Action are expected to be minimized through the implementing of the construction practices and measures described above, thereby mitigating impacts to the maximum extent practicable.

Chapter V.

Alternatives

IV. E. - HISTORIC RESOURCES

INTRODUCTION

This section of the DEIS evaluates the potential impacts of 5 alternatives to the Proposed Action.

1.) NO ACTION

The "No Action" alternative is required to be addressed pursuant to the adopted Scoping Document and the SEQRA regulations. In this case, the No Action alternative would leave the Site in its current condition.

The Project Site currently supports 5 buildings. The south side of the Site supports the 4-story, 40,620 square foot Mamaroneck Self Storage facility, along with an adjacent 25 space off-street parking area. The north side of the Site supports a group of one and two-story, aging warehouse buildings totaling 15,526 square feet. Building C is a 2-story 2,985 square foot concrete block building located in the center of the site, which houses the Murphy Brothers Contracting office and warehouse space. Along the eastern edge of the central portion of the Site is the remnant of the former lumber yard's storage racks and a 2-story, 1,734 square foot concrete block building (Building D) which houses a custom business. Building A is located in the northeast corner of the site, and is an 8,322 square foot, 2-story wood frame "barn" that two electrical contractors and storage, a window/floral display company and storage and Murphy Brothers Contracting storage. In the northwest corner of the site, adjacent to the Waverly Avenue/Fenimore Road intersection is Building B - a 1 ½ story to 2-story, 2,485 square foot stucco building that contains the Murphy Brothers Storefront and Murphy Brothers Contractors office and warehouse space. The area between these buildings is paved, and provides off-street parking for the various uses. The eastern side of the Site is bounded by a CSX freight rail spur.

The No Build alternative would result in no additional environmental impacts beyond the existing condition (i.e. no additional impervious surfaces, no additional traffic or visual impacts, no increase demand for domestic water or generation of wastewater, etc.)

This alternative does not meet the objectives of the Applicant, nor would it meet the objectives of the Village as articulated in various land use plans, to improve and enhance the Industrial Area.

2.) REDEVELOPMENT OF THE PROJECT SITE WITH A ZONING COMPLIANT STORAGE FACILITY

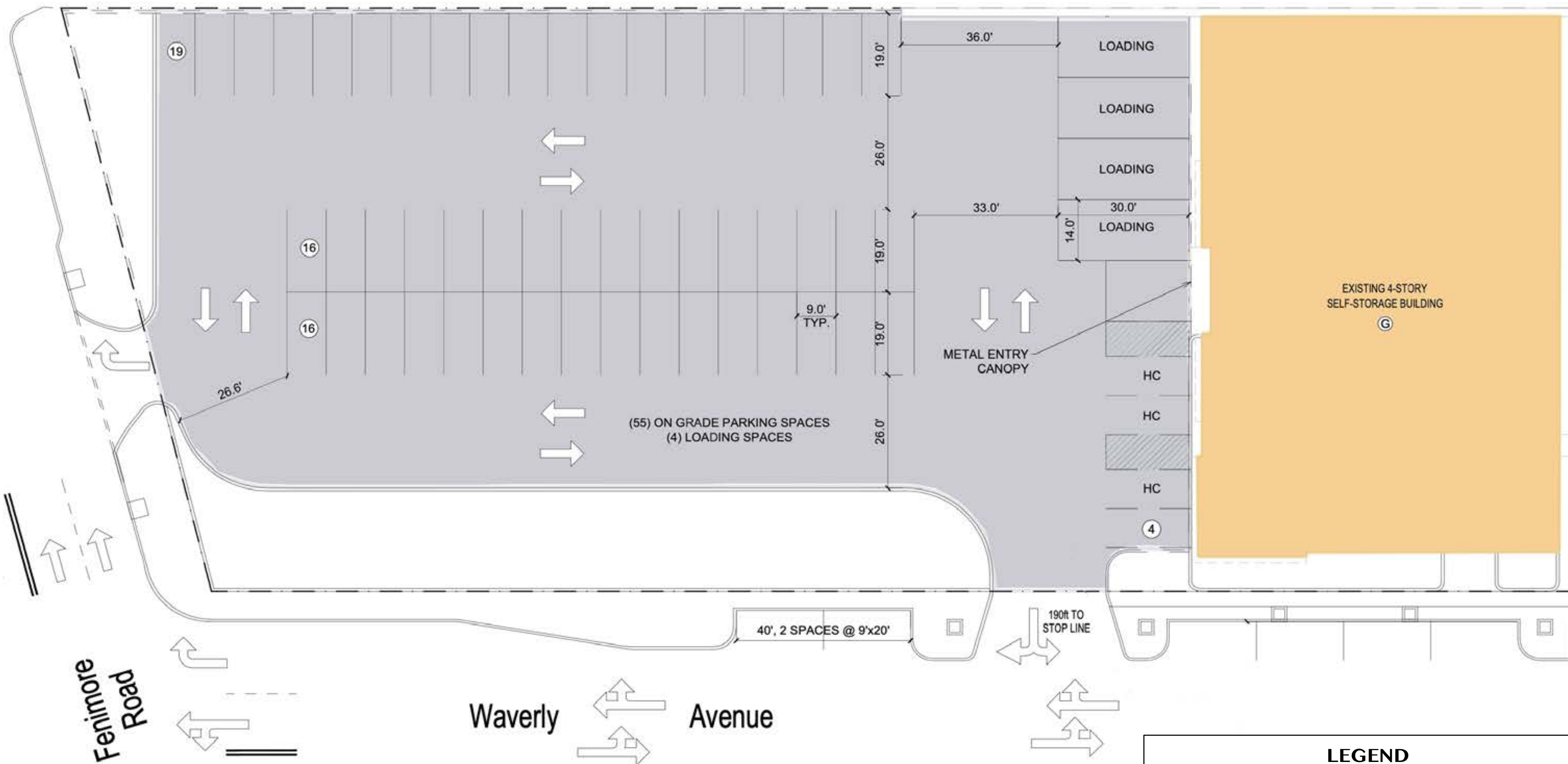
This alternative calls for the development of a fully zoning compliant storage facility (Figure V-1). However, the Site supports existing historically non-complaint structures and the existing self-storage building was approved by the Village pursuant to variances issued by the Zoning Board of Appeals in 2013. Developing an addition to the existing self- storage facility at this point, in a fully zoning compliant manner, is impossible.

In order to bring the existing self-storage building into a realistically feasible degree of compliance, all of the existing buildings on the Site totaling 15,526 square feet, would need to be demolished. By doing so, the F.A.R. for the Site would be reduced to 0.92 which would comply with the maximum permitted F.A.R. of 1.0. Similarly, demolishing the buildings would reduce the maximum gross floor area of the Site to 40,492 square feet, which falls below the maximum permitted of 44,156 square feet. By demolishing all of the existing buildings, that area of the Site could be reclaimed and reused to meet the total parking requirement required by code, or 55 off-street parking spaces.

Under this alternative, the amount of excavation, traffic generation and the demand for water and the generation of wastewater would be proportionally reduced. However, as these number are negligible, no tangible benefit would be realized.

Demolishing the existing buildings would reduce the Site's tax assessment resulting in lower real estate tax revenues for all taxing jurisdictions.

This alternative would allow for existing curb cuts to be eliminated, providing for a single two-way curb cut on Waverly Avenue and a single one-way exiting curb cut on Fenimore Road. This represents an improved traffic circulation pattern.



LEGEND

Existing Self-Storage Buildings

Parking Lot

Source: KTM Architect

Scale: 0 15' 30'

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Alternative B

Zoning Compliant Redevelopment

E S N W

Figure V-1

3.) SMALLER SQUARE FOOTAGE OF PROPOSED ADDITION

Under this alternative (Figure V-2), the square footage of the proposed self-storage building addition would be reduced from 56,328 square feet to 41,304 square feet in gross floor area. This would be accomplished by reducing the length of the addition. Under this alternative, the northern edge of the building addition would be setback off Fenimore Road by 46.3' compared to the setback of 10' in the Proposed Action.

This alternative would maintain the 4 story, 45' building height, but because the building is smaller and would therefore support fewer storage units, the amount of excavation, traffic generation and the demand for water and the generation of wastewater would be proportionally reduced.

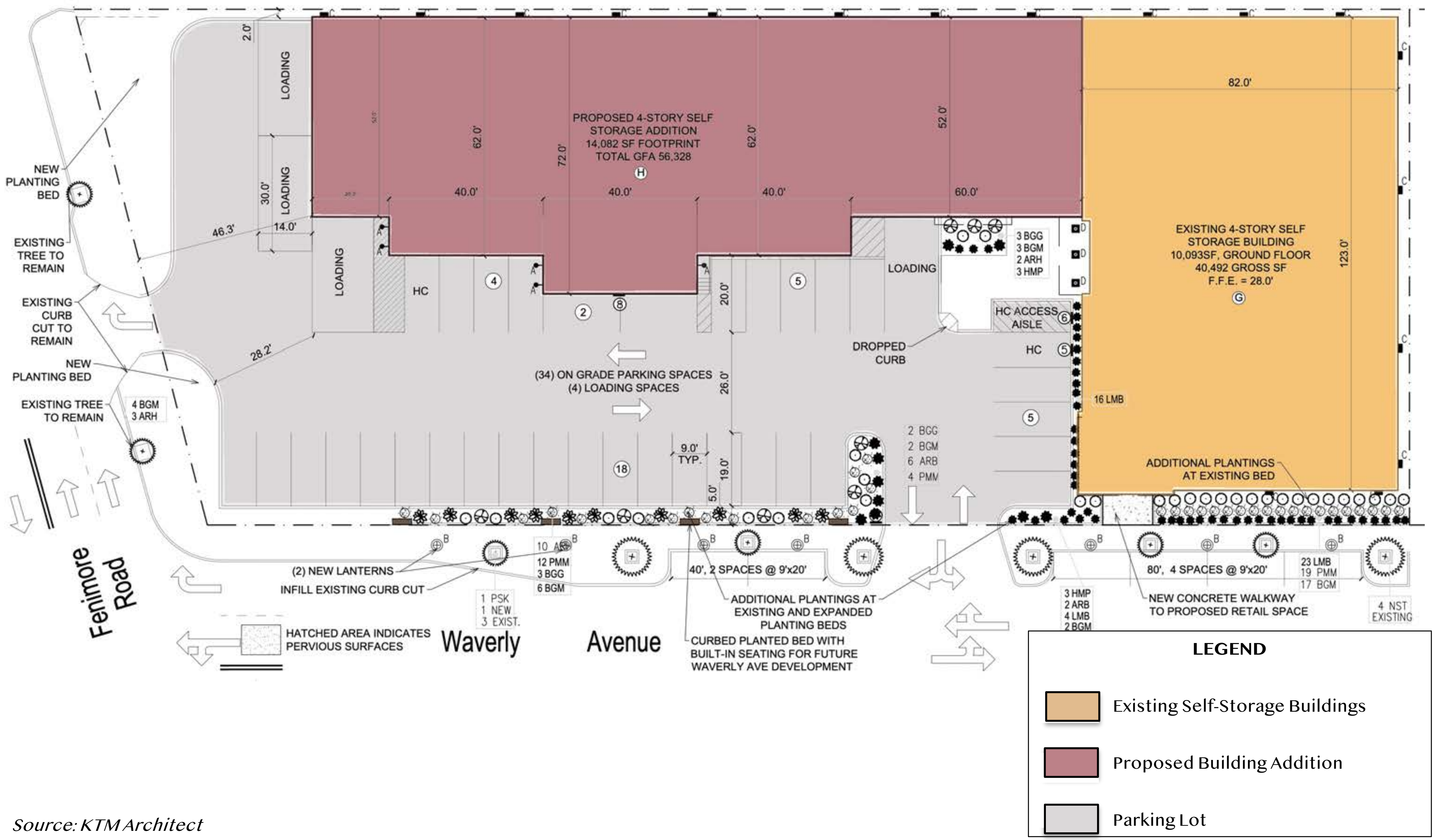
Under this alternative the Murphy Brothers Contracting office building on the corner of Waverly Avenue and Fenimore Road would be removed, and the parking lot reconfigured to accommodate 34 off-street parking spaces and 4 loading spaces. The two driveways would remain the same as in the Proposed Action.

4.) PROPOSED ADDITION WITH ONE LESS FLOOR

Under this alternative (Figure V-3), the self-storage building addition would maintain the same 14,082 square foot footprint as the Proposed Action, but would only extend to a height of 3 stories or 35 feet instead of the 4 stories and 45 feet in the Proposed Action.

This reduction in gross square footage would reduce the number of storage units by 1/3, for a total of 214 units.

Site disturbances and the amount of cut required for this alternative would remain identical to the Proposed Action, however, impacts relating to traffic generation and utility demands would be proportionally decreased.



Source: KTM Architect

Scale: 0 15' 30'

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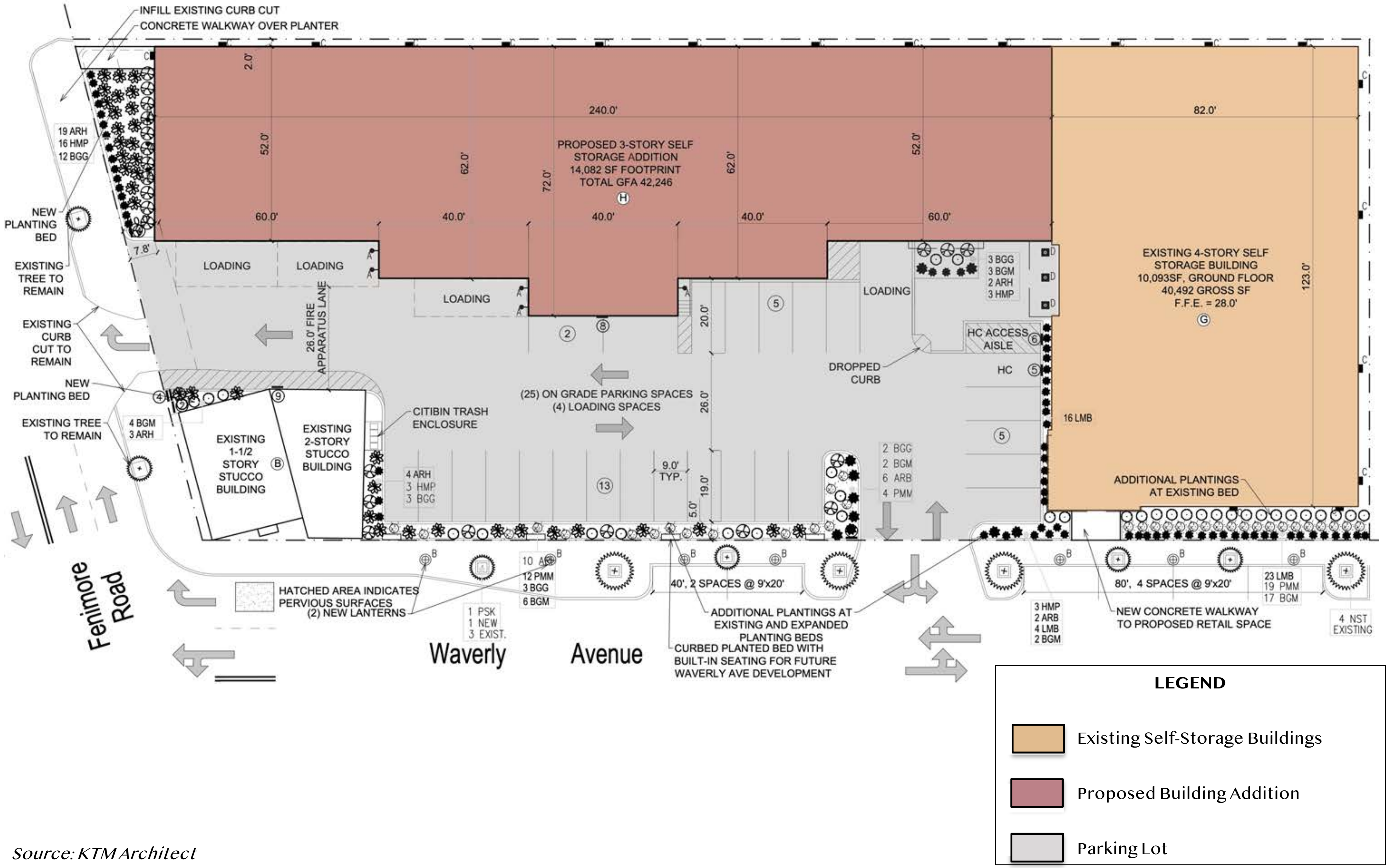
Alternative C 1
Smaller Square Footage of Proposed Addition

Figure V-2



Source: KTM Architect

Scale: 0 15' 30'	**Alternative C 2** **Proposed Addition with One Less Floor**	E S N W	Figure V-3

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5.) ADAPTIVE REUSE OF THE PROJECT SITE BUILDINGS AS STORAGE BUILDINGS

Under this alterative (Figure V-4), the 15,526 square feet contained within the 4 existing Site buildings would be repurposed to support self-storage units.

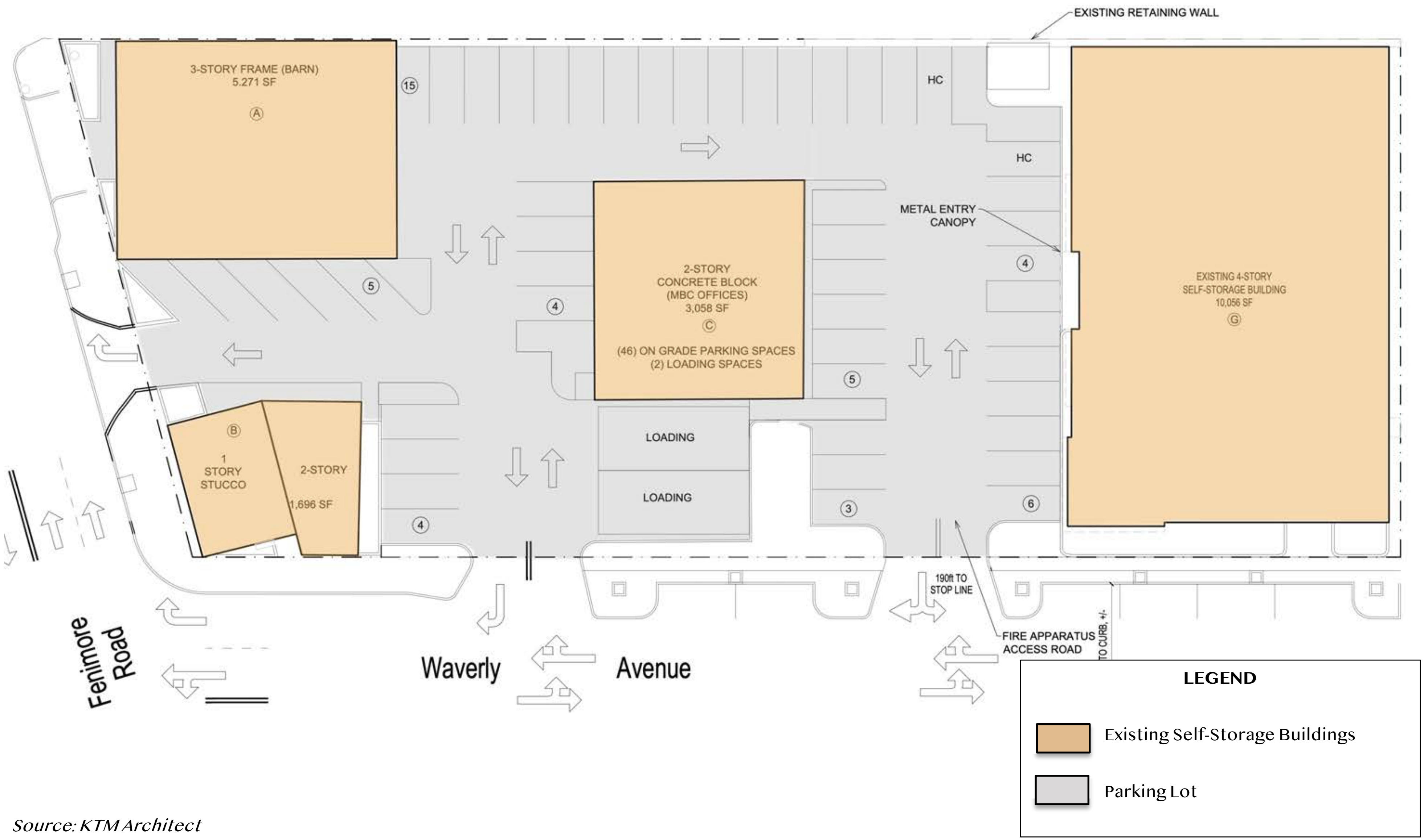
No site disturbances would be incurred in this alternative, and utility demand would remain unchanged, as existing services would remain in place. As no additional square footage is proposed, traffic generation would remain unchanged as well.

This alternative is impractical as the existing buildings are old and wholly structurally unsuited to support modern self-storage units. The cost of the improvements and renovations necessary to convert these structures would be excessive and uneconomical.

Table V. – 1 presents a summary comparison of the various alternatives.

Table V. - 1
Comparison of Alternatives

Project Element	Proposed Action	(Alt. A) No Action (Existing Condition)	(Alt. B) Zoning Compliant Building	(Alt. C-1) Smaller Square Footage	(Alt. C-2) One Less Floor	(Alt. C-3) Re-Use of Existing Buildings
Building Coverage	25,834 sqft 59%	20,891 sqft 45%	22,078 sqft 50%	22,078 sqft 50%	25,834 sqft 59%	20,081 sqft 45%
Gross Floor Area	107,087 sqft	59,081 sqft	40,492 sqft	95,818 sqft	93,005 sqft	59,081 sqft
F.A.R.	2.43	1.34	0.92	2.17	2.11	1.34
Building Height	4 stories 45’	4 stories 45’	4 stories 45’	4 stories 45’	3 stories 36’	4 stories 45’
# Parking Spaces	25	25	55	34	25	52
# Loading Spaces	4	0	4	4	4	0
Peak Hour Traffic	8 AM Trips 10 PM Trips	5 AM Trips 8 PM Trips	4 AM trips 5 PM Trips	7 AM Trips 9 PM Trips	7 AM Trips 9 PM Trips	5 AM Trips 8 PM Trips



Source: KTM Architect

Scale:
0 15' 30'

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Alternative C 3
Re-Use of Existing Buildings

E S N W

Figure
V-4

Net Cut/Fill	400 c.y. Net 220 c.y.	0	0	375 c.y.	400 c.y.	0
Impervious Area	40,383 sqft 91.5%	41,653 sqft 94.3%	40,492 sqft 91.5%	36,627 sqft 82.9%	40,383 sqft 91.5%	41,653 sqft 94.3%
Water Usage	24.9 gpd	27.7 gpd	10.4 gpd	24.4 gpd	23.9 gpd	15.2 gpd
Wastewater Generation	150 gpd	270 gpd	60.7 gpd	143.7 gpd	139.5 gpd	88.6 gpd

Chapter VI.

Significant Adverse Impacts That Cannot Be Avoided

VI. SIGNIFICANT ADVERSE IMPACTS THAT CANNOT BE AVOIDED

INTRODUCTION

The development of the Mamaroneck Self-Storage building addition will inevitably result in certain short term and long term adverse environmental impacts that cannot be avoided. Although these impacts cannot be avoided, many can, to some extent, be mitigated as noted in each of the proceeding chapters, and as such they are not, in the Applicant's opinion, considered to be significant.

Unavoidable adverse impacts that cannot be avoided include the following:

1.) Short Term Impacts:

The primary short-term impacts that would result from the Proposed Action are related to the demolition of the existing buildings and new construction activities. The presence of construction workers on-site and associated material deliveries to and from the Project Site would result in increased traffic generation in and around the project entrance. Demolition and construction activities would result in noise and air quality impacts and potential soil erosion.

Demolition and construction activities would occur only during periods permitted by Village Code. Construction workers and material deliveries typically occur outside of normal peak hour traffic periods and therefore the overall impact on the surrounding roadway network would be minor.

The air and noise quality of the surrounding environment would be impacted by exhaust and dust generated as a result of demolition and construction activities. Construction noise will comply with the Village of Mamaroneck Noise Ordinance (Chapter 254 of the Village Code). Potential dust and soil erosion impacts resulting from building demolition and construction activities would be mitigated by the implementation of the Sediment and Erosion Control Plan and details, included in the SWPPP prepared for this Project, in accordance with the General Permit for Stormwater Discharges associated with Construction Activities.

Waste resulting from the demolition of the existing buildings and new construction activities will be sorted into waste material and recyclable materials. Waste materials will be disposed of at approved landfill locations. Recyclable materials will be brought to approved recycling facilities.

The proposed earthwork activities required for the Project result in approximately 550 cubic yards of excavation, of which 330 cubic yards will be reused as fill, leaving 220 cubic yards of material to be removed from the Site. Utilizing haul trucks with a 16 cubic yard capacity, approximately 14 truck trips would be required to remove this excess material, which will be exported in accordance with all applicable regulations to a suitable location(s).

The development of the Proposed Action will occur in a single phase occurring over a 12-month period. The Proposed Action has been designed to disturb less than 5 acres of land area thereby complying with requirements of the Village as the MS4 and the NYSDEC.

In order to mitigate any potential impacts and prevent sediment from entering existing waterbodies and watercourses a Sediment and Erosion Control Plan has been prepared in accordance with the General Permit and the NYSDEC New York Standards and Specifications for Erosion and Sediment Control, (current version) for the Proposed Action. This plan includes the design of both temporary and permanent sediment and erosion control measures.

2.) Long Term Impacts

Long term impacts associated with the Proposed Action are unavoidable, however, in the Applicant's opinion, they are not significant. Potential long-term impacts include:

- **Land Use** - A portion of the Site that currently supports various warehouse and contractor businesses would be eliminated and replaced by an expanded self-storage facility. A self-storage facility is a permissible and wholly consistent land use in the Village's Industrial Area, as evidenced by the presence of the Mamaroneck Self-Storage facility which already exists and operates at the Site.

- **Zoning** - Then Proposed Action requires the following variances:

- Building Coverage
- Maximum F.A.R.
- Maximum Gross Floor Area
- Building Height
- Front Yard Setback
- Off-Street Parking
- Off-Street Loading

These variances, if granted, would "run with the land," and therefore represent a long-term impact.

- **Natural Resources** - The Proposed Action will disturb approximately half of the 1.01-acre Site. All of this disturbance will occur to already improved areas, including older buildings or paved surfaces.

  No significant natural resources are present on the Site. Approximately 550 cubic yards of excavation is anticipated to allow for the construction of the new building foundation, of which 330 cubic yards will be reused as fill, leaving 220 cubic yards of material to be removed from the Site. Because the Site was previously impacted by spill incidents, soil removal will be performed in accordance with NYSDEC regulations.

- **Hazardous Materials & Public Health** – Two prior spill incidents were successfully remediated and closed by 2004. According to the Phase I Environmental Assessment, the existing buildings on the Site that will be demolished to accommodate the self-storage building addition may contain asbestos, lead or PCB's. If found to be present, these materials will be removed from the Site in accordance with all applicable regulations or properly remediated.

- **Flooding & Flood Zone Impacts** – The Proposed Action will take place entirely within the 100-year floodplain, Zone AE. The existing flood prone buildings will be replaced by the self-storage building addition constructed

2-feet above the base flood elevation and in accordance with Chapter 186 of the Village Code, Flood Damage Protection.

- **Visual Resources** - The existing Mamaroneck Self Storage building has established the perceptual visual character of the Site. The proposed addition is a continuation of this character. The building addition will extend the building across the eastern edge of the Site to Fenimore Road. While the building addition will be taller than the surrounding buildings, there are no significant views, or viewsheds that would be blocked or disturbed by the construction of the building. The Project Site is located in the approximate center of the Industrial Area, which consists of typical one and two-story utilitarian industrial buildings. Compared to the existing industrial buildings, which in most cases, are not architecturally distinctive, attractive, or often well maintained, the existing Mamaroneck Self Storage building is the only new building constructed in the area in years, and is architecturally appropriate and very well maintained. The proposed building extension will eliminate the remaining industrial buildings on the Site, thereby further improving the visual appearance of the Site.

Chapter VII.

Irreversible & Irretrievable Commitment of Resources

VII. IRREVERSIBLE & IRRETRIEVABLE COMMITMENT OF RESOURCES

The development of the Mamaroneck Self-Storage building addition will result in the irreversible and irretrievable commitment of various resources.

Construction of the self-storage building addition, parking lot and landscaped areas will result in a permanent change to the Site from its current conditon.

The Proposed Action would require the commitment and consumption of a variety of resources and materials that once devoted to this development, would be unavailable for future use elsewhere.

Construction materials such as steel, asphalt, lumber, concrete, glass, masonry, paint and surface finishes, topsoil, etc., would be utilized. It should be noted that many of the construction materials utilized for this project may at some time in the future, be recycled or reused. The operation of construction equipment would involve the consumption of fossil fuels. Once completed however, the Proposed Action is anticipated to be an all electric, “net-zero” building, so it will not utilize fossil fuels for generating electricity, lighting and heating. A temporary commitment of workers will be necessary during the build-out construction period. Upon completion of the Project a permanent commitment of labor will be required to operate the expanded self-storage facility.

Chapter VIII.

Growth Inducing Aspects of the Proposed Action

VII. GROWTH INDUCING ASPECTS OF THE PROPOSED ACTION

The development of the Mamaroneck Self-Storage building will not result in any direct growth inducing aspects.

Indirectly, the expanded self-storage facility would support the Village's efforts to encourage transit-oriented residential development projects, such as The Mason, which are geared to young people and empty-nesters. Given the characteristics of these types of developments where on-site storage is limited, or non-existent, the need for self-storage facilities in the area has become more acute.

Chapter IX.

Sources & Bibliography

Sources & Bibliography

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MAMARONECK
SELF-STORAGE
BUILDING ADDITON

Draft Environmental Impact Statement
APPENDIX

Lead Agency:

Village of Mamaroneck – Zoning Board of Appeals

December, 2019

Scoping Document

FINAL SCOPING OUTLINE

East Coast North Properties, LLC – Expansion of Existing Self-Storage Facility
Adopted September 5, 2019

This document identifies the issues to be addressed in a Draft Environmental Impact Statement ("DEIS") for the proposed self-storage facility expansion. Accordingly, this Scoping Document addresses the items identified in paragraphs (e)(1) through (7) of Section 617.8 and paragraphs (b)(1) through (7) of Section 617.9 of the State Environmental Quality Review Act ("SEQRA") regulations.

A. DESCRIPTION OF THE PROPOSED ACTION

The Proposed Action is the expansion of an existing 40,620 square foot self-storage facility with a 56,328 square foot addition in the Village of Mamaroneck, New York. The addition will include 321 additional storage units required to meet local customer demand and incorporate 700 square feet of storage-associated retail space[1] along the Waverly Avenue frontage in the existing self-storage building.

The site of the Proposed Action consists of one tax parcel totaling approximately 1.01 acres, identified on the Village of Mamaroneck Tax Maps as #8-111-29-42, with street addresses of 416 Waverly Avenue and 560 Fenimore Road (the "Project Site").

Existing on-site uses include numerous contractor and construction uses, and the existing self-storage facility. There are five (5) buildings currently located on the Project Site:

- 3-story Barn located near the rear of the property line;
- 2-story stucco building at the corner of Fenimore Road and Waverly Avenue;
- 2-story concrete block structure currently used as the Murphy Brothers Construction ("MBC") office that is located in the center of the Project Site;
- 2 -story building over covered parking located near the rear of the property line, along with an open storage area; and
- 4-story existing self-storage building located along Waverly Avenue.

In addition to the five (5) buildings, open storage areas for construction vehicles and equipment are located on the Project Site. The Proposed Action involves the construction of a new 4-story self-storage building that will be an addition to the existing self-storage building, the removal of the open storage areas and the demolition of:

- 3-story Barn located near the rear of the property line;
- 2-story concrete block structure currently used as the Murphy Brothers Construction ("MBC") office that is located in the center of the Project Site; and
- 2 -story building over covered parking located near the rear of the property line.

The existing self-storage building will remain and the 2-story stucco building at the corner of Fenimore Road and Waverly Avenue will be utilized exclusively by MBC as their office

[1] The proposed retail store will sell packing and moving materials for the self-storage customers.

operations. After construction, only the self-storage and MBC uses will remain active at the Premises.

INVOLVED AGENCIES AND APPROVALS REQUIRED

- Village of Mamaroneck Board of Trustees
- Village of Mamaroneck Zoning Board of Appeals (Multiple Area Variances)
- Village of Mamaroneck Planning Board (Site Plan Approval)
- Village of Mamaroneck Harbor and Coastal Zone Management Commission (LWRP Consistency Determination)
- Village of Mamaroneck Department of Public Works (Street/Sidewalk Opening Permit)
- Village of Mamaroneck Board of Architectural Review (Approval of Architecture)
- Village of Mamaroneck Building Inspector (Building Permit and Flood Plain Development Permit)

INTERESTED AGENCIES

- Village of Mamaroneck Board of Traffic Commissioners
- Village of Mamaroneck Fire Department
- Town of Mamaroneck
- Westchester County Department of Health
- Westchester County Department of Planning
- New York State Department of Environmental Conservation
- CSX Railroad
- Metro-North Railroad
- Westchester Joint Water Works (WJWW)
- Consolidated Edison

POTENTIAL ENVIRONMENTAL IMPACTS

The Environmental Assessment Form prepared for this Proposed Action identified potential environmental impacts in the following areas:

IMPACT ON LAND

The Project Site has a high-water table that is within 3 feet of construction activity. As such, there is the potential for a moderate to large impact on the land/water table from potential releases on unknown contaminants. The Proposed Action is anticipated to involve the excavation of more than 1,000 tons of natural material in order to import structural fill.

There is the potential for construction to exceed one year. Accordingly, mitigation measures may need to be maintained over an extended period, resulting in the potential for long-term construction impacts.

IMPACTS ON SURFACE WATER

The Proposed Action may have a significant impact on the water quality of water bodies within or downstream of the Project Site as the area has not been thoroughly tested for contaminants or solid or hazardous waste.

IMPACTS ON GROUNDWATER

The Project Site is adjacent to an unconfined aquifer. Due to the industrial nature of the Project Site and the surrounding area, there is the potential for contamination. The Project Site has not been sufficiently evaluated for potential contaminants or solid or hazardous waste.

IMPACT ON FLOODING

The Proposed Action will result in construction in the 100- and 500-year floodplains with potential impacts to other properties nearby and downstream from the project. The Proposed Action may result in development within a flood hazard area and in an area with known flooding.

IMPACT ON TRANSPORTATION

The Proposed Action abuts an active freight rail spur. There is potential for a moderate to large impact on rail traffic, and adverse impacts on the integrity of the railway.

IMPACT ON ENERGY

The total square footage of all buildings on the Project Site would exceed 100,000 square feet, which could involve significant energy use for heating and/or cooling.

IMPACT ON NOISE, ODOR AND LIGHT

The Proposed Action has the potential to increase lighting levels over existing conditions.

IMPACT ON HUMAN HEALTH

The Proposed Action is near one or more sites identified on the New York State Environmental Site Remediation Database as being in the State Superfund and Brownfield Clean-up programs. The Project Site has the potential to contain hazardous materials or contamination associated with on- and off-site activities. The Project Site must be analyzed for potential environmental concerns so appropriate mitigation measures can be put in place to protect human health.

CONSISTENCY WITH COMMUNITY PLANS

The Proposed Action's land use components are different from, or in sharp contrast to, current surrounding land use patterns as the project is significantly larger than other buildings in the area. The Proposed Action is inconsistent with local land use plans and zoning regulations as it is requires significant variances. The Proposed Action is significantly larger, in terms of coverage and FAR, than is permitted in the area.

CONSISTENCY WITH COMMUNITY CHARACTER

The Proposed Action is inconsistent with the predominant architectural scale and character of the neighborhood. The Proposed Action will be significantly larger than the surrounding buildings and may significantly alter the character and aesthetics of the neighborhood.

B. REQUIRED ELEMENTS OF THE DEIS

GENERAL GUIDANCE

The DEIS is intended to convey general and technical information regarding the potential environmental impacts of the Proposed Action to the Village of Mamaroneck Zoning Board of Appeals (as Lead Agency) and other agencies involved in the review of the Proposed Action. The DEIS is also intended to convey the same information to the interested public. The Preparer of the DEIS is encouraged to keep this audience in mind as it prepares the document. Enough detail should be provided in each subject area to ensure that most readers of the document will understand, and be able to make decisions based upon, the information provided. Efforts should be made to avoid the use of technical jargon.

Narrative discussions should be accompanied by appropriate tables, charts, graphs, and figures whenever possible. If a particular subject can be most effectively described in graphic format, the narrative discussion should merely summarize and highlight the information presented graphically. All plans and maps showing the site should include adjacent properties (if appropriate), neighboring uses and structures, roads, and water bodies.

As the DEIS will become, upon acceptance by the Lead Agency, a document supporting objective findings on approvals requested under the application, the Preparer is requested to avoid subjective statements regarding potential impacts. The DEIS should contain objective statements and conclusions of facts based upon technical analyses. Subjective evaluations of impacts where evidence is inconclusive or subject to opinion should be prefaced by statements indicating that "It is the applicant's opinion that..." The Village of Mamaroneck Zoning Board of Appeals reserves the right, during review of the document, to request that subjective statements be removed from the document or otherwise modified to indicate that subjective statements are not necessarily representative of the findings of the Board. The document and any appendices or technical reports should be written in the third person (i.e., the terms "we" and "our" should not be used).

Discussions of mitigation measures should include an explanation of how those measures would be implemented, any potential environmental impacts of such implementation, the costs and the time frame associated with such implementation, and the entity that would be responsible for implementing and paying for the mitigation. The discussion should indicate any proposed improvements that have been incorporated into the Proposed Action.

REQUIRED ELEMENTS

The DEIS shall contain an analysis of environmental impacts in the subject areas outlined below and an identification of any significant adverse environmental effects that cannot be avoided if the Proposed Action is implemented. Information for each of the subject areas shall be provided in individual chapters describing existing conditions, conditions in the future without the Proposed Action (the "No Build" condition), potential impacts of the Proposed Action, and mitigation measures for any significant adverse impacts identified. Each chapter shall include a brief introduction identifying the major topics to be considered, relevant methodology used, and thresholds for determining if significant adverse impacts exist. An Executive Summary describing the Proposed Action and all significant adverse impacts identified shall also be included.

The current conditions on the Project Site shall be considered the existing conditions throughout the technical analyses. The "build year" for the Proposed Action shall be the expected first year of full occupancy and operation. The analysis of the future without the Proposed Action (the "No

Build" condition) should be based upon conditions projected in the build year for the Proposed Action, and shall include, at a minimum, the following projects in the vicinity of the Proposed Action and any approved mitigation measures (such as road improvements) for these projects:

- Mason Lofts (at full occupancy)

The Applicant shall contact surrounding communities to identify any other large projects that should be added to this list. Unless otherwise noted, the DEIS study area shall be a quarter mile radius around the Project Site.

ORGANIZATION AND EXPECTED CONTENT OF DEIS

COVER SHEET AND GENERAL INFORMATION

Introductory Material - Cover Sheet that includes:

A. Title (i.e., Draft Environmental Impact Statement).

B. Identification of the Proposed Action, including name and Location.

C. Identification of the Village Zoning Board of Appeals of the Village of Mamaroneck as the Lead Agency for the project.

D. The following contact information:

   Betty-Ann Sherer, Land Use Coordinator
   169 Mount Pleasant Avenue, Mamaroneck, NY10543
   BSherer@VoMNY.org
   (914) 825-8758

E. Website/URL where SEQRA documents are located

F. Date submitted and any revision dates.

G. Date of acceptance of the DEIS.

H. Deadline by which comments on the DEIS are due.

I. Name and address of Sponsor of Proposed Action, and the name, address and email address for a contact person representing the Sponsor.

J. The name and address of the primary preparer(s) of the DEIS and a list of consultants involved with the Project for the Applicant.

K. List of Consultant involved with the Project for the Village.

L. Table of Contents.

M. List of Exhibits.

N. List of Tables.

O. List of Appendices.

I. EXECUTIVE SUMMARY

The summary should provide the reader with a clear and cogent understanding of the information found elsewhere in the main body of the DEIS and should be organized as follows:

A. Brief but complete description of the Proposed Action, including Project Site history and background leading to the proposed development and anticipated build year.
B. Reasons for Modifying Project/Proposed Action.
C. Listing of required approvals and permits.
D. List of Involved and Interested Agencies (including neighboring municipalities).
E. Brief Description of Anticipated Impacts and Proposed Mitigation Measures.
F. Brief Description of Alternatives to the Proposed Action.
G. Table comparing impacts of the Proposed Action with the various alternatives.

II. DESCRIPTION OF PROPOSED ACTION

A. Project Location (including appropriate descriptive graphics).
B. Project Sponsor (including experience and objectives).
C. Description of Project Site's existing character.
D. Inventory of existing structures on the Project Site, including identification of buildings to be removed.
E. Description of land uses on the Project Site and surrounding land use, in narrative and graphic form.
F. Project description, including building location, square footage, arrangement, dimensions, height, general character, architecture, retail areas, rental areas, ownership and maintenance, access, off-street parking and traffic circulation, Project Site infrastructure, internal traffic circulation, internal pedestrian circulation, streetscape enhancements and associated site improvements, lighting, description of views from and to Project Site, connection to surrounding areas.
G. General description of utilities and stormwater management.
H. Construction scheduling, including any phasing and description of project construction, including site preparation (demolition, erosion and sedimentation controls and earthwork).
I. Purpose, need and benefits of the Proposed Action.

III. REQUIRED PERMITS AND APPROVALS, INVOLVED AND INTERESTED AGENCIES

A. Listing of all Village, County, State and federal permits and approvals that may be required to implement the project.
B. Listing of all Involved Agencies.
C. Listing of all Interested Agencies (including neighboring municipalities).

IV. EXISTING ENVIRONMENTAL CONDITIONS, ANTICIPATED IMPACTS AND PROPOSED MITIGATION

For the specific issues identified in this Scope, the DEIS should provide a topic-by- topic analysis of existing environmental conditions, future conditions without the project, potential impacts of the project, and potential measures to mitigate adverse environmental impacts. A description of the conditions associated with current and prior uses on the Project Site should also be included. Cumulative impacts should be discussed, including both on-site and off-site impacts. The identification of potential mitigation measures in this Scope is illustrative only and not intended to be all-inclusive or specifically required. Where mitigation is identified, the DEIS should discuss any adverse impacts associated with and approvals required for any such measures and identify the entity responsible for implementing any such improvements and the funding therefor.

A. Land Use, Zoning and Community Plans

1. Existing Conditions

    a. Include maps and narrative describing generalized land use patterns and neighborhood character in the Village of Mamaroneck and more specifically for a primary land use study area within a quarter mile of the Project Site.

    b. Describe existing uses on the Project Site, including previous land use approvals for the existing storage facility, and variances and conditions of approval therefor.

    c. Identify and describe existing uses of neighboring properties.

    d. Describe existing industrial uses within a quarter mile of the Project Site.

    e. Describe development trends and land use approval activity in the area.

    f. Describe the existing M-1 industrial zoning and applicable dimensional requirements.

        i. Describe existing on-site nonconformities with M-1 zoning district dimensional requirements.

        ii. Describe existing dimensional nonconformities on nearby properties within the M-1 zoning district.

    g. Describe any conditions of the existing variances on the Project Site.

    h. Describe the proposed "Maker Zone Overlay District" and its applicability to the Project Site.

    i. Describe the current Land Use Plans and Policies that affect the Project Site; including:

        i. Village of Mamaroneck existing Comprehensive Plans;

        ii. Village of Mamaroneck Local Waterfront Revitalization Plan (adopted)

        iii. Village of Mamaroneck Local Waterfront Revitalization Plan (draft)

        iv. Waverly Avenue Design Study

        v. Patterns for Westchester; and

        vi. Westchester 2025

2. Future Conditions without the Proposed Action

3. Anticipated Impacts

    a. Analyze the relationship of the proposed development to overall land use patterns within the study area, and to adjacent properties, including impacts on neighborhood character (e.g., from visual perspective), and discuss the Proposed Action's compliance or non-compliance with local land use regulations and its relationship to local, County and regional Plans.

b. Analyze any potential conflicts with the existing area variances on the Project Site.

c. Analyze the Proposed Action's consistency with the New York State Village Law (Section 7-712-B.3(b)) criteria for area variances.

d. Analyze the project's consistency with the proposed "Maker Zone Overlay District" and applicable use and dimensional requirements.

e. Analyze the Proposed Action's consistency with the current Land Use Plans and Policies; including:

   i. Village of Mamaroneck existing Comprehensive Plans;

   ii. Village of Mamaroneck Local Waterfront Revitalization Plan (adopted)

   iii. Village of Mamaroneck Local Waterfront Revitalization Plan (draft)

   iv. Waverly Avenue Design Study

   v. Patterns for Westchester; and

   vi. Westchester 2025

4. Proposed Mitigation Measures

B. Natural Resources

1. Surface Water

   a. Existing Conditions

      i. Identify and analyze surface water on the Project Site (if any).

      ii. Identify and analyze portions of the Project Site within or which drain to the Sheldrake River Basin.

   b. Future Conditions without the Proposed Action

   c. Anticipated Impacts

      i. Analyze potential impacts of the Proposed Action to any surface water located on-site, and to the Sheldrake River Basin.

   d. Proposed Mitigation Measures

2. Aquifers and Groundwater

   a. Existing Conditions

      i. Confirm depth to water across the Project Site.

      ii. Identify and analyze portions of the Project Site where construction will occur, and if groundwater will be encountered during/after construction..

iii. Identify and analyze any portions of the Project Site that are located over an aquifer.

b. Future Conditions without the Proposed Action

c. Anticipated Impacts

i. Review impacts of construction to groundwater.

ii. Review impacts of excavation activities to groundwater, including any need for construction-related dewatering, considering the removal of more than 1,000 tons of natural material.

iii. Review impacts of excavation activities on any aquifers located below the Project Site.

d. Proposed Mitigation Measures

3. Geology, Soils, and Topography

a. Existing Conditions

i. Identify the major geologic, soil, and topographical conditions on the Project Site, focusing on the suitability of the site for development using published data (i.e., NRCS Soils Survey, NYS surficial geology) and site specific information that has been obtained by the Applicant, if available.

b. Future Conditions without the Proposed Action

c. Anticipated Impacts

i. Analyze potential impacts to bedrock and soil conditions as a result of the Proposed Project. Impacts of grading and excavation should be quantified (i.e., cut and fill) and discussed. Potential impacts with regard to soil erosion should be discussed.

d. Proposed Mitigation Measures

i. Identify and analyze measures that will be implemented to mitigate potentially adverse impacts resulting from the Proposed Project, including proposed sediment and erosion control measures. Describe site or construction constraints anticipated as a result of the existing conditions' analysis.

C. Hazardous Materials and Public Health

1. Existing Conditions

a. Prepare both a Phase I and Phase II Environmental Site Assessment (ESA). The Phase I ESA should be completed in accordance with the American Society of Testing and Materials (ASTM) Standard Practice E 1527-13 to identify any existing recognized environmental conditions (RECs) and/or environmental concerns. The Phase I ESA should also include a review of non-scope considerations under ASTM 1527-13, which includes radon, asbestos containing materials (ACMs), PCBs, lead based paint, chemical storage, and any other regulatory compliance issues. This should include the potential for hazardous materials to be present within structures to be demolished or modified as part of the Proposed Project. The Phase II ESA should consider both the results of the Phase I ESA and the areas of proposed soil disturbance to confirm if hazardous materials are present on-site in soil, groundwater, and soil vapor. The Phase II conclusions should include recommendations for soil handling and required methods for off-site disposal, potential on-site exposure to site personnel and the surrounding community during construction, and the need for any mitigation measures [i.e., a sub-slab depressurization system (SSDS)] to be incorporated into the building design.

b. Describe adjacent and surrounding contaminated sites and their proximity to the Proposed Action (ex- Brownfields, Superfund Sites).

2. Future Conditions without the Proposed Action

3. Anticipated Impacts

   a. Identify potential impacts of the Proposed Project with respect to hazardous material contamination as a result of the Proposed Project, both during project construction and during the project's operation.

   b. Describe construction methods, including need for excavation dewatering, if applicable.

   c. Describe any hazardous materials to be used.

   d. Describe any potential impacts related to existing contamination.

4. Proposed Mitigation Measures

   a. Identify and describe measures to avoid or mitigate significant adverse impacts from hazardous materials that may result from existing conditions, construction, or operation of the Proposed Project.

   b. Describe any NYS DEC-required remediation procedure and policies.

   c. Implement any recommended actions from the Phase I and Phase II Environmental Assessments.

   d. If contamination is identified during the Phase II ESA, consideration should be made for preparation of an Excavation Management Plan to identify measures to control contamination in soil, groundwater, and/or soil vapor, including fugitive dust, during any site disturbance (i.e., excavation, grading, stockpiling, loading, backfilling), a Construction Health and Safety Plan (CHASP) to identify measures to protect workers from exposure, and a Community Air Monitoring Plan (CAMP) to minimize exposure to the surrounding community.

D. Flooding and Flood Zone Impacts

1. Existing Conditions

   a. Identify and analyze portions of the Project Site within the 100 year and 500-year floodplains.

b. Identify and analyze existing flood volume storage and stormwater management on the Project Site.

c. Including a description of local drainage patterns and their relationship to the Project Site. Stormwater flow peak rates of runoff would be provided for 1-, 2-, 10-, 25-, 50- and 100-year storm events as required by Village and NYSDEC Phase II regulations.

2. Future Conditions without the Proposed Action

3. Anticipated Impacts

   a. Identify and analyze the amount of disturbance within the floodplains.

   b. Identify and analyze relevant portions of FEMA's Flood Control Regulations and Standards and the Village of Mamaroneck Floodplain Development Code applicable to the proposed addition.

   c. Describe compliance with relevant FEMA and Village Floodplain Development Standards.

   d. Identify location and quantity of excavation, and analyze potential impacts of excavation within the floodplain.

   e. Identify and analyze flood volume storage after the project is constructed.

   f. Describe proposed stormwater management system and implementation of Best Management Practices based on NYSDEC Phase II regulation, including methods to maintain and enhance water quality standards and peak runoff rates.

   g. Identify and analyze measures to avoid or reduce both the Proposed Action's impacts on climate change and associated impacts due to the effects of climate change such as sea level rise and flooding.

4. Proposed Mitigation Measures

E. Historic Resources

1. Existing Conditions

   a. Summarize New York State Historic Preservation Officer (SHPO) consultation regarding the potential for impacts to historic, archaeological, and cultural resources on the Project Site. Include all relevant correspondence in the technical appendix.

   b. Summarize the results of any previous archaeological studies conducted on the Project Site.

2. Future Conditions without the Proposed Action

3. Anticipated Impacts

   a. Discuss potential impacts on any historic or archaeological resources substantially contiguous (less than a quarter mile radius) to the Project Site.

4. Proposed Mitigation Measures

F. Visual Resources

1. Existing Conditions
    a. Document the visual and architectural character of the Project Site and study area through photographs, cross sections and narrative.
2. Future Conditions without the Proposed Action
3. Anticipated Impacts
    a. Describe architectural scale and character of proposed self-storage expansion and how it integrates with scale and character of buildings to remain on the Project Site as well as buildings on adjacent properties.
    b. Identify and analyze views to and from the Project Site from surrounding roads, properties, and, designated visual resources. Specific views to the Proposed Action should include the following locations:
        i. Northwest corner of the intersection of Waverly Avenue and Fenimore Road looking towards the Project Site;
        ii. Northwest corner of the intersection of Waverly Avenue and Ogden Road looking towards the Project Site;
        iii. Northwest corner of the intersection of Fenimore Road and Hoyt Avenue looking towards the Project Site;
        iv. North side of Fenimore Road, midblock between Center Avenue and Waverly Avenue, looking towards the Project Site;
        v. Northbound on Heathcote Avenue looking towards the Project Site; and
        vi. Highview Street Historic District.
    c. Analyze potential impacts on the overall aesthetic quality and character of the surrounding area.
    d. Analyze the relationship of the proposed self-storage addition to the surrounding community, including the project height, general character, bulk and scale in relation to the surrounding area. Include a bulk diagram that shows the size of the proposed building in the context of the existing neighborhood.
    e. Describe and present graphically, the proposed Project Site landscaping and lighting plan.
    f. Utilize 3-D renderings, photographs, cross sections and elevations of the proposed development and/or photo simulations, as appropriate, to describe the resulting visual impact (i.e., before and after conditions), including a comparison of views of the existing buildings to views of the Proposed Action and images of typical proposed project buildings. This assessment should include consideration of rooftop facilities, such as solar panels, etc.
4. Proposed Mitigation Measures

G. Utilities

1. Water Supply

   a. Existing Conditions

      i. Include a description of existing water lines within study area and water system capacities.

      ii. Include usage under prior and existing contractor uses.

      iii. Include flow tests.

   b. Future Conditions without the Proposed Action

   c. Anticipated Impacts

      i. Describe proposed water mains, including pipe-sizing, location, and routing.

      ii. Identify and analyze proposed connection points to the existing systems.

      iii. Identify and analyze potential impacts of construction on infrastructure, including during peak usage periods.

      iv. Compare projected water use with prior and existing contractor uses to demand during anticipated peak usage periods.

      v. Discuss sufficiency of water resources for domestic and commercial use, as well as firefighting purposes.

   d. Proposed Mitigation Measures

      i. Use of water saving devices and other water conservation techniques.

      ii. Evaluate storage and system looping

2. Sanitary Sewage

   a. Existing Conditions

      i. Include a description of existing sanitary sewer lines servicing the development, including capacity and pipe location.

      ii. Include estimated sewage flows under existing uses.

      iii. Discussion of capacities of Mamaroneck Wastewater Treatment Facility.

   b. Future Conditions without the Proposed Action

   c. Anticipated Impacts

      i. Analysis of Proposed Action's sewage generation and compare with sewage generated by existing uses.

      ii. Description of proposed sewage system.

      iii. Identify and analyze proposed connection points to existing systems. 1v. Discuss sufficiency of treatment capacity.

      iv. Discuss any effects on sanitary sewer line capacity.

   d. Proposed Mitigation Measures

   e. Provide details of improvements and projections for proposed future demand in the area in addition to the project.

3. Use and Conservation of Energy

   a. Existing Conditions

      i. Include a description of existing electricity and energy demand required to power, heat and cool all existing uses on the Project Site.

   b. Future Conditions without the Proposed Action

   c. Anticipated Impacts

      i. Analyze proposed electricity and energy demand.

      ii. Analyze proposed electricity generation for the Community Solar Project.

      iii. Analyze proposed electricity and energy saving devices.

   d. Proposed Mitigation Measures

4. Solid Waste

   a. Existing Conditions

      i. Describe current garbage collection and recycling disposal services.

   b. Future Conditions without the Proposed Action

   c. Anticipated Impacts

      i. Explain responsibilities for garbage collection and recycling following redevelopment.

   d. Proposed Mitigation Measures

H. Traffic and Transportation

1. Traffic and Parking

   a. Existing Conditions

      i. Describe existing vehicle traffic circulation in and around the Project Site.

      ii. Describe truck loading and unloading in and around the Project Site.

      iii. Describe existing parking conditions on the Project Site.

   b. Future Conditions without the Proposed Action

   c. Anticipated Impacts

      i. Analyze proposed vehicle traffic circulation in and around the Project Site.

      ii. Describe truck loading and unloading in and around the Project Site.

IMPACTS ON SURFACE WATER

The Proposed Action may have a significant impact on the water quality of water bodies within or downstream of the Project Site as the area has not been thoroughly tested for contaminants or solid or hazardous waste.

IMPACTS ON GROUNDWATER

The Project Site is adjacent to an unconfined aquifer. Due to the industrial nature of the Project Site and the surrounding area, there is the potential for contamination. The Project Site has not been sufficiently evaluated for potential contaminants or solid or hazardous waste.

IMPACT ON FLOODING

The Proposed Action will result in construction in the 100- and 500-year floodplains with potential impacts to other properties nearby and downstream from the project. The Proposed Action may result in development within a flood hazard area and in an area with known flooding.

IMPACT ON TRANSPORTATION

The Proposed Action abuts an active freight rail spur. There is potential for a moderate to large impact on rail traffic, and adverse impacts on the integrity of the railway.

IMPACT ON ENERGY

The total square footage of all buildings on the Project Site would exceed 100,000 square feet, which could involve significant energy use for heating and/or cooling.

IMPACT ON NOISE, ODOR AND LIGHT

The Proposed Action has the potential to increase lighting levels over existing conditions.

IMPACT ON HUMAN HEALTH

The Proposed Action is near one or more sites identified on the New York State Environmental Site Remediation Database as being in the State Superfund and Brownfield Clean-up programs. The Project Site has the potential to contain hazardous materials or contamination associated with on- and off-site activities. The Project Site must be analyzed for potential environmental concerns so appropriate mitigation measures can be put in place to protect human health.

CONSISTENCY WITH COMMUNITY PLANS

The Proposed Action's land use components are different from, or in sharp contrast to, current surrounding land use patterns as the project is significantly larger than other buildings in the area. The Proposed Action is inconsistent with local land use plans and zoning regulations as it is requires significant variances. The Proposed Action is significantly larger, in terms of coverage and FAR, than is permitted in the area.

CONSISTENCY WITH COMMUNITY CHARACTER

The Proposed Action is inconsistent with the predominant architectural scale and character of the neighborhood. The Proposed Action will be significantly larger than the surrounding buildings and may significantly alter the character and aesthetics of the neighborhood.

iii. Analyze proposed parking conditions on the Project Site.

iv. Analyze changes in trip generation associated with the Proposed Action.

v. Analyze the potential impacts of the Proposed Action on the following intersections:

1. Fenimore Road and Waverly Avenue.
2. Fenimore Road and proposed site driveways.
3. Fenimore Road and Railroad Way.

d. Proposed Mitigation Measures

2. Rail Transportation

a. Existing Conditions

i. Inventory existing CSX rail conditions in the Project Site vicinity, including access, width and traffic controls.

ii. Inventory CSX rail operations in the Project Site vicinity including time and frequency.

iii. Describe the study area.

b. Future Conditions without the Proposed Action

c. Anticipated Impacts

i. Analyze potential conflicts with rail transportation resulting from construction and/or operation of the Proposed Action. Specifically consider: potential impacts to the railroad track from excavation, grading, and construction activities in close proximity; potential impacts to the railroad track from stormwater runoff or drainage from the Project Site; and potential conflicts with vehicular or construction traffic resulting from the Proposed Action.

ii. Analyze potential wind, noise, and lighting impacts that could result from the proposed building's proximity to the railroad tracks.

d. Proposed Mitigation Measures

i. Develop strategy for supportive excavation to prevent undermining of track bed or adjacent pavement.

ii. Develop a plan for demolition and construction that protects the tracks from debris.

I. Economic and Fiscal Analysis

1. Existing Conditions

a. Current Project Site taxes provided to each taxing jurisdiction (e.g., Village, County, school district) will be identified and described. Using available data, the economic activity in the study area will be qualitatively described.

2. Future Conditions without the Proposed Action
3. Anticipated Impacts
   a. Projected real property accruing to each taxing jurisdiction will be identified.
   b. The potential impacts of the Proposed Action on the area's employment, residential population, and the potential addition of or displacement of local businesses will be described.
   c. Identify and analyze any significant neighborhood character impacts, based on how the Proposed Action would affect businesses that define or substantially contribute to defining the character of the Village of Mamaroneck.
4. Proposed Mitigation Measures

J. Building Demolition and Construction

1. Anticipated Impacts
   a. Provide a construction phasing plan, including hours of demolition and construction activities, and identification of staging areas.
   b. Describe building demolition activities.
   c. Describe construction activities including the need, if any, for blasting.
   d. Identify and analyze short-term impacts related to issues such as parking (including construction-related parking and the temporary displacement of on-Site parking), vehicular and truck traffic, rail transportation, air quality, noise, vermin on-site and migration off-site during construction, etc.
   e. Discuss any impacts to sensitive receptors.
   f. Describe site security measures.
   g. Identify and analyze any impacts from excavation.
2. Proposed Mitigation
   a. Describe construction management plans and best management practices to be employed.
   b. Describe the construction staging plan, including any anticipated road and sidewalk closures.
   c. Describe mitigation measures to be employed during demolition, including site clearance protocol (i.e. traffic controls, construction fencing, railroad track protection, etc.).
   d. Describe measures to minimize construction-related impacts to air quality, such as fugitive dust control, controls on diesel emissions, prohibition of idling trucks.
   e. Describe measures to reduce noise during construction.
   f. Provide excavation plan.

K. Alternatives

A. No Action Alternative.

B. Redevelopment of the Project Site with a zoning compliant storage facility.

C. Alternative site plan redevelopment proposals:

1. Smaller square-footage of proposed addition;
2. Proposed addition with one less floor; and
3. Adaptive reuse of the Project Site buildings as a storage facility.

VI. Significant Adverse Impacts that cannot be Avoided

A. Long-Term

B. Short-Term

VII. Irreversible and Irretrievable Commitment of Resources

VIII. Growth Inducing Aspects of the Proposed Action

IV. Sources and Bibliography

V. Technical Appendix

A. SEQRA Documentation

B. Correspondence

C. Engineering and Environmental Reports

IMPACTS ON SURFACE WATER

The Proposed Action may have a significant impact on the water quality of water bodies within or downstream of the Project Site as the area has not been thoroughly tested for contaminants or solid or hazardous waste.

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The Project Site is adjacent to an unconfined aquifer. Due to the industrial nature of the Project Site and the surrounding area, there is the potential for contamination. The Project Site has not been sufficiently evaluated for potential contaminants or solid or hazardous waste.

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The Proposed Action is near one or more sites identified on the New York State Environmental Site Remediation Database as being in the State Superfund and Brownfield Clean-up programs. The Project Site has the potential to contain hazardous materials or contamination associated with on- and off-site activities. The Project Site must be analyzed for potential environmental concerns so appropriate mitigation measures can be put in place to protect human health.

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The Proposed Action's land use components are different from, or in sharp contrast to, current surrounding land use patterns as the project is significantly larger than other buildings in the area. The Proposed Action is inconsistent with local land use plans and zoning regulations as it is requires significant variances. The Proposed Action is significantly larger, in terms of coverage and FAR, than is permitted in the area.

CONSISTENCY WITH COMMUNITY CHARACTER

The Proposed Action is inconsistent with the predominant architectural scale and character of the neighborhood. The Proposed Action will be significantly larger than the surrounding buildings and may significantly alter the character and aesthetics of the neighborhood.

Environmental Assessment Form

Full Environmental Assessment Form
Part 1 - Project and Setting

Instructions for Completing Part 1

Part 1 is to be completed by the applicant or project sponsor. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification.

Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information; indicate whether missing information does not exist, or is not reasonably available to the sponsor; and, when possible, generally describe work or studies which would be necessary to update or fully develop that information.

Applicants/sponsors must complete all items in Sections A & B. In Sections C, D & E, most items contain an initial question that must be answered either "Yes" or "No". If the answer to the initial question is "Yes", complete the sub-questions that follow. If the answer to the initial question is "No", proceed to the next question. Section F allows the project sponsor to identify and attach any additional information. Section G requires the name and signature of the project sponsor to verify that the information contained in Part 1is accurate and complete.

A. Project and Sponsor Information.

Name of Action or Project: Murphy Brother's storage Facility Addition		
Project Location (describe, and attach a general location map): 416 Waverly Place, Mamaroneck, New York		
Brief Description of Proposed Action (include purpose or need): Expansion of the existing Murphy Brother's self-storage facility and associated driveway and stormwater improvements.		
Name of Applicant/Sponsor: East Coast North Properties, LLC	Telephone: 914-777-5777 E-Mail: Chris@murphybrothers.com	
Address: 416 Waverly Avenue		
City/PO: Mamaroneck	State: New York	Zip Code: 10543
Project Contact (if not same as sponsor; give name and title/role): Hudson Engineering & Consulting, Michael Stein, P.E	Telephone: 914-909-0420 E-Mail: Michael@hudsonec.com	
Address: 45 Knollwood Road - suite 201		
City/PO: Elmsford	State: New York	Zip Code:
Property Owner (if not same as sponsor):	Telephone: E-Mail:	
Address:		
City/PO:	State:	Zip Code:

B. Government Approvals

B. Government Approvals, Funding, or Sponsorship. ("Funding" includes grants, loans, tax relief, and any other forms of financial assistance.)		
Government Entity	**If Yes: Identify Agency and Approval(s) Required**	**Application Date (Actual or projected)**
a. City Council, Town Board, or Village Board of Trustees ☐Yes ☑No		
b. City, Town or Village Planning Board or Commission ☑Yes ☐No	Planning Board - Site Plan Approval & Floodplain Development Permit	December 2017
c. City Council, Town or Village Zoning Board of Appeals ☑Yes ☐No	Zoning Board of Appeals - Multiple Area Variances	February 2018
d. Other local agencies ☑Yes ☐No	HCZMC - LWRP Consistency Determination DPW- Curb Cut, Building Dept - Building Permit	December 2017
e. County agencies ☐Yes ☑No		
f. Regional agencies ☐Yes ☑No		
g. State agencies ☐Yes ☑No		
h. Federal agencies ☐Yes ☑No		

i. Coastal Resources.

i. Is the project site within a Coastal Area, or the waterfront area of a Designated Inland Waterway? ☑Yes ☐No

ii. Is the project site located in a community with an approved Local Waterfront Revitalization Program? ☑Yes ☐No

iii. Is the project site within a Coastal Erosion Hazard Area? ☐Yes ☑No

C. Planning and Zoning

C.1. Planning and zoning actions.

Will administrative or legislative adoption, or amendment of a plan, local law, ordinance, rule or regulation be the only approval(s) which must be granted to enable the proposed action to proceed? ☐Yes ☑No

- **If Yes,** complete sections C, F and G.
- **If No,** proceed to question C.2 and complete all remaining sections and questions in Part 1

C.2. Adopted land use plans.

a. Do any municipally- adopted (city, town, village or county) comprehensive land use plan(s) include the site where the proposed action would be located? ☑Yes ☐No

If Yes, does the comprehensive plan include specific recommendations for the site where the proposed action would be located? ☐Yes ☑No

b. Is the site of the proposed action within any local or regional special planning district (for example: Greenway Brownfield Opportunity Area (BOA); designated State or Federal heritage area; watershed management plan; or other?) ☐Yes ☑No

If Yes, identify the plan(s):

c. Is the proposed action located wholly or partially within an area listed in an adopted municipal open space plan, or an adopted municipal farmland protection plan? ☐Yes ☑No

If Yes, identify the plan(s):

C.3. Zoning	
a. Is the site of the proposed action located in a municipality with an adopted zoning law or ordinance. If Yes, what is the zoning classification(s) including any applicable overlay district? M-1 Manufacturing District	☑ Yes ☐ No
b. Is the use permitted or allowed by a special or conditional use permit?	☐ Yes ☑ No
c. Is a zoning change requested as part of the proposed action? If Yes, *i.* What is the proposed new zoning for the site? ______	☐ Yes ☑ No

C.4. Existing community services.
a. In what school district is the project site located? Mamaroneck UFSD
b. What police or other public protection forces serve the project site? Village of Mamaroneck Police Department
c. Which fire protection and emergency medical services serve the project site? Village of Mamaroneck Fire Department & Mamaroneck EMS
d. What parks serve the project site? Stanley Ave. Park & Station Park

D. Project Details

D.1. Proposed and Potential Development	
a. What is the general nature of the proposed action (e.g., residential, industrial, commercial, recreational; if mixed, include all components)? Commercial	
b. a. Total acreage of the site of the proposed action? 1.01 acres b. Total acreage to be physically disturbed? 0.73 acres c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? 1.01 acres	
c. Is the proposed action an expansion of an existing project or use? *i.* If Yes, what is the approximate percentage of the proposed expansion and identify the units (e.g., acres, miles, housing units, square feet)? % 68.93% Units: 321 (storage space)	☑ Yes ☐ No
d. Is the proposed action a subdivision, or does it include a subdivision? If Yes, *i.* Purpose or type of subdivision? (e.g., residential, industrial, commercial; if mixed, specify types) ______ *ii.* Is a cluster/conservation layout proposed? ☐ Yes ☐ No *iii.* Number of lots proposed? ______ *iv.* Minimum and maximum proposed lot sizes? Minimum ______ Maximum ______	☐ Yes ☑ No
e. Will proposed action be constructed in multiple phases? *i.* If No, anticipated period of construction: 12 months *ii.* If Yes: • Total number of phases anticipated ______ • Anticipated commencement date of phase 1 (including demolition) ______ month ______ year • Anticipated completion date of final phase ______ month ______ year • Generally describe connections or relationships among phases, including any contingencies where progress of one phase may determine timing or duration of future phases: ______	☐ Yes ☑ No

f. Does the project include new residential uses? ☐Yes ☑No
If Yes, show numbers of units proposed.

	One Family	Two Family	Three Family	Multiple Family (four or more)
Initial Phase				
At completion of all phases				

g. Does the proposed action include new non-residential construction (including expansions)? ☑Yes ☐No
If Yes,
i. Total number of structures One addition
ii. Dimensions (in feet) of largest proposed structure: 48.0' height; 72.0' width; and 240.0' length
iii. Approximate extent of building space to be heated or cooled: 56,328 square feet

h. Does the proposed action include construction or other activities that will result in the impoundment of any liquids, such as creation of a water supply, reservoir, pond, lake, waste lagoon or other storage? ☐Yes ☑No
If Yes,
i. Purpose of the impoundment: ________
ii. If a water impoundment, the principal source of the water: ☐ Ground water ☐ Surface water streams ☐ Other specify: ________
iii. If other than water, identify the type of impounded/contained liquids and their source. ________
iv. Approximate size of the proposed impoundment. Volume: ____ million gallons; surface area: ____ acres
v. Dimensions of the proposed dam or impounding structure: ____ height; ____ length
vi. Construction method/materials for the proposed dam or impounding structure (e.g., earth fill, rock, wood, concrete): ________

D.2. Project Operations

a. Does the proposed action include any excavation, mining, or dredging, during construction, operations, or both? ☐Yes ☑No
(Not including general site preparation, grading or installation of utilities or foundations where all excavated materials will remain onsite)
If Yes:
i. What is the purpose of the excavation or dredging? ________
ii. How much material (including rock, earth, sediments, etc.) is proposed to be removed from the site?
- Volume (specify tons or cubic yards): ________
- Over what duration of time? ________

iii. Describe nature and characteristics of materials to be excavated or dredged, and plans to use, manage or dispose of them. ________
iv. Will there be onsite dewatering or processing of excavated materials? ☐Yes ☐No
If yes, describe. ________
v. What is the total area to be dredged or excavated? ________ acres
vi. What is the maximum area to be worked at any one time? ________ acres
vii. What would be the maximum depth of excavation or dredging? ________ feet
viii. Will the excavation require blasting? ☐Yes ☐No
ix. Summarize site reclamation goals and plan: ________

b. Would the proposed action cause or result in alteration of, increase or decrease in size of, or encroachment into any existing wetland, waterbody, shoreline, beach or adjacent area? ☐Yes ☑No
If Yes:
i. Identify the wetland or waterbody which would be affected (by name, water index number, wetland map number or geographic description): ________

ii. Describe how the proposed action would affect that waterbody or wetland, e.g. excavation, fill, placement of structures, or alteration of channels, banks and shorelines. Indicate extent of activities, alterations and additions in square feet or acres:

iii. Will proposed action cause or result in disturbance to bottom sediments? ☐Yes ☐No
If Yes, describe:

iv. Will proposed action cause or result in the destruction or removal of aquatic vegetation? ☐Yes ☐No
If Yes:

- acres of aquatic vegetation proposed to be removed:
- expected acreage of aquatic vegetation remaining after project completion:
- purpose of proposed removal (e.g. beach clearing, invasive species control, boat access):
- proposed method of plant removal:
- if chemical/herbicide treatment will be used, specify product(s):

v. Describe any proposed reclamation/mitigation following disturbance:

c. Will the proposed action use, or create a new demand for water? ☑Yes ☐No
If Yes:

i. Total anticipated water usage/demand per day: <300 gallons/day

ii. Will the proposed action obtain water from an existing public water supply? ☑Yes ☐No
If Yes:

- Name of district or service area: Westchester Joint Water Works
- Does the existing public water supply have capacity to serve the proposal? ☑Yes ☐No
- Is the project site in the existing district? ☑Yes ☐No
- Is expansion of the district needed? ☐Yes ☑No
- Do existing lines serve the project site? ☑Yes ☐No

iii. Will line extension within an existing district be necessary to supply the project? ☐Yes ☑No
If Yes:

- Describe extensions or capacity expansions proposed to serve this project:
- Source(s) of supply for the district:

iv. Is a new water supply district or service area proposed to be formed to serve the project site? ☐Yes ☐No
If, Yes:

- Applicant/sponsor for new district:
- Date application submitted or anticipated:
- Proposed source(s) of supply for new district:

v. If a public water supply will not be used, describe plans to provide water supply for the project:

vi. If water supply will be from wells (public or private), maximum pumping capacity: _______ gallons/minute.

d. Will the proposed action generate liquid wastes? ☑Yes ☐No
If Yes:

i. Total anticipated liquid waste generation per day: <300 gallons/day

ii. Nature of liquid wastes to be generated (e.g., sanitary wastewater, industrial; if combination, describe all components and approximate volumes or proportions of each):
Sanitary wastewater

iii. Will the proposed action use any existing public wastewater treatment facilities? ☑Yes ☐No
If Yes:

- Name of wastewater treatment plant to be used: Mamaroneck Wastewater Treatment Facility
- Name of district: mamroneck
- Does the existing wastewater treatment plant have capacity to serve the project? ☑Yes ☐No
- Is the project site in the existing district? ☑Yes ☐No
- Is expansion of the district needed? ☐Yes ☑No

- Do existing sewer lines serve the project site? ☑Yes ☐No
- Will line extension within an existing district be necessary to serve the project? ☐Yes ☑No

  If Yes:
  - Describe extensions or capacity expansions proposed to serve this project: ____

iv. Will a new wastewater (sewage) treatment district be formed to serve the project site? ☐Yes ☑No

If Yes:
- Applicant/sponsor for new district: ____
- Date application submitted or anticipated: ____
- What is the receiving water for the wastewater discharge? ____

v. If public facilities will not be used, describe plans to provide wastewater treatment for the project, including specifying proposed receiving water (name and classification if surface discharge, or describe subsurface disposal plans):

____

vi. Describe any plans or designs to capture, recycle or reuse liquid waste: ____

e. Will the proposed action disturb more than one acre and create stormwater runoff, either from new point sources (i.e. ditches, pipes, swales, curbs, gutters or other concentrated flows of stormwater) or non-point source (i.e. sheet flow) during construction or post construction? ☐Yes ☑No

If Yes:

i. How much impervious surface will the project create in relation to total size of project parcel?

____ Square feet or ____ acres (impervious surface)
____ Square feet or ____ acres (parcel size)

ii. Describe types of new point sources. ____

iii. Where will the stormwater runoff be directed (i.e. on-site stormwater management facility/structures, adjacent properties, groundwater, on-site surface water or off-site surface waters)?

____

- If to surface waters, identify receiving water bodies or wetlands: ____
- Will stormwater runoff flow to adjacent properties? ☐Yes ☐No

iv. Does proposed plan minimize impervious surfaces, use pervious materials or collect and re-use stormwater? ☐Yes ☐No

f. Does the proposed action include, or will it use on-site, one or more sources of air emissions, including fuel combustion, waste incineration, or other processes or operations? ☐Yes ☑No

If Yes, identify:

i. Mobile sources during project operations (e.g., heavy equipment, fleet or delivery vehicles)

____

ii. Stationary sources during construction (e.g., power generation, structural heating, batch plant, crushers)

____

iii. Stationary sources during operations (e.g., process emissions, large boilers, electric generation)

____

g. Will any air emission sources named in D.2.f (above), require a NY State Air Registration, Air Facility Permit, or Federal Clean Air Act Title IV or Title V Permit? ☐Yes ☑No

If Yes:

i. Is the project site located in an Air quality non-attainment area? (Area routinely or periodically fails to meet ambient air quality standards for all or some parts of the year) ☐Yes ☐No

ii. In addition to emissions as calculated in the application, the project will generate:
- ____Tons/year (short tons) of Carbon Dioxide (CO_2)
- ____Tons/year (short tons) of Nitrous Oxide (N_2O)
- ____Tons/year (short tons) of Perfluorocarbons (PFCs)
- ____Tons/year (short tons) of Sulfur Hexafluoride (SF_6)
- ____Tons/year (short tons) of Carbon Dioxide equivalent of Hydroflourocarbons (HFCs)
- ____Tons/year (short tons) of Hazardous Air Pollutants (HAPs)

h. Will the proposed action generate or emit methane (including, but not limited to, sewage treatment plants, landfills, composting facilities)? ☐Yes ☑No

If Yes:

i. Estimate methane generation in tons/year (metric): ____________

ii. Describe any methane capture, control or elimination measures included in project design (e.g., combustion to generate heat or electricity, flaring): ____________

i. Will the proposed action result in the release of air pollutants from open-air operations or processes, such as quarry or landfill operations? ☐Yes ☑No

If Yes: Describe operations and nature of emissions (e.g., diesel exhaust, rock particulates/dust):

____

j. Will the proposed action result in a substantial increase in traffic above present levels or generate substantial new demand for transportation facilities or services? ☐Yes ☑No

If Yes:

i. When is the peak traffic expected (Check all that apply): ☐ Morning ☐ Evening ☐ Weekend ☐ Randomly between hours of ________ to ________.

ii. For commercial activities only, projected number of semi-trailer truck trips/day: ____________

iii. Parking spaces: Existing ________ Proposed ________ Net increase/decrease ________

iv. Does the proposed action include any shared use parking? ☐Yes ☐No

v. If the proposed action includes any modification of existing roads, creation of new roads or change in existing access, describe:

____

vi. Are public/private transportation service(s) or facilities available within ½ mile of the proposed site? ☐Yes ☐No

vii Will the proposed action include access to public transportation or accommodations for use of hybrid, electric or other alternative fueled vehicles? ☐Yes ☐No

viii. Will the proposed action include plans for pedestrian or bicycle accommodations for connections to existing pedestrian or bicycle routes? ☐Yes ☐No

k. Will the proposed action (for commercial or industrial projects only) generate new or additional demand for energy? ☐Yes ☑No

If Yes:

i. Estimate annual electricity demand during operation of the proposed action: ____________

ii. Anticipated sources/suppliers of electricity for the project (e.g., on-site combustion, on-site renewable, via grid/local utility, or other):

____

iii. Will the proposed action require a new, or an upgrade to, an existing substation? ☐Yes ☐No

l. Hours of operation. Answer all items which apply.

i. During Construction:

- Monday - Friday: 8:00 am to 6:00 pm
- Saturday: 8:00 am to 6:00 pm
- Sunday: None
- Holidays: None

ii. During Operations:

- Monday - Friday: 7:00 am to 7:00 pm
- Saturday: 7:00 am to 7:00 pm
- Sunday: 7:00 am to 7:00 pm
- Holidays: None

m. Will the proposed action produce noise that will exceed existing ambient noise levels during construction, operation, or both? ☑ Yes ☐ No

If yes:

i. Provide details including sources, time of day and duration:

General Construction Activities, 8:00 am to 6:00 pm Monday-Saturday During construction. No Blasting required.

ii. Will proposed action remove existing natural barriers that could act as a noise barrier or screen? ☐ Yes ☑ No

Describe: ____

n.. Will the proposed action have outdoor lighting? ☑ Yes ☐ No

If yes:

i. Describe source(s), location(s), height of fixture(s), direction/aim, and proximity to nearest occupied structures:

Refer to Lighting Plan

ii. Will proposed action remove existing natural barriers that could act as a light barrier or screen? ☐ Yes ☑ No

Describe: ____

o. Does the proposed action have the potential to produce odors for more than one hour per day? ☐ Yes ☑ No

If Yes, describe possible sources, potential frequency and duration of odor emissions, and proximity to nearest occupied structures: ____

p. Will the proposed action include any bulk storage of petroleum (combined capacity of over 1,100 gallons) or chemical products 185 gallons in above ground storage or any amount in underground storage? ☐ Yes ☑ No

If Yes:

i. Product(s) to be stored ____

ii. Volume(s) ____ per unit time ____ (e.g., month, year)

iii. Generally describe proposed storage facilities: ____

q. Will the proposed action (commercial, industrial and recreational projects only) use pesticides (i.e., herbicides, insecticides) during construction or operation? ☐ Yes ☑ No

If Yes:

i. Describe proposed treatment(s):

ii. Will the proposed action use Integrated Pest Management Practices? ☐ Yes ☐ No

r. Will the proposed action (commercial or industrial projects only) involve or require the management or disposal of solid waste (excluding hazardous materials)? ☑ Yes ☐ No

If Yes:

i. Describe any solid waste(s) to be generated during construction or operation of the facility:

- Construction: 500 tons per 52 Weeks (unit of time)
- Operation : 25 lbs. tons per Week (unit of time)

ii. Describe any proposals for on-site minimization, recycling or reuse of materials to avoid disposal as solid waste:

- Construction: Wood, Steel, and concrete will be recycled/reused if possible.
- Operation: paper, cardboard, and plastics will be recycled per Village of Mamaroneck and Westchester county policies

iii. Proposed disposal methods/facilities for solid waste generated on-site:

- Construction: 30 Yard Container to be removed and replaced by outside carting company when full.
- Operation: Dumpster to be provided by outside carting company

s. Does the proposed action include construction or modification of a solid waste management facility? ☐ Yes ☑ No

If Yes:

i. Type of management or handling of waste proposed for the site (e.g., recycling or transfer station, composting, landfill, or other disposal activities): ____________

ii. Anticipated rate of disposal/processing:

- ________ Tons/month, if transfer or other non-combustion/thermal treatment, or
- ________ Tons/hour, if combustion or thermal treatment

iii. If landfill, anticipated site life: ____________ years

t. Will proposed action at the site involve the commercial generation, treatment, storage, or disposal of hazardous waste? ☐ Yes ☑ No

If Yes:

i. Name(s) of all hazardous wastes or constituents to be generated, handled or managed at facility: ____________

ii. Generally describe processes or activities involving hazardous wastes or constituents: ____________

iii. Specify amount to be handled or generated _____ tons/month

iv. Describe any proposals for on-site minimization, recycling or reuse of hazardous constituents: ____________

v. Will any hazardous wastes be disposed at an existing offsite hazardous waste facility? ☐ Yes ☐ No

If Yes: provide name and location of facility: ____________

If No: describe proposed management of any hazardous wastes which will not be sent to a hazardous waste facility: ____________

E. Site and Setting of Proposed Action

E.1. Land uses on and surrounding the project site

a. Existing land uses.

i. Check all uses that occur on, adjoining and near the project site.

☑ Urban ☑ Industrial ☐ Commercial ☐ Residential (suburban) ☐ Rural (non-farm)
☐ Forest ☐ Agriculture ☐ Aquatic ☐ Other (specify): ____________

ii. If mix of uses, generally describe: ____________

b. Land uses and covertypes on the project site.

Land use or Covertype	Current Acreage	Acreage After Project Completion	Change (Acres +/-)
• Roads, buildings, and other paved or impervious surfaces	0.950	0.933	-0.017
• Forested			
• Meadows, grasslands or brushlands (non-agricultural, including abandoned agricultural)			
• Agricultural (includes active orchards, field, greenhouse etc.)			
• Surface water features (lakes, ponds, streams, rivers, etc.)			
• Wetlands (freshwater or tidal)			
• Non-vegetated (bare rock, earth or fill)			
• Other Describe: Lawn & Landscaping	0.064	.081	+0.017

c. Is the project site presently used by members of the community for public recreation? ☐ Yes ☑ No

i. If Yes: explain: ______

d. Are there any facilities serving children, the elderly, people with disabilities (e.g., schools, hospitals, licensed day care centers, or group homes) within 1500 feet of the project site? ☐ Yes ☑ No

If Yes,

i. Identify Facilities:

______

______

e. Does the project site contain an existing dam? ☐ Yes ☑ No

If Yes:

i. Dimensions of the dam and impoundment:

- Dam height: ______ feet
- Dam length: ______ feet
- Surface area: ______ acres
- Volume impounded: ______ gallons OR acre-feet

ii. Dam's existing hazard classification: ______

iii. Provide date and summarize results of last inspection:

______

______

f. Has the project site ever been used as a municipal, commercial or industrial solid waste management facility, or does the project site adjoin property which is now, or was at one time, used as a solid waste management facility? ☐ Yes ☑ No

If Yes:

i. Has the facility been formally closed? ☐ Yes ☐ No

- If yes, cite sources/documentation: ______

ii. Describe the location of the project site relative to the boundaries of the solid waste management facility:

______

______

iii. Describe any development constraints due to the prior solid waste activities: ______

______

g. Have hazardous wastes been generated, treated and/or disposed of at the site, or does the project site adjoin property which is now or was at one time used to commercially treat, store and/or dispose of hazardous waste? ☐ Yes ☑ No

If Yes:

i. Describe waste(s) handled and waste management activities, including approximate time when activities occurred:

______

______

h. Potential contamination history. Has there been a reported spill at the proposed project site, or have any remedial actions been conducted at or adjacent to the proposed site? ☑ Yes ☐ No

If Yes:

i. Is any portion of the site listed on the NYSDEC Spills Incidents database or Environmental Site Remediation database? Check all that apply: ☑ Yes ☐ No

☑ Yes – Spills Incidents database — Provide DEC ID number(s): 0304697, 0304698

☐ Yes – Environmental Site Remediation database — Provide DEC ID number(s): ______

☐ Neither database

ii. If site has been subject of RCRA corrective activities, describe control measures: ______

None

______

iii. Is the project within 2000 feet of any site in the NYSDEC Environmental Site Remediation database? ☑ Yes ☐ No

If yes, provide DEC ID number(s): 360025 , C360108A, 360045 , 360027

iv. If yes to (i), (ii) or (iii) above, describe current status of site(s):

Items 0304697 and 0304698 on the spill incident database for the site have been closed. Items 360025, C360108A, 360045 and 360027 on the NYSDEC Environmental Site Remediation database remain open.

v. Is the project site subject to an institutional control limiting property uses? ☐ Yes ☑ No

- If yes, DEC site ID number: ____
- Describe the type of institutional control (e.g., deed restriction or easement): ____
- Describe any use limitations: ____
- Describe any engineering controls: ____
- Will the project affect the institutional or engineering controls in place? ☐ Yes ☐ No
- Explain: ____

E.2. Natural Resources On or Near Project Site

a. What is the average depth to bedrock on the project site? >6.5 feet

b. Are there bedrock outcroppings on the project site? ☐ Yes ☑ No
If Yes, what proportion of the site is comprised of bedrock outcroppings? ____%

c. Predominant soil type(s) present on project site: Urban Land 100 %
____ ____%
____ ____%

d. What is the average depth to the water table on the project site? Average: >6.5 feet

e. Drainage status of project site soils:
☐ Well Drained: ____% of site
☐ Moderately Well Drained: ____% of site
☑ Poorly Drained 100 % of site

f. Approximate proportion of proposed action site with slopes:
☑ 0-10%: 100 % of site
☐ 10-15%: ____% of site
☐ 15% or greater: ____% of site

g. Are there any unique geologic features on the project site? ☐ Yes ☑ No
If Yes, describe: ____

h. Surface water features.

i. Does any portion of the project site contain wetlands or other waterbodies (including streams, rivers, ponds or lakes)? ☐ Yes ☑ No

ii. Do any wetlands or other waterbodies adjoin the project site? ☐ Yes ☑ No

If Yes to either *i* or *ii*, continue. If No, skip to E.2.i.

iii. Are any of the wetlands or waterbodies within or adjoining the project site regulated by any federal, state or local agency? ☐ Yes ☐ No

iv. For each identified regulated wetland and waterbody on the project site, provide the following information:

- Streams: Name ____ Classification ____
- Lakes or Ponds: Name ____ Classification ____
- Wetlands: Name ____ Approximate Size ____
- Wetland No. (if regulated by DEC) ____

v. Are any of the above water bodies listed in the most recent compilation of NYS water quality-impaired waterbodies? ☐ Yes ☐ No

If yes, name of impaired water body/bodies and basis for listing as impaired: ____

i. Is the project site in a designated Floodway? ☐ Yes ☑ No

j. Is the project site in the 100-year Floodplain? ☑ Yes ☐ No

k. Is the project site in the 500-year Floodplain? ☑ Yes ☐ No

l. Is the project site located over, or immediately adjoining, a primary, principal or sole source aquifer? ☑ Yes ☐ No
If Yes:
i. Name of aquifer: Principal Aquifer

m. Identify the predominant wildlife species that occupy or use the project site:
Small Mammals

n. Does the project site contain a designated significant natural community? ☐ Yes ☑ No
If Yes:
i. Describe the habitat/community (composition, function, and basis for designation): ______

ii. Source(s) of description or evaluation: ______
iii. Extent of community/habitat:
- Currently: ______ acres
- Following completion of project as proposed: ______ acres
- Gain or loss (indicate + or -): ______ acres

o. Does project site contain any species of plant or animal that is listed by the federal government or NYS as endangered or threatened, or does it contain any areas identified as habitat for an endangered or threatened species? ☐ Yes ☑ No

p. Does the project site contain any species of plant or animal that is listed by NYS as rare, or as a species of special concern? ☐ Yes ☑ No

q. Is the project site or adjoining area currently used for hunting, trapping, fishing or shell fishing? ☐ Yes ☑ No
If yes, give a brief description of how the proposed action may affect that use: ______

E.3. Designated Public Resources On or Near Project Site

a. Is the project site, or any portion of it, located in a designated agricultural district certified pursuant to Agriculture and Markets Law, Article 25-AA, Section 303 and 304? ☐ Yes ☑ No
If Yes, provide county plus district name/number: ______

b. Are agricultural lands consisting of highly productive soils present? ☐ Yes ☑ No
i. If Yes: acreage(s) on project site? ______
ii. Source(s) of soil rating(s): ______

c. Does the project site contain all or part of, or is it substantially contiguous to, a registered National Natural Landmark? ☐ Yes ☑ No
If Yes:
i. Nature of the natural landmark: ☐ Biological Community ☐ Geological Feature
ii. Provide brief description of landmark, including values behind designation and approximate size/extent: ______

d. Is the project site located in or does it adjoin a state listed Critical Environmental Area? ☐ Yes ☑ No
If Yes:
i. CEA name: ______
ii. Basis for designation: ______
iii. Designating agency and date: ______

e. Does the project site contain, or is it substantially contiguous to, a building, archaeological site, or district which is listed on, or has been nominated by the NYS Board of Historic Preservation for inclusion on, the State or National Register of Historic Places? If Yes: *i.* Nature of historic/archaeological resource: ☐Archaeological Site ☐Historic Building or District *ii.* Name: ____ *iii.* Brief description of attributes on which listing is based: ____	☐Yes ☑No
f. Is the project site, or any portion of it, located in or adjacent to an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory?	☑Yes ☐No
g. Have additional archaeological or historic site(s) or resources been identified on the project site? If Yes: *i.* Describe possible resource(s): ____ *ii.* Basis for identification: ____	☐Yes ☑No
h. Is the project site within fives miles of any officially designated and publicly accessible federal, state, or local scenic or aesthetic resource? If Yes: *i.* Identify resource: ____ *ii.* Nature of, or basis for, designation (e.g., established highway overlook, state or local park, state historic trail or scenic byway, etc.): ____ *iii.* Distance between project and resource: ____ miles.	☐Yes ☑No
i. Is the project site located within a designated river corridor under the Wild, Scenic and Recreational Rivers Program 6 NYCRR 666? If Yes: *i.* Identify the name of the river and its designation: ____ *ii.* Is the activity consistent with development restrictions contained in 6NYCRR Part 666?	☐Yes ☑No ☐Yes ☐No

F. Additional Information

Attach any additional information which may be needed to clarify your project.

If you have identified any adverse impacts which could be associated with your proposal, please describe those impacts plus any measures which you propose to avoid or minimize them.

G. Verification

I certify that the information provided is true to the best of my knowledge.

Applicant/Sponsor Name Hudson Engineering & Consulting-Michael Stein Date January 14, 2019

Signature ____ Title President

PRINT FORM

Stormwater Pollution Prevention Plan

STORMWATER POLLUTION PREVENTION PLAN & DRAINAGE ANALYSIS

Self Storage Addition
560 Fenimore Road
Mamaroneck - New York

February 8, 2018
Revised January 14, 2019

Hudson Engineering & Consulting, P.C.
45 Knollwood Road - Suite 201
Elmsford, NY 10523

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B. Monthly Summary of Site Inspection Activities

C. Inspection and Maintenance Checklist

- **Catch Basins, Manholes, and Inlets**
- **Conveyance Systems (Pipes & Ditches)**
- **Vaults, Tanks, and Attenuation Piping**

1.) Contractor Certification Statement

CONTRACTOR and SUBCONTRACTOR CERTIFICATION STATEMENT

for the New York State Department of Environmental Conservation (DEC) State Pollutant Discharge Elimination System Permit for Stormwater Discharges from Construction Activity (GP-0-15-002)

As per *Part III.A.5* on page 19 of *GP-0-15-002* (effective January 29, 2015):

'Prior to the *commencement of construction activity*, the *owner or operator* must identify the contractor(s) and subcontractor(s) that will be responsible for installing, constructing, repairing, replacing, inspecting and maintaining the erosion and sediment control practices included in the SWPPP; and the contractor(s) and subcontractor(s) that will be responsible for constructing the post-construction stormwater management practices included in the SWPPP. The *owner or operator* shall have each of the contractors and subcontractors identify at least one person from their company that will be responsible for implementation of the SWPPP. This person shall be known as the *trained contractor*. The *owner or operator* shall ensure that at least one *trained contractor* is on site on a daily basis when soil disturbance activities are being performed.'

The *owner or operator* shall have each contractor and subcontractor involved in soil disturbance sign a copy of the following certification statement before they commence any *construction activity*:

416 Waverly Avenue	NYR __________	Village of Mamaroneck
Name of Construction Site	*DEC Permit ID*	*Municipality (MS4)*

"I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the qualified inspector during a site inspection. I also understand that the owner or operator must comply with the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations."

Responsible Corporate Officer/Partner Signature	Date
Name of above Signatory	Name of Company
Title of above Signatory	Mailing Address
Telephone of Company	City, State and Zip

Identify the specific elements of the SWPPP the contractor or subcontractor is responsible for:
The contractor shall be responsible for the installation and maintenance of all temporary and permanent erosion
and sediment control practices for the duration of construction activities.

'*TRAINED CONTRACTOR*' FOR THE CERTIFIED CONTRACTOR OR SUBCONTRACTOR

Name of Trained Employee	*Title of Trained Employee*	*NYSDEC SWT #*

A copy of this signed contractor certification statement must be maintained at the SWPPP on site

2.) Narrative

STORMWATER POLLUTION PREVENTION PLAN
Self Storage Addition
560 Fenimore Road
Mamaroneck - New York

A. INTRODUCTION

This Stormwater Pollution Prevention Plan & Stormwater Analysis presents the proposed Best Management Practices (BMPs) to control erosion, sedimentation, and manage stormwater during the construction of a new four (4) story addition to an existing self storage building, and associated parking and landscaping, located at 560 Fenimore Road (SBL 8-25-70) in the Village of Mamaroneck, Westchester County, New York.

This Plan consists of this narrative and a plan set entitled: "Self Storage Building Addition, 560 Fenimore Road, Village of Mamaroneck, Westchester County, New York", all as prepared by Hudson Engineering and Consulting, P.C., Elmsford, New York, last revised January 14, 2019. The design is in accordance with the Village of Mamaroneck requirements. The plans have also been prepared to meet the requirements of the New York State Department of Environmental Conservation (NYSDEC), per the Village code.

B. METHODOLOGY

The stormwater analysis was developed utilizing the Soil Conservation Service (SCS) TR-20 methodologies (HydroCad®) to assist with the drainage analysis and design of the mitigating practice. The "Complex Number" (CN) value determination is based on soil type, vegetation and land use. *See Soil Map & Report contained herein.* The "Time of Concentration" (T_c) is determined by the time wise longest flow path within each watershed. The CN and T_c data is input into the computer model. This project involves modifications to an existing developed property; therefore, this will be classified as redevelopment per the NYSDEC Phase II regulations.

The pre-developed and post-developed impervious area coverage was calculated as follows:

Pre and Post Impervious Coverage	
Total Existing Impervious Area	41,390-square feet
Total Proposed Impervious Area	40,675-square feet
Total Decrease in Impervious Area	715-square feet
Percent Decrease	1.73%

Per Section 9.2.1, B-III of the NYSDEC Manual, 75% of the Water Quality Volume from the disturbed, impervious area, as well as any additional runoff from tributary areas that are undisturbed, can be treated with the use of Alternative Stormwater Management Practices (SMPs), as listed in Section 9.4 of the NYSDEC Stormwater Management Design Manual.

The stormwater management design is based on the NYSDEC "New York State Stormwater Management Design Manual", latest edition and "Controlling Urban Runoff: A practical Manual for Planning and Designing Urban BMP'S", by the Metropolitan Washington Council of Governments. Stormwater quality has been analyzed in accordance with the guidelines set forth in the New York State General Permit for Storm Water Discharge, GP-0-15-002.

C. LIST OF PERMITS

The following is a list of permits and approvals required for the project along with the status.

- Village of Mamaroneck – Building Permit – Pending
- Village of Mamaroneck – Zoning Board Approval – Pending
- Village of Mamaroneck – Planning Board Approval – Pending
- Harbor Coastal Zone Management Commission – Pending

D. PRE-DESIGN INVESTIGATIVE ANALYSIS

Due to the site's location partially within the 100-year flood limit line, it has been determined that percolation is not a viable option for stormwater on this site, and conventional stormwater management practices could not be utilized in the stormwater design (i.e. infiltration chambers, infiltration basins, etc.). Therefore, no deep hole testing or percolation testing was performed.

E. PRE-DEVELOPED CONDITION

In the pre-developed conditions, the proposed redevelopment project was modeled as six watersheds, Watershed 1A, 1B, 1C, 1D, 2 and 3. Watersheds 1A, 1B, 1C, 1D and 2 are all tributary to Design Point 1. Watershed 3 is tributary to DP-2. Each watershed was analyzed as follows:

Watershed 1A is comprised of 2,252 square feet, of which all is impervious in the form of a portion of the existing 2 story building and driveway surface. The watershed has a weighted complex number (CN) value of 98 and a calculated time of concentration (Tc) of 0.8 Minutes. Stormwater from this tributary area flows overland to an existing catch basin located in the center of the parking area. The runoff is then conveyed via pipe to an existing hydrodynamic separator and enters the village's drainage system at Design Point DP-1.

Watershed 1B is comprised of 5,979 square feet, of which 5,522 square feet is impervious in the form of a portion of the driveway and 457 square feet is pervious in the form of lawn and landscaping. The watershed has a weighted complex number (CN) value of 97 and a calculated time of concentration (Tc) of 1.1 Minutes. Stormwater from this tributary area flows overland to an existing catch basin located in the center of the parking area. The runoff is then conveyed via pipe to an existing hydrodynamic separator and enters the village's drainage system at Design Point DP-1.

Watershed 1C is comprised of 2,849 square feet, of which 2,119 square feet is impervious in the form of a portion of the driveway and 730 square feet is pervious in the form of lawn and landscaping. The watershed has a weighted complex number (CN) value of 93 and a calculated time of concentration (Tc) of 0.9 Minutes. Stormwater from this tributary area flows overland to an existing catch basin located adjacent to the Waverly Avenue right-of-way. The runoff is then conveyed via pipe to an existing hydrodynamic separator and enters the village's drainage system at Design Point DP-1.

Watershed 1D is comprised of 786 square feet, all of which is impervious in the form of a portion of an existing building. The watershed has a weighted complex number (CN) value of 98 and a calculated time of concentration (Tc) of 1.0 Minute (direct entry). Stormwater from this roof area is collected and conveyed via pipe to an existing catch basin (private) located within the village's Right of Way. The runoff then enters the village's drainage system at Design Point DP-1.

Watershed 2 is comprised of 10,733 square feet, of which 10,056 square feet is impervious in the form of the existing storage building and 677 square feet is pervious in the form of an existing stormwater planter. The watershed has a weighted complex number (CN) value of 97 and a calculated time of concentration (Tc) of 1.0 Minute (direct entry). The existing stormwater planter was sized to provide water quality treatment for the runoff from this watershed. The planter is designed with overflows to bypass larger storms. All runoff from the planter is conveyed via pipe the hydrodynamic separator and enters the village's drainage system at design point DP-1.

Watershed 3 is comprised of 21,557 square feet, of which 20,655 is impervious in the form of a portion of the driveway, and buildings and 902 square feet is pervious in the form of lawn and landscaping. The watershed has a weighted complex number (CN) value of 97 and a calculated time of concentration (Tc) of 1.4 Minutes. Stormwater from this tributary area flows overland from the center of the site in a northwesterly direction where it exits the site into the Fenimore Road right-of-way at Point C. The runoff flows overland (R1) to design point DP-1 where it enters the village's drainage system.

The rate off runoff at the design point are calculated as follows:

Pre-Developed Conditions			
Design Point	1-Year	10-Year	25-Year
	cfs	cfs	cfs
DP-1	0.89	3.02	3.81
DP-2	1.58	2.89	3.64

F. POST-DEVELOPED CONDITION

In the post-developed condition, the project site has been modeled as nine (9) watersheds, Watershed 1A, 1B, 1C, 1D, 1E, 2, 3, 3A and 3B. Watersheds 1A, 1B, 1C, 1D, 1E, and 2 are tributary to design point DP-1. Watersheds 3, 3A, and 3B are tributary to DP-2. Each watershed is analyzed as follows:

Watershed 1A is made up of the portion of the proposed parking area adjacent to the proposed building addition. This watershed contains 2,893-square feet of tributary area, all of which is impervious area in the form of the driveway. This watershed has a weighted complex number (CN) value of 98 and a calculated Time of Concentration (Tc) of 1.2 minutes. Stormwater from this area flows overland to an existing catch basin. From here the runoff is captured and conveyed to an existing hydrodynamic separator, where it meets with the runoff from Watersheds 1B, 1C, 1E and 2. The hydrodynamic separator is capable of treating the entire water quality volume from the tributary area. The treated runoff is then conveyed to an existing catch basin located at the corner of Waverly Avenue and Fenimore Road where it enters the village's drainage system at design point DP-1.

Watershed 1B is made up of the portion of the proposed parking area adjacent to the entrance to the existing storage building. This watershed contains 3,079-square feet of tributary area, which consists of 3,008-square feet of impervious area, with the remaining 71-square feet of area in the form of lawn and landscaping. This watershed has a weighted complex number (CN) value of 97 and a calculated Time of Concentration (Tc) of 0.8 minutes. Stormwater from this area flows overland to a relocated catch basin located adjacent to a proposed loading area. From here the runoff is captured and conveyed to an existing hydrodynamic separator, where it meets with the runoff from Watersheds 1A, 1C, 1E and 2. As previously mentioned, the hydrodynamic separator is capable of treating the entire water quality volume from the tributary area. The treated runoff is then conveyed to an existing catch basin located at the corner of Waverly Avenue and Fenimore Road where it enters the village's drainage system at design point DP-1.

Watershed 1C is made up of the portion of the proposed parking area adjacent to the existing stucco building to remain. This watershed contains 3,283-square feet of tributary area, which consists of 3,039-square feet of impervious area, with the remaining 244-square feet of area in the form of lawn and landscaping. This watershed has a weighted complex number (CN) value of 96 and a calculated Time of Concentration (Tc) of 0.9 minutes. Stormwater from this area flows overland to an existing catch basin located just upstream of the existing hydrodynamic separator. From here the runoff is captured and conveyed to the existing hydrodynamic separator, where it meets with the runoff from Watersheds 1A, 1B, 1E and 2. As previously mentioned, the hydrodynamic separator is capable of treating the entire water quality volume from the tributary area. The treated runoff is then conveyed to an existing catch basin located at the corner of Waverly Avenue and Fenimore Road where it enters the village's drainage system at design point DP-1.

Watershed 1D is comprised of 786 square feet, all of which is impervious in the form of a portion of an existing building. The watershed has a weighted complex number (CN) value of 98 and a calculated time of concentration (Tc) of 1.0 Minute (direct entry). Stormwater from this roof area is collected and conveyed via pipe to an existing catch basin (private) located within the village's ROW. The runoff then enters the village's drainage system at Design Point DP-1.

Watershed 1E is made up of the portion of the proposed parking area adjacent to the main driveway entrance. This watershed contains 1,428-square feet of tributary area, which consists of 1,402-square feet of impervious area, with the remaining 26-square feet of area in the form of lawn and landscaping. This watershed has a weighted complex number (CN) value of 98 and a calculated Time of Concentration (Tc) of 0.7 minutes. Stormwater from this area flows overland to a proposed trench drain located across the driveway entrance. From here the runoff is captured and conveyed to an existing hydrodynamic separator, where it meets with the runoff from Watersheds 1A, 1B, 1C and 2. As previously mentioned, the hydrodynamic separator is capable of treating the entire water quality volume from the tributary area. The treated runoff is then conveyed to an existing catch basin located at the corner of Waverly Avenue and Fenimore Road where it enters the village's drainage system at design point DP-1.

Watershed 2 is made up of the existing roof area and associated stormwater planter. This watershed contains 10,733-square feet of tributary area, which consists of 10,056-square feet of impervious area, with the remaining 677-square feet of area in the form of an existing stormwater planter. This watershed has a weighted complex number (CN) value of 97 and a direct entry Time of Concentration (Tc) of 1.0 minute. Stormwater from this area is collected via a series of roof drains and is conveyed directly to an existing stormwater planter located adjacent to the existing building. The stormwater planter is sized to treat the entire water quality volume from the watershed, as well as bypass storm events up to and including the 25-year storm. From here the treated runoff is conveyed to an existing hydrodynamic separator, where it meets with the runoff from Watersheds 1A, 1B, 1C and 1E. The treated runoff is then conveyed to an existing catch basin located at the corner of Waverly Avenue and Fenimore Road where it enters the village's drainage system at design point DP-1.

Watershed 3 is made up of portions of sidewalk and landscaped area encompass the perimeter of the property. This watershed contains 2,071 square feet of tributary area, consisting of 416 square feet of impervious area in the form of sidewalks, with the remaining 1,655 square feet pervious area. The watershed has a weighted complex number (CN) value of 79 and a calculated time of concentration (Tc) of 1.0 minute (direct entry). The runoff flows overland within the right-of-way to an existing catch basin where it enters the village's drainage system and is conveyed to the design point DP-2.

Watershed 3A is made up of the proposed roof area and associated stormwater planter. This watershed contains 14,755-square feet of tributary area, which consists of 14,082-square feet of impervious area, with the remaining 673-square feet of area in the form of a proposed stormwater planter. This watershed has a weighted complex number (CN) value of 97 and a direct entry Time of Concentration (Tc) of 1.0 minute. Stormwater from this area is collected via a series of roof drains and is conveyed directly to a proposed stormwater planter, which has been sized to treat the entire water quality volume from watersheds 3A and 3B, as well as bypass storm events up to and including the 25-year storm. The treated runoff is conveyed via pipe to design point DP-2 where it enters the village's drainage system.

Watershed 3B is made up of a portion of the driveway area, existing 2 story building and landscaped area located along Fenimore Road. This watershed contains 5,128-square feet of tributary area, which consists of 4,993-square feet of impervious area, with the remaining 135-square feet of area pervious in the form of lawn and landscaping. This watershed has a weighted complex number (CN) value of 97 and a Time of Concentration (Tc) of 1.0 minute. Stormwater from this area originates adjacent to the existing two-story building and flows in an easterly direction where it flows into the proposed stormwater planter. The stormwater planter has been sized to treat the entire water quality volume from watershed 3A and 3B, as well as bypass storm events up to and including the 25-year storm. The treated runoff is conveyed via pipe to design point DP-2 where it enters the village's drainage system.

The rate off runoff at the design point are calculated as follows:

Post-Developed Conditions			
Design Point	**1-Year**	**10-Year**	**25-Year**
	cfs	**cfs**	**Cfs**
DP-1	**0.89**	**2.98**	**3.75**

DP-2	**1.48**	**2.85**	**3.62**

G. SUMMARY OF FLOWS

Pre- and Post-Developed Conditions						
Design Point	**1-Year**		**10-Year**		**25-Year**	
	Pre-	**Post-**	**Pre-**	**Post-**	**Pre-**	**Post-**
DP-1	0.89	**0.89**	3.02	**2.98**	3.81	**3.75**
DP-2	1.58	**1.48**	2.89	**2.85**	3.64	**3.62**

Post-developed flows rates at each design point are equal to or less than those in the pre-developed conditions.

H. WATER QUALITY VOLUME

The Water Quality Volume (WQv) calculations were performed for the entire site as well as for the tributary areas to each water quality practice. The calculations are as follows:

ENTIRE SITE

$P =$ 90% Rainfall 1.5 -inches

$A_i =$ Impervious Area = 40,675 -square feet

$A_i =$ 0.9338 -acres

$A_t =$ Tributary Area = 44,156 -square feet

$A_t =$ 1.0137 -acres

$I =$ % Impervious = 92.12%

$R_v =$ 0.05+0.009(I); where I = Percent Impervious written as a percent

$R_v =$ 0.879 **(0.20 minimum)**

$R_v =$ 0.879

$$WQ_v = \frac{(P \times R_v \times A_t)}{12} = 0.11138 \text{ acre-feet} = 4851.91 \text{ cubic feet}$$

Total Water Quality Volume: 4851.91 cubic feet

*Water Quality treatment provided: 100.04% (4,854.00 cubic feet)

Due to the configuration of the site, water quality treatment could not be provided for watershed 1D and Watershed 3. Watershed 1D consists of a portion of the existing building that will not be altered as a result of the improvements and watershed 3 consists of the small areas around the perimeter of the site that flow overland into the right-of-way.

To compensate for these two areas, additional treatment was provided for Watershed 1A, 1B, 1C, 1E, 2, 3A, and 3B. Since Watersheds 1A, 1B, 1C, 1E and 3A are more susceptible to pollutants as they are mostly made up of driving surfaces, the increase of treatable volume will have greater overall benefits than trying to capture the roof area.

WATERSHEDS 1A, 1B, 1C & 1E

P=	90%	Rainfall	1.5	-inches
A_i =	Impervious Area =		10,297	-square feet
		A_i =	0.2364	-acres
A_t =	Tributary Area =		10,638	-square feet
		A_t =	0.2442	-acres
I =	% Impervious =		96.79%	

R_v= 0.05+0.009(I); where I = Percent Impervious written as a percent

R_v= 0.921 **(0.20 minimum)**

R_v= 0.921

$$WQ_v = \frac{(P \times R_v \times A_t)}{12} = 0.02812 \text{ acre-feet} = 1224.90 \text{ cubic feet}$$

Rainfall = 1.73 -inches → 1263 cubic feet OKAY

The Water Quality Volume (WQv) from the proposed parking area comprises of approximately 26.03% of the overall WQv for the entire property. This volume is equal to a 1.73-inch, 24-hour storm event from tributary area, which produces a flow rate of approximately 0.45-cfs*. The entire volume is treated via an existing AquaSwirl AS-2 hydrodynamic device, which is capable of treating up to 1.10-cfs. The existing device is also capable of bypassing the 25-year storm event from the watershed. *Water Quality routing calculations are contained within Section 8 of this report. The AquaSwirl Sizing Chart is contained within Section 9 of this report.*

**Note, the existing hydrodynamic separator also receives flows from watershed 2. For the water quality storm event the peak flow is 0.03 cfs.*

WATERSHED 2

P=	90%	Rainfall	1.5	-inches
A_i =	Impervious Area =		10,086	-square feet
		A_i =	0.2315	-acres
A_t =	Tributary Area =		10,755	-square feet
		A_t =	0.2469	-acres
I =	% Impervious =		93.78%	

R_v= 0.05+0.009(I); where I = Percent Impervious written as a percent

R_v= 0.894 **(0.20 minimum)**

R_v= 0.894

$$WQ_v = \frac{(P \times R_v \times A_t)}{12} = 0.02759 \text{ acre-feet} = 1201.89 \text{ cubic feet}$$

Rainfall = 1.73 -inches → 1259 cubic feet OKAY

The Water Quality Volume (WQv) from the existing roof area comprises of approximately 25.95% of the overall WQv for the entire property. This volume is equal to a 1.73-inch, 24-hour storm event. The entire volume is treated via an existing Stormwater Planter, which was previously approved by the Village and was designed to treat the entire WQV from this watershed. The existing planter is also capable of bypassing the 25-year storm event from the watershed without overflow. *Water Quality routing calculations are contained within Section 8 of this report.*

WATERSHED 3A & 3B

P=	90% Rainfall	1.5	-inches
A_i =	Impervious Area =	19,075	-square feet
	A_i =	0.4379	-acres
A_t =	Tributary Area =	19,883	-square feet
	A_t =	0.4565	-acres
I =	% Impervious =	95.94%	

R_v= 0.05+0.009(I); where I = Percent Impervious written as a percent

R_v= 0.913 **(0.20 minimum)**

R_v= 0.913

$$WQ_v = \frac{(P \times R_v \times A_t)}{12} = 0.05212 \text{ acre-feet} = 2270.21 \text{ cubic feet}$$

Rainfall = 1.73 -inches → 2332 cubic feet OKAY

The Water Quality Volume (WQv) from the proposed roof area comprises of approximately 48.06% of the overall WQv for the entire property. This volume is equal to a 1.73-inch, 24 hour storm event over the tributary area. This volume is treated via a proposed Stormwater Planter with a Focal Point biofilter system. The proposed planter is also capable of bypassing the 25-year storm event from the watershed without overflow. The FocalPoint biofilter system is approved as a proprietary practice for redevelopment under the NYSDEC guidelines. Additional information for this practice has been provided in *Section 10* of this report. *Water Quality routing calculations are contained within Section 8 of this report.*

100% of the Water Quality Volume is treated with a combination of a proposed stormwater planter for all new roof area, an existing stormwater planter for the existing roof area, and an AquaSwirl AS-2 hydrodynamic device for the existing/revised parking area. All practices have also been sized to bypass the 25-year storm event. Each practice is an approved Alternate SMP, as outlined in Section 9.4 of the NYSDEC Stormwater Management Design Manual.

I. NYSDEC TABLE 3.1 DESIGN REGULATIONS:

Each mitigation practice is contained in Table 3.1 of the NYSDEC design regulations and is discussed below.

- Preservation of Undisturbed Areas: Permanent conservation easements of undisturbed areas are not proposed for this site
- Preservation of Buffers. See above.
- Reduction of Clearing and Grading: All construction is occurring in areas previously disturbed.
- Locating Development in Less Sensitive Areas: No development is planned within sensitive areas.
- Open Space Design: Not applicable to this application.
- Soil Restoration: As required, all disturbed soil areas will be “deep tilled” prior to the establishment of ground cover. Deep tilling restores the absorptive quality of the soil.
- Roadway Reduction: No roadways are being proposed as part of this application.
- Sidewalk Reduction: All sidewalks have been designed to the minimum extent possible per the Village of Mamaroneck requirements, in order meet the required pedestrian traffic on and off-site.
- Driveway Reduction: All driveways have been designed to the minimum extent possible to provide adequate access for the proposed use.
- Cul-de-sac Reduction: No Cul-de-sacs are being proposed as part of this application.
- Building Footprint Reduction: The proposed building footprint is considered the minimum footprint desired for this use.
- Parking Reduction: Parking for the proposed use has been provided to the maximum extent possible.
- Conservation of Natural Areas: Not applicable to this application.
- Sheet Flow to riparian buffers or filter strips: Not applicable to this application.
- Vegetated Open Swale: An “O-Type Swale” is not applicable to this site.
- Tree Planting/Tree Boxes: Landscaped Islands have been provided wherever possible.
- Disconnection of Rooftop Runoff: Not applicable to this application.
- Stream Daylighting for Redevelopment Projects: Not applicable to this application.
- Rain Gardens: Due to the location of the property within the existing 100-year flood zone, standard exfiltration practices were determined to be ineffective for this application.
- Green Roof: Green roof technology could be incorporated into the design if desired, however, the required water quality volume is already being

treated via existing and proposed stormwater planters and an existing hydrodynamic separator.

- Stormwater Planters: Stormwater Planters have been incorporated into the design to treat the runoff from both existing and proposed roof areas.
- Rain tank/Cistern: Rain tanks/Cisterns could be incorporated if desired.
- Porous Pavement: Porous Pavement could be incorporated into the design, however, due to the location of the property within the existing 100-year flood zone, standard exfiltration practices were determined to be ineffective for this application.

J. CONSTRUCTION PHASE

During the construction phase of the project, a sediment and erosion control plan shall be implemented in accordance with the New York State Department of Environmental Conservation’s Best Management Practices (BMP). The primary goals of the sediment and erosion control plan are to prevent the tracking of dirt and mud onto adjacent roads, to prevent mud and silt from entering into existing and proposed drainage facilities, and to protect the receiving waters from contamination during the construction.

<u>During construction, the party responsible for implementing the temporary (during construction) Stormwater Management facilities Maintenance Program will be the owner. Contact information will be filed with the Village.</u>

A New York State Professional Engineer or Certified Professional In Erosion and Sediment Control (P.E. or CPESC) shall conduct an assessment of the site prior to the commencement of construction and certify in an inspection report that the appropriate erosion and sediment controls shown on the plan have been adequately installed and/or implemented to ensure overall preparedness of the site for construction. Following the commencement of construction, site inspections shall be conducted by the P.E. or CPESC at least every 7 calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater.

During each inspection, the representative shall record the following:

1. On a site map, indicate the extent of all disturbed site areas and drainage pathways. Indicate site areas that are expected to undergo initial disturbance or significant site work within the next 14-day period;

2. Indicate on a site map all areas of the site that have undergone temporary or permanent stabilization;

3. Indicate all disturbed site areas that have not undergone active site work during the previous 14-day period;

4. Inspect all sediment control practices and record approximate degree of sediment accumulation as a percentage of the sediment storage volume;

5. Inspect all erosion and sediment control practices and record all maintenance requirements. Identify any evidence of rill or gully erosion occurring on slopes and any loss of stabilizing vegetation or seeding/mulching. Document any excessive deposition of sediment or ponding water along the barrier. Record the depth of sediment within containment structures and any erosion near outlet and overflow structures.

6. All identified deficiencies.

The construction manager shall maintain a record of all inspection reports in a site logbook. The site logbook shall be maintained on-site and be made available to the Village of Mamaroneck. A summary of the site inspection activities shall be posted on a monthly basis in a public accessible location at the site.

The projects anticipated start date is Spring 2019 and the anticipated completed date is spring 2020.

K. CONSTRUCTION SEQUENCING

The following erosion control schedule shall be utilized:

1. Install construction entrance to the development area.

2. Establish construction staging area.

3. Selective vegetation removal for silt fence installation.

4. Install silt fence down slope of all areas to be disturbed as shown on the plan.

5. Strip topsoil and stockpile at the locations specified on the plans (up gradient of erosion control measures). Temporarily stabilize topsoil stockpiles (hydroseed during May 1st through October 31st planting season or by covering with a tarpaulin(s) November 1st through April 30th. Install silt fence around toe of slope.

6. Demolish any existing site features and/or structures noted as being removed on the construction documents, and dispose of off-site.

7. Rough grade site.

8. Install additional silt fencing as necessary.

9. Rough grade parking lot and install trench drains and drain inlets, as well as all associated onsite piping.

10. Obtain street opening permit for drainage connection to existing catch basin in Fenimore Road, as well as proposed curb cut widenings.

11. Install drainage work tributary to existing municipal catch basin in Fenimore Road up to location of proposed stormwater planter.

12. Excavate and construct foundations for new building.

13. Construct stormwater planter adjacent to building addition.

14. Construct building. Install and connect all roof drain leaders to previously installed stormwater planter.

15. Install curbing, and sub-base courses. Fine grade and seed all disturbed areas. Spread salt hay over seeded areas.

16. Install bituminous concrete top course.

17. Clean pavement, drain lines, catch basins and pretreatment devices. Clean exfiltration/attenuation galleries.

18. Remove all temporary soil erosion and sediment control measures after the site is stabilized with vegetation.

* Soil erosion and sediment control maintenance must occur weekly and prior to and after every ½" or greater rainfall event.

L. EROSION AND SEDIMENT CONTROL COMPONENTS

The primary aim of the soil and sediment control measures is to reduce soil erosion from areas stripped of vegetation during and after construction and to prevent silt from reaching the off-site drainage structures and downstream properties. As outlined in the Construction Sequencing schedule, the Sediment and Erosion Control Components are an integral component of the construction sequencing and will be implemented to control sedimentation and re-establish vegetation as soon as practicable.

Planned erosion and sedimentation control practices during construction include the installation, inspection and maintenance of the inlet protection, soil stockpile areas, diversion swales, sediment traps and silt fencing. General land grading practices, including land stabilization and construction sequencing are also integrated into the Sediment and Erosion Control Plan. Dust control is not expected to be a problem due to the relatively limited area of exposure, the undisturbed perimeter of trees around the project area and the relatively short time of exposure. Should excessive dust be generated, it will be controlled by sprinkling.

All proposed soil erosion and sediment control practices have been designed in accordance with the following publications:

- New York State standards and Specifications for Urban Erosion and Sediment Control, latest edition.
- New York State General Permit for Stormwater Discharges, GP-0-15-002 (General permit).
- “Reducing the Impacts of Stormwater Runoff from New Development”, as published by the New York State Department of Environmental Conservation (NYSDEC), second edition, April, 1993.

The proposed soil erosion and sediment control devices include the planned erosion control practices outlined below. Maintenance procedures for each erosion control practice have also been outlined below.

- **SILT FENCE**

  Silt fence (geo-textile filter cloth) shall be placed in locations depicted on the approved plans. The purpose of the silt fence is to reduce the velocity of sediment laden stormwater from small drainage areas and to intercept the transported sediment load. In general, silt fence shall be used at the toe of slopes or intermediately within slopes where obvious channel concentration of stormwater is not present.

  <u>Maintenance</u>

  Silt fencing shall be inspected at a minimum of once per week and prior to and within 48 hours following a rain event ½” or greater. Inspections shall include ensuring that the fence material is tightly secured to the woven wire and the wire is secured to the wood posts. In addition, overlapping filter fabric shall be secure and the fabric shall be maintained a minimum of six (6) inches below grade. In the event that any “bulges” develop in the fence, that section of fence shall be replaced within 48 hours with new fence section. Any sediment build-up against the fence shall be removed within 48 hours and deposited on-site a minimum of 100 feet outside of any wetland or watercourse.

- **INLET PROTECTION**

  After driveway catch basins and surface inlets have been installed, these drain inlets will receive stormwater from the driveway, Temporary Diversion Swales and surrounding overland watersheds. In order to protect the receiving waters from sedimentation, the contractor shall install ¾ inch stone aggregate around the perimeter of all catch basins and surface inlets as illustrated on the approved plans. This barrier will allow stormwater to be filtered prior to reaching the basin inlet grate.

<u>Maintenance</u>

The stone aggregate shall be inspected weekly prior to and within 48 hours following a rain event ½" or greater. Care shall be taken to ensure that all stone aggregate are properly located and secure and do not become displaced. The stone aggregate shall be inspected for accumulated sediments and any accumulated sediment shall be removed from the device and deposited not less than 100 feet from wetland or watercourse.

- **SOIL/SHOT ROCK STOCKPILING**

All soil and shot rock stripped from the construction area during grubbing and mass grading shall be stockpiled in locations approved by the Town/Village's representative, but in no case shall they be placed within 100' of a wetland or watercourse. The stockpiled soils shall be re-used during finish-grading to provide a suitable growing medium for plant establishment. Soil stockpiles shall be protected from erosion by vegetating the stockpile with rapidly – germinating grass seed or covering the stockpile with tarpaulin and surrounding it with either silt fence.

<u>Maintenance</u>

Sediment controls (silt fence) surrounding the stockpiles shall be inspected according to the recommended maintenance outline above. All stockpiles shall be inspected for signs of erosion or problems with seed establishment weekly and prior to and within 48 hours following a rain event ½" or greater.

- **GENERAL LAND GRADING**

The intent of the Erosion & Sediment Control Plan is to control disturbed areas such that soils are protected from erosion by temporary methods and, ultimately, by permanent vegetation. Where practicable, all cut and fill slopes shall be kept to a maximum slope of 2:1. In the event that a slope must exceed a 2:1 slope, it will be stabilized with stone riprap. On fill slopes, all material will be placed in layers not to exceed 12 inches in depth and adequately compacted. Where practicable, diversion swales shall be constructed on the top of all fill embankments to divert any overland flows away from the fill slopes.

- **SURFACE STABILIZATION**

All disturbed will be protected from erosion with the use of vegetative measures (i.e., grass seed mix, sod) hydromulch netting or hay. When activities temporarily cease during construction, soil stockpiles and exposed soil should be stabilized by seed, mulch or other appropriate measures as soon as possible, but in no case more than 14 days after construction activity has ceased. All seeded areas will be re-seeded areas as necessary and mulch according to the site plan to maintain a vigorous, dense vegetative cover,

Erosion control barriers consisting of silt fencing shall be placed around exposed areas during construction. Where exposed areas are immediately uphill from a wetland or watercourse, the erosion control barrier will consist of double rows of silt fencing. Any areas stripped of vegetation during construction will be vegetated and/or mulch as soon as possible, but in no case more than 14 days to prevent erosion of the exposed soils. And topsoil removed during construction will be temporarily stockpiled for future use in grading and landscaping.

As mentioned above, temporary vegetation will be established to protect exposed soil areas during construction. If growing conditions are not suitable for the temporary vegetation, mulch will be used to the satisfaction of the Commissioner of Public Works. Materials that may be used for mulching include straw, hay, salt hay, wood fiber, synthetic soil stabilizers, mulch netting, sod or hydromulch. In site areas where significant erosion potential exists (steep slopes) and where specifically directed by the Town/Village's representative, Curlex Excelsior erosion control blankets (manufactured by American Excelsior, or approved equal) shall be installed. A permanent vegetative cover will be established upon completion of construction of those areas that have been brought to finish-grade and to remain undisturbed.

- **DEWATERING**

Prevent surface water and subsurface or ground water from flowing into excavations and trenches. Pump out any accumulated water.

Do not allow water to accumulate in excavations or trenches. Remove water from all excavations immediately to prevent softening of foundation bottoms, undercutting footings, and soil changes detrimental to the stability of subgrades and foundations. Furnish and maintain pumps, sumps, suction and discharge piping systems, and other system components necessary to convey the water away from the Site.

Convey water removed from excavations, and rain water, to collecting or run-off area. Cut and maintain temporary drainage ditches and provide other necessary diversions outside excavation limits for each structure. Do not use trench excavations as temporary drainage ditches.

Provide temporary controls to restrict the velocity of discharged water as necessary to prevent erosion and siltation of receiving areas.

M. CONSTRUCTION PRACTICES TO MINIMIZE STORMWATER CONTAMINATION

<u>General:</u>

Adequate measures shall be taken to minimize contaminant particles arising from the discharge of solid materials, including building materials, grading operations, and the reclamation and placement of pavement, during project construction, including but not limited to:

- Building materials, garbage, and debris shall be cleaned up daily and deposited into dumpsters, which will be periodically removed from the site and appropriately disposed of. All dumpsters and containers left on-site shall be covered and surrounded with silt fence in order to prevent contaminants from leaving the site. Silt fencing shall be inspected on a weekly basis.

- Dump trucks hauling material from the construction site will be covered with a tarpaulin.

- The paved street adjacent to the site entrance will be swept daily to remove excess mud, dirt, or rock tracked from the site.

- Petroleum products will be stored in tightly sealed containers that are clearly labeled.

- All vehicles on site will be monitored for leaks and receive regular preventive maintenance to reduce the chance of leakage.

- All spills will be cleaned up immediately upon discovery. Spills large enough to reach the storm system will be reported to the National Response Center at 1-800-424-8802.

- Materials and equipment necessary for spill cleanup will be kept in the temporary material storage trailer onsite. Equipment will include, but not be limited to, brooms, dust pans, mops, rags, gloves, goggles, kitty litter, sand, saw dust, and plastic and metal trash containers.

- All paint containers and curing compounds will be tightly sealed and stored when not required for use. Excess paint will not be discharged to the storm system, but will be properly disposed according to the manufacturer’s instructions.

- Sanitary waste will be collected from portable units a minimum of two times a week to avoid overfilling. All sanitary waste units shall be surrounded by silt fence to prevent contaminants from leaving the site. Silt fencing shall be inspected on a weekly basis.

- Any asphalt substances used on-site will be applied according to the manufacturer's recommendation.

- Fertilizers will be stored in a covered shed and partially used bags will be transferred to a sealable bin to avoid spills and will be applied only in the minimum amounts recommended by the manufacturer and worked into the soil to limit exposure to stormwater.

- No disturbed area shall be left un-stabilized for longer than 14 days during the growing season.

- When erosion is likely to be a problem, grubbing operations shall be scheduled and performed such that grading operations and permanent erosion control features can follow within 24 hours thereafter.

- As work progresses, patch seeding shall be done as required on areas previously treated to maintain or establish protective cover.

- Drainage pipes and swales/ditches shall generally be constructed in a sequence from outlet to inlet in order to stabilize outlet areas and ditches before water is directed to the new installation or any portion thereof, unless conditions unique to the location warrant an alternative method.

Spill Control & Spill Response:

- For all hazardous materials stored on site, the manufacturer's recommended methods for spill clean up will be clearly posted. Site personnel will be made aware of the procedures, and the locations of the information and cleanup supplies.
- Appropriate cleanup materials and equipment will be maintained by the Contractor in the materials storage area on-site. As appropriate, equipment and materials may include items such as booms, dust pans, mops, rags, gloves, goggles, kitty litter, sand, sawdust, and plastic and metal trash containers specifically for clean up purposes.
- All spills will be cleaned immediately after discovery and the materials disposed of properly.
- The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with a hazardous substance.
- After a spill, a report will be prepared describing the spill, what caused it, and the cleanup measures taken. The spill prevention plan will be adjusted to include measures to prevent this type of spill from reoccurring, as well as clean up instructions in the event of reoccurrences.
- The Contractor's site superintendent, responsible for day-to-day operations, will be the spill prevention and cleanup coordinator. The Contractor is responsible for ensuring that the site superintendent has had

appropriate training for hazardous materials handling, spill management, and cleanup.

- The Contractor's site superintendent will be notified immediately when a spill or the threat of a spill is observed. The superintendent will assess the situation and determine the appropriate response.
- If spills represent an imminent threat of escaping erosion and sediment controls and entering receiving waters, personnel will be directed to respond immediately to contain the release and notify the superintendent after the situation has been stabilized.
- Spill kits containing appropriate materials and equipment for spill response and cleanup will be maintained by the Contractor at the site.
- If oil sheen is observed on surface water, action will be taken immediately to remove the material causing the sheen. The Contractor will use appropriate materials to contain and absorb the spill. The source of the oil sheen will also be identified and removed or repaired as necessary to prevent further releases.
- If a spill occurs the superintendent or the superintendent's designee will be responsible for completing the spill reporting form and for reporting the spill to the contacts listed below.
- Personnel with primary responsibility for spill response and clean up will receive training by the Contractor's site superintendent or designee. The training must include identifying the location of the spill kits and other spill response equipment and the use of spill response materials.
- Spill response equipment will be inspected and maintained as necessary to replace any materials used in spill response activities.

<u>Spill Control Notification:</u>

- A reportable spill is a quantity of five (5) gallons or more or any spill of oil which: (1) violates water quality standards, (2) produces a "sheen" on a surface water, or (3) causes a sludge or emulsion. This spill must be reported immediately to the agencies listed below.

- Any spill of oil or hazardous substance to waters of the state must be reported immediately by telephone to the following agencies:

  - 911 – Police, Fire and EMS
  - Village of Mamaroneck Engineering Department
    169 Mount Pleasant Avenue

Phone: (914) 777-7731

- Mamaroneck Fire Department
  123 Mamaroneck Avenue
  Phone: (914) 825-8777
- NYS Department of Environmental Conservation (NYSDEC)
  Spill Reporting Hotline
  (1800) 457–7362
- National Response Center: (1800) 424-8802
- Local Emergency Planning Committee (LEPC)
  Westchester County Office of Emergency Management
  200 Bradhurst Avenue
  Hawthorne, NY 10532
  (914) 864–5450
- Westchester County Department of Health (WCDOH)
  Spill Reporting Hotline
  (914) 813-5000
- U.S. Environmental Protection Agency (USEPA)
  EPCRA Information Hotline
  1(800) 535–0202
- U.S. Department of Labor and Occupational Safety and Health Administration (OSHA)
  Tarrytown, NY
  (914) 524–7510

N. STORMWATER MANAGEMENT FACILITIES MAINTENANCE PROGRAM

The following maintenance plan has been developed to maintain the proper function of all drainage and erosion and sediment control facilities:

- <u>Erosion & Sediment Control Maintenance:</u>

  During the construction of the project, the site erosion and sediment control measures as well as basin embankments and outlet structures will be inspected by the project superintendent once a week and/or within 24 hours following a rainstorm ½" or greater. Any repairs required shall be performed in a timely manner. All sediment removal and/or repairs will be followed within 24 hours by re-vegetation. Remove sediment and correct erosion by re-seed eroded areas and gullies within 7 days.

- <u>General Stormwater Facilities Maintenance (Storm Sewer, Catch Basins/Drain Inlets, Manholes, Pre-treatment Device and Subsurface Infiltration System)</u>

All stormwater facilities shall be inspected immediately after completion of construction, and then monthly for the first three (3) months following the completion of the Project. Within the first three (3) months, inspections shall immediately be performed following a large storm event (i.e. producing 1/2" (one-half inch) of rain or greater. Thereafter, these facilities shall be inspected as described as follows. Upon inspection, facilities shall be immediately maintained and/or cleaned as may be required. Any site areas exhibiting soil erosion of any kind shall be immediately restored and stabilized with vegetation, mulch or stone, depending on the area to be stabilized.

Upon each inspection, all visible debris including, but not limited to, twigs, leaf and forest litter shall be removed from the swales, overflow discharge points and frames and grates of drainage structures.

- <u>Sumps − Catch Basin/Drain Inlets and Drain Manholes</u>

All catch basin/drain inlets and drain manholes with sumps have been designed to trap sediment prior to its transport to the infiltration practice and, ultimately, downstream. These sumps will require periodic inspection and maintenance to ensure that adequate depth is maintained within the sumps.

All sumps shall be inspected once per month for the first three (3) months (after drainage system has been put into service). Thereafter, all sumps shall be inspected every four (4) months. The Owner, or their duly authorized representative, shall take measurements of the sump depth.

If sediment has accumulated to 1/2 (one-half) the depth of the sump, all sediment shall be removed from the sump. Sediments can be removed with hand-labor or with a vacuum truck.

The use of road salt shall be minimized for maintenance of roadway and driveway areas.

- <u>Hydrodynamic Separator:</u>

The hydrodynamic separator <u>(Aquaswirl unit)</u> shall be inspected every six (6) months (Spring and Fall) for excess sediment accumulation. During dry weather conditions, accumulated sediments shall be vacuumed out when sediment has reached 1/2 (one-half) the capacity of the isolated sump, or when an appreciable level of hydrocarbons and trash has accumulated, whichever occurs first.

Upon completion of construction, the Aquaswirl Unit should be inspected quarterly during the first year in order to develop an appropriate schedule of maintenance. When the sediment pile is within 30 to 36 inches of the water surface, the system should be maintained. A vacuum truck shall be used to remove the accumulated sediment and debris. Refer to manufacturer's literature for detailed maintenance instructions.

- <u>Stormwater Planter:</u>

  The stormwater planters shall be inspected twice within the first six (6) months, and after each storm event greater than 0.5-inches (Spring and Fall) for excess sediment accumulation and for surface ponding. After the first year, the planter shall be inspected every four (4) months and after storm events greater than the 1-year storm.

  During dry weather conditions, all accumulated sediment shall be removed from the planter, and the existing topsoil shall be retiled to promote exfiltration of the stormwater thought the practice.

  Routine maintenance activities shall be performed weekly, and shall include running and replacing dead or dying vegetation, plant thinning, and erosion repair.

- <u>FocalPoint Biofilter System:</u>

  The Focalpoint Biofilter System shall be inspected twice within the first six (6) months, and after each storm event greater than 1.0-inches (Spring and Fall) for excess sediment accumulation and for surface ponding. After the first year, the planter shall be inspected every six (6) months and after storm events greater than the 1-year storm.

  During dry weather conditions, all accumulated sediment shall be removed from the planter, and the existing topsoil shall be retiled to promote exfiltration of the stormwater thought the practice.

  Routine maintenance activities shall be performed weekly and shall include running and replacing dead or dying vegetation, plant thinning, and erosion repair.

  All maintenance shall be completed in accordance with the manufacturer's guidelines outlined in the Operations & Maintenance manual located in *Section 8* of this report.

O. CONCLUSION:

The stormwater management plan proposed meets and exceeds all the requirements set forth by the Village of Mamaroneck and the New York State Department of Environmental Conservation (NYSDEC) for redevelopment projects. Design modification requirements that may occur during the approval process, will be performed and submitted for review to the Village of Mamaroneck.

3.) Extreme Precipitation Table

Extreme Precipitation Tables

Northeast Regional Climate Center

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

Smoothing	Yes
State	New York
Location	
Longitude	73.743 degrees West
Latitude	40.950 degrees North
Elevation	0 feet
Date/Time	Fri, 19 Jan 2018 11:31:10 -0500

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.34	0.51	0.64	0.84	1.05	1.31	**1yr**	0.90	1.23	1.50	1.86	2.31	2.86	3.22	**1yr**	2.53	3.10	3.58	4.31	4.94	**1yr**
2yr	0.41	0.63	0.78	1.02	1.28	1.59	**2yr**	1.11	1.50	1.83	2.26	2.80	3.45	3.87	**2yr**	3.05	3.72	4.27	5.07	5.75	**2yr**
5yr	0.47	0.74	0.92	1.24	1.58	2.00	**5yr**	1.37	1.85	2.31	2.86	3.52	4.31	4.89	**5yr**	3.82	4.70	5.45	6.38	7.13	**5yr**
10yr	0.53	0.84	1.06	1.43	1.86	2.37	**10yr**	1.61	2.18	2.75	3.41	4.19	5.11	5.84	**10yr**	4.53	5.62	6.56	7.59	8.38	**10yr**
25yr	0.62	0.98	1.25	1.73	2.31	2.97	**25yr**	1.99	2.69	3.45	4.30	5.28	6.41	7.40	**25yr**	5.67	7.11	8.37	9.56	10.39	**25yr**
50yr	0.70	1.13	1.45	2.02	2.72	3.53	**50yr**	2.35	3.17	4.11	5.11	6.27	7.60	8.85	**50yr**	6.73	8.51	10.08	11.38	12.23	**50yr**
100yr	0.80	1.29	1.66	2.36	3.21	4.19	**100yr**	2.77	3.73	4.89	6.09	7.46	9.02	10.58	**100yr**	7.99	10.18	12.13	13.55	14.41	**100yr**
200yr	0.91	1.48	1.91	2.75	3.79	4.98	**200yr**	3.27	4.40	5.82	7.26	8.88	10.72	12.66	**200yr**	9.48	12.18	14.62	16.13	16.97	**200yr**
500yr	1.09	1.79	2.33	3.38	4.73	6.24	**500yr**	4.08	5.48	7.32	9.14	11.18	13.47	16.06	**500yr**	11.92	15.45	18.71	20.33	21.08	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.25	0.39	0.47	0.63	0.78	0.88	**1yr**	0.67	0.86	1.27	1.54	1.96	2.58	2.97	**1yr**	2.29	2.86	3.31	3.97	4.58	**1yr**
2yr	0.39	0.61	0.75	1.01	1.25	1.50	**2yr**	1.08	1.47	1.71	2.19	2.73	3.35	3.76	**2yr**	2.97	3.61	4.14	4.93	5.61	**2yr**
5yr	0.44	0.68	0.84	1.16	1.47	1.79	**5yr**	1.27	1.75	2.02	2.57	3.20	4.03	4.54	**5yr**	3.56	4.37	5.06	5.95	6.70	**5yr**
10yr	0.49	0.75	0.93	1.31	1.69	2.04	**10yr**	1.46	1.99	2.29	2.91	3.58	4.62	5.21	**10yr**	4.09	5.01	5.90	6.82	7.63	**10yr**
25yr	0.56	0.85	1.06	1.52	1.99	2.42	**25yr**	1.72	2.36	2.71	3.42	4.15	5.53	6.22	**25yr**	4.90	5.98	7.22	8.17	9.07	**25yr**
50yr	0.62	0.94	1.17	1.69	2.27	2.73	**50yr**	1.96	2.67	3.09	3.89	4.59	6.32	7.11	**50yr**	5.60	6.83	8.44	9.34	10.35	**50yr**
100yr	0.69	1.05	1.31	1.90	2.60	3.09	**100yr**	2.24	3.02	3.54	4.43	5.12	7.23	8.11	**100yr**	6.40	7.80	9.85	10.69	11.80	**100yr**
200yr	0.78	1.17	1.48	2.15	3.00	3.52	**200yr**	2.59	3.44	4.06	5.05	5.68	8.27	9.27	**200yr**	7.32	8.91	11.52	12.23	13.47	**200yr**
500yr	0.91	1.36	1.75	2.54	3.62	4.22	**500yr**	3.12	4.12	4.88	6.08	8.37	9.87	11.05	**500yr**	8.73	10.63	14.20	14.60	16.05	**500yr**

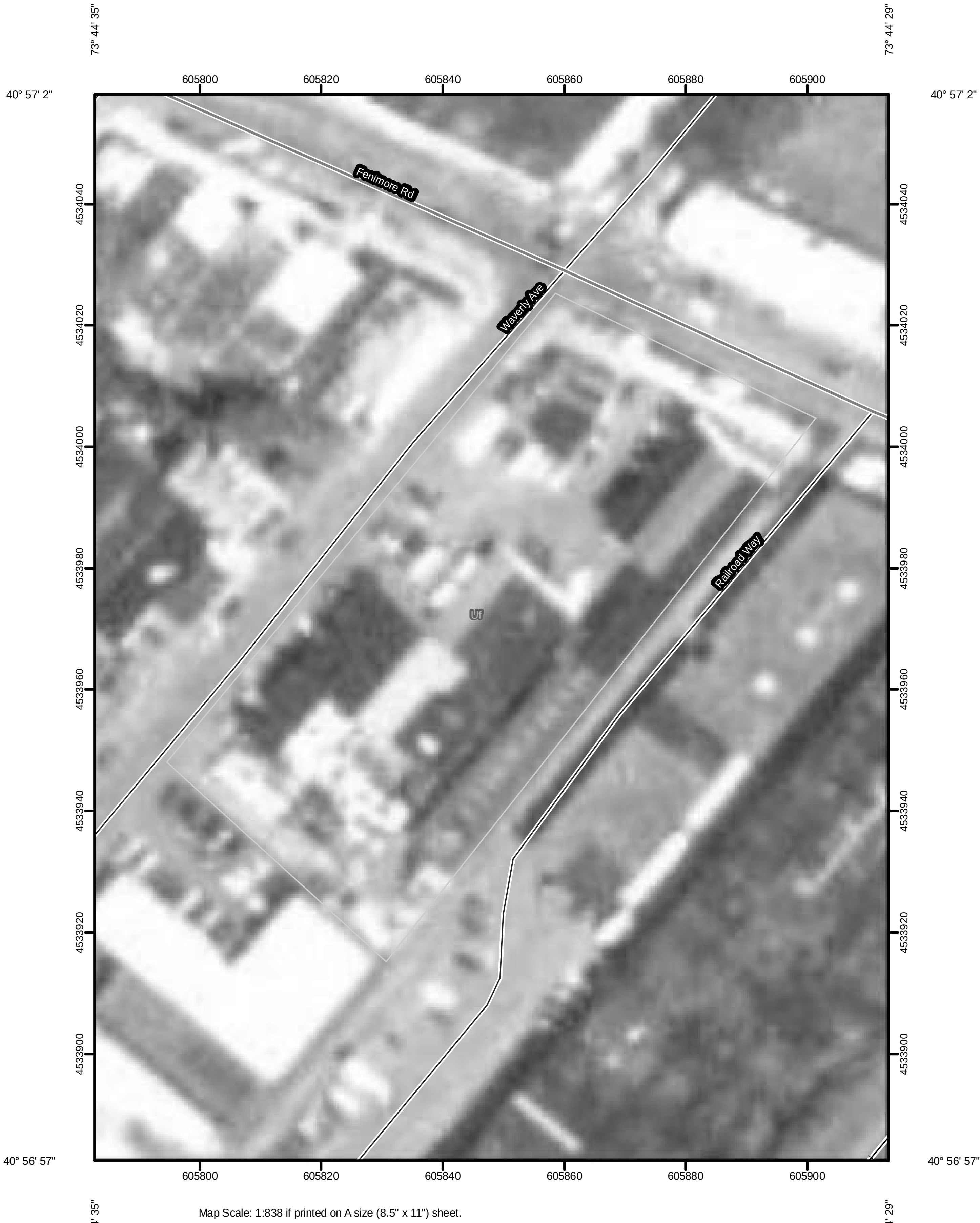
Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.37	0.58	0.71	0.95	1.17	1.38	**1yr**	1.01	1.35	1.63	2.14	2.61	3.13	3.48	**1yr**	2.77	3.35	3.85	4.63	5.26	**1yr**
2yr	0.42	0.65	0.80	1.08	1.33	1.63	**2yr**	1.15	1.59	1.90	2.38	3.01	3.55	4.03	**2yr**	3.15	3.87	4.40	5.25	5.93	**2yr**
5yr	0.51	0.78	0.97	1.33	1.70	1.99	**5yr**	1.46	1.95	2.32	3.03	3.75	4.61	5.23	**5yr**	4.08	5.03	5.85	6.83	7.56	**5yr**
10yr	0.60	0.92	1.14	1.59	2.05	2.38	**10yr**	1.77	2.33	2.81	3.67	4.53	5.63	6.42	**10yr**	4.98	6.17	7.25	8.37	9.12	**10yr**
25yr	0.74	1.12	1.40	2.00	2.63	3.01	**25yr**	2.27	2.94	3.64	4.74	5.83	7.31	8.41	**25yr**	6.47	8.09	9.64	10.99	11.68	**25yr**
50yr	0.86	1.32	1.64	2.35	3.17	3.61	**50yr**	2.73	3.52	4.42	5.76	7.06	8.95	10.32	**50yr**	7.92	9.92	11.95	13.50	14.09	**50yr**
100yr	1.02	1.54	1.93	2.79	3.82	4.31	**100yr**	3.30	4.21	5.36	7.00	8.55	10.93	12.68	**100yr**	9.68	12.20	14.82	16.57	17.01	**100yr**
200yr	1.20	1.80	2.29	3.31	4.62	5.16	**200yr**	3.98	5.04	6.49	8.49	10.36	13.35	15.61	**200yr**	11.82	15.01	18.37	20.38	20.52	**200yr**
500yr	1.50	2.23	2.87	4.16	5.92	6.52	**500yr**	5.11	6.37	8.38	10.97	13.30	17.43	20.55	**500yr**	15.42	19.76	24.41	26.80	26.31	**500yr**

Powered by ACIS
Northeast Regional Climate Center

4.) Soils Maps & Soils Data

Soil Map—Westchester County, New York
(416 Waverly Avenue)



Map Scale: 1:838 if printed on A size (8.5" x 11") sheet.

N

Meters
0 5 10 20 30

Feet
0 30 60 120 180

MAP LEGEND

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

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features
- Cities

Water Features
- Oceans
- Streams and Canals

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

MAP INFORMATION

Map Scale: 1:838 if printed on A size (8.5" × 11") sheet.

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 18N NAD83

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

Soil Survey Area: Westchester County, New York
Survey Area Data: Version 4, Dec 14, 2006

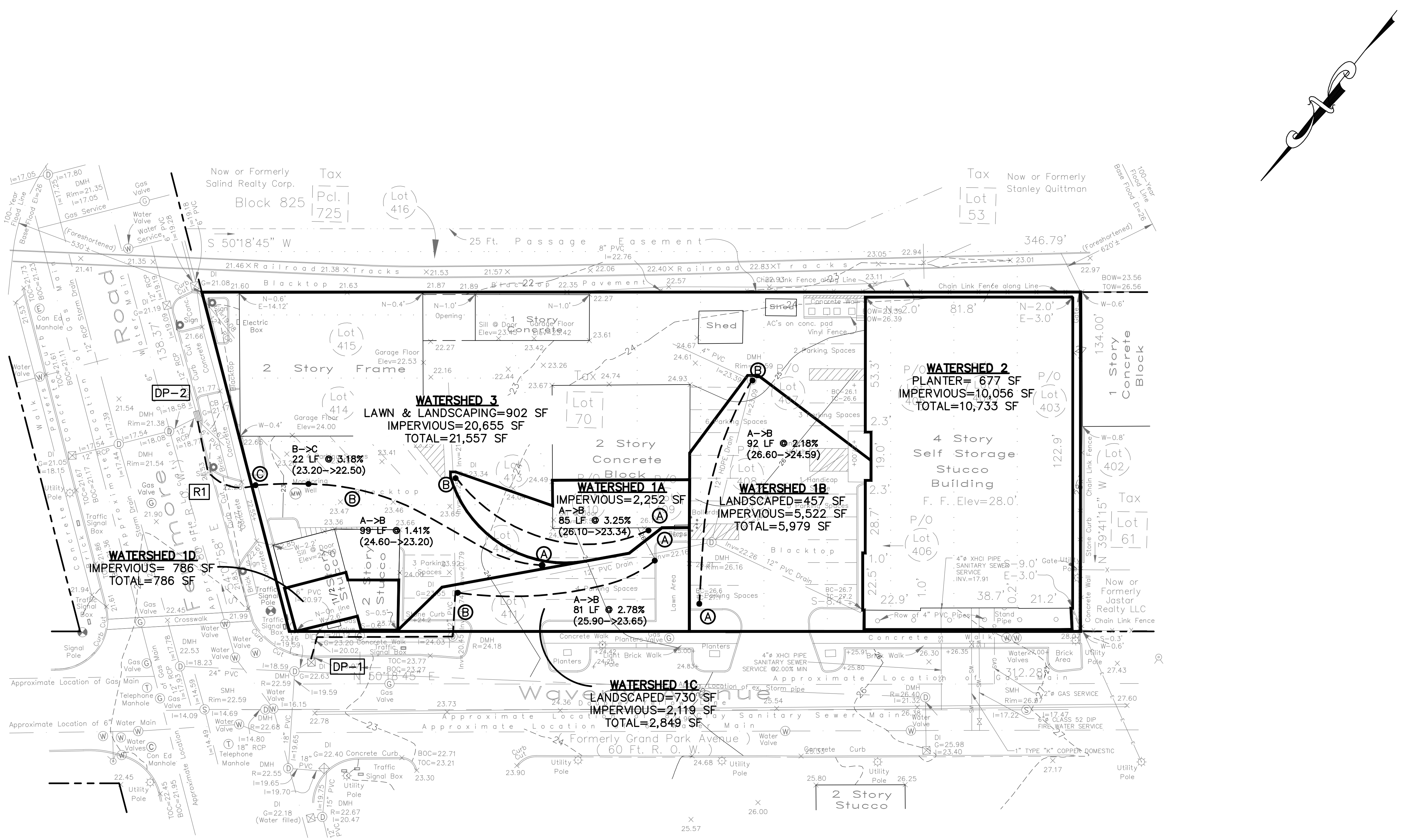
Date(s) aerial images were photographed: 7/31/2006

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

Westchester County, New York (NY119)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
Uf	Urban land	1.3	100.0%
Totals for Area of Interest		**1.3**	**100.0%**

5.) Watershed Maps



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

ANY ALTERATIONS OR REVISIONS OF THESE PLANS, UNLESS DONE BY OR UNDER THE DIRECTION OF THE NYS LICENSED AND REGISTERED ENGINEER THAT PREPARED THEM, IS A VIOLATION OF THE NYS EDUCATION LAW.

No.	Date	Description
1.	1-14-19	REVISED PER TOWN COMMENTS

Revisions

THIS PLAN NOT VALID FOR CONSTRUCTION WITHOUT ENGINEERS SEAL & SIGNATURE

PROJECT:

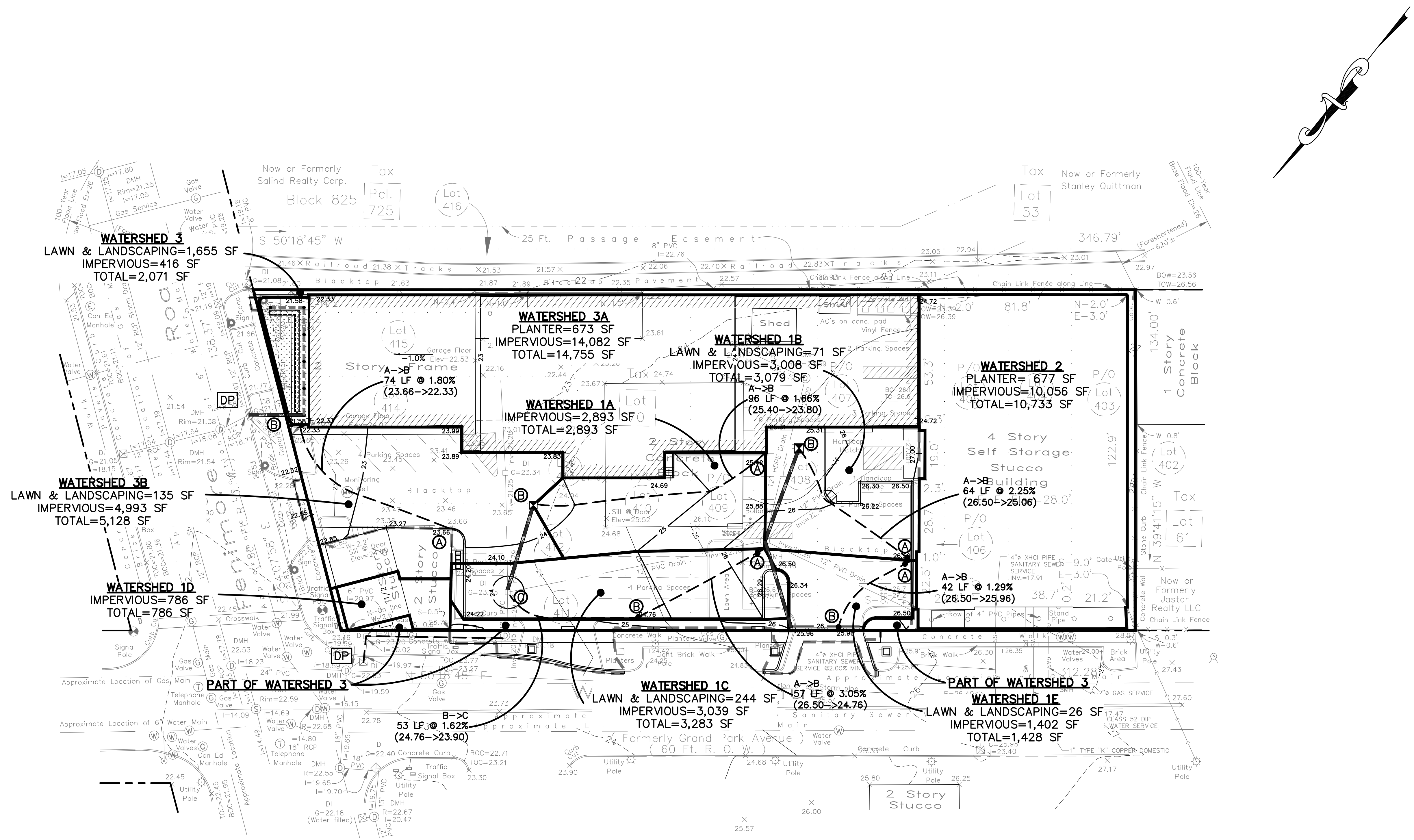
SELF STORAGE BUILDING ADDITION
560 FENIMORE ROAD
VILLAGE OF MAMARONECK
WESTCHESTER COUNTY – NEW YORK

WATERSHED MAP – EXISTING

HEC

HUDSON ENGINEERING & CONSULTING, P.C.
45 Knollwood Road – Suite 201
Elmsford, New York 10523
T: 914-909-0420
F: 914-560-2086

Date: 2/8/18
Scale: 1" = 20'
Designed By: D.C.
Checked By: M.S.
Sheet: 1 of 2
Sheet No. WS-E



PROJECT:

SELF STORAGE BUILDING ADDITION
560 FENIMORE ROAD
VILLAGE OF MAMARONECK
WESTCHESTER COUNTY – NEW YORK

WATERSHED MAP – PROPOSED

No.	Description	Date
1.	REVISED PER TOWN COMMENTS	1-14-19

Revisions

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HEC

HUDSON
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&
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45 Knollwood Road – Suite 201
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T: 914-909-0420
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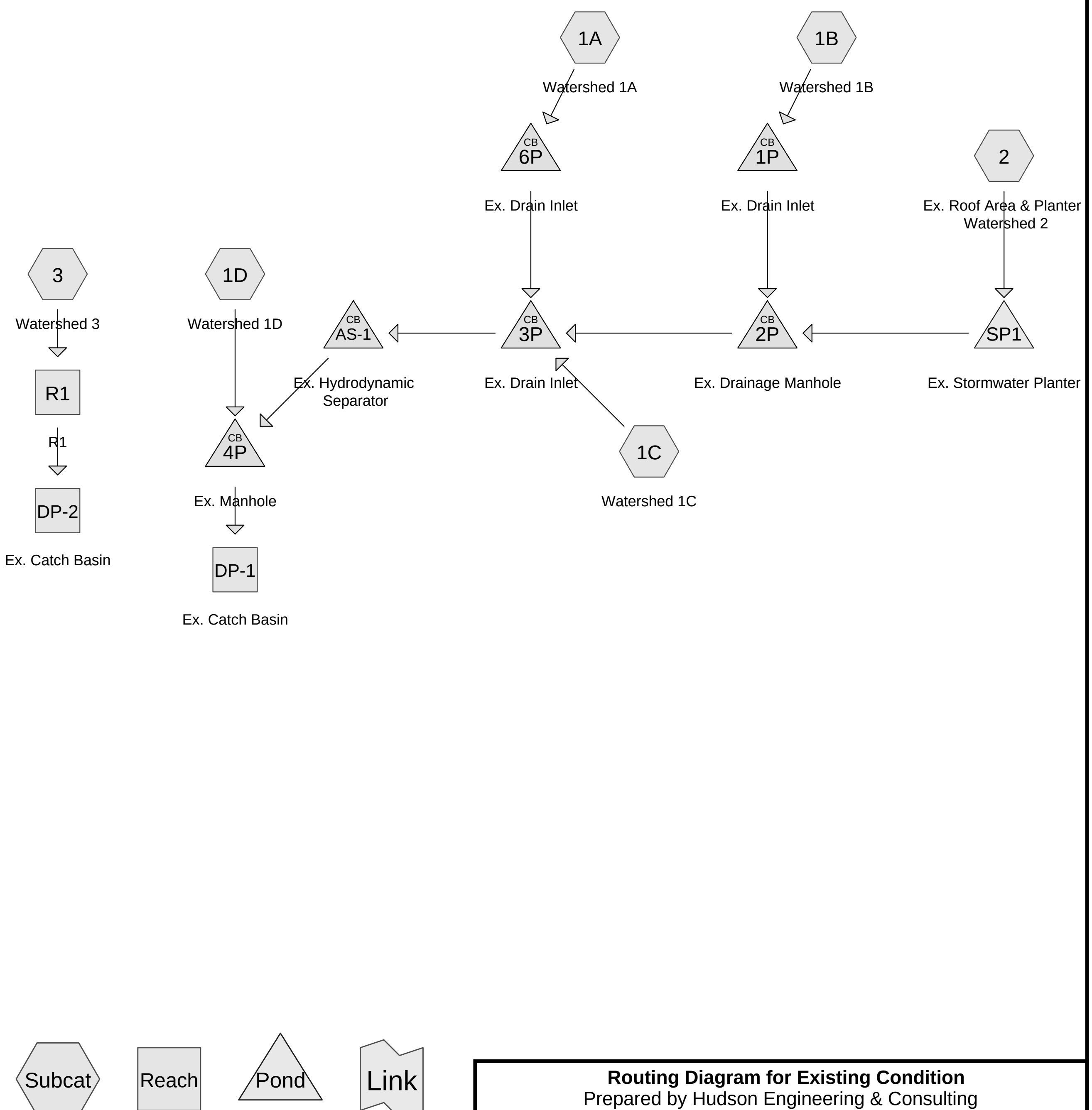
Date: 2/8/18
Scale: 1" = 20'
Designed By: D.C.
Checked By: M.S.
Sheet: 2 of 2
Sheet No.
WS-P

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

6.) Pre-Developed Analysis of the 1-, 10-, and 25-year Extreme Storm Events



Routing Diagram for Existing Condition
Prepared by Hudson Engineering & Consulting
HydroCAD® 10.00-14 s/n 02549 © 2015 HydroCAD Software Solutions LLC

Summary for Subcatchment 1A: Watershed 1A

Runoff = 0.17 cfs @ 12.01 hrs, Volume= 493 cf, Depth= 2.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.86"

	Area (sf)	CN	Description
*	2,252	98	Parking Lot & part of building
	2,252		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	85	0.0325	1.68		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"

Summary for Subcatchment 1B: Watershed 1B

Runoff = 0.44 cfs @ 12.02 hrs, Volume= 1,255 cf, Depth= 2.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.86"

	Area (sf)	CN	Description
	457	79	50-75% Grass cover, Fair, HSG C
*	5,522	98	Parking Lot
	5,979	97	Weighted Average
	457		7.64% Pervious Area
	5,522		92.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	92	0.0218	1.45		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"

Summary for Subcatchment 1C: Watershed 1C

Runoff = 0.19 cfs @ 12.01 hrs, Volume= 503 cf, Depth= 2.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.86"

	Area (sf)	CN	Description
	730	79	50-75% Grass cover, Fair, HSG C
*	2,119	98	Parking Lot
	2,849	93	Weighted Average
	730		25.62% Pervious Area
	2,119		74.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	81	0.0277	1.56		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"

Summary for Subcatchment 1D: Watershed 1D

Runoff = 0.06 cfs @ 12.01 hrs, Volume= 172 cf, Depth= 2.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.86"

	Area (sf)	CN	Description
*	786	98	
	786		100.00% Impervious Area

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

Summary for Subcatchment 2: Ex. Roof Area & Planter Watershed 2

Runoff = 0.80 cfs @ 12.01 hrs, Volume= 2,254 cf, Depth= 2.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.86"

	Area (sf)	CN	Description
*	10,056	98	Roof
*	677	79	Planter
	10,733	97	Weighted Average
	677		6.31% Pervious Area
	10,056		93.69% Impervious Area

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

Summary for Subcatchment 3: Watershed 3

Runoff = 1.58 cfs @ 12.02 hrs, Volume= 4,526 cf, Depth= 2.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.86"

	Area (sf)	CN	Description
	902	79	50-75% Grass cover, Fair, HSG C
*	20,655	98	Parking Lot & Buildings
	21,557	97	Weighted Average
	902		4.18% Pervious Area
	20,655		95.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	99	0.0141	1.24		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"
0.1	22	0.0318	3.62		**Shallow Concentrated Flow, B->C** Paved Kv= 20.3 fps
1.4	121	Total			

Summary for Reach DP-1: Ex. Catch Basin

Inflow Area = 22,599 sf, 91.75% Impervious, Inflow Depth = 2.48" for 1-Year event
Inflow = 0.89 cfs @ 12.01 hrs, Volume= 4,678 cf
Outflow = 0.89 cfs @ 12.01 hrs, Volume= 4,678 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Reach DP-2: Ex. Catch Basin

Inflow Area = 21,557 sf, 95.82% Impervious, Inflow Depth = 2.52" for 1-Year event
Inflow = 1.58 cfs @ 12.02 hrs, Volume= 4,526 cf
Outflow = 1.58 cfs @ 12.02 hrs, Volume= 4,526 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

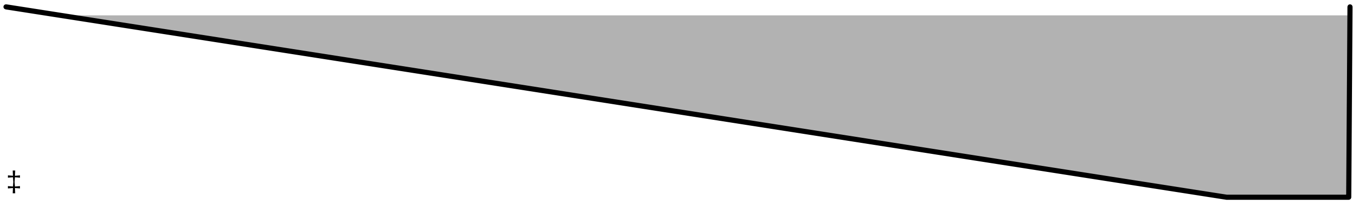
Summary for Reach R1: R1

Inflow Area = 21,557 sf, 95.82% Impervious, Inflow Depth = 2.52" for 1-Year event
Inflow = 1.58 cfs @ 12.02 hrs, Volume= 4,526 cf
Outflow = 1.58 cfs @ 12.02 hrs, Volume= 4,526 cf, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.86 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.01 fps, Avg. Travel Time= 0.7 min

Peak Storage= 23 cf @ 12.02 hrs
Average Depth at Peak Storage= 0.10'
Bank-Full Depth= 0.10' Flow Area= 0.6 sf, Capacity= 1.77 cfs

1.00' x 0.10' deep channel, n= 0.013 Asphalt, smooth
Side Slope Z-value= 100.0 0.1 '/' Top Width= 11.01'
Length= 41.0' Slope= 0.0324 '/'
Inlet Invert= 22.50', Outlet Invert= 21.17'



‡

Summary for Pond 1P: Ex. Drain Inlet

Inflow Area = 5,979 sf, 92.36% Impervious, Inflow Depth = 2.52" for 1-Year event
Inflow = 0.44 cfs @ 12.02 hrs, Volume= 1,255 cf
Outflow = 0.44 cfs @ 12.02 hrs, Volume= 1,255 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.44 cfs @ 12.02 hrs, Volume= 1,255 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 23.47' @ 12.02 hrs
Flood Elev= 24.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	23.09'	**12.0" Round 12" HDPE** L= 65.3' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 23.09' / 22.26' S= 0.0127 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.44 cfs @ 12.02 hrs HW=23.46' TW=22.55' (Dynamic Tailwater)
└─**1=12" HDPE** (Inlet Controls 0.44 cfs @ 1.64 fps)

Summary for Pond 2P: Ex. Drainage Manhole

Inflow Area = 16,712 sf, 93.21% Impervious, Inflow Depth = 2.52" for 1-Year event
Inflow = 0.47 cfs @ 12.02 hrs, Volume= 3,509 cf
Outflow = 0.47 cfs @ 12.02 hrs, Volume= 3,509 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.47 cfs @ 12.02 hrs, Volume= 3,509 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 22.55' @ 12.02 hrs
Flood Elev= 26.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	22.16'	**12.0" Round 12" PVC** L= 101.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 22.16' / 20.74' S= 0.0140 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.47 cfs @ 12.02 hrs HW=22.55' TW=21.27' (Dynamic Tailwater)
└─**1=12" PVC** (Inlet Controls 0.47 cfs @ 1.67 fps)

Summary for Pond 3P: Ex. Drain Inlet

Inflow Area =	21,813 sf, 91.45% Impervious,	Inflow Depth = 2.48" for 1-Year event			
Inflow =	0.84 cfs @	12.01 hrs,	Volume=	4,506 cf	
Outflow =	0.84 cfs @	12.01 hrs,	Volume=	4,506 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.84 cfs @	12.01 hrs,	Volume=	4,506 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 21.27' @ 12.01 hrs
Flood Elev= 23.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.74'	**12.0" Round 12" PVC** L= 14.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 20.74' / 20.45' S= 0.0207 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.83 cfs @ 12.01 hrs HW=21.27' TW=20.97' (Dynamic Tailwater)
↑—**1=12" PVC** (Inlet Controls 0.83 cfs @ 1.96 fps)

Summary for Pond 4P: Ex. Manhole

Inflow Area =	22,599 sf, 91.75% Impervious,	Inflow Depth = 2.48" for 1-Year event			
Inflow =	0.89 cfs @	12.01 hrs,	Volume=	4,678 cf	
Outflow =	0.89 cfs @	12.01 hrs,	Volume=	4,678 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.89 cfs @	12.01 hrs,	Volume=	4,678 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 20.59' @ 12.01 hrs
Flood Elev= 24.12'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.02'	**15.0" Round Ex. 15" HDPE** L= 8.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 20.02' / 19.97' S= 0.0063 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.89 cfs @ 12.01 hrs HW=20.59' TW=0.00' (Dynamic Tailwater)
↑—**1=Ex. 15" HDPE** (Barrel Controls 0.89 cfs @ 2.39 fps)

Summary for Pond 6P: Ex. Drain Inlet

Inflow Area =	2,252 sf,100.00% Impervious,	Inflow Depth = 2.63" for 1-Year event			
Inflow =	0.17 cfs @	12.01 hrs,	Volume=	493 cf	
Outflow =	0.17 cfs @	12.01 hrs,	Volume=	493 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.17 cfs @	12.01 hrs,	Volume=	493 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 21.49' @ 12.02 hrs
Flood Elev= 23.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	21.25'	**12.0" Round 12" PVC** L= 45.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 21.25' / 20.79' S= 0.0102 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.17 cfs @ 12.01 hrs HW=21.49' TW=21.27' (Dynamic Tailwater)
└─**1=12" PVC** (Outlet Controls 0.17 cfs @ 1.76 fps)

Summary for Pond AS-1: Ex. Hydrodynamic Separator

Inflow Area = 21,813 sf, 91.45% Impervious, Inflow Depth = 2.48" for 1-Year event
Inflow = 0.84 cfs @ 12.01 hrs, Volume= 4,506 cf
Outflow = 0.84 cfs @ 12.01 hrs, Volume= 4,506 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.84 cfs @ 12.01 hrs, Volume= 4,506 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 20.97' @ 12.02 hrs
Flood Elev= 24.12'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.45'	**15.0" Round Ex. 15" RCP** L= 54.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 20.45' / 20.12' S= 0.0061 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.82 cfs @ 12.01 hrs HW=20.97' TW=20.59' (Dynamic Tailwater)
└─**1=Ex. 15" RCP** (Outlet Controls 0.82 cfs @ 2.50 fps)

Summary for Pond SP1: Ex. Stormwater Planter

Inflow Area = 10,733 sf, 93.69% Impervious, Inflow Depth = 2.52" for 1-Year event
Inflow = 0.80 cfs @ 12.01 hrs, Volume= 2,254 cf
Outflow = 0.20 cfs @ 12.33 hrs, Volume= 2,254 cf, Atten= 75%, Lag= 18.7 min
Primary = 0.20 cfs @ 12.33 hrs, Volume= 2,254 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 27.77' @ 12.33 hrs Surf.Area= 677 sf Storage= 861 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 209.2 min (973.5 - 764.3)

Volume	Invert	Avail.Storage	Storage Description
#1	26.50'	1,016 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
26.50	677	0	0
28.00	677	1,016	1,016

Device	Routing	Invert	Outlet Devices
#1	Primary	23.50'	**12.0" Round Culvert** L= 64.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 23.50' / 21.33' S= 0.0339 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	27.75'	**6.0" Horiz. Orifice/Grate X 10.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	26.50'	**2.000 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.20 cfs @ 12.33 hrs HW=27.77' TW=22.47' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.20 cfs of 5.80 cfs potential flow)
  ├─**2=Orifice/Grate** (Weir Controls 0.17 cfs @ 0.48 fps)
  └─**3=Exfiltration** (Exfiltration Controls 0.03 cfs)

Summary for Subcatchment 1A: Watershed 1A

Runoff = 0.31 cfs @ 12.01 hrs, Volume= 914 cf, Depth= 4.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.11"

	Area (sf)	CN	Description
*	2,252	98	Parking Lot & part of building
	2,252		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	85	0.0325	1.68		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"

Summary for Subcatchment 1B: Watershed 1B

Runoff = 0.81 cfs @ 12.02 hrs, Volume= 2,370 cf, Depth= 4.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.11"

	Area (sf)	CN	Description
	457	79	50-75% Grass cover, Fair, HSG C
*	5,522	98	Parking Lot
	5,979	97	Weighted Average
	457		7.64% Pervious Area
	5,522		92.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	92	0.0218	1.45		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"

Summary for Subcatchment 1C: Watershed 1C

Runoff = 0.37 cfs @ 12.01 hrs, Volume= 1,022 cf, Depth= 4.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.11"

	Area (sf)	CN	Description
	730	79	50-75% Grass cover, Fair, HSG C
*	2,119	98	Parking Lot
	2,849	93	Weighted Average
	730		25.62% Pervious Area
	2,119		74.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	81	0.0277	1.56		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"

Summary for Subcatchment 1D: Watershed 1D

Runoff = 0.11 cfs @ 12.01 hrs, Volume= 319 cf, Depth= 4.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.11"

	Area (sf)	CN	Description
*	786	98	
	786		100.00% Impervious Area

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

Summary for Subcatchment 2: Ex. Roof Area & Planter Watershed 2

Runoff = 1.46 cfs @ 12.01 hrs, Volume= 4,254 cf, Depth= 4.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.11"

	Area (sf)	CN	Description
*	10,056	98	Roof
*	677	79	Planter
	10,733	97	Weighted Average
	677		6.31% Pervious Area
	10,056		93.69% Impervious Area

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

Summary for Subcatchment 3: Watershed 3

Runoff = 2.90 cfs @ 12.02 hrs, Volume= 8,545 cf, Depth= 4.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.11"

	Area (sf)	CN	Description
	902	79	50-75% Grass cover, Fair, HSG C
*	20,655	98	Parking Lot & Buildings
	21,557	97	Weighted Average
	902		4.18% Pervious Area
	20,655		95.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	99	0.0141	1.24		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"
0.1	22	0.0318	3.62		**Shallow Concentrated Flow, B->C** Paved Kv= 20.3 fps
1.4	121	Total			

Summary for Reach DP-1: Ex. Catch Basin

Inflow Area = 22,599 sf, 91.75% Impervious, Inflow Depth = 4.72" for 10-Year event
Inflow = 3.02 cfs @ 12.02 hrs, Volume= 8,881 cf
Outflow = 3.02 cfs @ 12.02 hrs, Volume= 8,881 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Reach DP-2: Ex. Catch Basin

Inflow Area = 21,557 sf, 95.82% Impervious, Inflow Depth = 4.76" for 10-Year event
Inflow = 2.89 cfs @ 12.02 hrs, Volume= 8,545 cf
Outflow = 2.89 cfs @ 12.02 hrs, Volume= 8,545 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

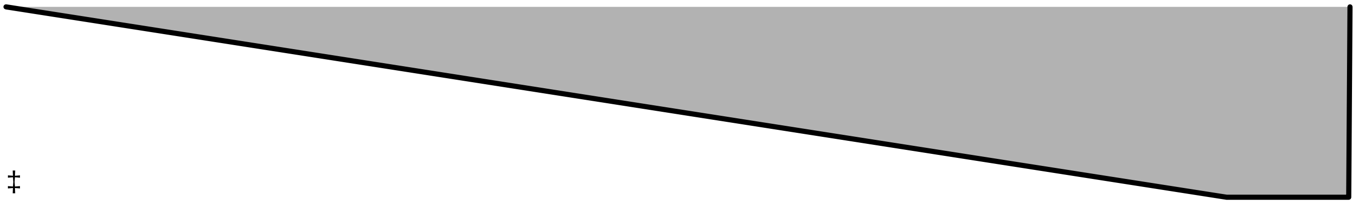
Summary for Reach R1: R1

Inflow Area = 21,557 sf, 95.82% Impervious, Inflow Depth = 4.76" for 10-Year event
Inflow = 2.90 cfs @ 12.02 hrs, Volume= 8,545 cf
Outflow = 2.89 cfs @ 12.02 hrs, Volume= 8,545 cf, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.26 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.20 fps, Avg. Travel Time= 0.6 min

Peak Storage= 36 cf @ 12.02 hrs
Average Depth at Peak Storage= 0.13'
Bank-Full Depth= 0.10' Flow Area= 0.6 sf, Capacity= 1.77 cfs

1.00' x 0.10' deep channel, n= 0.013 Asphalt, smooth
Side Slope Z-value= 100.0 0.1 '/' Top Width= 11.01'
Length= 41.0' Slope= 0.0324 '/'
Inlet Invert= 22.50', Outlet Invert= 21.17'



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Summary for Pond 1P: Ex. Drain Inlet

Inflow Area = 5,979 sf, 92.36% Impervious, Inflow Depth = 4.76" for 10-Year event
Inflow = 0.81 cfs @ 12.02 hrs, Volume= 2,370 cf
Outflow = 0.81 cfs @ 12.02 hrs, Volume= 2,370 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.81 cfs @ 12.02 hrs, Volume= 2,370 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 23.65' @ 12.02 hrs
Flood Elev= 24.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	23.09'	**12.0" Round 12" HDPE** L= 65.3' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 23.09' / 22.26' S= 0.0127 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.77 cfs @ 12.02 hrs HW=23.64' TW=23.21' (Dynamic Tailwater)
└─**1=12" HDPE** (Outlet Controls 0.77 cfs @ 2.52 fps)

Summary for Pond 2P: Ex. Drainage Manhole

Inflow Area = 16,712 sf, 93.21% Impervious, Inflow Depth = 4.76" for 10-Year event
Inflow = 2.24 cfs @ 12.02 hrs, Volume= 6,625 cf
Outflow = 2.24 cfs @ 12.02 hrs, Volume= 6,625 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.24 cfs @ 12.02 hrs, Volume= 6,625 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 23.22' @ 12.02 hrs
Flood Elev= 26.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	22.16'	**12.0" Round 12" PVC** L= 101.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 22.16' / 20.74' S= 0.0140 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.24 cfs @ 12.02 hrs HW=23.22' TW=22.54' (Dynamic Tailwater)
└─**1=12" PVC** (Inlet Controls 2.24 cfs @ 2.85 fps)

Summary for Pond 3P: Ex. Drain Inlet

Inflow Area = 21,813 sf, 91.45% Impervious, Inflow Depth = 4.71" for 10-Year event
Inflow = 2.91 cfs @ 12.02 hrs, Volume= 8,562 cf
Outflow = 2.91 cfs @ 12.02 hrs, Volume= 8,562 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.91 cfs @ 12.02 hrs, Volume= 8,562 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 22.55' @ 12.02 hrs
Flood Elev= 23.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.74'	**12.0" Round 12" PVC** L= 14.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 20.74' / 20.45' S= 0.0207 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.85 cfs @ 12.02 hrs HW=22.53' TW=21.62' (Dynamic Tailwater)
└─**1=12" PVC** (Inlet Controls 2.85 cfs @ 3.63 fps)

Summary for Pond 4P: Ex. Manhole

Inflow Area = 22,599 sf, 91.75% Impervious, Inflow Depth = 4.72" for 10-Year event
Inflow = 3.02 cfs @ 12.02 hrs, Volume= 8,881 cf
Outflow = 3.02 cfs @ 12.02 hrs, Volume= 8,881 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.02 cfs @ 12.02 hrs, Volume= 8,881 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 21.19' @ 12.02 hrs
Flood Elev= 24.12'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.02'	**15.0" Round Ex. 15" HDPE** L= 8.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 20.02' / 19.97' S= 0.0063 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.01 cfs @ 12.02 hrs HW=21.19' TW=0.00' (Dynamic Tailwater)
└─**1=Ex. 15" HDPE** (Barrel Controls 3.01 cfs @ 3.28 fps)

Summary for Pond 6P: Ex. Drain Inlet

Inflow Area = 2,252 sf,100.00% Impervious, Inflow Depth = 4.87" for 10-Year event
Inflow = 0.31 cfs @ 12.01 hrs, Volume= 914 cf
Outflow = 0.31 cfs @ 12.01 hrs, Volume= 914 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.31 cfs @ 12.01 hrs, Volume= 914 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 22.55' @ 12.03 hrs
Flood Elev= 23.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	21.25'	**12.0" Round 12" PVC** L= 45.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 21.25' / 20.79' S= 0.0102 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.01 hrs HW=22.34' TW=22.47' (Dynamic Tailwater)
└─**1=12" PVC** (Controls 0.00 cfs)

Summary for Pond AS-1: Ex. Hydrodynamic Separator

Inflow Area = 21,813 sf, 91.45% Impervious, Inflow Depth = 4.71" for 10-Year event
Inflow = 2.91 cfs @ 12.02 hrs, Volume= 8,562 cf
Outflow = 2.91 cfs @ 12.02 hrs, Volume= 8,562 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.91 cfs @ 12.02 hrs, Volume= 8,562 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 21.63' @ 12.02 hrs
Flood Elev= 24.12'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.45'	**15.0" Round Ex. 15" RCP** L= 54.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 20.45' / 20.12' S= 0.0061 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.85 cfs @ 12.02 hrs HW=21.62' TW=21.19' (Dynamic Tailwater)
└─**1=Ex. 15" RCP** (Outlet Controls 2.85 cfs @ 3.10 fps)

Summary for Pond SP1: Ex. Stormwater Planter

Inflow Area = 10,733 sf, 93.69% Impervious, Inflow Depth = 4.76" for 10-Year event
Inflow = 1.46 cfs @ 12.01 hrs, Volume= 4,254 cf
Outflow = 1.43 cfs @ 12.02 hrs, Volume= 4,255 cf, Atten= 2%, Lag= 0.5 min
Primary = 1.43 cfs @ 12.02 hrs, Volume= 4,255 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 27.84' @ 12.02 hrs Surf.Area= 677 sf Storage= 908 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 150.0 min (900.7 - 750.7)

Volume	Invert	Avail.Storage	Storage Description
#1	26.50'	1,016 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
26.50	677	0	0
28.00	677	1,016	1,016

Device	Routing	Invert	Outlet Devices
#1	Primary	23.50'	**12.0" Round Culvert** L= 64.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 23.50' / 21.33' S= 0.0339 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	27.75'	**6.0" Horiz. Orifice/Grate X 10.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	26.50'	**2.000 in/hr Exfiltration over Surface area**

Primary OutFlow Max=1.43 cfs @ 12.02 hrs HW=27.84' TW=23.22' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.43 cfs of 5.85 cfs potential flow)
  ├─**2=Orifice/Grate** (Weir Controls 1.40 cfs @ 0.98 fps)
  └─**3=Exfiltration** (Exfiltration Controls 0.03 cfs)

Summary for Subcatchment 1A: Watershed 1A

Runoff = 0.39 cfs @ 12.01 hrs, Volume= 1,158 cf, Depth= 6.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.41"

	Area (sf)	CN	Description
*	2,252	98	Parking Lot & part of building
	2,252		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	85	0.0325	1.68		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"

Summary for Subcatchment 1B: Watershed 1B

Runoff = 1.02 cfs @ 12.02 hrs, Volume= 3,016 cf, Depth= 6.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.41"

	Area (sf)	CN	Description
	457	79	50-75% Grass cover, Fair, HSG C
*	5,522	98	Parking Lot
	5,979	97	Weighted Average
	457		7.64% Pervious Area
	5,522		92.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	92	0.0218	1.45		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"

Summary for Subcatchment 1C: Watershed 1C

Runoff = 0.47 cfs @ 12.01 hrs, Volume= 1,327 cf, Depth= 5.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.41"

	Area (sf)	CN	Description
	730	79	50-75% Grass cover, Fair, HSG C
*	2,119	98	Parking Lot
	2,849	93	Weighted Average
	730		25.62% Pervious Area
	2,119		74.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	81	0.0277	1.56		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"

Summary for Subcatchment 1D: Watershed 1D

Runoff = 0.14 cfs @ 12.01 hrs, Volume= 404 cf, Depth= 6.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.41"

	Area (sf)	CN	Description
*	786	98	
	786		100.00% Impervious Area

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

Summary for Subcatchment 2: Ex. Roof Area & Planter Watershed 2

Runoff = 1.84 cfs @ 12.01 hrs, Volume= 5,414 cf, Depth= 6.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.41"

	Area (sf)	CN	Description
*	10,056	98	Roof
*	677	79	Planter
	10,733	97	Weighted Average
	677		6.31% Pervious Area
	10,056		93.69% Impervious Area

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

Summary for Subcatchment 3: Watershed 3

Runoff = 3.65 cfs @ 12.02 hrs, Volume= 10,874 cf, Depth= 6.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.41"

	Area (sf)	CN	Description
	902	79	50-75% Grass cover, Fair, HSG C
*	20,655	98	Parking Lot & Buildings
	21,557	97	Weighted Average
	902		4.18% Pervious Area
	20,655		95.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	99	0.0141	1.24		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"
0.1	22	0.0318	3.62		**Shallow Concentrated Flow, B->C** Paved Kv= 20.3 fps
1.4	121	Total			

Summary for Reach DP-1: Ex. Catch Basin

Inflow Area = 22,599 sf, 91.75% Impervious, Inflow Depth = 6.01" for 25-Year event
Inflow = 3.81 cfs @ 12.02 hrs, Volume= 11,319 cf
Outflow = 3.81 cfs @ 12.02 hrs, Volume= 11,319 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Reach DP-2: Ex. Catch Basin

Inflow Area = 21,557 sf, 95.82% Impervious, Inflow Depth = 6.05" for 25-Year event
Inflow = 3.64 cfs @ 12.02 hrs, Volume= 10,874 cf
Outflow = 3.64 cfs @ 12.02 hrs, Volume= 10,874 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Reach R1: R1

Inflow Area = 21,557 sf, 95.82% Impervious, Inflow Depth = 6.05" for 25-Year event
Inflow = 3.65 cfs @ 12.02 hrs, Volume= 10,874 cf
Outflow = 3.64 cfs @ 12.02 hrs, Volume= 10,874 cf, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.38 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.28 fps, Avg. Travel Time= 0.5 min

Peak Storage= 44 cf @ 12.02 hrs
Average Depth at Peak Storage= 0.14'
Bank-Full Depth= 0.10' Flow Area= 0.6 sf, Capacity= 1.77 cfs

1.00' x 0.10' deep channel, n= 0.013 Asphalt, smooth
Side Slope Z-value= 100.0 0.1 '/' Top Width= 11.01'
Length= 41.0' Slope= 0.0324 '/'
Inlet Invert= 22.50', Outlet Invert= 21.17'

‡

Summary for Pond 1P: Ex. Drain Inlet

Inflow Area = 5,979 sf, 92.36% Impervious, Inflow Depth = 6.05" for 25-Year event
Inflow = 1.02 cfs @ 12.02 hrs, Volume= 3,016 cf
Outflow = 1.02 cfs @ 12.02 hrs, Volume= 3,016 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.02 cfs @ 12.02 hrs, Volume= 3,016 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 24.38' @ 12.04 hrs
Flood Elev= 24.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	23.09'	**12.0" Round 12" HDPE** L= 65.3' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 23.09' / 22.26' S= 0.0127 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.02 hrs HW=23.93' TW=24.04' (Dynamic Tailwater)
└─**1=12" HDPE** (Controls 0.00 cfs)

Summary for Pond 2P: Ex. Drainage Manhole

Inflow Area = 16,712 sf, 93.21% Impervious, Inflow Depth = 6.05" for 25-Year event
Inflow = 2.82 cfs @ 12.02 hrs, Volume= 8,430 cf
Outflow = 2.82 cfs @ 12.02 hrs, Volume= 8,430 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.82 cfs @ 12.02 hrs, Volume= 8,430 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 24.29' @ 12.03 hrs
Flood Elev= 26.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	22.16'	**12.0" Round 12" PVC** L= 101.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 22.16' / 20.74' S= 0.0140 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.53 cfs @ 12.02 hrs HW=24.16' TW=23.44' (Dynamic Tailwater)
└─**1=12" PVC** (Inlet Controls 2.53 cfs @ 3.22 fps)

Summary for Pond 3P: Ex. Drain Inlet

Inflow Area = 21,813 sf, 91.45% Impervious, Inflow Depth = 6.00" for 25-Year event
Inflow = 3.68 cfs @ 12.02 hrs, Volume= 10,915 cf
Outflow = 3.68 cfs @ 12.02 hrs, Volume= 10,915 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.68 cfs @ 12.02 hrs, Volume= 10,915 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 23.45' @ 12.02 hrs
Flood Elev= 23.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.74'	**12.0" Round 12" PVC** L= 14.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 20.74' / 20.45' S= 0.0207 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.56 cfs @ 12.02 hrs HW=23.40' TW=21.98' (Dynamic Tailwater)
└─**1=12" PVC** (Inlet Controls 3.56 cfs @ 4.53 fps)

Summary for Pond 4P: Ex. Manhole

Inflow Area = 22,599 sf, 91.75% Impervious, Inflow Depth = 6.01" for 25-Year event
Inflow = 3.81 cfs @ 12.02 hrs, Volume= 11,319 cf
Outflow = 3.81 cfs @ 12.02 hrs, Volume= 11,319 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.81 cfs @ 12.02 hrs, Volume= 11,319 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 21.39' @ 12.02 hrs
Flood Elev= 24.12'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.02'	**15.0" Round Ex. 15" HDPE** L= 8.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 20.02' / 19.97' S= 0.0063 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.80 cfs @ 12.02 hrs HW=21.39' TW=0.00' (Dynamic Tailwater)
└─**1=Ex. 15" HDPE** (Barrel Controls 3.80 cfs @ 3.52 fps)

Summary for Pond 6P: Ex. Drain Inlet

Inflow Area = 2,252 sf,100.00% Impervious, Inflow Depth = 6.17" for 25-Year event
Inflow = 0.39 cfs @ 12.01 hrs, Volume= 1,158 cf
Outflow = 0.39 cfs @ 12.01 hrs, Volume= 1,158 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.39 cfs @ 12.01 hrs, Volume= 1,158 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 23.47' @ 12.03 hrs
Flood Elev= 23.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	21.25'	**12.0" Round 12" PVC** L= 45.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 21.25' / 20.79' S= 0.0102 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.01 hrs HW=23.04' TW=23.29' (Dynamic Tailwater)
└─**1=12" PVC** (Controls 0.00 cfs)

Summary for Pond AS-1: Ex. Hydrodynamic Separator

Inflow Area = 21,813 sf, 91.45% Impervious, Inflow Depth = 6.00" for 25-Year event
Inflow = 3.68 cfs @ 12.02 hrs, Volume= 10,915 cf
Outflow = 3.68 cfs @ 12.02 hrs, Volume= 10,915 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.68 cfs @ 12.02 hrs, Volume= 10,915 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 22.00' @ 12.02 hrs
Flood Elev= 24.12'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.45'	**15.0" Round Ex. 15" RCP** L= 54.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 20.45' / 20.12' S= 0.0061 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.60 cfs @ 12.02 hrs HW=21.98' TW=21.39' (Dynamic Tailwater)
└─**1=Ex. 15" RCP** (Inlet Controls 3.60 cfs @ 2.93 fps)

Summary for Pond SP1: Ex. Stormwater Planter

Inflow Area = 10,733 sf, 93.69% Impervious, Inflow Depth = 6.05" for 25-Year event
Inflow = 1.84 cfs @ 12.01 hrs, Volume= 5,414 cf
Outflow = 1.81 cfs @ 12.02 hrs, Volume= 5,414 cf, Atten= 1%, Lag= 0.5 min
Primary = 1.81 cfs @ 12.02 hrs, Volume= 5,414 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 27.86' @ 12.02 hrs Surf.Area= 677 sf Storage= 918 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 133.3 min (879.6 - 746.3)

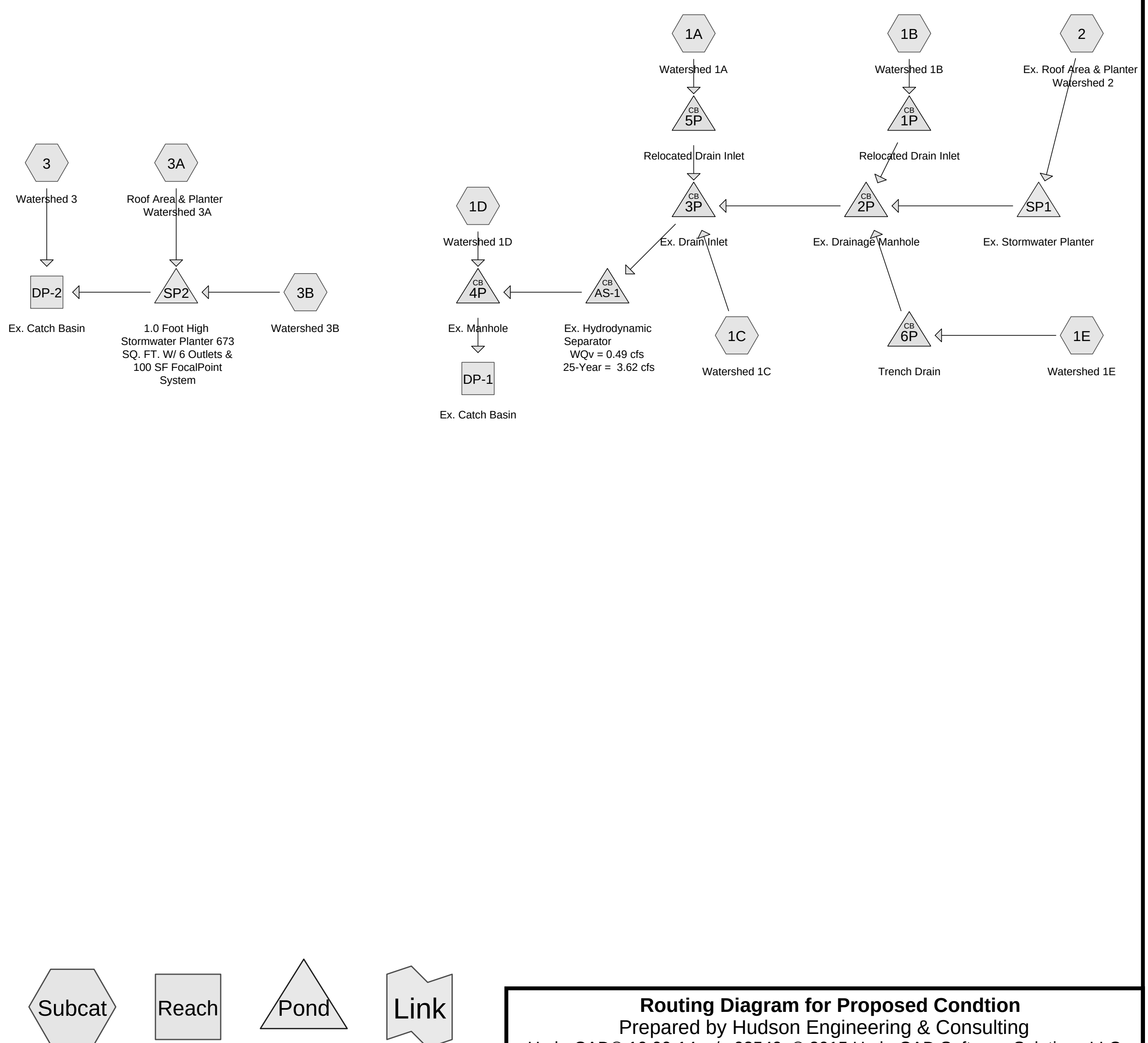
Volume	Invert	Avail.Storage	Storage Description
#1	26.50'	1,016 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
26.50	677	0	0
28.00	677	1,016	1,016

Device	Routing	Invert	Outlet Devices
#1	Primary	23.50'	**12.0" Round Culvert** L= 64.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 23.50' / 21.33' S= 0.0339 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	27.75'	**6.0" Horiz. Orifice/Grate X 10.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	26.50'	**2.000 in/hr Exfiltration over Surface area**

Primary OutFlow Max=1.80 cfs @ 12.02 hrs HW=27.86' TW=24.19' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.80 cfs of 5.72 cfs potential flow)
  ├─**2=Orifice/Grate** (Weir Controls 1.77 cfs @ 1.06 fps)
  └─**3=Exfiltration** (Exfiltration Controls 0.03 cfs)

7.) Post-Developed Analysis of the 1-, 10-, and 25-year Extreme Storm Events



Routing Diagram for Proposed Condtion
Prepared by Hudson Engineering & Consulting
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Summary for Subcatchment 1A: Watershed 1A

Runoff = 0.22 cfs @ 12.02 hrs, Volume= 634 cf, Depth= 2.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.86"

	Area (sf)	CN	Description
*	2,893	98	Parking Lot
	2,893		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	96	0.0166	1.31		**Sheet Flow, A-B**
					Smooth surfaces n= 0.011 P2= 3.45"

Summary for Subcatchment 1B: Watershed 1B

Runoff = 0.23 cfs @ 12.01 hrs, Volume= 646 cf, Depth= 2.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.86"

	Area (sf)	CN	Description
	71	74	>75% Grass cover, Good, HSG C
*	3,008	98	Parking Lot
	3,079	97	Weighted Average
	71		2.31% Pervious Area
	3,008		97.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	64	0.0225	1.37		**Sheet Flow, A-B**
					Smooth surfaces n= 0.011 P2= 3.45"

Summary for Subcatchment 1C: Watershed 1C

Runoff = 0.24 cfs @ 12.01 hrs, Volume= 661 cf, Depth= 2.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.86"

	Area (sf)	CN	Description
	244	74	>75% Grass cover, Good, HSG C
*	3,039	98	Parking Lot
	3,283	96	Weighted Average
	244		7.43% Pervious Area
	3,039		92.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	57	0.0305	1.51		**Sheet Flow, A->B** Smooth surfaces n= 0.011 P2= 3.45"
0.3	53	0.0162	2.58		**Shallow Concentrated Flow, B->C** Paved Kv= 20.3 fps
0.9	110	Total			

Summary for Subcatchment 1D: Watershed 1D

Runoff = 0.06 cfs @ 12.01 hrs, Volume= 172 cf, Depth= 2.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.86"

	Area (sf)	CN	Description
*	786	98	building
	786		100.00% Impervious Area

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

Summary for Subcatchment 1E: Watershed 1E

Runoff = 0.11 cfs @ 12.01 hrs, Volume= 313 cf, Depth= 2.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.86"

	Area (sf)	CN	Description
	26	74	>75% Grass cover, Good, HSG C
*	1,402	98	Parking Lot
	1,428	98	Weighted Average
	26		1.82% Pervious Area
	1,402		98.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	42	0.0129	1.01		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"

Summary for Subcatchment 2: Ex. Roof Area & Planter Watershed 2

Runoff = 0.80 cfs @ 12.01 hrs, Volume= 2,254 cf, Depth= 2.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.86"

	Area (sf)	CN	Description
*	10,056	98	Roof
*	677	79	Planter
	10,733	97	Weighted Average
	677		6.31% Pervious Area
	10,056		93.69% Impervious Area

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

Summary for Subcatchment 3: Watershed 3

Runoff = 0.07 cfs @ 12.02 hrs, Volume= 188 cf, Depth= 1.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.86"

	Area (sf)	CN	Description
	1,655	74	>75% Grass cover, Good, HSG C
*	416	98	Sidewalks
	2,071	79	Weighted Average
	1,655		79.91% Pervious Area
	416		20.09% Impervious Area

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

Summary for Subcatchment 3A: Roof Area & Planter Watershed 3A

Runoff = 1.10 cfs @ 12.01 hrs, Volume= 3,098 cf, Depth= 2.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.86"

	Area (sf)	CN	Description
*	14,082	98	Roof
*	673	79	Planter
	14,755	97	Weighted Average
	673		4.56% Pervious Area
	14,082		95.44% Impervious Area

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

Summary for Subcatchment 3B: Watershed 3B

Runoff = 0.38 cfs @ 12.01 hrs, Volume= 1,077 cf, Depth= 2.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.86"

	Area (sf)	CN	Description
	135	74	>75% Grass cover, Good, HSG C
*	4,993	98	Parking Lot & portion of ex. building
	5,128	97	Weighted Average
	135		2.63% Pervious Area
	4,993		97.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	74	0.0180	1.29		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"

Summary for Reach DP-1: Ex. Catch Basin

Inflow Area = 22,202 sf, 95.41% Impervious, Inflow Depth = 2.53" for 1-Year event
Inflow = 0.89 cfs @ 12.01 hrs, Volume= 4,680 cf
Outflow = 0.89 cfs @ 12.01 hrs, Volume= 4,680 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3

Summary for Reach DP-2: Ex. Catch Basin

Inflow Area = 21,954 sf, 88.78% Impervious, Inflow Depth = 2.39" for 1-Year event
Inflow = 1.48 cfs @ 12.03 hrs, Volume= 4,365 cf
Outflow = 1.48 cfs @ 12.03 hrs, Volume= 4,365 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3

Summary for Pond 1P: Relocated Drain Inlet

Inflow Area = 3,079 sf, 97.69% Impervious, Inflow Depth = 2.52" for 1-Year event
Inflow = 0.23 cfs @ 12.01 hrs, Volume= 646 cf
Outflow = 0.23 cfs @ 12.01 hrs, Volume= 646 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.23 cfs @ 12.01 hrs, Volume= 646 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 23.02' @ 12.01 hrs
Flood Elev= 25.05'

Device	Routing	Invert	Outlet Devices
#1	Primary	22.75'	**12.0" Round 12" HDPE** L= 35.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 22.75' / 22.26' S= 0.0140 '/' Cc= 0.900

n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.23 cfs @ 12.01 hrs HW=23.01' TW=22.50' (Dynamic Tailwater)
↑—**1=12" HDPE** (Inlet Controls 0.23 cfs @ 1.38 fps)

Summary for Pond 2P: Ex. Drainage Manhole

Inflow Area = 15,240 sf, 94.92% Impervious, Inflow Depth = 2.53" for 1-Year event
Inflow = 0.37 cfs @ 12.01 hrs, Volume= 3,213 cf
Outflow = 0.37 cfs @ 12.01 hrs, Volume= 3,213 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.37 cfs @ 12.01 hrs, Volume= 3,213 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 22.50' @ 12.01 hrs
Flood Elev= 26.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	22.16'	**12.0" Round 12" PVC** L= 101.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 22.16' / 20.74' S= 0.0140 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.37 cfs @ 12.01 hrs HW=22.50' TW=21.39' (Dynamic Tailwater)
↑—**1=12" PVC** (Inlet Controls 0.37 cfs @ 1.57 fps)

Summary for Pond 3P: Ex. Drain Inlet

Inflow Area = 21,416 sf, 95.25% Impervious, Inflow Depth = 2.53" for 1-Year event
Inflow = 0.83 cfs @ 12.01 hrs, Volume= 4,508 cf
Outflow = 0.83 cfs @ 12.01 hrs, Volume= 4,508 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.83 cfs @ 12.01 hrs, Volume= 4,508 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 21.39' @ 12.01 hrs
Flood Elev= 23.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.74'	**12.0" Round 12" PVC** L= 14.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 20.74' / 20.45' S= 0.0207 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.82 cfs @ 12.01 hrs HW=21.39' TW=21.22' (Dynamic Tailwater)
↑—**1=12" PVC** (Inlet Controls 0.82 cfs @ 1.53 fps)

Summary for Pond 4P: Ex. Manhole

Inflow Area = 22,202 sf, 95.41% Impervious, Inflow Depth = 2.53" for 1-Year event
Inflow = 0.89 cfs @ 12.01 hrs, Volume= 4,680 cf
Outflow = 0.89 cfs @ 12.01 hrs, Volume= 4,680 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.89 cfs @ 12.01 hrs, Volume= 4,680 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 20.59' @ 12.01 hrs
Flood Elev= 24.12'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.02'	**15.0" Round Ex. 15" HDPE** L= 8.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 20.02' / 19.97' S= 0.0063 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.88 cfs @ 12.01 hrs HW=20.59' TW=0.00' (Dynamic Tailwater)
└─**1=Ex. 15" HDPE** (Barrel Controls 0.88 cfs @ 2.39 fps)

Summary for Pond 5P: Relocated Drain Inlet

Inflow Area = 2,893 sf,100.00% Impervious, Inflow Depth = 2.63" for 1-Year event
Inflow = 0.22 cfs @ 12.02 hrs, Volume= 634 cf
Outflow = 0.22 cfs @ 12.02 hrs, Volume= 634 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.22 cfs @ 12.02 hrs, Volume= 634 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 21.53' @ 12.02 hrs
Flood Elev= 23.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	21.20'	**12.0" Round 12" HDPE** L= 34.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 21.20' / 20.79' S= 0.0121 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.22 cfs @ 12.02 hrs HW=21.52' TW=21.38' (Dynamic Tailwater)
└─**1=12" HDPE** (Outlet Controls 0.22 cfs @ 1.47 fps)

Summary for Pond 6P: Trench Drain

Inflow Area = 1,428 sf, 98.18% Impervious, Inflow Depth = 2.63" for 1-Year event
Inflow = 0.11 cfs @ 12.01 hrs, Volume= 313 cf
Outflow = 0.11 cfs @ 12.01 hrs, Volume= 313 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.11 cfs @ 12.01 hrs, Volume= 313 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 23.53' @ 12.01 hrs
Flood Elev= 25.96'

Device	Routing	Invert	Outlet Devices
#1	Primary	23.35'	**12.0" Round 12" HDPE** L= 34.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 23.35' / 22.26' S= 0.0321 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.11 cfs @ 12.01 hrs HW=23.53' TW=22.50' (Dynamic Tailwater)
└─**1=12" HDPE** (Inlet Controls 0.11 cfs @ 1.14 fps)

Summary for Pond AS-1: Ex. Hydrodynamic Separator WQv = 0.49 cfs 25-Year = 3.62 cfs

Inflow Area = 21,416 sf, 95.25% Impervious, Inflow Depth = 2.53" for 1-Year event
Inflow = 0.83 cfs @ 12.01 hrs, Volume= 4,508 cf
Outflow = 0.83 cfs @ 12.01 hrs, Volume= 4,508 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.83 cfs @ 12.01 hrs, Volume= 4,508 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 21.23' @ 12.01 hrs
Flood Elev= 24.12'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.74'	**15.0" Round Ex. 15" RCP** L= 52.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 20.74' / 20.12' S= 0.0119 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf

Primary OutFlow Max=0.82 cfs @ 12.01 hrs HW=21.22' TW=20.59' (Dynamic Tailwater)
└─**1=Ex. 15" RCP** (Inlet Controls 0.82 cfs @ 1.87 fps)

Summary for Pond SP1: Ex. Stormwater Planter

Inflow Area = 10,733 sf, 93.69% Impervious, Inflow Depth = 2.52" for 1-Year event
Inflow = 0.80 cfs @ 12.01 hrs, Volume= 2,254 cf
Outflow = 0.21 cfs @ 12.31 hrs, Volume= 2,254 cf, Atten= 74%, Lag= 17.7 min
Primary = 0.21 cfs @ 12.31 hrs, Volume= 2,254 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 27.77' @ 12.31 hrs Surf.Area= 669 sf Storage= 852 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 208.0 min (972.3 - 764.3)

Volume	Invert	Avail.Storage	Storage Description
#1	26.50'	1,004 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
26.50	669	0	0
28.00	669	1,004	1,004

Device	Routing	Invert	Outlet Devices
#1	Primary	23.50'	**12.0" Round Culvert** L= 64.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 23.50' / 22.26' S= 0.0194 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	27.75'	**6.0" Horiz. Orifice/Grate X 10.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	26.50'	**2.000 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.21 cfs @ 12.31 hrs HW=27.77' TW=22.46' (Dynamic Tailwater)
1=Culvert (Passes 0.21 cfs of 5.80 cfs potential flow)
2=Orifice/Grate (Weir Controls 0.18 cfs @ 0.50 fps)
3=Exfiltration (Exfiltration Controls 0.03 cfs)

mmary for Pond SP2: 1.0 Foot High Stormwater Planter 673 SQ. FT. W/ 6 Outlets & 100 SF FocalPoint Sy

Inflow Area = 19,883 sf, 95.94% Impervious, Inflow Depth = 2.52" for 1-Year event
Inflow = 1.48 cfs @ 12.01 hrs, Volume= 4,175 cf
Outflow = 1.41 cfs @ 12.03 hrs, Volume= 4,177 cf, Atten= 4%, Lag= 0.9 min
Primary = 1.41 cfs @ 12.03 hrs, Volume= 4,177 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 22.17' @ 12.03 hrs Surf.Area= 100 sf Storage= 445 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 6.3 min (770.6 - 764.3)

Volume	Invert	Avail.Storage	Storage Description
#1	19.33'	45 cf	**2.00'W x 50.00'L x 2.25'H FocalPoint** 225 cf Overall x 20.0% Voids
#2	21.58'	505 cf	**Stormwater Planter (Prismatic)**Listed below (Recalc) -Impervious
		550 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
21.58	673	0	0
22.08	673	337	337
22.33	673	168	505

Device	Routing	Invert	Outlet Devices
#1	Primary	19.00'	**12.0" Round Culvert** L= 19.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 19.00' / 18.77' S= 0.0121 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	19.33'	**100.000 in/hr Exfiltration over Surface area**
#3	Device 1	22.08'	**8.0" Horiz. Orifice/Grate X 6.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.41 cfs @ 12.03 hrs HW=22.17' TW=0.00' (Dynamic Tailwater)
1=Culvert (Passes 1.41 cfs of 4.88 cfs potential flow)
2=Exfiltration (Exfiltration Controls 0.23 cfs)
3=Orifice/Grate (Weir Controls 1.18 cfs @ 1.00 fps)

Summary for Subcatchment 1A: Watershed 1A

Runoff = 0.39 cfs @ 12.02 hrs, Volume= 1,175 cf, Depth= 4.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.11"

	Area (sf)	CN	Description
*	2,893	98	Parking Lot
	2,893		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	96	0.0166	1.31		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"

Summary for Subcatchment 1B: Watershed 1B

Runoff = 0.42 cfs @ 12.01 hrs, Volume= 1,220 cf, Depth= 4.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.11"

	Area (sf)	CN	Description
	71	74	>75% Grass cover, Good, HSG C
*	3,008	98	Parking Lot
	3,079	97	Weighted Average
	71		2.31% Pervious Area
	3,008		97.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	64	0.0225	1.37		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"

Summary for Subcatchment 1C: Watershed 1C

Runoff = 0.44 cfs @ 12.01 hrs, Volume= 1,270 cf, Depth= 4.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.11"

	Area (sf)	CN	Description
	244	74	>75% Grass cover, Good, HSG C
*	3,039	98	Parking Lot
	3,283	96	Weighted Average
	244		7.43% Pervious Area
	3,039		92.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	57	0.0305	1.51		**Sheet Flow, A->B** Smooth surfaces n= 0.011 P2= 3.45"
0.3	53	0.0162	2.58		**Shallow Concentrated Flow, B->C** Paved Kv= 20.3 fps
0.9	110	Total			

Summary for Subcatchment 1D: Watershed 1D

Runoff = 0.11 cfs @ 12.01 hrs, Volume= 319 cf, Depth= 4.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.11"

	Area (sf)	CN	Description
*	786	98	building
	786		100.00% Impervious Area

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

Summary for Subcatchment 1E: Watershed 1E

Runoff = 0.20 cfs @ 12.01 hrs, Volume= 580 cf, Depth= 4.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.11"

	Area (sf)	CN	Description
	26	74	>75% Grass cover, Good, HSG C
*	1,402	98	Parking Lot
	1,428	98	Weighted Average
	26		1.82% Pervious Area
	1,402		98.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	42	0.0129	1.01		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"

Summary for Subcatchment 2: Ex. Roof Area & Planter Watershed 2

Runoff = 1.46 cfs @ 12.01 hrs, Volume= 4,254 cf, Depth= 4.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.11"

	Area (sf)	CN	Description
*	10,056	98	Roof
*	677	79	Planter
	10,733	97	Weighted Average
	677		6.31% Pervious Area
	10,056		93.69% Impervious Area

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

Summary for Subcatchment 3: Watershed 3

Runoff = 0.19 cfs @ 12.02 hrs, Volume= 500 cf, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.11"

	Area (sf)	CN	Description
	1,655	74	>75% Grass cover, Good, HSG C
*	416	98	Sidewalks
	2,071	79	Weighted Average
	1,655		79.91% Pervious Area
	416		20.09% Impervious Area

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

Summary for Subcatchment 3A: Roof Area & Planter Watershed 3A

Runoff = 2.01 cfs @ 12.01 hrs, Volume= 5,849 cf, Depth= 4.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.11"

	Area (sf)	CN	Description
*	14,082	98	Roof
*	673	79	Planter
	14,755	97	Weighted Average
	673		4.56% Pervious Area
	14,082		95.44% Impervious Area

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

Summary for Subcatchment 3B: Watershed 3B

Runoff = 0.70 cfs @ 12.01 hrs, Volume= 2,033 cf, Depth= 4.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.11"

	Area (sf)	CN	Description
	135	74	>75% Grass cover, Good, HSG C
*	4,993	98	Parking Lot & portion of ex. building
	5,128	97	Weighted Average
	135		2.63% Pervious Area
	4,993		97.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	74	0.0180	1.29		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"

Summary for Reach DP-1: Ex. Catch Basin

Inflow Area = 22,202 sf, 95.41% Impervious, Inflow Depth = 4.77" for 10-Year event
Inflow = 2.98 cfs @ 12.02 hrs, Volume= 8,819 cf
Outflow = 2.98 cfs @ 12.02 hrs, Volume= 8,819 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3

Summary for Reach DP-2: Ex. Catch Basin

Inflow Area = 21,954 sf, 88.78% Impervious, Inflow Depth = 4.58" for 10-Year event
Inflow = 2.85 cfs @ 12.02 hrs, Volume= 8,383 cf
Outflow = 2.85 cfs @ 12.02 hrs, Volume= 8,383 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3

Summary for Pond 1P: Relocated Drain Inlet

Inflow Area = 3,079 sf, 97.69% Impervious, Inflow Depth = 4.76" for 10-Year event
Inflow = 0.42 cfs @ 12.01 hrs, Volume= 1,220 cf
Outflow = 0.42 cfs @ 12.01 hrs, Volume= 1,220 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.42 cfs @ 12.01 hrs, Volume= 1,220 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 23.28' @ 12.02 hrs
Flood Elev= 25.05'

Device	Routing	Invert	Outlet Devices
#1	Primary	22.75'	**12.0" Round 12" HDPE** L= 35.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 22.75' / 22.26' S= 0.0140 '/' Cc= 0.900

n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.39 cfs @ 12.01 hrs HW=23.27' TW=23.17' (Dynamic Tailwater)
└─**1=12" HDPE** (Outlet Controls 0.39 cfs @ 1.39 fps)

Summary for Pond 2P: Ex. Drainage Manhole

Inflow Area = 15,240 sf, 94.92% Impervious, Inflow Depth = 4.77" for 10-Year event
Inflow = 2.04 cfs @ 12.02 hrs, Volume= 6,055 cf
Outflow = 2.04 cfs @ 12.02 hrs, Volume= 6,055 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.04 cfs @ 12.02 hrs, Volume= 6,055 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 23.19' @ 12.02 hrs
Flood Elev= 26.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	22.16'	**12.0" Round 12" PVC** L= 101.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 22.16' / 20.74' S= 0.0140 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.03 cfs @ 12.02 hrs HW=23.18' TW=22.67' (Dynamic Tailwater)
└─**1=12" PVC** (Outlet Controls 2.03 cfs @ 3.14 fps)

Summary for Pond 3P: Ex. Drain Inlet

Inflow Area = 21,416 sf, 95.25% Impervious, Inflow Depth = 4.76" for 10-Year event
Inflow = 2.87 cfs @ 12.02 hrs, Volume= 8,500 cf
Outflow = 2.87 cfs @ 12.02 hrs, Volume= 8,500 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.87 cfs @ 12.02 hrs, Volume= 8,500 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 22.67' @ 12.02 hrs
Flood Elev= 23.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.74'	**12.0" Round 12" PVC** L= 14.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 20.74' / 20.45' S= 0.0207 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.86 cfs @ 12.02 hrs HW=22.66' TW=21.75' (Dynamic Tailwater)
└─**1=12" PVC** (Inlet Controls 2.86 cfs @ 3.64 fps)

Summary for Pond 4P: Ex. Manhole

Inflow Area = 22,202 sf, 95.41% Impervious, Inflow Depth = 4.77" for 10-Year event
Inflow = 2.98 cfs @ 12.02 hrs, Volume= 8,819 cf
Outflow = 2.98 cfs @ 12.02 hrs, Volume= 8,819 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.98 cfs @ 12.02 hrs, Volume= 8,819 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 21.18' @ 12.02 hrs
Flood Elev= 24.12'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.02'	**15.0" Round Ex. 15" HDPE** L= 8.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 20.02' / 19.97' S= 0.0063 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.96 cfs @ 12.02 hrs HW=21.18' TW=0.00' (Dynamic Tailwater)
└─**1=Ex. 15" HDPE** (Barrel Controls 2.96 cfs @ 3.26 fps)

Summary for Pond 5P: Relocated Drain Inlet

Inflow Area = 2,893 sf,100.00% Impervious, Inflow Depth = 4.87" for 10-Year event
Inflow = 0.39 cfs @ 12.02 hrs, Volume= 1,175 cf
Outflow = 0.39 cfs @ 12.02 hrs, Volume= 1,175 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.39 cfs @ 12.02 hrs, Volume= 1,175 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 22.69' @ 12.02 hrs
Flood Elev= 23.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	21.20'	**12.0" Round 12" HDPE** L= 34.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 21.20' / 20.79' S= 0.0121 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.39 cfs @ 12.02 hrs HW=22.68' TW=22.66' (Dynamic Tailwater)
└─**1=12" HDPE** (Inlet Controls 0.39 cfs @ 0.50 fps)

Summary for Pond 6P: Trench Drain

Inflow Area = 1,428 sf, 98.18% Impervious, Inflow Depth = 4.87" for 10-Year event
Inflow = 0.20 cfs @ 12.01 hrs, Volume= 580 cf
Outflow = 0.20 cfs @ 12.01 hrs, Volume= 580 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.20 cfs @ 12.01 hrs, Volume= 580 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 23.59' @ 12.01 hrs
Flood Elev= 25.96'

Device	Routing	Invert	Outlet Devices
#1	Primary	23.35'	**12.0" Round 12" HDPE** L= 34.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 23.35' / 22.26' S= 0.0321 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.20 cfs @ 12.01 hrs HW=23.59' TW=23.16' (Dynamic Tailwater)
└─**1=12" HDPE** (Inlet Controls 0.20 cfs @ 1.33 fps)

Summary for Pond AS-1: Ex. Hydrodynamic Separator WQv = 0.49 cfs 25-Year = 3.62 cfs

Inflow Area = 21,416 sf, 95.25% Impervious, Inflow Depth = 4.76" for 10-Year event
Inflow = 2.87 cfs @ 12.02 hrs, Volume= 8,500 cf
Outflow = 2.87 cfs @ 12.02 hrs, Volume= 8,500 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.87 cfs @ 12.02 hrs, Volume= 8,500 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 21.75' @ 12.02 hrs
Flood Elev= 24.12'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.74'	**15.0" Round Ex. 15" RCP** L= 52.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 20.74' / 20.12' S= 0.0119 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf

Primary OutFlow Max=2.86 cfs @ 12.02 hrs HW=21.75' TW=21.18' (Dynamic Tailwater)
└─**1=Ex. 15" RCP** (Inlet Controls 2.86 cfs @ 2.70 fps)

Summary for Pond SP1: Ex. Stormwater Planter

Inflow Area = 10,733 sf, 93.69% Impervious, Inflow Depth = 4.76" for 10-Year event
Inflow = 1.46 cfs @ 12.01 hrs, Volume= 4,254 cf
Outflow = 1.43 cfs @ 12.02 hrs, Volume= 4,255 cf, Atten= 2%, Lag= 0.5 min
Primary = 1.43 cfs @ 12.02 hrs, Volume= 4,255 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 27.84' @ 12.02 hrs Surf.Area= 669 sf Storage= 897 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 149.2 min (899.8 - 750.7)

Volume	Invert	Avail.Storage	Storage Description
#1	26.50'	1,004 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
26.50	669	0	0
28.00	669	1,004	1,004

Device	Routing	Invert	Outlet Devices
#1	Primary	23.50'	**12.0" Round Culvert** L= 64.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 23.50' / 22.26' S= 0.0194 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	27.75'	**6.0" Horiz. Orifice/Grate X 10.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	26.50'	**2.000 in/hr Exfiltration over Surface area**

Primary OutFlow Max=1.43 cfs @ 12.02 hrs HW=27.84' TW=23.17' (Dynamic Tailwater)
1=Culvert (Passes 1.43 cfs of 5.85 cfs potential flow)
2=Orifice/Grate (Weir Controls 1.40 cfs @ 0.98 fps)
3=Exfiltration (Exfiltration Controls 0.03 cfs)

mmary for Pond SP2: 1.0 Foot High Stormwater Planter 673 SQ. FT. W/ 6 Outlets & 100 SF FocalPoint Sy

Inflow Area = 19,883 sf, 95.94% Impervious, Inflow Depth = 4.76" for 10-Year event
Inflow = 2.70 cfs @ 12.01 hrs, Volume= 7,881 cf
Outflow = 2.66 cfs @ 12.02 hrs, Volume= 7,883 cf, Atten= 2%, Lag= 0.5 min
Primary = 2.66 cfs @ 12.02 hrs, Volume= 7,883 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 22.23' @ 12.02 hrs Surf.Area= 100 sf Storage= 484 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 5.7 min (756.4 - 750.7)

Volume	Invert	Avail.Storage	Storage Description
#1	19.33'	45 cf	**2.00'W x 50.00'L x 2.25'H FocalPoint** 225 cf Overall x 20.0% Voids
#2	21.58'	505 cf	**Stormwater Planter (Prismatic)**Listed below (Recalc) -Impervious
		550 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
21.58	673	0	0
22.08	673	337	337
22.33	673	168	505

Device	Routing	Invert	Outlet Devices
#1	Primary	19.00'	**12.0" Round Culvert** L= 19.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 19.00' / 18.77' S= 0.0121 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	19.33'	**100.000 in/hr Exfiltration over Surface area**
#3	Device 1	22.08'	**8.0" Horiz. Orifice/Grate X 6.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.65 cfs @ 12.02 hrs HW=22.23' TW=0.00' (Dynamic Tailwater)
1=Culvert (Passes 2.65 cfs of 4.93 cfs potential flow)
2=Exfiltration (Exfiltration Controls 0.23 cfs)
3=Orifice/Grate (Weir Controls 2.42 cfs @ 1.27 fps)

Summary for Subcatchment 1A: Watershed 1A

Runoff = 0.49 cfs @ 12.02 hrs, Volume= 1,488 cf, Depth= 6.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.41"

	Area (sf)	CN	Description
*	2,893	98	Parking Lot
	2,893		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	96	0.0166	1.31		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"

Summary for Subcatchment 1B: Watershed 1B

Runoff = 0.53 cfs @ 12.01 hrs, Volume= 1,553 cf, Depth= 6.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.41"

	Area (sf)	CN	Description
	71	74	>75% Grass cover, Good, HSG C
*	3,008	98	Parking Lot
	3,079	97	Weighted Average
	71		2.31% Pervious Area
	3,008		97.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	64	0.0225	1.37		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"

Summary for Subcatchment 1C: Watershed 1C

Runoff = 0.56 cfs @ 12.01 hrs, Volume= 1,624 cf, Depth= 5.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.41"

	Area (sf)	CN	Description
	244	74	>75% Grass cover, Good, HSG C
*	3,039	98	Parking Lot
	3,283	96	Weighted Average
	244		7.43% Pervious Area
	3,039		92.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	57	0.0305	1.51		**Sheet Flow, A->B** Smooth surfaces n= 0.011 P2= 3.45"
0.3	53	0.0162	2.58		**Shallow Concentrated Flow, B->C** Paved Kv= 20.3 fps
0.9	110	Total			

Summary for Subcatchment 1D: Watershed 1D

Runoff = 0.14 cfs @ 12.01 hrs, Volume= 404 cf, Depth= 6.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.41"

	Area (sf)	CN	Description
*	786	98	building
	786		100.00% Impervious Area

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

Summary for Subcatchment 1E: Watershed 1E

Runoff = 0.25 cfs @ 12.01 hrs, Volume= 734 cf, Depth= 6.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.41"

	Area (sf)	CN	Description
	26	74	>75% Grass cover, Good, HSG C
*	1,402	98	Parking Lot
	1,428	98	Weighted Average
	26		1.82% Pervious Area
	1,402		98.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	42	0.0129	1.01		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"

Summary for Subcatchment 2: Ex. Roof Area & Planter Watershed 2

Runoff = 1.84 cfs @ 12.01 hrs, Volume= 5,414 cf, Depth= 6.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.41"

	Area (sf)	CN	Description
*	10,056	98	Roof
*	677	79	Planter
	10,733	97	Weighted Average
	677		6.31% Pervious Area
	10,056		93.69% Impervious Area

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

Summary for Subcatchment 3: Watershed 3

Runoff = 0.27 cfs @ 12.02 hrs, Volume= 699 cf, Depth= 4.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.41"

	Area (sf)	CN	Description
	1,655	74	>75% Grass cover, Good, HSG C
*	416	98	Sidewalks
	2,071	79	Weighted Average
	1,655		79.91% Pervious Area
	416		20.09% Impervious Area

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

Summary for Subcatchment 3A: Roof Area & Planter Watershed 3A

Runoff = 2.53 cfs @ 12.01 hrs, Volume= 7,443 cf, Depth= 6.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.41"

	Area (sf)	CN	Description
*	14,082	98	Roof
*	673	79	Planter
	14,755	97	Weighted Average
	673		4.56% Pervious Area
	14,082		95.44% Impervious Area

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

Summary for Subcatchment 3B: Watershed 3B

Runoff = 0.88 cfs @ 12.01 hrs, Volume= 2,587 cf, Depth= 6.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.41"

	Area (sf)	CN	Description
	135	74	>75% Grass cover, Good, HSG C
*	4,993	98	Parking Lot & portion of ex. building
	5,128	97	Weighted Average
	135		2.63% Pervious Area
	4,993		97.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	74	0.0180	1.29		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"

Summary for Reach DP-1: Ex. Catch Basin

Inflow Area = 22,202 sf, 95.41% Impervious, Inflow Depth = 6.06" for 25-Year event
Inflow = 3.75 cfs @ 12.02 hrs, Volume= 11,218 cf
Outflow = 3.75 cfs @ 12.02 hrs, Volume= 11,218 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3

Summary for Reach DP-2: Ex. Catch Basin

Inflow Area = 21,954 sf, 88.78% Impervious, Inflow Depth = 5.86" for 25-Year event
Inflow = 3.62 cfs @ 12.02 hrs, Volume= 10,730 cf
Outflow = 3.62 cfs @ 12.02 hrs, Volume= 10,730 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3

Summary for Pond 1P: Relocated Drain Inlet

Inflow Area = 3,079 sf, 97.69% Impervious, Inflow Depth = 6.05" for 25-Year event
Inflow = 0.53 cfs @ 12.01 hrs, Volume= 1,553 cf
Outflow = 0.53 cfs @ 12.01 hrs, Volume= 1,553 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.53 cfs @ 12.01 hrs, Volume= 1,553 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 24.20' @ 12.02 hrs
Flood Elev= 25.05'

Device	Routing	Invert	Outlet Devices
#1	Primary	22.75'	**12.0" Round 12" HDPE** L= 35.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 22.75' / 22.26' S= 0.0140 '/' Cc= 0.900

n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.01 hrs HW=24.09' TW=24.11' (Dynamic Tailwater)
└─**1=12" HDPE** (Controls 0.00 cfs)

Summary for Pond 2P: Ex. Drainage Manhole

Inflow Area =	15,240 sf, 94.92% Impervious,	Inflow Depth = 6.06"	for 25-Year event
Inflow =	2.57 cfs @ 12.02 hrs,	Volume= 7,702 cf	
Outflow =	2.57 cfs @ 12.02 hrs,	Volume= 7,702 cf,	Atten= 0%, Lag= 0.0 min
Primary =	2.57 cfs @ 12.02 hrs,	Volume= 7,702 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 24.18' @ 12.02 hrs
Flood Elev= 26.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	22.16'	**12.0" Round 12" PVC** L= 101.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 22.16' / 20.74' S= 0.0140 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.55 cfs @ 12.02 hrs HW=24.16' TW=23.44' (Dynamic Tailwater)
└─**1=12" PVC** (Inlet Controls 2.55 cfs @ 3.24 fps)

Summary for Pond 3P: Ex. Drain Inlet

Inflow Area =	21,416 sf, 95.25% Impervious,	Inflow Depth = 6.06"	for 25-Year event
Inflow =	3.62 cfs @ 12.02 hrs,	Volume= 10,814 cf	
Outflow =	3.62 cfs @ 12.02 hrs,	Volume= 10,814 cf,	Atten= 0%, Lag= 0.0 min
Primary =	3.62 cfs @ 12.02 hrs,	Volume= 10,814 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 23.45' @ 12.02 hrs
Flood Elev= 23.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.74'	**12.0" Round 12" PVC** L= 14.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 20.74' / 20.45' S= 0.0207 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.60 cfs @ 12.02 hrs HW=23.43' TW=21.97' (Dynamic Tailwater)
└─**1=12" PVC** (Inlet Controls 3.60 cfs @ 4.59 fps)

Summary for Pond 4P: Ex. Manhole

Inflow Area =	22,202 sf, 95.41% Impervious,	Inflow Depth = 6.06" for 25-Year event		
Inflow =	3.75 cfs @	12.02 hrs, Volume=	11,218 cf	
Outflow =	3.75 cfs @	12.02 hrs, Volume=	11,218 cf,	Atten= 0%, Lag= 0.0 min
Primary =	3.75 cfs @	12.02 hrs, Volume=	11,218 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 21.38' @ 12.02 hrs
Flood Elev= 24.12'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.02'	**15.0" Round Ex. 15" HDPE** L= 8.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 20.02' / 19.97' S= 0.0063 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.74 cfs @ 12.02 hrs HW=21.37' TW=0.00' (Dynamic Tailwater)
└─**1=Ex. 15" HDPE** (Barrel Controls 3.74 cfs @ 3.50 fps)

Summary for Pond 5P: Relocated Drain Inlet

Inflow Area =	2,893 sf,100.00% Impervious,	Inflow Depth = 6.17" for 25-Year event		
Inflow =	0.49 cfs @	12.02 hrs, Volume=	1,488 cf	
Outflow =	0.49 cfs @	12.02 hrs, Volume=	1,488 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.49 cfs @	12.02 hrs, Volume=	1,488 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 23.47' @ 12.02 hrs
Flood Elev= 23.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	21.20'	**12.0" Round 12" HDPE** L= 34.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 21.20' / 20.79' S= 0.0121 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.39 cfs @ 12.02 hrs HW=23.45' TW=23.43' (Dynamic Tailwater)
└─**1=12" HDPE** (Inlet Controls 0.39 cfs @ 0.49 fps)

Summary for Pond 6P: Trench Drain

Inflow Area =	1,428 sf, 98.18% Impervious,	Inflow Depth = 6.17" for 25-Year event		
Inflow =	0.25 cfs @	12.01 hrs, Volume=	734 cf	
Outflow =	0.25 cfs @	12.01 hrs, Volume=	734 cf,	Atten= 0%, Lag= 0.0 min
Primary =	0.25 cfs @	12.01 hrs, Volume=	734 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 24.18' @ 12.02 hrs
Flood Elev= 25.96'

Device	Routing	Invert	Outlet Devices
#1	Primary	23.35'	**12.0" Round 12" HDPE** L= 34.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 23.35' / 22.26' S= 0.0321 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.01 hrs HW=24.05' TW=24.10' (Dynamic Tailwater)
└─**1=12" HDPE** (Controls 0.00 cfs)

Summary for Pond AS-1: Ex. Hydrodynamic Separator WQv = 0.49 cfs 25-Year = 3.62 cfs

Inflow Area = 21,416 sf, 95.25% Impervious, Inflow Depth = 6.06" for 25-Year event
Inflow = 3.62 cfs @ 12.02 hrs, Volume= 10,814 cf
Outflow = 3.62 cfs @ 12.02 hrs, Volume= 10,814 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.62 cfs @ 12.02 hrs, Volume= 10,814 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 21.98' @ 12.02 hrs
Flood Elev= 24.12'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.74'	**15.0" Round Ex. 15" RCP** L= 52.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 20.74' / 20.12' S= 0.0119 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf

Primary OutFlow Max=3.60 cfs @ 12.02 hrs HW=21.97' TW=21.37' (Dynamic Tailwater)
└─**1=Ex. 15" RCP** (Inlet Controls 3.60 cfs @ 2.94 fps)

Summary for Pond SP1: Ex. Stormwater Planter

Inflow Area = 10,733 sf, 93.69% Impervious, Inflow Depth = 6.05" for 25-Year event
Inflow = 1.84 cfs @ 12.01 hrs, Volume= 5,414 cf
Outflow = 1.81 cfs @ 12.02 hrs, Volume= 5,414 cf, Atten= 1%, Lag= 0.5 min
Primary = 1.81 cfs @ 12.02 hrs, Volume= 5,414 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 27.86' @ 12.02 hrs Surf.Area= 669 sf Storage= 907 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 132.6 min (878.9 - 746.3)

Volume	Invert	Avail.Storage	Storage Description
#1	26.50'	1,004 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
26.50	669	0	0
28.00	669	1,004	1,004

Device	Routing	Invert	Outlet Devices
#1	Primary	23.50'	**12.0" Round Culvert** L= 64.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 23.50' / 22.26' S= 0.0194 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	27.75'	**6.0" Horiz. Orifice/Grate X 10.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	26.50'	**2.000 in/hr Exfiltration over Surface area**

Primary OutFlow Max=1.80 cfs @ 12.02 hrs HW=27.86' TW=24.14' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.80 cfs of 5.75 cfs potential flow)
  ├─**2=Orifice/Grate** (Weir Controls 1.77 cfs @ 1.06 fps)
  └─**3=Exfiltration** (Exfiltration Controls 0.03 cfs)

mmary for Pond SP2: 1.0 Foot High Stormwater Planter 673 SQ. FT. W/ 6 Outlets & 100 SF FocalPoint Sy

Inflow Area = 19,883 sf, 95.94% Impervious, Inflow Depth = 6.05" for 25-Year event
Inflow = 3.40 cfs @ 12.01 hrs, Volume= 10,030 cf
Outflow = 3.36 cfs @ 12.02 hrs, Volume= 10,031 cf, Atten= 1%, Lag= 0.4 min
Primary = 3.36 cfs @ 12.02 hrs, Volume= 10,031 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 22.26' @ 12.02 hrs Surf.Area= 100 sf Storage= 502 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 5.8 min (752.1 - 746.3)

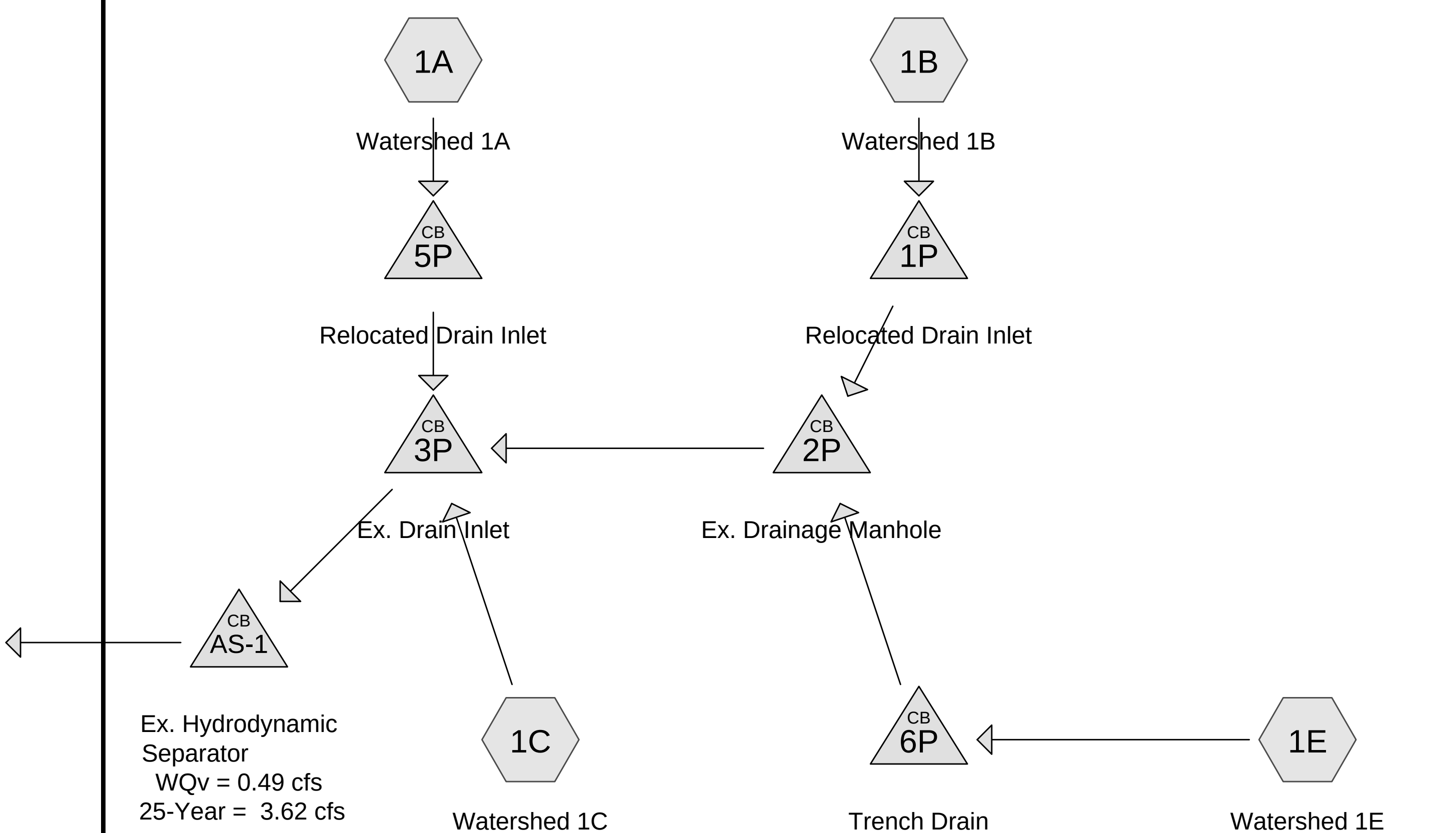
Volume	Invert	Avail.Storage	Storage Description
#1	19.33'	45 cf	**2.00'W x 50.00'L x 2.25'H FocalPoint** 225 cf Overall x 20.0% Voids
#2	21.58'	505 cf	**Stormwater Planter (Prismatic)**Listed below (Recalc) -Impervious
		550 cf	Total Available Storage

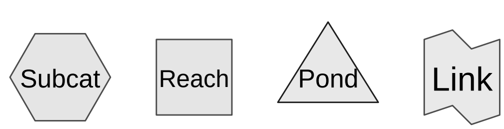
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
21.58	673	0	0
22.08	673	337	337
22.33	673	168	505

Device	Routing	Invert	Outlet Devices
#1	Primary	19.00'	**12.0" Round Culvert** L= 19.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 19.00' / 18.77' S= 0.0121 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	19.33'	**100.000 in/hr Exfiltration over Surface area**
#3	Device 1	22.08'	**8.0" Horiz. Orifice/Grate X 6.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.35 cfs @ 12.02 hrs HW=22.26' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 3.35 cfs of 4.96 cfs potential flow)
  ├─**2=Exfiltration** (Exfiltration Controls 0.23 cfs)
  └─**3=Orifice/Grate** (Weir Controls 3.11 cfs @ 1.38 fps)

8). Water Quality Calculations





Routing Diagram for Proposed Condtion
Prepared by Hudson Engineering & Consulting
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Summary for Subcatchment 1A: Watershed 1A

Runoff = 0.13 cfs @ 12.02 hrs, Volume= 363 cf, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr WQv Rainfall=1.73"

	Area (sf)	CN	Description
*	2,893	98	Parking Lot
	2,893		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	96	0.0166	1.31		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"

Summary for Subcatchment 1B: Watershed 1B

Runoff = 0.13 cfs @ 12.01 hrs, Volume= 361 cf, Depth= 1.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr WQv Rainfall=1.73"

	Area (sf)	CN	Description
	71	74	>75% Grass cover, Good, HSG C
*	3,008	98	Parking Lot
	3,079	97	Weighted Average
	71		2.31% Pervious Area
	3,008		97.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	64	0.0225	1.37		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"

Summary for Subcatchment 1C: Watershed 1C

Runoff = 0.13 cfs @ 12.01 hrs, Volume= 360 cf, Depth= 1.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr WQv Rainfall=1.73"

	Area (sf)	CN	Description
	244	74	>75% Grass cover, Good, HSG C
*	3,039	98	Parking Lot
	3,283	96	Weighted Average
	244		7.43% Pervious Area
	3,039		92.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	57	0.0305	1.51		**Sheet Flow, A->B** Smooth surfaces n= 0.011 P2= 3.45"
0.3	53	0.0162	2.58		**Shallow Concentrated Flow, B->C** Paved Kv= 20.3 fps
0.9	110	Total			

Summary for Subcatchment 1E: Watershed 1E

Runoff = 0.06 cfs @ 12.01 hrs, Volume= 179 cf, Depth= 1.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr WQv Rainfall=1.73"

	Area (sf)	CN	Description
	26	74	>75% Grass cover, Good, HSG C
*	1,402	98	Parking Lot
	1,428	98	Weighted Average
	26		1.82% Pervious Area
	1,402		98.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	42	0.0129	1.01		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"

Summary for Pond 1P: Relocated Drain Inlet

Inflow Area = 3,079 sf, 97.69% Impervious, Inflow Depth = 1.41" for WQv event
Inflow = 0.13 cfs @ 12.01 hrs, Volume= 361 cf
Outflow = 0.13 cfs @ 12.01 hrs, Volume= 361 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.13 cfs @ 12.01 hrs, Volume= 361 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 22.95' @ 12.01 hrs
Flood Elev= 25.05'

Device	Routing	Invert	Outlet Devices
#1	Primary	22.75'	**12.0" Round 12" HDPE** L= 35.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 22.75' / 22.26' S= 0.0140 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.13 cfs @ 12.01 hrs HW=22.95' TW=22.40' (Dynamic Tailwater)
1=12" HDPE (Inlet Controls 0.13 cfs @ 1.20 fps)

Summary for Pond 2P: Ex. Drainage Manhole

Inflow Area = 4,507 sf, 97.85% Impervious, Inflow Depth = 1.44" for WQv event
Inflow = 0.20 cfs @ 12.01 hrs, Volume= 540 cf
Outflow = 0.20 cfs @ 12.01 hrs, Volume= 540 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.20 cfs @ 12.01 hrs, Volume= 540 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 22.40' @ 12.01 hrs
Flood Elev= 26.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	22.16'	**12.0" Round 12" PVC** L= 101.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 22.16' / 20.74' S= 0.0140 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.20 cfs @ 12.01 hrs HW=22.40' TW=21.21' (Dynamic Tailwater)
↑—**1=12" PVC** (Inlet Controls 0.20 cfs @ 1.33 fps)

Summary for Pond 3P: Ex. Drain Inlet

Inflow Area = 10,683 sf, 96.81% Impervious, Inflow Depth = 1.42" for WQv event
Inflow = 0.46 cfs @ 12.01 hrs, Volume= 1,263 cf
Outflow = 0.46 cfs @ 12.01 hrs, Volume= 1,263 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.46 cfs @ 12.01 hrs, Volume= 1,263 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 21.21' @ 12.01 hrs
Flood Elev= 23.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.74'	**12.0" Round 12" PVC** L= 14.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 20.74' / 20.45' S= 0.0207 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.46 cfs @ 12.01 hrs HW=21.21' TW=21.09' (Dynamic Tailwater)
↑—**1=12" PVC** (Outlet Controls 0.46 cfs @ 1.84 fps)

Summary for Pond 5P: Relocated Drain Inlet

Inflow Area = 2,893 sf,100.00% Impervious, Inflow Depth = 1.51" for WQv event
Inflow = 0.13 cfs @ 12.02 hrs, Volume= 363 cf
Outflow = 0.13 cfs @ 12.02 hrs, Volume= 363 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.13 cfs @ 12.02 hrs, Volume= 363 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 21.42' @ 12.02 hrs
Flood Elev= 23.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	21.20'	**12.0" Round 12" HDPE** L= 34.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 21.20' / 20.79' S= 0.0121 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.13 cfs @ 12.02 hrs HW=21.42' TW=21.21' (Dynamic Tailwater)
↑—**1=12" HDPE** (Outlet Controls 0.13 cfs @ 1.55 fps)

Summary for Pond 6P: Trench Drain

Inflow Area = 1,428 sf, 98.18% Impervious, Inflow Depth = 1.51" for WQv event
Inflow = 0.06 cfs @ 12.01 hrs, Volume= 179 cf
Outflow = 0.06 cfs @ 12.01 hrs, Volume= 179 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.06 cfs @ 12.01 hrs, Volume= 179 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 23.49' @ 12.01 hrs
Flood Elev= 25.96'

Device	Routing	Invert	Outlet Devices
#1	Primary	23.35'	**12.0" Round 12" HDPE** L= 34.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 23.35' / 22.26' S= 0.0321 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.06 cfs @ 12.01 hrs HW=23.49' TW=22.40' (Dynamic Tailwater)
↑—**1=12" HDPE** (Inlet Controls 0.06 cfs @ 0.99 fps)

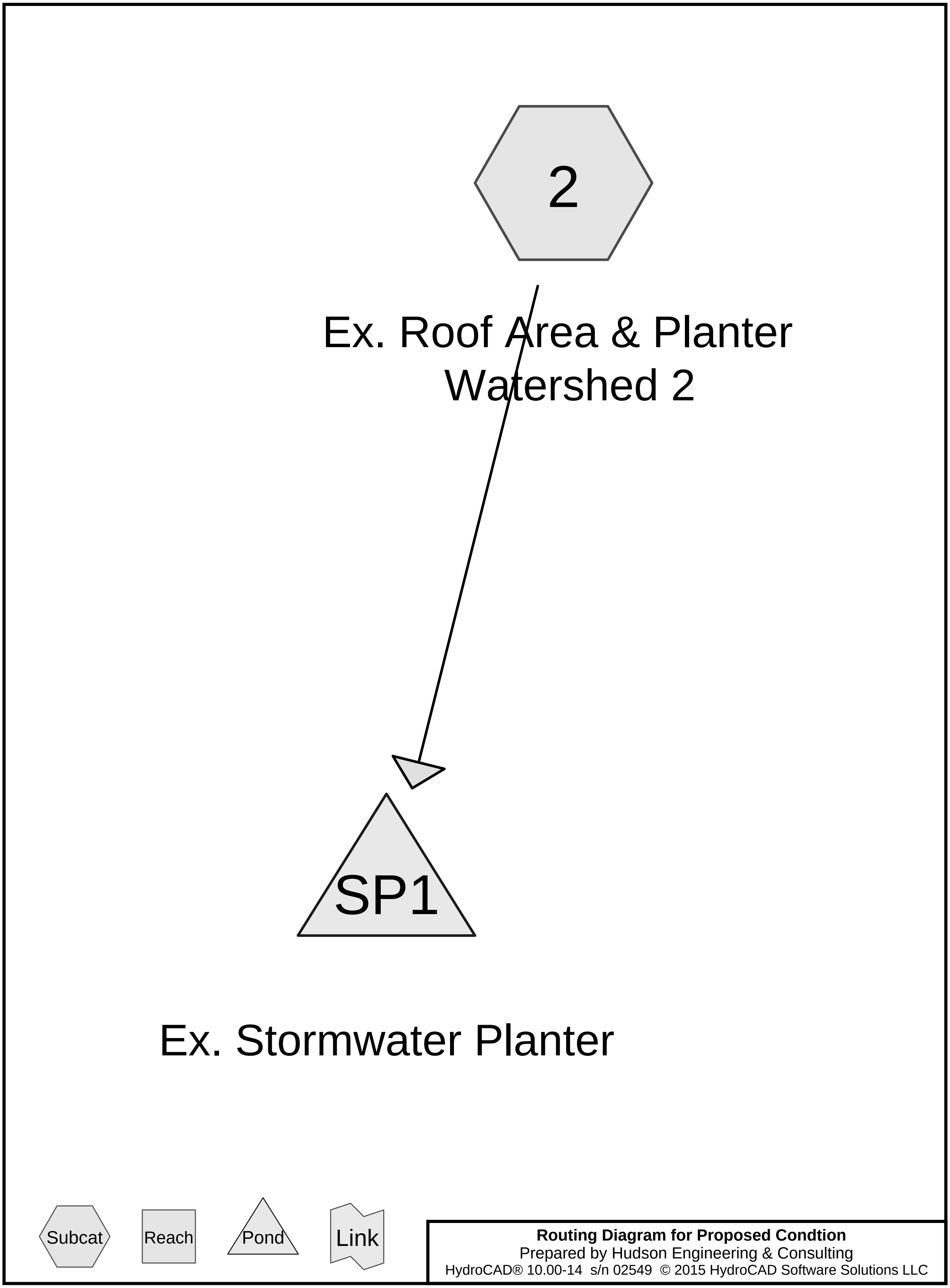
Summary for Pond AS-1: Ex. Hydrodynamic Separator WQv = 0.49 cfs 25-Year = 3.62 cfs

Inflow Area = 10,683 sf, 96.81% Impervious, Inflow Depth = 1.42" for WQv event
Inflow = 0.46 cfs @ 12.01 hrs, Volume= 1,263 cf
Outflow = 0.46 cfs @ 12.01 hrs, Volume= 1,263 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.46 cfs @ 12.01 hrs, Volume= 1,263 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 21.10' @ 12.01 hrs
Flood Elev= 24.12'

Device	Routing	Invert	Outlet Devices
#1	Primary	20.74'	**15.0" Round Ex. 15" RCP** L= 52.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 20.74' / 20.12' S= 0.0119 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf

Primary OutFlow Max=0.46 cfs @ 12.01 hrs HW=21.09' TW=20.43' (Dynamic Tailwater)
↑—**1=Ex. 15" RCP** (Inlet Controls 0.46 cfs @ 1.60 fps)



Routing Diagram for Proposed Condtion
Prepared by Hudson Engineering & Consulting

Summary for Subcatchment 2: Ex. Roof Area & Planter Watershed 2

Runoff = 0.46 cfs @ 12.01 hrs, Volume= 1,259 cf, Depth= 1.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr WQv Rainfall=1.73"

	Area (sf)	CN	Description
*	10,056	98	Roof
*	677	79	Planter
	10,733	97	Weighted Average
	677		6.31% Pervious Area
	10,056		93.69% Impervious Area

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

Summary for Pond SP1: Ex. Stormwater Planter

Inflow Area = 10,733 sf, 93.69% Impervious, Inflow Depth = 1.41" for WQv event
Inflow = 0.46 cfs @ 12.01 hrs, Volume= 1,259 cf
Outflow = 0.03 cfs @ 11.57 hrs, Volume= 1,259 cf, Atten= 93%, Lag= 0.0 min
Primary = 0.03 cfs @ 11.57 hrs, Volume= 1,259 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 27.22' @ 12.99 hrs Surf.Area= 669 sf Storage= 482 cf

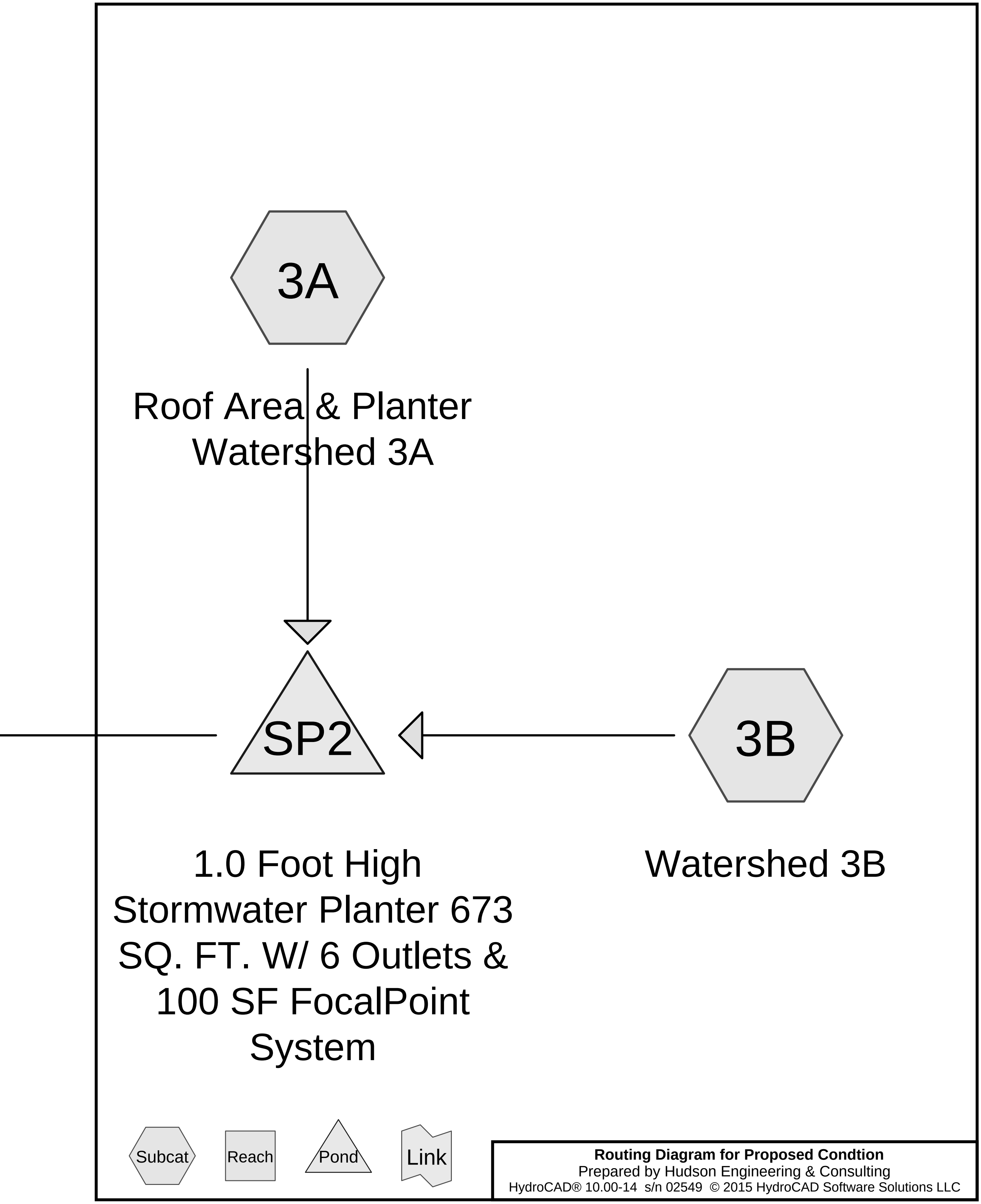
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 120.3 min (899.3 - 778.9)

Volume	Invert	Avail.Storage	Storage Description
#1	26.50'	1,004 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
26.50	669	0	0
28.00	669	1,004	1,004

Device	Routing	Invert	Outlet Devices
#1	Primary	23.50'	**12.0" Round Culvert** L= 64.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 23.50' / 22.26' S= 0.0194 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	27.75'	**6.0" Horiz. Orifice/Grate X 10.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	26.50'	**2.000 in/hr Exfiltration over Surface area**

Primary OutFlow Max=0.03 cfs @ 11.57 hrs HW=26.52' (Free Discharge)
└─**1=Culvert** (Passes 0.03 cfs of 4.74 cfs potential flow)
  ├─**2=Orifice/Grate** (Controls 0.00 cfs)
  └─**3=Exfiltration** (Exfiltration Controls 0.03 cfs)


3A
Roof Area & Planter Watershed 3A
SP2
1.0 Foot High Stormwater Planter 673 SQ. FT. W/ 6 Outlets & 100 SF FocalPoint System
3B
Watershed 3B
Subcat
Reach
Pond
Link
Routing Diagram for Proposed Condtion
Prepared by Hudson Engineering & Consulting
HydroCAD® 10.00-14 s/n 02549 © 2015 HydroCAD Software Solutions LLC

Summary for Subcatchment 3A: Roof Area & Planter Watershed 3A

Runoff = 0.63 cfs @ 12.01 hrs, Volume= 1,730 cf, Depth= 1.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr WQv Rainfall=1.73"

	Area (sf)	CN	Description
*	14,082	98	Roof
*	673	79	Planter
	14,755	97	Weighted Average
	673		4.56% Pervious Area
	14,082		95.44% Impervious Area

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

Summary for Subcatchment 3B: Watershed 3B

Runoff = 0.22 cfs @ 12.01 hrs, Volume= 601 cf, Depth= 1.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr WQv Rainfall=1.73"

	Area (sf)	CN	Description
	135	74	>75% Grass cover, Good, HSG C
*	4,993	98	Parking Lot & portion of ex. building
	5,128	97	Weighted Average
	135		2.63% Pervious Area
	4,993		97.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	74	0.0180	1.29		**Sheet Flow, A-B** Smooth surfaces n= 0.011 P2= 3.45"

mmary for Pond SP2: 1.0 Foot High Stormwater Planter 673 SQ. FT. W/ 6 Outlets & 100 SF FocalPoint Sy

Inflow Area = 19,883 sf, 95.94% Impervious, Inflow Depth = 1.41" for WQv event
Inflow = 0.85 cfs @ 12.01 hrs, Volume= 2,332 cf
Outflow = 0.23 cfs @ 11.78 hrs, Volume= 2,334 cf, Atten= 73%, Lag= 0.0 min
Primary = 0.23 cfs @ 11.78 hrs, Volume= 2,334 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 22.03' @ 12.30 hrs Surf.Area= 100 sf Storage= 347 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 6.4 min (785.4 - 778.9)

Volume	Invert	Avail.Storage	Storage Description
#1	19.33'	45 cf	**2.00'W x 50.00'L x 2.25'H FocalPoint** 225 cf Overall x 20.0% Voids
#2	21.58'	505 cf	**Stormwater Planter (Prismatic)**Listed below (Recalc) -Impervious
		550 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
21.58	673	0	0
22.08	673	337	337
22.33	673	168	505

Device	Routing	Invert	Outlet Devices
#1	Primary	19.00'	**12.0" Round Culvert** L= 19.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 19.00' / 18.77' S= 0.0121 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Device 1	19.33'	**100.000 in/hr Exfiltration over Surface area**
#3	Device 1	22.08'	**8.0" Horiz. Orifice/Grate X 6.00** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.23 cfs @ 11.78 hrs HW=19.37' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.23 cfs of 0.42 cfs potential flow)
 ├─**2=Exfiltration** (Exfiltration Controls 0.23 cfs)
 └─**3=Orifice/Grate** (Controls 0.00 cfs)

9.) AquaSwirl Sizing Chart & Spec Sheet

Aqua-Swirl®
Stormwater Treatment System

Inspection and Maintenance Manual

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March 2014

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AquaShield™, Inc
Stormwater Treatment Solutions

The highest priority of AquaShield™, Inc. (AquaShield™) is to protect waterways by providing stormwater treatment solutions to businesses across the world. These solutions have a reliable foundation based on over 20 years of water treatment experience.

Local regulators, engineers, and contractors have praised the AquaShield™ systems for their simple design and ease of installation. All the systems are fabricated from high performance, durable and lightweight materials. Contractors prefer the quick and simple installation of our structures that saves them money.

The patented line of AquaShield™ stormwater treatment products that provide high levels of stormwater treatment include the following:

- **Aqua-Swirl® Stormwater Treatment System:** hydrodynamic separator, which provides a highly effective means for the removal of sediment, floating debris and free-oil.

- **Aqua-Filter™ Stormwater Filtration System:** treatment train stormwater filtration system capable of removing gross contaminants, fine sediments, waterborne hydrocarbons, heavy metals and total phosphorous.

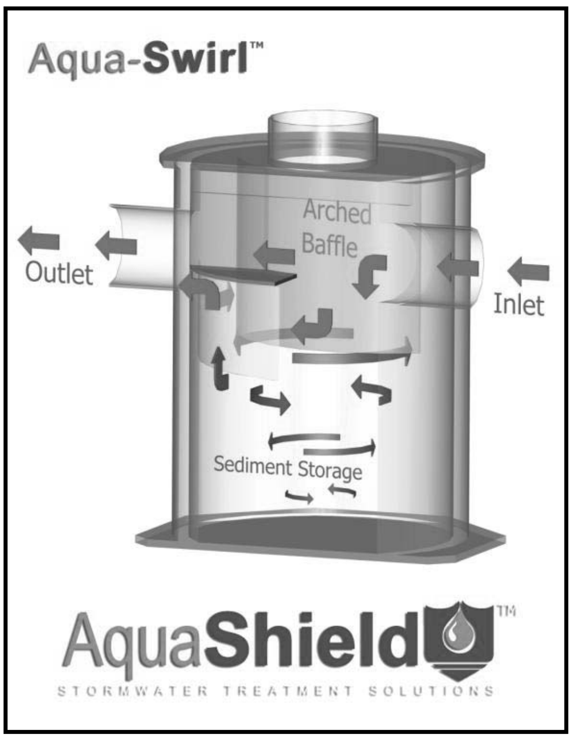
Aqua-Swirl® Stormwater Treatment System

Aqua-Filter™ Stormwater Filtration System

Aqua-Swirl® Stormwater Treatment System

The patented Aqua-Swirl® Stormwater Treatment System is a single chamber hydrodynamic separator which provides a highly effective means for the removal of sediment, free oil, and floating debris. Both treatment and storage are accomplished in the swirl chamber without the use of multiple or "blind" chambers. Independent laboratory and field performance verifications have shown that the Aqua-Swirl® achieves over 80% suspended solids removal efficiency on a net annual basis.

The Aqua-Swirl® is most commonly installed in an "off-line" configuration. Or, depending on local regulations, an "in-line" (on-line) conveyance flow diversion (CFD) system can be used. The CFD model allows simple installation by connecting directly to the existing storm conveyance pipe thereby providing full treatment of the "first flush," while the peak design storm is diverted and channeled through the main conveyance pipe.



The patented Aqua-Swirl® Stormwater Treatment System provides a highly effective means for the removal of sediment, floating debris, and free oil. Swirl technology, or vortex separation, is a proven form of treatment utilized in the stormwater industry to accelerate gravitational separation.

Floatable debris in the Aqua-Swirl®

Each Aqua-Swirl® is constructed of high performance, lightweight and durable materials including polymer coated steel (PCS), high density polyethylene (HDPE), or fiberglass reinforced polymer (FRP). These materials eliminate the need for heavy lifting equipment during installation.

System Operation

The treatment operation begins when stormwater enters the Aqua-Swirl® through a tangential inlet pipe that produces a circular (or vortex) flow pattern that causes contaminates to settle to the base of the unit. Since stormwater flow is intermittent by nature, the Aqua-Swirl® retains water between storm events providing both dynamic and quiescent settling of solids. The dynamic settling occurs during each storm event while the quiescent settling takes place between successive storms. A combination of gravitational and hydrodynamic drag forces encourages the solids to drop out of the flow and migrate to the center of the chamber where velocities are the lowest.

The treated flow then exits the Aqua-Swirl® behind the arched outer baffle. The top of the baffle is sealed across the treatment channel, thereby eliminating floatable pollutants from escaping the system. A vent pipe is extended up the riser to expose the backside of the baffle to atmospheric conditions, preventing a siphon from forming at the bottom of the baffle.

Custom Applications

The Aqua-Swirl® system can be modified to fit a variety of purposes in the field, and the angles for inlet and outlet lines can be modified to fit most applications. The photo below demonstrates the flexibility of Aqua-Swirl® installations using a “twin” configuration in order to double the water quality treatment capacity. Two Aqua-Swirl® units were placed side by side in order to treat a high volume of water while occupying a small amount of space.

Custom designed AS-9 Twin Aqua-Swirl®

Retrofit Applications

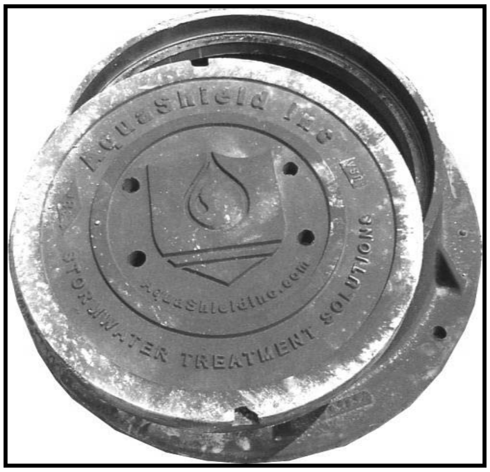
The Aqua-Swirl® system is designed so that it can easily be used for retrofit applications. With the invert of the inlet and outlet pipe at the same elevation, the Aqua-Swirl® can easily be connected directly to the existing storm conveyance drainage system. Furthermore, because of the lightweight nature and small footprint of the Aqua-Swirl®, existing infrastructure utilities (i.e., wires, poles, trees) would be unaffected by installation.

AquaShield™ Product System Maintenance

The long term performance of any stormwater treatment structure, including manufactured or land based systems, depends on a consistent maintenance plan. Inspection and maintenance functions are simple and easy for the AquaShield™ Stormwater Treatment Systems allowing all inspections to be performed from the surface.

It is important that a routine inspection and maintenance program be established for each unit based on: (a) the volume or load of the contaminants of concern, (b) the frequency of releases of contaminants at the facility or location, and (c) the nature of the area being drained.

In order to ensure that our systems are being maintained properly, AquaShield™ offers a maintenance solution to all of our customers. We will arrange to have maintenance performed.



Inspection

All AquaShield™ products can be inspected from the surface, eliminating the need to enter the systems to determine when cleanout should be performed. In most cases, AquaShield™ recommends a quarterly inspection for the first year of operation to develop an appropriate schedule of maintenance. Based on experience of the system's first year in operation, we recommend that the inspection schedule be revised to reflect the site-specific conditions encountered. Typically, the inspection schedule for subsequent years is reduced to semi-annual inspection.

Aqua-Swirl® Maintenance

The Aqua-Swirl® has been designed to minimize and simplify the inspection and maintenance process. The single chamber system can be inspected and maintained entirely from the surface thereby eliminating the need for confined space entry. Furthermore, the entire structure (specifically, the floor) is accessible for visual inspection from the surface. There are no areas of the structure that are blocked from visual inspection or periodic cleaning. Inspection of any free-floating oil and floatable debris can be directly observed and maintained through the manhole access provided directly over the swirl chamber.

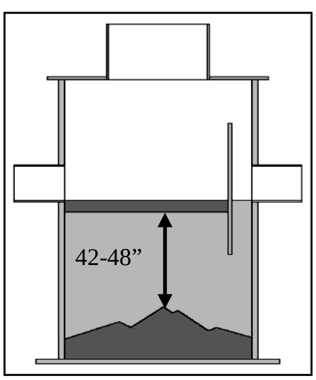
Aqua-Swirl® Inspection Procedure

To inspect the Aqua-Swirl®, a hook is needed to remove the manhole cover. AquaShield™ provides a customized manhole cover with our distinctive logo to make it easy for maintenance crews to locate the system in the field. We also provide a permanent metal information plate affixed inside the access riser which provides our contact information, the Aqua-Swirl® model size, and serial number.

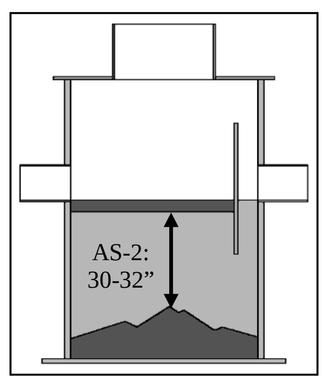
The only tools needed to inspect the Aqua-Swirl® system are a flashlight and a measuring device such as a stadia rod or pole. Given the easy and direct accessibility provided, floating oil and debris can be observed directly from the surface. Sediment depths can easily be determined by lowering a measuring device to the top of the sediment pile and to the surface of the water.

Sediment inspection using a stadia rod in a single chamber

The maintenance trigger for Aqua-Swirl® Models AS-3 through AS-13 occurs when the sediment pile is within 42 to 48 inches of the standing water surface. For the Aqua-Swirl® Model AS-2, maintenance is needed when the top of the sediment pile is measured to be 30 to 32 inches below the standing water surface.



Maintenance trigger for Aqua-Swirl® Models AS-3 through AS-13 occurs when sediment pile is 42-48 inches below water surface.



Maintenance trigger for Aqua-Swirl® Model AS-2 occurs when sediment pile is 30 to 32 inches below water surface.

It should be noted that in order to avoid underestimating the volume of sediment in the chamber, the measuring device must be carefully lowered to the *top* of the sediment pile. Keep in mind that the finer sediment at the top of the pile may offer less resistance to the measuring device than the larger particles which typically occur deeper within the sediment pile.

The Aqua-Swirl® design allows for the sediment to accumulate in a semi-conical fashion as illustrated above. That is, the depth to sediment as measured below the water surface may be less in the center of the swirl chamber; and likewise, may be greater at the edges of the swirl chamber.

Aqua-Swirl® Cleanout Procedure

Cleaning the Aqua-Swirl® is simple and quick. Free-floating oil and floatable debris can be observed and removed directly through the 30-inch service access riser provided. A vacuum truck is typically used to remove the accumulated sediment and debris. An advantage of the Aqua-Swirl® design is that the entire sediment storage area can be reached with a vacuum hose from the surface (reaching all the sides). Since there are no multiple or limited (hidden or "blind") chambers in the Aqua-Swirl®, there are no restrictions to impede on-site maintenance tasks.

Disposal of Recovered Materials

Disposal of recovered material is typically handled in the same fashion as catch basin cleanouts. AquaShield™ recommends that all maintenance activities be performed in accordance with appropriate health and safety practices for the tasks and equipment being used.

AquaShield™ also recommends that all materials removed from the Aqua-Swirl® and any external structures (e.g, bypass features) be handled and disposed in full accordance with any applicable local and state requirements.

Vacuum truck quickly cleans the Aqua-Swirl®
from a single chamber

Aqua-Swirl® Inspection and Maintenance Work Sheets on following pages

Aqua-Swirl® Inspection and Maintenance Manual
Work Sheets

SITE and OWNER INFORMATION

Site Name: ______________________________

Site Location: ______________________________

Date: ______________________ Time: ______________________

Inspector Name: ______________________________

Inspector Company: ______________________ Phone #: ______________________

Owner Name: ______________________________

Owner Address: ______________________________

Owner Phone #: ______________________ Emergency Phone #: ______________________

INSPECTIONS

I. Floatable Debris and Oil

1. Remove manhole lid to expose liquid surface of the Aqua-Swirl®.
2. Remove floatable debris with basket or net if any present.
3. If oil is present, measure its depth. Clean liquids from system if one half (½) inch or more oil is present.

   Note: Water in Aqua-Swirl® can appear black and similar to oil due to the dark body of the surrounding structure. Oil may appear darker than water in the system and is usually accompanied by oil stained debris (e.g. Styrofoam, etc.). The depth of oil can be measured with an oil/water interface probe, a stadia rod with water finding paste, a coliwasa, or collect a representative sample with a jar attached to a rod.

II. Sediment Accumulation

1. Lower measuring device (e.g. stadia rod) into swirl chamber through service access provided until top of sediment pile is reached.
2. Record distance to top of sediment pile from top of standing water: ____________ inches
3. For Aqua-Swirl® Models AS-3 through AS-13, schedule cleaning if value in Step #2 is 48 to 42 inches or less.
4. For Aqua-Swirl® Model AS-2, schedule cleaning if value in Step #2 is 32 to 30 inches or less.

III. Diversion Structures (External Bypass Features)

If a diversion (external bypass) configuration is present, it should be inspected as follows:

1. Inspect weir or other bypass feature for structural decay or damage. Weirs are more susceptible to damage than off-set piping and should be checked to confirm that they are not crumbling (concrete or brick) or decaying (steel).
2. Inspect diversion structure and bypass piping for signs of structural damage or blockage from debris or sediment accumulation.
3. When feasible, measure elevations on diversion weir or piping to ensure it is consistent with site plan designs.
4. Inspect downstream (convergence) structure(s) for sign of blockage or structural failure as noted above.

CLEANING

Schedule cleaning with local vactor company or AquaShield™ to remove sediment, oil and other floatable pollutants. The captured material generally does not require special treatment or handling for disposal. Site-specific conditions or the presence of known contaminants may necessitate that appropriate actions be taken to clean and dispose of materials captured and retained by the Aqua-Swirl®. All cleaning activities should be performed in accordance with property health and safety procedures.

AquaShield™ always recommends that all materials removed from the Aqua-Swirl® during the maintenance process be handled and disposed in accordance with local and state environmental or other regulatory requirements.

MAINTENANCE SCHEDULE

I. During Construction

Inspect the Aqua-Swirl® every three (3) months and clean the system as needed. The Aqua-Swirl® should be inspected and cleaned at the end of construction regardless of whether it has reached its maintenance trigger.

II. First Year Post-Construction

Inspect the Aqua-Swirl® every three (3) months and clean the system as needed.

Inspect and clean the system once annually regardless of whether it has reached its sediment or floatable pollutant storage capacity.

III. Second and Subsequent Years Post-Construction

If the Aqua-Swirl® did not reach full sediment or floatable pollutant capacity in the First Year Post-Construction period, the system can be inspected and cleaned once annually.

If the Aqua-Swirl® reached full sediment or floatable pollutant capacity in less than 12 months in the First Year Post-Construction period, the system should be inspected once every six (6) months and cleaned as needed. The Aqua-Swirl® should be cleaned annually regardless of whether it reaches its sediment or floatable pollutant capacity.

IV. Bypass Structures

Bypass structures should be inspected whenever the Aqua-Swirl® is inspected. Maintenance should be performed on bypass structures as needed.

MAINTENANCE COMPANY INFORMATION

Company Name: ____

Street Address: ____

City: ____________________ State/Prov.:________ Zip/Postal Code: __________

Contact: ______________________________ Title: ____________________

Office Phone: ____________________ Cell Phone: ____________________

ACTIVITY LOG

Date of Cleaning: ________________ (Next inspection should be 3 months from this data for first year).

Time of Cleaning: Start: ________________ End: ________________

Date of Next Inspection: ____________

Floatable debris present: Yes No

Notes: ____

____

____

Oil present: Yes No Oil depth (inches): ____________________

Measurement method and notes: ______________________________

____

____

STRUCTURAL CONDITIONS and OBSERVATIONS

Structural damage: Yes No Where: ______________________________

Structural wear: Yes No Where: ____

Odors present: Yes No Describe: ____

Clogging: Yes No Describe: ____

Other Observations: ____

____

____

NOTES

Additional Comments and/or Actions To Be Taken	Time Frame

ATTACHMENTS

- Attach site plan showing Aqua-Swirl® location.
- Attach detail drawing showing Aqua-Swirl® dimensions and model number.
- If a diversion configuration is used, attach details showing basic design and elevations (where feasible).

Aqua-Swirl®

TABULAR MAINTENANCE SCHEDULE

Date Construction Started: ______________________________

Date Construction Ended: ______________________________

During Construction

	Month											
Activity	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Inspect and Clean as needed			X			X			X			X
Inspect Bypass and maintain as needed			X			X			X			X
Clean System*												X*

* The Aqua-Swirl® should be cleaned **<u>once a year</u>** regardless of whether it has reached full pollutant storage capacity. In addition, the system should be cleaned at the **<u>end of construction</u>** regardless of whether it has reach full pollutant storage capacity.

First Year Post-Construction

	Month											
Activity	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Inspect and Clean as needed			X			X			X			X
Inspect Bypass and maintain as needed			X			X			X			X
Clean System*												X*

* The Aqua-Swirl® should be cleaned **<u>once a year</u>** regardless of whether it has reached full pollutant storage capacity.

Second and Subsequent Years Post-Construction

	Month											
Activity	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Inspect and Clean as needed												X*
Inspect Bypass, maintain as needed												X*
Clean System*												X*

* If the Aqua-Swirl® did **<u>not</u>** reach full sediment or floatable pollutant capacity in the First Year Post-Construction period, the system can be inspected and cleaned once annually.

If the Aqua-Swirl® **<u>reached</u>** full sediment or floatable pollutant capacity in less than 12 months in the First Year Post-Construction period, the system should be inspected once every six (6) months or more frequently if past history warrants, and cleaned as needed. The Aqua-Swirl® should be cleaned annually regardless of whether it reaches its full sediment or floatable pollutant capacity.

Aqua-Swirl™ Sizing Chart *(English)*

Aqua-Swirl™ Model	Swirl Chamber Diameter (ft.)	Maximum Stub-Out Pipe Outer Diameter (in.)		Water Quality Treatment Flow[2] (cfs)	Oil/Debris Storage Capacity (gal)	Sediment Storage Capacity (ft^3)
		On/Offline	CFD[1]			
AS-2	2.50	8	12	1.1	37	10
AS-3	3.25	10	16	1.8	110	20
AS-4	4.25	12	18	3.2	190	32
AS-5	5.00	12	24	4.4	270	45
AS-6	6.00	14	30	6.3	390	65
AS-7	7.00	16	36	8.6	540	90
AS-8	8.00	18	42	11.2	710	115
AS-9	9.00	20	48	14.2	910	145
AS-10	10.0	22	54	17.5	1130	180
AS-12	12.0	24	48	25.2	1698	270
AS-XX	Custom	--	--	>26	--	--

***Higher water quality treatment flow rates can be designed with multiple swirls.**

1) *The **Aqua-Swirl™ Conveyance Flow Diversion (CFD)** provides full treatment of the "first flush," while the peak design storm is diverted and channeled through the main conveyance pipe. Please refer to your local representative for more information.*

2) *Many regulatory agencies are establishing "water quality treatment flow rates" for their areas based on the initial movement of pollutants into the storm drainage system. The treatment flow rate of the Aqua-Swirl™ system is engineered to meet or exceed the local water quality treatment criteria. This **"water quality treatment flow rate"** typically represents approximately 90% to 95% of the total annual runoff volume.*

The design and orientation of the Aqua-Filter™ generally entails some degree of customization. For assistance in design and specific sizing using historical rainfall data, please refer to an AquaShield™ representative or visit our website at www.AquaShieldInc.com. CAD details and specifications are available upon request.

10.) FocalPoint Biofilter System

Designing with FocalPoint in New York

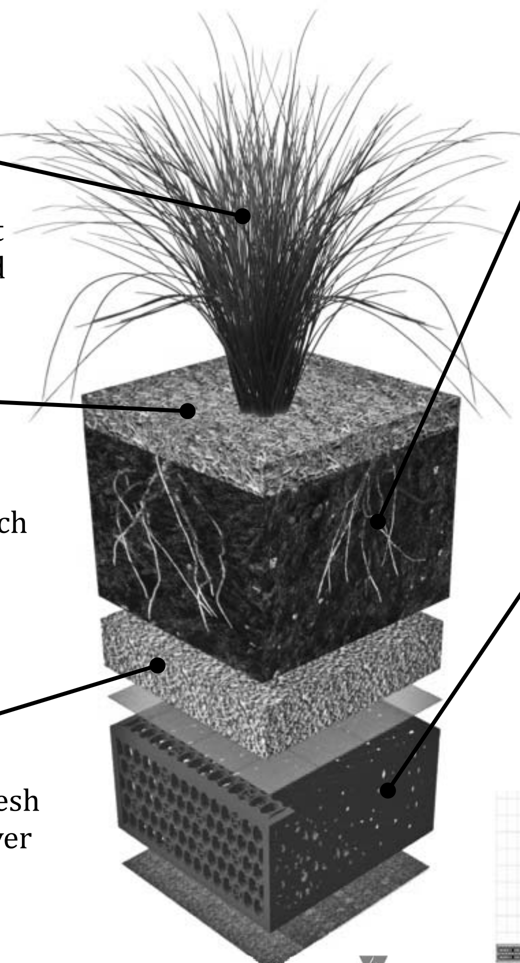
Utilizing a High Performance Modular Biofiltration System for New Development, Redevelopment and Retrofit Projects

The New York State Department of Environmental Conservation (NYS DEC) has approved the FocalPoint (High Performance Modular Biofiltration System) as a proprietary stormwater management practice for use on New Development, Redevelopment and Retrofit Projects.

SYSTEM OVERVIEW:

The FocalPoint is an ultra-efficient, modular biofiltration system that treats and drains large volumes of stormwater runoff in a small footprint to meet post construction stormwater treatment requirements. The system can be installed along the edge of a roadway behind curb line, in landscaped stormwater basins and be incorporated into an urban green infrastructure streetscape. As an innovative micro-scale practice, the FocalPoint overcomes many of the inherent challenges with traditional micro-bioretention and other similar BMPs – improving media quality control, reduction in space needed and reduced maintenance footprint, and elimination of clog-prone geotextiles.

SYSTEM COMPONENTS:



Vegetated System:
Plants process pollutants removed from run-off and root system maintains drainage and aeration of media.

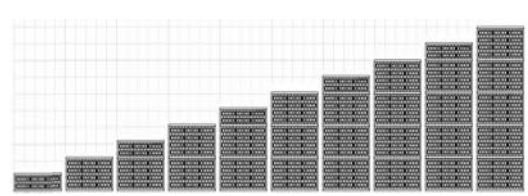
3” Layer of Shredded Hardwood Mulch:
Pre-treatment mechanism. Removal and Replacement of Mulch Represents the Bulk of System Maintenance!

6” Bridging Stone & Separation Layer:
Clog-Proof Clean Stone & Micro-Mesh Replace Traditional Geotextile Layer
No geotextile = no clogging

18” High Performance Media:
Flows at 100” Per Hour / 200 ft per day
Resistant to Clogging

3rd Party Field and Lab Test Verified for 91% TSS, 66% P and 48% N

High Performance Underdrain:
9.45” Modular Tank, or “Flat Pipe” w/95% Open Surface Collects Water Efficiently. Expand into Modular Tanks for Larger Storage Needs.

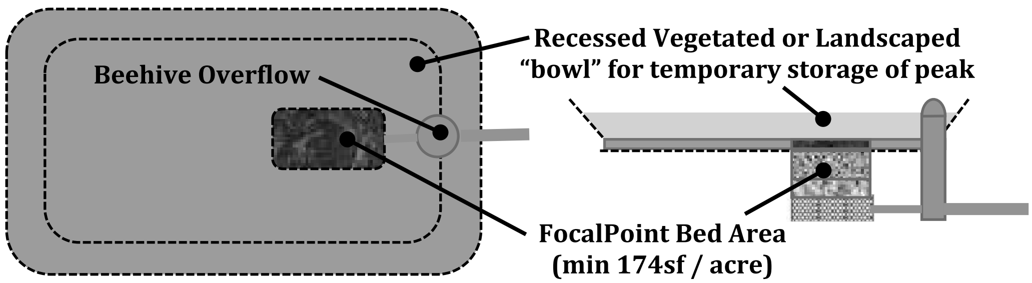


FocalPoint
BIOFILTRATION SYSTEMS

SIZING SUMMARY:

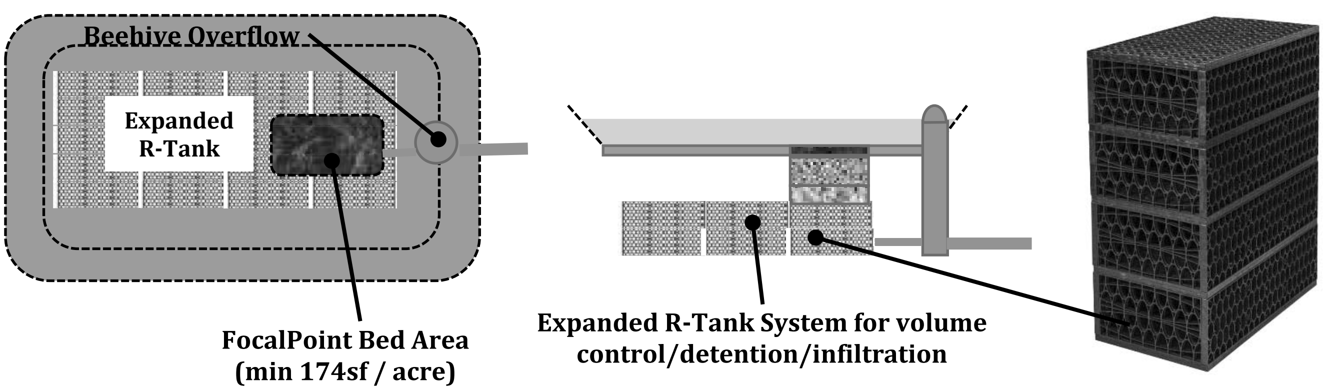
Water Quality (WQ) Treatment Only projects:

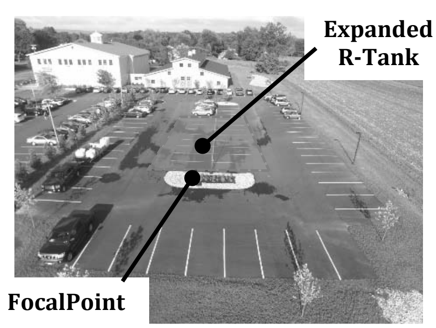
- The surface area of the FocalPoint media bed must be a minimum of **174 square feet per 1 acre of impervious area**
- The system must also be modelled in HydroCAD (or similar TR-55 modelling software) to demonstrate that the entire volume of a Type II or Type III (depending on region) 24 hr storm is treated prior to activation of the bypass/overflow (typically set at 6-12" above the mulch surface). Note: a 1.20 to 1.50 inch rainfall event typically generates 1.0 inches of runoff depending on watershed characteristics



Managing Larger Storms (with expanded infiltration or detention):

The R-Tank modular underdrain at the bottom of the FocalPoint gives the designer the opportunity to satisfy both WQv, Channel Protection, Recharge and Detention for controlled release of major storm events all within one system. The R-Tank can be expanded both vertically and horizontally to meet the volume/storage goals to ensure runoff is not only treated by the FocalPoint but also achieves post development peak flowrate control. The benefit to designers is that the R-Tank portion of the system can be built under parking areas (H-20, HS-25 load rated) to improve site surface utilization.





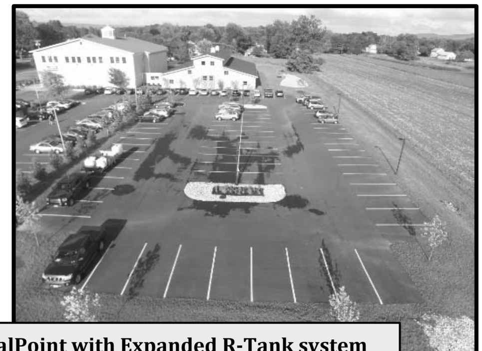
FocalPoint
BIOFILTRATION SYSTEMS

Site Development Project Examples:


Housing Development – FocalPoint with Expanded R-Tank system (Portland, ME)

Grant Funded WQ Project – FocalPoint (Ogunquit, ME)

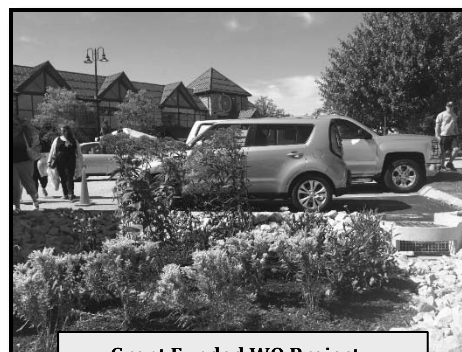
Site Development Project – FocalPoint (Portland, ME)

Commercial Development – FocalPoint with Expanded R-Tank system (Hadley, MA)

Urban Streetscape Project FocalPoint

Sports Facility – FocalPoint (Washington D.C.)



Grant Funded WQ Project – FocalPoint (Kittery, ME)

Urban Streetscape Installation FocalPoint

Premixed, certified FocalPoint Materials/Components

Site Development Project – FocalPoint with Expanded R-Tank – Newington NH

ACCESSORY ITEMS TO CONSIDER:

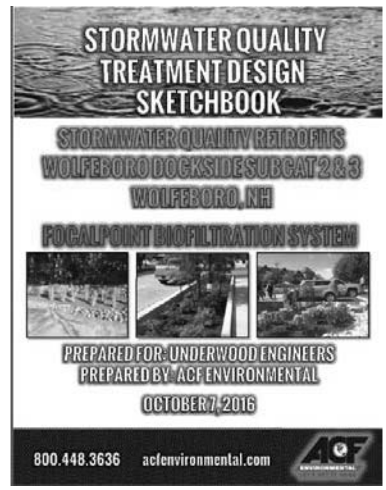
Rain Guardian Turret/Foxhole Curbline precast pretreatment unit for collection of sediment and energy dissipation.



ACF Beehive Overflow Filter
Domed riser with geotextile insert for collection of gross solids during major storm events.


DESIGN SUPPORT:

ACF and Fabco's in house engineering support team provide site specific technical support to engineers, designers, landscape architects and contractors. ACF realizes that engineers today are working on several projects at one time and are always working against low engineering design budgets. The intent of our technical support is to not only provide you with product information but to work alongside you and develop solutions to your site development design challenges.



We offer site specific design computations and conceptual layout support at no charge which we typically bind up with all relevant attachments in a design "Sketchbook" - a helpful tool that ultimately brings value and saves you time and associated cost as you work through incorporating this innovative solution into your design plans.

CONTACT ACF ENVIRONMENTAL:

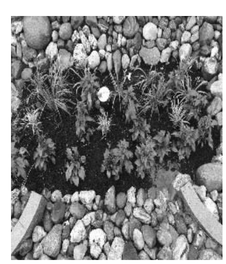
Bill Stoecker — bill@energysmartsolutionsinc.com

BMP Specialist - Fabco Industries — *(800) 559 2450*

Robert J Woodman – P.E., C.P.E.S.C — rwoodman@acfenv.com

Senior Stormwater Engineer – ACF Environmental




FocalPoint

BIOFILTRATION SYSTEMS

HIGH PERFORMANCE MODULAR BIOFILTRATION SYSTEM (HPMBS)

Operations & Maintenance

ACF ENVIRONMENTAL

Customer Focused, Environmentally Committed

GENERAL DESCRIPTION

The following general specifications describe the general operations and maintenance requirements for the FocalPoint® High Performance Modular Biofiltration System (HPMBS). The system utilizes physical, chemical and biological mechanisms of a soil, plant and microbe complex to remove pollutants typically found in urban stormwater runoff. The treatment system is a fully equipped, modular, constructed in place system designed to treat contaminated runoff.

Stormwater enters the FocalPoint® HPMBS, is filtered by the High Flow Biofiltration Media and passes through to the underdrain/storage system where the treated water is detained, retained or infiltrated to sub-soils, prior to discharge to the storm sewer system of any remaining flow.

Higher flows bypass the FocalPoint® HPMBS via a downstream inlet or other overflow conveyance. Maintenance is a simple, inexpensive and safe operation that does not require confined space entry, pumping or vacuum equipment, or specialized tools. Properly trained landscape personnel can effectively maintain FocalPoint® HPMBS by following instructions in this manual.

BASIC OPERATIONS

FocalPoint® is a modular, high performance biofiltration system that often works in tandem with other integrated management practices (IMP). Contaminated stormwater runoff enters the biofiltration bed through a conveyance swale, planter box, or directly through a curb cut or false inlet. Energy is dissipated by a rock or vegetative dissipation device and is absorbed by a 3-inch layer of aged, double shredded hardwood mulch, with fines removed, (when specified) on the surface of the biofiltration media.

As the water passes through the mulch layer, most of the larger sediment particles and heavy metals are removed through sedimentation and chemical reactions with the organic material in the mulch. Water passes through the biofiltration media where the finer particles are removed and numerous chemical reactions take place to immobilize and capture pollutants in the soil media.

The cleansed water passes into the underdrain/storage system and remaining flows are directed to a storm sewer system or other appropriate discharge point. Once the pollutants are in the soil, bacteria begin to break down and metabolize the materials and the plants begin to uptake and metabolize the pollutants. Some pollutants such as heavy metals, which are chemically bound to organic particles in the mulch, are released over time as the organic matter decomposes to release the metals to the feeder roots of the plants and the cells of the bacteria in the soil where they remain and are recycled. Other pollutants such as phosphorus are chemically bound to the soil particles and released slowly back to the plants and bacteria and used in their metabolic processes. Nitrogen goes through a variety of very complex biochemical processes where it can ultimately end up in the plant/bacteria biomass, turned to nitrogen gas or dissolves back into the water column as nitrates depending on soil temperature, pH and the availability of oxygen. The pollutants ultimately are retained in the mulch, soil and biomass with some passing out of the system into the air or back into the water.

DESIGN AND INSTALLATION

Each project presents different scopes for the use of FocalPoint® HPMBS. To ensure the safe and specified function of this stormwater BMP, Convergent Water Technologies and/or its Value Added Resellers (VAR) review each application before supply. Information and design assistance is available to the design engineer during the planning process. Correct FocalPoint® sizing is essential to optimum performance. The engineer shall submit calculations for approval by the local jurisdiction when required. The contractor and/or VAR is responsible for the correct installation of FocalPoint® HPMBS units as described in approved plans. A comprehensive installation manual is available at www.convergentwater.com.

MAINTENANCE

Why Maintain?

All stormwater treatment systems require maintenance for effective operation. This necessity is often incorporated in your property's permitting process as a legally binding BMP maintenance agreement. Other reasons for maintenance include:

- Avoid legal challenges from your jurisdiction's maintenance enforcement program.

- Prolong the lifespan of your FocalPoint® HPMBS.

- Avoid costly repairs.

- Help reduce pollutant loads leaving your property.

Simple maintenance of the FocalPoint® HPMBS is required to continue effective pollutant removal from stormwater runoff before any discharge into downstream waters. This procedure will also extend the longevity of the living biofiltration system. The unit will recycle and accumulate pollutants within the biomass, but may also subjected to other materials entering the surface of the system. This may include trash, silt and leaves etc. which will be contained above the mulch and/or biofiltration media layer. Too much silt may inhibit the FocalPoint's® HPMBS flow rate, which is a primary reason for system maintenance. Removal of accumulated silt/sediment and/or replacement of the mulch layer (when specified), is an important activity that prevents over accumulation of such silt/sediment.

When to Maintain?

Convergent Water Technologies and/or its VAR includes a 1-year maintenance plan with each system purchased. Annual included maintenance consists of two (2) scheduled maintenance visits. Additional maintenance may be necessary depending on sediment and trash loading (by Owner or at additional cost). The start of the maintenance plan begins when the system is activated for full operation. Full operation is defined as when the site is appropriately stabilized, the unit is installed and activated (by VAR), i.e., when mulch (if specified) and plantings are added.

Activation should be avoided until the site is fully stabilized (full landscaping, grass cover, final paving and street sweeping completed). Maintenance visits are scheduled seasonally; the spring visit aims to clean up after winter loads including salts and sands. The fall visit helps the system by removing excessive leaf litter.

A first inspection to determine if maintenance is necessary should be performed at least twice annually after storm events of greater than (1) one inch total depth (subject to regional climate). Please refer to the maintenance checklist for specific conditions that indicate if maintenance is necessary.

It has been found that in regions which receive between 30-50 inches of annual rainfall, (2) two visits are generally required. Regions with less rainfall often only require (1) one visit per annum. Varying land uses can affect maintenance frequency.

Some sites may be subjected to extreme sediment or trash loads, requiring more frequent maintenance visits. This is the reason for detailed notes of maintenance actions per unit, helping the VAR/Maintenance contractor and Owner predict future maintenance frequencies, reflecting individual site conditions.

Owners must promptly notify the VAR/Maintenance contractor of any damage to the plant(s), which constitute(s) an integral part of the biofiltration technology. Owners should also advise other landscape or maintenance contractors to leave all maintenance of the FocalPoint® HPMBS to the VAR/Maintenance contractor (i.e. no pruning or fertilizing).

EXCLUSION OF SERVICES

It is the responsibility of the owner to provide adequate irrigation when necessary to the plant(s) in the FocalPoint® HPMBS.

Clean up due to major contamination such as oils, chemicals, toxic spills, etc. will result in additional costs and are not covered under the VAR/Maintenance contractor maintenance contract. Should a major contamination event occur, the Owner must block off the outlet pipe of the FocalPoint® (where the cleaned runoff drains to, such as drop-inlet) and block off the point where water enters of the FocalPoint® HPMBS. The VAR/Maintenance contractor should be informed immediately.

MAINTENANCE VISIT SUMMARY

Each maintenance visit consists of the following simple tasks (detailed instructions below).

1. Inspection of FocalPoint® HPMBS and surrounding area

2. Removal of debris, trash and mulch

3. Mulch replacement

4. Plant health evaluation (including measurements) and pruning or replacement as necessary

5. Clean area around FocalPoint® HPMBS

6. Complete paperwork, including date stamped photos of the tasks listed above.

MAINTENANCE TOOLS, SAFETY EQUIPMENT AND SUPPLIES

Ideal tools include: camera, bucket, shovel, broom, pruners, hoe/rake, and tape measure. Appropriate Personal Protective Equipment (PPE) should be used in accordance with local or company procedures. This may include impervious gloves where the type of trash is unknown, high visibility clothing and barricades when working in close proximity to traffic and also safety hats and shoes.

Inspection of FocalPoint® HPMBS and surrounding area

Record individual unit before maintenance with photograph (numbered). Record on Maintenance Report (see example in this document) the following:

- Standing Water yes | no
- Is Bypass Inlet Clear? yes | no
- Damage to HPMBS System yes | no
  to Overflow conveyance yes | no

Removal of Silt / Sediment / Clay

Dig out silt (if any) and mulch and remove trash & foreign items.

- Silt / Clay Found? yes | no
- Cups / Bags Found? yes | no
- Leaves? yes | no
- Volume of material removed ________ (volume or weight)

Removal of debris, trash and mulch

After removal of mulch and debris, measure distance from the top of the FocalPoint® HPMBS engineered media soil to the flow line elevation of the adjacent overflow conveyance. If this distance is greater than that specified on the plans (typ. 6" - 12"), add media (not top soil or other) to recharge to the distance specified.

- Distance to media surface to flow line of overflow conveyance (inches) ____________
- # of Buckets of Media Added _________

Mulch Replacement

Most maintenance visits require only replacement mulch (if utilized) which must be, aged, double shredded hardwood mulch with fines removed. For smaller projects, one cubic foot of mulch will cover four square feet of biofiltration bed, and for larger projects, one cubic yard of mulch will cover 108 square feet of biofiltration bed. Some visits may require additional FocalPoint® HPMBS engineered soil media available from the VAR/Contractor.

- Add double shredded, aged hardwood mulch which has been screened to remove fines, evenly across the entire biofiltration media bed to a depth of 3".
- Clean accumulated sediment from energy dissipation system at the inlet to the FocalPoint® HPMBS to allow for entry of trash during a storm event.

Plant health evaluation and pruning or replacement as necessary

Examine the plant's health and replace if dead or dying.
Prune as necessary to encourage growth in the correct directions

- Height above Grate (feet) _______
- Width at Widest point (feet) _______
- Health alive | dead
- Damage to Plant yes | no

Clean area around FocalPoint® HPMBS

- Clean area around unit and remove all refuse to be disposed of appropriately.

Complete paperwork

- Deliver Maintenance Report and photographs as appropriate.
- Some jurisdictions may require submission of maintenance reports in accordance with approvals.
- It is the responsibility of the Owner to comply with local regulations.

FocalPoint Warranty

Seller warrants goods sold hereunder against defects in materials and workmanship only, for a period of (1) year from date the Seller activates the system into service. Seller makes no other warranties, express or implied.

Seller's liability hereunder shall be conditioned upon the Buyer's installation, maintenance, and service of the goods in strict compliance with the written instructions and specifications provided by the Seller. Any deviation from Seller's instructions and specifications or any abuse or neglect shall void warranties.

In the event of any claim upon Seller's warranty, the burden shall be upon the Buyer to prove strict compliance with all instructions and specifications provided by the Seller.

Seller's liability hereunder shall be limited only to the cost or replacement of the goods. Buyer agrees that Seller shall not be liable for any consequential losses arising from the purchase, installation, and/or use of the goods.

Maintenance Checklist

Element	Problem	What To Check	Should Exist	Action
Inlet	Excessive sediment or trash accumulation	Accumulation of sediment or trash impair free flow of water into FocalPoint	Inlet free of obstructions allowing free flow into FocalPoint System	Sediments or trash should be removed
Mulch Cover	Trash and floatable debris accumulation	Excessive trash or debris accumulation.	Minimal trash or other debris on mulch cover	Trash and debris should be removed and mulch cover raked level. Ensure that bark nugget
Mulch Cover	Ponding of water on mulch cover	Ponding in unit could be indicative of clogging due to excessive fine sediment accumulation or spill of petroleum oils	Stormwater should drain freely and evenly over mulch cover.	Contact VAR for advice.
Plants	Plants not growing, or in poor condition	Soil/mulch too wet, evidence of spill. Pest infestation. Vandalism to plants.	Plants should be healthy and pest free.	Contact VAR for advice.
Plants	Plant growth excessive	Plants should be appropriate to the species and location of FocalPoint		Trim/prune plants in accordance with typical landscaping and

R-TANK
STORMWATER DETENTION SYSTEM®

LD HD SD UD XD

ACF ENVIRONMENTAL

LET'S GET IT DONE®

More Stormwater Less Space

STORMWATER MANAGEMENT

Is your stormwater detention system taking up too much space? Bring it down to size with the R-Tank System, the most efficient and versatile underground stormwater storage system available today. Whether you need to reduce your system footprint to resolve a utility conflict or free up space for a future expansion, R-Tank will give you the smallest footprint, provide more options for vehicular loading and cover depths, and deliver more installation versatility than any other system around.

The R-Tank System includes five different module configurations, providing system height options from 2" to over 7' tall. And it delivers support for HS-20 and HS-25 traffic with cover depths from 6" all the way up to over 16'. Whether you're designing a project at the beach with minimal depth over the water table, or a deep system in the hills, R-Tank has you covered.

With an unlimited array of system footprints and configurations, R-Tank solves tough stormwater problems by perfectly adapting to the needs of your site. Give R-Tank a shot on your next project, and prepare to be impressed.

BENEFITS

High Capacity
- 95% void internal area

Strength
- Easily supports traffic loading from parking lots and roads
- Module options for HS-20 and HS-25 rating with cover depths from 6 inches to 16 feet

Design & Construction Versatility
- Combine modules into any shape to efficiently use space
- Vary height from 2 inches to 7 feet

Increased Infiltration and Exfiltration
- Outer shell is 90% open
- Increases groundwater recharge, reducing post-construction discharge volumes

Easy to Transport
- Can be supplied unassembled for reduced delivery costs

Lightweight and Quick to Install
- Installed by hand; no cranes required
- Reduces site access delays

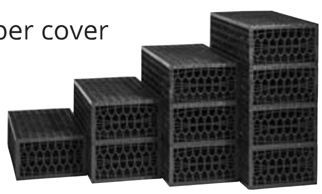
Recycled Content
- Manufactured with recycled polypropylene

R TANK®

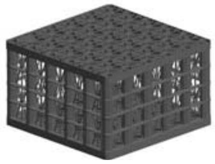
R TANK® LD
- Light Duty module (30 psi)
- Ideal for applications in green space
- Not rated for vehicular traffic
- 12” Minimum cover, 36” maximum cover
- Four internal plates

R TANK® HD
- Heavy Duty module (33.4 psi)
- Standard module for HS-20 traffic applications
- 20” Minimum cover, 84” Maximum cover
- Five internal plates

R TANK® SD
- Super Duty module (42.9 psi)
- Higher safety factors for shallow traffic applications and deeper cover
- 18” Minimum cover, 120” Maximum cover
- Five internal plates



R TANK UD
- Ultra Duty module (134.2 psi)
- Traffic loads with 12” of cover
- Available from 14” – 66” tall
- Ideal for high water table sites

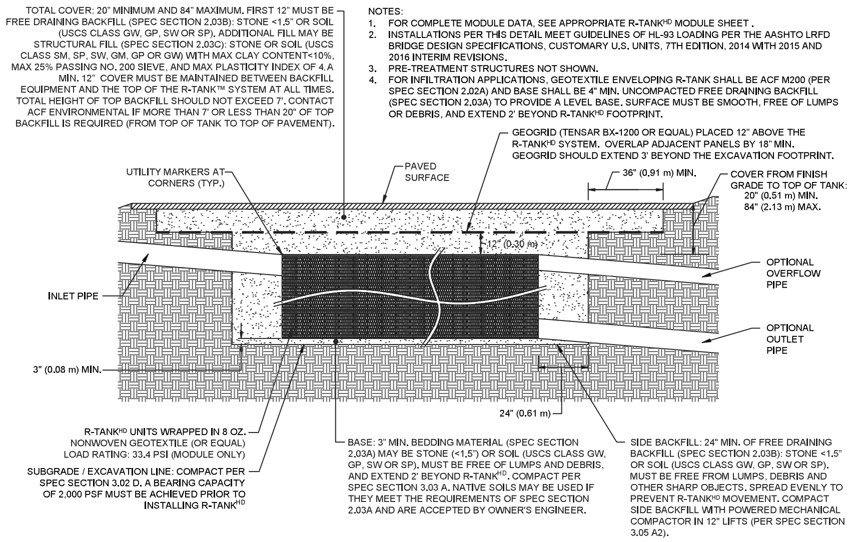


R TANK® XD
- Extreme Duty module (320 psi)
- Traffic loads with 6” cover
- 16.5’ maximum cover
- Available from 2” - 10’ tall
- 90% void

DESIGN CONSIDERATIONS

Many factors will influence the design of the R-Tank® system. While this list is not intended to be all-inclusive, several design considerations are worth highlighting:

1. **PRE-TREATMENT**
2. **BACKFILL MATERIALS**
3. **RUNOFF REDUCTION**
4. **WATER TABLE**
5. **CONSTRUCTION LOADS**
6. **LATERAL LOADS**
7. **R-TANK® MODULES**
8. **LOAD MODELING**



1. PRE-TREATMENT

Removing pollutants from runoff before they enter an underground detention system is the only smart way to design & build a system. The best way to do that is with the Trash Guard Plus® (see page 6), but many other ways exist. Be sure the system you select will remove:

- Heavy Sediments
- Gross Pollutants (trash)
- Biodegradable Debris

2. BACKFILL MATERIALS

Backfill materials should be stone (smaller than 1.5" in diameter) or soil (GW, GP SW or SP as classified by the Unified Soil Classification System). Material must be free from lumps, debris and any sharp objects that could cut the geotextile. See the R-Tank® narrative specification section 2.03 for additional information.

3. RUNOFF REDUCTION

Most designs incorporate an outlet to drain the system at a controlled rate and/or an overflow to prevent flooding in extreme events. But be sure to take advantage of any infiltration you can achieve on the site. Consider raising the invert of your outlet or creating a sump to capture and infiltrate the water quality volume whenever possible.

4. WATER TABLE

While installing the R-Tank® below the water table is manageable, designers must be able to create a stable base and account for the system's ability to drain this water out or limit its ability to enter the system. If a liner is used to prevent ground water from entering the system, measures must be taken to prevent the system from floating.

5. CONSTRUCTION LOADS

Construction loads are often the heaviest loads the system will see throughout its life. Care must be taken during backfilling and compaction using the proper equipment (see specification section 3.05), and post-installation construction traffic should be routed around the system (Installation Guide step 12).

6. LATERAL LOADS

As systems get deeper, the loads acting on the sides of the tank increase. While vertical loads often control the design, be sure to consider lateral loading, as well.

7. R-TANK MODULES

Be sure to select the right module for your application. See the information on page 3 for more details on which module is the best fit. Also refer to the specifications for each module on the back of this brochure, or call us for assistance.

8. LOAD MODELING

A safety factor of 1.75 or higher is required when designing an R-Tank System using the AASHTO LRFD Bridge Design Specifications. Be sure to run your own loading model with all requirements specific to your site. Several example models can be found in our Tech Note on loading capabilities, and minimum cover requirements for various loads can be found in the spec on the back of this brochure.

LOW IMPACT DESIGN AND GREEN INFRASTRUCTURE

As much of the nation's Gray Infrastructure continues to decay, new concepts for a better way to rebuild it are emerging through Green Infrastructure (GI) and Low Impact Development (LID). This type of reconstruction moves beyond traditional systems that do ONE THING very well to systems that accomplish MULTIPLE objectives simultaneously. ACF has several technologies that dovetail with the goals of LID and GI that can play a significant role in the redevelopment process.

SPACE EFFICIENT SUBSURFACE STORAGE

R-TANK®

Pipe and stone are used in traditional systems to move and store runoff.
R-Tank does the same job, but with several additional benefits.

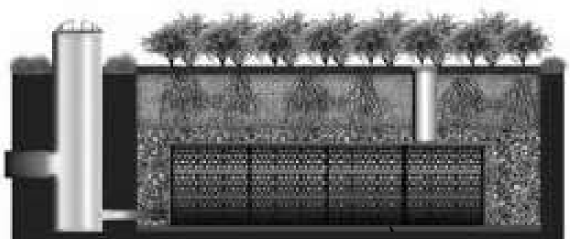
- Stores and moves runoff
- Open system encourages infiltration
- Stores 138% more water than stone
- Easily handles traffic loads beneath sidewalks and streets
- Ships flat to reduce site disturbance
- Moves water slowly, increasing time of concentration
- Fully accessible for maintenance
- Maximizes storage potential of GI practices like bioretention, street tree pits, etc.

VEGETATED/ BIOLOGICAL TREATMENT SYSTEM

FOCALPOINT

Traditional landscaping adds aesthetic value to projects, but has more potential. Many developers turn to bioretention, but are forced to surrender massive land areas and dedicate significant future funds to maintenance. FocalPoint reduces the space requirements and maintenance costs of bioretention by up to 90% while providing all the water purification benefits.

- Adds aesthetic value to properties
- Cleans runoff to improve water quality
- Reduces space requirements and maintenance costs of traditional bioretention systems
- Encourages infiltration to reduce volume of water discharged
- Pair with R-Tank® to maximize water storage and transport

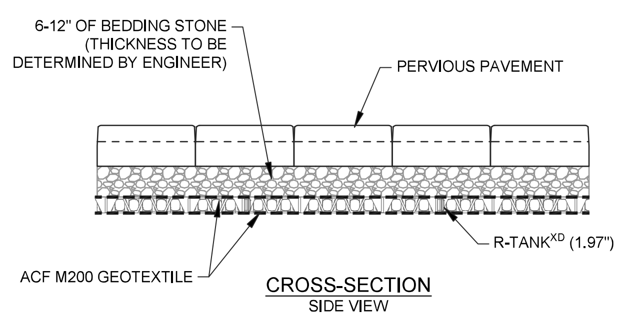


RUNOFF REDUCTION TECHNIQUES

PERMEABLE PAVEMENTS

Traditional pavements move vehicles efficiently, but are easily damaged by stormwater. ACF specializes in pervious pavements that handle traffic easily while providing surface infiltration rates 10 times higher than traditional pervious pavements. High surface infiltration rates reduce the expense of long-term maintenance and the headaches that go with it.

- Handles all vehicular loads
- Drains ten times faster than competing pervious pavements
- Reduces long-term maintenance costs
- Encourages infiltration
- Pair with R-Tank® to maximize water storage and transport



MAINTENANCE

Designing an R-Tank System with longevity and maintenance in mind is a simple three-step process:

1. PREVENT

Keep debris and sediment out of the system by pre-treating runoff with the Trash Guard Plus® unit (see below). For a more centralized approach, you could consider having the R-Tank units penetrate the connecting structure, which allows the use of the R-Tank® as its own trash screen. This works best with a structure that includes a sump (see drawing to right).

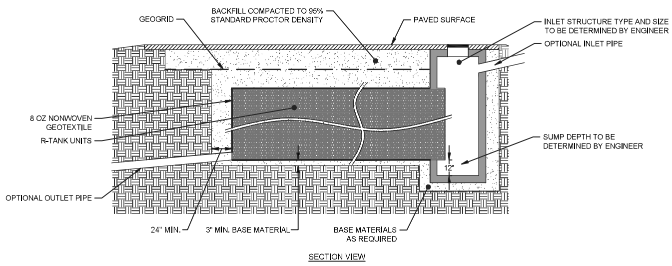
2. ISOLATE

Trap solid pollutants inside the maintenance row (see drawing to right) where they can be easily removed, using the Maintenance Modules (available in LD, HD, and UD only). These modules are wrapped in geotextile to retain solids and are fully accessible by conventional jet-vac systems to remove captured pollutants.

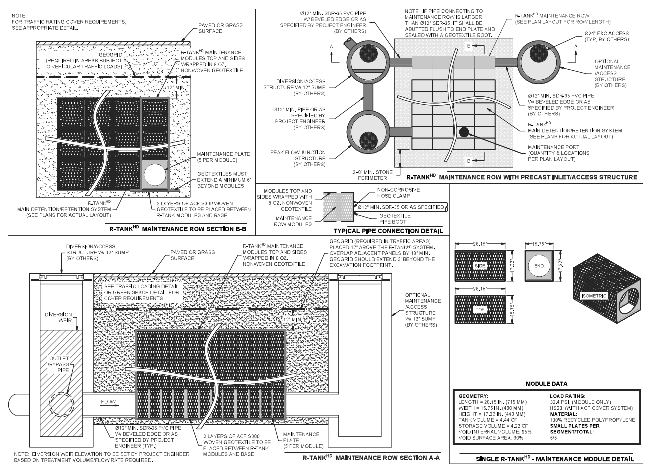
3. PROTECT

Ensure a long system life by including maintenance ports to remove any pollutants that evade the pre-treatment system and maintenance row. Maintenance ports should be specified within 10’ of inlet and outlet connections, and roughly 50’ on center (see detail on page 7).

INLET CONNECTION



MAINTENANCE ROW



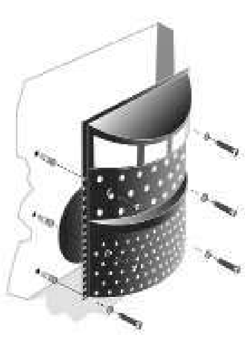
MAINTENANCE PREVENTION

TRASH GUARD PLUS ®

Trash Guard Plus® is a patented stormwater pretreatment device that captures debris, sediment and floatables. Easy to install and maintain, it is a fraction of the cost of other pretreatment devices.

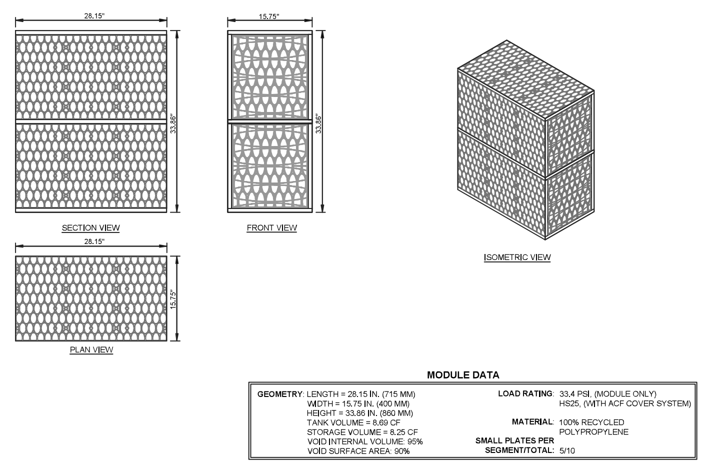
Benefits of Trash Guard Plus®

- Simple retrofit to existing catch basins
- Installs without heavy equipment
- Quick and easy assembly
- Adjusts to irregular catch basin bottoms and/or walls
- Eliminates eyesore stormwater trash at public parks, beaches, and waterways
- Removes harmful nutrients and regulated metals

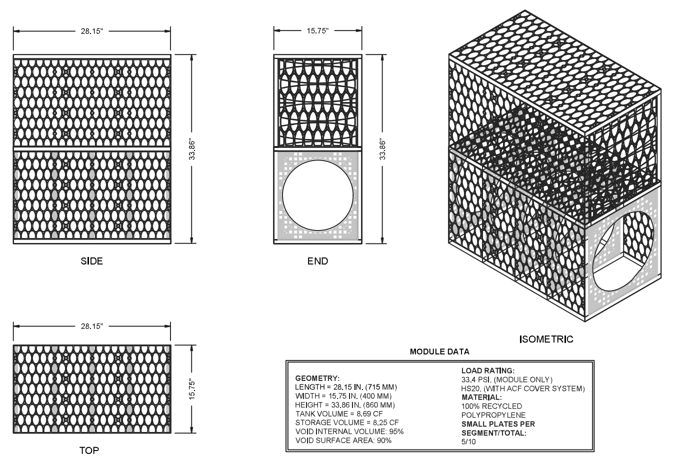


CAD DRAWINGS

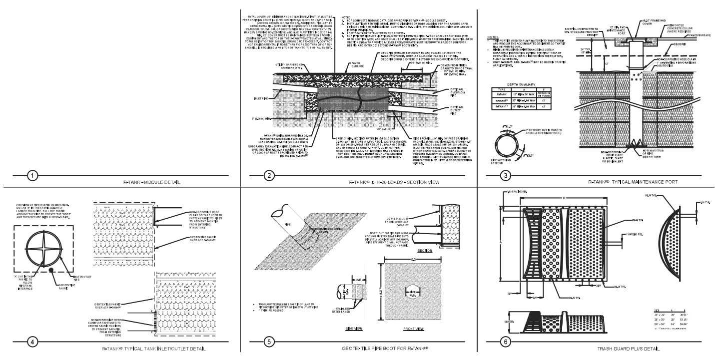
Module Drawing - Double



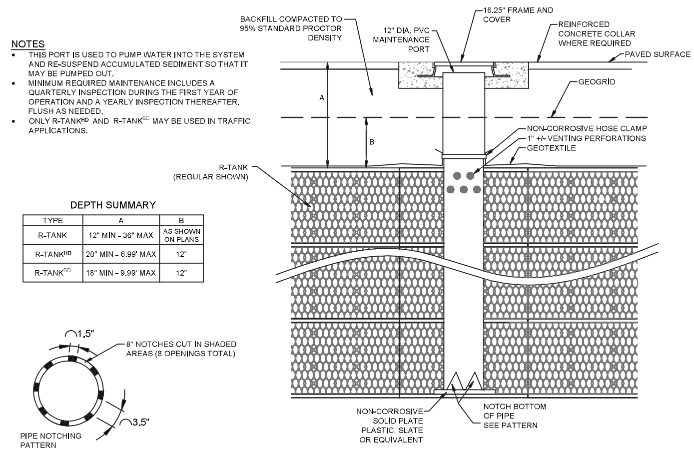
Maintenance Module - Double



Composite Details



Maintenance Port



Selecting the Right R-Tank Module

	Module				
Cover Depth* (Inches)	LD	HD	SD	UD	XD
Minimum 6"	Green Space - No Traffic	Green Space - No Traffic	Green Space - No Traffic	Green Space - No Traffic	HS-20
12"	Green Space - No Traffic	Green Space - No Traffic	Green Space - No Traffic	HS-20**	HS-20
14"	Green Space - No Traffic	Green Space - No Traffic	Green Space - No Traffic	HS-20	HS-20
18"	Green Space - No Traffic	Green Space - No Traffic	HS-20	HS-20	HS-20
20"	Green Space - No Traffic	HS-20	HS-20	HS-20	HS-20
24"	Green Space - No Traffic	HS-20	HS-20	HS-20	HS-20
36"	Green Space - No Traffic	HS-20	HS-20	HS-20	HS-20
48"	-	HS-20	HS-20	HS-20	HS-20
60"	-	HS-20	HS-20	HS-20	HS-20
72"	-	HS-20	HS-20	-	HS-20
84"	-	-	HS-20	-	HS-20
120"	-	-	HS-20	-	HS-20
160"	-	-	-	-	HS-20
Maximum 200"	-	-	-	-	HS-20

HS-20 designation based on AASHTO LRFD Bridge Design Specification for Single Lane Traffic

* *Cover depth is measured from the top of the module to the finished grade or top of pavement.*

** *The UD module requires STONE backfill (not soils) on the sides at this depth.*

R TANK LD R TANK HD

Dimensions & Capacity

Module (Segments)	Width (inch)	Length (inch)	Height (in/ft)	Volume (cf)	Capacity (cf)	Weight* (lbs)
Mini	15.75	28.15	9.45"/0.79'	2.42	2.30	10.1/10.9
Single(1)	15.75	28.15	17.32"/1.44'	4.44	4.22	15.7/17.3
Single + Mini(1.5)	15.75	28.15	25.98"/2.17'	6.67	6.33	23.6/25.9
Double (2)	15.75	28.15	33.86"/2.82'	8.69	8.25	29.1/32.3
Double + Mini(2.5)	15.75	28.15	42.52"/3.54'	10.91	10.36	37.0/41.0
Triple (3)	15.75	28.15	50.39"/4.20'	12.93	12.28	42.5/47.4
Triple + Mini(3.5)	15.75	28.15	59.06"/4.92'	15.15	14.39	50.4/56.0
Quad(4)	15.75	28.15	66.93"/5.58'	17.17	16.31	55.9/62.4
Quad + Mini(4.5)	15.75	28.15	75.59"/6.30'	19.39	18.42	63.8/71.0
Pent(5)	15.75	28.15	83.46"/6.96'	21.41	20.34	69.3/77.4

*Weights shown are for LD/HD modules.

R TANK SD

Dimensions & Capacity

Module (Segments)	Width (inch)	Length (inch)	Height (in/ft)	Volume (cf)	Capacity (cf)	Weight (lbs)
Single (1)	15.75	28.15	9.45"/0.79'	2.42	2.30	10.95
Double (2)	15.75	28.15	18.12"/1.51'	4.64	4.41	19.58
Triple (3)	15.75	28.15	26.79"/2.23'	6.86	6.52	28.21
Quad (4)	15.75	28.15	35.46"/2.96'	9.08	8.63	36.84
Pent (5)	15.75	28.15	44.13"/3.68'	11.30	10.74	45.47
Hex (6)	15.75	28.15	52.80"/4.40'	13.52	12.84	54.10
Septa (7)	15.75	28.15	61.47"/5.12'	15.74	14.95	62.73
Octo (8)	15.75	28.15	70.14"/5.85'	17.96	17.06	71.36
Nono (9)	15.75	28.15	78.81"/6.57'	20.18	19.17	79.99
Decka (10)	15.75	28.15	87.48"/7.29'	22.40	21.28	88.62

R TANK UD

Dimensions & Capacity

Module (Segments)	Width (inch)	Length (inch)	Height (in/ft)	Volume (cf)	Capacity (cf)	Weight (lbs)
Single (1)	23.62	23.62	14.17"/1.18'	4.57	4.35	21.2
Double (2)	23.62	23.62	27.17"/2.26'	8.77	8.33	39.0
Triple (3)	23.62	23.62	40.16"/ 3.35'	12.97	12.32	56.8
Quad (4)	23.62	23.62	53.15"/4.43'	17.16	16.30	74.6
Pent (5)	23.62	23.62	66.14"/5.5'	21.35	20.29	92.4

R TANK XD

Dimensions & Capacity

Module (Segments)	Width (inch)	Length (inch)	Height (inch)	Volume (cf)	Capacity (cf)	Weight (lbs)
Single (1)	19.68	23.62	1.97	0.53	0.48	4
Double (2)	19.68	23.62	3.94	1.06	0.95	8
Triple (3)	19.68	23.62	5.91	1.59	1.43	12
Quad (4)	19.68	23.62	7.87	2.12	1.91	16
Pent (5)	19.68	23.62	9.84	2.65	2.38	20

Note: XD modules may be stacked up to 10' tall (60 layers).

Specifications

Item	Description	LD	HD	SD	UD	XD
Void Area	Volume available for water storage	95%	95%	95%	95%	90%
Surface Area Void	% of exterior available for infiltration	90%	90%	90%	90%	90%
Compressive Strength	ASTM D2412 / ASTM F2418	30.0 psi	33.4	42.9 psi	134.2 psi	240.2 psi
Unit Weight	Weight of plastic/cubic foot of tank	3.29 lbs/cf	3.62 lbs/cf	3.96 lbs/cf	4.33 lbs/cf	7.55 lbs/cf
Rib Thickness	Thickness of load-bearing members	0.18 inches	0.18 inches	0.18 inches	-	-
Service Temperature	Safe temperature range for use	-14 - 167^{0} F	-14 - 167^{0} F	-14 - 167^{0} F	-14 - 167^{0} F	-14 - 167^{0} F
Recycled Content	Use of recycle polypropylene	100%	100%	100%	100%	100%
Minimum Cover	Cover required for HS-20 loading	Not Traffic Rated	20"	18"	12"-14"	6"
Minimum Cover	Cover required for HS-25 loading	Not Traffic Rated	24"	18"	15"-17"	6"
Maximum Cover	Maximum allowable cover depth	3.0'	6.99'	9.99'	5.0'	16.7'

3 2018

FOCALPOINT

HIGH PERFORMANCE MODULAR BIOFILTRATION SYSTEM

NYS DEC DESIGN WORKSHEET/CHECKLIST

The New York State Department of Environmental Conservation (NYS DEC) has approved the FocalPoint (High Performance Modular Biofiltration System) as a proprietary stormwater management practice for use on New Development, Redevelopment and Retrofit Projects.

1. FocalPoint Bed Area (min 174 square feet per acre of impervious area (e.g. 0.2 acres = 35 sf))

- Tributary Impervious area = 0.44 ac. (A)
- Tributary Pervious area = 0.018 ac. (B)
- Min FocalPoint bed area req'd = (((A) x 1.0) + ((B) x 0.4)) * 174 = 77.8 sf.
- FocalPoint Bed Area provided * = 100 sf.
- Dimensions of Proposed FocalPoint = 2 ft x 50 ft

* see criteria 2. to determine if minimum size is appropriate.

2. A Type II 24hr rainfall event that generates the WQ volume shall be modelled to demonstrate the entire storm volume is treated prior to activation of the overflow (typically set at 6-12" above the mulch) (Note: a 1.2 to 1.3" rainfall event usually generates 1 inch of runoff) contact ACF for a sample HydroCAD node.

- Water Quality Volume Goal (WQv) = 2332 cubic feet
- Type II 24hr Rainfall Depth to generate WQv = 1.73 inches
- Temporary storage depth provided = 6" inches (typ 6" to 12")
- Temporary storage volume provided at above depth = 336.5 cubic feet.
- Peak ponding depth from Type II 24hr storm event = 5.5" inches

3. Size Harco Domed Overflow Riser

- Domed Overflow Riser:
  - Rim Elev of Overflow Riser: = ______ (typ 6-12" above mulch surface)
  - Overflow Riser Diameter = ______ (12, 15, 18, 24 or 30" dia)
  - 6" invert in Elev from FocalPoint = ______ (typ 3 ft below mulch surface)
  - ___" invert out Elev = ______
- Or other (spillway/weir etc) ☐

4. RRv, Channel Protection and Flood Control/Peak flow attenuation of major storms

- The treated flow and bypass flow can be routed to a detention system either an open pond, or a subsurface system such as an expanded R-Tank system (contact ACF for additional information on designing expanded R-Tank systems)

5. The Design shall be reviewed by the manufacturer's representative prior to submission and installation will be overseen by the manufacturer's representative.

- The Design has been reviewed by ACF Environmental ☐
- Engineer will coordinate installation inspection with ACF ☐

Contact ACF Environmental at 1800 448 3636 with any questions
or contact Rob Woodman – Senior Stormwater Engineer at rwoodman@acfenv.com

11.) Stormwater Management Construction Checklists

APPENDIX H

STATE POLLUTANT DISCHARGE ELIMINATION SYSTEM FOR CONSTRUCTION ACTIVITIES

CONSTRUCTION SITE LOG BOOK

Table of Contents

Properly completing forms such as those contained in Appendix H meet the inspection requirement of NYS-DEC SPDES GP for Construction Activities. Completed forms shall be kept on site at all times and made available to authorities upon request.

I. PRE-CONSTRUCTION MEETING DOCUMENTS

Project Name ____

Permit No. ______________________ **Date of Authorization** ______________

Name of Operator ____

Prime Contractor ____

a. Preamble to Site Assessment and Inspections

The Following Information To Be Read By All Person's Involved in The Construction of Stormwater Related Activities:

The Operator agrees to have a qualified professional[1] conduct an assessment of the site prior to the commencement of construction[2] and certify in this inspection report that the appropriate erosion and sediment controls described in the SWPPP have been adequately installed or implemented to ensure overall preparedness of the site for the commencement of construction.

Prior to the commencement of construction, the Operator shall certify in this site logbook that the SWPPP has been prepared in accordance with the State's standards and meets all Federal, State and local erosion and sediment control requirements.

When construction starts, site inspections shall be conducted by the qualified professional at least every 7 calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater (Construction Duration Inspections). The Operator shall maintain a record of all inspection reports in this site logbook. The site logbook shall be maintained on site and be made available to the permitting authorities upon request. The Operator shall post at the site, in a publicly accessible location, a summary of the site inspection activities on a monthly basis (Monthly Summary Report).

The operator shall also prepare a written summary of compliance with this general permit at a minimum frequency of every three months (Operator's Compliance Response Form), while coverage exists. The summary should address the status of achieving each component of the SWPPP.

Prior to filing the Notice of Termination or the end of permit term, the Operator shall have a qualified professional perform a final site inspection. The qualified professional shall certify that the site has undergone final stabilization[3] using either vegetative or structural stabilization methods and that all temporary erosion and sediment controls (such as silt fencing) not needed for long-term erosion control have been removed. In addition, the Operator must identify and certify that all permanent structures described in the SWPPP have been constructed and provide the owner(s) with an operation and maintenance plan that ensures the structure(s) continuously functions as designed.

1 "Qualified Professional means a person knowledgeable in the principles and practice of erosion and sediment controls, such as a Certified Professional in Erosion and Sediment Control (CPESC), soil scientist, licensed engineer or someone working under the direction and supervision of a licensed engineer (person must have experience in the principles and practices of erosion and sediment control).

2 "Commencement of construction" means the initial removal of vegetation and disturbance of soils associated with clearing, grading or excavating activities or other construction activities.

3 "Final stabilization" means that all soil-disturbing activities at the site have been completed and a uniform, perennial vegetative cover with a density of eighty (80) percent has been established or equivalent stabilization measures (such as the use of mulches or geotextiles) have been employed on all unpaved areas and areas not covered by permanent structures.

b. Operators Certification

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. Further, I hereby certify that the SWPPP meets all Federal, State, and local erosion and sediment control requirements. I am aware that false statements made herein are punishable as a class A misdemeanor pursuant to Section 210.45 of the Penal Law.

Name (please print): ____________________

Title ____________________ **Date:** ____________________

Address: ____________________

Phone: ____________________ **Email:** ____________________

Signature: ____________________

c. Qualified Professional's Credentials & Certification

"I hereby certify that I meet the criteria set forth in the General Permit to conduct site inspections for this project and that the appropriate erosion and sediment controls described in the SWPPP and as described in the following Pre-construction Site Assessment Checklist have been adequately installed or implemented, ensuring the overall preparedness of this site for the commencement of construction."

Name (please print): ____________________

Title ____________________ **Date:** ____________________

Address: ____________________

Phone: ____________________ **Email:** ____________________

Signature: ____________________

d. Pre-construction Site Assessment Checklist
(NOTE: Provide comments below as necessary)

1. Notice of Intent, SWPPP, and Contractors Certification:
Yes No NA
[ ] [ ] [ ] Has a Notice of Intent been filed with the NYS Department of Conservation?
[ ] [ ] [ ] Is the SWPPP on-site? Where?________________________________
[ ] [ ] [ ] Is the Plan current? What is the latest revision date?______________
[ ] [ ] [ ] Is a copy of the NOI (with brief description) onsite? Where?______________
[ ] [ ] [ ] Have all contractors involved with stormwater related activities signed a contractor's certification?

2. Resource Protection
Yes No NA
[ ] [ ] [ ] Are construction limits clearly flagged or fenced?
[ ] [ ] [ ] Important trees and associated rooting zones, on-site septic system absorption fields, existing vegetated areas suitable for filter strips, especially in perimeter areas, have been flagged for protection.
[ ] [ ] [ ] Creek crossings installed prior to land-disturbing activity, including clearing and blasting.

3. Surface Water Protection
Yes No NA
[ ] [ ] [ ] Clean stormwater runoff has been diverted from areas to be disturbed.
[ ] [ ] [ ] Bodies of water located either on site or in the vicinity of the site have been identified and protected.
[ ] [ ] [ ] Appropriate practices to protect on-site or downstream surface water are installed.
[ ] [ ] [ ] Are clearing and grading operations divided into areas <5 acres?

4. Stabilized Construction Entrance
Yes No NA
[ ] [ ] [ ] A temporary construction entrance to capture mud and debris from construction vehicles before they enter the public highway has been installed.
[ ] [ ] [ ] Other access areas (entrances, construction routes, equipment parking areas) are stabilized immediately as work takes place with gravel or other cover.
[ ] [ ] [ ] Sediment tracked onto public streets is removed or cleaned on a regular basis.

5. Perimeter Sediment Controls
Yes No NA
[ ] [ ] [ ] Silt fence material and installation comply with the standard drawing and specifications.
[ ] [ ] [ ] Silt fences are installed at appropriate spacing intervals
[ ] [ ] [ ] Sediment/detention basin was installed as first land disturbing activity.
[ ] [ ] [ ] Sediment traps and barriers are installed.

6. Pollution Prevention for Waste and Hazardous Materials
Yes No NA
[ ] [ ] [ ] The Operator or designated representative has been assigned to implement the spill prevention avoidance and response plan.
[ ] [ ] [ ] The plan is contained in the SWPPP on page ______
[ ] [ ] [ ] Appropriate materials to control spills are onsite. Where? __________________

II. CONSTRUCTION DURATION INSPECTIONS

a. Directions:
Inspection Forms will be filled out during the entire construction phase of the project.
Required Elements:

(1) On a site map, indicate the extent of all disturbed site areas and drainage pathways. Indicate site areas that are expected to undergo initial disturbance or significant site work within the next 14-day period;

(2) Indicate on a site map all areas of the site that have undergone temporary or permanent stabilization;

(3) Indicate all disturbed site areas that have not undergone active site work during the previous 14-day period;

(4) Inspect all sediment control practices and record the approximate degree of sediment accumulation as a percentage of sediment storage volume (for example, 10 percent, 20 percent, 50 percent);

(5) Inspect all erosion and sediment control practices and record all maintenance requirements such as verifying the integrity of barrier or diversion systems (earthen berms or silt fencing) and containment systems (sediment basins and sediment traps). Identify any evidence of rill or gully erosion occurring on slopes and any loss of stabilizing vegetation or seeding/mulching. Document any excessive deposition of sediment or ponding water along barrier or diversion systems. Record the depth of sediment within containment structures, any erosion near outlet and overflow structures, and verify the ability of rock filters around perforated riser pipes to pass water; and

(6) Immediately report to the Operator any deficiencies that are identified with the implementation of the SWPPP.

SITE PLAN/SKETCH

______________________________________ ______________________________________

Inspector (print name) **Date of Inspection**

______________________________________ ______________________________________

Qualified Professional (print name) **Qualified Professional Signature**

The above signed acknowledges that, to the best of his/her knowledge, all information provided on the forms is accurate and complete.

Maintaining Water Quality

Yes No NA
[ ] [ ] [ ] Is there an increase in turbidity causing a substantial visible contrast to natural conditions?
[ ] [ ] [ ] Is there residue from oil and floating substances, visible oil film, or globules or grease?
[ ] [ ] [ ] All disturbance is within the limits of the approved plans.
[ ] [ ] [ ] Have receiving lake/bay, stream, and/or wetland been impacted by silt from project?

Housekeeping

1. General Site Conditions
Yes No NA
[ ] [ ] [ ] Is construction site litter and debris appropriately managed?
[ ] [ ] [ ] Are facilities and equipment necessary for implementation of erosion and sediment control in working order and/or properly maintained?
[ ] [ ] [ ] Is construction impacting the adjacent property?
[ ] [ ] [ ] Is dust adequately controlled?

2. Temporary Stream Crossing
Yes No NA
[ ] [ ] [ ] Maximum diameter pipes necessary to span creek without dredging are installed.
[ ] [ ] [ ] Installed non-woven geotextile fabric beneath approaches.
[ ] [ ] [ ] Is fill composed of aggregate (no earth or soil)?
[ ] [ ] [ ] Rock on approaches is clean enough to remove mud from vehicles & prevent sediment from entering stream during high flow.

Runoff Control Practices

1. Excavation Dewatering
Yes No NA
[ ] [ ] [ ] Upstream and downstream berms (sandbags, inflatable dams, etc.) are installed per plan.
[ ] [ ] [ ] Clean water from upstream pool is being pumped to the downstream pool.
[ ] [ ] [ ] Sediment laden water from work area is being discharged to a silt-trapping device.
[ ] [ ] [ ] Constructed upstream berm with one-foot minimum freeboard.

2. Level Spreader
Yes No NA
[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Constructed on undisturbed soil, not on fill, receiving only clear, non-sediment laden flow.
[ ] [ ] [ ] Flow sheets out of level spreader without erosion on downstream edge.

3. Interceptor Dikes and Swales
Yes No NA
[ ] [ ] [ ] Installed per plan with minimum side slopes 2H:1V or flatter.
[ ] [ ] [ ] Stabilized by geotextile fabric, seed, or mulch with no erosion occurring.
[ ] [ ] [ ] Sediment-laden runoff directed to sediment trapping structure

Runoff Control Practices (continued)

4. Stone Check Dam

Yes No NA

[ ] [ ] [ ] Is channel stable? (flow is not eroding soil underneath or around the structure).
[ ] [ ] [ ] Check is in good condition (rocks in place and no permanent pools behind the structure).
[ ] [ ] [ ] Has accumulated sediment been removed?.

5. Rock Outlet Protection

Yes No NA

[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Installed concurrently with pipe installation.

Soil Stabilization

1. Topsoil and Spoil Stockpiles

Yes No NA

[ ] [ ] [ ] Stockpiles are stabilized with vegetation and/or mulch.
[ ] [ ] [ ] Sediment control is installed at the toe of the slope.

2. Revegetation

Yes No NA

[ ] [ ] [ ] Temporary seedings and mulch have been applied to idle areas.
[ ] [ ] [ ] 4 inches minimum of topsoil has been applied under permanent seedings

Sediment Control Practices

1. Stabilized Construction Entrance

Yes No NA

[ ] [ ] [ ] Stone is clean enough to effectively remove mud from vehicles.
[ ] [ ] [ ] Installed per standards and specifications?
[ ] [ ] [ ] Does all traffic use the stabilized entrance to enter and leave site?
[ ] [ ] [ ] Is adequate drainage provided to prevent ponding at entrance?

2. Silt Fence

Yes No NA

[ ] [ ] [ ] Installed on Contour, 10 feet from toe of slope (not across conveyance channels).
[ ] [ ] [ ] Joints constructed by wrapping the two ends together for continuous support.
[ ] [ ] [ ] Fabric buried 6 inches minimum.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.
Sediment accumulation is ___% of design capacity.

Sediment Control Practices (continued)

3. Storm Drain Inlet Protection (Use for Stone & Block; Filter Fabric; Curb; or, Excavated practices)
Yes No NA
[ ] [ ] [ ] Installed concrete blocks lengthwise so open ends face outward, not upward.
[ ] [ ] [ ] Placed wire screen between No. 3 crushed stone and concrete blocks.
[ ] [ ] [ ] Drainage area is 1acre or less.
[ ] [ ] [ ] Excavated area is 900 cubic feet.
[ ] [ ] [ ] Excavated side slopes should be 2:1.
[ ] [ ] [ ] 2" x 4" frame is constructed and structurally sound.
[ ] [ ] [ ] Posts 3-foot maximum spacing between posts.
[ ] [ ] [ ] Fabric is embedded 1 to 1.5 feet below ground and secured to frame/posts with staples at max 8-inch spacing.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.
Sediment accumulation ___% of design capacity.

4. Temporary Sediment Trap
Yes No NA
[ ] [ ] [ ] Outlet structure is constructed per the approved plan or drawing.
[ ] [ ] [ ] Geotextile fabric has been placed beneath rock fill.
Sediment accumulation is ___% of design capacity.

5. Temporary Sediment Basin
Yes No NA
[ ] [ ] [ ] Basin and outlet structure constructed per the approved plan.
[ ] [ ] [ ] Basin side slopes are stabilized with seed/mulch.
[ ] [ ] [ ] Drainage structure flushed and basin surface restored upon removal of sediment basin facility.
Sediment accumulation is ___% of design capacity.

<u>Note</u>: Not all erosion and sediment control practices are included in this listing. Add additional pages to this list as required by site specific design.
Construction inspection checklists for post-development stormwater management practices can be found in Appendix F of the New York Stormwater Management Design Manual.

CONSTRUCTION DURATION INSPECTIONS

b. Modifications to the SWPPP (To be completed as described below)

The Operator shall amend the SWPPP whenever:

1. There is a significant change in design, construction, operation, or maintenance which may have a significant effect on the potential for the discharge of pollutants to the waters of the United States and which has not otherwise been addressed in the SWPPP; or
2. The SWPPP proves to be ineffective in:
   a. Eliminating or significantly minimizing pollutants from sources identified in the SWPPP and as required by this permit; or
   b. Achieving the general objectives of controlling pollutants in stormwater discharges from permitted construction activity; and
3. Additionally, the SWPPP shall be amended to identify any new contractor or subcontractor that will implement any measure of the SWPPP.

Modification & Reason:

III. Monthly Summary of Site Inspection Activities

Name of Permitted Facility:	Today's Date:	Reporting Month:
Location:	Permit Identification #:	
Name and Telephone Number of Site Inspector:		

Date of Inspection	Regular / Rainfall based Inspection	Name of Inspector	Items of Concern

Owner/Operator Certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that false statements made herein are punishable as a class A misdemeanor pursuant to Section 210.45 of the Penal Law."

Signature of Permittee or Duly Authorized Representative

Name of Permittee or Duly Authorized Representative

Date

Duly authorized representatives must have written authorization, submitted to DEC, to sign any permit documents.

NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity
Permit Number GP-02-01
Monthly Summary of Site Inspection Activities

Name of Permitted Facility:	**Permit Identification #:**
Location:	**Today's Date:** / **Reporting Month:**
Name and Telephone Number of Site Inspector:	**Name and Telephone Number of Site Inspector:**

Permit Reference; Part III.D.3.b (page 15):

"The operator shall post at the site, in a publicly-accessible location, a summary of the site inspection activities on a monthly basis."

Date of Inspection	Type of Inspection and 24 hr Rainfall	Name of Qualified Professional conducting Site Inspections	Major items of concern related to compliance of the SWPPP with all conditions of the general permit	Date Corrected

Owner/Operator Certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that false statements made herein are punishable as a class A misdemeanor pursuant to Section 210.45 of the Penal Law."

Signature of Permittee or Duly Authorized Representative ____________________ Name of Permittee or Duly Authorized Representative ____________________ Date ________

Duly authorized representatives of the Permittee (Owner/Operator) <u>must</u> have written authorization, submitted to DEC, to sign any permit documents.

Inspection and Maintenance Checklist
Catch Basins, Manholes, and Inlets

Date: ______________________

Type of Inspection: Storm ☐ Weekly ☐ Monthly ☐ Annual ☐

Site: ______________________ Inspector(s): ______________________

Description or location of Project: ______________________

Defect	Conditions when Maintenance is Needed	Maintenance (1 or 2)*	Comments
General			
Trash and Debris	Trash and debris which are located immediately in front of the catch basin opening or is blocking inletting capacity of the basin by more than 10%.		
	Trash or debris (in the basin) that exceeds 60 percent of the sump depth as measured from the bottom of basin to invert of the lowest pipe into or out of the basin, but in no case less than a minimum of six inches clearance from the debris surface to the invert of the lowest pipe.		
	Trash or debris in any inlet or outlet pipe blocking more then 1/3 of its height.		
	Dead animals or vegetation that could generate odors that could cause complaints or dangerous gases (e.g., methane).		
Sediment	Sediment (in the basin) that exceeds 60 percent of the sump depth as measured from the bottom of basin to invert of the lowest pipe into or out of the basin, but in no case less than a minimum of 6 inches clearance from the sediment surface to the invert of the lowest pipe.		
Structure Damage to Frame and/or Top Slab	Top slab has holes larger than 2 square inches or cracks wider then ¼ inch.		
	Frame not sitting flush on top slab, i.e., separation of more than ¾ inch of the frame from the top slab. Frame not securely attached.		

*Maintenance: Enter 1 if maintenance is needed. Enter 2 if maintenance was preformed same day.

Defect	Conditions when Maintenance is Needed	Maintenance (1 or 2)*	Comments
Fractures or Cracks in Basin Walls/Bottom	Maintenance person judges that structure is unsound.		
	Grout fillet has separated or cracked wider then ½ inch and longer than 1 foot at the joint of any inlet/outlet pipe or any evidence of soil particles entering catch basin through cracks.		
Settlement/Misalignment	If failure of basin has created a safety, function, or design problem.		
Vegetation	Vegetation growing across and blocking more than 10% of the basin opening.		
	Vegetation growing in inlet/outlet pipe joints that is more than 6 inches tall and less than 6 inches apart.		
Contamination and Pollution	Any evidence of oil, gasoline, contaminants or other pollutants.		
Catch Basin Cover			
Cover Not in Place	Cover is missing or only partially in place. Any open catch basin requires maintenance.		
Locking Mechanism Not Working	Mechanism cannot be opened by one maintenance person with proper tools. Bolts into frame have less than ½ inch of thread.		
Cover Difficult to Remove	One maintenance person cannot remove lid after applying normal lifting pressure. (Intent is keep cover from sealing off access to maintenance).		
Ladder			
Ladder Rungs Unsafe	Ladder is unsafe due to missing rungs, not securely attached to basin wall, misalignment, rust, cracks, or sharp edges.		
Metal Grates (If Applicable)			
Grate opening Unsafe	Grate with opening wider than 7/8 inch.		
Trash and Debris	Trash and debris that is blocking more than 20% of grate surface inletting capacity.		
Damaged or Missing	Grate missing or broken member(s) of the grate.		

*Maintenance: Enter 1 if maintenance is needed. Enter 2 if maintenance was preformed same day.

Inspection and Maintenance Checklist
Conveyance Systems (Pipes & Ditches)

Date: ______________________________

Type of Inspection: Storm ☐ Weekly ☐ Monthly ☐ Annual ☐

Site: ______________________________ Inspector(s): ______________________________

Defect	Conditions When Maintenance is Needed	Maintenance (1 or 2)*	Comments
Pipes			
Sediment & Debris	Accumulated Sediment that exceeds 20% of the diameter of the pipe.		
Vegetation	Vegetation that reduces free movement of water through pipes		
Damaged Pipe	Protective coating is damaged; rust is causing more than 50% deterioration to any part of pipe.		
	Any dent that decreases the cross section area of pipe by more than 20% or puncture that impacts performance.		
Open Ditches			
Trash and Debris	Trash and debris > 5 cf/1000 sf (one standard size garbage can) Visual evidence of dumping		
Sediment	Accumulated sediment that exceeds 20% of the design depth.		
Vegetation	Vegetation that reduces free movement of water through ditches.		
Erosion Damage to Slopes and Channel Bottom	Eroded damage over 2 inches deep where cause of damage is still present or where there is potential for continued erosion.		
Rock Lining Out of Place or Missing (If Applicable)	Maintenance person can see native soil beneath the rock lining.		

*Maintenance: Enter 1 if maintenance is needed. Enter 2 if maintenance was preformed same day.

Hudson Engineering Flood Storage Analysis

HEC
HUDSON
ENGINEERING
&
CONSULTING, P.C.

January 14, 2019

Robin Kramer, Chair
Board of Appeals
Village of Mamaroneck
Village Hall (Third Floor)
169 Mt. Pleasant Avenue
Mamaroneck, New York 10543

Re: Site Plan Review
416 Waverly Avenue (560 Fenimore Avenue)
Village of Mamaroneck

Dear Ms. Kramer,

Regarding the above referenced application, the grading on the subject site was performed to replicate the existing storage capacity of flood waters on the site. As verified by the charts below, in the proposed condition the storage of flood water on site increases slightly. Therefore, this development does not negatively impact the elevation of flood water in the area, and in fact it results in a theoretical decrease in the flood elevation.

Volumetric Analysis - Existing Conditions			
Elevation	Surface Area	Incremental Storage (Cubic Feet)	Cumulative Storage (Cubic Feet)
21	0	0	0
22	388	194	194
23	2,961	1,675	1,869
24	16,517	9,739	11,608
25	21,073	18,795	30,403
26	27,420	24,247	54,649

Volumetric Analysis - Proposed Conditions			
Elevation	Surface Area	Incremental Storage (Cubic Feet)	Cumulative Storage (Cubic Feet)
21	0	0	0
22	704	352	352
23	5,344	3,024	3,376
24	15,142	10,243	13,619
25	22,826	18,984	32,603
26	26,110	24,468	57,071

45 Knollwood Road –Suite 201- Elmsford, NY 10523 (914) 909-0420 Fax (914) 560-2086

HUDSON
ENGINEERING
&
CONSULTING, P.C.

Refer to the attached volumetric analysis (Sheet C-5).

If you should have any additional questions or comments, please do not hesitate to contact our office at (914) 909-0420.

Sincerely,

Michael F. Stein, P.E.
President

45 Knollwood Road –Suite 201- Elmsford, NY 10523 (914) 909-0420 Fax (914) 560-2086

Stormwater Control Facility Maintenance Agreement

STORMWATER CONTROL FACILITY
MAINTENANCE AGREEMENT

Whereas, the Municipality of Village of Mamaroneck ("Municipality") and the _______________("facility owner") want to enter into an agreement to provide for the long term maintenance and continuation of stormwater control measures approved by the Municipality for the below named project, and

Whereas, the Municipality and the facility owner desire that the stormwater control measures be built in accordance with the approved project plans and thereafter be maintained, cleaned, repaired, replaced and continued in perpetuity in order to ensure optimum performance of the components. Therefore, the Municipality and the facility owner agree as follows:

1. This agreement binds the Municipality and the facility owner, its successors and assigns, to the maintenance provisions depicted in the approved project plans which are attached as Schedule A of this agreement.

2. The facility owner shall maintain, clean, repair, replace and continue the stormwater control measures as necessary to ensure optimum performance of the measures to design specifications. The stormwater control measures shall include, but shall not be limited to, the following: drop inlets, pipes, culverts, soil absorption devices and hydrodynamic separator devices.

3. The facility owner shall be responsible for all expenses related to the maintenance of the stormwater control measures and shall establish a means for the collection and distribution of expenses among parties for any commonly owned facilities.

4. The facility owner shall provide for the periodic inspection of the stormwater control measures, not less than once in every five year period, to determine the condition and integrity of the measures. Such inspection shall be performed by a Professional Engineer licensed by the State of New York. The inspecting engineer shall prepare and submit to the Municipality within 30 days of the inspection, a written report of the findings including recommendations for those actions necessary for the continuation of the stormwater control measures.

5. The facility owner shall not authorize, undertake or permit alteration, abandonment, modification or discontinuation of the stormwater control measures except in accordance with written approval of the Municipality.

6. The facility owner shall undertake necessary repairs and replacement of the stormwater control measures at the direction of the Municipality or in accordance with the recommendations of the inspecting engineer.

7. This agreement shall be recorded in the Office of the County Clerk, County of _____________together with the deed for the common property and shall be included in the offering plan and/or prospectus approved pursuant to_______________.

8. If ever the Municipality determines that the facility owner has failed to construct or maintain the stormwater control measures in accordance with the project plan or has failed to undertake corrective action specified by the Municipality or by the inspecting engineer, the Municipality is authorized to undertake such steps as reasonably necessary for the preservation, continuation or maintenance of the stormwater control measures and to affix the expenses thereof as a lien against the property.

9. This agreement is effective_____________.

_________________________________ _______________________________

Provident Engineering
Traffic & Parking Study

TRAFFIC AND PARKING STUDY

Murphy Brothers - Mamaroneck Self Storage
416 Waverly Avenue
Village of Mamaroneck, New York

Prepared for

East Coast North Properties, LLC
and
Murphy Brothers Contracting
Village of Mamaroneck, NY

Prepared by

Provident Design Engineering, PLLC
formerly TRC Engineers, Inc.
Hawthorne, New York

February 8, 2018
Revised January 14, 2019

Project No. 17-060

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TRAFFIC AND PARKING STUDY
Murphy Brothers - Mamaroneck Self Storage
416 Waverly Avenue
Village of Mamaroneck, New York

1.0 INTRODUCTION

Provident Design Engineering, PLLC (PDE), formerly TRC Engineers, Inc., has been retained by East Coast North Properties, LLC and Murphy Brothers Contracting to review the traffic circulation and the parking conditions for the proposed Mamaroneck Self Storage facility addition to be located at 416 Waverly Avenue in the Village of Mamaroneck. Similar to the storage facility that was recently constructed at the Site (269 units), the additional storage facility (321 units) would replace some existing structures on the site which currently house various contractors/workers. Self Storage facilities tend to generate minimal traffic or parking. The existing Self Storage facility generally has one employee on site, while at times there could be two employees present. With the additional Self Storage units, there will be a maximum of three employees at any one time. In addition to the new Self Storage facility, there will also be a limited amount of retail space (700 sf) along the Waverly Avenue frontage in the existing Self Storage building that will service the Self Storage patrons.

Parking is currently provided on-site, with the provision of additional on-street parking spaces located along Waverly Avenue. Previous to the construction of the original Self

Storage facility, some of the vehicles would have had to back out of their parking spaces directly onto Waverly Avenue.

With the additional Self Storage facility, there will be 25 parking spaces on-site along with four (4) loading spaces as well as the on-street parking spaces.

PDE, TRC at the time, prepared the Traffic and Parking Study for the original Self Storage facility at the Site. To perform this latest Study, PDE followed a similar methodology including performing various observations of the traffic operations at the existing facility, as well as conducted parking counts at various times during the day and week. Utilization data of the Self Storage facility over an extended period of time was also reviewed. PDE conducted traffic analysis for the intersection of Waverly Avenue and Fenimore Road as well as at the Site Driveways.

The following is a summary of PDE's observations and findings in relation to the Self Storage facility in regards to traffic operations and parking.

2.0 TRAFFIC AND PARKING GENERATION

PDE has reviewed the amount of traffic that is generated by the proposed Self Storage facility utilizing the Institute of Transportation Engineers' (ITE) publication, "Trip Generation", 10th Edition, for this type of facility (ITE Land Use 151). The 310 additional storage units would conservatively generate approximately 3 entering vehicles and 3 exiting vehicles in the Peak AM Hour and approximately 2 entering vehicles and 3 exiting vehicles during the Peak PM Roadway Hour. During the Weekend Peak Hour, the 310 additional storage units would generate similar amounts, 3 entering vehicles and 2 exiting vehicles. This is minimal traffic and in general, the same vehicle that enters is also the vehicle that exits within the hour, as well as the occasional employee potentially entering or exiting. This minimal traffic will have no impact upon traffic operating conditions in the area. It is less traffic than utilized the previous uses of the site.

The following Table is a summary of the Weekday Peak Hour Trip Generation:

TABLE NO. 1
TRIP GENERATION
FOR ADDITIONAL 321 STORAGE UNITS

	Weekday Peak AM Roadway Hour			**Weekday Peak PM Roadway Hour**
ENTER	3			2
EXIT	3			3

The 700 sf of retail space will also generate minimal traffic as the retail will be limited to Self Storage supplies. The ITE 10th Edition (Land Use 920) estimates that this space would conservatively generate approximately 2 entering vehicles and 0 exiting vehicles in the Weekday Peak AM Hour and approximately 2 entering vehicles and 3 exiting vehicles during the Peak PM Roadway Hour. In reality, there would be even less traffic than these amounts as the employee for the retail portion will be the same as for the Self Storage portion and the customers would be the Self Storage patrons. Similar conditions would be experienced during the Weekend Peak Hour.

The supporting information from the ITE 10th Edition is contained in Appendix D.

Parking Generation

A Self Storage facility of a total of 590 units, based upon the Institute of Transportation Engineers' (ITE) publication "Parking Generation", 4th Edition, would generate a Peak parking demand of 8 spaces. The supporting information from the ITE 4th Edition is contained in Appendix D.

The 700-sf retail space is estimated to generate a parking demand of approximately two parking spaces but would actually require much less as the retail will be limited to self storage supplies and be sold to the self storage patrons. In addition, the employee for the self storage supplies will be the same as the employee for the self storage facility.

Parking is described in more detail in Section 4.0 below.

3.0 TRAFFIC CIRCULATION AND OPERATIONS

Existing Circulation

The previous site was served by various curbcuts and driveways along both Waverly Avenue and Fenimore Road. The access was "cleaned up" with the construction of the original Self Storage Building, which also improved the safety along Waverly Avenue as vehicles were backing out onto Waverly Avenue. Along Waverly Avenue currently, the access to the northern portion of the site is an unsignalized entrance/exit (with only right turns out permitted). A second curbcut along Waverly Avenue is located at the southern end of the site and serves the Self Storage Building and other contractor/worker parking but does not provide a vehicular connection to the rest of the property.

Along Fenimore Road, there is an existing curbcut between the barn and the front building that was converted to a right turn exiting movement only as part of the original Self Storage project. An additional curbcut provides limited access to the barn area. Vehicles sometimes back out of this driveway onto Fenimore Road.

Future Circulation and Operations

The number of curbcuts under the future scenario with the additional Self Storage facility will be reduced from four to two. The curbcut along Waverly Avenue currently serving the northern portion of the facility will be closed. The curbcut that currently serves the southern portion of the site along Waverly Avenue will remain.

The curbcut along Fenimore Road between the barn and the front building will remain an exit only driveway (right turns only). The curbcut that serves the barn will be removed.

All of the driveways will remain unsignalized under STOP control.

In addition to the modifications to the driveways, the internal circulation at the site will also be improved. Elimination of some of the buildings will improve traffic flow. In addition, as illustrated on the Site Plan, circulation will become more organized and striped islands will be provided to provide clearer direction. The signage also will be upgraded to improve traffic control. The northern portion will now be connected with the southern portion of the site. These improvements will significantly improve traffic flow throughout the site as well as improve Waverly Avenue and Fenimore Road by reducing the number of curbcuts.

Adjacent Roadway Network

The intersection of Waverly Avenue and Fenimore Road is controlled by a multi-phase traffic signal. PDE conducted traffic counts at this intersection as well as at the Site Driveways. The Peak Hours for the intersection are 7:30 AM to 8:30 AM and 4:45 PM to 5:45 PM. The Existing Traffic Volumes are illustrated on Figure 1 in Appendix A. PDE also conducted Level of Service capacity analyses for the intersection of Waverly Avenue and Fenimore Road and the Site Driveways. "Build" conditions were also analyzed and incorporate a background growth rate in addition to the Site modifications including the additional Self Storage units as illustrated on Figure 2. Copies of these analyses are contained in Appendix B.

Table No. 2 summarizes the Levels of Services for the intersection and the Site Driveways:

TABLE NO. 2
LEVEL OF SERVICE

Intersection	AM Peak		PM Peak	
	Existing	Build	Existing	Build
Fenimore Road & Waverly Avenue	C 22.7	C 22.8	C 21.5	C 21.6
Fenimore Road and Existing Exit Driveway	C 15.0	c 15.1	a 0.0	a 0.0
Waverly Avenue & Existing Driveway 1 (Contractor Offices)	b 14.7	- -	c 15.0	- -
Waverly Avenue & Existing Driveway 2 (Self-Storage)	b 11.1	b 13.6	b 12.0	b 12.2

Note: Signalized intersection Levels of Service are represented by Upper Case letters while unsignalized intersections are represented by lower case letters. Average Delay is provided below the Levels of Service and is illustrated in seconds per vehicle. To be conservative, no credit was taken for the traffic contractors/workers at the Site that will no longer be present during the Build condition.

As illustrated in the Table above, the analysis shows that the intersection of Fenimore Road and Waverly Avenue currently operates at Level of Service C in the Peak AM and PM Hours and these Levels of Service will remain. The Site Driveways will also continue to operate at Level of Service C or better. Thus, good Levels of Service are maintained at each of the intersections/driveways. To be conservative, no credit was taken for the traffic contractors/workers at the Site that will no longer be present during the Build condition, which would remove approximately 19 vehicles. Thus there will actually be less vehicles than current.

As described in Section 2.0, the Self Storage facility will not generate significant traffic and will not have any significant impact upon the traffic operating conditions of this intersection or on the Site Driveways and adjacent streets.

4.0 PARKING

a. Existing Parking Conditions

The current parking spaces on-site are split between two separate lots, as well as on-street parking spaces along Waverly Avenue.

PDE conducted parking observations on various days (both weekdays and weekends) and at various times throughout the day at the site. There were very few vehicles ever parked for the existing Self Storage facility and there were never times that ample parking spaces was not available on the property.

In addition, PDE reviewed data for the entrance and exit into the existing Self Storage facility from July 1, 2017 to August 24, 2017. These indicated that the maximum number of parking spaces for the Self Storage facility utilized at any one time throughout the entire period was five spaces, which included two parking spaces utilized by employees. A copy of this data is contained in Appendix C.

In addition to the parking for Murphy Brothers, approximately 19 other contractors/workers currently park at the Site. These 19 vehicles will be removed from the Site after the additional Self Storage units are constructed. Thus there would be less vehicles parking on the Site.

b. Future Parking

To determine the parking that was to be required for the original Self Storage facility at the Site, the parking requirements at other Self Storage facilities in the area was reviewed. The following table, similar to the Table that was contained in the previous Traffic and Parking Study illustrates the parking spaces provided for other Self Storage facilities in Westchester.

TABLE NO. 3
PARKING FOR OTHER SELF STORAGE FACILITIES

Facility	Location	No. of Units	Parking Spaces Initially Required by Zoning	Variance Granted (Parking Spaces to be installed)
Westy's Self Storage	Port Chester	900	83	22
Safeguard Storage	Elmsford	550	68	12
Safeguard Storage	New Rochelle	653	48	14
Westy's Self Storage	Tuckahoe	1,500	N/A	24
Black Mountain	New Rochelle	1,182	N/A	12
Project	*Mamaroneck*	*590*	*137*	*25*

Table No. 4 compares the Parking Spaces per Unit as well as the number of Units per Parking Space for other Self Storage in the area.

TABLE NO. 4 PARKING RATIOS FOR OTHER SELF STORAGE FACILITIES				
Facility	**Location**	**No. of Units**	**Parking Spaces per Unit**	**Units per Parking Space**
Westy's Self Storage	Port Chester	900	0.0244	41
Safeguard Storage	Elmsford	550	0.0218	46
Safeguard Storage	New Rochelle	653	0.0214	47
Westy's Self Storage	Tuckahoe	1,500	0.0160	63
Black Mountain	New Rochelle	1,182	0.0101	99
Project	*Mamaroneck*	*590*	*0.0424*	*24*

As illustrated in the above Tables, some of these other facilities have significantly more storage units yet provide a similar number of parking spaces as proposed for the Mamaroneck Self Storage facility. Observations of the parking in these lots indicate minimal vehicles are parked there.

The Mamaroneck Self Storage facility currently has 1-2 employees on-site at any one time. With additional units, this could increase to a maximum of 3 employees on-site at times. As described earlier, a Self Storage facility of a total of 590 units, based upon the Institute of Transportation Engineers' (ITE) publication "Parking Generation", 4th Edition, would generate a Peak parking demand of 8 spaces. The supporting information from the ITE 4th Edition is contained in Appendix D.

The 700-sf retail space is estimated to require approximately two parking spaces based upon the potential use of Site. The Murphy Brothers Contracting portion of the Site will have four full time employees and two Project Managers on-site and are projected to utilize six parking spaces. Murphy Brothers Contracting will generally not generate any visits from the general public or contractors. The other nineteen contractors/workers that currently park on the Site will no longer be parking there as that usage will be replaced by the additional Self Storage units and thus the overall parking demand will be reduced.

With the proposed additional Self Storage facility and the modifications to the layout of the site, there will be 25 parking spaces provided on-site along with four (4) loading spaces, in addition to the on-street parking spaces. The four loading spaces will be utilized by the patrons of the Self Storage facility, thus freeing up even more parking spaces. Thus the parking to be provided will be sufficient to support the Self Storage facility and the other various uses on the site.

5.0 CONCLUSIONS

The proposed modifications to the internal circulation of the site will improve traffic flow and operations. The elimination of a driveway along Waverly Avenue and the elimination of a curb cut on Fenimore Road will also improve safety within the site and along Waverly Avenue and Fenimore Road such as vehicles will no longer back out of the barn driveway onto Fenimore Road. The additional Self Storage facility will not generate significant traffic and will not impact traffic operating conditions along the adjacent roadways or within the site.

The Self Storage facility with the additional units would conservatively require up to 8 parking spaces while the Murphy Brothers Contracting will require 6 parking spaces and up to 2 parking spaces will be required for the retail space. In addition, the peak of all of the above uses would not occur at the same time, with the Murphy Brothers Contracting peaking in the early morning, the Self Storage facility peaking mid-late morning and the retail portion generating insignificant parking. Thus, the 25 parking spaces to be provided will result in more than sufficient parking be provided for the entire site, including for the additional Self Storage facility. There will be also 4 loading spaces that will be provided and these will be utilized by the patrons of the Self Storage facility, thus freeing up even more parking spaces.

Respectively submitted:

PROVIDENT DESIGN ENGINEERING, PLLC

Brian E. Dempsey, P.E., PTOE
Senior Project Manager

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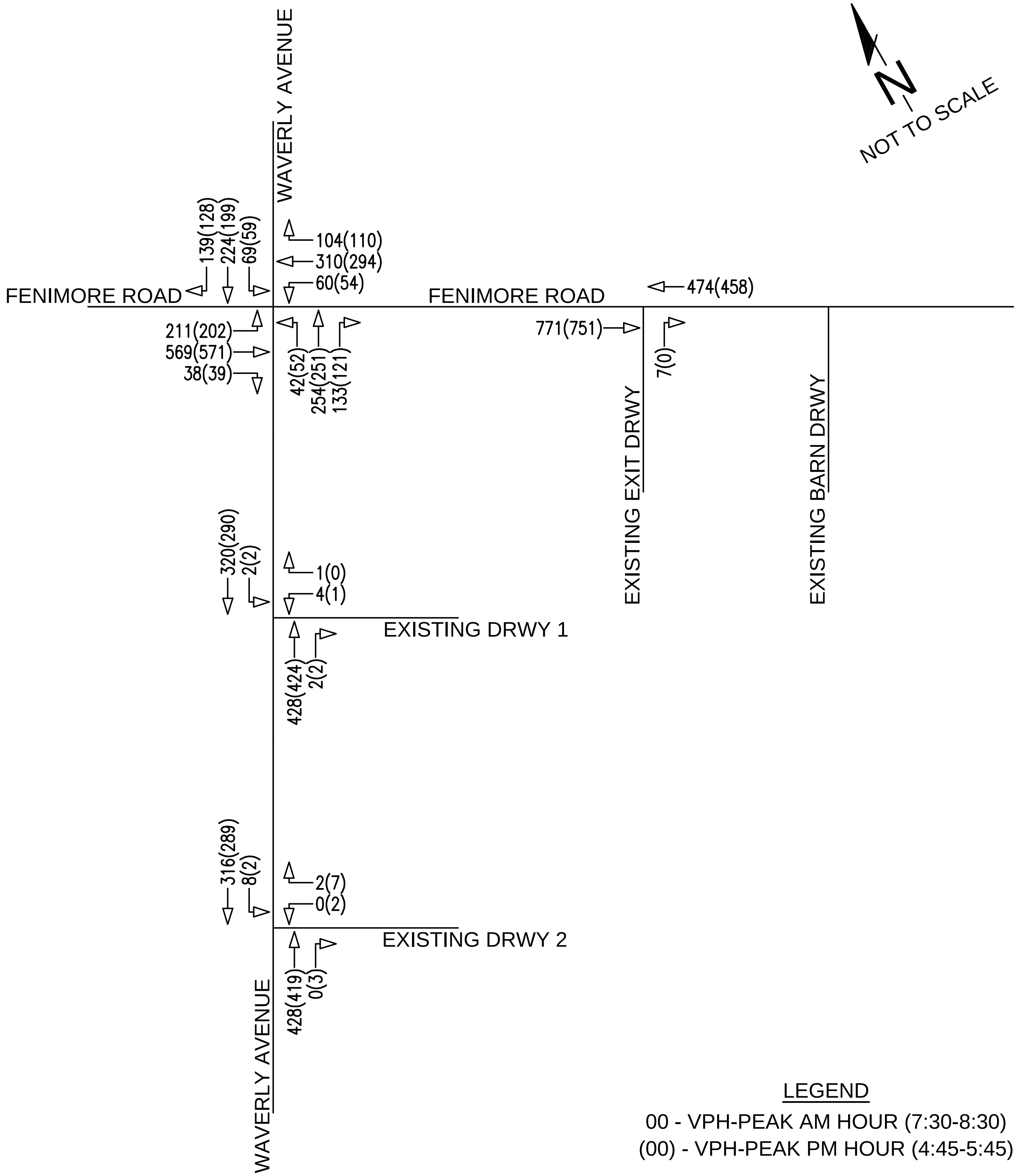
APPENDIX A

Figures



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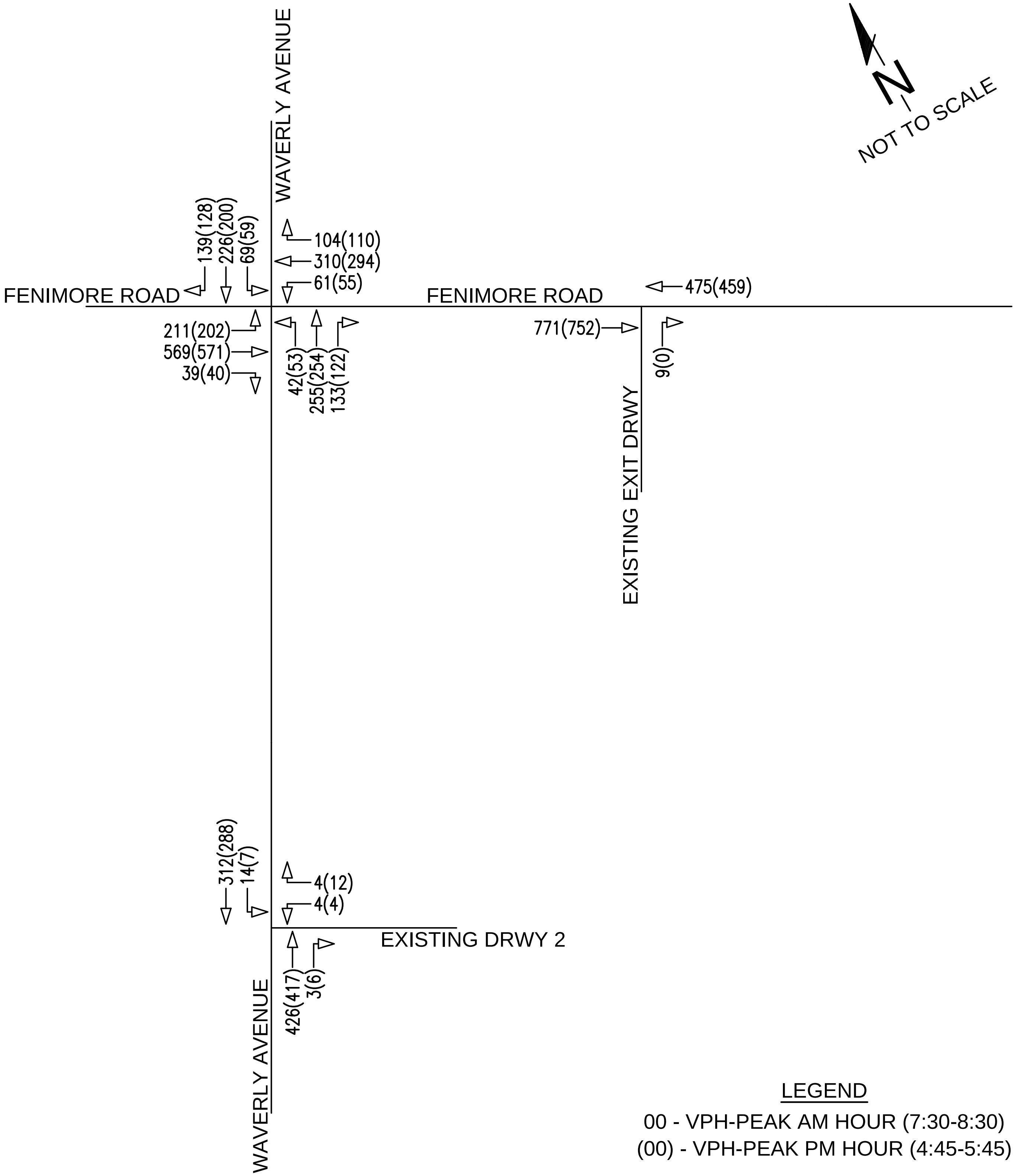
Provident design engineering
7 SKYLINE DRIVE, HAWTHORNE, NEW YORK 10532
TEL: (914) 592-4040 WWW.PDERESULTS.COM

Existing Traffic Volumes
Mamaroneck, Westchester, NY

Project No. 17-060
January 2019

Figure No. 01



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Project No. 17-060
January 2019

Build Traffic Figures
Mamaroneck, Westchester, NY

Figure No. 02

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APPENDIX B

Level of Service Analysis

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	211	569	38	60	310	104	42	254	133	69	224	139
Future Volume (veh/h)	211	569	38	60	310	104	42	254	133	69	224	139
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj (A_pbT)	1.00		0.99	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	229	618	41	65	337	113	46	276	145	75	243	151
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Opposing Right Turn Influence	Yes			Yes			Yes			Yes		
Cap, veh/h	542	1068	899	366	795	667	202	362	190	183	338	210
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Prop Arrive On Green	0.10	0.57	0.57	0.43	0.43	0.43	0.32	0.32	0.32	0.32	0.32	0.32
Ln Grp Delay, s/veh	13.2	13.5	7.8	19.3	18.1	15.1	36.3	0.0	34.8	42.7	0.0	32.7
Ln Grp LOS	B	B	A	B	B	B	D		C	D		C
Approach Vol, veh/h		888			515			467			469	
Approach Delay, s/veh		13.1			17.6			34.9			34.3	
Approach LOS		B			B			C			C	

Timer:	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6	7	8
Case No		6.0		3.0		6.0	1.2	5.0
Phs Duration (G+Y+Rc), s		30.0		52.0		30.0	12.0	40.0
Change Period (Y+Rc), s		4.0		5.0		4.0	4.0	5.0
Max Green (Gmax), s		26.0		47.0		26.0	8.0	35.0
Max Allow Headway (MAH), s		5.3		5.1		5.3	3.8	5.1
Max Q Clear (g_c+l1), s		22.1		19.4		26.1	7.5	12.4
Green Ext Time (g_e), s		2.1		8.4		0.0	0.0	7.9
Prob of Phs Call (p_c)		1.00		1.00		1.00	1.00	1.00
Prob of Max Out (p_x)		0.00		0.00		0.00	0.00	0.00
Left-Turn Movement Data								
Assigned Mvmt		5				1	7	3
Mvmt Sat Flow, veh/h		985				962	1774	769
Through Movement Data								
Assigned Mvmt		2		4		6		8
Mvmt Sat Flow, veh/h		1142		1863		1067		1863
Right-Turn Movement Data								
Assigned Mvmt		12		14		16		18
Mvmt Sat Flow, veh/h		600		1568		663		1563
Left Lane Group Data								
Assigned Mvmt	0	5	0	0	0	1	7	3
Lane Assignment							(Pr/Pm)	

Lanes in Grp	0	1	0	0	0	1	1	1
Grp Vol (v), veh/h	0	46	0	0	0	75	229	65
Grp Sat Flow (s), veh/h/ln	0	985	0	0	0	962	1774	769
Q Serve Time (g_s), s	0.0	3.6	0.0	0.0	0.0	6.2	5.5	4.8
Cycle Q Clear Time (g_c), s	0.0	20.1	0.0	0.0	0.0	24.1	5.5	10.2
Perm LT Sat Flow (s_l), veh/h/ln	0	985	0	0	0	962	935	769
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	0.0	26.0	0.0	0.0	0.0	26.0	37.0	35.0
Perm LT Serve Time (g_u), s	0.0	9.5	0.0	0.0	0.0	8.2	24.6	29.6
Perm LT Q Serve Time (g_ps), s	0.0	3.6	0.0	0.0	0.0	6.2	4.0	4.8
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	0.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00
Lane Grp Cap (c), veh/h	0	202	0	0	0	183	542	366
V/C Ratio (X)	0.00	0.23	0.00	0.00	0.00	0.41	0.42	0.18
Avail Cap (c_a), veh/h	0	202	0	0	0	183	542	366
Upstream Filter (I)	0.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d1), s/veh	0.0	33.6	0.0	0.0	0.0	36.1	10.8	18.3
Incr Delay (d2), s/veh	0.0	2.6	0.0	0.0	0.0	6.6	2.4	1.1
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	36.3	0.0	0.0	0.0	42.7	13.2	19.3
1st-Term Q (Q1), veh/ln	0.0	1.0	0.0	0.0	0.0	1.7	2.6	1.0
2nd-Term Q (Q2), veh/ln	0.0	0.1	0.0	0.0	0.0	0.3	0.4	0.1
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00
%ile Back of Q (50%), veh/ln	0.0	1.1	0.0	0.0	0.0	2.0	3.0	1.1
%ile Storage Ratio (RQ%)	0.00	0.56	0.00	0.00	0.00	0.78	0.94	0.29
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	6	0	8
Lane Assignment				T				T
Lanes in Grp	0	0	0	1	0	0	0	1
Grp Vol (v), veh/h	0	0	0	618	0	0	0	337
Grp Sat Flow (s), veh/h/ln	0	0	0	1863	0	0	0	1863
Q Serve Time (g_s), s	0.0	0.0	0.0	17.4	0.0	0.0	0.0	10.4
Cycle Q Clear Time (g_c), s	0.0	0.0	0.0	17.4	0.0	0.0	0.0	10.4
Lane Grp Cap (c), veh/h	0	0	0	1068	0	0	0	795
V/C Ratio (X)	0.00	0.00	0.00	0.58	0.00	0.00	0.00	0.42
Avail Cap (c_a), veh/h	0	0	0	1068	0	0	0	795
Upstream Filter (I)	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	0.0	0.0	11.2	0.0	0.0	0.0	16.4
Incr Delay (d2), s/veh	0.0	0.0	0.0	2.3	0.0	0.0	0.0	1.7
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	0.0	13.5	0.0	0.0	0.0	18.1
1st-Term Q (Q1), veh/ln	0.0	0.0	0.0	8.8	0.0	0.0	0.0	5.3

2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.4
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	0.0	0.0	9.4	0.0	0.0	0.0	5.7
%ile Storage Ratio (RQ%)	0.00	0.00	0.00	1.08	0.00	0.00	0.00	1.32
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Right Lane Group Data								
Assigned Mvmt	0	12	0	14	0	16	0	18
Lane Assignment		T+R		R		T+R		R
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	421	0	41	0	394	0	113
Grp Sat Flow (s), veh/h/ln	0	1742	0	1568	0	1729	0	1563
Q Serve Time (g_s), s	0.0	17.8	0.0	0.9	0.0	16.5	0.0	3.7
Cycle Q Clear Time (g_c), s	0.0	17.8	0.0	0.9	0.0	16.5	0.0	3.7
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	0.34	0.00	1.00	0.00	0.38	0.00	1.00
Lane Grp Cap (c), veh/h	0	552	0	899	0	548	0	667
V/C Ratio (X)	0.00	0.76	0.00	0.05	0.00	0.72	0.00	0.17
Avail Cap (c_a), veh/h	0	552	0	899	0	548	0	667
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	25.2	0.0	7.7	0.0	24.8	0.0	14.5
Incr Delay (d2), s/veh	0.0	9.6	0.0	0.1	0.0	7.9	0.0	0.5
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	34.8	0.0	7.8	0.0	32.7	0.0	15.1
1st-Term Q (Q1), veh/ln	0.0	8.5	0.0	0.4	0.0	7.9	0.0	1.6
2nd-Term Q (Q2), veh/ln	0.0	1.5	0.0	0.0	0.0	1.2	0.0	0.1
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	10.0	0.0	0.4	0.0	9.1	0.0	1.7
%ile Storage Ratio (RQ%)	0.00	4.98	0.00	0.14	0.00	0.53	0.00	0.42
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Intersection Summary								
HCM 2010 Ctrl Delay		22.7						
HCM 2010 LOS		C						

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑		↱
Traffic Vol, veh/h	771	0	0	474	0	7
Future Vol, veh/h	771	0	0	474	0	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	838	0	0	515	0	8

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	-	838
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	-	0	0	-	0	366
Stage 1	-	0	0	-	0	-
Stage 2	-	0	0	-	0	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	-	366
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	15
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	366	-	-
HCM Lane V/C Ratio	0.021	-	-
HCM Control Delay (s)	15	-	-
HCM Lane LOS	C	-	-
HCM 95th %tile Q(veh)	0.1	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	1	428	2	2	320
Future Vol, veh/h	4	1	428	2	2	320
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	1	465	2	2	348

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	818	466	0	0	467	0
Stage 1	466	-	-	-	-	-
Stage 2	352	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	346	597	-	-	1094	-
Stage 1	632	-	-	-	-	-
Stage 2	712	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	345	597	-	-	1094	-
Mov Cap-2 Maneuver	345	-	-	-	-	-
Stage 1	632	-	-	-	-	-
Stage 2	711	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.7	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	377	1094	-
HCM Lane V/C Ratio	-	-	0.014	0.002	-
HCM Control Delay (s)	-	-	14.7	8.3	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	2	428	0	8	316
Future Vol, veh/h	0	2	428	0	8	316
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2	465	0	9	343

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	826	465	0	0	465	0
Stage 1	465	-	-	-	-	-
Stage 2	361	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	342	597	-	-	1096	-
Stage 1	632	-	-	-	-	-
Stage 2	705	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	339	597	-	-	1096	-
Mov Cap-2 Maneuver	339	-	-	-	-	-
Stage 1	632	-	-	-	-	-
Stage 2	698	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.1	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	597	1096	-
HCM Lane V/C Ratio	-	-	0.004	0.008	-
HCM Control Delay (s)	-	-	11.1	8.3	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	202	571	39	54	294	110	52	251	121	59	199	128
Future Volume (veh/h)	202	571	39	54	294	110	52	251	121	59	199	128
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj (A_pbT)	1.00		0.99	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	220	621	42	59	320	120	57	273	132	64	216	139
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Opposing Right Turn Influence	Yes			Yes			Yes			Yes		
Cap, veh/h	551	1068	899	363	795	667	231	374	181	196	333	214
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Prop Arrive On Green	0.10	0.57	0.57	0.43	0.43	0.43	0.32	0.32	0.32	0.32	0.32	0.32
Ln Grp Delay, s/veh	12.8	13.5	7.8	19.2	17.8	15.2	34.6	0.0	33.1	39.0	0.0	29.9
Ln Grp LOS	B	B	A	B	B	B	C		C	D		C
Approach Vol, veh/h		883			499			462			419	
Approach Delay, s/veh		13.1			17.3			33.3			31.3	
Approach LOS		B			B			C			C	

Timer:	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6	7	8
Case No		6.0		3.0		6.0	1.2	5.0
Phs Duration (G+Y+Rc), s		30.0		52.0		30.0	12.0	40.0
Change Period (Y+Rc), s		4.0		5.0		4.0	4.0	5.0
Max Green (Gmax), s		26.0		47.0		26.0	8.0	35.0
Max Allow Headway (MAH), s		5.3		5.1		5.3	3.8	5.1
Max Q Clear (g_c+l1), s		20.7		19.5		24.0	7.2	11.9
Green Ext Time (g_e), s		2.5		8.3		1.1	0.1	7.8
Prob of Phs Call (p_c)		1.00		1.00		1.00	1.00	1.00
Prob of Max Out (p_x)		0.00		0.00		0.00	0.00	0.00
Left-Turn Movement Data								
Assigned Mvmt		5				1	7	3
Mvmt Sat Flow, veh/h		1019				975	1774	766
Through Movement Data								
Assigned Mvmt		2		4		6		8
Mvmt Sat Flow, veh/h		1178		1863		1051		1863
Right-Turn Movement Data								
Assigned Mvmt		12		14		16		18
Mvmt Sat Flow, veh/h		570		1568		676		1563
Left Lane Group Data								
Assigned Mvmt	0	5	0	0	0	1	7	3
Lane Assignment							(Pr/Pm)	

Lanes in Grp	0	1	0	0	0	1	1	1
Grp Vol (v), veh/h	0	57	0	0	0	64	220	59
Grp Sat Flow (s), veh/h/ln	0	1019	0	0	0	975	1774	766
Q Serve Time (g_s), s	0.0	4.2	0.0	0.0	0.0	5.1	5.2	4.4
Cycle Q Clear Time (g_c), s	0.0	18.7	0.0	0.0	0.0	22.0	5.2	9.9
Perm LT Sat Flow (s_l), veh/h/ln	0	1019	0	0	0	975	943	766
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	0.0	26.0	0.0	0.0	0.0	26.0	37.0	35.0
Perm LT Serve Time (g_u), s	0.0	11.5	0.0	0.0	0.0	9.1	25.3	29.5
Perm LT Q Serve Time (g_ps), s	0.0	4.2	0.0	0.0	0.0	5.1	3.6	4.4
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	0.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00
Lane Grp Cap (c), veh/h	0	231	0	0	0	196	551	363
V/C Ratio (X)	0.00	0.25	0.00	0.00	0.00	0.33	0.40	0.16
Avail Cap (c_a), veh/h	0	231	0	0	0	196	551	363
Upstream Filter (I)	0.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d1), s/veh	0.0	32.1	0.0	0.0	0.0	34.7	10.6	18.2
Incr Delay (d2), s/veh	0.0	2.5	0.0	0.0	0.0	4.4	2.2	1.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	34.6	0.0	0.0	0.0	39.0	12.8	19.2
1st-Term Q (Q1), veh/ln	0.0	1.2	0.0	0.0	0.0	1.4	2.5	0.9
2nd-Term Q (Q2), veh/ln	0.0	0.2	0.0	0.0	0.0	0.2	0.3	0.1
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00
%ile Back of Q (50%), veh/ln	0.0	1.3	0.0	0.0	0.0	1.6	2.8	1.0
%ile Storage Ratio (RQ%)	0.00	0.66	0.00	0.00	0.00	0.63	0.90	0.26
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	6	0	8
Lane Assignment				T				T
Lanes in Grp	0	0	0	1	0	0	0	1
Grp Vol (v), veh/h	0	0	0	621	0	0	0	320
Grp Sat Flow (s), veh/h/ln	0	0	0	1863	0	0	0	1863
Q Serve Time (g_s), s	0.0	0.0	0.0	17.5	0.0	0.0	0.0	9.7
Cycle Q Clear Time (g_c), s	0.0	0.0	0.0	17.5	0.0	0.0	0.0	9.7
Lane Grp Cap (c), veh/h	0	0	0	1068	0	0	0	795
V/C Ratio (X)	0.00	0.00	0.00	0.58	0.00	0.00	0.00	0.40
Avail Cap (c_a), veh/h	0	0	0	1068	0	0	0	795
Upstream Filter (I)	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	0.0	0.0	11.2	0.0	0.0	0.0	16.3
Incr Delay (d2), s/veh	0.0	0.0	0.0	2.3	0.0	0.0	0.0	1.5
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	0.0	13.5	0.0	0.0	0.0	17.8
1st-Term Q (Q1), veh/ln	0.0	0.0	0.0	9.0	0.0	0.0	0.0	5.0

2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.3
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	0.0	0.0	9.7	0.0	0.0	0.0	5.3
%ile Storage Ratio (RQ%)	0.00	0.00	0.00	1.10	0.00	0.00	0.00	1.23
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Right Lane Group Data								
Assigned Mvmt	0	12	0	14	0	16	0	18
Lane Assignment		T+R		R		T+R		R
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	405	0	42	0	355	0	120
Grp Sat Flow (s), veh/h/ln	0	1748	0	1568	0	1727	0	1563
Q Serve Time (g_s), s	0.0	16.9	0.0	1.0	0.0	14.5	0.0	3.9
Cycle Q Clear Time (g_c), s	0.0	16.9	0.0	1.0	0.0	14.5	0.0	3.9
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	0.33	0.00	1.00	0.00	0.39	0.00	1.00
Lane Grp Cap (c), veh/h	0	554	0	899	0	548	0	667
V/C Ratio (X)	0.00	0.73	0.00	0.05	0.00	0.65	0.00	0.18
Avail Cap (c_a), veh/h	0	554	0	899	0	548	0	667
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	24.9	0.0	7.7	0.0	24.1	0.0	14.6
Incr Delay (d2), s/veh	0.0	8.2	0.0	0.1	0.0	5.8	0.0	0.6
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	33.1	0.0	7.8	0.0	29.9	0.0	15.2
1st-Term Q (Q1), veh/ln	0.0	8.1	0.0	0.4	0.0	6.9	0.0	1.7
2nd-Term Q (Q2), veh/ln	0.0	1.3	0.0	0.0	0.0	0.9	0.0	0.1
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	9.4	0.0	0.4	0.0	7.8	0.0	1.8
%ile Storage Ratio (RQ%)	0.00	4.67	0.00	0.15	0.00	0.46	0.00	0.45
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Intersection Summary								
HCM 2010 Ctrl Delay		21.5						
HCM 2010 LOS		C						

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	751	0	0	458	0	0
Future Vol, veh/h	751	0	0	458	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	816	0	0	498	0	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	-	816
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	-	0	0	-	0	377
Stage 1	-	0	0	-	0	-
Stage 2	-	0	0	-	0	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	-	377
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB		WB		NB
HCM Control Delay, s	0		0		0
HCM LOS					A

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	0	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	-	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	0	424	2	2	290
Future Vol, veh/h	1	0	424	2	2	290
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	0	461	2	2	315

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	782	462	0	0	463	0
Stage 1	462	-	-	-	-	-
Stage 2	320	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	363	600	-	-	1098	-
Stage 1	634	-	-	-	-	-
Stage 2	736	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	362	600	-	-	1098	-
Mov Cap-2 Maneuver	362	-	-	-	-	-
Stage 1	634	-	-	-	-	-
Stage 2	735	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	362	1098	-
HCM Lane V/C Ratio	-	-	0.003	0.002	-
HCM Control Delay (s)	-	-	15	8.3	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	2	7	419	3	2	289
Future Vol, veh/h	2	7	419	3	2	289
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	8	455	3	2	314

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	775	457	0	0	459	0
Stage 1	457	-	-	-	-	-
Stage 2	318	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	366	604	-	-	1102	-
Stage 1	638	-	-	-	-	-
Stage 2	738	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	365	604	-	-	1102	-
Mov Cap-2 Maneuver	365	-	-	-	-	-
Stage 1	638	-	-	-	-	-
Stage 2	737	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	527	1102	-
HCM Lane V/C Ratio	-	-	0.019	0.002	-
HCM Control Delay (s)	-	-	12	8.3	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	211	569	39	61	310	104	42	255	133	69	226	139
Future Volume (veh/h)	211	569	39	61	310	104	42	255	133	69	226	139
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj (A_pbT)	1.00		0.99	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	229	618	42	66	337	113	46	277	145	75	246	151
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Opposing Right Turn Influence	Yes			Yes			Yes			Yes		
Cap, veh/h	542	1068	899	365	795	667	200	363	190	183	340	209
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Prop Arrive On Green	0.10	0.57	0.57	0.43	0.43	0.43	0.32	0.32	0.32	0.32	0.32	0.32
Ln Grp Delay, s/veh	13.2	13.5	7.8	19.4	18.1	15.1	36.5	0.0	34.9	42.8	0.0	32.9
Ln Grp LOS	B	B	A	B	B	B	D		C	D		C
Approach Vol, veh/h		889			516			468			472	
Approach Delay, s/veh		13.1			17.6			35.0			34.5	
Approach LOS		B			B			D			C	

Timer:	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6	7	8
Case No		6.0		3.0		6.0	1.2	5.0
Phs Duration (G+Y+Rc), s		30.0		52.0		30.0	12.0	40.0
Change Period (Y+Rc), s		4.0		5.0		4.0	4.0	5.0
Max Green (Gmax), s		26.0		47.0		26.0	8.0	35.0
Max Allow Headway (MAH), s		5.3		5.1		5.3	3.8	5.1
Max Q Clear (g_c+l1), s		22.2		19.4		26.2	7.5	12.4
Green Ext Time (g_e), s		2.0		8.4		0.0	0.0	7.9
Prob of Phs Call (p_c)		1.00		1.00		1.00	1.00	1.00
Prob of Max Out (p_x)		0.00		0.00		0.00	0.00	0.00
Left-Turn Movement Data								
Assigned Mvmt		5				1	7	3
Mvmt Sat Flow, veh/h		982				961	1774	768
Through Movement Data								
Assigned Mvmt		2		4		6		8
Mvmt Sat Flow, veh/h		1144		1863		1072		1863
Right-Turn Movement Data								
Assigned Mvmt		12		14		16		18
Mvmt Sat Flow, veh/h		599		1568		658		1563
Left Lane Group Data								
Assigned Mvmt	0	5	0	0	0	1	7	3
Lane Assignment							(Pr/Pm)	

Lanes in Grp	0	1	0	0	0	1	1	1
Grp Vol (v), veh/h	0	46	0	0	0	75	229	66
Grp Sat Flow (s), veh/h/ln	0	982	0	0	0	961	1774	768
Q Serve Time (g_s), s	0.0	3.6	0.0	0.0	0.0	6.3	5.5	4.9
Cycle Q Clear Time (g_c), s	0.0	20.2	0.0	0.0	0.0	24.2	5.5	10.3
Perm LT Sat Flow (s_l), veh/h/ln	0	982	0	0	0	961	935	768
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	0.0	26.0	0.0	0.0	0.0	26.0	37.0	35.0
Perm LT Serve Time (g_u), s	0.0	9.3	0.0	0.0	0.0	8.1	24.6	29.6
Perm LT Q Serve Time (g_ps), s	0.0	3.6	0.0	0.0	0.0	6.3	4.0	4.9
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	0.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00
Lane Grp Cap (c), veh/h	0	200	0	0	0	183	542	365
V/C Ratio (X)	0.00	0.23	0.00	0.00	0.00	0.41	0.42	0.18
Avail Cap (c_a), veh/h	0	200	0	0	0	183	542	365
Upstream Filter (I)	0.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d1), s/veh	0.0	33.8	0.0	0.0	0.0	36.1	10.8	18.3
Incr Delay (d2), s/veh	0.0	2.7	0.0	0.0	0.0	6.7	2.4	1.1
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	36.5	0.0	0.0	0.0	42.8	13.2	19.4
1st-Term Q (Q1), veh/ln	0.0	1.0	0.0	0.0	0.0	1.7	2.6	1.0
2nd-Term Q (Q2), veh/ln	0.0	0.1	0.0	0.0	0.0	0.3	0.4	0.1
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00
%ile Back of Q (50%), veh/ln	0.0	1.1	0.0	0.0	0.0	2.0	3.0	1.2
%ile Storage Ratio (RQ%)	0.00	0.32	0.00	0.00	0.00	0.78	0.94	0.29
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	6	0	8
Lane Assignment				T				T
Lanes in Grp	0	0	0	1	0	0	0	1
Grp Vol (v), veh/h	0	0	0	618	0	0	0	337
Grp Sat Flow (s), veh/h/ln	0	0	0	1863	0	0	0	1863
Q Serve Time (g_s), s	0.0	0.0	0.0	17.4	0.0	0.0	0.0	10.4
Cycle Q Clear Time (g_c), s	0.0	0.0	0.0	17.4	0.0	0.0	0.0	10.4
Lane Grp Cap (c), veh/h	0	0	0	1068	0	0	0	795
V/C Ratio (X)	0.00	0.00	0.00	0.58	0.00	0.00	0.00	0.42
Avail Cap (c_a), veh/h	0	0	0	1068	0	0	0	795
Upstream Filter (I)	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	0.0	0.0	11.2	0.0	0.0	0.0	16.4
Incr Delay (d2), s/veh	0.0	0.0	0.0	2.3	0.0	0.0	0.0	1.7
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	0.0	13.5	0.0	0.0	0.0	18.1
1st-Term Q (Q1), veh/ln	0.0	0.0	0.0	8.8	0.0	0.0	0.0	5.3

2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.4
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	0.0	0.0	9.4	0.0	0.0	0.0	5.7
%ile Storage Ratio (RQ%)	0.00	0.00	0.00	1.08	0.00	0.00	0.00	1.32
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Right Lane Group Data								
Assigned Mvmt	0	12	0	14	0	16	0	18
Lane Assignment		T+R		R		T+R		R
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	422	0	42	0	397	0	113
Grp Sat Flow (s), veh/h/ln	0	1742	0	1568	0	1730	0	1563
Q Serve Time (g_s), s	0.0	17.9	0.0	1.0	0.0	16.7	0.0	3.7
Cycle Q Clear Time (g_c), s	0.0	17.9	0.0	1.0	0.0	16.7	0.0	3.7
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	0.34	0.00	1.00	0.00	0.38	0.00	1.00
Lane Grp Cap (c), veh/h	0	552	0	899	0	549	0	667
V/C Ratio (X)	0.00	0.76	0.00	0.05	0.00	0.72	0.00	0.17
Avail Cap (c_a), veh/h	0	552	0	899	0	549	0	667
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	25.2	0.0	7.7	0.0	24.8	0.0	14.5
Incr Delay (d2), s/veh	0.0	9.7	0.0	0.1	0.0	8.1	0.0	0.5
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	34.9	0.0	7.8	0.0	32.9	0.0	15.1
1st-Term Q (Q1), veh/ln	0.0	8.6	0.0	0.4	0.0	7.9	0.0	1.6
2nd-Term Q (Q2), veh/ln	0.0	1.5	0.0	0.0	0.0	1.2	0.0	0.1
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	10.0	0.0	0.4	0.0	9.2	0.0	1.7
%ile Storage Ratio (RQ%)	0.00	1.34	0.00	0.15	0.00	0.54	0.00	0.42
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Intersection Summary								
HCM 2010 Ctrl Delay		22.8						
HCM 2010 LOS		C						

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	771	0	0	475	0	9
Future Vol, veh/h	771	0	0	475	0	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	838	0	0	516	0	10

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	-	838
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	-	0	0	-	0	366
Stage 1	-	0	0	-	0	-
Stage 2	-	0	0	-	0	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	-	366
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB		WB		NB
HCM Control Delay, s	0		0		15.1
HCM LOS					C

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	366	-	-
HCM Lane V/C Ratio	0.027	-	-
HCM Control Delay (s)	15.1	-	-
HCM Lane LOS	C	-	-
HCM 95th %tile Q(veh)	0.1	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	4	426	3	14	312
Future Vol, veh/h	4	4	426	3	14	312
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	4	463	3	15	339

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	835	465	0	0	466	0
Stage 1	465	-	-	-	-	-
Stage 2	370	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	338	597	-	-	1095	-
Stage 1	632	-	-	-	-	-
Stage 2	699	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	332	597	-	-	1095	-
Mov Cap-2 Maneuver	332	-	-	-	-	-
Stage 1	632	-	-	-	-	-
Stage 2	687	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.6	0	0.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	427	1095	-
HCM Lane V/C Ratio	-	-	0.02	0.014	-
HCM Control Delay (s)	-	-	13.6	8.3	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	202	571	40	55	294	110	53	254	122	59	200	128
Future Volume (veh/h)	202	571	40	55	294	110	53	254	122	59	200	128
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj (A_pbT)	1.00		0.99	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	220	621	43	60	320	120	58	276	133	64	217	139
Adj No. of Lanes	1	1	1	1	1	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Opposing Right Turn Influence	Yes			Yes			Yes			Yes		
Cap, veh/h	551	1068	899	363	795	667	230	374	180	193	334	214
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Prop Arrive On Green	0.10	0.57	0.57	0.43	0.43	0.43	0.32	0.32	0.32	0.32	0.32	0.32
Ln Grp Delay, s/veh	12.8	13.5	7.8	19.2	17.8	15.2	34.8	0.0	33.5	39.4	0.0	30.0
Ln Grp LOS	B	B	A	B	B	B	C		C	D		C
Approach Vol, veh/h		884			500			467			420	
Approach Delay, s/veh		13.1			17.3			33.6			31.4	
Approach LOS		B			B			C			C	

Timer:	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6	7	8
Case No		6.0		3.0		6.0	1.2	5.0
Phs Duration (G+Y+Rc), s		30.0		52.0		30.0	12.0	40.0
Change Period (Y+Rc), s		4.0		5.0		4.0	4.0	5.0
Max Green (Gmax), s		26.0		47.0		26.0	8.0	35.0
Max Allow Headway (MAH), s		5.3		5.1		5.3	3.8	5.1
Max Q Clear (g_c+l1), s		20.8		19.5		24.3	7.2	12.0
Green Ext Time (g_e), s		2.5		8.3		1.0	0.1	7.8
Prob of Phs Call (p_c)		1.00		1.00		1.00	1.00	1.00
Prob of Max Out (p_x)		0.00		0.00		0.00	0.00	0.00
Left-Turn Movement Data								
Assigned Mvmt		5				1	7	3
Mvmt Sat Flow, veh/h		1018				972	1774	766
Through Movement Data								
Assigned Mvmt		2		4		6		8
Mvmt Sat Flow, veh/h		1180		1863		1053		1863
Right-Turn Movement Data								
Assigned Mvmt		12		14		16		18
Mvmt Sat Flow, veh/h		569		1568		674		1563
Left Lane Group Data								
Assigned Mvmt	0	5	0	0	0	1	7	3
Lane Assignment							(Pr/Pm)	

Lanes in Grp	0	1	0	0	0	1	1	1
Grp Vol (v), veh/h	0	58	0	0	0	64	220	60
Grp Sat Flow (s), veh/h/ln	0	1018	0	0	0	972	1774	766
Q Serve Time (g_s), s	0.0	4.3	0.0	0.0	0.0	5.2	5.2	4.5
Cycle Q Clear Time (g_c), s	0.0	18.8	0.0	0.0	0.0	22.3	5.2	10.0
Perm LT Sat Flow (s_l), veh/h/ln	0	1018	0	0	0	972	943	766
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	0.0	26.0	0.0	0.0	0.0	26.0	37.0	35.0
Perm LT Serve Time (g_u), s	0.0	11.5	0.0	0.0	0.0	8.9	25.3	29.5
Perm LT Q Serve Time (g_ps), s	0.0	4.3	0.0	0.0	0.0	5.2	3.6	4.5
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	0.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00
Lane Grp Cap (c), veh/h	0	230	0	0	0	193	551	363
V/C Ratio (X)	0.00	0.25	0.00	0.00	0.00	0.33	0.40	0.17
Avail Cap (c_a), veh/h	0	230	0	0	0	193	551	363
Upstream Filter (I)	0.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d1), s/veh	0.0	32.2	0.0	0.0	0.0	34.9	10.6	18.2
Incr Delay (d2), s/veh	0.0	2.6	0.0	0.0	0.0	4.5	2.2	1.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	34.8	0.0	0.0	0.0	39.4	12.8	19.2
1st-Term Q (Q1), veh/ln	0.0	1.2	0.0	0.0	0.0	1.4	2.5	0.9
2nd-Term Q (Q2), veh/ln	0.0	0.2	0.0	0.0	0.0	0.2	0.3	0.1
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	0.00	0.00	1.00	1.00	1.00
%ile Back of Q (50%), veh/ln	0.0	1.4	0.0	0.0	0.0	1.6	2.8	1.0
%ile Storage Ratio (RQ%)	0.00	0.38	0.00	0.00	0.00	0.64	0.90	0.26
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	0	6	0	8
Lane Assignment				T				T
Lanes in Grp	0	0	0	1	0	0	0	1
Grp Vol (v), veh/h	0	0	0	621	0	0	0	320
Grp Sat Flow (s), veh/h/ln	0	0	0	1863	0	0	0	1863
Q Serve Time (g_s), s	0.0	0.0	0.0	17.5	0.0	0.0	0.0	9.7
Cycle Q Clear Time (g_c), s	0.0	0.0	0.0	17.5	0.0	0.0	0.0	9.7
Lane Grp Cap (c), veh/h	0	0	0	1068	0	0	0	795
V/C Ratio (X)	0.00	0.00	0.00	0.58	0.00	0.00	0.00	0.40
Avail Cap (c_a), veh/h	0	0	0	1068	0	0	0	795
Upstream Filter (I)	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	0.0	0.0	11.2	0.0	0.0	0.0	16.3
Incr Delay (d2), s/veh	0.0	0.0	0.0	2.3	0.0	0.0	0.0	1.5
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	0.0	13.5	0.0	0.0	0.0	17.8
1st-Term Q (Q1), veh/ln	0.0	0.0	0.0	9.0	0.0	0.0	0.0	5.0

2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.3
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	0.0	0.0	9.7	0.0	0.0	0.0	5.3
%ile Storage Ratio (RQ%)	0.00	0.00	0.00	1.11	0.00	0.00	0.00	1.23
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Right Lane Group Data								
Assigned Mvmt	0	12	0	14	0	16	0	18
Lane Assignment		T+R		R		T+R		R
Lanes in Grp	0	1	0	1	0	1	0	1
Grp Vol (v), veh/h	0	409	0	43	0	356	0	120
Grp Sat Flow (s), veh/h/ln	0	1748	0	1568	0	1727	0	1563
Q Serve Time (g_s), s	0.0	17.1	0.0	1.0	0.0	14.5	0.0	3.9
Cycle Q Clear Time (g_c), s	0.0	17.1	0.0	1.0	0.0	14.5	0.0	3.9
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	0.33	0.00	1.00	0.00	0.39	0.00	1.00
Lane Grp Cap (c), veh/h	0	554	0	899	0	548	0	667
V/C Ratio (X)	0.00	0.74	0.00	0.05	0.00	0.65	0.00	0.18
Avail Cap (c_a), veh/h	0	554	0	899	0	548	0	667
Upstream Filter (I)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d1), s/veh	0.0	25.0	0.0	7.7	0.0	24.1	0.0	14.6
Incr Delay (d2), s/veh	0.0	8.5	0.0	0.1	0.0	5.9	0.0	0.6
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	33.5	0.0	7.8	0.0	30.0	0.0	15.2
1st-Term Q (Q1), veh/ln	0.0	8.2	0.0	0.4	0.0	6.9	0.0	1.7
2nd-Term Q (Q2), veh/ln	0.0	1.3	0.0	0.0	0.0	0.9	0.0	0.1
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.0	9.5	0.0	0.4	0.0	7.8	0.0	1.8
%ile Storage Ratio (RQ%)	0.00	1.27	0.00	0.15	0.00	0.46	0.00	0.45
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Intersection Summary								
HCM 2010 Ctrl Delay		21.6						
HCM 2010 LOS		C						

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	752	0	0	459	0	0
Future Vol, veh/h	752	0	0	459	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	Stop
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	817	0	0	499	0	0

Major/Minor	Major1			Major2	Minor1	
Conflicting Flow All	0	-	-	-	-	817
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	-	0	0	-	0	376
Stage 1	-	0	0	-	0	-
Stage 2	-	0	0	-	0	-
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	-	376
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	WBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	0	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	-	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	12	417	6	7	288
Future Vol, veh/h	4	12	417	6	7	288
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	13	453	7	8	313

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	785	457	0	0	460	0
Stage 1	457	-	-	-	-	-
Stage 2	328	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	361	604	-	-	1101	-
Stage 1	638	-	-	-	-	-
Stage 2	730	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	358	604	-	-	1101	-
Mov Cap-2 Maneuver	358	-	-	-	-	-
Stage 1	638	-	-	-	-	-
Stage 2	723	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.2	0	0.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	515	1101	-
HCM Lane V/C Ratio	-	-	0.034	0.007	-
HCM Control Delay (s)	-	-	12.2	8.3	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

APPENDIX C

Self Storage Facility Usage Data

	Employees	# Tenants	# X 15 minutes	# X 15 minutes	# of parking Space needed
DATE	# E	# T	2 in 15	3 IN 15	
Saturday, July 1, 2017	1	10	5	1	4
Sunday, July 2, 2017	1	4	2	0	3
Monday, July 3, 2017	1	6	4	0	3
Tuesday, July 4, 2017	0	3	0	0	1
Wednesday, July 5, 2017	2	11	2	0	4
Thursday, July 6, 2017	2	12	5	0	4
Friday, July 7, 2017	2	13	3	3	5
Saturday, July 8, 2017	2	12	3	3	5
Sunday, July 9, 2017	2	11	3	1	5
Monday, July 10, 2017	1	6	1	0	3
Tuesday, July 11, 2017	2	15	3	0	4
Wednesday, July 12, 2017	1	4	0	0	2
Thursday, July 13, 2017	1	14	1	1	4
Friday, July 14, 2017	1	10	2	0	3
Saturday, July 15, 2017	1	11	4	1	4
Sunday, July 16, 2017	1	9	1	0	3
Monday, July 17, 2017	1	21	4	3	4
Tuesday, July 18, 2017	1	16	6	1	4
Wednesday, July 19, 2017	2	10	1	1	5
Thursday, July 20, 2017	1	8	1	1	4
Friday, July 21, 2017	2	9	3	0	4
Saturday, July 22, 2017	1	11	1	0	3
Sunday, July 23, 2017	2	9	3	1	5
Monday, July 24, 2017	1	10	1	0	3
Tuesday, July 25, 2017	1	14	4	0	3
Wednesday, July 26, 2017	2	9	5	0	4
Thursday, July 27, 2017	2	11	3	0	4
Friday, July 28, 2017	2	10	1	1	5
Saturday, July 29, 2017	1	11	1	0	3
Sunday, July 30, 2017	1	7	0	0	2
Monday, July 31, 2017	1	9	3	0	3

	Employees	# Tenants	# X 15 minutes	# X 15 minutes	# of parking Space needed
DATE	# E	# T	2 in 15	3 IN 15	
Tuesday, August 1, 2017	2	13	4	0	4
Wednesday, August 2, 2017	2	9	1	0	4
Thursday, August 3, 2017	1	10	6	0	3
Friday, August 4, 2017	1	8	0	1	4
Saturday, August 5, 2017	2	8	1	1	5
Sunday, August 6, 2017	1	7	0	1	4
Monday, August 7, 2017	2	5	1	0	4
Tuesday, August 8, 2017	2	7	1	0	4
Wednesday, August 9, 2017	1	9	3	2	4
Thursday, August 10, 2017	1	7	1	0	3
Friday, August 11, 2017	2	5	0	0	3
Saturday, August 12, 2017	2	7	3	0	4
Sunday, August 13, 2017	1	6	0	0	2
Monday, August 14, 2017	1	8	3	0	3
Tuesday, August 15, 2017	2	6	0	0	3
Wednesday, August 16, 2017	1	5	1	0	3
Thursday, August 17, 2017	1	4	0	0	2
Friday, August 18, 2017	1	4	0	0	2
Saturday, August 19, 2017	2	8	3	0	4
Sunday, August 20, 2017	1	7	1	0	3
Monday, August 21, 2017	1	7	1	0	3
Tuesday, August 22, 2017	1	10	1	1	4
Wednesday, August 23, 2017	1	6	1	0	3
Thursday, August 24, 2017	1	6	1	0	3

APPENDIX D

Institute of Transportation Engineers Trip Generation and Parking Generation Data

Trip Generation Manual

10th Edition • Volume 2: Data

Industrial (Land Uses 100–199)

SEPTEMBER 2017
INSTITUTE OF TRANSPORTATION ENGINEERS

Land Use: 151
Mini-Warehouse

Description

A mini-warehouse is a building in which a number of storage units or vaults are rented for the storage of goods. They are typically referred to as "self-storage" facilities. Each unit is physically separated from other units, and access is usually provided through an overhead door or other common access point.

Additional Data

Time-of-day distribution data for this land use are presented in Appendix A. For the 10 general urban/suburban sites with data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 10:30 and 11:30 a.m. and 1:15 and 2:15 p.m., respectively.

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in California, Colorado, Massachusetts, Minnesota, New Jersey, Texas, and Utah.

Source Numbers

212, 403, 551, 568, 642, 708, 724, 850, 868, 876

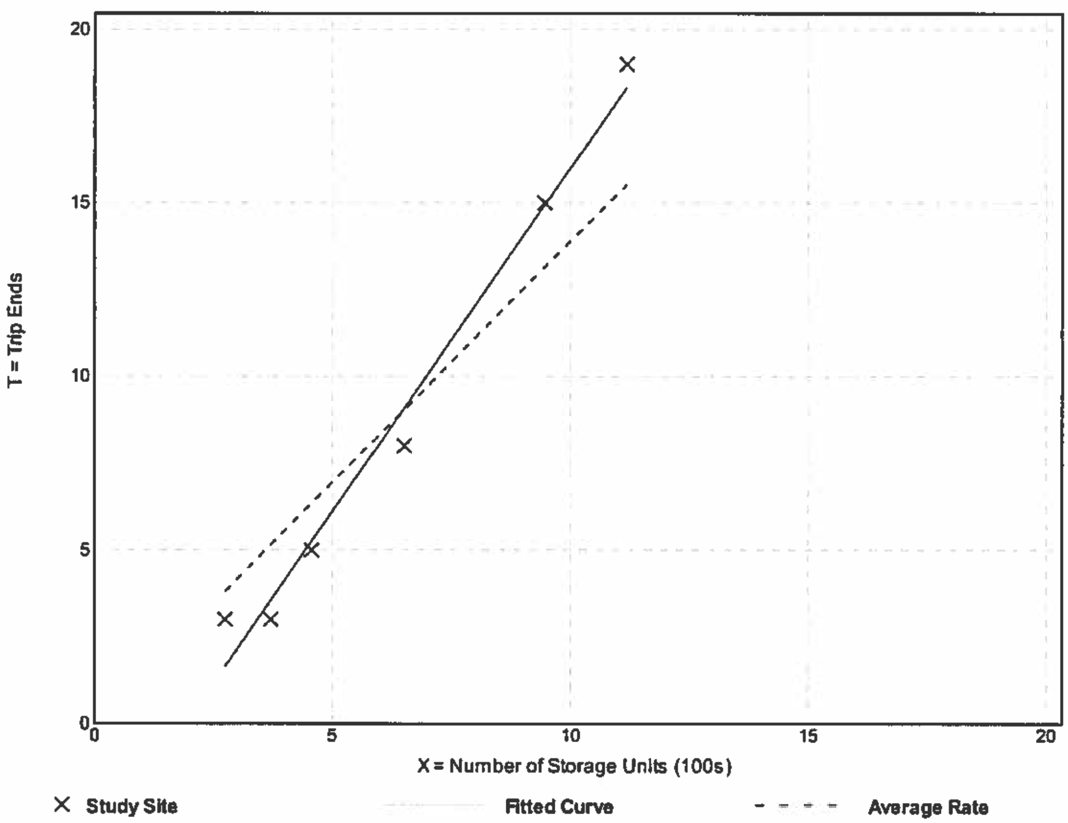
Mini-Warehouse
(151)

Vehicle Trip Ends vs:	**Storage Units (100s)**
On a:	**Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m.**
Setting/Location:	**General Urban/Suburban**
Number of Studies:	6
Avg. Num. of Storage Units (100s):	6
Directional Distribution:	51% entering, 49% exiting

Vehicle Trip Generation per Storage Unit (100s)

Average Rate	Range of Rates	Standard Deviation
1.39	0.81 - 1.70	0.33

Data Plot and Equation



Fitted Curve Equation: $T = 1.98(X) - 3.79$

$R^2 = 0.98$

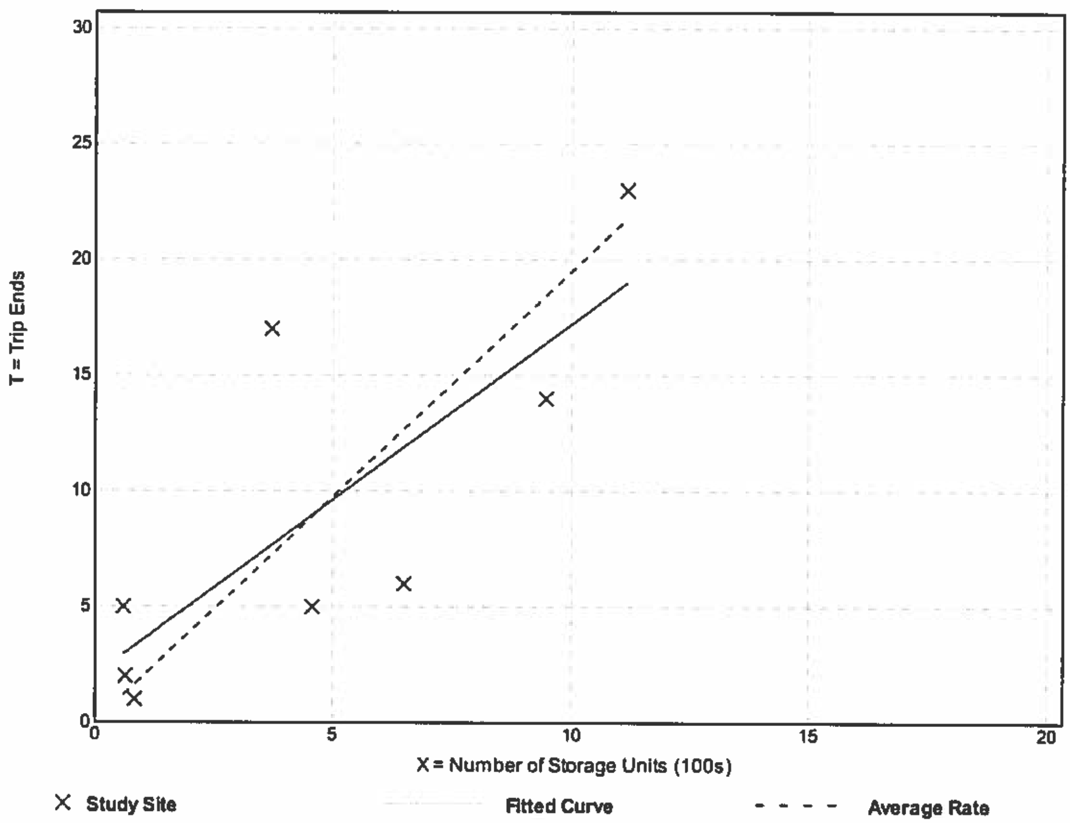
Mini-Warehouse
(151)

Vehicle Trip Ends vs:	**Storage Units (100s)**
On a:	**Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.**
Setting/Location:	**General Urban/Suburban**
Number of Studies:	8
Avg. Num. of Storage Units (100s):	5
Directional Distribution:	50% entering, 50% exiting

Vehicle Trip Generation per Storage Unit (100s)

Average Rate	Range of Rates	Standard Deviation
1.95	0.92 - 8.33	1.40

Data Plot and Equation



Fitted Curve Equation: $T = 1.52(X) + 2.02$

$R^2 = 0.61$

Trip Generation Manual

10th Edition • Volume 2: Data

Services (Land Uses 900–999)

SEPTEMBER 2017
INSTITUTE OF TRANSPORTATION ENGINEERS

Land Use: 920
Copy, Print, and Express Ship Store

Description

A copy, print, and express ship store is a facility that offers a variety of copying, printing, binding, and shipping services. Retail sales of a limited range of office-related items including packing and shipping supplies are also commonly available. Technology services, such as computer rental and wireless Internet may also be provided. Copy, print, and express ship stores typically maintain long store hours 7 days a week. Some stores may be open 24 hours a day.

Additional Data

The weekday AM peak hour occurred between 10:30 and 11:30 a.m. The weekday PM peak hour occurred between 3:30 and 4:30 p.m.

The site was surveyed in the 2000s in Texas.

Source Number

608

Copy, Print, and Express Ship Store
(920)

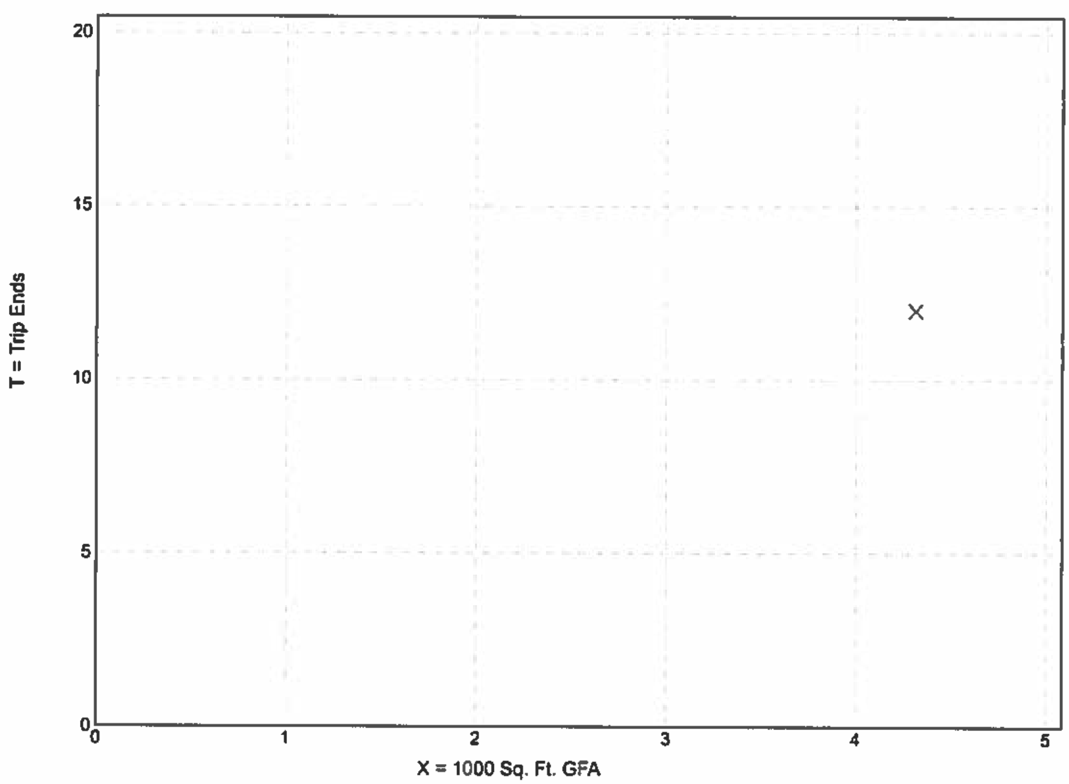
Vehicle Trip Ends vs:	**1000 Sq. Ft. GFA**
On a:	**Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 7 and 9 a.m.**
Setting/Location:	**General Urban/Suburban**
Number of Studies:	1
1000 Sq. Ft. GFA:	4
Directional Distribution:	75% entering, 25% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
2.78	2.78 - 2.78	*

Data Plot and Equation

Caution – Small Sample Size



× **Study Site** - - - - **Average Rate**

Fitted Curve Equation: Not Given R^2= ****

Copy, Print, and Express Ship Store
(920)

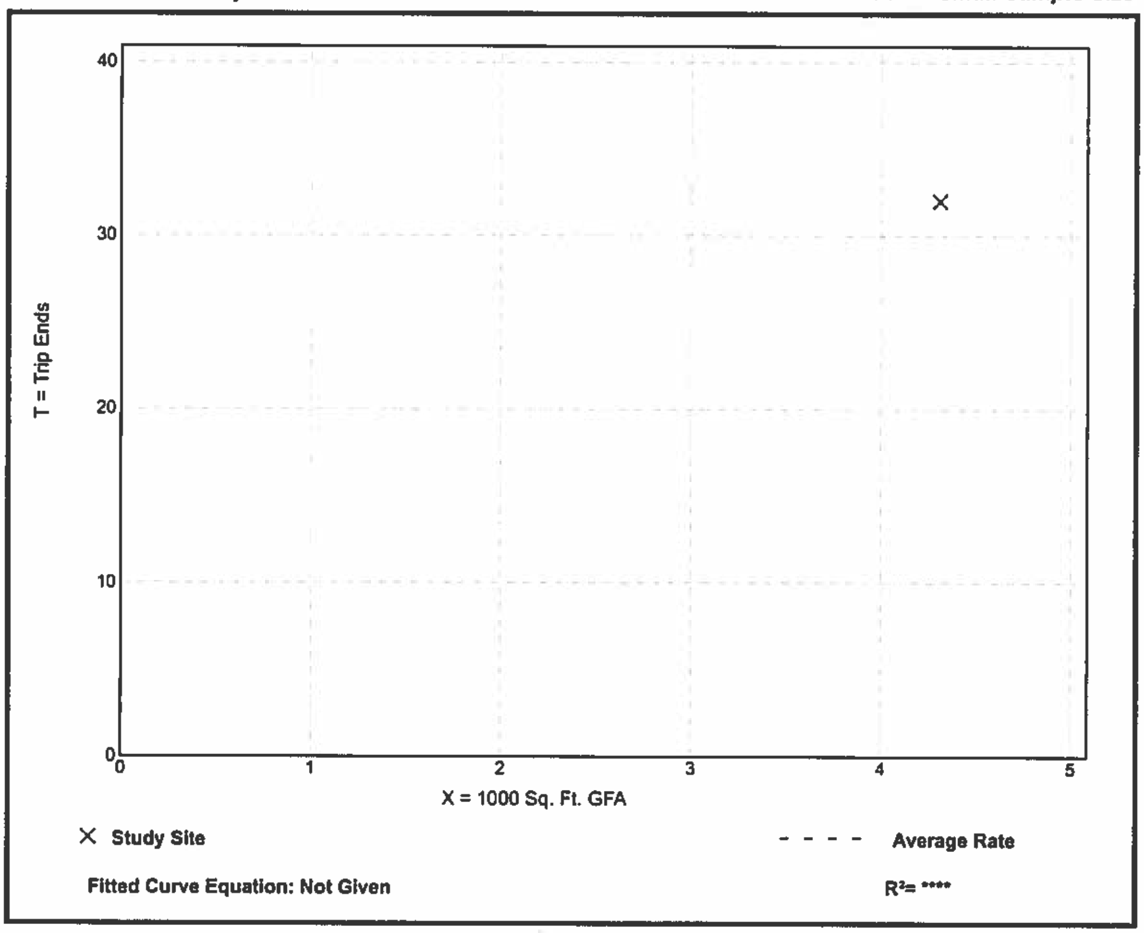
Vehicle Trip Ends vs:	**1000 Sq. Ft. GFA**
On a:	**Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.**
Setting/Location:	**General Urban/Suburban**
Number of Studies:	1
1000 Sq. Ft. GFA:	4
Directional Distribution:	44% entering, 56% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
7.42	7.42 - 7.42	*

Data Plot and Equation

Caution – Small Sample Size



4th Edition

Parking Generation

ite

Institute of Transportation Engineers

Land Use: 151
Mini-Warehouse

Description

Mini-warehouses are buildings in which a number of storage units or vaults are rented for the storage of goods. They are typically referred to as "self-storage" facilities. Each unit is physically separated from other units, and access is usually provided through an overhead door or other common access point.

Database Description

- Average parking supply ratio: 0.2 spaces per 1,000 square feet (sq. ft.) gross floor area (GFA) (two study sites).

The Saturday parking demand ratio for a site with 1,400 storage units was 0.77 vehicles per 100 storage units. Parking demand data at this site were collected for six consecutive hours between 1:00 and 7:00 p.m., and the peak period of demand occurred between 4:00 and 5:00 p.m.

The following table presents a time-of-day distribution of parking demand for three study sites.

Based on Vehicles per 1,000 sq. ft. GFA	*Weekday*	
Hour Beginning	Percent of Peak Period	Number of Data Points*
12:00–4:00 a.m.	–	0
5:00 a.m.	–	0
6:00 a.m.	–	0
7:00 a.m.	31	3
8:00 a.m.	24	3
9:00 a.m.	59	3
10:00 a.m.	91	3
11:00 a.m.	100	3
12:00 p.m.	55	3
1:00 p.m.	45	3
2:00 p.m.	46	3
3:00 p.m.	40	2
4:00 p.m.	88	1
5:00 p.m.	27	1
6:00 p.m.	35	1
7:00 p.m.	27	1
8:00 p.m.	–	0
9:00 p.m.	–	0
10:00 p.m.	–	0
11:00 p.m.	–	0

* Subset of database

Study Sites/Years

Canada:
Burnaby, BC (1991); Coquitlam, BC (1991); Richmond, BC (1991)

United States:
Santa Barbara, CA (1998); Hadley, MA (2008)

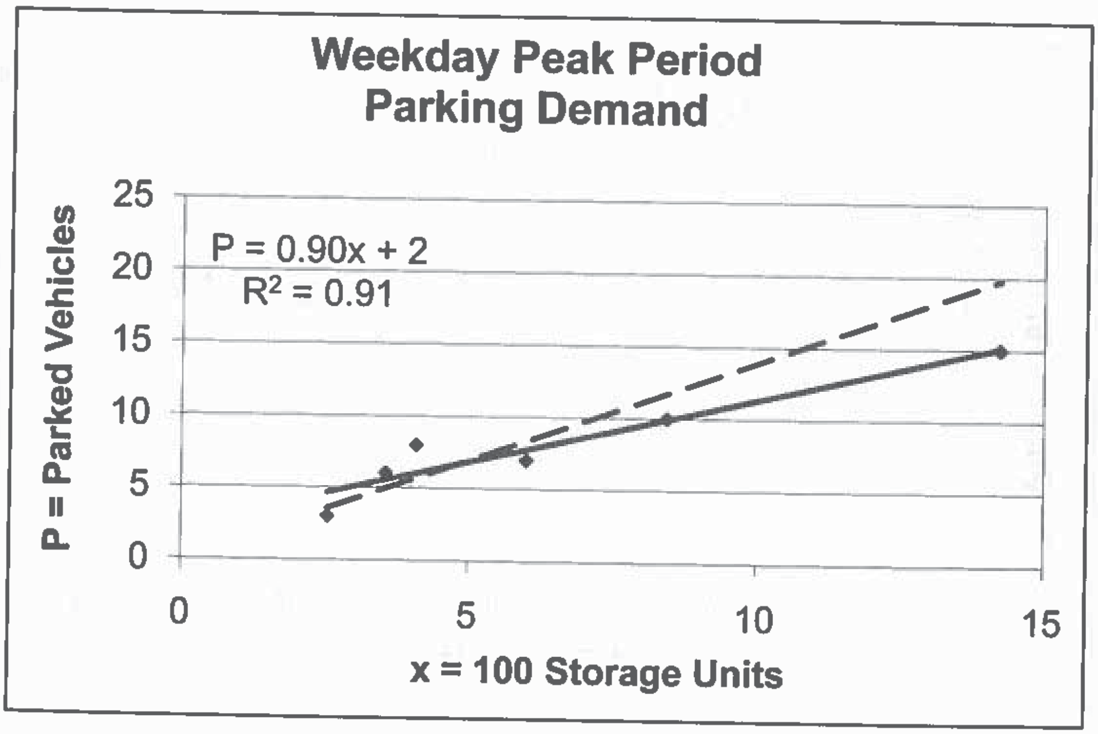
4th Edition Source Number

1115

Land Use: 151
Mini-Warehouse

Average Peak Period Parking Demand vs. 100 Storage Units
On a: Weekday

Statistic	Peak Period Demand
Peak Period	11:00 a.m.–12:00 p.m.; 4:00–5:00 p.m.
Number of Study Sites	6
Average Size of Study Sites	648 storage units
Average Peak Period Parking Demand	1.35 vehicles per 100 storage units
Standard Deviation	0.34
Coefficient of Variation	25%
Range	1.05–1.96 vehicles per 100 storage units
85th Percentile	1.66 vehicles per 100 storage units
33rd Percentile	1.17 vehicles per 100 storage units



◆ Actual Data Points ——— Fitted Curve - - - - Average Rate

HydroEnvironmental Solutions Excavation Work Plan

HydroEnvironmental
SOLUTIONS, INC.

January 15, 2019

Mr. Chris Murphy
Mr. Sean Murphy
East Coast North Properties LLC
416 Waverly Avenue
Mamaroneck, New York 10538

RE: Scope of Work for Proposed Foundation Excavation
416 Waverly Avenue
Mamaroneck, New York

Dear Messrs. Murphy:

In accordance with the New York State Department of Environmental Conservation (NYSDEC) Regulations pertaining to construction on environmentally impacted sites, HydroEnvironmental Solutions, Inc. (HES) has compiled the following Scope of Work detailing the methods and approach for excavation and removal of soils from the proposed building footprint that will be implemented at the subject Site (**Figure 1**). This Scope of Work is submitted for review and approval by the Village of Mamaroneck (VOM) Zoning Board of Appeals (ZBA) and will be adhered to if petroleum hydrocarbon impacted or other constituents of concern impacted soil is encountered during foundation excavation activities at the subject site. If impacted soils are not encountered, then this Excavation Work Plan (EWP) will not be required, only standard construction practices will need to be followed.

Work will not proceed without an approved permit in accordance with the Village of Mamaroneck's Building Code pertaining to the Site. It should be noted that this Scope of Work is specific to the Site excavation proposed on the attached Drawings for the proposed building expansion, (provided by the property owner and attached hereto {**Appendix 1**}, Drawings C-1 through C-7 and Foundation Detail {by BETCO}) as described herein.

Environmental Work in Support of the Proposed Foundation Excavation

The environmental work proposed in this Scope will comply with NYSDEC-Technical Guidance Document DER-10, Part 375 Regulations for conducting cleanups and the recommendations and technical approach discussed and included therein.

One Deans Bridge Road • Somers, New York 10589

(914) 276-2560 • FAX (914) 276-2664

All work outlined in this document, Excavation Work Plan, is to be performed during the excavation of the foundation and will be conducted in accordance with a Village approved work scope unless otherwise stated in this document. A Site-Specific Health and Safety Plan (HASP), the Earthwork contractor's HASP, OSHA HAZWOPER training certifications and documentation, a Quality Assurance Project Plan (QAPP) and a Community Air Monitoring Plan (CAMP) will be implemented during this work as required (i.e.: if contaminated soil is encountered). In accordance with DER-10, a CAMP will be implemented to monitor air quality during all on-Site intrusive work and soil moving, loading, truck cleaning, backfilling, and stockpiling activities associated with the proposed foundation excavation in contaminated areas only. The "Work Area", which is defined as a 20-30 foot area measured from the sidewalls of the excavations (where possible, depending on the property fence line location relative to the excavation area), will be monitored continuously during excavation activities by an on-Site geologist/environmental scientist using: (1) a calibrated four gas meter (%LEL, %O_2, H_2S and CO); (2) photoionization detector (PID), both of which will be immediately adjacent to the excavation edge while the work is ongoing; and (3) a total of three CAMP monitors, two of which will be placed downwind and one upwind of the Work Area. Water and polyethylene sheeting (6 millimeter) will be available on-Site should dust and/or VOC/odor control become necessary during this work.

All field work will be conducted in accordance with the requirements of the HASPs and all soil samples will be collected in accordance with the requirements of the QAPP. Prior to or at the start of this work, soil erosion and sediment controls and Site fencing/signage will be installed along the Site perimeter in accordance with the approved Site-wide Storm Water Pollution Prevention Plan (SWPPP). In the event that soil stockpiling is necessary, stockpile staging areas will be constructed prior to the start of excavation activities. Areas of the Site disturbed during the excavation work will be covered as necessary to control odors or fugitive dusts. Covers will be maintained in accordance with the SWPPP.

Excavation Work Plan – Proposed Foundation

The Excavation Work Plan (EWP) outlined herein will be followed during all excavation activities. Although no soil has been analytically pre-characterized before excavation, soil will be screened in accordance with industry accepted practices. The New York One Call procedures will be completed by the excavation contractor prior to excavation startup. Documentation of the proposed excavation activities will include, but not be limited to, photographs of the work area and activities; soil excavation logs; disposal records for soils and materials excavated and removed from the Site; an accounting of daily activities and personnel on and off-Site; end-point sample data from all impacted excavation areas; and air monitoring logs from the excavation Work Areas in addition to the CAMP data. Additionally, the dimensions, depth, and location of the excavation upon completion will be surveyed and documented, as well as the location of all end-point samples as this will be required by the NYSDEC. This information will be provided to the NYSDEC and the Village in a written technical report; however, a summary of the work will be provided to the Village.

It should be noted that the general practices will be enhanced for excavation close to property lines. The excavation, along with continuous work area monitoring at the sides of excavation areas, will start in areas furthest away from the property line (and effectively work towards the property line, keeping pace with observations and field monitors during all work). A temporary fence will be deployed and maintained to preserve a minimum of 20-foot clearance around the excavation limits during the excavation of impacted soils only within 20 feet of the property boundary. This may include cordoning off a portion of the right of way on Waverly Avenue (i.e.: parking spaces). Proper permits, if required, will be obtained from the Village as required. All approved CAMP and Work Zone monitoring will be strictly adhered to during all intrusive on-Site work in impacted areas only.

Excavation of the foundation may encounter bedrock surfaces. During construction, the contractor and construction manager will adhere to safe work practices to ensure safe slope stability. The construction manager and contractor do not expect the depth of the excavation to create a condition where the excavation construction will impose on the property boundary or require shoring to maintain safety guidelines for slope stability outlined in the trenching and excavation requirements of OSHA 29 CFR 1926.651 and 1926.652. Should the contractor and construction manager determine that the excavation does not meet these safety standards noted above then they will provide necessary action to maintain slope stability and will implement stepped grading or sheet piles to meet such requirements.

Only NYSDEC and Village pre-approved off-site fill will be used to backfill the excavation(s) from grade to depth of the foundation footings.

Stockpiling

Stockpiling of soil from the excavation is not anticipated as current plans are to direct load during excavation. However, stockpiling may be utilized under the following conditions if necessary. Stockpiling on-Site soil/fill with no evidence of contamination (i.e., no staining or elevated PID measurements) may take place in approved areas in approximately 50 cubic yard piles, until removed from the Site or used for backfill. If stockpiling is to take place, stockpiles will be placed, graded, shaped, and covered for proper drainage. Soil materials shall be located and retained away from the edge of excavations.

Stockpiling of on-Site soil/fill with evidence of contamination (staining and/or elevated PID measurements) may take place in approved areas in approximately 50 cubic yard piles, until sample analysis is completed. Stockpiles will be placed, graded, shaped, and covered for proper drainage. This will ensure effective weather proofing of potentially contaminated soil stockpiles. Materials shall be located and retained away from edge of excavations.

Stockpiles will be kept covered at all times with appropriately anchored polyethylene sheeting or tarps. All stockpiles will be routinely inspected, and damaged tarp covers will be promptly replaced. The stockpiled soil/fill will be placed on top of and completely covered by polyethylene sheeting. All polyethylene sheeting will be a minimum thickness of 6 millimeter (mm) to reduce the infiltration of precipitation and to eliminate the formation of dust. The stockpile area shall be protected from stormwater runoff. Soil stockpiles will be continuously encircled with a silt fence. Non-soil weights (e.g. tires or rock) may be necessary to inhibit movement of the cover sheeting by wind. Stockpiles will be inspected, at a minimum, once each week and after every storm event, and in accordance with the Site SWPPP. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by the Village.

Soil Excavation and Direct Loading

As noted above, the plan for the proposed foundation excavation is to direct load the trucks unless one of the contingencies noted above occurs. A Roll-off container will be placed at the Site for disposal of any encountered/excavated debris. The roll-off container will be securely covered when not in use or when filled. A qualified environmental professional or person under their supervision will oversee all invasive work and the excavation and load-out of all excavated material in areas where impacted soils are encountered. The property owner and its contractor are solely responsible for safe execution of all invasive and other work performed under this Excavation Work Plan. The contractor will have an OSHA competent person (trained in accordance with 29 CFR 1926) on-Site and responsible for excavation safety. The excavation shall be completed in accordance with the following measures:

- Employ a transport vehicle tracking pad for vehicle loading operations to control and contain contaminated soil and debris spillage along with a truck cleaning station. The Site entrance and tracking pad detail and truck cleaning station description and detail are included at the end of this Scope ("**Appendix 2** – Alternative to Truck Washing Station"). The impacted excavation areas shall be an open excavation, which will comply with the trenching and excavation requirements of 29 CFR 1926.651 and 1926.652. During non-work hours – or when awaiting laboratory data from end-point samples – the excavations will be secured and covered with 6 mil polyethylene sheeting as required to control dust and vapor that could emanate from the open excavations. The excavations will be backfilled as soon as practicable (i.e., when sample results are received and reviewed with the Village, given there are no safety, odor, or other nuisance issues related to the excavation), or immediately (i.e., if odors or other nuisance issues are noted, or for any safety reasons) even if backfill material has to be removed to perform more sampling or excavation at a later time. A demarcation layer will be installed at completed excavations in case additional soil needs to be removed. The contractor will provide excavation protection system(s) required by ordinances, codes, laws and regulations to prevent injury to workers and to prevent damage to new and existing structures or utilities. Should the foundation excavation be required to remain open while awaiting and during construction of the foundation, the excavation will continue to comply with all environmental and safety protocols noted in this document. It is not anticipated that any on-Site staff will be required to enter excavation areas that are more than 4 feet deep.

Unless shown or specified otherwise, protection system(s) shall be utilized under the following conditions:

- Excavations Less Than 5 Feet Deep: Excavations in stable rock or in soil conditions where there is no potential for a cave-in may be made with vertical sides.
- During soil removal, all trucks will be direct loaded. Stockpiling is not planned for the excavation. During excavation, a covered Roll-off container will be staged on-Site for encountered/excavated debris (e.g. metal debris, tires, lumber, etc.). Materials contained in the roll-off will be disposed of off-Site in accordance with all applicable rules and regulations.
- Excavations More Than 5 Feet Deep: Excavations in stable rock may be made with vertical sides. Under all other conditions, the sidewalls of the excavations may be required to be sloped or shored to sufficiently provide for safe excavation, which may slightly expand the footprint. The OSHA excavation competent person overseeing the excavation activities will be responsible for the configuration of the excavation as it pertains to the trenching and excavation requirements of 29 CFR 1926.651 and 1926.652, and on decisions to backfill a source area that is completed. If the footprint is expanded, the material from outside of the proposed footprint shall be handled in the same manner as all material in this Scope of Work. It is anticipated that benching, shielding or shoring and bracing will be required. The excavation hole will be secured with a 6 millimeter (mm) polyethylene sheeting, as required, to control dust and vapor that could emanate from the open excavation as noted above or will be backfilled with material (from on-Site or off-Site sources) pre-approved by NYSDEC and the Village if material is imported from off-Site.
- Debris and Waste (non-soil) that are encountered: If debris and wastes (non-soil; wire, metal, scrap/metal) are encountered, a roll-off container will be available. All solid wastes, such as these, will be appropriately characterized and disposed of off-Site in accordance with all applicable local, State, and Federal rules and regulations. A roll-off for debris such as wire, metal, scrap/metal will be staged on-Site (see above comment) to address this potential waste stream

The excavation or disturbances will be temporarily covered with a tarp if odors are present until the end-point sample results have been received (as further described here) or backfilled with on-Site material for any nuisance condition or safety reasons. Backfill material which is sourced on Site shall be placed cautiously into the excavations to avoid generation of dust. Monitoring for dust and odors/emissions shall be performed per the CAMP. Excavation will proceed cautiously due to the possibility of previously unknown sources such as underground storage tanks that could be encountered. If such sources are encountered, they will be cautiously removed as further described below. Readings on the air monitors that are set up in the excavation Work Areas will be constantly assessed so that the appropriate pace of work can be determined. Following OSHA excavation safety requirements, the excavations will be secured using orange snow fencing (at completion or at the end of each work day). If the excavation remains open prior to receiving backfill, it will be covered with 6 mil polyethylene sheeting as required based on Work Area monitoring to control dust and vapor that could emanate from the open excavation. The excavation may be kept open and secured, as described above, until end-point sample data is received.

- The excavation will ultimately be backfilled with approved material, as required and approved by the NYSDEC and the Village. Unless for safety reasons, the excavations will be secured in this manner until laboratory end-point soil samples are obtained.

- All loading and transportation activities will be conducted in accordance with all applicable Federal, State, and Local regulations, including but not limited to United States Department of Transportation (USDOT) and United States Environmental Protection Agency (USEPA) Regulations 40 CFR 172-179.

- The NYSDEC and the Village will be notified in writing when loading of contaminated soil/fill will occur and include the name and location of the disposal facility to be used.

- Loading and transport of contaminated soil and debris will not occur until receipt of approval from the disposal facility in which the contaminated soil and debris will be disposed.

- All loading activities will be conducted in a manner to minimize the formation of dust. Contaminated soil and debris transport containers will be covered to prevent release of dust and particulates and exposure of the contaminated soil and debris to precipitation.

- Confirmation sampling of the sidewalls per DER-10 Section 5.4(b) 5 will be used to determine that the excavation is complete. Any confirmation sampling results that demonstrate contaminated material is present (i.e., grossly contaminated soil) will require further excavation and sampling to a maximum depth of 15 feet below ground surface. In contaminated excavation areas, end-point samples will be collected for laboratory analysis and compared to the Commercial Soil Cleanup Objectives (CSCOs). Samples will be collected in areas biased towards visible contamination, odor and/or high VOC concentrations. If there are significant end-point exceedances of the CSCOs, the sidewall samples will be compared to existing data points from that area and applicable property boundary data to determine if further excavation is required. For example, the type of contaminant and whether it is volatile or not will be considered, and the location of the excavation in relation to other Site conditions and data will be considered. Observations made during excavations will also be considered to determine if the excavation is completed, or if further excavation is needed (e.g., debris or stained soil visible on sidewall).

- The documented contaminated excavation areas for the foundation will have end-point soil samples collected that will be analyzed for:
    - o VOCs via EPA Method 8260
    - o SVOCs via EPA Method 8270
    - o TAL Metals
    - o PCBs
    - o Pesticides
- As required by the EWP, dust and odor suppression (water and polyethylene sheeting) will be available during all excavation work and documented.
- A truck cleaning and inspection station will be operated on-Site. The truck cleaning station will be used for all vehicles leaving the Site. Trucks will be brushed and/or scrubbed clean as required when exiting the Site and the Site truck exit areas will be inspected periodically. To the extent that any dirt has exited the Site, the exit ramp and street will be cleaned. If necessary, in order to prevent soil from collecting on truck tires and parts during loading, a polyethylene tarp will be constructed by attaching plastic to a large 2 x 8-inch board equivalent to the length of the triaxle bed that will be draped over the side of the dump trailer bed during loading. The tarp will protect the loading side of the truck from soil accumulation and dust during loading. All trucks transporting waste from the Site will adhere to the following load covering:
    - o Solid vinyl or equivalent tops;
    - o Trucks will be required to have gasketed or tightly fitting tail gates;
- Trucks transporting clean material on-Site (from off-Site sources or from on-Site borrow areas) will not be the same trucks removing contaminated material from the Site. The proposed truck cleaning and inspection station details for the project are included at the end of this document in **Appendix 2**.
- Egress points for truck and equipment transport from the Site will also be kept clean of dirt and other materials during Site remediation and development. Locations where vehicles enter or exit the Site will be inspected daily to ensure there is no off-Site soil tracking. Soil that has been tracked off-Site will be swept or cleaned as appropriate. The qualified environmental professional will be responsible for ensuring that all egress points for truck and equipment transport from the Site are clean of dirt and other materials derived from the Site during intrusive excavation activities. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to Site-derived materials.

- Loaded transport vehicle tires and undercarriages will be inspected and cleaned to remove any adhering contaminated soil and debris prior to vehicle departure from the Site. Loaded vehicles leaving the Site will be appropriately tarped, securely covered, manifested (if needed), secured, and placarded in accordance with appropriate Federal, State, Local, and NYSDOT requirements (and all other applicable transportation requirements). Trucks used for transportation of contaminated soil and debris will travel on authorized roads in accordance with all Federal, State and Local regulations. Queuing of trucks will be performed on-Site in order to minimize off-Site disturbances around the Site entrance. Off-Site queuing will be prohibited.

- Planned truck transport routes are defined as follows:

  - Trucks coming from Interstate 95 will approach the Site from the west on Fenimore Road (northbound, Exit 18A). Trucks will then turn south (right) onto Waverly Avenue and enter the Site at a driveway along the western side of the property. Exiting trucks will travel north on Waverly Avenue, turn left (north) onto Mamaroneck Avenue and proceed to the Interstate 95 southbound entrance ramp ((see **Figure 2**). All trucks loaded with Site materials will enter and exit the vicinity of the Site using only these approved truck routes. This is the most appropriate route and takes into account: (a) limiting transport through residential areas and past sensitive Sites; (b) use of city mapped truck routes; (c) prohibiting off-Site queuing of trucks entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport. Trucks will be prohibited from stopping and idling in the neighborhood outside the Site. The planned truck route for the proposed excavation is included on **Figure 2.**

- All manifests will be signed by the on-Site contractor soil disposal representative on behalf of the Site owner and they will retain all disposal and waste characterization documentation, which shall be provided to HES and the Village.

Soil Disposal Off-Site

All soil/fill/solid waste excavated and removed from the Site will be treated as contaminated and regulated material and will be transported and disposed of in accordance with all Local, State (including 6 NYCRR Part 360) and Federal regulations. If disposal of soil/fill from this Site is proposed for unregulated off-Site disposal (i.e. clean soil removed for development purposes), a formal request with an associated plan will be made to the NYSDEC. However, this is not anticipated at this time. Unregulated off-Site management of materials from this Site will not occur without formal NYSDEC approval.

Off-Site disposal locations for excavated soils will be identified in the pre-excavation notification. This will include estimated quantities and a breakdown by class of disposal facility if appropriate, i.e. hazardous waste disposal facility, solid waste landfill, petroleum treatment facility, C&D recycling facility, etc. Waste classification soil sampling will need to be completed for the excavation area.

Actual disposal quantities and associated documentation will be reported to the NYSDEC and the Village in the applicable report. This documentation will include: waste profiles, test results, facility acceptance letters, manifests, bills of lading and facility receipts. Non-hazardous historic fill and contaminated soils taken off-Site will be handled, at minimum, as a Municipal Solid Waste per 6 NYCRR Part 360-1.2.

Contingency Plan

If underground storage tanks (USTs), drums, free product, or other previously unidentified contaminant sources are found during excavation, excavation activities will be suspended and the NYSDEC will immediately be notified. The excavation will be re-covered if necessary, based on "at hole" air monitoring data. If necessary, the area will be secured and covered until an agency-approved plan is in place to delineate, characterize, and remedy any new source area finding. Any drums and/or USTs or other source material encountered will be evaluated and a removal plan will be submitted for NYSDEC approval. Appropriately trained personnel will excavate and handle all source area materials in accordance with all applicable Federal, State, and Local regulations. Removed drums and tanks will be properly characterized and disposed of off-Site. The soil/fill surrounding the buried drums or underground storage tanks will be considered as potentially contaminated and will be direct-loaded for off-Site disposal (or, temporarily stockpiled and characterized, as needed).

Sampling will be performed on product, sediment and surrounding soils, etc. as necessary to determine the nature of the material and proper disposal method. Chemical analysis will be performed for a full list of analytes (TAL metals; TCL volatiles and semi-volatiles, TCL pesticides and PCBs), unless the Site history and previous sampling results provide a sufficient justification to limit the list of analytes. In this case, a reduced list of analytes will be proposed to the NYSDEC for approval prior to sampling.

Identification of unknown or unexpected contaminated media by screening during invasive Site work will be promptly communicated by phone to the NYSDEC and Village representatives. Reportable quantities of petroleum product will also be reported to the NYSDEC Spills Hotline

Community Air Monitoring Plan

The number of CAMP monitoring stations in documented contaminated areas operating will be three (3). Considering the Work Area as defined above, there will be: two (2) stations in downwind locations and one (1) station in the upwind location of the Work Area. HES will monitor wind directions throughout the work day, and the CAMP stations will be re-positioned as necessary. It is noted that the locations and operations of the CAMP system are subject to modification by the NYSDEC / NYSDOH and the Village, based on observations during work at the excavation and air results warranting such modification. As stated above, special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures.

Monitoring for VOCs will be performed at each of the CAMP station locations with a PID. Upwind concentrations will be measured at the start of each workday and periodically thereafter to establish background concentrations.

Additionally, a PID and 4-gas meter will be used within the Work Area immediately adjacent to the excavation perimeter edge to monitor for VOCs and gas concentrations at the excavation during soil removal activities. A PID will also be used to scan the soils at the end-point sampling locations.

For the CAMP stations, if the ambient air concentration of total organic vapors (PID) at the downwind perimeter of the work area exceeds 5 parts per million (ppm) above background for a 15-minute average, work activities will be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities will resume with continued monitoring. If total organic vapor levels at the downwind perimeter of the Work Area persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities will be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps bring the vapor levels below 5 ppm over background for the 15-minute average, work activities will resume provided that the total organic vapor level 200 feet downwind of the work area or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less, remains below 5 ppm over background for the 15-minute average. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities will be shutdown and the area backfilled or otherwise covered with foam and polyethylene sheeting.

Particulate concentrations will be monitored at each of the CAMP station locations. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques will be employed. Work will continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m3 above the upwind level and provided that no visible dust is migrating from the work area. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m3 above the upwind level, work will be stopped and re-evaluation of activities will be initiated. Work will resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m3 of the upwind level and in preventing visible dust migration.

If the proposed work area is within 20-feet or less of the property boundary then a reduction of CAMP monitoring levels is required. Any work occurring within 20-feet of the property perimeter will require the action level for VOCs to be lowered from exceeding 5 ppm above background during a 15-minute average to 5 ppm above background level during a 5-minute average. Additionally, the action level for particulate concentrations at the downwind PM-10 particulate level will be lowered from 100 mcg/m3 greater than background over a 15-minute period to a 5-minute period.

Odor Control Plan

Based on the primary constituents of concern, metals, VOCs and SVOCs, as well as the field experience that odors were observed on-Site during past utility excavation along Waverly Avenue, odors may be anticipated to be a possible issue or concern.

This odor control plan is capable of controlling the migration of nuisance odors off-Site. If nuisance odors are identified at the Site boundary work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC and NYSDOH will be notified of all odor events. The agencies will be notified of any other complaints from the community such as dust or noise that arise directly from the project activities. Implementation of all odor controls, including the halt of work, is the responsibility of the property owner's remediation environmental consultant.

All necessary means will be employed to prevent on- and off-Site nuisance odors. These measures may include: (a) limiting the area of open excavations and size of soil stockpiles; (b) shrouding open excavations with tarps and other cover systems; (c) direct load-out of soils to trucks for off-Site disposal; (d) use of staff to monitor wind conditions and odors at the immediate excavation area, property line and, if necessary, beyond property lines.

Clean Fill Imported to the Site for Backfill

As stated above, all materials proposed for import onto the Site will be approved by the qualified environmental professional and will be in compliance with provisions in this EWP prior to receipt at the Site. Information on potential / proposed clean fill materials (source, soil / stone type, laboratory analytical data) will be submitted to NYSDEC and the Village, which requires, at a minimum, sampling of the material and disclosure of the source.

Material from industrial sites, spill sites, or other environmental remediation sites or potentially contaminated sites will not be imported to the Site.

All imported soils will meet the backfill and cover soil quality standards established in 6 NYCRR 375-6.7(d). Soils that meet "exempt" fill requirements under 6 NYCRR Part 360, but do not meet backfill or cover soil objectives for this Site, will not be imported onto the Site without prior approval by NYSDEC. Solid waste will not be imported onto the Site.

Trucks entering the Site with imported soils will be securely covered with tight fitting covers. Imported soils will be used immediately for backfill or stockpiled separately from excavated materials and covered to prevent dust releases.

Off-Site borrow soils will be documented as having originated from locations having no evidence of disposal or release of hazardous, toxic or radioactive substances, wastes or petroleum products. Off-Site borrow soils intended for use as Site backfill cannot otherwise be defined as a solid waste in accordance with 6 NYCRR Part 360-1.2(a).

If the contractor designates a source as "virgin" soil, it shall be further documented in writing to be native soil material from areas not having supported any known prior industrial or commercial development or agricultural use. Virgin soils should be subject to collection of one representative composite sample per source. The sample should be analyzed for TCL VOCs, SVOCs, pesticides, PCBs, and TAL metals. The soil will be acceptable for use as backfill provided that all parameters meet the Allowable Constituent Levels for Imported Fill or Soil, provided as Appendix 5 of DER-10 (May 2010) **Health and Safety Procedures for Intrusive Activities**.

Contractors engaged in subsurface excavation activities will be required to implement appropriate health and safety procedures. These procedures will involve, at a minimum, donning adequate personal protective equipment, performing appropriate air monitoring, and implementing other engineering controls, as necessary, to mitigate potential ingestion, inhalation and contact with residual constituents in the soils. A Site-specific, activity-specific Health and Safety Plan (HASP) will be prepared for the Site by the Construction Contractor (Contactor). All required on-Site construction and technical personnel who are required to be OSHA 40-hour HAZWOPER training and 10-hour OSHA Construction training will maintain up to date training. An OSHA Competent Person in accordance with 29CFR-1926 will be on-Site and responsible for excavation safety.

If you have any questions regarding the Scope of Work for the Proposed Foundation Excavation, please contact me at (914) 276-2560. We look forward to continuing to work with you on this project.

Very truly yours,
HydroEnvironmental Solutions, Inc.

Steven M. Verdibello

Steven Verdibello, PG
Project Manager

William A. Canavan

William A. Canavan, PG, LSRP
President

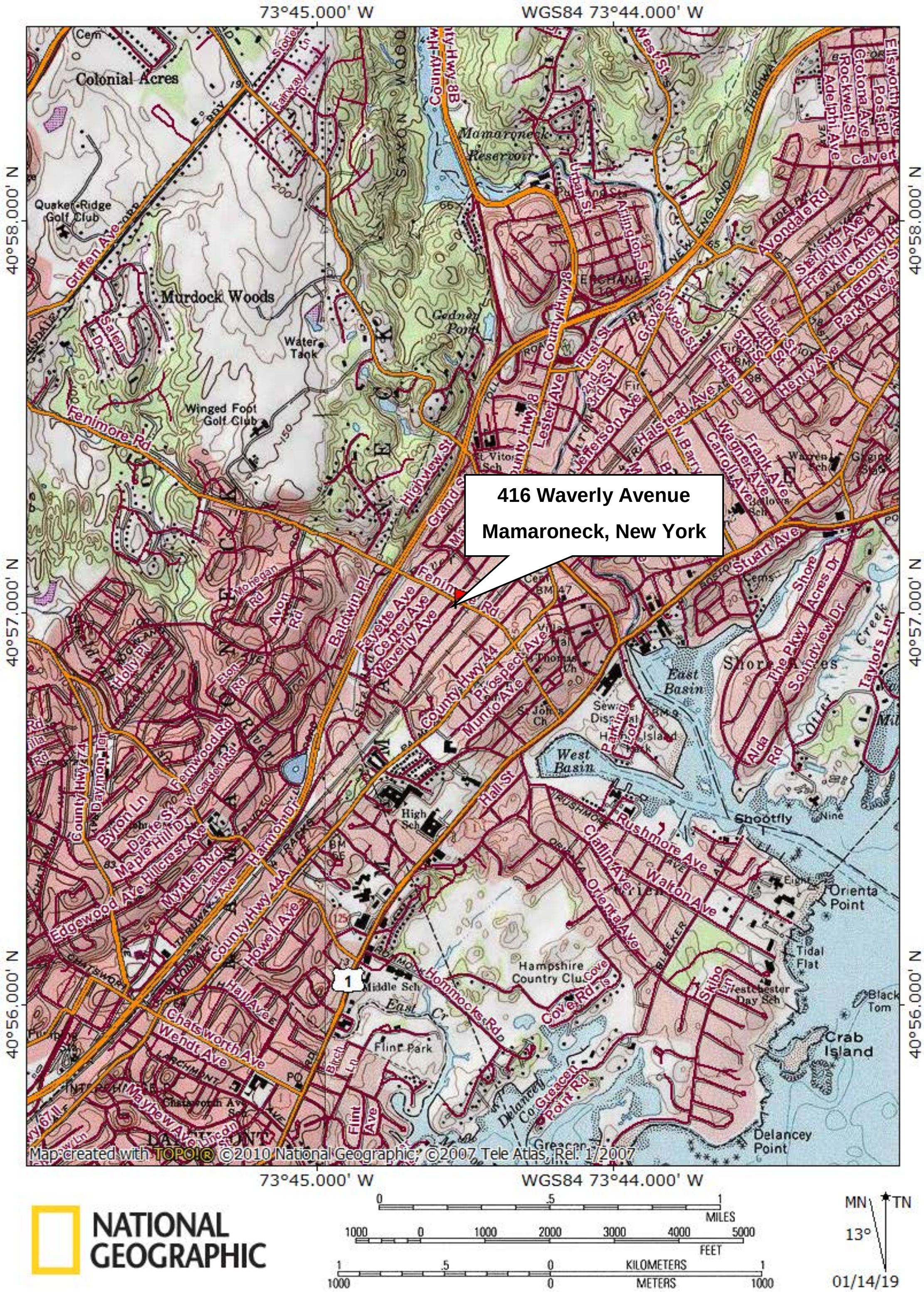
Enclosures

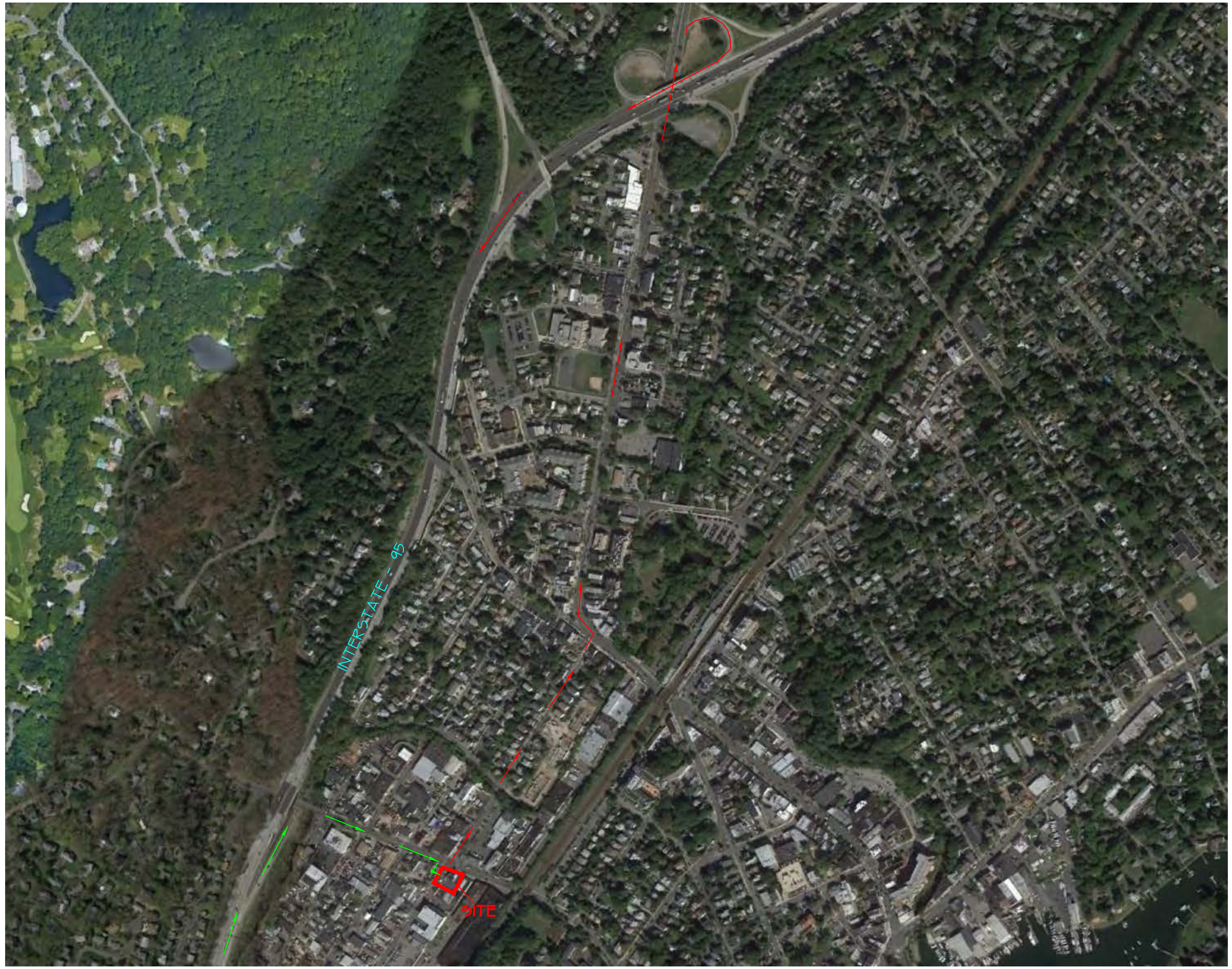
cc: Kristen Motel, Esq. – Cuddy & Feder
Village of Mamaroneck Building Inspector
File

FIGURES

FIGURE 1

Site Location Map





LEGEND

ROUTE TO SITE

ROUTE FROM SITE

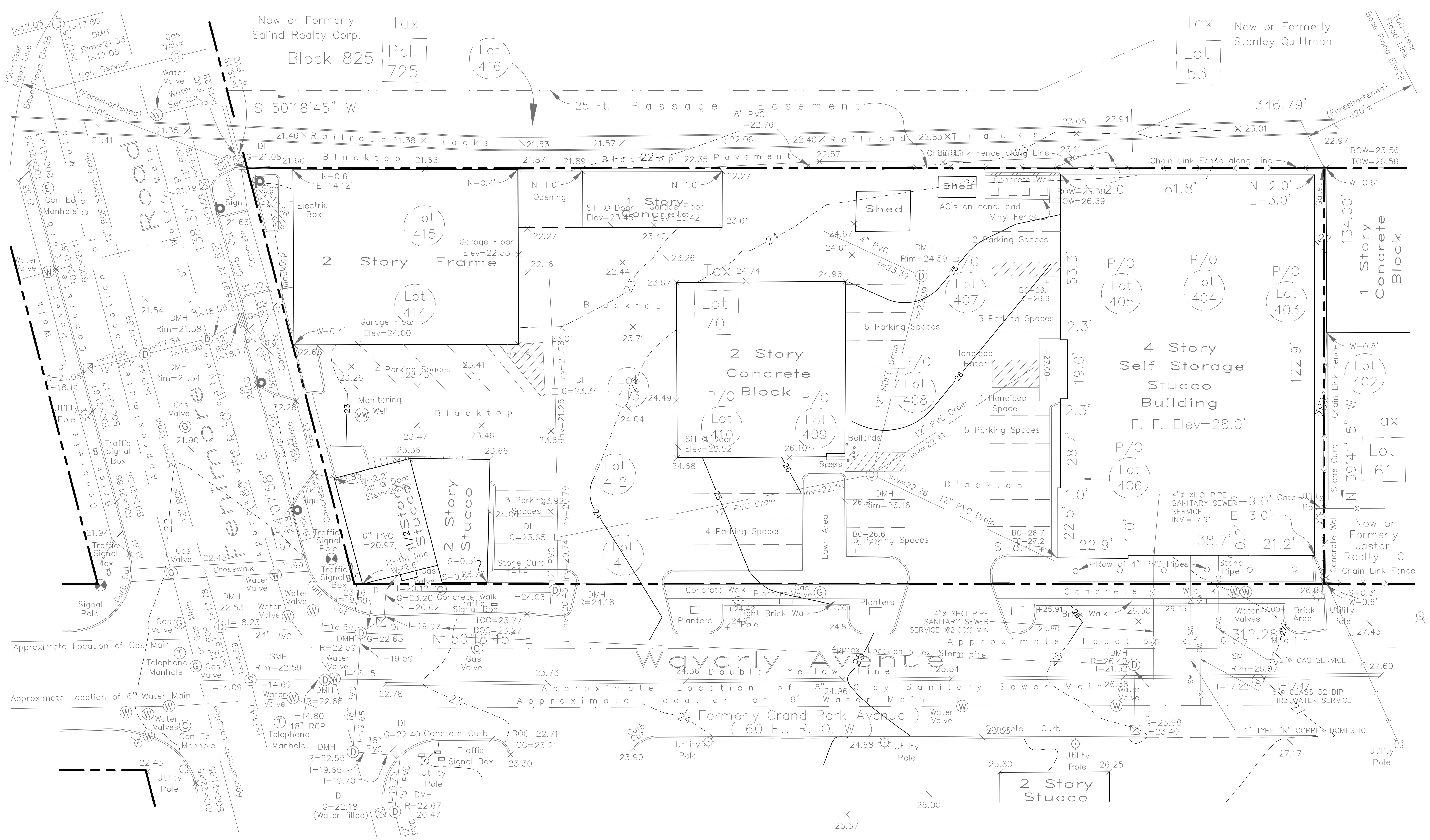
FIGURE 2

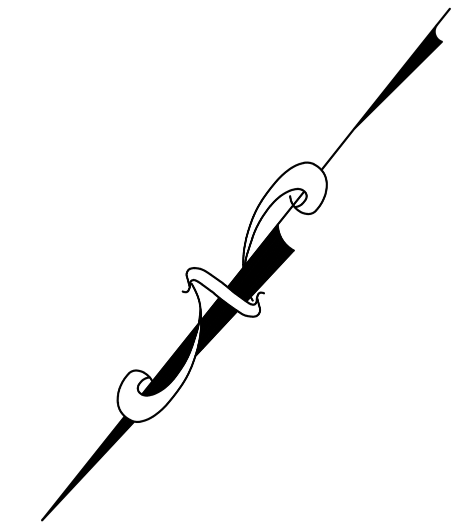
416 WAVERLY AVENUE MAMARONECK, NEW YORK	GENERALIZED SITE PLAN	NOT TO SCALE	JANUARY 2019	HydroEnvironmental SOLUTIONS, INC. One Deans Bridge Road Somers, New York 10589
		TRUCK TRANSPORT ROUTE		

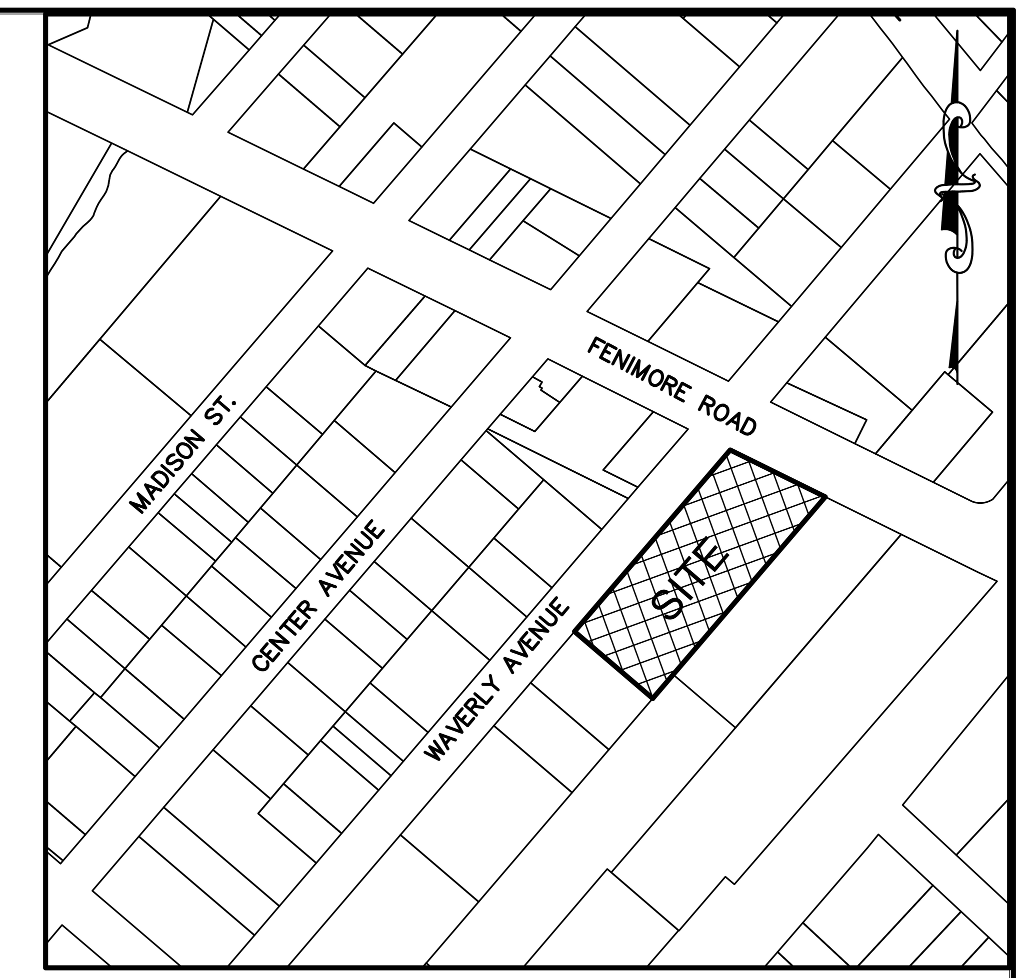
APPENDICES

APPENDIX 1

Construction Drawings and Foundation Detail







SITE LOCATION MAP
(SCALE: 1"=200')

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

ANY ALTERATIONS OR REVISIONS OF THESE PLANS, UNLESS DONE BY OR UNDER THE DIRECTION OF THE NYS LICENSED AND REGISTERED ENGINEER THAT PREPARED THEM, IS A VIOLATION OF THE NYS EDUCATION LAW.

No.	Description	Date
1.	REVISED PER TOWN COMMENTS	9-27-18

Revisions

THIS PLAN NOT VALID FOR CONSTRUCTION WITHOUT ENGINEERS SEAL & SIGNATURE

PROJECT:

SELF STORAGE BUILDING ADDITION
560 FENIMORE ROAD
VILLAGE OF MAMARONECK
WESTCHESTER COUNTY – NEW YORK

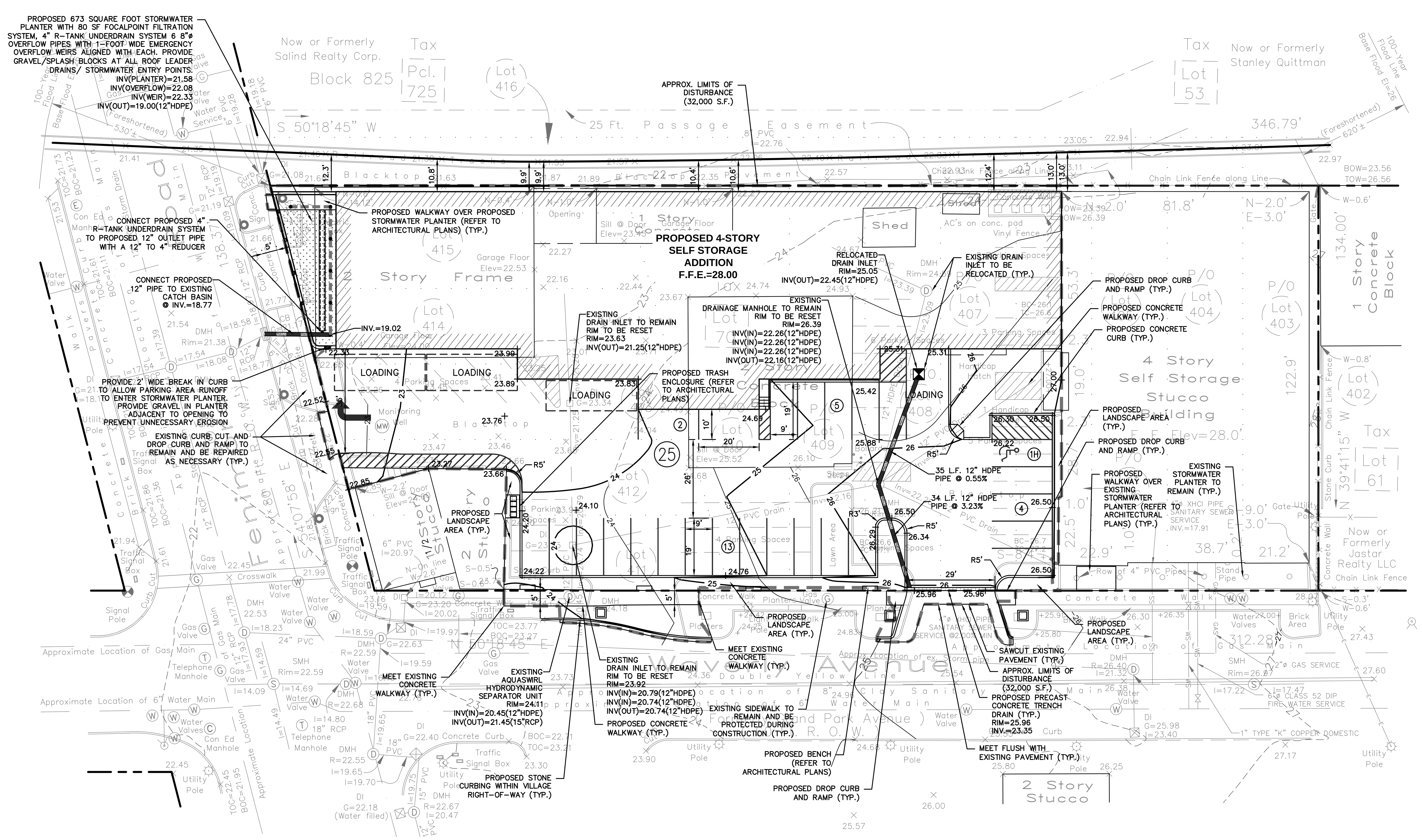
EXISTING CONDITIONS MAP

HEC

HUDSON ENGINEERING & CONSULTING, P.C.
45 Knollwood Road – Suite 201
Elmsford, New York 10523
T: 914-909-0420
F: 914-560-2086

STATE OF NEW YORK · MICHAEL F. STEIN · No. 80637 · LICENSED PROFESSIONAL ENGINEER

Date: 2/8/18
Scale: 1" = 20'
Designed By: D.C.
Checked By: M.S.
Sheet: 1 / 7
Sheet No.
C-1



GENERAL NOTES:

1. THE ENGINEER SHALL NOT BE RESPONSIBLE FOR THE SUPERVISION OF THE CONSTRUCTION.
2. NO CHANGES SHALL BE MADE TO THESE PLANS EXCEPT AS PER NYS LAW CHAPTER 987.
3. ALL WORK AND MATERIALS SHALL COMPLY WITH ALL APPLICABLE CODES, INCLUDING BUT NOT LIMITED TO ACI, AISC, ZONING, AND THE NEW YORK STATE BUILDING CODE.
4. ALL CONDITIONS, LOCATIONS AND DIMENSIONS SHALL BE FIELD VERIFIED AND THE ENGINEER SHALL BE IMMEDIATELY NOTIFIED OF ANY DISCREPANCIES.
5. ALL CHANGES MADE TO THE PLANS SHALL BE APPROVED BY THE ENGINEER AND ANY SUCH CHANGES SHALL BE FILED AS AMENDMENTS TO THE ORIGINAL BUILDING PERMIT.
6. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK USING HIS BEST SKILL AND ATTENTION. HE SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.
7. THE CONTRACTOR SHALL BE RESPONSIBLE TO THE OWNER FOR THE ACTS AND OMISSIONS OF HIS EMPLOYEES, SUBCONTRACTORS AND THEIR AGENTS AND EMPLOYEES, AND OTHER PERSONS PERFORMING ANY OF THE WORK UNDER A CONTACT WITH THE CONTRACTOR.
8. SAFETY DURING CONSTRUCTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL CONFORM TO ALL LOCAL, STATE AND FEDERAL AGENCIES IN EFFECT DURING THE PERIOD OF CONSTRUCTION.
9. THE CONTRACTOR AND HIS SUBCONTRACTORS SHALL MAKE APPLICATION TO RECEIVE ALL NECESSARY PERMITS TO PERFORM THE WORK UNDER CONTRACT. THE CONTRACTOR AND HIS SUBCONTRACTORS SHALL BE LICENSED TO DO ALL WORK AS REQUIRED BY THE LOCAL, COUNTY, AND STATE AGENCIES WHICH MAY HAVE JURISDICTION OVER THOSE TRADES, AND SHALL PRESENT THE OWNER WITH COPIES OF ALL LICENSES AND INSURANCE CERTIFICATES.
10. FINAL GRADING AROUND THE BUILDING AREA SHALL SLOPE AWAY FROM THE STRUCTURE.
11. ALL WRITTEN DIMENSIONS ON THE DRAWINGS SHALL TAKE PRECEDENCE OVER ANY SCALED DIMENSIONS.
12. ADJOINING PUBLIC AND PRIVATE PROPERTY SHALL BE PROTECTED FROM DAMAGE DURING CONSTRUCTION, REMODELING AND DEMOLITION WORK. PROTECTION MUST BE PROVIDED FOR FOOTINGS, FOUNDATIONS, PARTY WALLS, CHIMNEYS, SKYLIGHTS AND ROOFS. PROVISIONS SHALL BE MADE TO CONTROL WATER RUNOFF AND EROSION DURING CONSTRUCTION OR DEMOLITION ACTIVITIES. THE PERSON MAKING OR CAUSING AN EXCAVATION TO BE MADE SHALL PROVIDE WRITTEN NOTICE TO THE OWNERS OF ADJOINING BUILDINGS ADVISING THEM THAT THE EXCAVATION IS TO BE MADE AND THAT THE ADJOINING BUILDING SHOULD BE PROTECTED. SAID NOTIFICATION SHALL BE DELIVERED NOT LESS THAN 10 DAYS PRIOR TO THE SCHEDULED STARTING DATE OF THE EXCAVATION.
13. OWNER SHALL INSURE THAT THE INSURANCE PROVIDED BY THE CONTRACTOR HIRED TO PERFORM THE WORK SHALL BE ENDORSED TO NAME HUDSON ENGINEERING & CONSULTING, P.C., AND ANY DIRECTORS, OFFICERS, EMPLOYEES, SUBSIDIARIES, AND AFFILIATES, AS ADDITIONAL INSURED ON ALL POLICIES AND HOLD HARMLESS DOCUMENTS, AND SHALL STIPULATE THAT THIS INSURANCE IS PRIMARY, AND THAT ANY OTHER INSURANCE OR SELF-INSURANCE MAINTAINED BY HUDSON ENGINEERING & CONSULTING, P.C., SHALL BE EXCESS ONLY AND SHALL NOT BE CALLED UPON TO CONTRIBUTE WITH THIS INSURANCE. ISO ADDITIONAL INSURED ENDORSEMENT FORM NUMBER CG2010 1185 UNDER GL. COPIES OF THE INSURANCE POLICIES SHALL BE SUBMITTED TO AND HUDSON ENGINEERING & CONSULTING, P.C., FOR APPROVAL PRIOR TO THE SIGNING OF THE CONTRACT.
14. INDUSTRIAL CODE RULE 753: THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES 72 HOURS PRIOR TO THE START OF HIS OPERATIONS AND SHALL COMPLY WITH ALL THE LATEST INDUSTRIAL CODE RULE 753 REGULATIONS.

LEGEND

PROPERTY LINE
PROPOSED CONCRETE CURB
PROPOSED BITUMINOUS CONCRETE PAVEMENT
PROPOSED WALKWAY
PROPOSED CONTOUR — 26 —
PROPOSED SPOT GRADE +26.25
PROPOSED STORM PIPE
PROPOSED DRAIN INLET
PROPOSED TRENCH DRAIN
PROPOSED LIMIT OF DISTURBANCE

NOTES:
1. ANY IMPORTED SOIL SHALL COMPLY WITH ALL FEDERAL, STATE, AND LOCAL REQUIREMENTS FOR QUALITY AND USE.
2. OFF-SITE DISPOSAL OF EXCESS CUT SHALL BE IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REQUIREMENTS.
3. UTILITIES TO ALL EXISTING BUILDINGS TO BE DEMOLISHED SHALL BE REMOVED, CUT AND CAPPED AT THE MAIN PER VILLAGE OF MAMARONECK STANDARDS.

Cut/Fill Summary

	Cut	Fill	Net
Totals	69.31 Cu. Yd.	127.91 Cu. Yd.	58.59 Cu. Yd.<Fill>

No.	Description	Date
1.	REVISED PER TOWN COMMENTS	9-27-18

Revisions

THIS PLAN NOT VALID FOR CONSTRUCTION WITHOUT ENGINEERS SEAL & SIGNATURE

PROJECT:
SELF STORAGE BUILDING ADDITION
560 FENIMORE ROAD
VILLAGE OF MAMARONECK
WESTCHESTER COUNTY – NEW YORK

STORMWATER MANAGEMENT PLAN

HEC HUDSON ENGINEERING & CONSULTING, P.C.
45 Knollwood Road – Suite 201
Elmsford, New York 10523
T: 914-909-0420
F: 914-560-2086
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STATE OF NEW YORK · MICHAEL F. STEIN · No. 80637 · LICENSED PROFESSIONAL ENGINEER

Date:	2/8/18	Sheet:
Scale:	1" = 20'	2
Designed By:	D.C.	7
Checked By:	M.S.	
Sheet No.	C-2	

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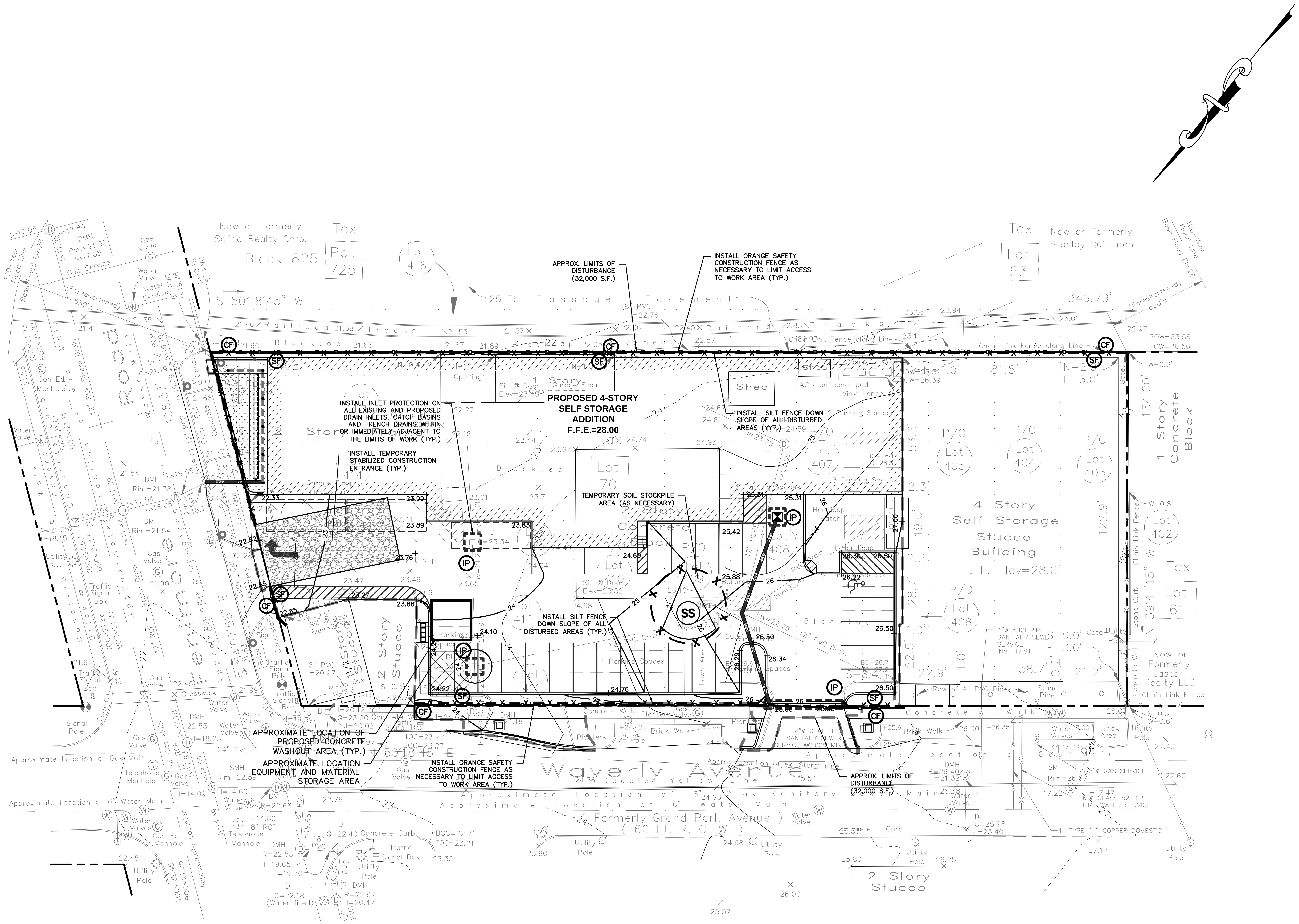


INSTALLATION & MAINTENANCE OF EROSION CONTROL:

CONSTRUCTION SCHEDULE
NOTIFY APPROPRIATE MUNICIPAL AGENCY HAVING JURISDICTION AT LEAST 5 DAYS PRIOR TO START.

EROSION CONTROL MEASURES
INSTALL ALL EROSION CONTROL MEASURES PRIOR TO START OF CONSTRUCTION. CALL FOR INSPECTION FROM THE APPROPRIATE MUNICIPAL AGENCY HAVING JURISDICTION AT LEAST 2 DAYS PRIOR TO INSTALLATION.

INSPECTION BY MUNICIPALITY
MAINTENANCE (TO BE PERFORMED DURING ALL PHASES OF CONSTRUCTION)

AFTER ANY RAIN CAUSING RUNOFF, CONTRACTOR TO INSPECT HAYBALES, ETC. AND REMOVE ANY EXCESSIVE SEDIMENT AND INSPECT STOCKPILES AND CORRECT ANY PROBLEMS WITH SEED ESTABLISHMENT.
INSPECTIONS SHALL BE DOCUMENTED IN WRITING AND SUBMITTED TO THE APPROPRIATE MUNICIPAL AGENCY HAVING JURISDICTION.

INSPECTION BY MUNICIPALITY – FINAL GRADING
REMOVE UNNEEDED SUBGRADE FROM SITE.
CALL FOR INSPECTION FROM THE APPROPRIATE MUNICIPAL AGENCY HAVING JURISDICTION AT LEAST 2 DAYS PRIOR TO FINISH.

INSPECTION BY MUNICIPALITY – LANDSCAPING

SPREAD TOPSOIL EVENLY OVER AREAS TO BE SEEDED. HAND RAKE LEVEL. BROADCAST 1.25 LB. BAG OF JONATHAN GREEN "FASTGROW" MIX OR EQUAL OVER AREA TO BE SEEDED. APPLY STRAW MULCH AND WATER WITHIN 2 DAYS OF COMPLETION OF TOPSOILING. CALL FOR INSPECTION FROM THE APPROPRIATE MUNICIPAL AGENCY HAVING JURISDICTION AT LEAST 2 DAYS PRIOR TO FINISH.

INSPECTION BY MUNICIPALITY – FINAL LANDSCAPING

GRASS ESTABLISHED.
CALL FOR INSPECTION FROM THE APPROPRIATE MUNICIPAL AGENCY HAVING JURISDICTION AT LEAST 2 DAYS PRIOR TO FINISH.

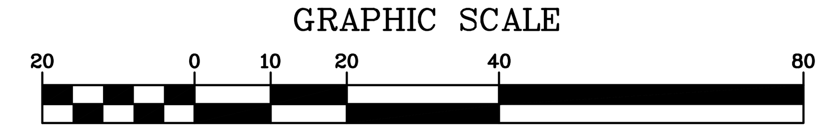
INSPECTION BY MUNICIPALITY – FINAL INSPECTION

ALL EROSION CONTROL MEASURES REMOVED AND GRASS ESTABLISHED.
CALL FOR INSPECTION FROM THE APPROPRIATE MUNICIPAL AGENCY HAVING JURISDICTION AT LEAST 2 DAYS PRIOR TO FINISH.

LEGEND

- TEMPORARY INLET PROTECTION (IP)
- TEMPORARY SILT FENCE —X—X— (SF)
- TEMPORARY CONSTRUCTION FENCE (CF)
- TEMPORARY SOIL STOCKPILE AREA (SS)
- STABILIZED CONSTRUCTION ENTRANCE
- PROPOSED LIMIT OF DISTURBANCE

GRAPHIC SCALE



(IN FEET)
1 inch = 20 ft.

No.	Description	Date
1.	REVISED PER TOWN COMMENTS	9-27-18

Revisions

THIS PLAN NOT VALID FOR CONSTRUCTION WITHOUT ENGINEERS SEAL & SIGNATURE

PROJECT:

SELF STORAGE BUILDING ADDITION
560 FENIMORE ROAD
VILLAGE OF MAMARONECK
WESTCHESTER COUNTY – NEW YORK

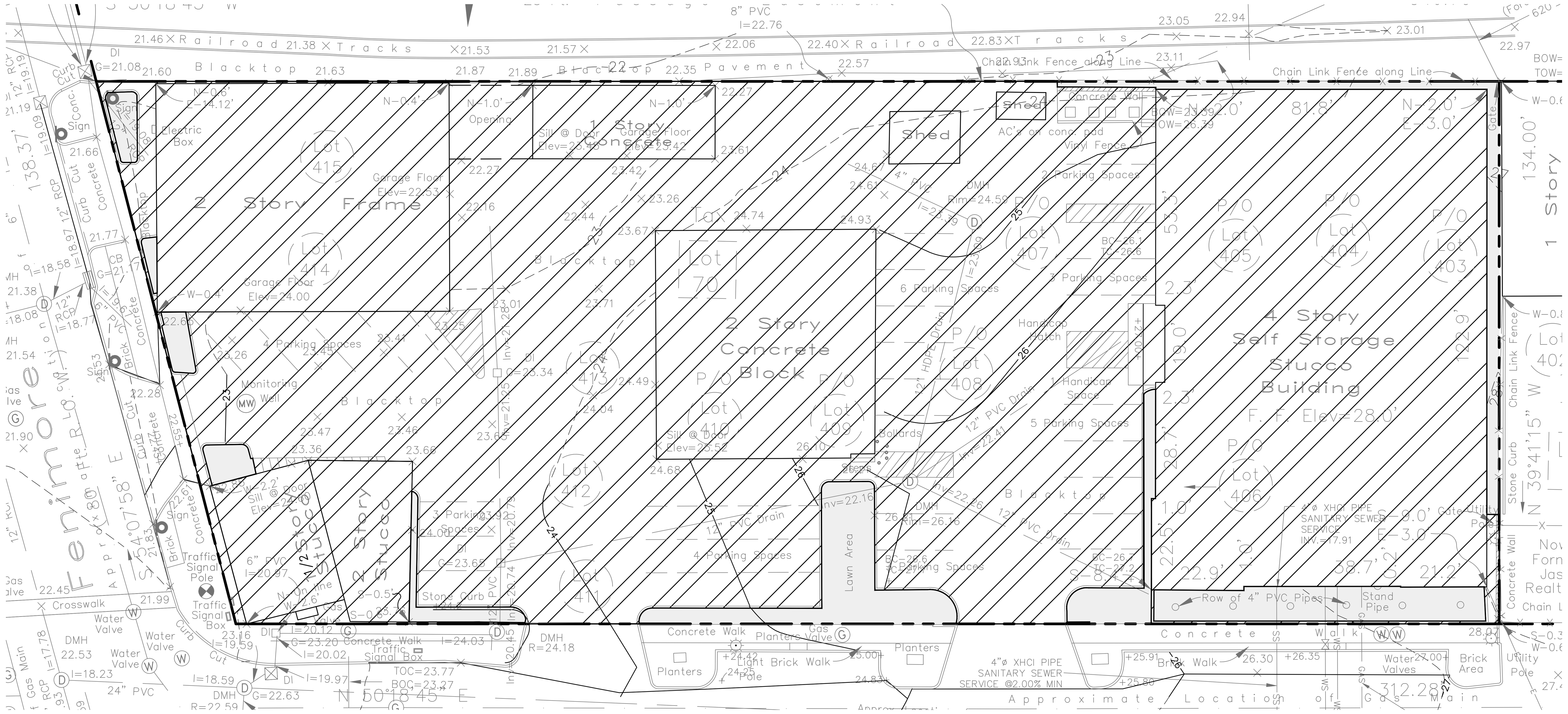
EROSION & SEDIMENT CONTROL PLAN

HEC

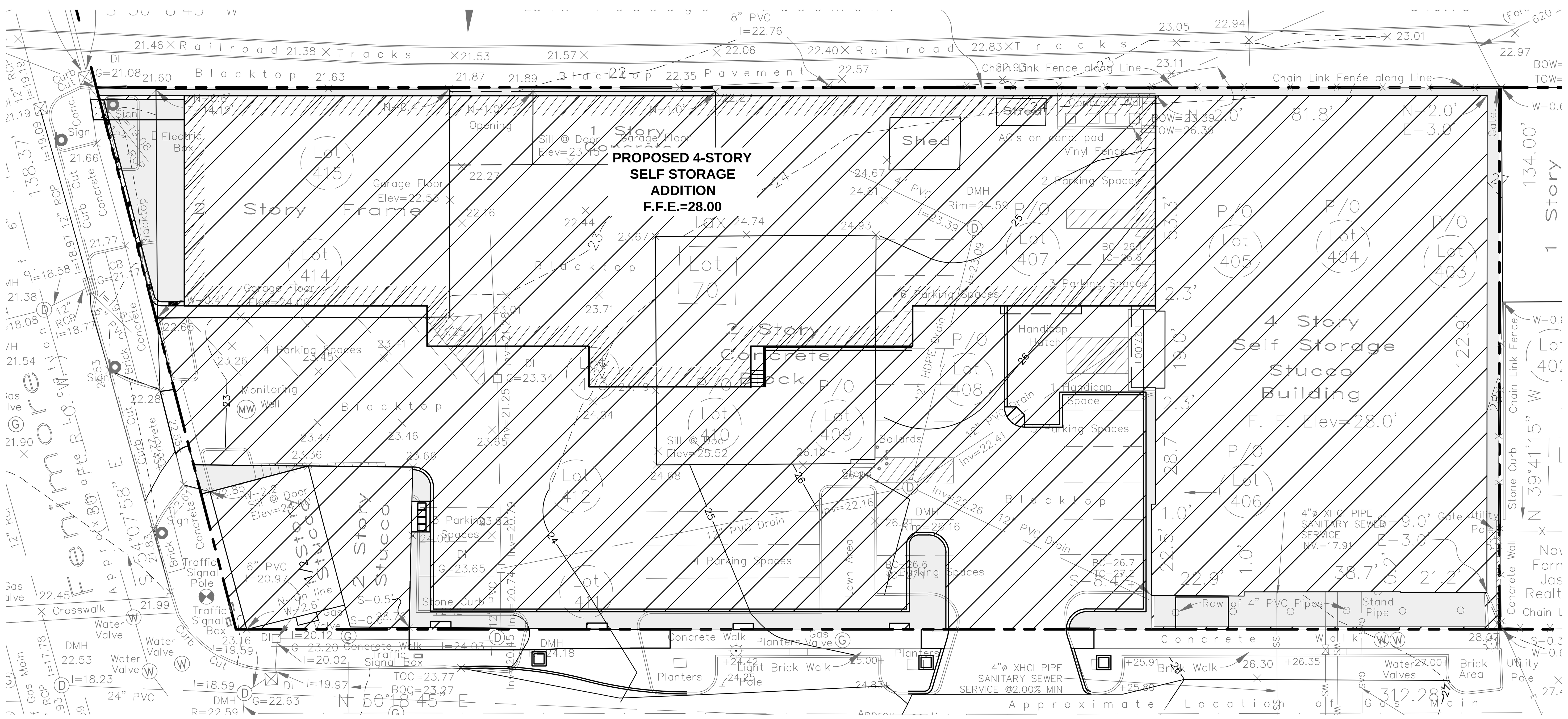
HUDSON ENGINEERING & CONSULTING, P.C.
45 Knollwood Road – Suite 201
Elmsford, New York 10523
T: 914-909-0420
F: 914-560-2086

STATE OF NEW YORK · MICHAEL F. STEIN · LICENSED PROFESSIONAL ENGINEER · No. 80637

Date: 2/8/18
Scale: 1" = 20'
Designed By: D.C.
Checked By: M.S.
Sheet: 3 / 7
Sheet No. C-3



EXISTING SITE COVERAGE
SCALE: 1"=20'



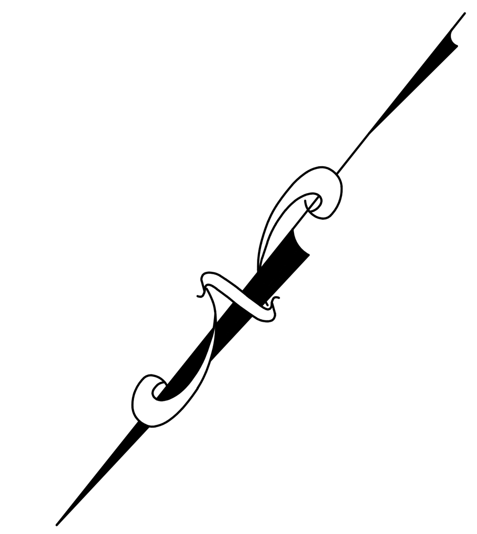
PROPOSED SITE COVERAGE
SCALE: 1"=20'

Existing Site Coverage

Impervious:	41,390 SF
Pervious:	2,766 SF

Proposed Site Coverage

Impervious:	40,675 SF
Pervious:	3,481 SF



LEGEND

IMPERVIOUS COVER

PERVIOUS COVER

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

No.	Description	Date
1.	REVISED PER TOWN COMMENTS	9-27-18

Revisions

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PROJECT:
SELF STORAGE BUILDING ADDITION
560 FENIMORE ROAD
VILLAGE OF MAMARONECK
WESTCHESTER COUNTY – NEW YORK

SITE COVERAGE PLAN

HEC
HUDSON
ENGINEERING
&
CONSULTING, P.C.
45 Knollwood Road – Suite 201
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T: 914-909-0420
F: 914-560-2086

STATE OF NEW YORK · MICHAEL F. STEIN · No. 80637 · LICENSED PROFESSIONAL ENGINEER

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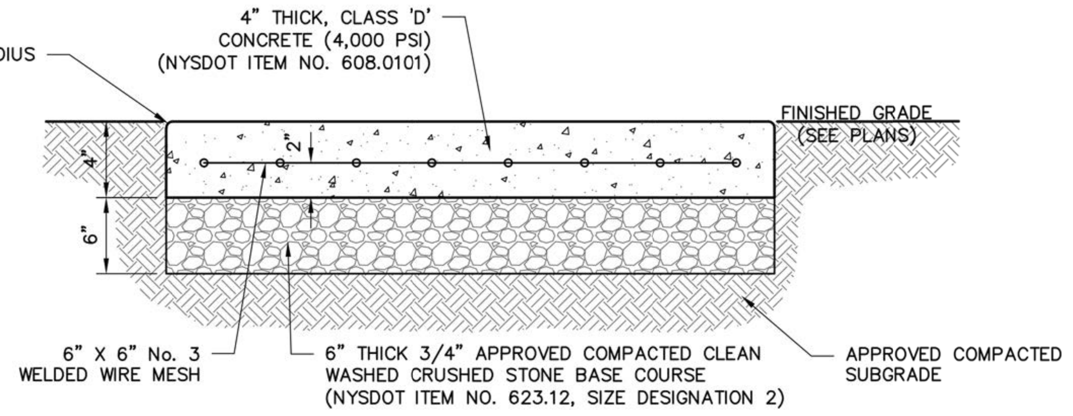
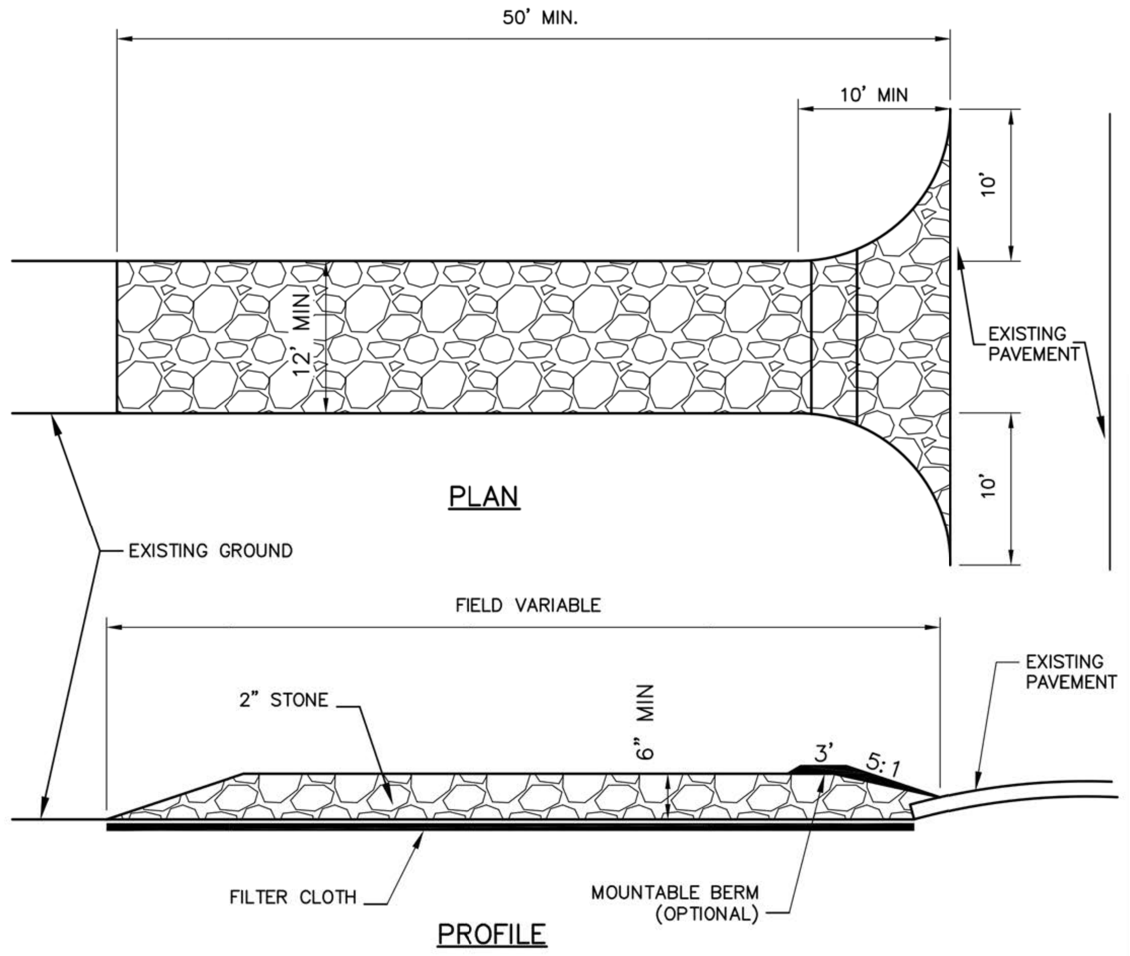


SECTION VIEW

NOTES:

1. WHEN SIDEWALK ABUTS A ROADWAY, CURB AND SIDEWALK SHALL BE MONOLITHICALLY CONSTRUCTED. REFER TO VILLAGE STANDARD MONOLITHIC CURB AND SIDEWALK CONSTRUCTION DETAIL.
2. UNLESS OTHERWISE NOTED, PORTLAND CEMENT CONCRETE SIDEWALKS SHALL MEET THE SPECIFICATIONS OUTLINED IN SECTION 608 AND SUBSECTION 700 OF THE NEW YORK STATE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS, DATED JANUARY 9, 2014 WITH LATEST REVISIONS.
3. THE GENERAL CONSTRUCTION DETAILS FOR MANUFACTURING AND TRANSPORTING CONCRETE SHALL MEET THE REQUIREMENTS OF SECTION 501, PORTLAND CEMENT CONCRETE– GENERAL.
4. WELDED WIRE FABRIC REINFORCEMENT SHALL BE MADE OF W2.9 OR W3 WIRE AT 6 INCH CENTERS TRANSVERSELY CONVENTIONALLY FORMED CONCRETE SHALL MEET THE REQUIREMENTS FOR CLASS D IN ACCORDANCE WITH SECTION 501 "PORTLAND CEMENT CONCRETE––GENERAL." ALL CONCRETE SHALL CONTAIN A WATER–REDUCING ADMIXTURE MEETING THE REQUIREMENTS OF §711–08 IN SUCH A QUANTITY AS TO PROVIDE A MINIMUM 10% REDUCTION OF THE DESIGN WATER CONTENT BY USING A NORMAL RANGEWATER–REDUCER. WWF SHALL BE MANUFACTURED IN SHEETS AND PLACED WITH IN CONCRETE BY CHAIRING.
5. REINFORCING SHALL NOT EXTEND THROUGH EXPANSION JOINTS.
6. INSTALL A PREMOULDED RESILIENT JOINT FILLER, §705–07, AT ALL JOINTS BETWEEN SIDEWALK AND CURB, PAVEMENT, BUILDING, ETC. THE PREMOULDED RESILIENT JOINT FILLER SHALL CONFORM TO THE REQUIREMENTS OF ASTM D1751.
7. THE EXPANSION JOINTS SHALL BE LOCATED AT ALL IMMOVABLE OBJECTS (BRIDGE SUBSTRUCTURES, ETC.), WHERE SHOWN ON THE PLANS, AND/OR AS DIRECTED BY THE ENGINEER. EXPANSION JOINTS SHALL NOT BE REQUIRED AT 20 FOOT INTERVALS.
8. PREMOULDED RESILIENT JOINT FILLER (§705–07). USE 3/8 – 5/8 INCH THICK FILLER IN TRANSVERSE EXPANSION JOINT ASSEMBLIES ONLY. INCLUDE A ONE–PIECEPREMOULDED RESILIENT JOINT FILLER IN THE ASSEMBLY THAT EXTENDS COMPLETELY ACROSS THE SLAB WIDTH. THE JOINT FILLER MUST EITHER EQUAL THE FULL DEPTH OF THE SLAB, OR EXTEND FROM THE BOTTOM OF THE SLAB TO WITHIN 1 1/2 – 2 INCHES OF THE TOP OF THE SLAB WITH A FINISHING CAP THAT EXTENDS TO THE TOP OF THE SLAB.
9. UNLESS OTHERWISE SPECIFIED IN THE CONTRACT DOCUMENTS, THE CONCRETE SURFACE SHALL BE SCORED AND TOOLED AT INTERVALS OF 5 FEET. SCORE THE CONCRETE A MINIMUM 1/8 INCH TO A MAXIMUM 1/4 INCH IN WIDTH AND TO A MINIMUM DEPTH OF ONE–THIRD THE TOTAL THICKNESS.
10. 3 FOOT WIDE SIDEWALKS SHALL RECEIVE CONTRACTION JOINTS EVERY 4 FEET. 4 AND 5 FOOT WIDE SIDEWALKS SHALL RECEIVE CONTRACTION JOINTS EQUAL TO THE WIDTH OF THE SIDEWALK. SIDEWALKS MAY BE CONVENTIONALLY FORMED OR MACHINE FORMED.
11. ONLY MAGNESIUM FLOATS AND TROWELS ARE ALLOWED. THE USE OF ALUMINUM OR STEEL FINISHING TROWELS AND TOOLS IS PROHIBITED. THE CONCRETE SHALL BE FINISHED TO PRODUCE A SMOOTH SURFACE AND THEN LIGHTLY BROOMED TO A UNIFORM TEXTURE. THE EDGES AND SCORED JOINTS OF ALL SIDEWALK SLABS SHALL BE TOOLED WITH AN EDGING TOOL HAVING A 1/4 INCH RADIUS.
12. ALL WORK SHALL BE IN ACCORDANCE WITH NYSDOT SPECIFICATIONS AND IN REASONABLY CLOSE CONFORMITY WITH THE LINES AND GRADES SHOWN ON THE PLANS OR ESTABLISHED BY THE ENGINEER.
13. SIDEWALK SHALL BE PAID UNDER NYSDOT ITEM NO. 608.0101. CRUSHED STONE SHALL BE PAID UNDER NYSDOT ITEM NO. 623.12.

VILLAGE OF MAMARONECK STANDARD CONSTRUCTION DETAILS / PREPARED IN THE OFFICE OF THE VILLAGE ENGINEER	CAST–IN–PLACE CONCRETE SIDEWALK	VILLAGE OF MAMARONECK, VILLAGE MUNICIPAL BUILDING, 169 MT. PLEASANT AVENUE (3RD FLOOR), WESTCHESTER COUNTY, VILLAGE OF MAMARONECK, NY 10543, PHONE: (914) 777-7731, FAX: (914) 777-7792	SD-5D
DESIGNED BY: ARC, PE / DRAWN BY: ARC, PE	CHECKED BY: ARC, PE / VOM PCC Sidewalk.dwg		



PROFILE

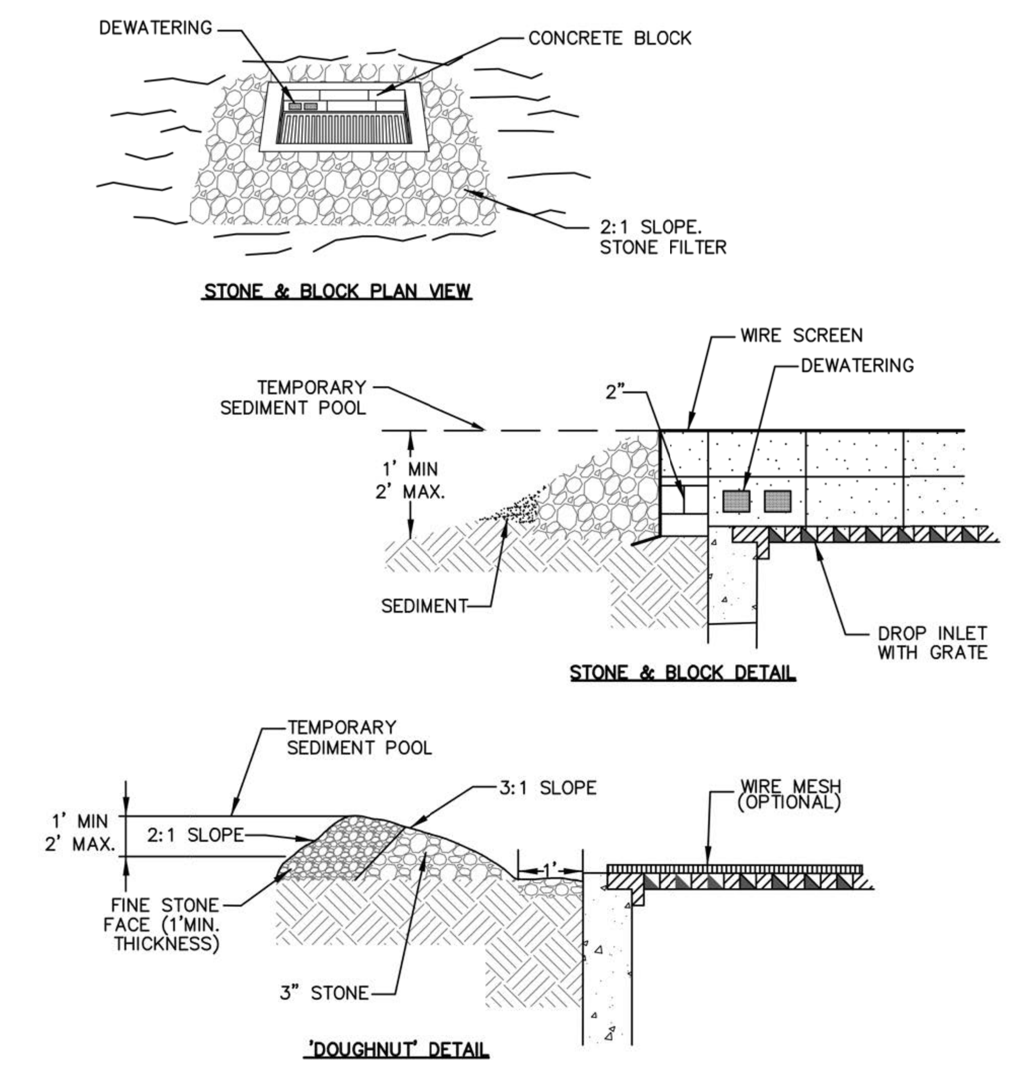
CONSTRUCTION SPECIFICATIONS:

1. USE 2" DIAMETER STONE OR RECLAIMED/RECYCLED CONCRETE EQUIVALENT.
2. RECOMMENDED LENGTH GREATER THAN 50 FEET WHERE PRACTICAL.
3. THICKNESS NOT LESS THAN 6 INCHES.
4. 10 FOOT MINIMUM WIDTH, BUT NOT LESS THAN FULL WIDTH AT POINTS WHERE INGRESS AND EGRESS OCCUR.
5. FILTER CLOTH SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.

CONSTRUCTION SPECIFICATIONS:

6. ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WILL BE PERMITTED.
7. ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS–OF–WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND, AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PUBLIC RIGHTS–OF–WAY MUST BE REMOVED IMMEDIATELY.
8. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED BY THE CONTRACTOR.
9. REMOVE STABILIZED CONSTRUCTION ENTRANCE PRIOR TO PLACEMENT OF BITUMINOUS CONCRETE PAVEMENT.

VILLAGE OF MAMARONECK STANDARD CONSTRUCTION DETAILS / PREPARED IN THE OFFICE OF THE VILLAGE ENGINEER	STABILIZED CONSTRUCTION ENTRANCE	VILLAGE OF MAMARONECK, VILLAGE MUNICIPAL BUILDING, 169 MT. PLEASANT AVENUE (3RD FLOOR), WESTCHESTER COUNTY, VILLAGE OF MAMARONECK, NY 10543, PHONE: (914) 777-7731, FAX: (914) 777-7792	SD-1C
DESIGNED BY: ARC, PE / DRAWN BY: ARC, PE	CHECKED BY: ARC, PE / VOM Stabilized Construction Entr		

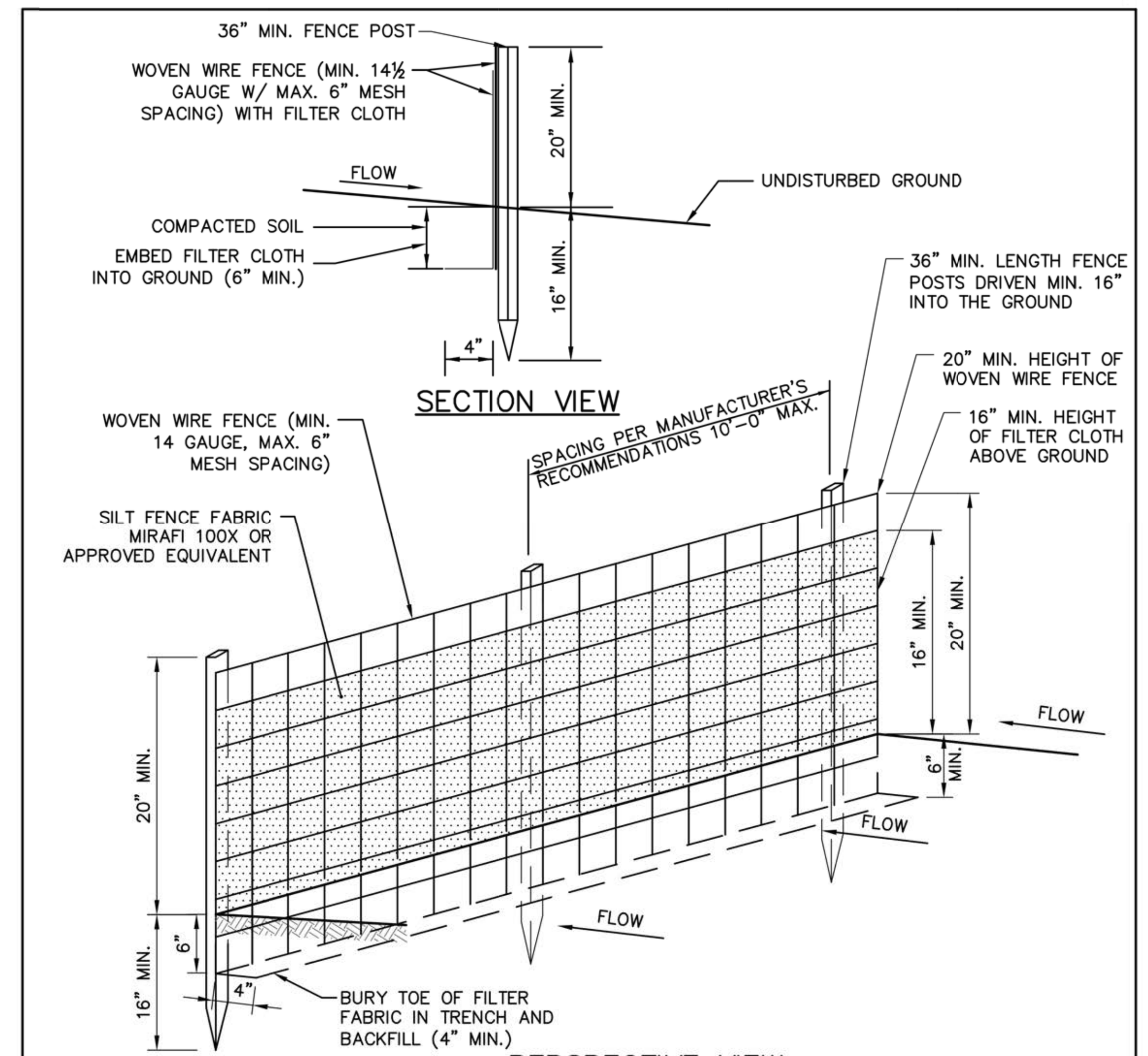


NOTES:

1. LAY ONE BLOCK ON EACH SIDE OF THE STRUCTURE ON ITS SIDE FOR DEWATERING. FOUNDATION SHALL BE 2 INCHES MINIMUM BELOW REST OF INLET AND BLOCKS SHALL BE PLACED AGAINST INLET FOR SUPPORT.
2. HARDWARE CLOTH OR ½" WIRE MESH SHALL BE PLACED OVER BLOCK OPENINGS TO SUPPORT STONE.
3. USE CLEAN STONE OR GRAVEL ½ TO ¾ INCH IN DIAMETER PLACED 2 INCHES BELOW TOP OF THE BLOCK ON A 2:1 SLOPE OR FLATTER.
4. FOR STONE STRUCTURES ONLY, A 1 FOOT THICK LAYER OF THE FILTER STONE WILL BE PLACED AGAINST THE 3 INCH STONE AS SHOWN ON THE DRAWINGS.

MAXIMUM DRAINAGE AREA 1 ACRE

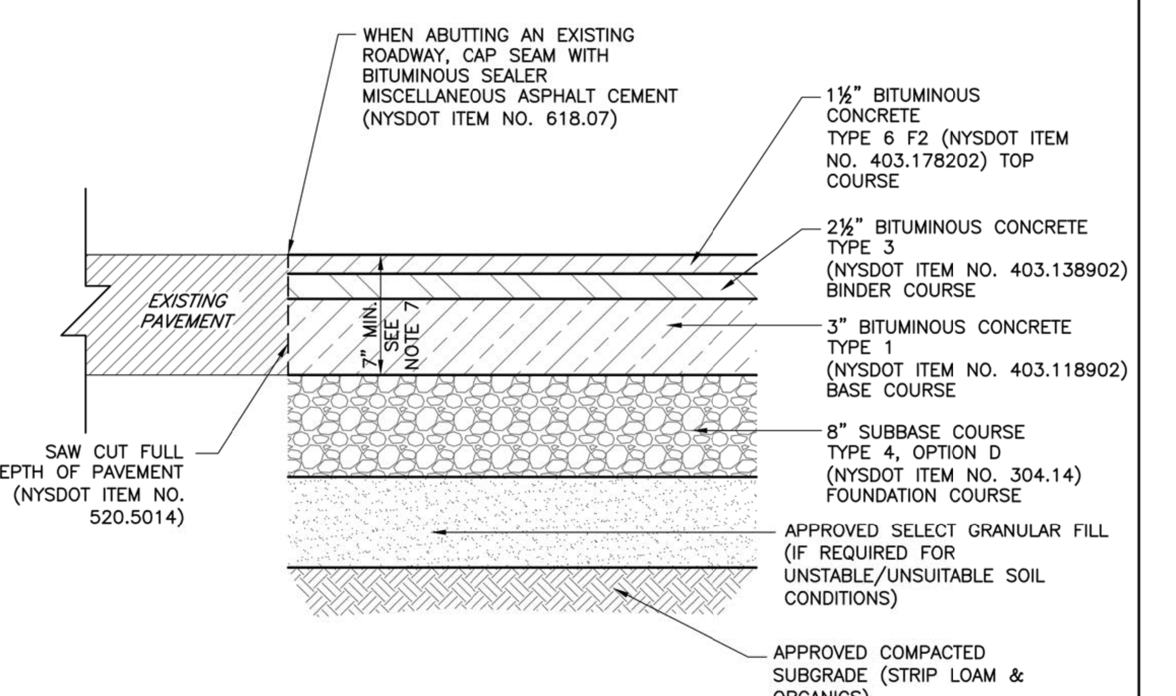
VILLAGE OF MAMARONECK STANDARD CONSTRUCTION DETAILS / PREPARED IN THE OFFICE OF THE VILLAGE ENGINEER	STONE AND BLOCK DRAIN INLET PROTECTION	VILLAGE OF MAMARONECK, VILLAGE MUNICIPAL BUILDING, 169 MT. PLEASANT AVENUE (3RD FLOOR), WESTCHESTER COUNTY, VILLAGE OF MAMARONECK, NY 10543, PHONE: (914) 777-7731, FAX: (914) 777-7792	SD-1G
DESIGNED BY: ARC, PE / DRAWN BY: ARC, PE	CHECKED BY: ARC, PE / VOM Stone & Block Inlet Protecti		



NOTES:

1. WOVEN WIRE FENCE SHALL BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. POSTS SHALL BE STEEL, EITHER "T" OR "U" TYPE OR HARDWOOD.
2. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION. FENCE SHALL BE WOVEN WIRE, 6" MAXIMUM MESH OPENING.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED BY SIX INCHES AND FOLDED. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI 100X, STABLINKA T140N, OR APPROVED EQUIVALENT.
4. PREFABRICATED UNITS SHALL BE GEOFAB, ENVIROFENCE, OR APPROVED EQUIVALENT.
5. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED AND REPLACED WHEN "BULGES" DEVELOP IN THE SILT FENCE.
6. INSTALL FABRIC ON UPHILL SIDE OF SUPPORT POSTS.
7. SILT FENCE SHALL NOT BE USED IN DRAINAGE WAYS.

VILLAGE OF MAMARONECK STANDARD CONSTRUCTION DETAILS / PREPARED IN THE OFFICE OF THE VILLAGE ENGINEER	SILT FENCE	VILLAGE OF MAMARONECK, VILLAGE MUNICIPAL BUILDING, 169 MT. PLEASANT AVENUE (3RD FLOOR), WESTCHESTER COUNTY, VILLAGE OF MAMARONECK, NY 10543, PHONE: (914) 777-7731, FAX: (914) 777-7792	SD-1A
DESIGNED BY: ARC, PE / DRAWN BY: ARC, PE	CHECKED BY: ARC, PE / VOM Silt Fence.dwg		



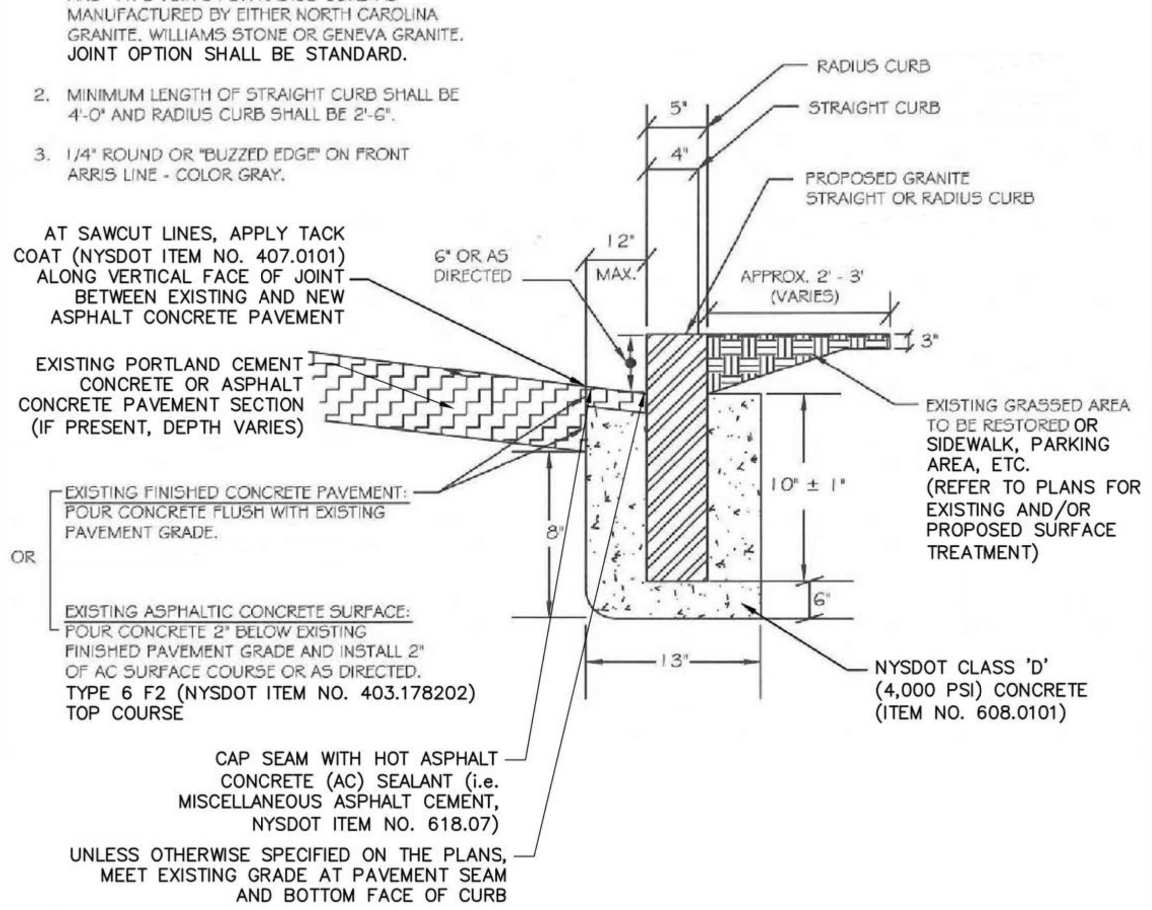
NOTES:

1. UNLESS OTHERWISE NOTED, BITUMINOUS CONCRETE SHALL MEET THE SPECIFICATIONS OUTLINED IN SECTION 403 OF THE NEW YORK STATE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS, DATED MAY 1, 2008 WITH LATEST REVISIONS. NOTE, THIS SECTION IS NO LONGER INCLUDED IN THE NYSDOT STANDARD SPECIFICATIONS.
2. UNLESS OTHERWISE NOTED, SUBBASE COURSE SHALL MEET THE SPECIFICATIONS OUTLINED IN SECTION 300 OF THE NEW YORK STATE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS, DATED MAY 1, 2008 WITH LATEST REVISIONS.
3. DETAIL DEPICTS COMPACTED PAVEMENT THICKNESS.
4. THIS DETAIL SHALL BE COORDINATED WITH THE VILLAGE STANDARD PIPE TRENCH AND ASPHALT PAVEMENT REPLACEMENT CONSTRUCTION DETAIL AND ALL OTHER PERTINENT VILLAGE STANDARD CONSTRUCTION DETAILS.
5. THIS ASPHALT CONCRETE PAVEMENT SECTION APPLIES ONLY TO LOCAL (i.e. VILLAGE) ROADS. PAVEMENT REPLACEMENT, REHABILITATION, CONSTRUCTION, ETC. FOR COUNTY AND STATE ROADWAYS SHALL BE IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE AGENCY HAVING JURISDICTION.
6. IF 403 HOT MIX ASPHALT (HMA) ITEM NUMBERS ARE UNAVAILABLE FROM THE ASPHALT PLANT, NYSDOT SUPERPAVE HMA 70 OR 80 SERIES COMPACTION SHALL BE SUBSTITUTED UPON REVIEW AND APPROVAL BY THE VILLAGE ENGINEER.
7. HOT MIX ASPHALT (HMA) PAVEMENT SHALL BE 7" MIN. THICK, OR MATCH EXISTING HMA PAVEMENT THICKNESS, WHICHEVER IS GREATER. IF EXISTING HMA PAVEMENT IS GREATER THAN 7", THE HMA DIFFERENCE SHALL CONSIST OF HMA BASE COURSE (OR BINDER COURSE FOR SMALL QUANTITIES)
8. THE VILLAGE ENGINEER RESERVES THE RIGHT TO MODIFY (e.g. INCREASE THICKNESS) THE PAVEMENT SECTION DUE TO SITE CONDITIONS (e.g. UNSUITABLE/UNSTABLE SUBGRADE, HIGH GROUNDWATER, ETC.).

VILLAGE OF MAMARONECK STANDARD CONSTRUCTION DETAILS / PREPARED IN THE OFFICE OF THE VILLAGE ENGINEER	ASPHALT CONCRETE PAVEMENT (WITHIN RIGHT–OF–WAY)	VILLAGE OF MAMARONECK, VILLAGE MUNICIPAL BUILDING, 169 MT. PLEASANT AVENUE (3RD FLOOR), WESTCHESTER COUNTY, VILLAGE OF MAMARONECK, NY 10543, PHONE: (914) 777-7731, FAX: (914) 777-7792	SD-6A
DESIGNED BY: ARC, PE / DRAWN BY: ARC, PE	CHECKED BY: ARC, PE / VOM Roadway Pavement Section		

NOTES:

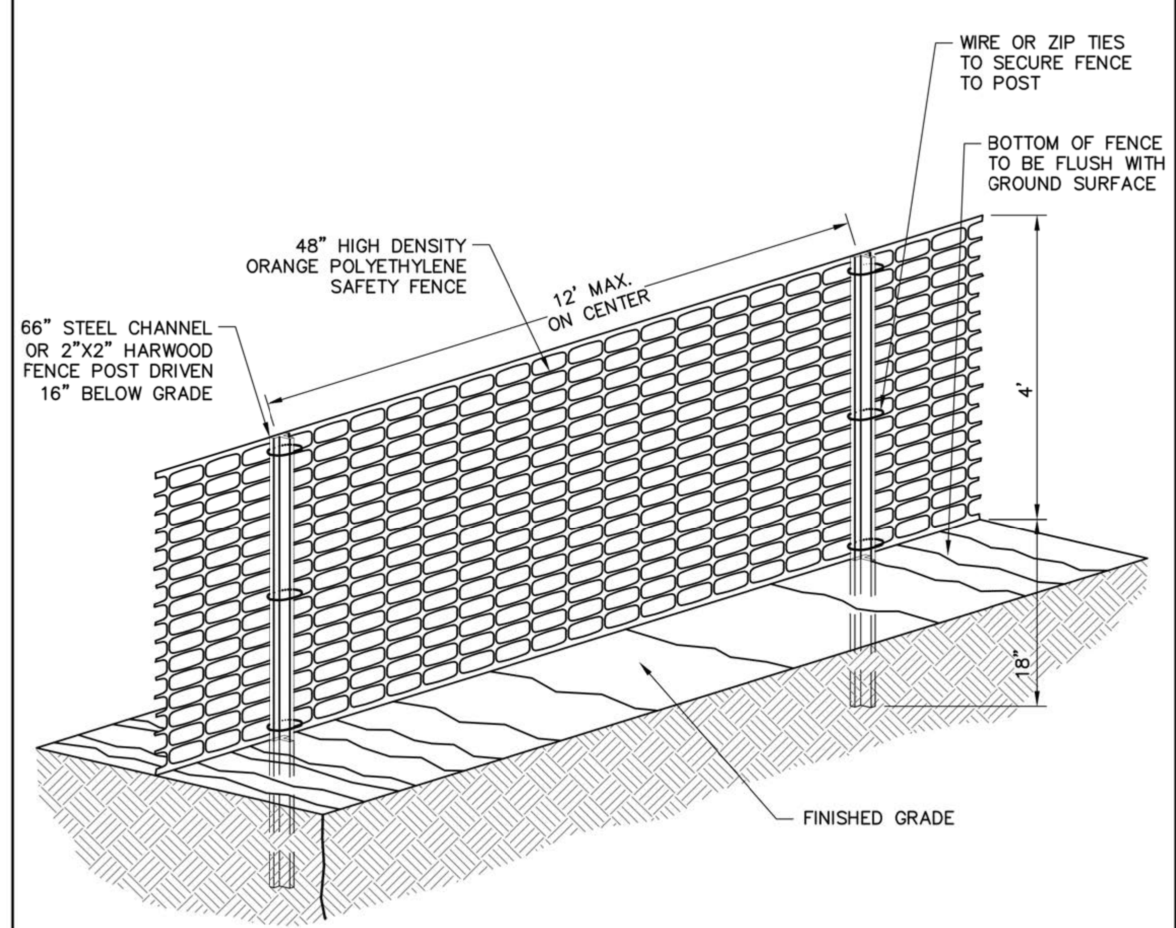
1. GRANITE CURB TO BE SPLIT FACE, SAWN TOP, EQUAL TO TYPE V4x16 FOR STRAIGHT CURB AND TYPE V5x16 FOR RADIUS CURB AS MANUFACTURED BY EITHER NORTH CAROLINA GRANITE, WILLIAMS STONE OR GENEVA GRANITE. JOINT OPTION SHALL BE STANDARD.
2. MINIMUM LENGTH OF STRAIGHT CURB SHALL BE 4'-0" AND RADIUS CURB SHALL BE 2'-6".
3. 1/4" ROUND OR "BUZZED EDGE" ON FRONT ARRIS LINE - COLOR GRAY.



NOTES:

1. UNLESS OTHERWISE NOTED, GRANITE CURB AND PORTLAND CEMENT CONCRETE CRADLE SHALL MEET THE SPECIFICATIONS OUTLINED IN SECTION 501, 609 AND SUBSECTION 700 OF THE NEW YORK STATE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS, DATED JANUARY 9, 2014 WITH LATEST REVISIONS.
2. CURB SHALL CONFORM TO NYSDOT ITEM NO. 609.0201.
3. THE GENERAL CONSTRUCTION DETAILS FOR MANUFACTURING AND TRANSPORTING CONCRETE SHALL MEET THE REQUIREMENTS OF SECTION 501, PORTLAND CEMENT CONCRETE– GENERAL.
4. THE VERTICAL FACE OF THE COLD BUTT JOINT BETWEEN EXISTING AND PROPOSED PAVEMENT SHALL BE SEALED WITH TACK COAT AND THE SEAM SHALL BE SEALED WITH HOT AC SEALANT AS SHOWN ABOVE.

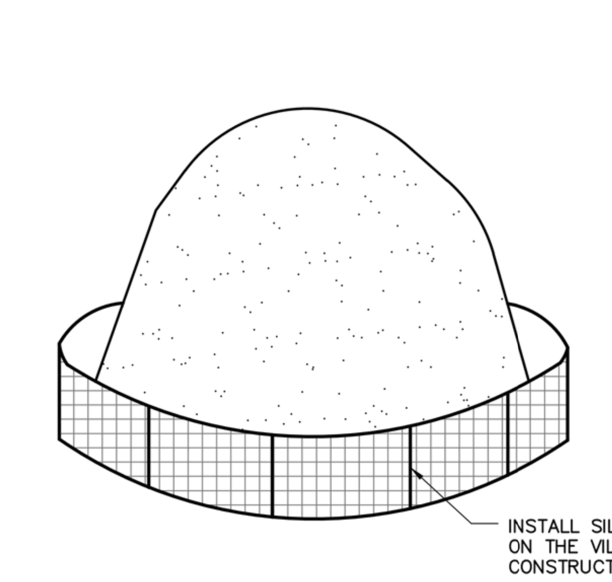
VILLAGE OF MAMARONECK STANDARD CONSTRUCTION DETAILS / PREPARED IN THE OFFICE OF THE VILLAGE ENGINEER	GRANITE CURB	VILLAGE OF MAMARONECK, VILLAGE MUNICIPAL BUILDING, 169 MT. PLEASANT AVENUE (3RD FLOOR), WESTCHESTER COUNTY, VILLAGE OF MAMARONECK, NY 10543, PHONE: (914) 777-7731, FAX: (914) 777-7792	SD-5B
DESIGNED BY: ARC, PE / DRAWN BY: ARC, PE	CHECKED BY: ARC, PE / VOM Granite Curb.dwg		



NOTES:

1. MAINTAIN TENSION ACROSS FULL HEIGHT AND LENGTH OF FENCE.
2. PROVIDE PERIODIC INSPECTION AND MAINTENANCE OF FENCE.
3. FENCE SHALL BE HIGH DENSITY ORANGE POLYETHYLENE SAFETY FENCE AS MANUFACTURED BY EROSION RUNNER® OR APPROVED EQUAL.

VILLAGE OF MAMARONECK STANDARD CONSTRUCTION DETAILS / PREPARED IN THE OFFICE OF THE VILLAGE ENGINEER	CONSTRUCTION FENCE	VILLAGE OF MAMARONECK, VILLAGE MUNICIPAL BUILDING, 169 MT. PLEASANT AVENUE (3RD FLOOR), WESTCHESTER COUNTY, VILLAGE OF MAMARONECK, NY 10543, PHONE: (914) 777-7731, FAX: (914) 777-7792	SD-1B
DESIGNED BY: ARC, PE / DRAWN BY: ARC, PE	CHECKED BY: ARC, PE / VOM Construction Fence.dwg		



NOTES:

1. ALL STOCKPILES SHALL BE SURROUNDED BY SILT FENCING.
2. STOCKPILES SHALL HAVE A MAXIMUM 2:1 (H:V) SIDE SLOPE.
3. REPAIR/OR REPLACE ANY SILT FENCING DAMAGED DUE TO CONSTRUCTION ACTIVITIES OR STOCKPILE MITIGATION.
4. STOCKPILE SHALL BE LOCATED IN AREAS AS SHOWN ON THE DRAWINGS OR APPROVED BY THE ENGINEER.

VILLAGE OF MAMARONECK STANDARD CONSTRUCTION DETAILS / PREPARED IN THE OFFICE OF THE VILLAGE ENGINEER	TEMPORARY SOIL/MATERIAL STOCKPILE AREA	VILLAGE OF MAMARONECK, VILLAGE MUNICIPAL BUILDING, 169 MT. PLEASANT AVENUE (3RD FLOOR), WESTCHESTER COUNTY, VILLAGE OF MAMARONECK, NY 10543, PHONE: (914) 777-7731, FAX: (914) 777-7792	SD-1H
DESIGNED BY: ARC, PE / DRAWN BY: ARC, PE	CHECKED BY: ARC, PE / VOM Temporary Stockpile Area.dw		

Revisions

No.	Description	Date
1.	REVISED PER TOWN COMMENTS	9-27-18

THIS PLAN NOT VALID FOR CONSTRUCTION WITHOUT ENGINEERS SEAL & SIGNATURE

PROJECT:

SELF STORAGE BUILDING ADDITION
560 FENIMORE ROAD
VILLAGE OF MAMARONECK
WESTCHESTER COUNTY – NEW YORK

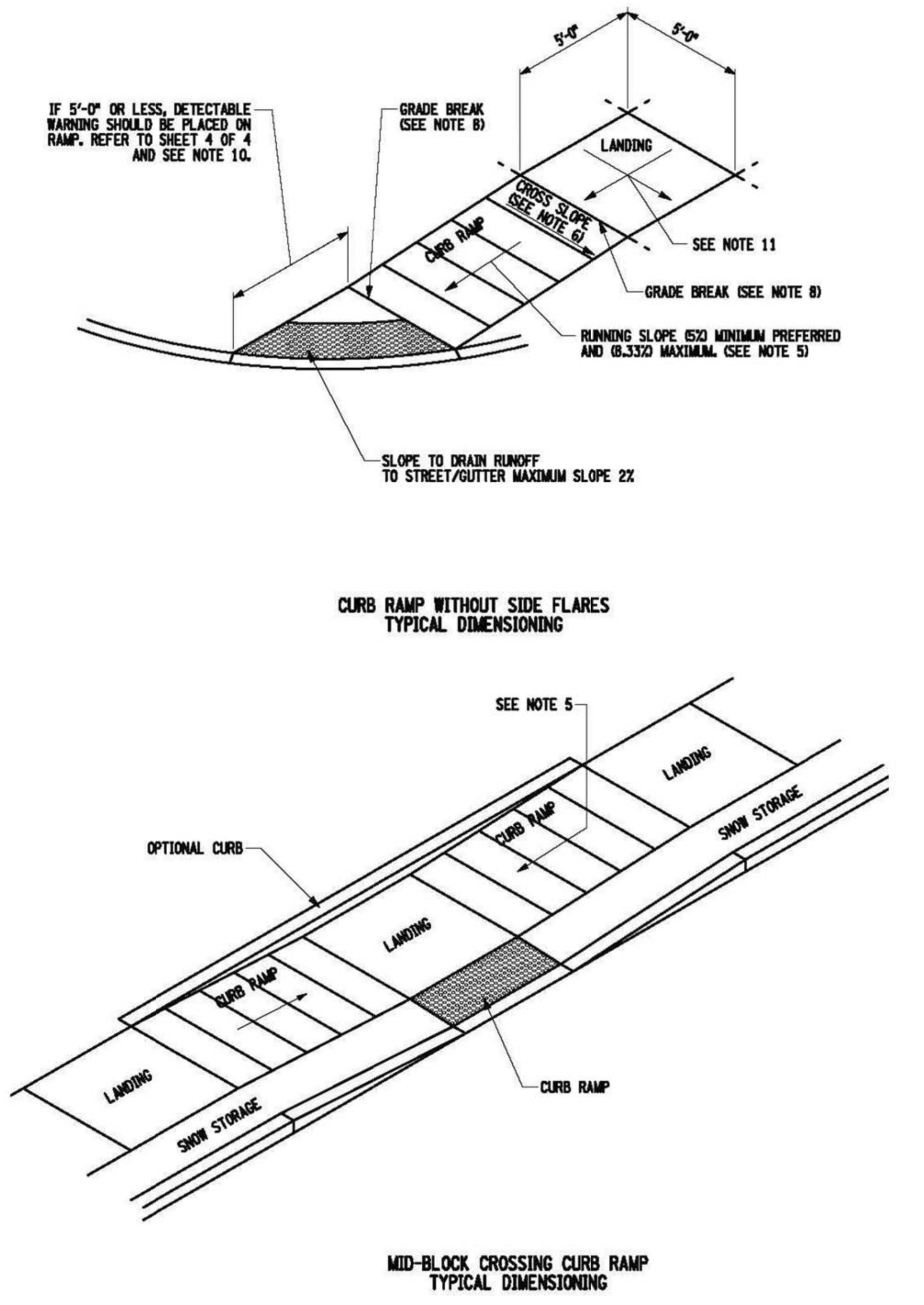
SITE DETAILS

HEC
HUDSON ENGINEERING & CONSULTING, P.C.
45 Knollwood Road – Suite 201
Elmsford, New York 10523
T: 914-909-0420
F: 914-560-2086

Date:	2/8/18
Scale:	1" = 20'
Designed By:	D.C.
Checked By:	M.S.
Sheet:	5 of 7
Sheet No.	C-5

STATE OF NEW YORK · MICHAEL F. STEIN · No. 80637 · LICENSED PROFESSIONAL ENGINEER

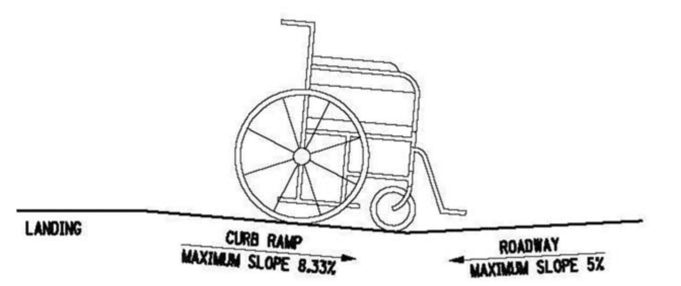
ANY ALTERATIONS OR REVISIONS OF THESE PLANS, UNLESS DONE BY OR UNDER THE DIRECTION OF THE NYS LICENSED AND REGISTERED ENGINEER THAT PREPARED THEM, IS A VIOLATION OF THE NYS EDUCATION LAW.



CURB RAMP WITHOUT SIDE FLARES
TYPICAL DIMENSIONING

MID-BLOCK CROSSING CURB RAMP
TYPICAL DIMENSIONING

VILLAGE OF MAMARONECK STANDARD CONSTRUCTION DETAILS	SIDEWALK CURB RAMPS (SHEET 1 OF 8)	VILLAGE OF MAMARONECK	PROJECT: DETAILS / SCALE: NOT TO SCALE / DATE: 03/13/2014
PREPARED IN THE OFFICE OF THE VILLAGE ENGINEER	DESIGNED BY: ARC, PE CHECKED BY: ARC, PE DRAWN BY: ARC, PE VOM NYSDOT Sidewalk Curb Ramp	VILLAGE MUNICIPAL BUILDING 169 MT. PLEASANT AVENUE (3RD FLOOR) WESTCHESTER COUNTY VILLAGE OF MAMARONECK, NY 10543 PHONE: (914) 777-7731 FAX: (914) 777-7792	SD-5H



NOTE: THE COUNTER SLOPE OF THE GUTTER OR STREET AT THE FOOT OF A CURB RAMP, LANDING, OR BLENDED TRANSITION SHALL BE 5% MAXIMUM

COUNTER SLOPE CONDITIONS

GENERAL NOTES:

1. THE DIMENSIONS AND SLOPES PRESENTED IN THE DETAILS ARE THE MINIMUM NECESSARY TO COMPLY WITH THE ADA AND DOT STANDARDS. ANY DEVIATION LESS THAN THE MINIMUM WIDTH OR GREATER THAN THE MAXIMUM SLOPE FROM THESE STANDARDS MUST BE DOCUMENTED WITH THE STANDARDS BEING MET TO THE GREATEST EXTENT PRACTICABLE AND CONSISTENT WITH THE MOST CURRENT ADAAG.
2. CURB RAMPS, LANDINGS AND BLENDED TRANSITIONS MAY REQUIRE THE USE OF DETECTABLE WARNINGS. DETECTABLE WARNINGS ON THIS SHEET ARE SHOWN FOR ILLUSTRATION ONLY. REFER TO THE DETECTABLE WARNING DETAILS ON SHEET 4 OF 4 FOR DETAILS ON PLACEMENT, ORIENTATION & DIMENSIONS. REFER TO CHAPTER 18 OF THE HIGHWAY DESIGN MANUAL FOR MORE INFORMATION.

CURB RAMP NOTES:

3. THE MINIMUM WIDTH FOR SIDEWALK CURB RAMPS IS 5'-0".
4. THE RUNNING SLOPE OF A CURB RAMP SHALL BE 1:20 (5%) MINIMUM (PREFERRED) AND 1:12 (8.33%) MAXIMUM.
5. WHERE THE SLOPE OF THE ROADWAY EXCEEDS 8.33% THE CURB RAMP LENGTH IS THE LENGTH NECESSARY TO MEET THE EXISTING SIDEWALK. IT IS NOT NECESSARY THAT THE RAMP LENGTH EXCEED 15'-0".
6. THE CROSS SLOPE OF CURB RAMPS SHOULD BE AS FLAT AS POSSIBLE, NOT TO EXCEED 1:50 (2%). THE CROSS SLOPE AT MIDBLOCK CROSSINGS MAY BE WARPED TO MEET STREET OR HIGHWAY GRADE.
7. THE VERTICAL ALIGNMENT OF A CURB RAMP, EXCLUDING THE FLARES, SHALL BE PLANAR. GRADE BREAKS SHALL BE FLUSH AND PERPENDICULAR TO THE DIRECTION OF THE RAMP RUN.
8. RAMP TRANSITIONS BETWEEN WALKS, LANDINGS, GUTTERS, OR STREETS SHALL BE FLUSH AND FREE OF ABRUPT VERTICAL CHANGES (1/4" MAX).
9. WHERE A PEDESTRIAN CIRCULATION PATH CROSSES THE CURB RAMP, FLARED SIDES WITH A SLOPE OF 10% MAXIMUM, MEASURED PARALLEL TO THE CURB LINE, SHALL BE PROVIDED.

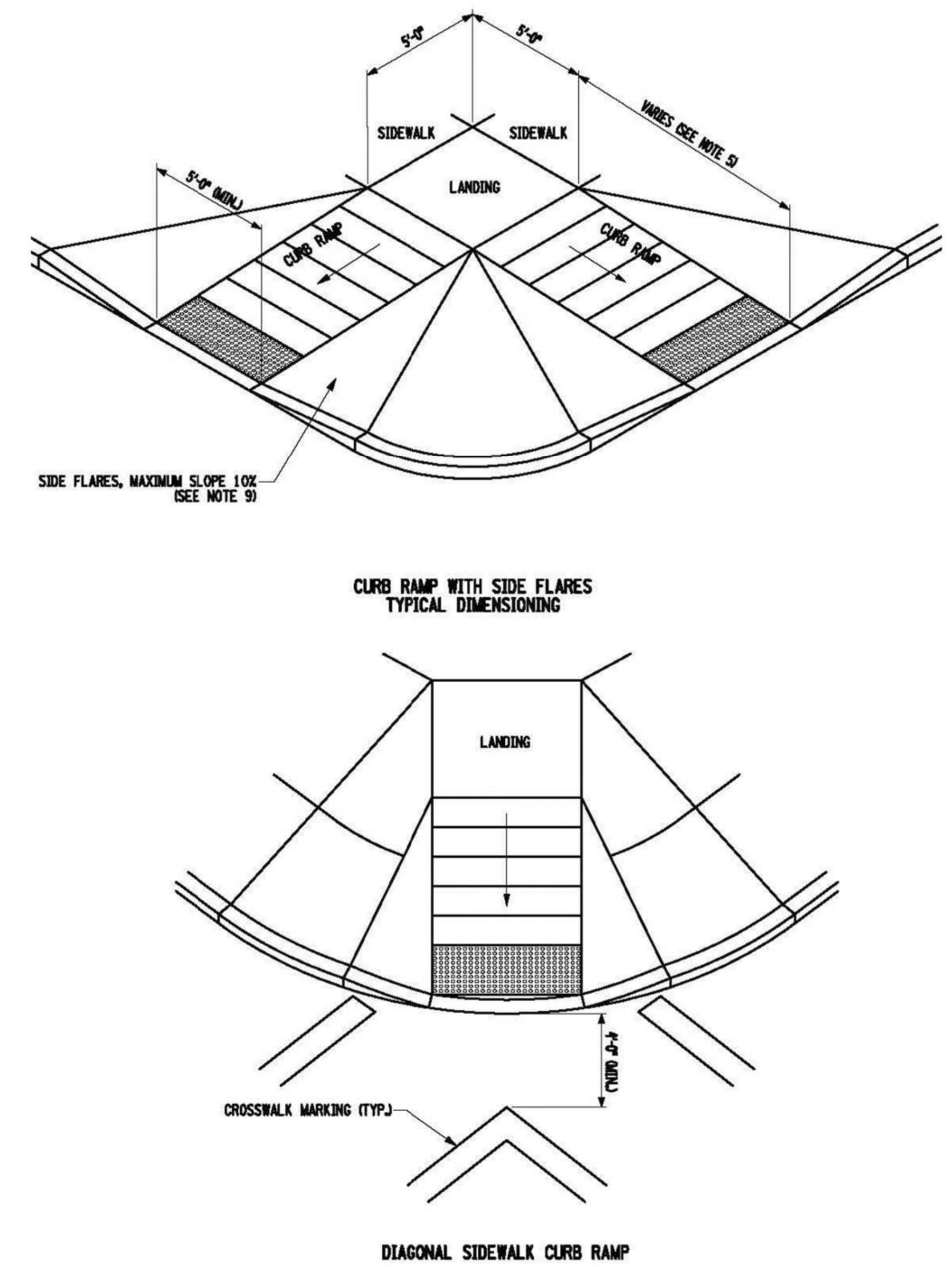
LANDING NOTES:

10. LANDINGS SHALL HAVE A MINIMUM CLEAR DIMENSION OF A 5'-0" BY 5'-0" EXCEPT AT THE BOTTOM OF RAMPS TYPE 1 & 2 ON SHEET 2 OF 4.
11. THE RUNNING AND CROSS SLOPES ON LANDINGS AT INTERSECTIONS IS 1:50 (2%) MAXIMUM. THE RUNNING AND CROSS SLOPES AT MIDBLOCK CROSSINGS MAY BE WARPED TO MEET STREET OR HIGHWAY GRADE.

NOTES:

1. FOR DIMENSIONS & GEOMETRIC VALUES REFER TO SHEET 1 OF 4.
2. THE CONFIGURATIONS SHOWN GENERICALLY REPRESENT THE MOST COMMON SITUATIONS ENCOUNTERED ON NYSDOT PROJECTS. THEY ARE INTENDED TO PRESENT CURB RAMP DESIGN CONCEPTS. SITE CONDITIONS AT INDIVIDUAL LOCATIONS REQUIRE SPECIFIC DESIGNS. CURB RAMP DESIGNS MUST BE CONSISTENT WITH THE PROVISIONS OF SHEETS 1, 2, AND 3 OF 4. REFER TO REGIONAL LANDSCAPE ARCHITECT FOR ADDITIONAL DESIGN GUIDANCE.
3. COORDINATE TRAFFIC CONTROL DEVICES, UTILITY LOCATIONS, SIGNS, STREET FURNITURE AND DRAINAGE TO ENSURE A CONTINUOUS PEDESTRIAN ACCESS ROUTE AT ALL CURB RAMP LOCATIONS. GUIDANCE FOR CROSSWALK MARKINGS AND TRAFFIC CONTROL DEVICES IS PROVIDED IN THE MUTCD.
4. DETECTABLE WARNINGS SHOWN ON THIS SHEET ARE FOR ILLUSTRATION ONLY. FOR SPECIFIC PLACEMENT ORIENTATIONS AND DIMENSIONS REFER TO SHEET 4 OF 4. SEE NOTE 10.
5. THE CROSS SLOPE OF RAMPS AND/OR LANDINGS AT MID BLOCK CROSSINGS MAY BE WARPED TO MEET STREET OR HIGHWAY GRADE.
6. USE TYPE 8 ONLY WHERE OTHER RAMPS ARE UNUSABLE. SINGLE DIAGONAL OR DEPRESSED CORNER CURB RAMPS SERVING TWO STREET CROSSING DIRECTIONS SHOULD BE AVOIDED IN NEW CONSTRUCTION AND SHOULD ONLY BE CONSIDERED WHERE CONDITIONS REQUIRE THEIR USE.
7. GRATES SHALL NOT BE LOCATED ON CURB RAMPS, BLENDED TRANSITIONS OR LANDINGS. ACCESS COVERS OF SIMILAR SURFACES SHALL COMPLY WITH APPLICABLE SURFACE REQUIREMENTS.
8. UTILITIES, SIGNS, AND OTHER FIXED OBJECTS MAY NOT BE PLACED ON A CURB, OR IN A MANNER THAT INTERFERES WITH THE USE OF THE CURB RAMP.
9. THE SURFACE OF ALL CURB RAMPS SHALL BE STABLE, FIRM AND SLIP RESISTANT. A COARSE BROOM FINISH RUNNING PERPENDICULAR TO THE SLOPE IS RECOMMENDED ON CONCRETE RAMP SURFACES, EXCLUSIVE OF THE DETECTABLE WARNING FIELDS.
10. THERE SHALL BE A LANDING AT THE TOP OF EACH PERPENDICULAR CURB RAMP AND A LANDING AT THE BOTTOM OF RAMPS TYPE 1 & 2 ON SHEET 2 OF 4.
11. LANDINGS MAY OVERLAP WITH ADJACENT LANDINGS OR A SINGLE LANDING MAY SERVE MULTIPLE CURB RAMPS.
12. LANDINGS MAY OVERLAP WITH THE CLEAR GROUND SPACE REQUIRED AT PEDESTRIAN SIGNAL PUSH BUTTONS.

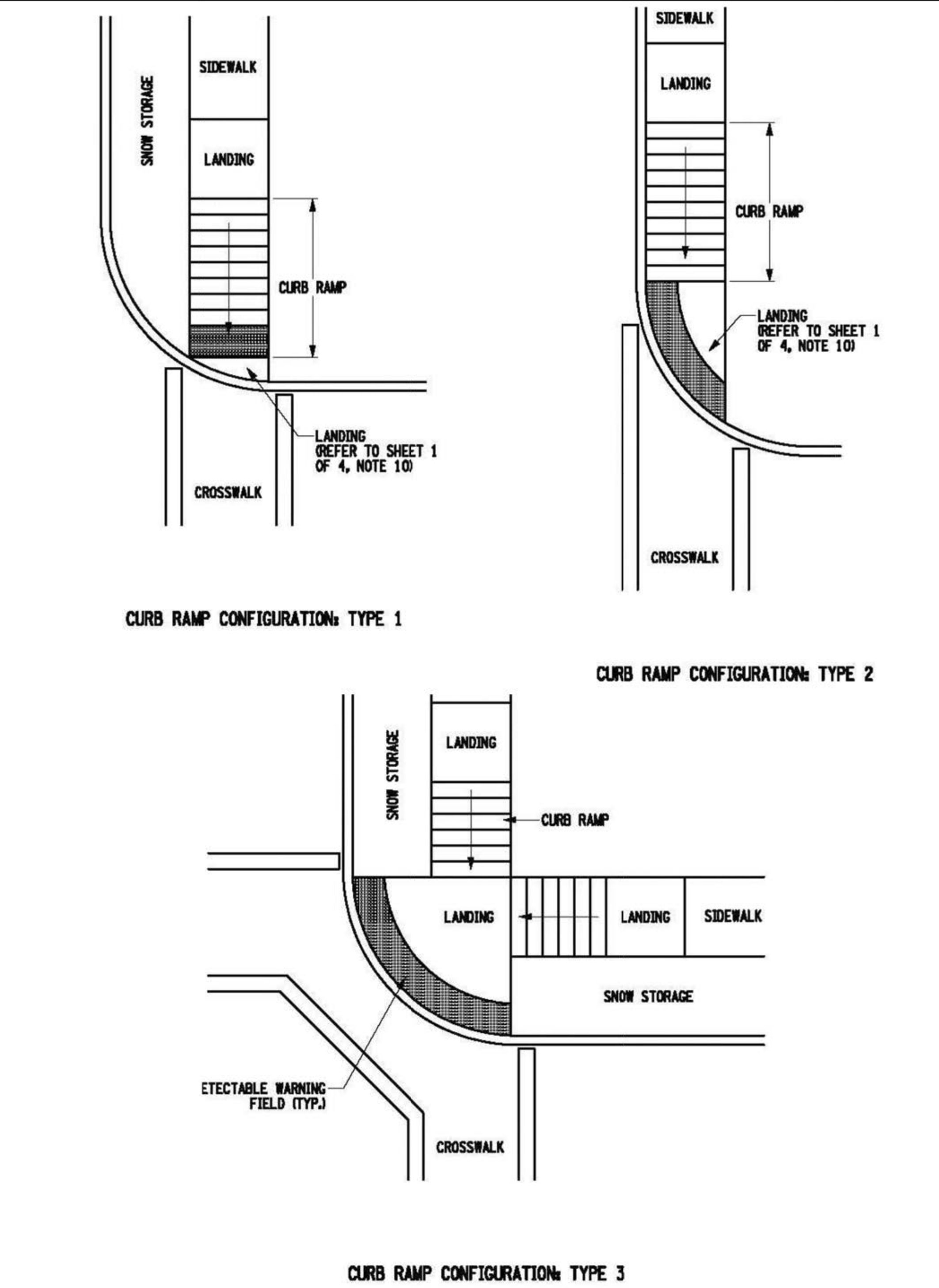
VILLAGE OF MAMARONECK STANDARD CONSTRUCTION DETAILS	SIDEWALK CURB RAMPS (SHEET 2 OF 8)	VILLAGE OF MAMARONECK	PROJECT: DETAILS / SCALE: NOT TO SCALE / DATE: 03/13/2014
PREPARED IN THE OFFICE OF THE VILLAGE ENGINEER	DESIGNED BY: ARC, PE CHECKED BY: ARC, PE DRAWN BY: ARC, PE VOM NYSDOT Sidewalk Curb Ramp	VILLAGE MUNICIPAL BUILDING 169 MT. PLEASANT AVENUE (3RD FLOOR) WESTCHESTER COUNTY VILLAGE OF MAMARONECK, NY 10543 PHONE: (914) 777-7731 FAX: (914) 777-7792	SD-5H



CURB RAMP WITH SIDE FLARES
TYPICAL DIMENSIONING

DIAGONAL SIDEWALK CURB RAMP

VILLAGE OF MAMARONECK STANDARD CONSTRUCTION DETAILS	SIDEWALK CURB RAMPS (SHEET 3 OF 8)	VILLAGE OF MAMARONECK	PROJECT: DETAILS / SCALE: NOT TO SCALE / DATE: 03/13/2014
PREPARED IN THE OFFICE OF THE VILLAGE ENGINEER	DESIGNED BY: ARC, PE CHECKED BY: ARC, PE DRAWN BY: ARC, PE VOM NYSDOT Sidewalk Curb Ramp	VILLAGE MUNICIPAL BUILDING 169 MT. PLEASANT AVENUE (3RD FLOOR) WESTCHESTER COUNTY VILLAGE OF MAMARONECK, NY 10543 PHONE: (914) 777-7731 FAX: (914) 777-7792	SD-5H

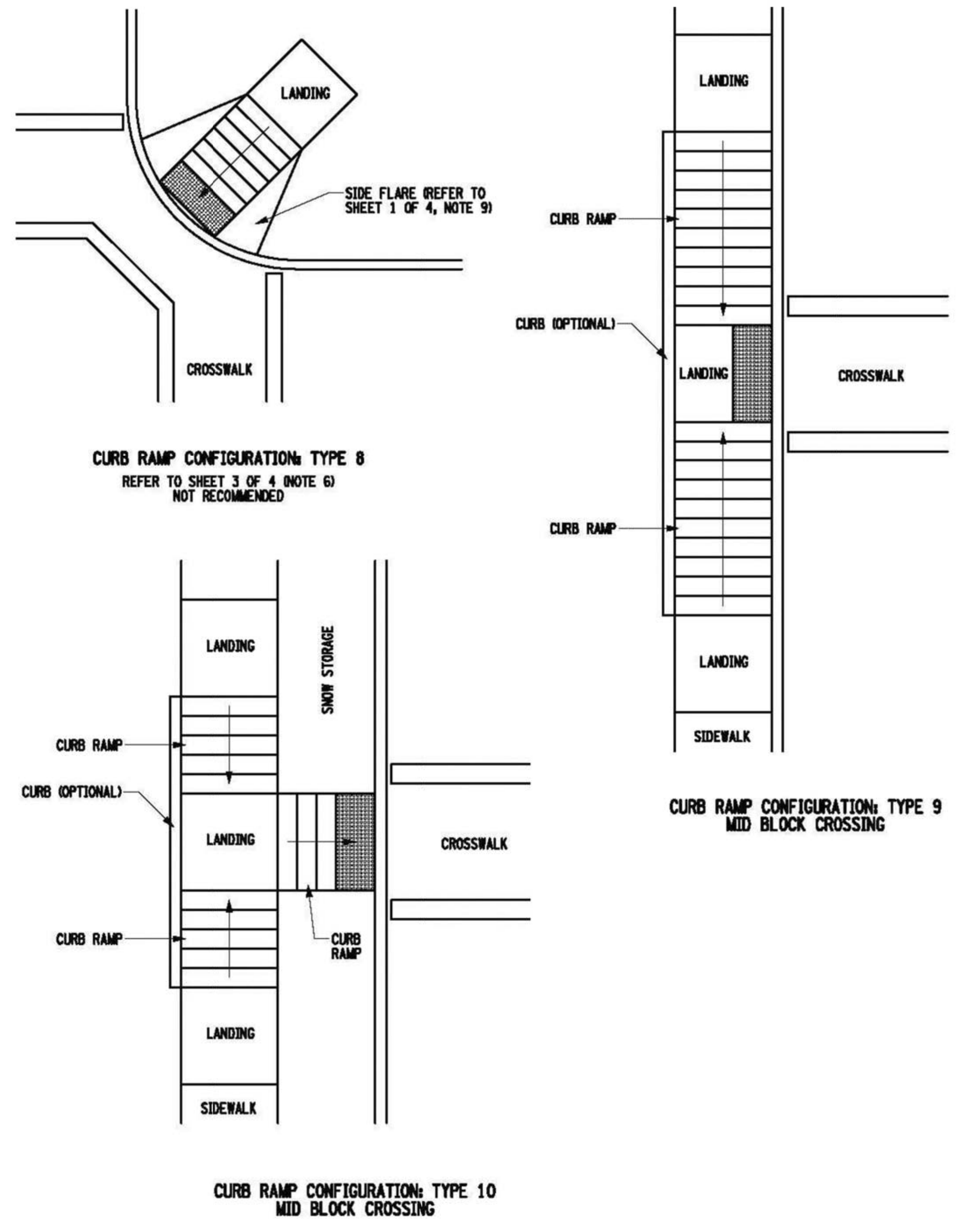


CURB RAMP CONFIGURATION: TYPE 1

CURB RAMP CONFIGURATION: TYPE 2

CURB RAMP CONFIGURATION: TYPE 3

VILLAGE OF MAMARONECK STANDARD CONSTRUCTION DETAILS	SIDEWALK CURB RAMPS (SHEET 4 OF 8)	VILLAGE OF MAMARONECK	PROJECT: DETAILS / SCALE: NOT TO SCALE / DATE: 03/13/2014
PREPARED IN THE OFFICE OF THE VILLAGE ENGINEER	DESIGNED BY: ARC, PE CHECKED BY: ARC, PE DRAWN BY: ARC, PE VOM NYSDOT Sidewalk Curb Ramp	VILLAGE MUNICIPAL BUILDING 169 MT. PLEASANT AVENUE (3RD FLOOR) WESTCHESTER COUNTY VILLAGE OF MAMARONECK, NY 10543 PHONE: (914) 777-7731 FAX: (914) 777-7792	SD-5H

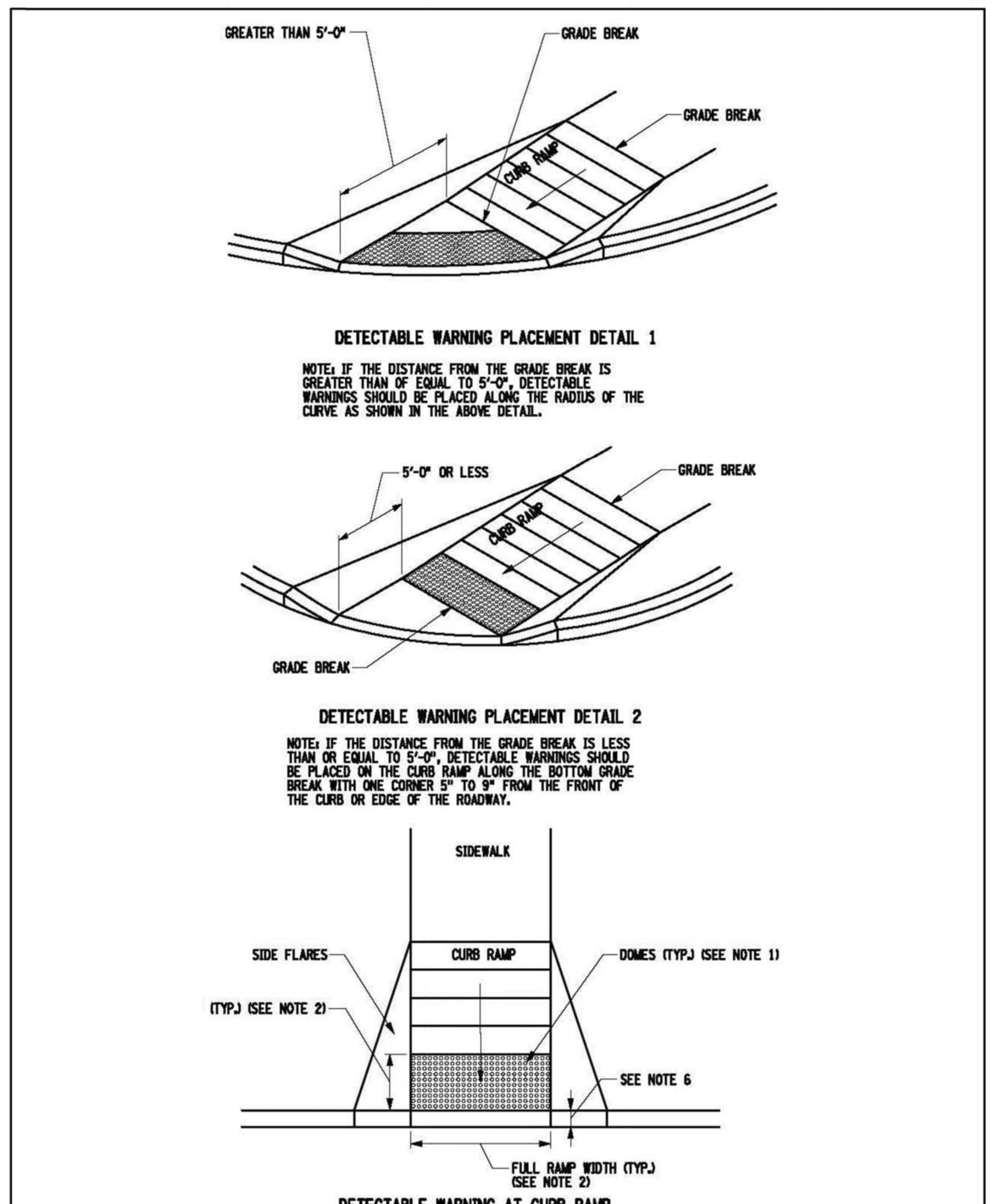


CURB RAMP CONFIGURATION: TYPE 8
REFER TO SHEET 3 OF 4 (NOTE 6)
NOT RECOMMENDED

CURB RAMP CONFIGURATION: TYPE 9
MID BLOCK CROSSING

CURB RAMP CONFIGURATION: TYPE 10
MID BLOCK CROSSING

VILLAGE OF MAMARONECK STANDARD CONSTRUCTION DETAILS	SIDEWALK CURB RAMPS (SHEET 7 OF 8)	VILLAGE OF MAMARONECK	PROJECT: DETAILS / SCALE: NOT TO SCALE / DATE: 03/13/2014
PREPARED IN THE OFFICE OF THE VILLAGE ENGINEER	DESIGNED BY: ARC, PE CHECKED BY: ARC, PE DRAWN BY: ARC, PE VOM NYSDOT Sidewalk Curb Ramp	VILLAGE MUNICIPAL BUILDING 169 MT. PLEASANT AVENUE (3RD FLOOR) WESTCHESTER COUNTY VILLAGE OF MAMARONECK, NY 10543 PHONE: (914) 777-7731 FAX: (914) 777-7792	SD-5H



DETECTABLE WARNING PLACEMENT DETAIL 1

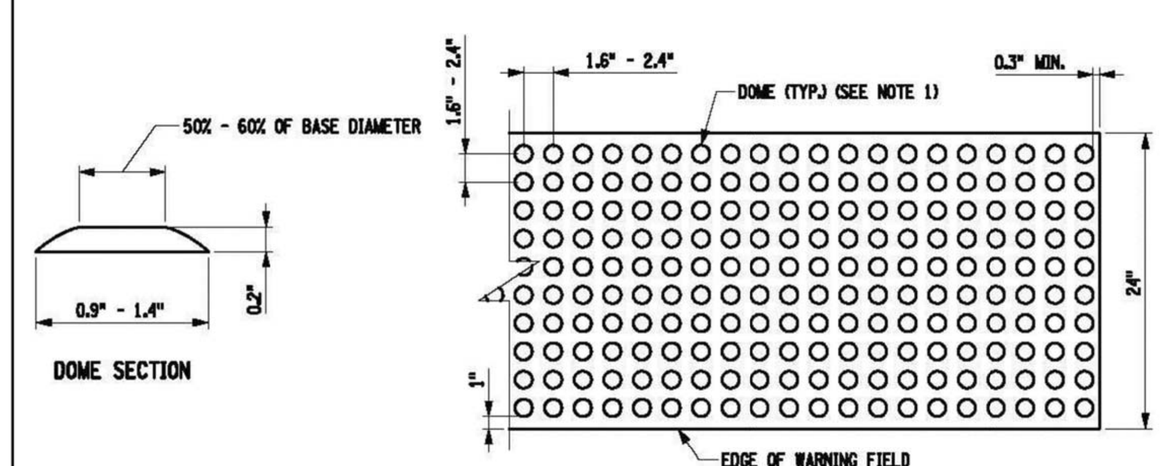
NOTE: IF THE DISTANCE FROM THE GRADE BREAK IS GREATER THAN OF EQUAL TO 5'-0", DETECTABLE WARNINGS SHOULD BE PLACED ALONG THE RADIUS OF THE CURVE AS SHOWN IN THE ABOVE DETAIL.

DETECTABLE WARNING PLACEMENT DETAIL 2

NOTE: IF THE DISTANCE FROM THE GRADE BREAK IS LESS THAN OR EQUAL TO 5'-0", DETECTABLE WARNINGS SHOULD BE PLACED ON THE CURB RAMP ALONG THE BOTTOM GRADE BREAK WITH ONE CORNER 5" TO 9" FROM THE FRONT OF THE CURB OR EDGE OF THE ROADWAY.

DETECTABLE WARNING AT CURB RAMP

VILLAGE OF MAMARONECK STANDARD CONSTRUCTION DETAILS	DETECTABLE WARNING PLACEMENT (SHEET 1 OF 3)	VILLAGE OF MAMARONECK	PROJECT: DETAILS / SCALE: NOT TO SCALE / DATE: 03/13/2014
PREPARED IN THE OFFICE OF THE VILLAGE ENGINEER	DESIGNED BY: ARC, PE CHECKED BY: ARC, PE DRAWN BY: ARC, PE VOM Detectable Warning Unit.dwg	VILLAGE MUNICIPAL BUILDING 169 MT. PLEASANT AVENUE (3RD FLOOR) WESTCHESTER COUNTY VILLAGE OF MAMARONECK, NY 10543 PHONE: (914) 777-7731 FAX: (914) 777-7792	SD-5I



DOME SECTION

NOTES:

1. THE DETAILS PROVIDED ARE NOT DRAWN TO SCALE. THE QUANTITY OF DOMES DEPICTED ON THE DETECTABLE WARNING UNIT (THE DOMES AND THE ENTIRE 24" LEVEL SURFACE) IS FOR ILLUSTRATION ONLY.

DETECTABLE WARNING UNIT DIMENSIONS:

2. THE SIZE OF THE DETECTABLE WARNING FIELD SHALL BE 24" IN THE DIRECTION OF TRAVEL AND SHALL EXTEND THE FULL WIDTH OF THE CURB RAMP OR FLUSH SURFACE, EXCLUSIVE OF SIDE FLARES.

DOME ALIGNMENT:

3. THE ROWS OF DOMES SHALL BE ALIGNED TO BE PERPENDICULAR OR RADIAL TO THE GRADE BREAK BETWEEN THE RAMP LANDING OR CURB RAMP AND THE STREET.
4. WHERE DOMES ARE ARRAYED RADIALLY THEY MAY DIFFER IN DOME DIAMETER AND CENTER-TO-CENTER SPACING WITHIN THE RANGES SPECIFIED ON THIS SHEET.

COLOR REQUIREMENTS:

5. THE DETECTABLE WARNING FIELD SHALL BE THE COLOR SPECIFIED IN THE CONTRACT DOCUMENTS OR MEET THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS.

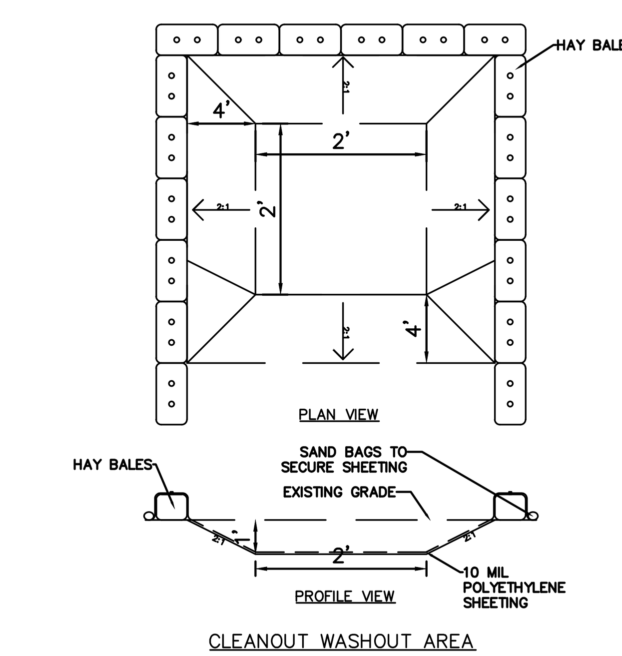
DETECTABLE WARNINGS LOCATIONS:

6. DETECTABLE WARNINGS SHALL BE LOCATED SO THAT THE EDGE OR CORNER OF THE WARNING FIELD NEAREST TO THE ROADWAY IS 5" TO 9" FROM THE FRONT OF THE CURB OR THE ROADWAY EDGE (12" WHERE TRAVERSABLE CURB IS USED).
7. THE EDGE OF THE DETECTABLE WARNING FIELD NEAREST TO A RAILROAD CROSSING SHALL BE 6'-0" MINIMUM AND 15'-0" MAXIMUM FROM THE CENTERLINE OF THE NEAREST RAIL.

NOTES:

1. DETECTABLE WARNINGS SHALL BE INSTALLED ON ALL CURB RAMPS. DETECTABLE WARNINGS SHALL CONSIST OF RAISED TRUNCATED DOMES WITH A DIAMETER OF NOMINAL 0.9 INCHES (23 mm), A HEIGHT OF NOMINAL 0.2 INCHES (5 mm), AND A CENTER–TO–CENTER SPACING OF NOMINAL 2.35 INCHES (60 mm) AND SHALL CONTRACT VISUALLY WITH ADJOINING SURFACES, EITHER LIGHT–ON–DARK OR DARK–ON–LIGHT. DETECTABLE WARNINGS SHALL BE IN ACCORDANCE WITH THE DEPARTMENT OF JUSTICE 28 CFH PART 36 "EXCERPT FROM 28 CFR PART 36: ADA STANDARDS FOR ACCESSIBLE DESIGN" LAST REVISED JULY 1, 1994.
2. DETECTABLE WARNING SYSTEM SHALL BE CAST–IN–PLACE TRUNCATED DOMES PART NUMBER ATS–C–2x5 MANUFACTURED BY ADVANTAGE™ TACTILE SYSTEMS OR APPROVED EQUAL. THE COLOR OF THE DETECTABLE WARNING SYSTEM SHALL BE BRICK RED (FEDERAL COLOR NO. 22144).
3. DETECTABLE WARNING UNITS SHALL BE PAID UNDER NYSDOT ITEM NO. 608.21.

VILLAGE OF MAMARONECK STANDARD CONSTRUCTION DETAILS	DETECTABLE WARNING PLACEMENT (SHEET 3 OF 3)	VILLAGE OF MAMARONECK	PROJECT: DETAILS / SCALE: NOT TO SCALE / DATE: 03/13/2014
PREPARED IN THE OFFICE OF THE VILLAGE ENGINEER	DESIGNED BY: ARC, PE CHECKED BY: ARC, PE DRAWN BY: ARC, PE VOM Detectable Warning Unit.dwg	VILLAGE MUNICIPAL BUILDING 169 MT. PLEASANT AVENUE (3RD FLOOR) WESTCHESTER COUNTY VILLAGE OF MAMARONECK, NY 10543 PHONE: (914) 777-7731 FAX: (914) 777-7792	SD-5I



CLEANOUT WASHOUT AREA

CONCRETE WASHOUT AREA NOTES:

1. CONCRETE WASHOUT AREA TO BE INSTALLED PRIOR TO CONCRETE PLACEMENT ON SITE. CONCRETE WASHOUT AREA TO BE ENTIRELY SELF CONTAINED
2. HAY BALES SHALL BE PROVIDED AROUND THE PERIMETER OF CONCRETE WASHOUT AREA FOR CONTAINMENT.
3. WASHOUT AREA SHALL BE LINED WITH PLASTIC SHEETING NO THINNER THAN 10 MILS. SHEETING SHALL HAVE NO HOLES OR TEARS AND SHALL BE ANCHORED BY SAND BAGS ON ALL SIDES EXCEPT ACCESS SIDE. PLASTIC LINING TO BE REPLACED WITH EACH CLEANING
4. SIGNS SHALL BE PROVIDED AT THE CONSTRUCTION ENTRANCE AND CONCRETE AREAS INDICATING LOCATION OF WASHOUT AREA.
5. WASHOUT AREA TO BE ENCLOSED IN CONSTRUCTION FENCE.
6. WASHOUT AREAS TO BE INSPECTED DAILY TO ENSURE LINER IS INTACT AND ADEQUATE CAPACITY IS AVAILABLE AT ALL TIMES. WASHOUT AREAS SHALL BE INSPECTED IMMEDIATELY AFTER HEAVIER RAINS. DAMAGED OR LEAKING WASHOUT AREAS TO BE DEACTIVATED AND REPAIRED IMMEDIATELY.
7. CONCRETE WASTE SHALL BE REMOVED AND DISPOSED OF ONCE IT REACHES THREE–QUARTERS OF THE WASHOUT AREA'S HEIGHT. ALL WASTE SHALL BE DISPOSED OF IN A MANNER CONSISTENT WITH APPLICABLE LAWS, REGULATIONS, AND GUIDELINES OF MUNICIPALITY.

No.	Description	Date
1.	REVISED PER TOWN COMMENTS	9-27-18

Revisions

THIS PLAN NOT VALID FOR CONSTRUCTION WITHOUT ENGINEERS SEAL & SIGNATURE

PROJECT:

SELF STORAGE BUILDING ADDITION
560 FENIMORE ROAD
VILLAGE OF MAMARONECK
WESTCHESTER COUNTY – NEW YORK

SITE DETAILS

HEC
HUDSON ENGINEERING & CONSULTING, P.C.
45 Knollwood Road – Suite 201
Elmsford, New York 10523
T: 914-909-0420
F: 914-560-2086

STATE OF NEW YORK · MICHAEL F. STEIN · NO. 80637 · LICENSED PROFESSIONAL ENGINEER

Date:	2/8/18
Scale:	1" = 20'
Designed By:	D.C.
Checked By:	M.S.
Sheet No.	C-6

Sheet: 6 / 7

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CONSTRUCTION PHASE:

DURING THE CONSTRUCTION PHASE OF THE PROJECT, A SEDIMENT AND EROSION CONTROL PLAN SHALL BE IMPLEMENTED IN ACCORDANCE WITH THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION'S BEST MANAGEMENT PRACTICES (BMP). THE PRIMARY GOALS OF THE SEDIMENT AND EROSION CONTROL PLAN ARE TO PREVENT THE TRACKING OF DIRT AND MUD ONTO ADJACENT ROADS, TO PREVENT MUD AND SILT FROM ENTERING INTO EXISTING AND PROPOSED DRAINAGE FACILITIES, AND TO PROTECT THE RECEIVING WATERS FROM CONTAMINATION DURING THE CONSTRUCTION.

DURING CONSTRUCTION, THE PARTY RESPONSIBLE FOR IMPLEMENTING THE TEMPORARY (DURING CONSTRUCTION) STORMWATER MANAGEMENT FACILITIES MAINTENANCE PROGRAM WILL BE THE OWNER. THE NAME AND CONTACT INFORMATION WILL BE FILED WITH THE VILLAGE OF CARMEL AND THE NYSDEC AT THE TIME OF THE PRECONSTRUCTION MEETING.

A NEW YORK STATE PROFESSIONAL ENGINEER OR CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL (P.E. OR CPESC) SHALL CONDUCT AN ASSESSMENT OF THE SITE PRIOR TO THE COMMENCEMENT OF CONSTRUCTION AND CERTIFY IN AN INSPECTION REPORT THAT THE APPROPRIATE EROSION AND SEDIMENT CONTROLS SHOWN ON THE PLAN HAVE BEEN ADEQUATELY INSTALLED AND/OR IMPLEMENTED TO ENSURE OVERALL PREPAREDNESS OF THE SITE FOR CONSTRUCTION. FOLLOWING THE COMMENCEMENT OF CONSTRUCTION, SITE INSPECTIONS SHALL BE CONDUCTED BY THE P.E. OR CPESC AT LEAST EVERY 7 CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF A STORM EVENT OF 0.5 INCHES OR GREATER.

DURING EACH INSPECTION, THE REPRESENTATIVE SHALL RECORD THE FOLLOWING:

1. ON A SITE MAP, INDICATE THE EXTENT OF ALL DISTURBED SITE AREAS AND DRAINAGE PATHWAYS. INDICATE SITE AREAS THAT ARE EXPECTED TO UNDERGO INITIAL DISTURBANCE OR SIGNIFICANT SITE WORK WITHIN THE NEXT 14-DAY PERIOD;
2. INDICATE ON A SITE MAP ALL AREAS OF THE SITE THAT HAVE UNDERGONE TEMPORARY OR PERMANENT STABILIZATION;
3. INDICATE ALL DISTURBED SITE AREAS THAT HAVE NOT UNDERGONE ACTIVE SITE WORK DURING THE PREVIOUS 14-DAY PERIOD;
4. INSPECT ALL SEDIMENT CONTROL PRACTICES AND RECORD APPROXIMATE DEGREE OF SEDIMENT ACCUMULATION AS A PERCENTAGE OF THE SEDIMENT STORAGE VOLUME;
5. INSPECT ALL EROSION AND SEDIMENT CONTROL PRACTICES AND RECORD ALL MAINTENANCE REQUIREMENTS. IDENTIFY ANY EVIDENCE OF RILL OR GULLY EROSION OCCURRING ON SLOPES AND ANY LOSS OF STABILIZING VEGETATION OR SEEDING/MULCHING. DOCUMENT ANY EXCESSIVE DEPOSITION OF SEDIMENT OR PONDING WATER ALONG THE BARRIER. RECORD THE DEPTH OF SEDIMENT WITHIN CONTAINMENT STRUCTURES AND ANY EROSION NEAR OUTLET AND OVERFLOW STRUCTURES.
6. ALL IDENTIFIED DEFICIENCIES.

THE P.E. OR CPESC SHALL MAINTAIN A RECORD OF ALL INSPECTION REPORTS IN A SITE LOGBOOK. THE SITE LOGBOOK SHALL BE MAINTAINED ON-SITE AND BE MADE AVAILABLE TO THE VILLAGE OF BRIARCLIFF MANOR AND THE NYSDEC. A SUMMARY OF THE SITE INSPECTION ACTIVITIES SHALL BE POSTED ON A MONTHLY BASIS IN A PUBLICLY ACCESSIBLE LOCATION AT THE SITE.

THE PROJECTS ANTICIPATED START DATE IS SEPTEMBER 2017 AND THE ANTICIPATED COMPLETION DATE IS ESTIMATED TO OCCUR IN SEPTEMBER APRIL 2018.

CONSTRUCTION SEQUENCING:

THE FOLLOWING EROSION CONTROL SCHEDULE SHALL BE UTILIZED:

1. INSTALL CONSTRUCTION ENTRANCE TO THE DEVELOPMENT AREA.
2. ESTABLISH CONSTRUCTION STAGING AREA.
3. INSTALL TREE PROTECTION ON TREES AS NOTED ON PLANS.
4. SELECTIVE VEGETATION REMOVAL FOR SILT FENCE INSTALLATION.
5. INSTALL SILT FENCE DOWN SLOPE OF ALL AREAS TO BE DISTURBED AS SHOWN ON THE PLAN.
6. REMOVE TREES WHERE NECESSARY (CLEAR & GRUB) FOR THE PROPOSED CONSTRUCTION.
7. STRIP TOPSOIL AND STOCKPILE AT THE LOCATIONS SPECIFIED ON THE PLANS (UP GRADIENT OF EROSION CONTROL MEASURES). TEMPORARILY STABILIZE TOPSOIL STOCKPILES (HYDROSEED DURING MAY 1ST THROUGH OCTOBER 31ST PLANTING SEASON OR BY COVERING WITH A TARPAULIN(S) NOVEMBER 1ST THROUGH APRIL 30TH. INSTALL SILT FENCE AROUND TOE OF SLOPE.
8. DEMOLISH ANY EXISTING SITE FEATURES AND/OR STRUCTURES NOTED AS BEING REMOVED ON THE CONSTRUCTION DOCUMENTS, AND DISPOSE OF OFF-SITE.
9. ROUGH GRADE SITE.
10. INSTALL ADDITIONAL SILT FENCING AS NECESSARY.
11. ROUGH GRADE PARKING LOT AND INSTALL TRENCH DRAINS AND DRAIN INLETS, AS WELL AS ALL ASSOCIATED ONSITE PIPING.
12. OBTAIN STREET OPENING PERMIT FOR DRAINAGE CONNECTION TO EXISTING CATCH BASIN IN FENIMORE ROAD, AS WELL AS PROPOSED CURB CUT WIDENINGS.
13. INSTALL DRAINAGE WORK TRIBUTARY TO EXISTING MUNICIPAL CATCH BASIN IN FENIMORE ROAD UP TO LOCATION OF PROPOSED STORMWATER PLANTER18. EXCAVATE AND CONSTRUCT FOUNDATIONS FOR NEW BUILDING.
14. CONSTRUCT STORMWATER PLANTER ADJACENT TO BUILDING ADDITION.
15. CONSTRUCT BUILDING. INSTALL AND CONNECT ALL ROOF DRAIN LEADERS TO PREVIOUSLY INSTALLED STORMWATER PLANTER.
16. INSTALL CURBING, AND SUB-BASE COURSES. FINE GRADE AND SEED ALL DISTURBED AREAS. SPREAD SALT HAY OVER SEEDED AREAS.
17. INSTALL BITUMINOUS CONCRETE TOP COURSE.
18. CLEAN PAVEMENT, DRAIN LINES, CATCH BASINS AND PRETREATMENT DEVICES. CLEAN EXFILTRATION/ATTENUATION GALLERIES.
19. REMOVE ALL TEMPORARY SOIL EROSION AND SEDIMENT CONTROL MEASURES AFTER THE SITE IS STABILIZED WITH VEGETATION.

*SOIL EROSION AND SEDIMENT CONTROL MAINTENANCE MUST OCCUR EVERY TWO WEEKS AND PRIOR TO AND AFTER EVERY ½" OR GREATER RAINFALL EVENT.

CONSTRUCTION PRACTICES TO MINIMIZE STORMWATER CONTAMINATION:

GENERAL:

ADEQUATE MEASURES SHALL BE TAKEN TO MINIMIZE CONTAMINANT PARTICLES ARISING FROM THE DISCHARGE OF SOLID MATERIALS, INCLUDING BUILDING MATERIALS, GRADING OPERATIONS, AND THE RECLAMATION AND PLACEMENT OF PAVEMENT, DURING PROJECT CONSTRUCTION, INCLUDING BUT NOT LIMITED TO:

- BUILDING MATERIALS, GARBAGE, AND DEBRIS SHALL BE CLEANED UP DAILY AND DEPOSITED INTO DUMPSTERS, WHICH WILL BE PERIODICALLY REMOVED FROM THE SITE AND APPROPRIATELY DISPOSED OF. ALL DUMPSTERS AND CONTAINERS LEFT ON-SITE SHALL BE COVERED AND SURROUNDED WITH SILT FENCE IN ORDER TO PREVENT CONTAMINANTS FROM LEAVING THE SITE. SILT FENCING SHALL BE INSPECTED ON A WEEKLY BASIS.
- DUMP TRUCKS HAULING MATERIAL FROM THE CONSTRUCTION SITE WILL BE COVERED WITH A TARPAULIN.
- THE PAVED STREET ADJACENT TO THE SITE ENTRANCE WILL BE SWEPT DAILY TO REMOVE EXCESS MUD, DIRT, OR ROCK TRACKED FROM THE SITE.
- PETROLEUM PRODUCTS WILL BE STORED IN TIGHTLY SEALED CONTAINERS THAT ARE CLEARLY LABELED.
- ALL VEHICLES ON SITE WILL BE MONITORED FOR LEAKS AND RECEIVE REGULAR PREVENTIVE MAINTENANCE TO REDUCE THE CHANCE OF LEAKAGE.
- ALL SPILLS WILL BE CLEANED UP IMMEDIATELY UPON DISCOVERY. SPILLS LARGE ENOUGH TO REACH THE STORM SYSTEM WILL BE REPORTED TO THE NATIONAL RESPONSE CENTER AT 1-800-424-8802.
- MATERIALS AND EQUIPMENT NECESSARY FOR SPILL CLEANUP WILL BE KEPT IN THE TEMPORARY MATERIAL STORAGE TRAILER ONSITE. EQUIPMENT WILL INCLUDE, BUT NOT BE LIMITED TO, BROOMS, DUST PANS, MOPS, RAGS, GLOVES, GOGGLES, KITTY LITTER, SAND, SAW DUST, AND PLASTIC AND METAL TRASH CONTAINERS.
- ALL PAINT CONTAINERS AND CURING COMPOUNDS WILL BE TIGHTLY SEALED AND STORED WHEN NOT REQUIRED FOR USE. EXCESS PAINT WILL NOT BE DISCHARGED TO THE STORM SYSTEM, BUT WILL BE PROPERLY DISPOSED ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.
- SANITARY WASTE WILL BE COLLECTED FROM PORTABLE UNITS A MINIMUM OF TWO TIMES A WEEK TO AVOID OVERFILLING. ALL SANITARY WASTE UNITS SHALL BE SURROUNDED BY SILT FENCE TO PREVENT CONTAMINANTS FROM LEAVING THE SITE. SILT FENCING SHALL BE INSPECTED ON A WEEKLY BASIS.
- ANY ASPHALT SUBSTANCES USED ON-SITE WILL BE APPLIED ACCORDING TO THE MANUFACTURER'S RECOMMENDATION.
- FERTILIZERS WILL BE STORED IN A COVERED SHED AND PARTIALLY USED BAGS WILL BE TRANSFERRED TO A SEALABLE BIN TO AVOID SPILLS AND WILL BE APPLIED ONLY IN THE MINIMUM AMOUNTS RECOMMENDED BY THE MANUFACTURER AND WORKED INTO THE SOIL TO LIMIT EXPOSURE TO STORMWATER.
- NO DISTURBED AREA SHALL BE LEFT UN-STABILIZED FOR LONGER THAN 14 DAYS DURING THE GROWING SEASON.
- WHEN EROSION IS LIKELY TO BE A PROBLEM, GRUBBING OPERATIONS SHALL BE SCHEDULED AND PERFORMED SUCH THAT GRADING OPERATIONS AND PERMANENT EROSION CONTROL FEATURES CAN FOLLOW WITHIN 24 HOURS THEREAFTER.
- AS WORK PROGRESSES, PATCH SEEDING SHALL BE DONE AS REQUIRED ON AREAS PREVIOUSLY TREATED TO MAINTAIN OR ESTABLISH PROTECTIVE COVER.
- DRAINAGE PIPES AND SWALES/DITCHES SHALL GENERALLY BE CONSTRUCTED IN A SEQUENCE FROM OUTLET TO INLET IN ORDER TO STABILIZE OUTLET AREAS AND DITCHES BEFORE WATER IS DIRECTED TO THE NEW INSTALLATION OR ANY PORTION THEREOF, UNLESS CONDITIONS UNIQUE TO THE LOCATION WARRANT AN ALTERNATIVE METHOD.

SPILL CONTROL & SPILL RESPONSE:

- FOR ALL HAZARDOUS MATERIALS STORED ON SITE, THE MANUFACTURER'S RECOMMENDED METHODS FOR SPILL CLEAN UP WILL BE CLEARLY POSTED. SITE PERSONNEL WILL BE MADE AWARE OF THE PROCEDURES, AND THE LOCATIONS OF THE INFORMATION AND CLEANUP SUPPLIES.
- APPROPRIATE CLEANUP MATERIALS AND EQUIPMENT WILL BE MAINTAINED BY THE CONTRACTOR IN THE MATERIALS STORAGE AREA ON-SITE. AS APPROPRIATE, EQUIPMENT AND MATERIALS MAY INCLUDE ITEMS SUCH AS BOOMS, DUST PANS, MOPS, RAGS, GLOVES, GOGGLES, KITTY LITTER, SAND, SAWDUST, AND PLASTIC AND METAL TRASH CONTAINERS SPECIFICALLY FOR CLEAN UP PURPOSES.
- ALL SPILLS WILL BE CLEANED IMMEDIATELY AFTER DISCOVERY AND THE MATERIALS DISPOSED OF PROPERLY.
- THE SPILL AREA WILL BE KEPT WELL VENTILATED AND PERSONNEL WILL WEAR APPROPRIATE PROTECTIVE CLOTHING TO PREVENT INJURY FROM CONTACT WITH A HAZARDOUS SUBSTANCE.
- AFTER A SPILL, A REPORT WILL BE PREPARED DESCRIBING THE SPILL, WHAT CAUSED IT, AND THE CLEANUP MEASURES TAKEN. THE SPILL PREVENTION PLAN WILL BE ADJUSTED TO INCLUDE MEASURES TO PREVENT THIS TYPE OF SPILL FROM REOCCURRING, AS WELL AS CLEAN UP INSTRUCTIONS IN THE EVENT OF REOCCURRENCES.
- THE CONTRACTOR'S SITE SUPERINTENDENT, RESPONSIBLE FOR DAY-TO-DAY OPERATIONS, WILL BE THE SPILL PREVENTION AND CLEANUP COORDINATOR. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT THE SITE SUPERINTENDENT HAS HAD APPROPRIATE TRAINING FOR HAZARDOUS MATERIALS HANDLING, SPILL MANAGEMENT, AND CLEANUP.
- THE CONTRACTOR'S SITE SUPERINTENDENT WILL BE NOTIFIED IMMEDIATELY WHEN A SPILL OR THE THREAT OF A SPILL IS OBSERVED. THE SUPERINTENDENT WILL ASSESS THE SITUATION AND DETERMINE THE APPROPRIATE RESPONSE.
- IF SPILLS REPRESENT AN IMMINENT THREAT OF ESCAPING EROSION AND SEDIMENT CONTROLS AND ENTERING RECEIVING WATERS, PERSONNEL WILL BE DIRECTED TO RESPOND IMMEDIATELY TO CONTAIN THE RELEASE AND NOTIFY THE SUPERINTENDENT AFTER THE SITUATION HAS BEEN STABILIZED.
- SPILL KITS CONTAINING APPROPRIATE MATERIALS AND EQUIPMENT FOR SPILL RESPONSE AND CLEANUP WILL BE MAINTAINED BY THE CONTRACTOR AT THE SITE.
- IF OIL SHEEN IS OBSERVED ON SURFACE WATER, ACTION WILL BE TAKEN IMMEDIATELY TO REMOVE THE MATERIAL CAUSING THE SHEEN. THE CONTRACTOR WILL USE APPROPRIATE MATERIALS TO CONTAIN AND ABSORB THE SPILL. THE SOURCE OF THE OIL SHEEN WILL ALSO BE IDENTIFIED AND REMOVED OR REPAIRED AS NECESSARY TO PREVENT FURTHER RELEASES.
- IF A SPILL OCCURS THE SUPERINTENDENT OR THE SUPERINTENDENT'S DESIGNEE WILL BE RESPONSIBLE FOR COMPLETING THE SPILL REPORTING FORM AND FOR REPORTING THE SPILL TO THE CONTACTS LISTED BELOW.
- PERSONNEL WITH PRIMARY RESPONSIBILITY FOR SPILL RESPONSE AND CLEAN UP WILL RECEIVE TRAINING BY THE CONTRACTOR'S SITE SUPERINTENDENT OR DESIGNEE. THE TRAINING MUST INCLUDE IDENTIFYING THE LOCATION OF THE SPILL KITS AND OTHER SPILL RESPONSE EQUIPMENT AND THE USE OF SPILL RESPONSE MATERIALS.
- SPILL RESPONSE EQUIPMENT WILL BE INSPECTED AND MAINTAINED AS NECESSARY TO REPLACE ANY MATERIALS USED IN SPILL RESPONSE ACTIVITIES.

ANY ALTERATIONS OR REVISIONS OF THESE PLANS, UNLESS DONE BY OR UNDER THE DIRECTION OF THE NYS LICENSED AND REGISTERED ENGINEER THAT PREPARED THEM, IS A VIOLATION OF THE NYS EDUCATION LAW.

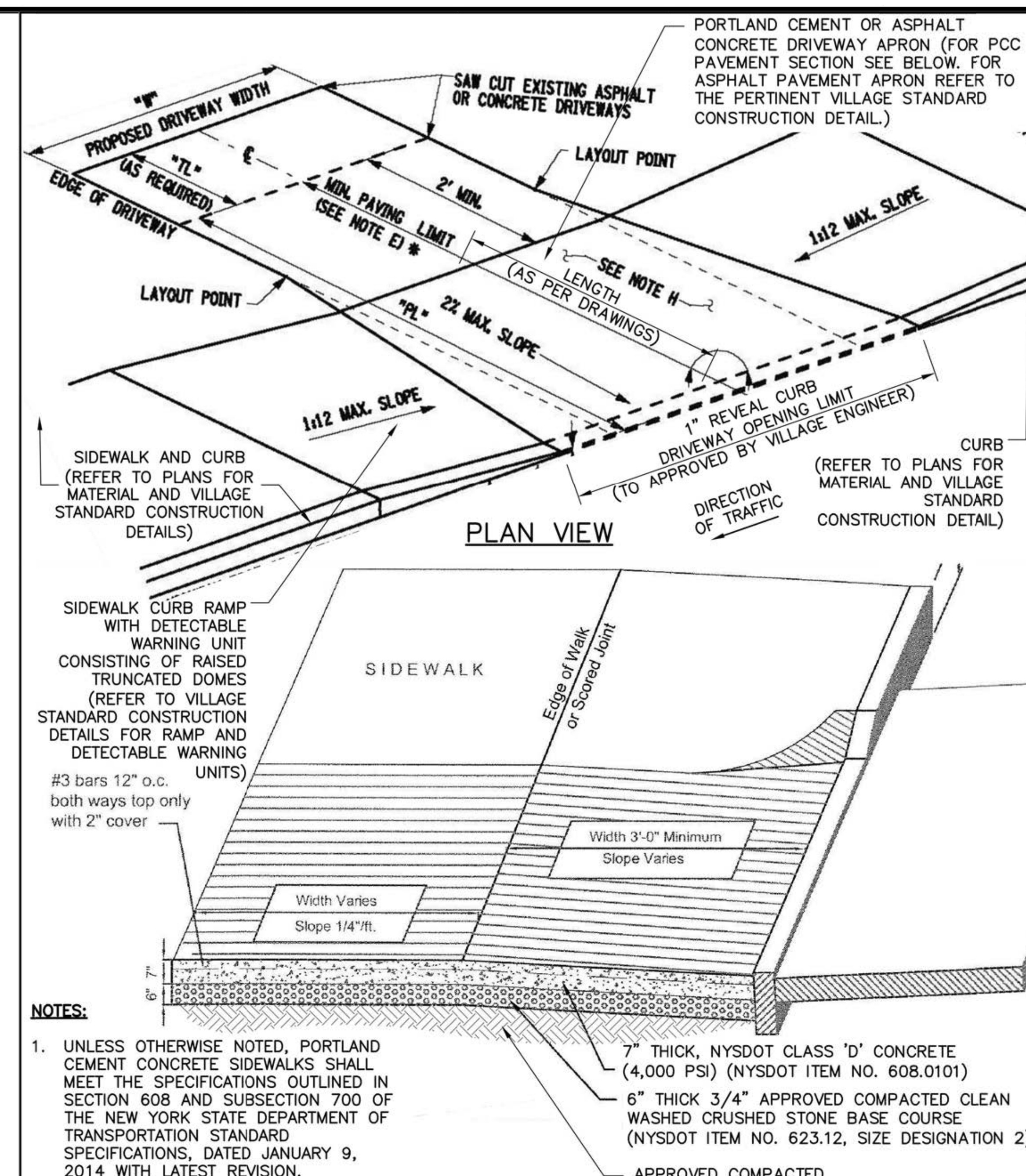
SPILL CONTROL NOTIFICATION:

- A REPORTABLE SPILL IS A QUANTITY OF FIVE (5) GALLONS OR MORE OR ANY SPILL OF OIL WHICH: (1) VIOLATES WATER QUALITY STANDARDS, (2) PRODUCES A "SHEEN" ON A SURFACE WATER, OR (3) CAUSES A SLUDGE OR EMULSION. THIS SPILL MUST BE REPORTED IMMEDIATELY TO THE AGENCIES LISTED BELOW.
- ANY SPILL OF OIL OR HAZARDOUS SUBSTANCE TO WATERS OF THE STATE MUST BE REPORTED IMMEDIATELY BY TELEPHONE TO THE FOLLOWING AGENCIES:
  - 911 – POLICE, FIRE AND EMS
  - VILLAGE OF MAMARONECK ENGINEERING DEPARTMENT
169 MOUNT PLEASANT AVENUE
MAMARONECK, NY 10543
PHONE: (914) 777-7731
  - VILLAGE OF MAMARONECK FIRE DEPARTMENT
123 MAMARONECK AVENUE
MAMARONECK, NY 10543
PHONE: (914) 825-8777
  - NYS DEPARTMENT OF ENVIRONMENTAL CONSERVATION (NYSDEC)
SPILL REPORTING HOTLINE
(1800) 457-7362
  - NATIONAL RESPONSE CENTER: (1800) 424-8802
  - LOCAL EMERGENCY PLANNING COMMITTEE (LEPC)
WESTCHESTER COUNTY OFFICE OF EMERGENCY MANAGEMENT
200 BRADHURST AVENUE
HAWTHORNE, NY 10532
(914) 864-5450
  - WESTCHESTER COUNTY DEPARTMENT OF HEALTH (WCDOH)
SPILL REPORTING HOTLINE
(914) 813-5000
  - U.S. ENVIRONMENTAL PROTECTION AGENCY (USEPA)
EPCRA INFORMATION HOTLINE
(1800) 535-0202
  - U.S. DEPARTMENT OF LABOR AND OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA)
TARRYTOWN, NY
(914) 524-7510

STORMWATER MANAGEMENT FACILITIES MAINTENANCE PROGRAM

MEASURE	DATES FOR INSPECTION	TIMING, ACTIVITY, AND LOCATION
GENERAL MAINTENANCE (STORM SEWER, CATCH BASINS/ DRAIN INLETS, MANHOLES, PRE-TREATMENT DEVICE AND INFILTRATION BASIN)	ALL	ALL STORMWATER FACILITIES SHALL BE INSPECTED IMMEDIATELY AFTER COMPLETION OF CONSTRUCTION, AND THEN MONTHLY FOR THE FIRST THREE (3) MONTHS FOLLOWING THE COMPLETION OF THE PROJECT. WITHIN THE FIRST THREE (3) MONTHS, INSPECTIONS SHALL IMMEDIATELY BE PERFORMED FOLLOWING A LARGE STORM EVENT (I.E. PRODUCING 1/2" (ONE-HALF INCH) OF RAIN OR GREATER. THEREAFTER, THESE FACILITIES SHALL BE INSPECTED AS DESCRIBED AS FOLLOWS. UPON INSPECTION, FACILITIES SHALL BE IMMEDIATELY MAINTAINED AND/OR CLEANED AS MAY BE REQUIRED. ANY SITE AREAS EXHIBITING SOIL EROSION OF ANY KIND SHALL BE IMMEDIATELY RESTORED AND STABILIZED WITH VEGETATION, MULCH OR STONE, DEPENDING ON THE AREA TO BE STABILIZED. UPON EACH INSPECTION, ALL VISIBLE DEBRIS INCLUDING, BUT NOT LIMITED TO, TWIGS, LEAF AND FOREST LITTER SHALL BE REMOVED FROM THE BASIN, OVERFLOW DISCHARGE POINTS AND FRAMES AND GRATES OF DRAINAGE STRUCTURES.
SUMPS – CATCH BASIN/DRAIN INLETS AND DRAIN MANHOLES	UPON COMPLETION OF CONSTRUCTION: –ONCE A MONTH FOR THE FIRST THREE (3) MONTHS AFTER FIRST THREE (3) MONTHS: –EVERY FOUR (4) MONTHS THEREAFTER	ALL CATCH BASIN/DRAIN INLETS AND DRAIN MANHOLES WITH SUMPS HAVE BEEN DESIGNED TO TRAP SEDIMENT PRIOR TO ITS TRANSPORT TO THE INFILTRATION PRACTICE AND, ULTIMATELY, DOWNSTREAM. THESE SUMPS WILL REQUIRE PERIODIC INSPECTION AND MAINTENANCE TO ENSURE THAT ADEQUATE DEPTH IS MAINTAINED WITHIN THE SUMPS. THE OWNER, OR THEIR DULY AUTHORIZED REPRESENTATIVE, SHALL TAKE MEASUREMENTS OF THE SUMP DEPTH. IF SEDIMENT HAS ACCUMULATED TO 1/2 (ONE-HALF) THE DEPTH OF THE SUMP, ALL SEDIMENT SHALL BE REMOVED FROM THE SUMP. SEDIMENTS CAN BE REMOVED WITH HAND-LABOR OR WITH A VACUUM TRUCK. THE USE OF ROAD SALT SHALL BE MINIMIZED FOR MAINTENANCE OF ROADWAY AND DRIVEWAY AREAS.
EXISTING HYDRODYNAMIC SEPARATOR	UPON COMPLETION OF CONSTRUCTION: –QUARTERLY FOR FIRST YEAR AFTER FIRST YEAR: –EVERY SIX (6) MONTHS THEREAFTER (SPRING & FALL)	THE HYDRODYNAMIC SEPARATOR DEVICE LOCATED IMMEDIATELY UPSTREAM OF THE OUTFALL SHALL BE MAINTAINED DURING DRY WEATHER CONDITIONS. ANY ACCUMULATED SEDIMENTS SHALL BE VACUUMED OUT WHEN SEDIMENT HAS REACHED 1/2 (ONE-HALF) THE CAPACITY OF THE ISOLATED SUMP, OR WHEN AN APPRECIABLE LEVEL OF HYDROCARBONS AND TRASH HAS ACCUMULATED, WHICHEVER OCCURS FIRST. WHEN THE SEDIMENT PILE IS WITHIN 30 TO 36 INCHES OF THE WATER SURFACE, THE SYSTEM SHOULD BE MAINTAINED. A VACUUM TRUCK SHALL BE USED TO REMOVE THE ACCUMULATED SEDIMENT AND DEBRIS. REFER TO MANUFACTURER'S LITERATURE FOR DETAILED MAINTENANCE INSTRUCTIONS.
STORMWATER PLANTER	UPON COMPLETION OF CONSTRUCTION: –TWICE IN THE FIRST SIX(6) MONTHS & AFTER EACH STORM EVENT GREATER THAN 0.5-INCHES AFTER FIRST YEAR: –EVERY FOUR (4) MONTHS THEREAFTER & AFTER STORM EVENTS GREATER THAN THE 1-YEAR STORM	ROUTINE MAINTENANCE ACTIVITIES INCLUDE PRUNING AND REPLACING DEAD OR DYING VEGETATION, PLANT THINNING, AND EROSION REPAIR. SINCE STORMWATER PLANTERS ARE NOT TYPICALLY PRECEDED BY PRE-TREATMENT PRACTICES, THE SOIL SURFACE SHOULD BE INSPECTED FOR EVIDENCE OF SEDIMENT BUILD-UP FROM THE CONNECTED IMPERVIOUS SURFACE AND FOR SURFACE PONDING. ATTENTION SHOULD BE PAID TO ADDITIONAL SEASONAL MAINTENANCE NEEDS AS WELL AS THE FIRST GROWING SEASON.

- DURING CONSTRUCTION, THE PARTY RESPONSIBLE FOR IMPLEMENTING THE TEMPORARY (DURING CONSTRUCTION) STORMWATER MANAGEMENT FACILITIES MAINTENANCE PROGRAM WILL BE THE CONTRACTOR. THE NAME AND CONTACT INFORMATION WILL BE FILED WITH THE TOWN OF YORKTOWN AND THE NYSDEC AT THE TIME OF THE PRE-CONSTRUCTION MEETING. THE PERMANENT MAINTENANCE PROGRAM FOR ALL NEW STORMWATER MANAGEMENT FACILITIES WILL BE MANAGED BY THE INDIVIDUAL HOMEOWNERS UPON COMPLETION OF CONSTRUCTION AND ACCEPTANCE OF THE IMPROVEMENTS.



REINFORCED CONCRETE DRIVEWAY

TYPICAL SECTION

NOTES:

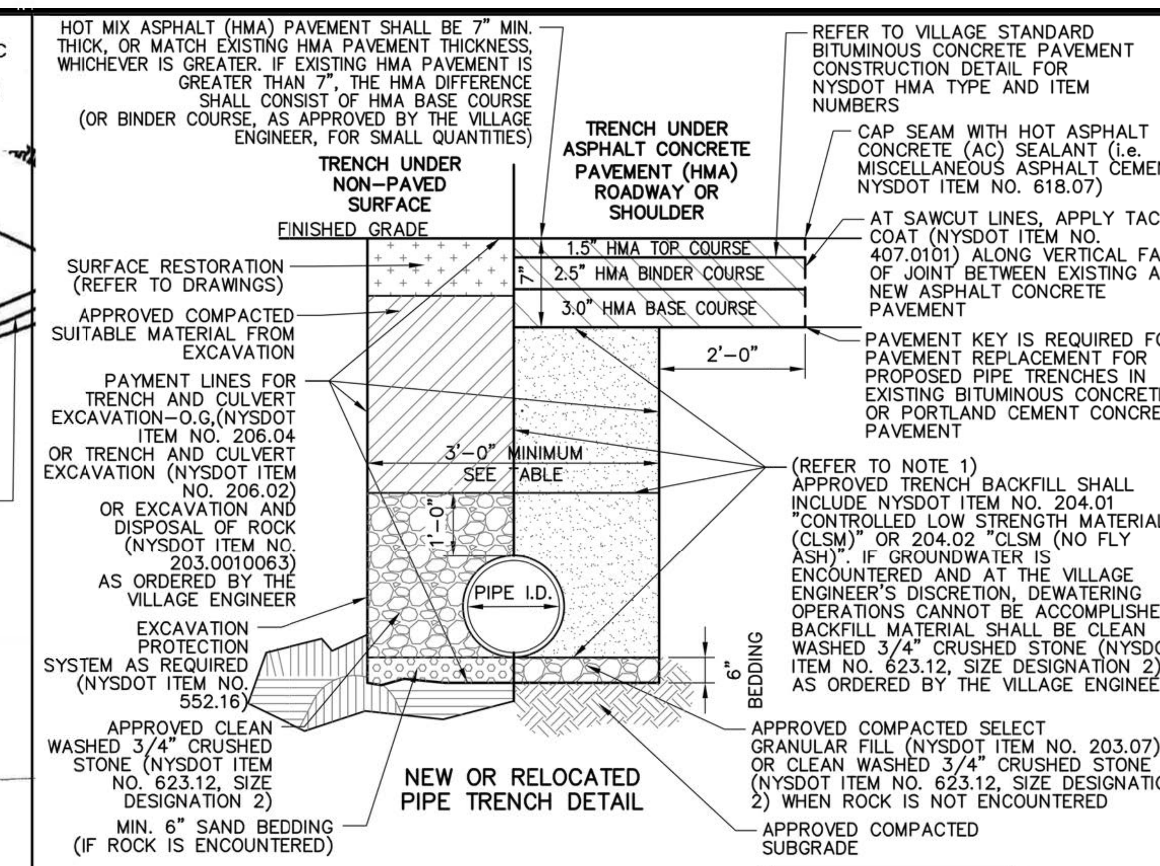
1. UNLESS OTHERWISE NOTED, PORTLAND CEMENT CONCRETE SIDEWALKS SHALL MEET THE SPECIFICATIONS OUTLINED IN SECTION 608 AND SUBSECTION 700 OF THE NEW YORK STATE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS, DATED JANUARY 9, 2014 WITH LATEST REVISION.
2. CONVENTIONALLY FORMED CONCRETE SHALL MEET THE REQUIREMENTS FOR CLASS D IN ACCORDANCE WITH SECTION 501 "PORTLAND CEMENT CONCRETE--GENERAL."

VILLAGE OF MAMARONECK STANDARD CONSTRUCTION DETAILS
PREPARED IN THE OFFICE OF THE VILLAGE ENGINEER

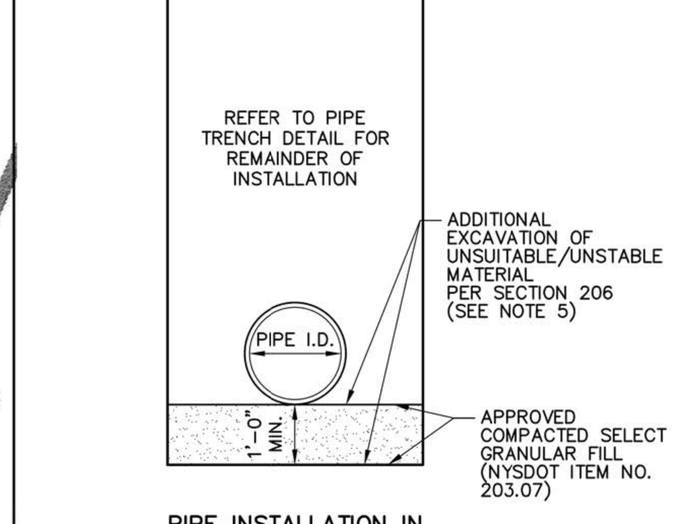
PORTLAND CEMENT CONCRETE TAPERED DRIVEWAY APRON (SIDEWALK ABUTTING ROADWAY)
DESIGNED BY: ARC, PE CHECKED BY: ARC, PE
DRAWN BY: ARC, PE VOM PCC Driveway.dwg

VILLAGE OF MAMARONECK
VILLAGE MUNICIPAL BUILDING
169 MT. PLEASANT AVENUE (3RD FLOOR)
WESTCHESTER COUNTY
VILLAGE OF MAMARONECK, NY 10543
PHONE: (914) 777-7731
FAX: (914) 777-7792

PROJECT: DETAILS
SCALE: NOT TO SCALE
DATE: 03/13/2014
SD-5E



NEW OR RELOCATED PIPE TRENCH DETAIL



PIPE INSTALLATION IN UNSTABLE OR UNSUITABLE SOIL CONDITIONS

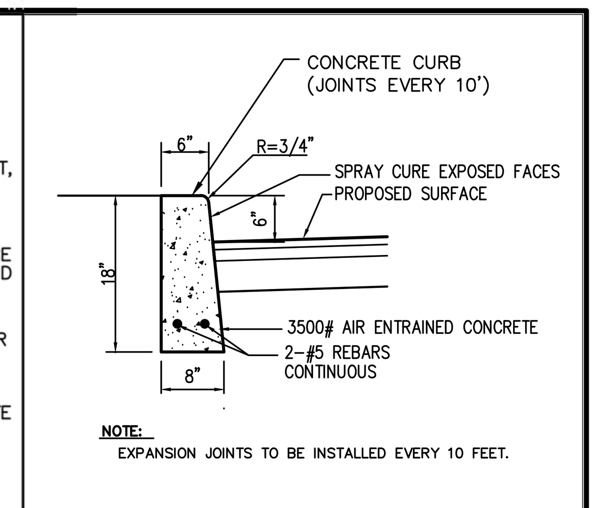
EXCAVATION PAYMENT WIDTHS	
PIPE INSIDE DIAMETER (I.D.)	TRENCH WIDTH
3	3'-0"
4	3'-0"
6	3'-0"
8	3'-0"
10	3'-0"
12	3'-0"
14	3'-6"
16	3'-6"
18	3'-6"
20	4'-0"
24	4'-0"
30	4'-6"
36	5'-0"
42	5'-6"
48	6'-0"
54	6'-6"
60	7'-0"
64	7'-6"

VILLAGE OF MAMARONECK STANDARD CONSTRUCTION DETAILS
PREPARED IN THE OFFICE OF THE VILLAGE ENGINEER

PIPE TRENCH AND ASPHALT CONCRETE PAVEMENT RESTORATION
DESIGNED BY: ARC, PE CHECKED BY: ARC, PE
DRAWN BY: ARC, PE VOM Pipe Trench and Asphalt Re

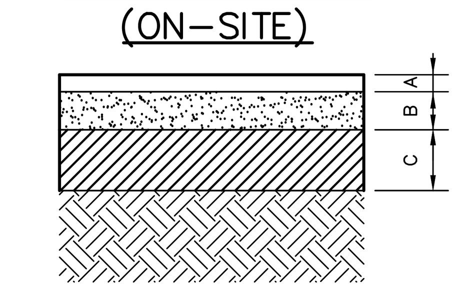
VILLAGE OF MAMARONECK
VILLAGE MUNICIPAL BUILDING
169 MT. PLEASANT AVENUE (3RD FLOOR)
WESTCHESTER COUNTY
VILLAGE OF MAMARONECK, NY 10543
PHONE: (914) 777-7731
FAX: (914) 777-7792

PROJECT: DETAILS
SCALE: NOT TO SCALE
DATE: 03/13/2014
REV: 10/16/2014
SD-2A



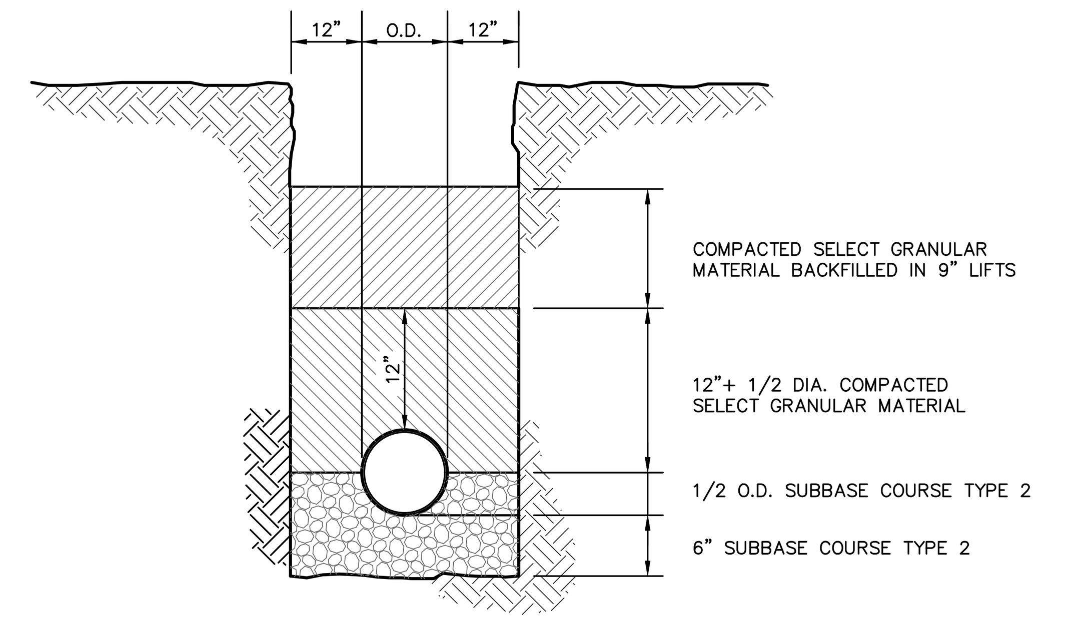
NOTE:
EXPANSION JOINTS TO BE INSTALLED EVERY 10 FEET.

CONCRETE CURB (ON-SITE)

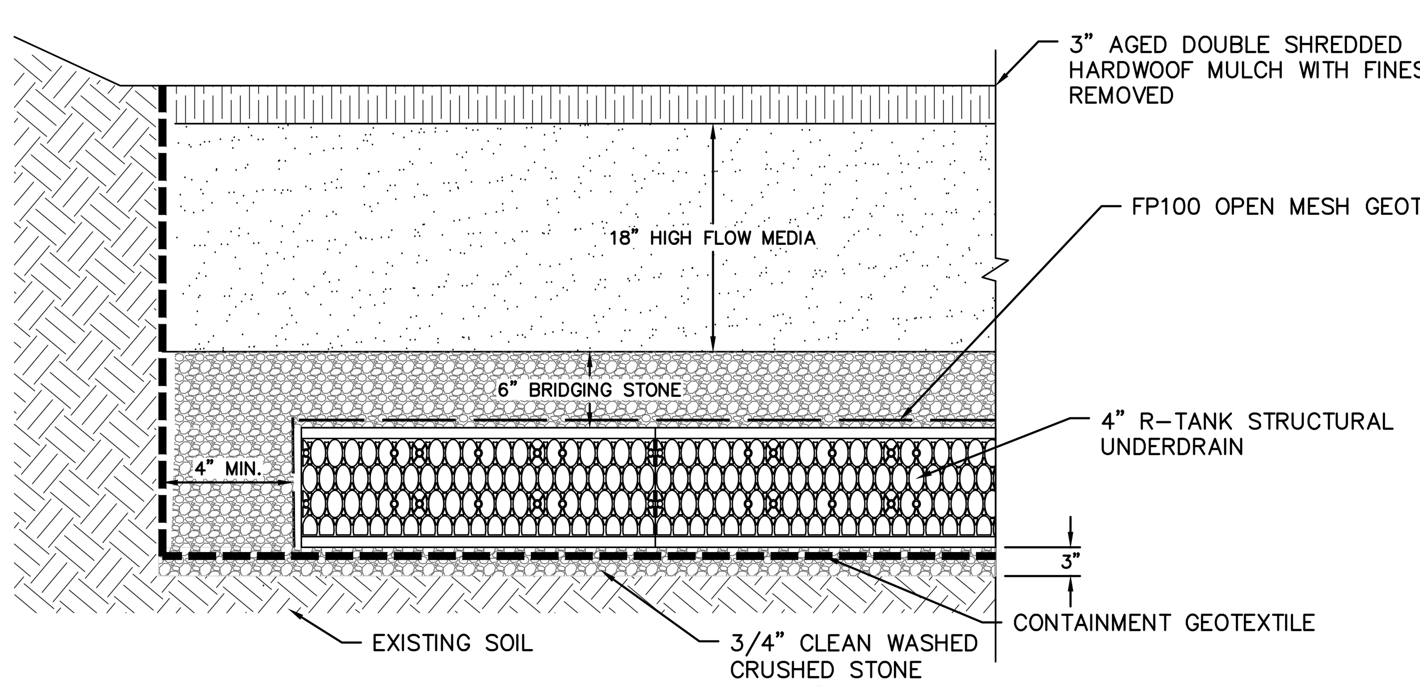


A– 2" TOP COURSE– N.Y.S.D.O.T. ITEM, 403.178202, TYPE 6 F2
B– 4" BINDER COURSE N.Y.S.D.O.T. ITEM, 403.13, TYPE 3
C– 6" SUBBASE COURSE– N.Y.S.D.O.T. ITEM, 304.12, TYPE 2

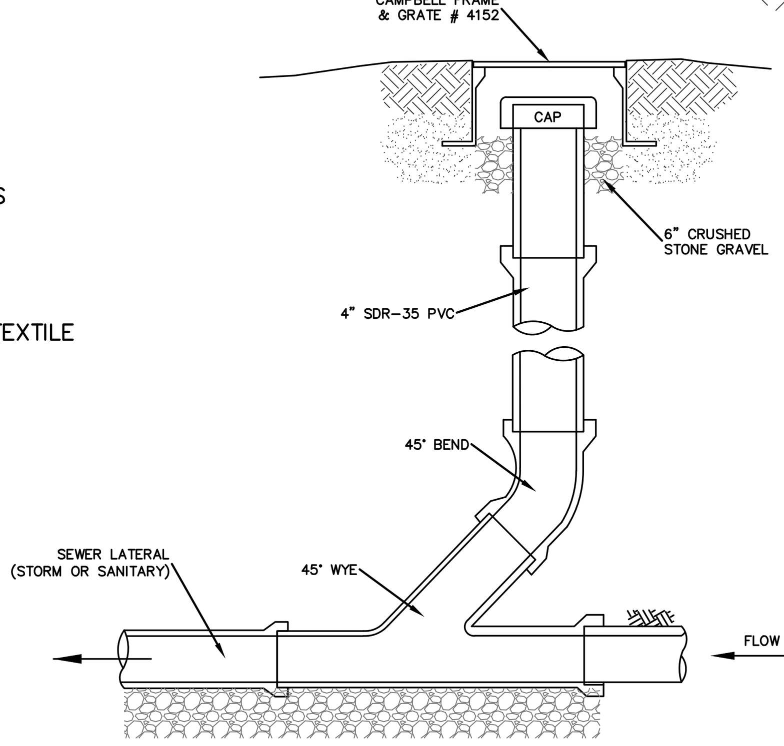
PAVEMENT SECTION (ON-SITE)



TRENCH BEDDING (ON-SITE)



FOCALPOINT FILTER

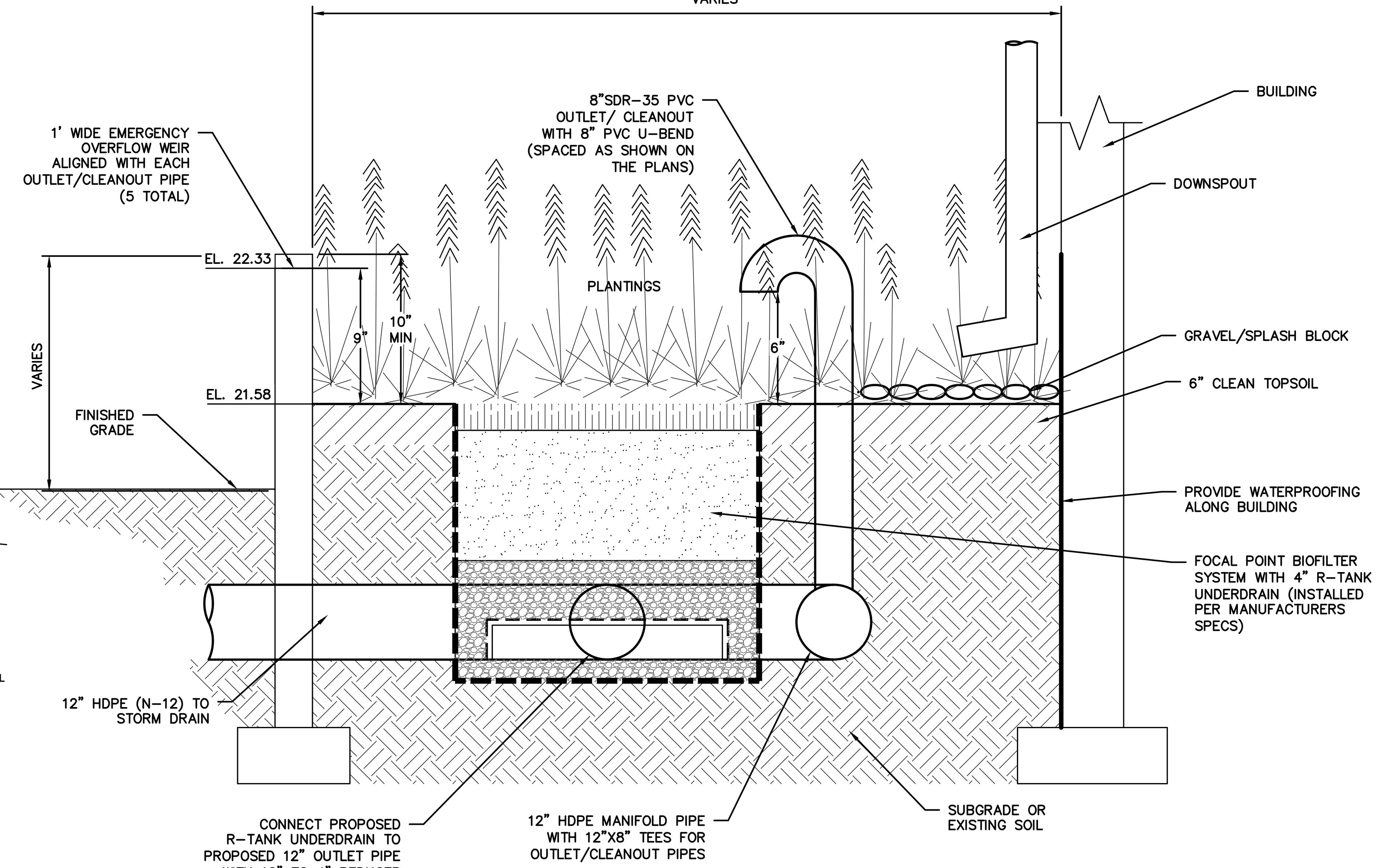


SEWER CLEANOUT DETAIL (GRAVITY)

(STORM OR SANITARY)

NOTES (SANITARY SEWER SERVICES):
1. ALL SANITARY SEWER SERVICES TO BE 4"ø SDR-35 @ 1.0% MINIMUM.
2. IN ACCORDANCE WITH THE NYS RESIDENTIAL BUILDING CODE, THE FOLLOWING REQUIREMENTS APPLY:
   A. CLEANOUTS SHALL BE INSTALLED NOT MORE THAN 100 FEET APART IN HORIZONTAL DRAINAGE LINES (P3005.2.2).
   B. CLEANOUTS SHALL BE INSTALLED AT EACH CHANGE OF DIRECTION OF THE DRAINAGE SYSTEM GREATER THAN 45 DEGREES.
   C. CLEANOUTS SHALL BE INSTALLED SO THAT THE CLEANOUT OPENS TO ALLOW CLEANING IN THE DIRECTION OF THE FLOW OF THE DRAINAGE LINE (P3005.2.8).

NOTES (STORM SEWER):
1. REFER TO PLAN FOR SPECIFIC PIPE SIZING AND SLOPE SPECIFICATIONS; HOWEVER, IN GENERAL, ALL STORM SEWER SERVICES TO BE 6"ø SDR-35 @ 1.0% MINIMUM.
2. CLEANOUTS SHALL BE PLACED BEFORE SIGNIFICANT PIPE BEND LOCATIONS (I.E., JUNCTIONS, 90-DEGREE BENDS, ETC.) UNLESS A ROOF LEADER DOWNSPOUT CONNECTION IS PROPOSED.



STORMWATER PLANTER WITH FOCAL POINT FILTER SYSTEM

No.	Description	Date
1.	REVISED PER TOWN COMMENTS	9-27-18

Revisions

THIS PLAN NOT VALID FOR CONSTRUCTION WITHOUT ENGINEERS SEAL & SIGNATURE

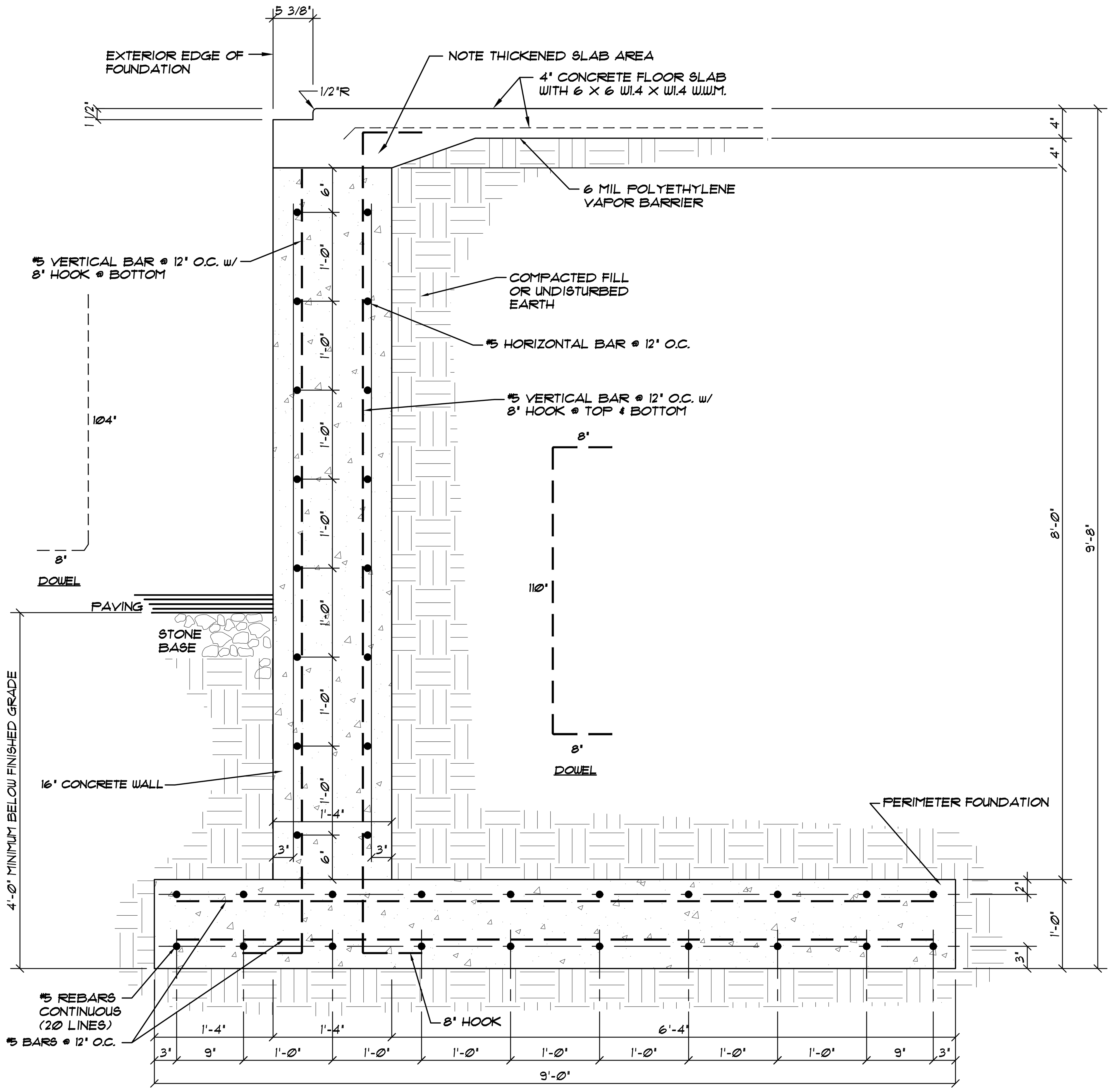
PROJECT:
SELF STORAGE BUILDING ADDITION
560 FENIMORE ROAD
VILLAGE OF MAMARONECK
WESTCHESTER COUNTY – NEW YORK

SITE DETAILS

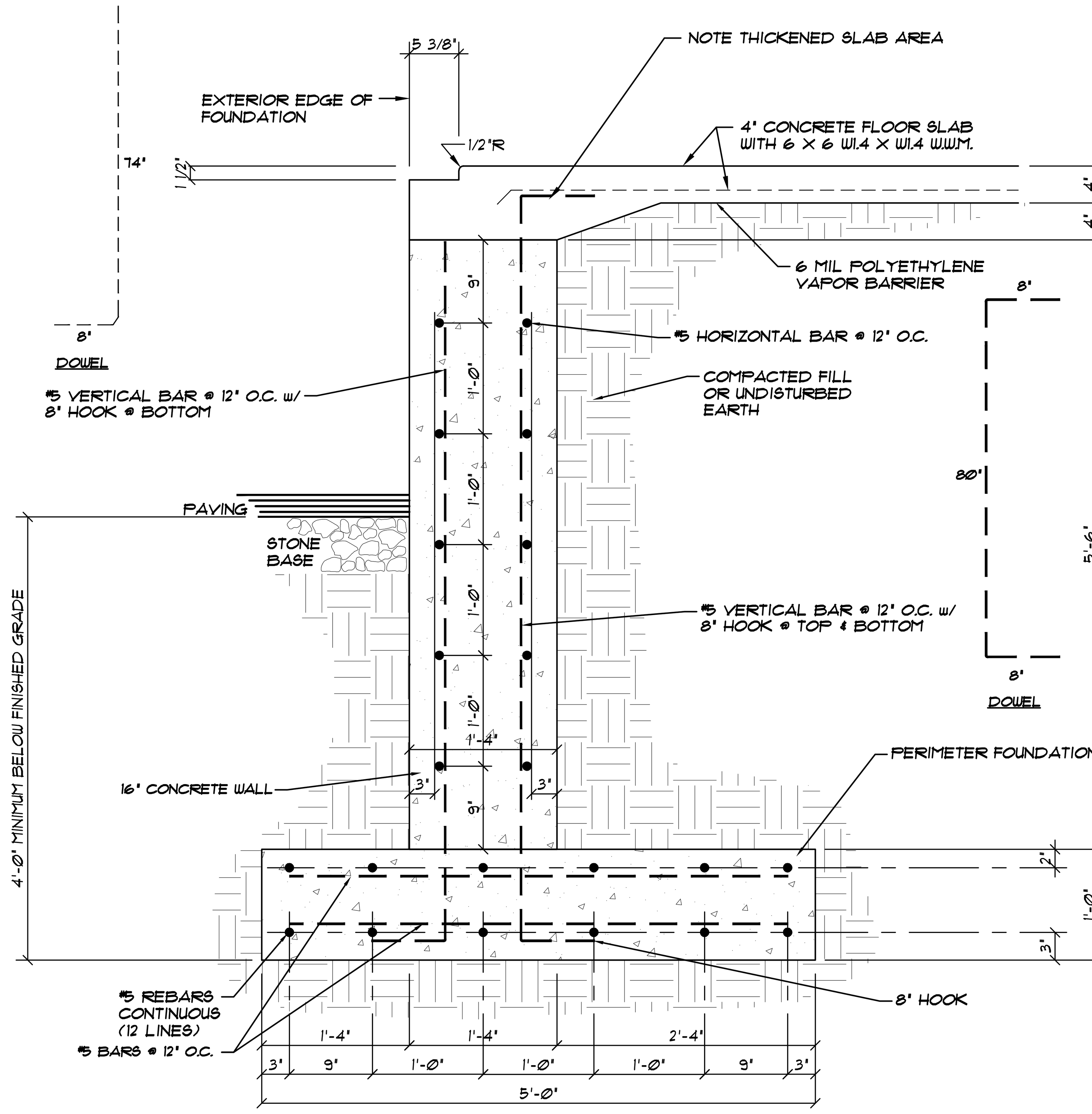
HEC
HUDSON ENGINEERING & CONSULTING, P.C.
45 Knollwood Road – Suite 201
Elmsford, New York 10523
T: 914-909-0420
F: 914-560-2086

STATE OF NEW YORK · MICHAEL F. STEIN · LICENSED PROFESSIONAL ENGINEER · No. 80637

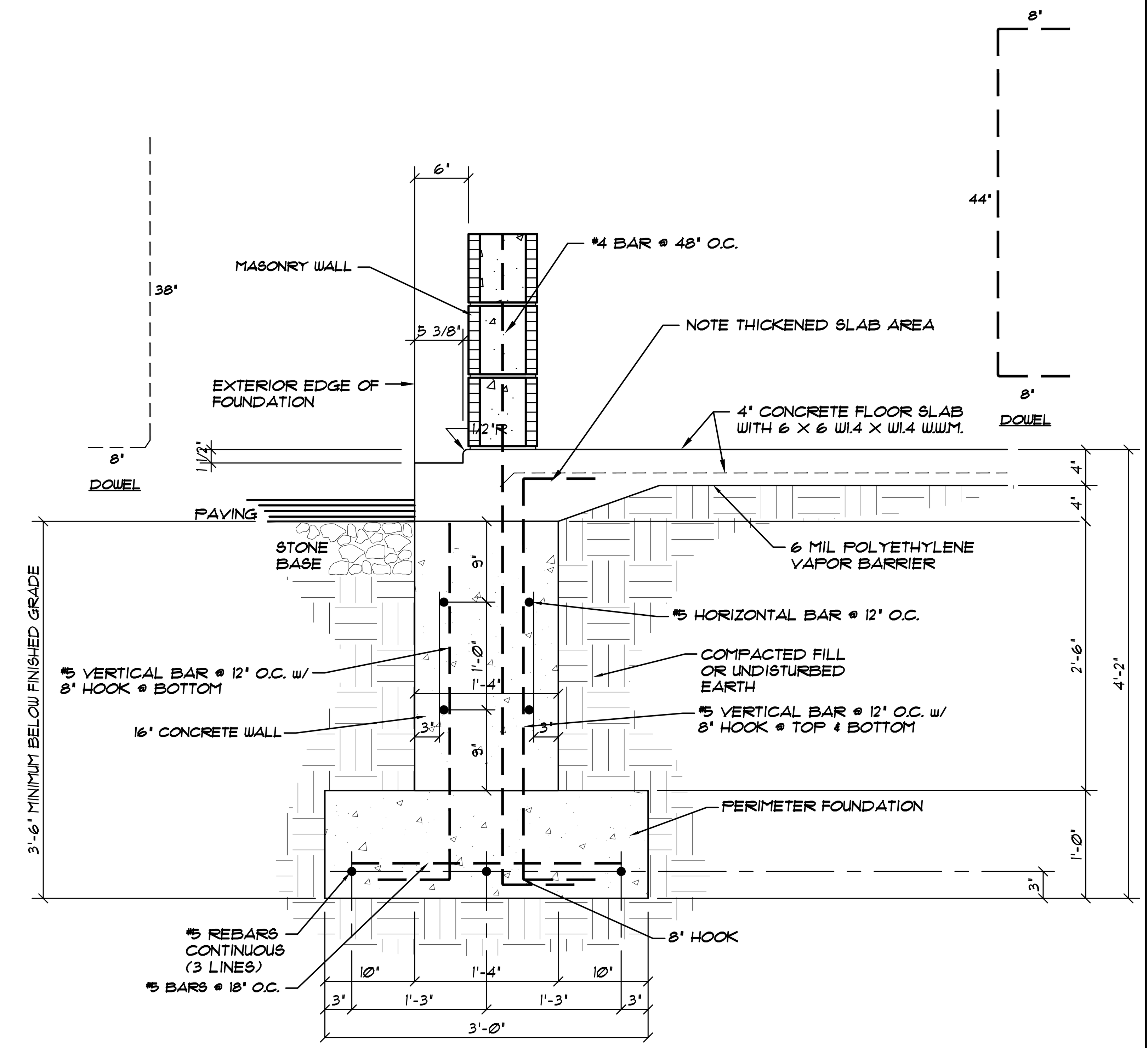
Date: 2/8/18
Scale: 1" = 20'
Designed By: D.C.
Checked By: M.S.
Sheet: 7 / 7
Sheet No. C-7



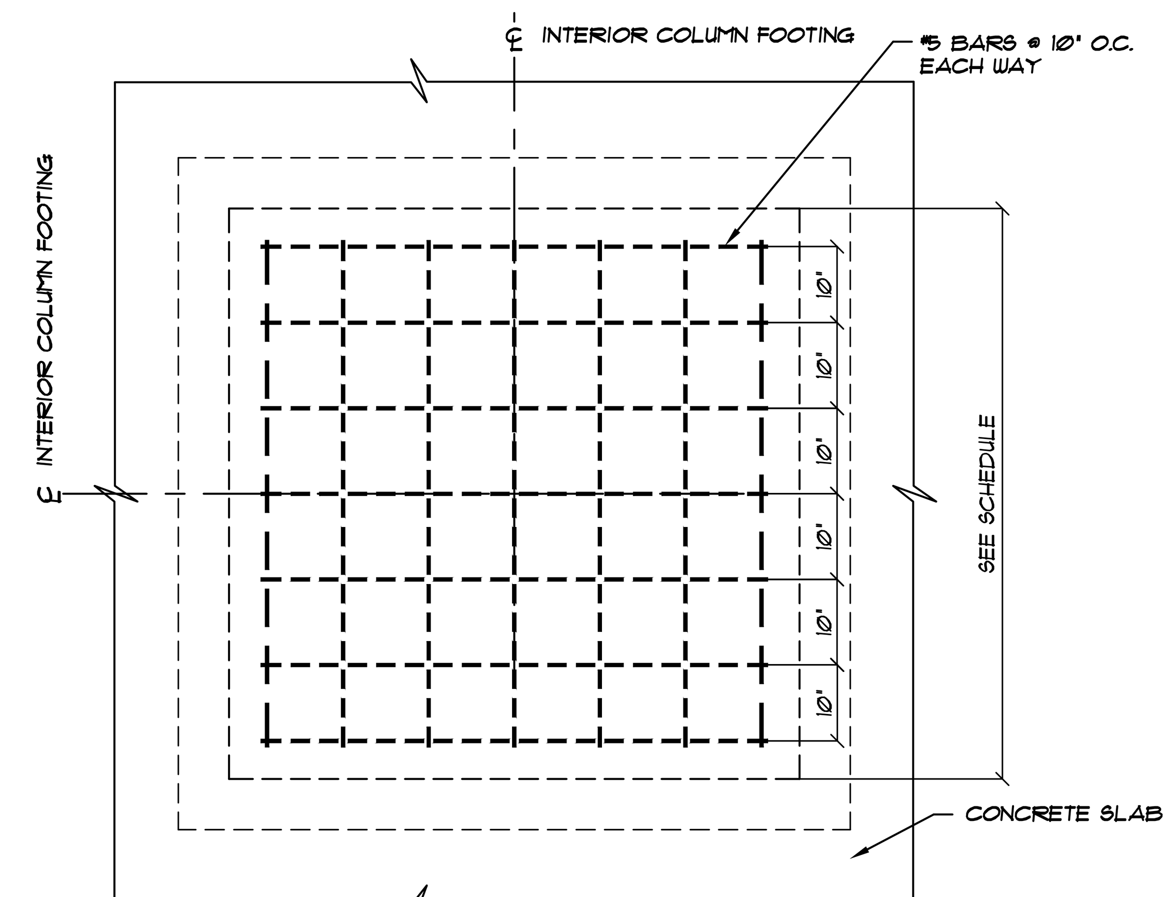
E / F5 PERIMETER FOUNDATION SECTION
NOT TO SCALE



D / F5 PERIMETER FOUNDATION SECTION
NOT TO SCALE

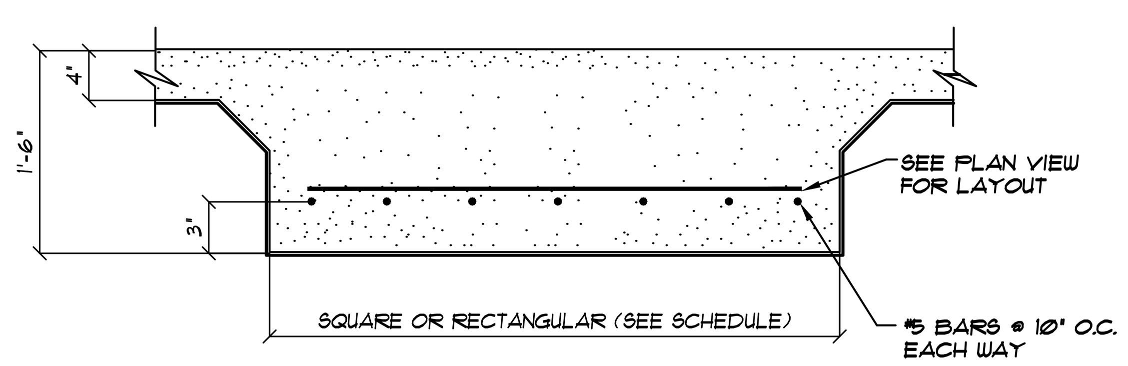


C / F5 PERIMETER FOUNDATION SECTION
NOT TO SCALE

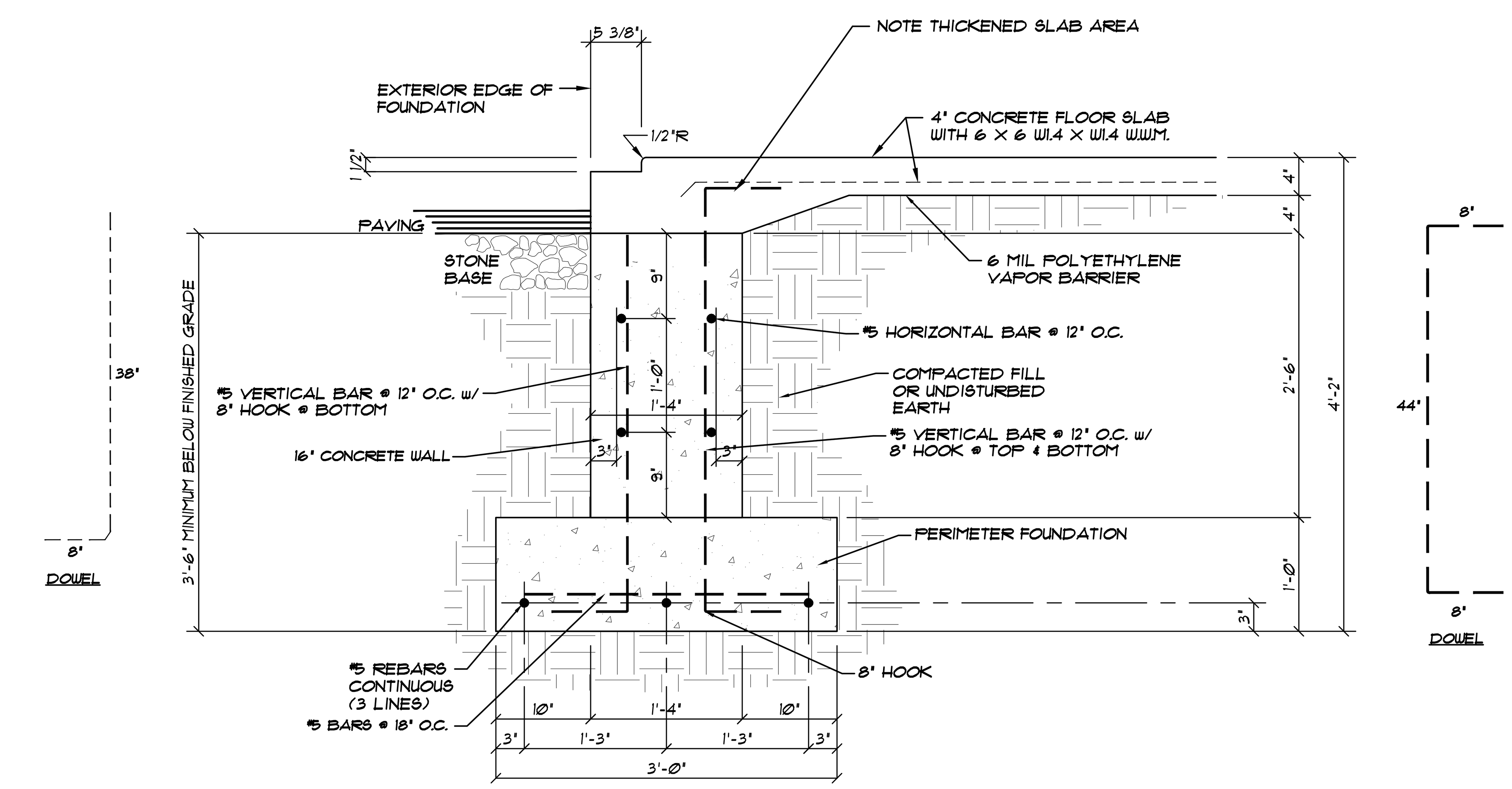


B / F5 STEEL LAYOUT PLAN SQUARE/RECTANGULAR INTERIOR COLUMN FOOTING
NOT TO SCALE

FOOTING SCHEDULE	
ID	SIZE
F4	4'-0" x 4'-0"
F5	5'-0" x 5'-0"
F7	7'-0" x 7'-0"



SECTION @ FOOTING



A / F5 PERIMETER FOUNDATION SECTION
NOT TO SCALE

REVISIONS	DATE	BY

DATE: 5/15/14
DRAWN BY: J. MORRISON
SCALE: AS NOTED
APPROVED BY:

BETCO
P.O. BOX 1650
STATESVILLE, NC 28687
(800)654-7813

PROJECT NAME: MAMARONECK SELF STORAGE
PROJECT ADDRESS: MAMARONECK, NEW YORK
OWNER: MAMARONECK SELF STORAGE, LLC.
PROJECT NO.: NY14056
SHEET TITLE: FOUNDATION DETAILS BUILDING "1"
DRAWING NUMBER: F5 of 10

APPENDIX 2

Alternative to Truck Washing Station

APPENDIX 2

416 Waverly Avenue
Mamaroneck, New York

Excavation Work Plan
Truck Cleaning and Inspection Station

January 2019

The site excavation activities are planned following Town approval of the Application for the proposed building expansion. The following truck cleaning and maintenance plan is proposed during all Site excavation and cleanup activities as an alternative to a Truck Washing Station:

- Installation and maintenance of two stabilized construction entrances at the Site entry and exit points.

- Two truck access points will be installed on the west and north ends of the Site so that truck access will be feasible from two sides of the Site.

- Placement of a full-time gatekeeper at the Site to control truck entry and departure from the Site. The gatekeeper will be a competent person, OSHA HAZWOPER trained and experienced in construction, excavation and dump trailer operation. The gatekeeper will be responsible for ensuring that no truck leaves the Site with excavated soil from the Site on any part of the truck exterior.

- After each truck is loaded by the on-Site excavator, the gatekeeper will visually inspect the entire truck on the temporary access driveway or the stabilized construction entrance for the presence of fugitive soil before the truck leaves the Site. If soil is observed anywhere on the truck exterior, the material will be removed using a bristle broom or other hand tools to the satisfaction of the gatekeeper. The driveway and stabilized construction entrance will also be kept free of loose excavated material through maintenance with a shovel and broom. Polyethylene sheeting may be used to shroud the side of the truck that is being loaded. The sheeting will prevent fugitive soil from accumulating on the dump trailer exterior.

- Prior to departure and signing the soil manifests, the on-Site geologist or environmental scientist will visually observe each truck for the presence of spillage on the truck exterior and, if present, will require that it be swept and removed.

- An on-Site water source will be maintained on standby at all times in case trucks need to be spot-washed to ensure that no soil from the Site leaves the designated loading and on-Site truck staging inspection area. Whenever required, a water and Alconox solution will be used to clean the trucks.

- If the above-outlined alternative truck cleaning plan is not effective at ensuring soil from the excavation area does not get tracked off-Site, then the Contractor shall be prepared to implement a full-blown truck washing station.

Site Remediation Database Search Results

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Environmental Site Remediation Database Search Details

Site Record

Administrative Information

Site Name: Former EMCA Site
Site Code: 360025
Program: State Superfund Program
Classification: 04
EPA ID Number:

Location

DEC Region: 3
Address: 605 Center Avenue and 604 Fayette Avenue
City: Mamaroneck Zip: 10543
County: Westchester
Latitude: 40.94879459
Longitude: -73.74587053
Site Type: STRUCTURE
Estimated Size: 0.344 Acres

Institutional And Engineering Controls

Control Type:
Environmental Easement

Control Elements:
Ground Water Use Restriction
Landuse Restriction
Monitoring Plan
Site Management Plan
IC/EC Plan

Site Owner(s) and Operator(s)

Current Owner Name: Altice - USA
Current Owner(s) Address: 1111 Stewart Avenue
Bethpage,NY, 11714-3581
Owner(s) during disposal: The Dow Chemical Company
Current On-Site Operator: EMCA
Stated Operator(s) Address: 605 Center Ave. & 604 Fayette Avenue
Mamaroneck,NY 10543
Current On-Site Operator: EMCA/SUB ROHM & HAAS/SUB THE DOW CHEM. CO.
Stated Operator(s) Address:
PHILADELPHIA,PA

Site Document Repository

Name: VILLAGE OF MAMARONECK
Address: 123 MAMARONECK AVENUE
MAMARONECK,NY 10543-0369
Name: MAMARONECK PUBLIC LIBRARY
Address: 136 PROSPECT AVENUE
MAMARONECK,NY 10543

Hazardous Waste Disposal Period

From: 1968 **To:** 1988

Site Description

Location: This site is located at 604 Fayette Avenue and 605 Center Avenue, Village of Mamaroneck, Westchester County, New York. This site originally consisted of four parcels: Section 8, Block 829, Lot 69 (Parcel I); Section 8, Block 829, Lot 92 (Parcel II); Section 8, Block 829, Lot 41 (Parcel III); and Section 8, Block 829, Lot 51 (Parcel IV). The site boundaries have since been modified to include Parcels I and IV only due to disposal history and current groundwater impacts. Parcels II and III have been excised from the site as no disposal occurred on those parcels, nor are they affected by Freon-113. The current site is approximately 0.34 acres in size. Site Features: The site consists of a two-story building and two parking areas. Current Zoning/Use: The site is located in an M-1 (manufacturing) zone in an industrial/commercial/residential area. Cablevision of Westchester currently uses the site as a cable television service center. Past Use of the Site: Prior to its current use, EMCA, a subsidiary of Rohm and Haas, owned and operated the site to manufacture electronic conducting paste from 1968 to 1988. The manufacturing activities were contained on the first floor of the building. The vacant lot which is now a parking area (604 Fayette) was used for waste storage and is a likely area of disposal. Other potential areas of disposal or spill are the material storage room, the ball milling room and powder room. Freon 113 was used in the ball milling operation. Site Geology and Hydrogeology: The shallow groundwater appears to flow from the south, east and west toward the center of the site and then flows off the site in a northerly direction towards the Sheldrake River. There is no domestic groundwater usage within one-half mile of the site. The area is served by public water supply. Geologic conditions at the site are characterized by unconsolidated deposits composed predominantly of stratified medium to fine sand with localized beds of coarse sand, gravel, silt, and clay. Bedrock is assumed at an approximate depth of 40 feet. Groundwater conditions consist of a water table aquifer encountered at a depth of approximately 6 feet below ground surface. Groundwater generally flows to the northwest towards the Sheldrake River.

Contaminants of Concern (Including Materials Disposed)

Contaminant Name/Type
FREON 113 (F002)
1,1,2-trichloro-1,2,2-triflouroethane

Site Environmental Assessment

Nature of Contamination: Remediation of the Site is complete. Prior to remediation, the primary contaminants of concern were Freon 113 and its breakdown products, particularly Freon 1113 in groundwater. Remaining contamination in the groundwater is being managed under a Site Management Plan.

Site Health Assessment

Contact with contaminated soils is not expected because the site is covered by buildings and pavement. Drinking contaminated groundwater is not likely since the area is supplied with public water.

For more Information: E-mail Us

Refine This Search

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Environmental Site Remediation Database Search Details

Site Record

Administrative Information

Site Name: Former M. Argueso and Co., Inc-Off-Site
Site Code: C360108A
Program: Brownfield Cleanup Program
Classification: A
EPA ID Number:

Location

DEC Region: 3
Address: 441-442 Waverly Avenue
City: Mamaroneck Zip: 10543
County: Westchester
Latitude: 40.949112
Longitude: -73.743346
Site Type:
Estimated Size: 0 Acres

Site Owner(s) and Operator(s)

Site Description

Location: This site is the off-site component of the Former Argueso and Co., Inc. site (C360108) located on 441, 442, 501 and 513 Waverly Avenue, Mamaroneck, Westchester County. The off-site portion (C360108A) is the immediate surrounding properties located in an urban area adjacent to the main site. Site Features: The on-site properties are located on opposite sides of Waverly Avenue. The site features were two buildings and parking areas. The building at 442 Waverly was demolished in 2010. The off-site component is comprised of immediately-surrounding properties. Current Zoning and Uses: The surrounding properties are zoned for commercial use. The properties are used for parking lots, commercial establishments, and a residential lot. Past Use of the Site: The M. Argueso and Co., Inc. purchased the on-site properties sometime between 1930s and 1960s and were used for wax refining and manufacturing. Wax manufacturing ceased in 2005, and the site (all 4 properties) was purchased by New Waverly Avenue Associates in 2006. Site Geology and Hydrogeology: The soils at the site include urban fill overlying sands. The fill was observed from 3.5 to 9 feet in thickness.

Groundwater is between 2.3 feet and 9 feet below the ground surface and flows generally northeast to northwest.

Site Environmental Assessment

Based upon investigations conducted at the on-site area (C360108), the primary contaminants of concern are petroleum, volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs). On-Site Soil - Soil samples did not contain levels exceeding 6 NYCRR Part 375 commercial use soil cleanup objectives (SCOs) on either property, but slightly exceed the SCOs for groundwater protection for the VOCs butylbenzene (12 ppm), sec-butylbenzene (11 ppm), tert-butylbenzene (5.9 ppm), and propylbenzene (3.9 ppm) with maximum values of 81 ppm, 99 ppm, 16 ppm, 68 ppm, respectively. Metals concentrations were below the commercial use SCOs. On-Site Groundwater - Contaminants impacting the on-site groundwater are VOCs. The groundwater monitoring wells are screened in the shallow and deeper portion of the sand aquifer. The deep groundwater contains higher levels of VOCs with a significant fraction of chlorinated VOCs. The primary groundwater contaminants of concern with their maximum values are tetrachloroethene (9,700 ppb), trichlorothene (730 ppb), cis-1,2 dichloroethene (780 ppb), and n-propylbenzene (280 ppb). The chlorinated solvent source appears to be the former loading dock area near monitoring well MW GZ-23. There was a former stormwater catch basin at the loading dock which may have acted as a migration pathway into the groundwater from spills during loading and unloading at the facility (former 442 Waverly building). A Fish and Wildlife Impact Analysis (FWIA) was not performed on-site due to the surrounding urban area and lack of potential receptors at or near the site. Off-Site Groundwater - Contaminants impacting the off-site groundwater are VOCs. The off-site groundwater monitoring wells OSMW-3 and OSMW-4 are located immediately upgradient of the site at 524 Waverly Avenue. The off-site wells have been monitored since 2012. The primary groundwater contaminants of concern with their maximum values are tetrachloroethene (3,400 ppb), trichloroethene (1,000 ppb), cis-1,2 dichloroethene (220 ppb), trans-1,2 dichloroethene (28 ppb), 1,2-dichloroethane (4.7 ppb), and benzene (45 ppb).

Site Health Assessment

Information submitted with the BCP application regarding the conditions at the site are currently under review and will be revised as additional information becomes available.

For more Information: E-mail Us

Refine This Search

6

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Environmental Site Remediation Database Search Details

Site Record

Administrative Information

Site Name: Former M. Argueso and Co., Inc
Site Code: C360108
Program: Brownfield Cleanup Program
Classification: C
EPA ID Number:

Location

DEC Region: 3
Address: 441, 442, 501, 513 Waverly Avenue
City: Mamaroneck Zip: 10543
County: Westchester
Latitude: 40.949176412
Longitude: -73.743379552
Site Type:
Estimated Size: 1.036 Acres

Institutional And Engineering Controls

Control Type:
Environmental Easement

Control Elements:
Ground Water Use Restriction
Soil Management Plan
Cover System
Landuse Restriction
Monitoring Plan
Site Management Plan
IC/EC Plan

Site Owner(s) and Operator(s)

Current Owner Name: New Waverly Avenue Associates, LLC
Current Owner(s) Address: 566 Westchester Avenue
Rye Brook,NY, 10573

Site Document Repository

Name: Mamaroneck Public Library

Mamaroneck Self-Storage Proposed Expansion
Proposed Mitigation of Construction Impacts on the Village and Neighboring Properties

Murphy Brothers Contracting, Inc. ("MBC"), which is owned and operated by corporation principals, Chris and Sean Murphy, will be performing the construction of the proposed expansion. As a 40-year-old local construction firm that has developed an excellent reputation for building quality residential and non-residential buildings throughout the Westchester and Southern Fairfield regions, MBC understands the importance of being a "good neighbor" during the course of construction.

- On all MBC construction projects, it is our policy to notify the neighboring building owners or residents prior to commencement of construction, making sure they know who we are, who is the project manager and how they can contact him or her in the event of a perceived inconvenience related to the project. We will notify local Industrial Area business owners as well and keep them advised of any possible impacts on their properties.
- MBC also believes that a clean, organized jobsite is a safety-first jobsite, and we pride ourselves in maintaining an orderly and secure site at all time.
- We will conduct the Mamaroneck Self-Storage expansion construction in the same manner. We will be erecting construction fencing as dictated by the Village of Mamaroneck (VOM) building department rules. Work hours will also be in accordance to what is allowable by the VOM building department rules. We anticipate that construction will take 12 months.
- For each of MBC's projects, whether residential or non-residential, we establish written project timelines indicating the various milestones within the project, enabling us to properly manage the work flow, making sure that materials and subcontractors on on-site and ready to go in advance of their need.
- Prior to construction, we will hold a pre-construction kick-off meeting, inviting the neighboring building owners and business owners to see how we intend to proceed along the established timeline. At various project intervals, we will keep interested neighbors updated on our progress.
- MBC will obey all Village regulations regarding construction, construction safety, dust and noise control as well as safety to pedestrians and drivers alike. Construction workers will be parking their vehicles on the 416 Waverly Avenue property.
- MBC will follow and exceed NYS Building Code and Energy Codes as we did in the construction of the original facility, where we exceeded the energy standards by more than 50%. Since we are replicating the structure, insulation, mechanicals and indoor lighting, we anticipate that the entire building will have met and exceeded the NYS Building Code and Energy Codes.
- MBC abides by all OSHA safety standards during all construction projects and will continue to do so with respect to the proposed expansion.
- There will be no tractor trailer truck deliveries between the hours of 7:00am-9am and 4pm-6pm, Monday through Friday to facilitate traffic flow along Waverly & Fenimore. MBC

shall not permit deliveries to be made near the intersection of Fenimore and Railroad Way, as to avoid interference with the egress and ingress of motor vehicles and trucks onto Railroad Way.

- MBC will hire an engineering consultant prior to construction to verify exact parameters of all excavation and concrete work along the CSX tracks to preserve the current integrity of the tracks.
- MBC has contacted the CSX Regional Manager, Robb Fritz (see original letter) who has reviewed the proposed site plan and survey and has stated that according to CSX rules of construction along private sidetracks, MBC's plan conforms to CSX guidelines. The letter from the CSX dated July 9, 2018 is attached.
- CSX, MARVAL Industries and Spatz Properties will be notified prior to any construction activity in or about Railroad Way and the intersection of Fenimore Road and Railroad Way to make sure CSX, MARVAL Industries and Spatz Properties are aware of any construction activities.
- During the course of construction, MBC will not interfere with the egress and ingress of the tracks utilized by CSX and MARVAL.
- Should any work and/or labor require the partial closing and/or impeded access to Railroad Way from Fenimore Road, MBC will perform the aforementioned work in the evening hours between 6pm and 5am with prior consent and authority granted by the Municipality and in coordination with CSX train schedules.
- MBC will enter into access agreements and provide indemnity and hold harmless agreements to the Village and any neighboring property owners of adjacent properties that must be accessed during the course of construction.
- MBC has agreed to enhance the lighting with wall-mounted fixtures along Railroad Way to alleviate any "canyon effect" by the development on the MBC property.

MBC has a longstanding collaborative relationship with its immediate neighbors and successfully coordinated with all parties during the approximate 10 months of construction of the existing Mamaroneck Self-Storage building in 2014-2015. The CSX tracks are maintained by Marvel Industries. We understand and respect the responsibility that Spatz Properties and the Spatz family have in maintaining the CSX railroad right-of-way, located on the Spatz properties. East Coast North Properties will indemnify the Village of Mamaroneck, Marval Industries, and the Spatz Properties when performing construction near or about railroad way and within any village right-of-ways.

SHPO Determination

NEW YORK STATE OF OPPORTUNITY.

Parks, Recreation, and Historic Preservation

ANDREW M. CUOMO
Governor

ROSE HARVEY
Commissioner

October 15, 2018

Mr. Michael Murphy
Company Representative
East Coast North Properties
416 Waverly Avenue
Mamaroneck, NY 10543

Re: SEQRA
Mamaroneck Self Storage Addition
416 Waverly Avenue, Mamaroneck, NY 10543
18PR06551

Dear Mr. Murphy:

Thank you for requesting the comments of the Division for Historic Preservation of the Office of Parks, Recreation and Historic Preservation (OPRHP) as part of your SEQRA process. These comments are those of OPRHP and relate only to Historic/Cultural resources.

If this project will involve state or federal permitting, funding or licensing, it may require additional review for potential impacts to architectural and archaeological resources, in accordance with Section 106 of the National Historic Preservation Act or Section 14.09 of NYS Parks Recreation and Historic Preservation Law.

Based on the information provided, OPHRP has no concerns regarding the proposed project under SEQRA. Should the project design be changed, we recommend further consultation with this office.

If you have any questions, please don't hesitate to contact me.

Sincerely,

Philip A. Perazio

Philip A. Perazio, Historic Preservation Program Analyst - Archaeology Unit
Phone: 518-268-2175
e-mail: philip.perazio@parks.ny.gov via email only

cc: Chris Murphy, East Coast Properties

Gmail

Bevin Falk <bevin@mamaroneckselfstorage.com>

from m.murphy: archeological sensitives on the 416 Waverly site

Perazio, Philip (PARKS) <Philip.Perazio@parks.ny.gov> Wed, Feb 6, 2019 at 11:25 AM
To: "michael@murphybrothers.com" <michael@murphybrothers.com>
Cc: Bevin Falk <bevin@mamaroneckselfstorage.com>, Sean Murphy <sean@murphybrothers.com>, Chris Murphy <chris@murphybrothers.com>

Dear Mr. Murphy:

Our letter encompasses both architectural and archaeological resources.

Please let me know if I can be of any further assistance.

Philip A. Perazio
Historic Preservation Program Analyst – Archaeologist

Division for Historic Preservation

New York State Parks, Recreation & Historic Preservation

Peebles Island State Park, P.O. Box 189, Waterford, NY 12188-0189

518-268-2175

Philip.Perazio@parks.ny.gov

www.nysparks.com/shpo

From: Michael Murphy [mailto:michael@murphybrothers.com]
Sent: Wednesday, February 06, 2019 10:59 AM
To: Perazio, Philip (PARKS) <Philip.Perazio@parks.ny.gov>
Cc: Bevin Falk <bevin@mamaroneckselfstorage.com>; Sean Murphy <sean@murphybrothers.com>; Chris Murphy <chris@murphybrothers.com>
Subject: from m.murphy: archeological sensitives on the 416 Waverly site

[Quoted text hidden]

Gmail

Bevin Falk <bevin@mamaroneckselfstorage.com>

from m.murphy: archeological sensitives on the 416 Waverly site

Michael Murphy <michael@murphybrothers.com> Wed, Feb 6, 2019 at 10:59 AM
To: "Philip.Perazio@parks.ny.gov" <Philip.Perazio@parks.ny.gov>
Cc: Bevin Falk <bevin@mamaroneckselfstorage.com>, Sean Murphy <sean@murphybrothers.com>, Chris Murphy <chris@murphybrothers.com>

Dear Mr. Perazio, I'm writing this note because we are meeting again with our local Zoning Board of Appeals (ZBA) regarding our proposed extension project on our property at 416 Waverly Avenue, Mamaroneck, NY 10543. We'd like to clarify the SHPO Determination letter (attached) sent on Oct 15th, 2018 to us as a result of our inquiry into the possibility of ***archeological sites*** on our property.

Your letter does indicate that OPHRP has no concerns regarding our proposed project under SEQRA as it relates to ***Historic/Cultural*** resources. However, our concern is that the Village of Mamaroneck ZBA will ask for verification regarding the possibility (or not) of there being a "***archeological sensitive***" site on our property, since your letter mentions "historic" and "cultural" but not specifically "archeological". Does this require another type of proof, or are we simply splitting hairs here, that "Historic/Cultural" does include "archeological" as well.

BTW: in your email (see below) sent to Bevin Falk (our employee) on 9/25/2018, did state that "... Based on the amount of development in the immediate vicinity of your property, we probably would have no archaeological concerns. However, I cannot provide an official opinion without a formal review."... which I assume is what we did to trigger the SHPO Determination letter on 10/15/2018 (attached here)

Thanks for your time and clarification in this matter.

All the best

Michael J. Murphy

Murphy Brothers Contracting, Inc.

416 Waverly Avenue, Mamaroneck, NY 10543

(914) 777-5777

(914) 424-3422

michael@murphybrothers.com

www.murphybrothers.com

Instagram: murphy_buildingblocks

Celebrating Our 40th Anniversary Serving the Greater Westchester + Hudson Valley + Southern Fairfield Region!

On Tue, Sep 25, 2018 at 3:30 PM Perazio, Philip (PARKS) <Philip.Perazio@parks.ny.gov> wrote:

Hello Bevin,

There is a recorded Native American archaeological site located about a third of a mile to the southeast of your project area, and several more a bit farther away. This is the basis of the 'archaeologically sensitive' designation. Based on the amount of development in the immediate vicinity of your property, we probably would have no archaeological concerns. However, I cannot provide an official opinion without a formal review.

Philip.

Philip A. Perazio
Historic Preservation Program Analyst – Archaeologist

Division for Historic Preservation

New York State Parks, Recreation & Historic Preservation

Peebles Island State Park, P.O. Box 189, Waterford, NY 12188-0189

518-268-2175

Philip.Perazio@parks.ny.gov

www.nysparks.com/shpo

11.a. SHPO Determination - 10_15_18.pdf
32K

Gmail

Bevin Falk <bevin@mamaroneckselfstorage.com>

archeological sensitives on the 416 Waverly site

Michael Murphy <michael@murphybrothers.com> Mon, Oct 8, 2018 at 1:24 PM
To: "egordon@kblaw.com" <egordon@kblaw.com>
Cc: Bevin Falk <bevin@mamaroneckselfstorage.com>, Chris Murphy <chris@murphybrothers.com>, Sean Murphy <sean@murphybrothers.com>, Michael Murphy <michael@murphybrothers.com>

On 9/25, we received the information below re. the presence of any archeological sensitives on the 416 Waverly site. According to their expert, based on the amount of development in the immediate vicinity of our property, there is probably no archaeological concerns. However, to be 100% certain, on 10/5, I submitted a request for a formal review. We are currently waiting results of their review.

-mm

On Tue, Sep 25, 2018 at 3:30 PM Perazio, Philip (PARKS) <Philip.Perazio@parks.ny.gov> wrote:

Hello Bevin,

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Philip.

Philip A. Perazio
Historic Preservation Program Analyst – Archaeologist

Division for Historic Preservation

New York State Parks, Recreation & Historic Preservation

Peebles Island State Park, P.O. Box 189, Waterford, NY 12188-0189

518-268-2175

Philip.Perazio@parks.ny.gov

www.nysparks.com/shpo

Construction Management Plan

Mamaroneck Self-Storage Proposed Expansion
Proposed Mitigation of Construction Impacts on the Village and Neighboring Properties

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- MBC has contacted the CSX Regional Manager, Robb Fritz (see original letter) who has reviewed the proposed site plan and survey and has stated that according to CSX rules of construction along private sidetracks, MBC's plan conforms to CSX guidelines. The letter from the CSX dated July 9, 2018 is attached.
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- MBC will enter into access agreements and provide indemnity and hold harmless agreements to the Village and any neighboring property owners of adjacent properties that must be accessed during the course of construction.
- MBC has agreed to enhance the lighting with wall-mounted fixtures along Railroad Way to alleviate any "canyon effect" by the development on the MBC property.

MBC has a longstanding collaborative relationship with its immediate neighbors and successfully coordinated with all parties during the approximate 10 months of construction of the existing Mamaroneck Self-Storage building in 2014-2015. The CSX tracks are maintained by Marvel Industries. We understand and respect the responsibility that Spatz Properties and the Spatz family have in maintaining the CSX railroad right-of-way, located on the Spatz properties. East Coast North Properties will indemnify the Village of Mamaroneck, Marval Industries, and the Spatz Properties when performing construction near or about railroad way and within any village right-of-ways.

CSX Correspondence

CSX
TRANSPORTATION

500 Meijer Drive, Suite 305
Florence, KY 41042
(859) 372-6121

Robb Fritz
Regional Manager – Site Design
Industrial Development

July 9th, 2018

RE: 560 Fenimore Rd. – Mamaroneck, NY

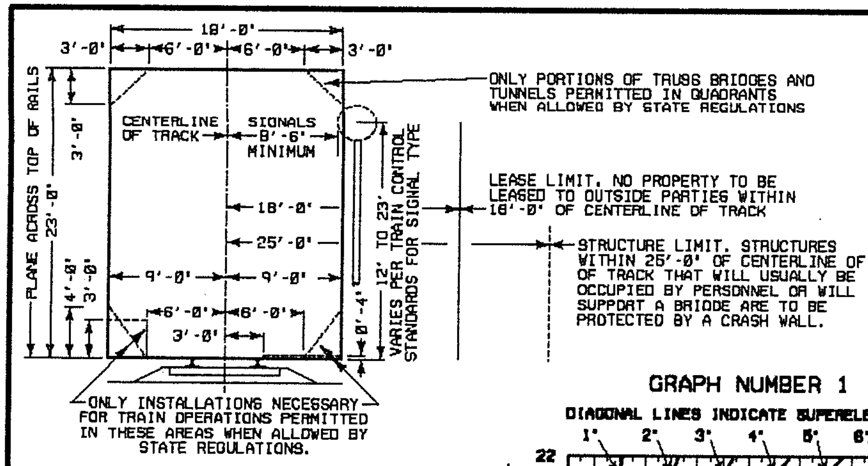
Mr. Murphy,

Per our conversation, you have plans to demo buildings near track that CSX provides service to. The closest obstruction as constructed today is 8'7". After the buildings are demolished and rebuilt, the closest clearance obstruction will actually be 2' further than what it is today (10'7"). CSX is OK with that proposal.

During construction, Murphy Brothers and its contractors must ensure that no impediments are placed in the required clearance envelope while CSX crews are operating on these tracks. Furthermore, contact must be made to the CSX Trainmaster prior to construction to ensure they make the crew(s) that work on this track aware of the planned construction activities.

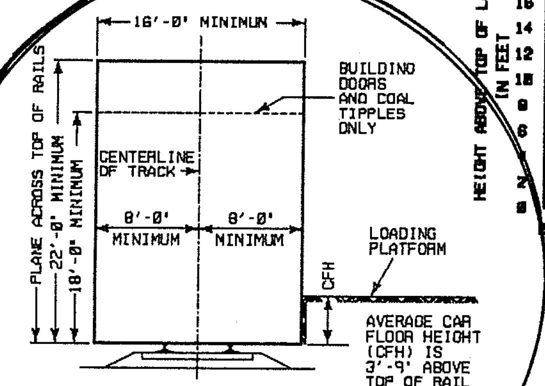
Thank you,

Robb Fritz
Regional Manager – Site Design
CSX Industrial Development



GENERAL

MAIN TRACKS, YARD TRACKS AND SIDINGS



INDUSTRIAL SIDE TRACKS

GRAPH NUMBER 1

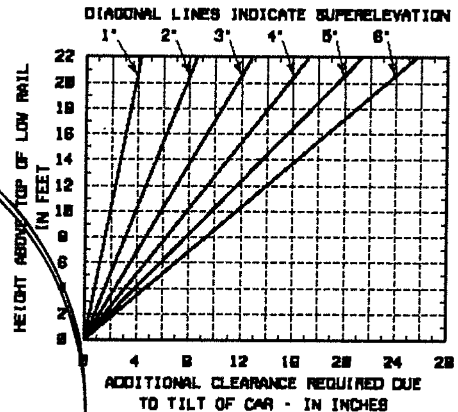


TABLE NUMBER 1												
ADDITIONAL CLEARANCE REQUIRED DUE TO CURVATURE - IN INCHES												
DEGREE OF CURVE	1	2	3	4	5	6	7	8	9	10	11	12
ALL LOCATIONS EXCEPT FLORIDA	1½	3	4½	6	7½	9	10½	12	13½	15	16½	18
IN THE STATE OF FLORIDA	2	4	6	8	10	12	14	16	18	20	22	24

2604

1. STANDARD CLEARANCES ARE TO BE USED FOR ALL NEW CONSTRUCTION WHERE THERE ARE NO LEGAL REQUIREMENTS THAT DICTATE GREATER CLEARANCES.
2. CLEARANCES FOR RECONSTRUCTION, REHABILITATION AND ALTERATION WORK ARE DEPENDENT ON EXISTING PHYSICAL CONDITIONS. WHERE POSSIBLE, THEY WILL BE IMPROVED TO COMPLY WITH THE STANDARD CLEARANCES.
3. STATE OR CANADIAN CLEARANCE LAWS MUST NOT BE VIOLATED. LEGAL REQUIRMENTS MAY BE MODIFIED ONLY BY THE GOVERNMENTAL BODY THAT ISSUED THEM.
4. STANDARD CLEARANCE MAY BE MODIFIED ONLY IF APPROVED BY THE CHIEF ENGINEER DESIGN, CONSTRUCTION, AND CAPACITY.
5. STANDARD CLEARANCE DIAGRAMS SHOWN ARE FOR TANGENT TRACK AND INCREASES MUST BE BE PROVIDED FOR THE EFFECTS OF CURVATURE AND SUPERELEVATION.

   A. ADDITIONAL CLEARANCE DUE TO CURVATURE:

   WHEN A FIXED OBSTRUCTION IS LOCATED ADJACENT TO A CURVED TRACK, THE HORIZONTAL CLEARANCE WILL BE INCREASED 1 ½ INCHES PER DEGREE OF CURVATURE ON BOTH SIDES OF THE TRACK CENTERLINE PER TABLE 1. EXCEPTION: FLORIDA REQUIRES 2 INCHES PER DEGREE.

   B. ADDITIONAL CLEARANCE DUE TO SUPERELEVATION:

   WHEN A FIXED OBSTRUCTION IS LOCATED ADJACENT TO A SUPERELEVATED TRACK, THE HORIZONTAL CLEARANCE ON THE LOW RAIL SIDE OF THE TRACK WILL BE INCREASED TO ALLOW FOR TILT. THE MINIMUM INCREASE IS SHOWN ON GRAPH NO. 1.

   C. ADDITIONAL CLEARANCE DUE TO CURVATURE AND SUPERELEVATION:

   WHEN A FIXED OBSTRUCTION IS LOCATED ADJACENT TO A CURVED AND SUPERELEVATED TRACK, THE HORIZONTAL CLEARANCE INCREASE WILL BE THE SUM OF THE INCREASES OBTAINED USING 5.A AND 5.B ABOVE. EXCEPTION: CANADA REQUIRES A MINIMUM OF 2 INCHES PER DEGREE.

   D. ADDITIONAL CLEARANCE ON TANGENT TRACKS:

   WHEN A FIXED OBSTRUCTION IS ADJACENT TO TANGENT TRACK BUT THE TRACK IS CURVED WITHIN 80 FEET OF THE OBSTRUCTION, THE HORIZONTAL CLEARANCE WILL BE INCREASED AS FOLLOWS:

DISTANCE FROM OBSTRUCTION TO CURVED TRACK - FEET	INCREASED HORIZONTAL CLEARANCE
0 TO 20	100% OF PARAGRAPH 5.C
21 TO 40	75% OF PARAGRAPH 5.C
41 TO 60	50% OF PARAGRAPH 5.C
61 TO 80	25% OF PARAGRAPH 5.C

6. VERTICAL CLEARANCE ON SUPERELEVATED TRACK IS MEASURED FROM THE TOP OF THE HIGH RAIL.

CSX TRANSPORTATION

CLEARANCE DIAGRAMS

APPROVED - CHIEF ENGINEER
DESIGN, CONSTRUCTION, & CAPACITY

APPROVED - VICE PRESIDENT
ENGINEERING

PREPARED BY:
D.C. CLARK

ISSUED: JULY 19, 1996
REVISED: SEPTEMBER 5, 2006

Medico, Cynthia

From: Fritz, Robb <Robb_Fritz@csx.com>
Sent: Friday, June 29, 2018 1:51 PM
To: Chris Murphy
Cc: Michael Murphy
Subject: RE: 560 Fenimore Rd. Mamaroneck New York

Chris, Michael –

Per our conversation, you have plans to demo buildings near track that CSX provides service to. The closest obstruction as built today is 8'7". After the buildings are demolished and rebuilt, the closest clearance obstruction will actually be 2' further than what it is today (10'7"). CSX is OK with that proposal.

Before starting construction, please coordinate with the local trainmaster to ensure that the train crews are aware of the construction.

Thank you,

Robb Fritz
Regional Manager Site Design, Industrial Development
500 Meijer Dr Suite 305, Florence, KY 41042
Tel: 859.372.6121 | Mobile: 419.733.3126 | Fax: 904.245.2631

From: Chris Murphy [mailto:chris@murphybrothers.com]
Sent: Friday, June 29, 2018 1:26 PM
To: Fritz, Robb <Robb_Fritz@csx.com>
Cc: Michael Murphy <michael@murphybrothers.com>
Subject: 560 Fenimore Rd. Mamaroneck New York

Chris Murphy
Murphy Brothers Contracting Inc.
416 Waverly Ave
Mamaroneck NY 10543
O- 914-777-5777
O- 203-628-1291
C- 914-774-5247
www.Murphybrothers.com

Mamaroneck Self Storage, LLC.
426 Waverly Avenue
Mamaroneck, NY 10543
Tel: 914-777-1177
Fax: 914-777-1178
BLOCKEDMamaroneckSelfStorage[.]comBLOCKED

Mamaroneck Self-Storage Community Solar Project

Mamaroneck Self-Storage Community Solar Project

MAMARONECK SELF STORAGE

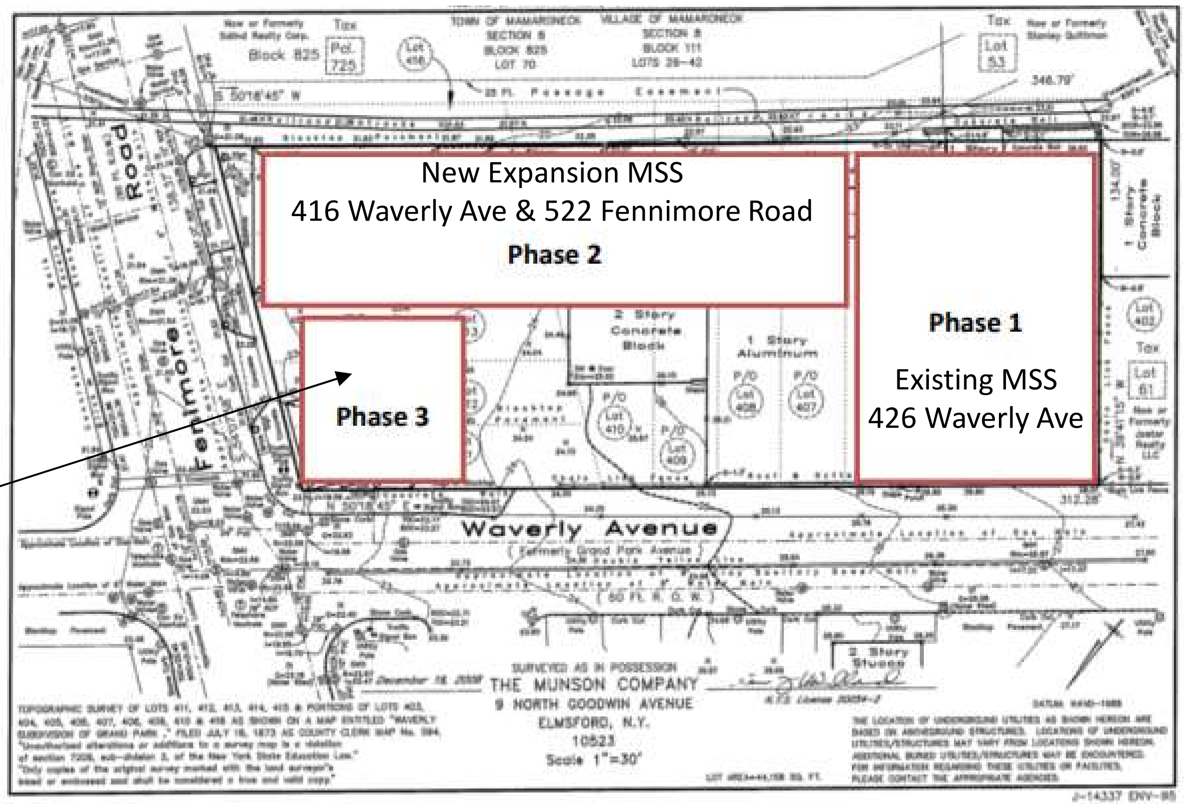
From

GES Community Solar Developers

MBC/MSS will incorporate a Community Solar Project on its new and existing buildings to provide clean energy to local residents

This project will provide ~50 Mamaroneck residents (including apartment dwellers) with access to solar-generated clean electricity at a SAVINGS to ConEd

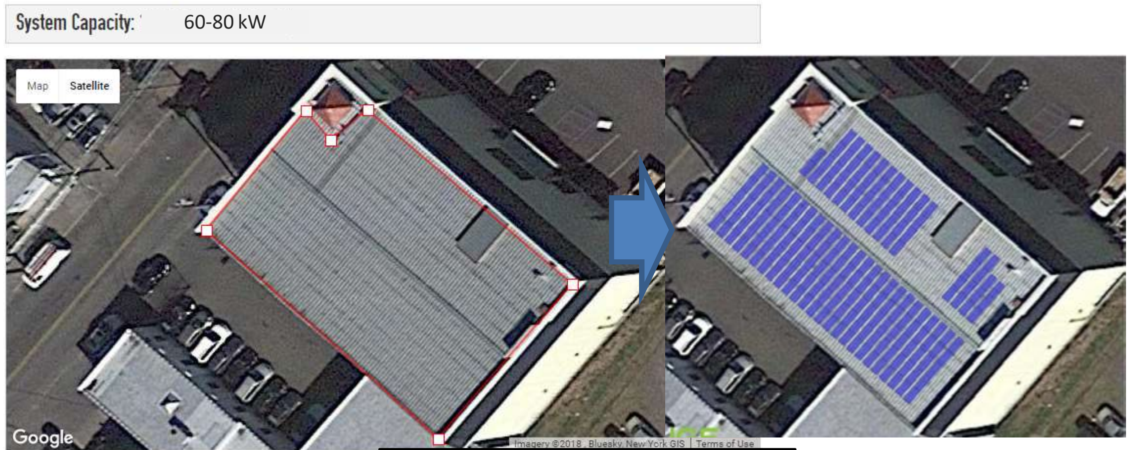
Existing MBC Offices
560 Fennimore Road



Buildings that will have solar

Figure 12. Three phase development plans on lot and block map

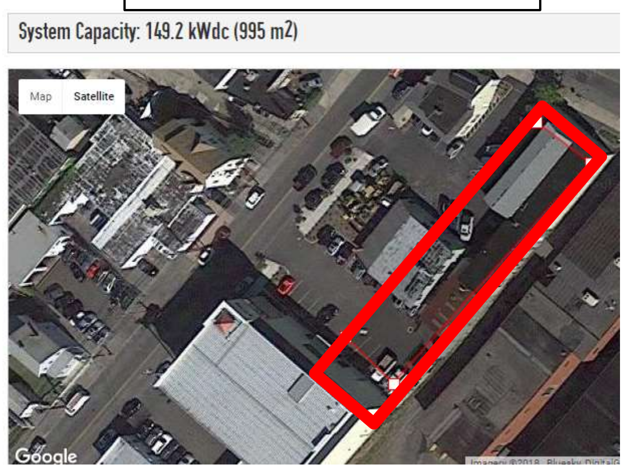
Murphy Brothers Contracting has always believed in building "Green." Community Solar on MSS roofs will total 210-230 kiloWatts



Phase 1 - Existing MSS
426 Waverly Ave

MAMARONECK SELF STORAGE

GES Community Solar Developers

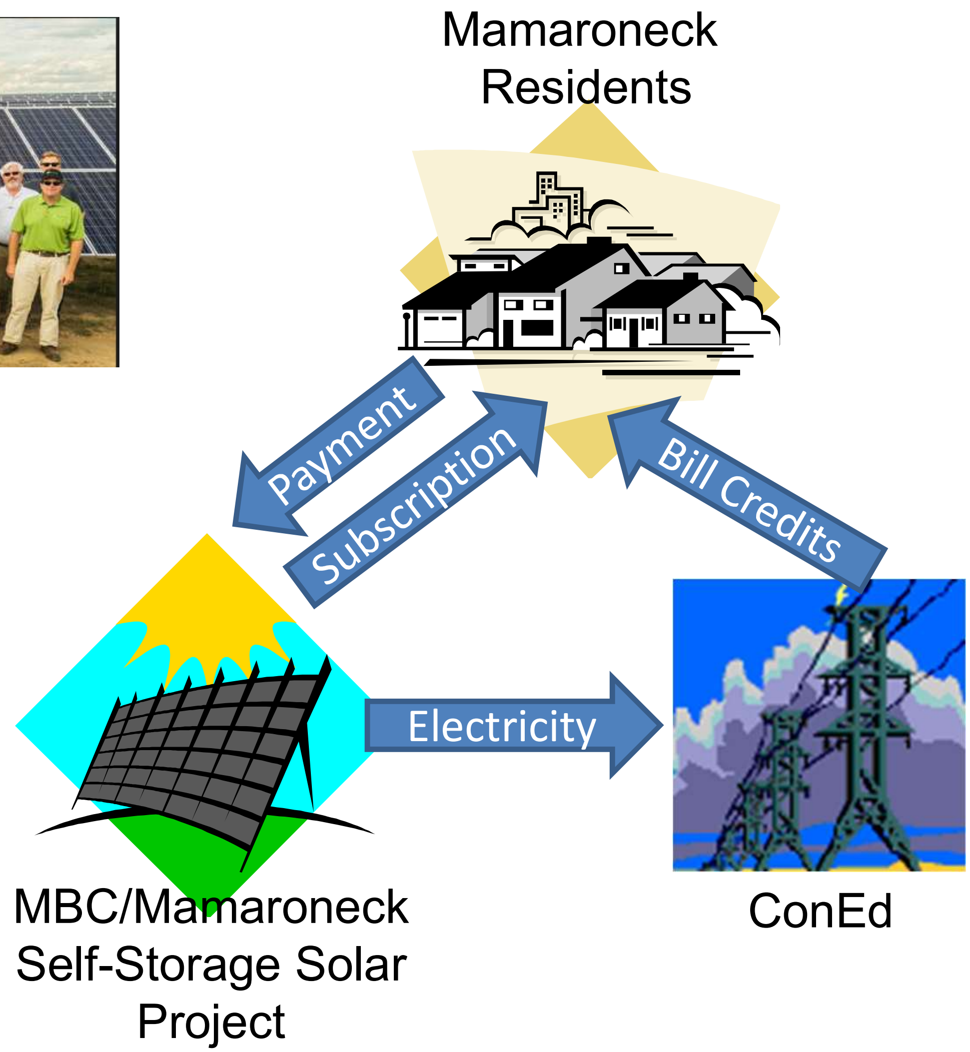


Phase 2 - New Expansion MSS
416 Waverly Ave & 522 Fennimore Road

Orientation
N

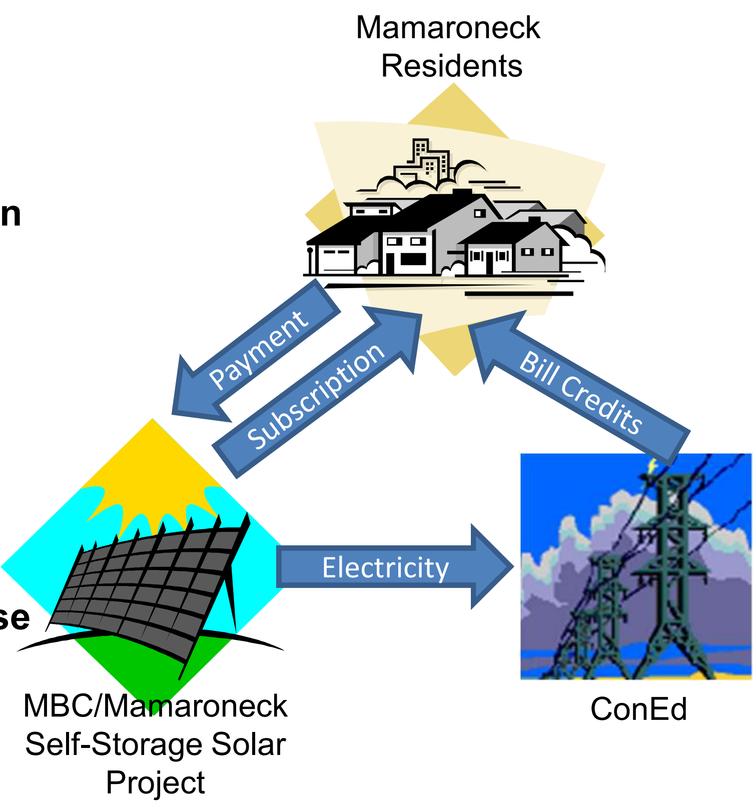
= Solar panel areas

The MBC/MSS – Mamaroneck Community Solar Ecosystem



MBC/MSS – Mamaroneck Community Solar Project
How it works and Benefits

- **New York State Public Service Commission ordered Community Solar to be established in 2015 (CASE 15-E-0082), refined in 2016**
- **Community Solar project is built on MBC/MSS roofs and connected to the grid via a separate service connection on MBC/MSS property, in front of their ConEd meter**
- **Electricity produced is sent directly to the ConEd grid. MSS offers Mamaroneck residents subscriptions to a portion of that electricity, requiring no money down, <u>at a savings to their ConEd billing rates</u>**
- **MSS democratizes solar! MSS <u>provides everyone* with access to clean energy</u>, even apartment dwellers and those who cannot put solar on their homes**
- **MSS informs ConEd which subscribers own what portion of the electricity. ConEd credits the bills of those subscribers for the electricity. MSS bills subscribers for their clean electricity at a savings**
- **MSS takes a big step towards the Mamaroneck Microgrid proposed in 2015**

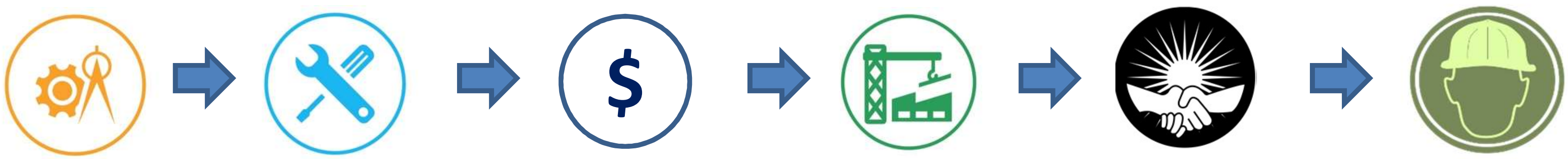


*with qualifying credit rating

Westchester-based GES Community Solar Developers will support MSS on its solar project

- **Principals of GES Community Solar Developers have developed, financed and built over 20,000 solar projects in last 10 years at SolarCity (Tesla NASDAQ listed), Sunrun (NASDAQ listed), Admirals Bank. GES finances through Institutional investors.**

- **GES is the Property Owner's Solar Department, providing end-to-end lifecycle services**



• Engineering	• Development • Permitting • Procurement	• Financing • Ownership	• Construction	• Customer Acquisition • Billing/Collections • Customer Care • Utility Relations	• Monitoring • Operations & Maintenance • Reporting

- **Customers have included: numerous self-storage owners, Shoprite, Marriott, Skanska Construction, warehouse and refrigeration companies, shopping center owners, public and private schools, multi-family housing, parking lot owners, industrial and farm land owners, municipals**

GES
Community Solar
Developers

GES Community Solar Developers contact

Ed Steins
CEO
Phone 914-924-0051
Email: Ed.Steins@GESDevelopers.com

Chiswell and Associates Market Feasibility Study

Chiswell and Associates, LLC

525-K East Market Street #233 Leesburg, VA 20176 434-589-4446
www.selfstorageconsulting.com Chiswell@Earthlink.net

Self Storage Feasibility Addition Memorandum
Mamaroneck Self Storage
426 Waverly Avenue
Mamaroneck, New York

Prepared Exclusively for

Mr. Chris Murphy / Mr. Sean Murphy
Mamaroneck Self Storage
December, 2017

Self Storage Feasibility
Addition Memorandum
for
Mamaroneck Self Storage
426 Waverly Avenue
Mamaroneck, New York

Table of Contents

Section 1
Executive Summary

Section 1 - Executive Summary

This Memorandum is designed to review the proposed addition to the Mamaroneck Self Storage complex. Having prepared the initial Self Storage Feasibility Study and Report for the development of the facility, I am uniquely qualified to comment of the proposed addition. In preparing this Evaluation, I examined details of your current operations, the proposed design of the four story addition, proposed Unit Mix, analyzed a site specific demographic report based upon the primary zip codes of your customers, as well as a review of the competition within the target market area.

The current operations have already achieved a Unit Occupancy of 84.48% and a Square Footage Occupancy of 86.98%. In my professional opinion, the addition of the designed 38,950 net square footage, adding 350 more units, will be well received by the community and will quickly lease up.

Within the five primary zip codes that account for 76.02% of your customers, there are currently no existing competitive self storage facilities. This is entirely the result of restrictive zoning within the communities. The ability to once again take advantage of the existing zoning on your Waverly Avenue property without the need to seek any change in the allowed use is a significant advantage. Your design for the addition will result in almost no additional impact on either Waverly Avenue or Fenimore Road. Also, as is the nature of self storage operations, no negative impact is anticipated on either the water or sewer system as a result of the expansion.

Your corporate commitment to the environment, as evident from the various awards the existing building has received, will be duplicated with the new structure. The energy efficiency of your original design was 52% more energy efficient than required by the NYS building code. The same is anticipated in the new structure.

The profile of the residential composition, within the five primary zip codes that you are serving, reflects an Average Household Income of $192,157. Residents clearly have the disposable income to afford self storage rentals.

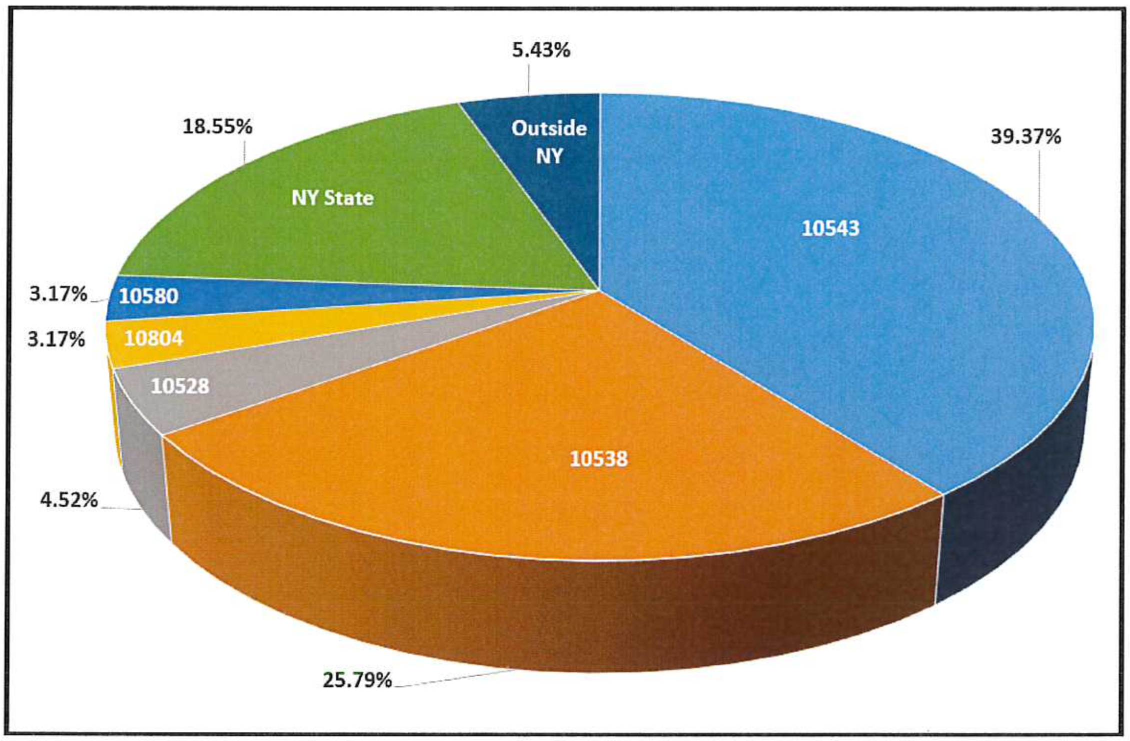
Based on all the information collected and reviewed, I feel the addition to Mamaroneck Self Storage will once again be positively received by the communities you are serving and should be developed.

Section 2
Demographic – Customer Analysis

Section 2 - Demographic – Customer Analysis

As I evaluated the feasibility of expanding the current Mamaroneck Self Storage complex, one the vital questions that I sought to answer was where the current customers are coming from that use the facility. The answer to this question provides the "Marketing Reach" of the business.

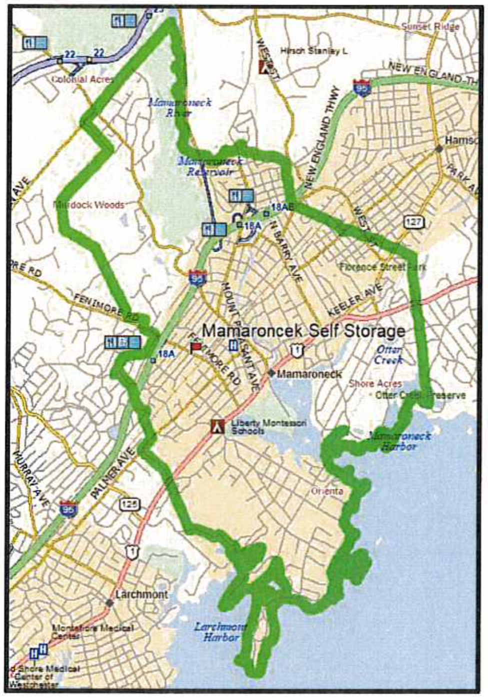
To obtain accurate results, I analyzed the zip code locations of all 221 customers. These customers are currently renting 245 storage units. Having conducted the initial Feasibility Study for the development of Phase 1 of the facility, I was honestly not surprised by the results shown on the chart below. A total of 76.02% of all current customers are coming from just five nearby zip codes including Mamaroneck - 10543, Larchmont – 10538, Harrison – 10528, Rye – 10580 and New Rochelle – 10804. The remaining customers are coming from other New York State zip codes and totals 18.55% and there are 5.43% of customers coming from outside New York.



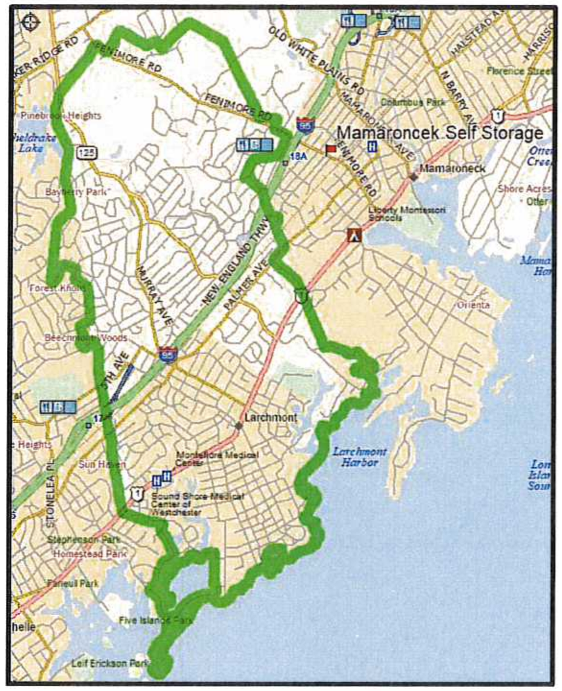
These zip code zones will remain the obvious target market area for the business as it expands. Using the resources of the Environics Analytics Corporation, I commissioned residential demographic reports detailing these five zip codes.

	Mamaroneck	Larchmont	Harrison	Rye	New Rochelle	Totals
Households	8,171	6,430	4,366	11,073	15,994	46,034
Population	21,111	17,208	12,305	30,558	44,541	125,723
Avg HoHld $	$148,847	$222,394	$169,335	$206,160	$214,047	$192,157

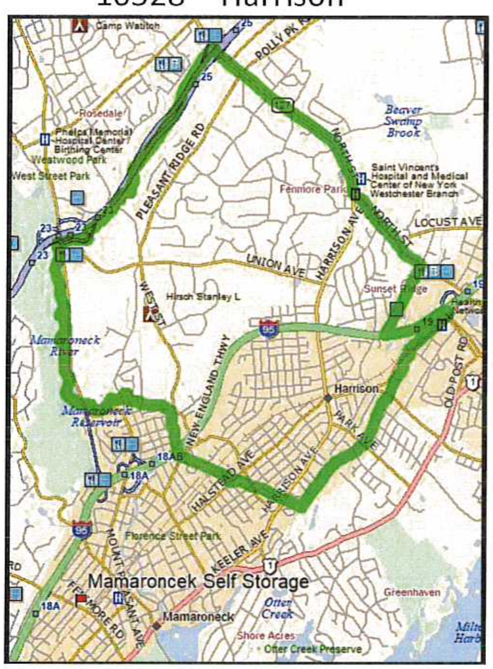
10543 – Mamaroneck



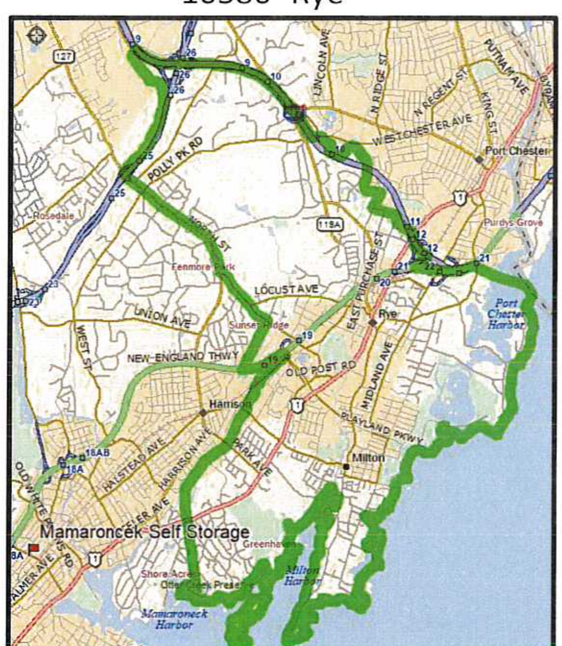
10538 - Larchmont



10528 – Harrison



10580 -Rye



10804 – New Rochelle

The 2017 national research report revealed that an average of 10% of the households in the United States currently use self storage. These customers are on average using storage at a rate of approximately 1.3 units per household and the average national unit size is projected to be 120 square feet. In a more urban setting, we have found that the average unit size is closer to 100 square foot average. While the national residential to commercial customer ratio is typically 80% residential 20% commercial, again in a more urban setting it is found to be 90% - 10%.

While the Association's research focused on households as the driver of Demand Potential, some people in the storage industry use a national Per Capita factor currently at 7.0 square feet per person. I have applied these two methodologies to create Demand Potential calculations for the combined five studied areas.

Total Households	46,034
% of Users	10%
Total Users	4,603
Units Per User	1.3
Total Units Used	5,984
Sq Ft of Unit	100
Total Residential Sq Ft = 90%	598,442
Total Business Sq Ft = 10%	66,494
Total Sq Ft Demand Potential	664,936

Population	125,723
7 Sq Ft Per Capita	7
Total Sq Ft Demand Potential	880,061

The Supply Demand ratio for the target market area is very apparent when there are no competitive facilities within the five zip code areas. Removing the current 29,100 sf of existing rentable square footage and the additional proposed 38,950 net rentable square footage of the addition from the national Demand Potential figures still leaves over 500,000 square feet of residential demand within the target market area.

The Average Household Income figures across the five zip code areas of $192,157 demonstrates that residents in these communities have the disposable income to provide for a monthly storage expense. It may seem counterintuitive, but the national research shows that the average residential storage customer has a garage (most with a two car garage), an attic and or a basement, but still use self storage.

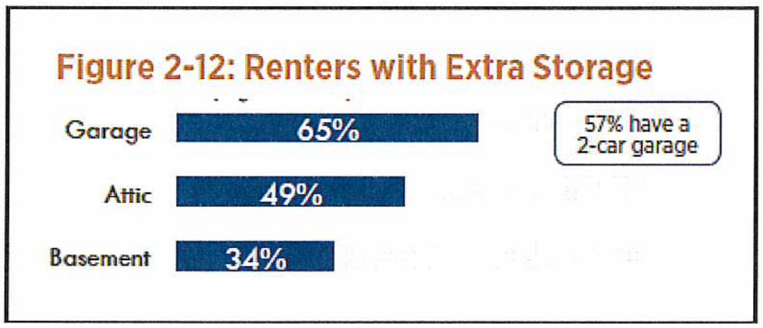


Figure 2-12, Page 17 <u>Self Storage Demand Study – 2017 Edition</u>

The analysis of the demographics of the primary zip code areas being served along with a review of current customers, show that there is no question an expansion of the existing Mamaroneck Self Storage facility will be successful.

Copies of the five demographic reports are included in the Appendix of this Memorandum.

Section 3
Competition Evaluation

Section 3 - Competition Evaluation

Across the United States, the Self Storage Industry has developed over the past forty years from a niche real estate play into a fully recognized asset class within the broader real estate market place. With 2017 total industry revenues expected to reach $32 billion, the business has established significant credentials.

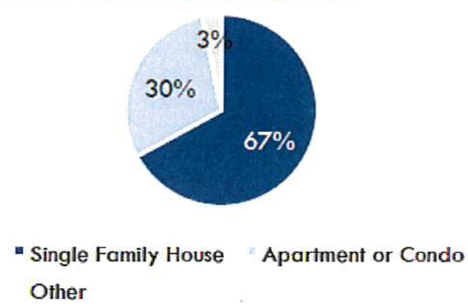
There is sufficient self storage structures across the Country, for example, to allow for every woman/man and children to stand under the roof of a storage building. By 2017 nearly 12 million households were using storage as shown on the chart from the national Self Storage Association research.

Figure 1-1: Total Households vs. Self Storage Renter Households

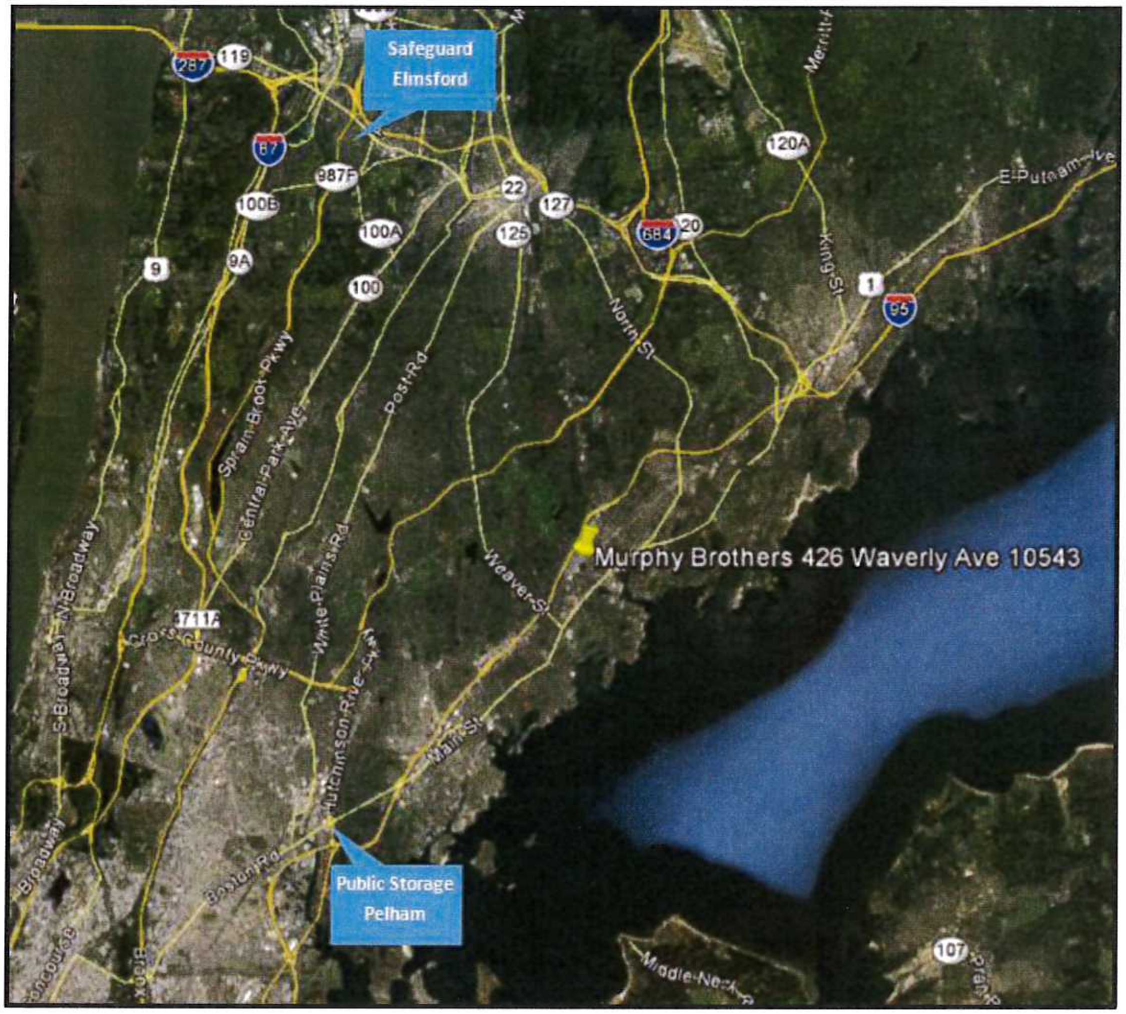
Figure 1-1, Page 4 Self Storage Demand Study – 2017 Edition

The vast majority of self storage customers come from single family residences.

Figure 2-11: Type of Residence



However, Mamaroneck Self Storage is the only facility of its kind from the north end of New Rochelle to the south end of Port Chester, and from Tuckahoe to the Long Island Sound, (as indicated in the attached map) touching all five zip codes that you are working with: 10543/Mamaroneck, 10538/Larchmont, 10580/Rye, 10528/Harrison, 10804/New Rochelle (as well as a large portion of 10583/Scarsdale).

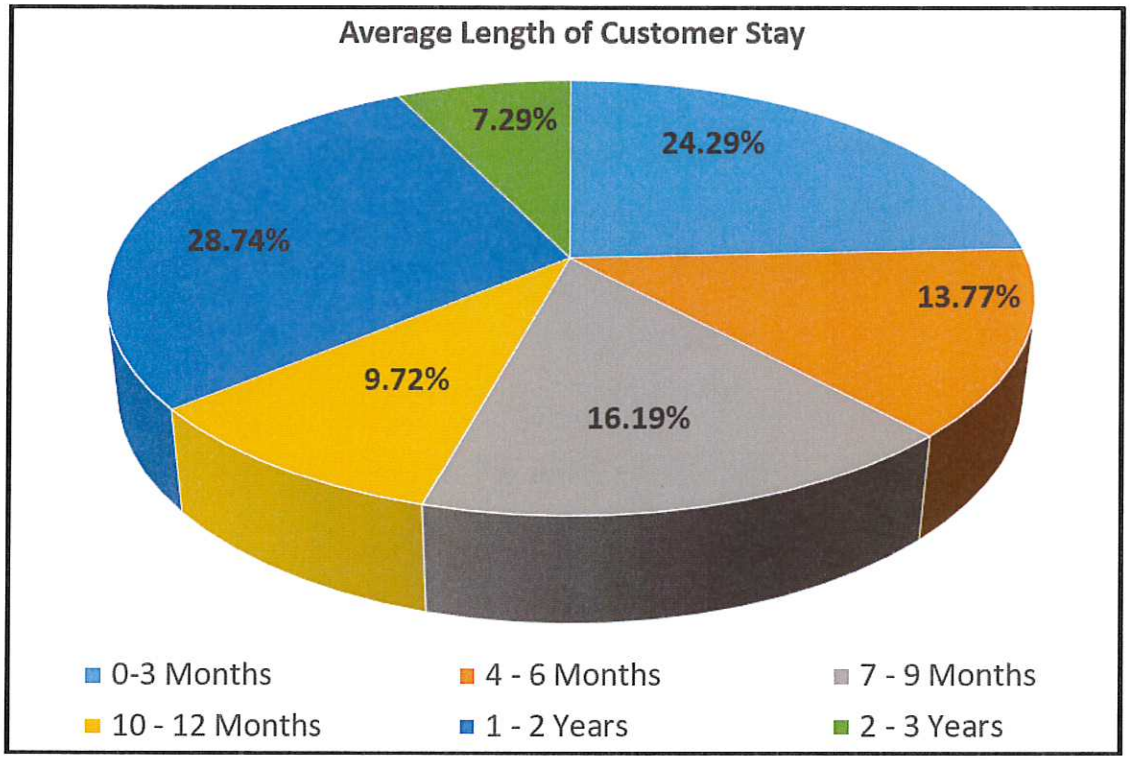


The prevailing zoning use restrictions coupled with the extremely high barriers to entry are significant deterrents to potential competitors who contemplate entering the area. Therefore, it is my professional opinion that competition will not be a negative factor to the future success of the expansion.

Section 4
Project Scope - Proposed Expansion

Section 4 - Project Scope - Proposed Expansion

The proposed addition of 35,150 net square feet of self storage is in direct response to the success that the initial development has enjoyed. This is not only evident from the 84.48% Unit Occupancy and 86.98% square footage occupancy that you currently enjoy, but also from the Average Length of Stay of your customers.



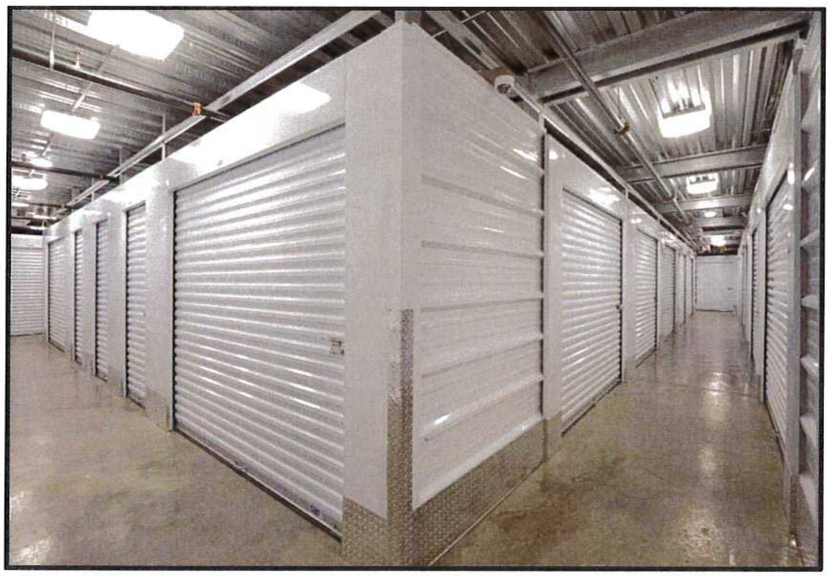
Customer records show that 61.94% of tenants have rented for 6 months or longer and 36.03% have stored for a full year or longer.

The proposed Unit Mix, with an Average Unit Size of 109.5 square feet, is just slightly larger than the original 92.2 square foot average in the current building.

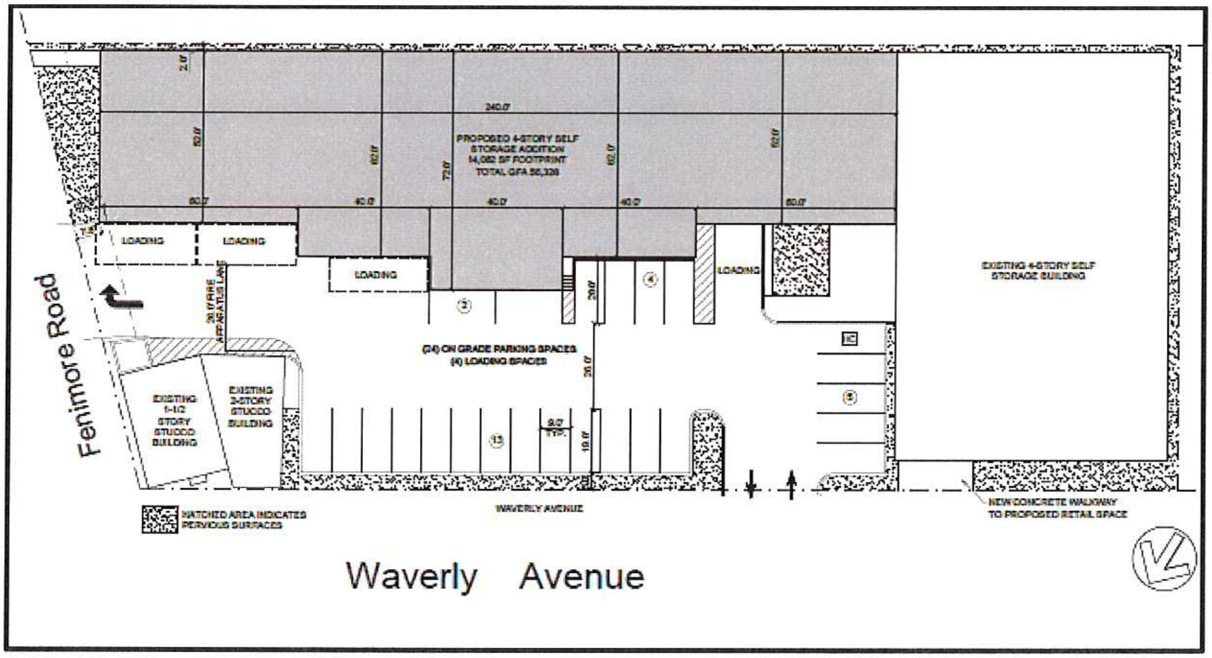
Murphy Brothers Addition Unit Mix

Size			Sq Ft	1st Fl	2nd Fl	3rd Fl	4th Fl	Total Units	Total Sq Ft
5	x	10	50	12	12	12	12	48	2,400
10	x	10	100	22	60	60	60	202	20,200
10	x	15	150		11	11	11	33	4,950
10	x	20	200	26	4	4	4	38	7,600
								321	35,150

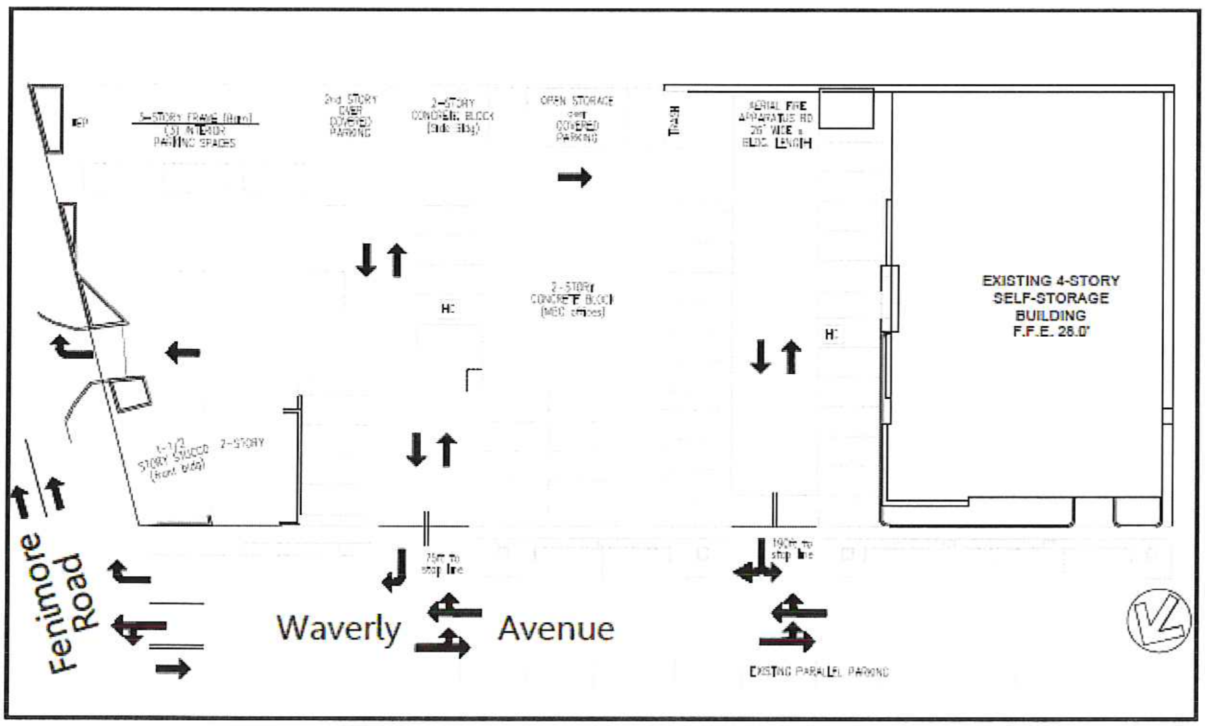
The addition will complement the current structure both exteriorly and internally in its design and material composition.



Since the opening of Mamaroneck Self Storage, the facility has received three major awards including: The Best of Building Owners and Managers' Association Westchester County's - Signature Award in the category of "Re-position / Re-purpose Award"; Westchester County 2017 Earth Day Award for the development of Mamaroneck Self Storage with energy-efficient features built into the facility design and the 2016 HBRA-CT HOBI Award for "Best Green Commercial Project".



The addition will maximize the potential of the property while minimizing impacts on the surrounding community.



The addition will continue to limit any traffic impacts on both Waverly Avenue and Fenimore Road.

Murphy Brothers Contracting collaborated with local architect, Ms. Kim Martelli and nationally known energy consultants, Steven Winter Associates to construct the initial 40,000 square foot self-storage facility under NYSERDA's New Construction Program to rate better than 52% more energy efficient than required by the NYS building code. The results succeeded in averaging annual operating cost savings of over $30,000 while providing a NYSERDA rebate check totaling close to $60,000 for incorporating energy-efficient upgrades into the construction. Identical building techniques will be employed in the construction of the proposed addition.

The redundant security systems that provide a secure environment for customers will be duplicated in the addition. Your Management standard of requiring all customers to provide a Government Issued Photo Identification as a condition for rental has also contributed to the secure atmosphere.

It is evident to me after reviewing the proposed design, Unit Mix and the various customer factors from your current operations that the proposed addition to the existing Mamaroneck Self Storage will provide the community you serve with the additional self storage options that customers have been asking for during the past year, and will continue to need in the future.

Section 5
Appendix

Section 5 - Appendix

- The Environics Analytics Corporation Background
- Sydney James Chiswell's Self Storage Industry Background
- Five Primary Zip Code Demographic Reports

Environics Analytics Demographics Program Overview

The Environics Analytics Demographic Program traces its history to the industry's earliest years, and newly combined company completing its third decade in the hands of the industry's most experienced demographers. The demographers now with the Environics team did the industry's groundbreaking work in small area estimation, and continue to make contributions to the profession of applied demography.

Environics adapts standard demographic methods to use with the best data at each geographic level. For example, Environics tracks neighborhood-level growth and decline from the annual acquisition of current small-area data from across the nation. Sources include estimates from local governments, consumer database counts, and postal delivery statistics. Such sources allow a "bottom-up" methodology grounded in authoritative local sources. Environics also uses Census Bureau estimates and other federal data to produce highly accurate totals for larger areas such as cities, counties and states. These independent estimates are used as control totals for the small area estimates, thus providing the internal consistency of a "top-down" process. Environics has refined this approach over the past three decades and annually evaluates new data sources and techniques to ensure maximum accuracy.

The Environics Reports are based upon data prepared for the current year, and projections (sometimes called forecasts) are prepared for dates five years in the future. New data updates are produced each year for many geographic levels including national, state, county, place (city/town), MCD, census tract, and block group. Data are also available for commonly used areas such as metropolitan areas, ZIP Codes, and media areas such as DMAs. Because they are produced for small areas, the data can be easily aggregated to custom geographic areas specified by the user.

Pop-Facts starts with the estimation and projection of "base counts," such as total population, household population, group quarters population, households, family households, and housing units. Characteristics related to these base counts are then estimated. Population characteristics include age, sex, race, and Hispanic ethnicity; households are estimated by age of householder and income; family households are estimated by income; and owner-occupied housing units are estimated by value.

Sydney James Chiswell
Self Storage Industry Background

Mr. Chiswell has been involved in the self-storage industry for thirty-five years. For the past twenty-seven years, his consulting firm, Chiswell & Associates, has been involved full time in providing consulting services exclusively to the self storage industry. Countless engagements, across the United States, have involved the preparation of Project Feasibility Studies for clients seeking to build new projects and Acquisition Due Diligence Reports for clients who are buying existing self storage facilities.

Prior to starting the firm in 1990, he was Vice President of Acquisitions for Sovran Self Storage (now Life Storage) for six years. During his last two years with Sovran, Chiswell was also responsible for the Facility Management of Sovran's 2 million+ square foot, 34 property portfolio of self-storage facilities in 10 states. Life Storage is now a publicly traded Real Estate Investment Trust (REIT) and one of the top five self-storage companies in America with over 600 properties.

Mr. Chiswell's experience and reputation in the industry has provided him with the opportunity to author a number of articles for industry publications. He is a frequent contributing author for Inside Self Storage magazine and is a member of their Editorial Advisory Board. He is a principle speaker at self storage meetings for Inside Self Storage magazine and at both national and state Self Storage Association conferences and trade shows.

As part of his desire to help provide educational opportunities for self storage owners and managers, Jim is serving as an educational consultant to the Self Storage Training Institute (SSTI). He is a faculty member of SSTI's Qualified Storage Manager certification program. This is the first online certification program available within the self storage industry. Chiswell is also a Founding Moderator of the Self Storage Talk internet forum which has over 9,000 registered self storage owner and manager members from across the world.

Pop-Facts Demographics Snapshot | Summary

ENVIRONICS ANALYTICS

Trade Area: 10543 (Mamaroneck, NY)

	10543 (Mamaroneck, NY) Total	%
Population		
2000 Census	19,712	100.00
2010 Census	20,186	100.00
2017 Estimate	21,111	100.00
2022 Projection	21,766	100.00
Population Growth		
Percent Change: 2000 to 2010	–	2.40
Percent Change: 2010 to 2017	–	4.58
Percent Change: 2017 to 2022	–	3.10

	10543 (Mamaroneck, NY) Total	%
Households		
2000 Census	7,445	100.00
2010 Census	7,462	100.00
2017 Estimate	7,882	100.00
2022 Projection	8,171	100.00
Household Growth		
Percent Change: 2000 to 2010	–	0.23
Percent Change: 2010 to 2017	–	5.63
Percent Change: 2017 to 2022	–	3.67

	10543 (Mamaroneck, NY) Total	%
Family Households		
2000 Census	5,178	100.00
2010 Census	5,088	100.00
2017 Estimate	5,373	100.00
2022 Projection	5,565	100.00
Family Household Growth		
Percent Change: 2000 to 2010	–	-1.74
Percent Change: 2010 to 2017	–	5.60
Percent Change: 2017 to 2022	–	3.57

Benchmark:USA

Pop-Facts Demographics Snapshot | Population & Race

Trade Area: 10543 (Mamaroneck, NY)

Total Population: 21,111
Total Households: 7,882

	10543 (Mamaroneck, NY) Count	%
2017 Est. Population by Single-Classification Race		
White Alone	15,219	72.09
Black/African American Alone	883	4.18
American Indian/Alaskan Native Alone	55	0.26
Asian Alone	1,315	6.23
Native Hawaiian/Pacific Islander Alone	14	0.07
Some Other Race Alone	2,877	13.63
Two or More Races	748	3.54
2017 Est. Population by Hispanic or Latino Origin		
Not Hispanic or Latino	15,466	73.26
Hispanic or Latino	5,645	26.74
Mexican	1,204	21.33
Puerto Rican	530	9.39
Cuban	105	1.86
All Other Hispanic or Latino	3,806	67.42
2017 Est. Pop by Race, Asian Alone, by Category		
Chinese, except Taiwanese	468	35.59
Filipino	83	6.31
Japanese	363	27.61
Asian Indian	150	11.41
Korean	206	15.66
Vietnamese	0	0.00
Cambodian	0	0.00
Hmong	0	0.00
Laotian	0	0.00
Thai	0	0.00
All Other Asian Races Including 2+ Category	45	3.42
2017 Est. Population by Ancestry		
Arab	134	0.64
Czech	33	0.16
Danish	17	0.08
Dutch	74	0.35
English	488	2.31
French (Excluding Basque)	532	2.52
French Canadian	78	0.37
German	845	4.00
Greek	277	1.31
Hungarian	96	0.46
Irish	1,776	8.41
Italian	4,533	21.47
Lithuanian	25	0.12
Norwegian	36	0.17
Polish	411	1.95
Portuguese	75	0.35
Russian	524	2.48
Scottish	47	0.22
Scotch-Irish	47	0.22
Slovak	0	0.00
Sub-Saharan African	116	0.55
Swedish	81	0.38
Swiss	18	0.09
Ukrainian	74	0.35
United States or American	1,666	7.89
Welsh	23	0.11
West Indian (except Hisp. groups)	298	1.41
Other ancestries	7,208	34.14
Ancestries Unclassified	1,579	7.48
2017 Est. Pop Age 5+ by Language Spoken At Home		
Speak Only English at Home	13,588	68.16
Speak Asian/Pacific Isl. Lang. at Home	866	4.34
Speak Indo-European Language at Home	2,378	11.93
Speak Spanish at Home	2,945	14.77
Speak Other Language at Home	160	0.80
2017 Est. Hisp. or Latino Pop by Single-Class. Race		
White Alone	2,358	41.77
Black/African American Alone	77	1.36
American Indian/Alaskan Native Alone	35	0.62
Asian Alone	5	0.09
Native Hawaiian/Pacific Islander Alone	7	0.12
Some Other Race Alone	2,790	49.42
Two or More Races	373	6.61

Benchmark:USA

Pop-Facts Demographics Snapshot | Population & Race

Trade Area: 10543 (Mamaroneck, NY)

Total Population: 21,111
Total Households: 7,882

	10543 (Mamaroneck, NY) Count	%
2017 Est. Population by Sex		
Male	10,372	49.13
Female	10,739	50.87
2017 Est. Population by Age		
Age 0 - 4	1,174	5.56
Age 5 - 9	1,246	5.90
Age 10 - 14	1,393	6.60
Age 15 - 17	881	4.17
Age 18 - 20	792	3.75
Age 21 - 24	1,033	4.89
Age 25 - 34	2,370	11.23
Age 35 - 44	2,793	13.23
Age 45 - 54	3,299	15.63
Age 55 - 64	2,772	13.13
Age 65 - 74	1,686	7.99
Age 75 - 84	998	4.73
Age 85 and over	674	3.19
Age 16 and over	17,009	80.57
Age 18 and over	16,417	77.77
Age 21 and over	15,625	74.01
Age 65 and over	3,358	15.91
Median Age	–	41.17
Average Age	–	40.50
2017 Est. Pop Age 15+ by Marital Status		
Total, Never Married	5,347	30.91
Male, Never Married	2,908	16.81
Female, Never Married	2,439	14.10
Married, Spouse Present	8,772	50.71
Married, Spouse Absent	591	3.42
Widowed	1,155	6.68
Male, Widowed	254	1.47
Female, Widowed	901	5.21
Divorced	1,433	8.28
Male, Divorced	428	2.47
Female, Divorced	1,005	5.81
2017 Est. Male Population by Age		
Male: Age 0 - 4	597	5.76
Male: Age 5 - 9	664	6.40
Male: Age 10 - 14	734	7.08
Male: Age 15 - 17	454	4.38
Male: Age 18 - 20	413	3.98
Male: Age 21 - 24	542	5.23
Male: Age 25 - 34	1,257	12.12
Male: Age 35 - 44	1,402	13.52
Male: Age 45 - 54	1,589	15.32
Male: Age 55 - 64	1,319	12.72
Male: Age 65 - 74	777	7.49
Male: Age 75 - 84	402	3.88
Male: Age 85 and over	222	2.14
Median Age, Male	–	38.88
Average Age, Male	–	38.70
2017 Est. Female Population by Age		
Female: Age 0 - 4	577	5.37
Female: Age 5 - 9	582	5.42
Female: Age 10 - 14	659	6.14
Female: Age 15 - 17	427	3.98
Female: Age 18 - 20	379	3.53
Female: Age 21 - 24	491	4.57
Female: Age 25 - 34	1,113	10.36
Female: Age 35 - 44	1,391	12.95
Female: Age 45 - 54	1,710	15.92
Female: Age 55 - 64	1,453	13.53
Female: Age 65 - 74	909	8.46
Female: Age 75 - 84	596	5.55
Female: Age 85 and over	452	4.21
Median Age, Female	–	43.36
Average Age, Female	–	42.10

Benchmark:USA

Pop-Facts Demographics Snapshot | Housing & Households

Trade Area: 10543 (Mamaroneck, NY)

Total Population: 21,111
Total Households: 7,882

	10543 (Mamaroneck, NY) Count	%
2017 Est. Households by Household Type		
Family Households	5,373	68.17
NonFamily Households	2,509	31.83
2017 Est. Group Quarters Population		
2017 Est. Group Quarters Population	332	1.57
2017 HHs By Ethnicity, Hispanic/Latino		
2017 HHs By Ethnicity, Hispanic/Latino	1,540	19.54
2017 Est. Family HH Type by Presence of Own Child.		
Married Couple Family, own children	2,131	39.66
Married Couple Family, no own children	2,113	39.33
Male Householder, own children	135	2.51
Male Householder, no own children	197	3.67
Female Householder, own children	421	7.83
Female Householder, no own children	376	7.00
2017 Est. Households by Household Size		
1-Person Household	2,171	27.54
2-Person Household	2,207	28.00
3-Person Household	1,315	16.68
4-Person Household	1,252	15.88
5-Person Household	614	7.79
6-Person Household	199	2.52
7-or-more-person	124	1.57
2017 Est. Average Household Size	–	2.64
2017 Est. Households by Number of Vehicles		
No Vehicles	854	10.84
1 Vehicle	2,810	35.65
2 Vehicles	2,780	35.27
3 Vehicles	1,040	13.20
4 Vehicles	333	4.22
5 or more Vehicles	65	0.82
2017 Est. Average Number of Vehicles	–	1.70
2017 Est. Occupied Housing Units by Tenure		
Housing Units, Owner-Occupied	4,733	60.05
Housing Units, Renter-Occupied	3,149	39.95
2017 Owner Occ. HUs: Avg. Length of Residence		
2017 Owner Occ. HUs: Avg. Length of Residence	–	19.60
2017 Renter Occ. HUs: Avg. Length of Residence		
2017 Renter Occ. HUs: Avg. Length of Residence	–	9.50
2017 Est. Owner-Occupied Housing Units by Value		
Value Less than $20,000	16	0.34
Value $20,000 - $39,999	34	0.72
Value $40,000 - $59,999	11	0.23
Value $60,000 - $79,999	17	0.36
Value $80,000 - $99,999	43	0.91
Value $100,000 - $149,999	98	2.07
Value $150,000 - $199,999	110	2.32
Value $200,000 - $299,999	404	8.54
Value $300,000 - $399,999	273	5.77
Value $400,000 - $499,999	411	8.68
Value $500,000 - $749,999	1,309	27.66
Value $750,000 - $999,999	902	19.06
Value $1,000,000 or more	1,105	23.35
2017 Est. Median All Owner-Occupied Housing Value	–	678,724.29

Benchmark: USA

Pop-Facts Demographics Snapshot | Housing & Households

Trade Area: 10543 (Mamaroneck, NY)

Total Population: 21,111
Total Households: 7,882

	10543 (Mamaroneck, NY) Count	%
2017 Est. Housing Units by Units in Structure		
1 Unit Attached	307	3.65
1 Unit Detached	3,809	45.25
2 Units	1,393	16.55
3 to 4 Units	692	8.22
5 to 19 Units	751	8.92
20 to 49 Units	756	8.98
50 or More Units	697	8.28
Mobile Home or Trailer	13	0.15
Boat, RV, Van, etc.	0	0.00
2017 Est. Housing Units by Year Structure Built		
Built 2010 or Later	477	5.67
Built 2000 to 2009	396	4.70
Built 1990 to 1999	284	3.37
Built 1980 to 1989	515	6.12
Built 1970 to 1979	382	4.54
Built 1960 to 1969	910	10.81
Built 1950 to 1959	1,677	19.92
Built 1940 to 1949	716	8.51
Built 1939 or Earlier	3,061	36.36
2017 Housing Units by Year Structure Built		
2017 Est. Median Year Structure Built	--	1,952.83
2017 Est. Households by Presence of People Under 18		
2017 Est. Households by Presence of People Under 18	2,838	36.01
Households with 1 or More People under Age 18		
Married Couple Family	2,182	76.89
Other Family, Male Householder	161	5.67
Other Family, Female Householder	474	16.70
NonFamily Household, Male Householder	13	0.46
NonFamily Household, Female Householder	8	0.28
Households with No People under Age 18		
Households with No People under Age 18	5,044	63.99
Married Couple Family	2,059	40.82
Other Family, Male Householder	171	3.39
Other Family, Female Householder	324	6.42
NonFamily, Male Householder	990	19.63
NonFamily, Female Householder	1,500	29.74

Benchmark: USA

Pop-Facts Demographics Snapshot | Affluence & Education

Trade Area: 10543 (Mamaroneck, NY)

Total Population: 21,111
Total Households: 7,882

	10543 (Mamaroneck, NY) Count	%
2017 Est. Pop Age 25+ by Edu. Attainment		
Less than 9th Grade	811	5.56
Some High School, No Diploma	613	4.20
High School Graduate (or GED)	2,637	18.07
Some College, No Degree	2,111	14.47
Associate's Degree	549	3.76
Bachelor's Degree	3,912	26.81
Master's Degree	2,876	19.71
Professional Degree	795	5.45
Doctorate Degree	288	1.97
2017 Est. Pop Age 25+ by Edu. Attain., Hisp./Lat.		
High School Diploma	939	27.38
High School Graduate	889	25.92
Some College or Associate's Degree	880	25.66
Bachelor's Degree or Higher	722	21.05
2017 Est. Households by HH Income		
Income < $15,000	656	8.32
Income $15,000 - $24,999	456	5.79
Income $25,000 - $34,999	504	6.39
Income $35,000 - $49,999	603	7.65
Income $50,000 - $74,999	1,167	14.81
Income $75,000 - $99,999	680	8.63
Income $100,000 - $124,999	653	8.29
Income $125,000 - $149,999	571	7.24
Income $150,000 - $199,999	794	10.07
Income $200,000 - $249,999	434	5.51
Income $250,000 - $499,999	775	9.83
Income $500,000+	589	7.47
2017 Est. Average Household Income	–	148,847.00
2017 Est. Median Household Income	–	94,935.64
2017 Median HH Inc. by Single-Class. Race or Eth.		
White Alone	–	100,580.69
Black or African American Alone	–	124,584.94
American Indian and Alaskan Native Alone	–	51,633.46
Asian Alone	–	126,590.32
Native Hawaiian and Other Pacific Islander Alone	–	100,000.00
Some Other Race Alone	–	61,064.87
Two or More Races	–	61,583.50
Hispanic or Latino	–	55,708.85
Not Hispanic or Latino	–	117,008.43
2017 Est. Families by Poverty Status		
2017 Families at or Above Poverty	5,048	93.95
2017 Families at or Above Poverty with children	2,404	44.74
2017 Families Below Poverty	325	6.05
2017 Families Below Poverty with children	190	3.54

Benchmark:USA

Pop-Facts Demographics Snapshot | Employment & Occupation

Trade Area: 10543 (Mamaroneck, NY)

Total Population: 21,111
Total Households: 7,882

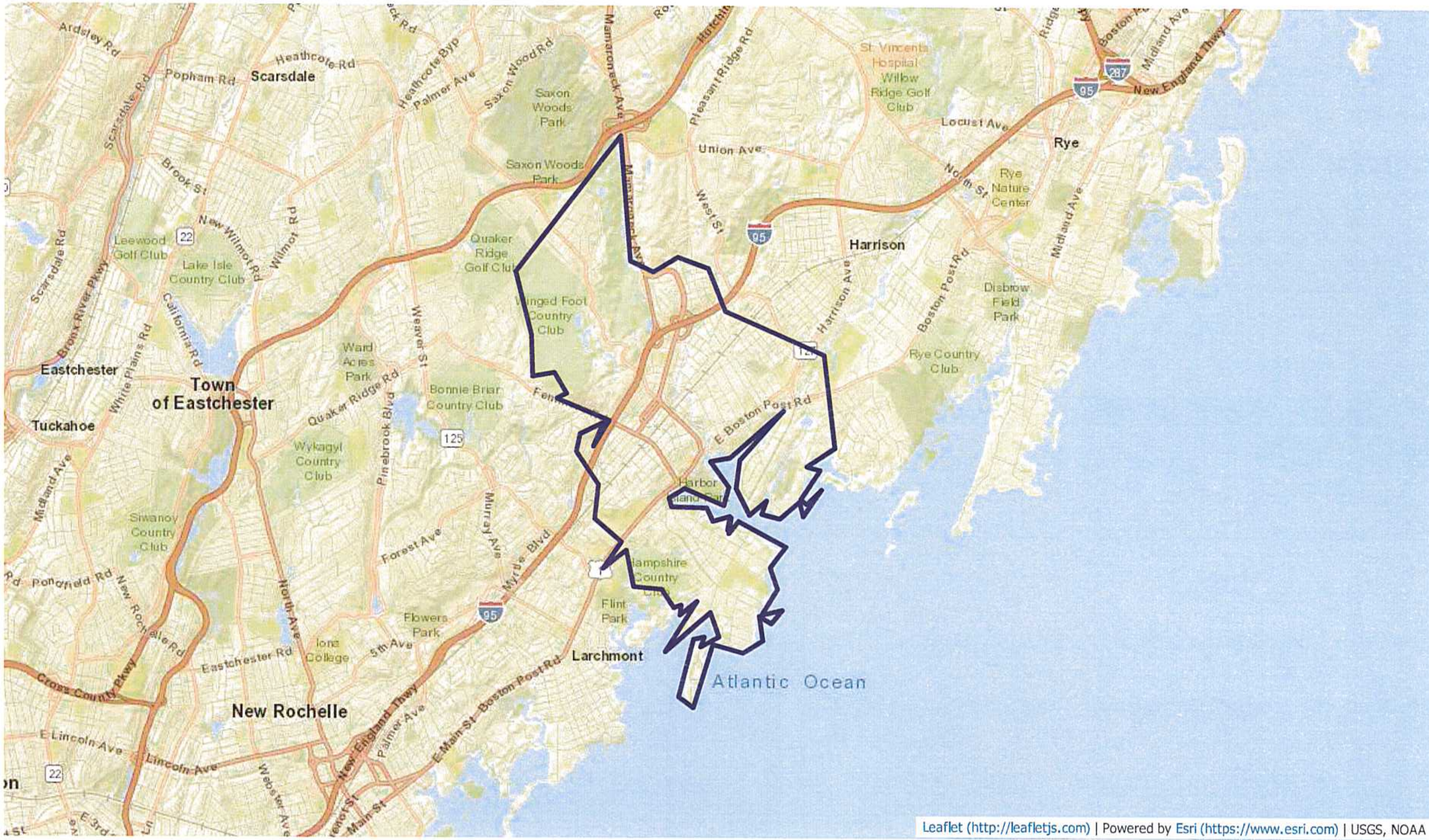
	10543 (Mamaroneck, NY) Count	%
2017 Est. Employed Civilian Population 16+ by Occupation Classification		
White Collar	7,480	70.59
Blue Collar	1,447	13.65
Service and Farming	1,670	15.76
2017 Est. Workers Age 16+ by Travel Time to Work		
Less than 15 Minutes	2,393	24.32
15 - 29 Minutes	2,519	25.61
30 - 44 Minutes	1,922	19.54
45 - 59 Minutes	956	9.72
60 or more Minutes	2,048	20.82
2017 Est. Avg Travel Time to Work in Minutes	–	36.00
2017 Est. Workers Age 16+ by Transp. to Work		
2017 Est. Workers Age 16+ by Transp. to Work	10,380	100.00
Drove Alone	6,026	58.05
Carpooled	577	5.56
Public Transport	2,454	23.64
Walked	532	5.13
Bicycle	56	0.54
Other Means	212	2.04
Worked at Home	523	5.04
2017 Est. Civ. Employed Pop 16+ by Class of Worker		
2017 Est. Civ. Employed Pop 16+ by Class of Worker	10,597	100.00
For-Profit Private Workers	6,419	60.57
Non-Profit Private Workers	1,127	10.63
Local Government Workers	1,184	11.17
State Government Workers	183	1.73
Federal Government Workers	118	1.11
Self-Employed Workers	1,564	14.76
Unpaid Family Workers	2	0.02
2017 Est. Civ. Employed Pop 16+ by Occupation		
Architecture/Engineering	65	0.61
Arts/Design/Entertainment/Sports/Media	486	4.59
Building/Grounds Cleaning/Maintenance	544	5.13
Business/Financial Operations	873	8.24
Community/Social Services	176	1.66
Computer/Mathematical	307	2.90
Construction/Extraction	631	5.96
Education/Training/Library	836	7.89
Farming/Fishing/Forestry	1	0.01
Food Preparation/Serving Related	285	2.69
Healthcare Practitioner/Technician	610	5.76
Healthcare Support	98	0.93
Installation/Maintenance/Repair	219	2.07
Legal	258	2.44
Life/Physical/Social Science	128	1.21
Management	1,690	15.95
Office/Administrative Support	1,003	9.46
Production	228	2.15
Protective Services	293	2.77
Sales/Related	1,048	9.89
Personal Care/Service	449	4.24
Transportation/Material Moving	369	3.48
2017 Est. Pop Age 16+ by Employment Status		
In Armed Forces	0	0.00
Civilian - Employed	10,611	62.38
Civilian - Unemployed	891	5.24
Not in Labor Force	5,507	32.38

Benchmark: USA

Pop-Facts Demographics Snapshot | Map

Trade Area: 10543 (Mamaroneck, NY)

Total Population: 21,111
Total Households: 7,882



Pop-Facts Demographics Snapshot | Summary

ENVIRONICS ANALYTICS

Trade Area: 10538 (Larchmont, NY)

	10538 (Larchmont, NY) Total	%
Population		
2000 Census	16,902	100.00
2010 Census	16,819	100.00
2017 Estimate	17,208	100.00
2022 Projection	17,523	100.00
Population Growth		
Percent Change: 2000 to 2010	–	-0.49
Percent Change: 2010 to 2017	–	2.31
Percent Change: 2017 to 2022	–	1.83

	10538 (Larchmont, NY) Total	%
Households		
2000 Census	6,313	100.00
2010 Census	6,245	100.00
2017 Estimate	6,430	100.00
2022 Projection	6,570	100.00
Household Growth		
Percent Change: 2000 to 2010	–	-1.08
Percent Change: 2010 to 2017	–	2.96
Percent Change: 2017 to 2022	–	2.18

	10538 (Larchmont, NY) Total	%
Family Households		
2000 Census	4,648	100.00
2010 Census	4,557	100.00
2017 Estimate	4,676	100.00
2022 Projection	4,768	100.00
Family Household Growth		
Percent Change: 2000 to 2010	–	-1.96
Percent Change: 2010 to 2017	–	2.61
Percent Change: 2017 to 2022	–	1.97

Benchmark:USA

Pop-Facts Demographics Snapshot | Population & Race

Trade Area: 10538 (Larchmont, NY)

Total Population: 17,208
Total Households: 6,430

	10538 (Larchmont, NY) Count	%
2017 Est. Population by Single-Classification Race		
White Alone	15,297	88.89
Black/African American Alone	398	2.31
American Indian/Alaskan Native Alone	22	0.13
Asian Alone	678	3.94
Native Hawaiian/Pacific Islander Alone	2	0.01
Some Other Race Alone	332	1.93
Two or More Races	479	2.78
2017 Est. Population by Hispanic or Latino Origin		
Not Hispanic or Latino	15,803	91.83
Hispanic or Latino	1,405	8.16
Mexican	232	16.51
Puerto Rican	279	19.86
Cuban	94	6.69
All Other Hispanic or Latino	800	56.94
2017 Est. Pop by Race, Asian Alone, by Category		
Chinese, except Taiwanese	135	19.91
Filipino	71	10.47
Japanese	276	40.71
Asian Indian	101	14.90
Korean	61	9.00
Vietnamese	0	0.00
Cambodian	0	0.00
Hmong	0	0.00
Laotian	0	0.00
Thai	2	0.29
All Other Asian Races Including 2+ Category	32	4.72
2017 Est. Population by Ancestry		
Arab	95	0.55
Czech	99	0.57
Danish	107	0.62
Dutch	60	0.35
English	852	4.95
French (Excluding Basque)	670	3.89
French Canadian	41	0.24
German	827	4.81
Greek	81	0.47
Hungarian	81	0.47
Irish	1,802	10.47
Italian	1,736	10.09
Lithuanian	91	0.53
Norwegian	160	0.93
Polish	647	3.76
Portuguese	87	0.51
Russian	783	4.55
Scottish	340	1.98
Scotch-Irish	101	0.59
Slovak	11	0.06
Sub-Saharan African	9	0.05
Swedish	64	0.37
Swiss	1	0.01
Ukrainian	30	0.17
United States or American	1,791	10.41
Welsh	57	0.33
West Indian (except Hisp. groups)	58	0.34
Other ancestries	4,811	27.96
Ancestries Unclassified	1,716	9.97
2017 Est. Pop Age 5+ by Language Spoken At Home		
Speak Only English at Home	12,951	80.59
Speak Asian/Pacific Isl. Lang. at Home	362	2.25
Speak Indo-European Language at Home	1,766	10.99
Speak Spanish at Home	684	4.26
Speak Other Language at Home	307	1.91
2017 Est. Hisp. or Latino Pop by Single-Class. Race		
White Alone	987	70.25
Black/African American Alone	40	2.85
American Indian/Alaskan Native Alone	14	1.00
Asian Alone	1	0.07
Native Hawaiian/Pacific Islander Alone	0	0.00
Some Other Race Alone	259	18.43
Two or More Races	104	7.40

Benchmark:USA

Pop-Facts Demographics Snapshot | Population & Race

Trade Area: 10538 (Larchmont, NY)

Total Population: 17,208
Total Households: 6,430

	10538 (Larchmont, NY) Count	%
2017 Est. Population by Sex		
Male	8,314	48.31
Female	8,894	51.69
2017 Est. Population by Age		
Age 0 - 4	1,138	6.61
Age 5 - 9	1,328	7.72
Age 10 - 14	1,419	8.25
Age 15 - 17	821	4.77
Age 18 - 20	699	4.06
Age 21 - 24	826	4.80
Age 25 - 34	1,140	6.63
Age 35 - 44	1,872	10.88
Age 45 - 54	2,734	15.89
Age 55 - 64	2,424	14.09
Age 65 - 74	1,553	9.03
Age 75 - 84	820	4.76
Age 85 and over	434	2.52
Age 16 and over	13,051	75.84
Age 18 and over	12,502	72.65
Age 21 and over	11,803	68.59
Age 65 and over	2,807	16.31
Median Age	–	42.04
Average Age	–	39.50
2017 Est. Pop Age 15+ by Marital Status		
Total, Never Married	3,107	23.32
Male, Never Married	1,563	11.73
Female, Never Married	1,544	11.59
Married, Spouse Present	8,461	63.51
Married, Spouse Absent	361	2.71
Widowed	625	4.69
Male, Widowed	103	0.77
Female, Widowed	522	3.92
Divorced	769	5.77
Male, Divorced	289	2.17
Female, Divorced	480	3.60
2017 Est. Male Population by Age		
Male: Age 0 - 4	581	6.99
Male: Age 5 - 9	682	8.20
Male: Age 10 - 14	724	8.71
Male: Age 15 - 17	422	5.08
Male: Age 18 - 20	365	4.39
Male: Age 21 - 24	430	5.17
Male: Age 25 - 34	574	6.90
Male: Age 35 - 44	886	10.66
Male: Age 45 - 54	1,287	15.48
Male: Age 55 - 64	1,145	13.77
Male: Age 65 - 74	724	8.71
Male: Age 75 - 84	336	4.04
Male: Age 85 and over	158	1.90
Median Age, Male	–	39.77
Average Age, Male	–	38.10
2017 Est. Female Population by Age		
Female: Age 0 - 4	557	6.26
Female: Age 5 - 9	646	7.26
Female: Age 10 - 14	695	7.81
Female: Age 15 - 17	399	4.49
Female: Age 18 - 20	334	3.75
Female: Age 21 - 24	396	4.45
Female: Age 25 - 34	566	6.36
Female: Age 35 - 44	986	11.09
Female: Age 45 - 54	1,447	16.27
Female: Age 55 - 64	1,279	14.38
Female: Age 65 - 74	829	9.32
Female: Age 75 - 84	484	5.44
Female: Age 85 and over	276	3.10
Median Age, Female	–	43.89
Average Age, Female	–	40.90

Benchmark:USA

Pop-Facts Demographics Snapshot | Housing & Households

Trade Area: 10538 (Larchmont, NY)

Total Population: 17,208
Total Households: 6,430

	10538 (Larchmont, NY) Count	%
2017 Est. Households by Household Type		
Family Households	4,676	72.72
NonFamily Households	1,754	27.28
2017 Est. Group Quarters Population		
2017 Est. Group Quarters Population	102	0.59
2017 HHs By Ethnicity, Hispanic/Latino		
2017 HHs By Ethnicity, Hispanic/Latino	462	7.18
2017 Est. Family HH Type by Presence of Own Child.		
Married Couple Family, own children	2,279	48.74
Married Couple Family, no own children	1,823	38.99
Male Householder, own children	57	1.22
Male Householder, no own children	83	1.77
Female Householder, own children	228	4.88
Female Householder, no own children	206	4.41
2017 Est. Households by Household Size		
1-Person Household	1,596	24.82
2-Person Household	1,870	29.08
3-Person Household	989	15.38
4-Person Household	1,264	19.66
5-Person Household	566	8.80
6-Person Household	116	1.80
7-or-more-person	29	0.45
2017 Est. Average Household Size	–	2.66
2017 Est. Households by Number of Vehicles		
No Vehicles	258	4.01
1 Vehicle	2,571	39.98
2 Vehicles	2,654	41.27
3 Vehicles	801	12.46
4 Vehicles	145	2.25
5 or more Vehicles	1	0.02
2017 Est. Average Number of Vehicles	–	1.70
2017 Est. Occupied Housing Units by Tenure		
Housing Units, Owner-Occupied	5,005	77.84
Housing Units, Renter-Occupied	1,425	22.16
2017 Owner Occ. HUs: Avg. Length of Residence		
2017 Owner Occ. HUs: Avg. Length of Residence	–	17.10
2017 Renter Occ. HUs: Avg. Length of Residence		
2017 Renter Occ. HUs: Avg. Length of Residence	–	9.90
2017 Est. Owner-Occupied Housing Units by Value		
Value Less than $20,000	35	0.70
Value $20,000 - $39,999	5	0.10
Value $40,000 - $59,999	11	0.22
Value $60,000 - $79,999	3	0.06
Value $80,000 - $99,999	34	0.68
Value $100,000 - $149,999	63	1.26
Value $150,000 - $199,999	226	4.51
Value $200,000 - $299,999	174	3.48
Value $300,000 - $399,999	155	3.10
Value $400,000 - $499,999	108	2.16
Value $500,000 - $749,999	623	12.45
Value $750,000 - $999,999	1,260	25.18
Value $1,000,000 or more	2,308	46.11
2017 Est. Median All Owner-Occupied Housing Value	–	989,947.95

Benchmark: USA

Pop-Facts Demographics Snapshot | Housing & Households

Trade Area: 10538 (Larchmont, NY)

Total Population: 17,208
Total Households: 6,430

	10538 (Larchmont, NY) Count	%
2017 Est. Housing Units by Units in Structure		
1 Unit Attached	112	1.65
1 Unit Detached	4,245	62.70
2 Units	109	1.61
3 to 4 Units	181	2.67
5 to 19 Units	212	3.13
20 to 49 Units	734	10.84
50 or More Units	1,137	16.80
Mobile Home or Trailer	40	0.59
Boat, RV, Van, etc.	0	0.00
2017 Est. Housing Units by Year Structure Built		
Built 2010 or Later	231	3.41
Built 2000 to 2009	91	1.34
Built 1990 to 1999	99	1.46
Built 1980 to 1989	205	3.03
Built 1970 to 1979	298	4.40
Built 1960 to 1969	620	9.16
Built 1950 to 1959	855	12.63
Built 1940 to 1949	546	8.06
Built 1939 or Earlier	3,825	56.50
2017 Housing Units by Year Structure Built		
2017 Est. Median Year Structure Built	–	1,939.74
2017 Est. Households by Presence of People Under 18		
2017 Est. Households by Presence of People Under 18	2,621	40.76
Households with 1 or More People under Age 18		
Married Couple Family	2,296	87.60
Other Family, Male Householder	66	2.52
Other Family, Female Householder	254	9.69
NonFamily Household, Male Householder	4	0.15
NonFamily Household, Female Householder	1	0.04
Households with No People under Age 18		
Households with No People under Age 18	3,809	59.24
Married Couple Family	1,806	47.41
Other Family, Male Householder	76	2.00
Other Family, Female Householder	178	4.67
NonFamily, Male Householder	609	15.99
NonFamily, Female Householder	1,140	29.93

Benchmark: USA

Pop-Facts Demographics Snapshot | Affluence & Education

Trade Area: 10538 (Larchmont, NY)

Total Population: 17,208
Total Households: 6,430

	10538 (Larchmont, NY) Count	%
2017 Est. Pop Age 25+ by Edu. Attainment		
Less than 9th Grade	190	1.73
Some High School, No Diploma	196	1.79
High School Graduate (or GED)	825	7.52
Some College, No Degree	905	8.24
Associate's Degree	343	3.13
Bachelor's Degree	4,208	38.34
Master's Degree	2,624	23.91
Professional Degree	1,231	11.21
Doctorate Degree	455	4.14
2017 Est. Pop Age 25+ by Edu. Attain., Hisp./Lat.		
High School Diploma	29	3.42
High School Graduate	83	9.78
Some College or Associate's Degree	235	27.68
Bachelor's Degree or Higher	502	59.13
2017 Est. Households by HH Income		
Income < $15,000	202	3.14
Income $15,000 - $24,999	180	2.80
Income $25,000 - $34,999	194	3.02
Income $35,000 - $49,999	305	4.74
Income $50,000 - $74,999	771	11.99
Income $75,000 - $99,999	597	9.29
Income $100,000 - $124,999	544	8.46
Income $125,000 - $149,999	351	5.46
Income $150,000 - $199,999	743	11.55
Income $200,000 - $249,999	449	6.98
Income $250,000 - $499,999	977	15.19
Income $500,000+	1,117	17.37
2017 Est. Average Household Income	–	222,394.00
2017 Est. Median Household Income	–	154,652.90
2017 Median HH Inc. by Single-Class. Race or Eth.		
White Alone	–	185,624.29
Black or African American Alone	–	64,810.06
American Indian and Alaskan Native Alone	–	75,000.00
Asian Alone	–	200,000.35
Native Hawaiian and Other Pacific Islander Alone	–	19,874.37
Some Other Race Alone	–	72,208.65
Two or More Races	–	80,388.54
Hispanic or Latino	–	76,637.62
Not Hispanic or Latino	–	190,525.11
2017 Est. Families by Poverty Status		
2017 Families at or Above Poverty	4,556	97.43
2017 Families at or Above Poverty with children	2,533	54.17
2017 Families Below Poverty	120	2.57
2017 Families Below Poverty with children	92	1.97

Benchmark:USA

Pop-Facts Demographics Snapshot | Employment & Occupation

Trade Area: 10538 (Larchmont, NY)

Total Population: 17,208
Total Households: 6,430

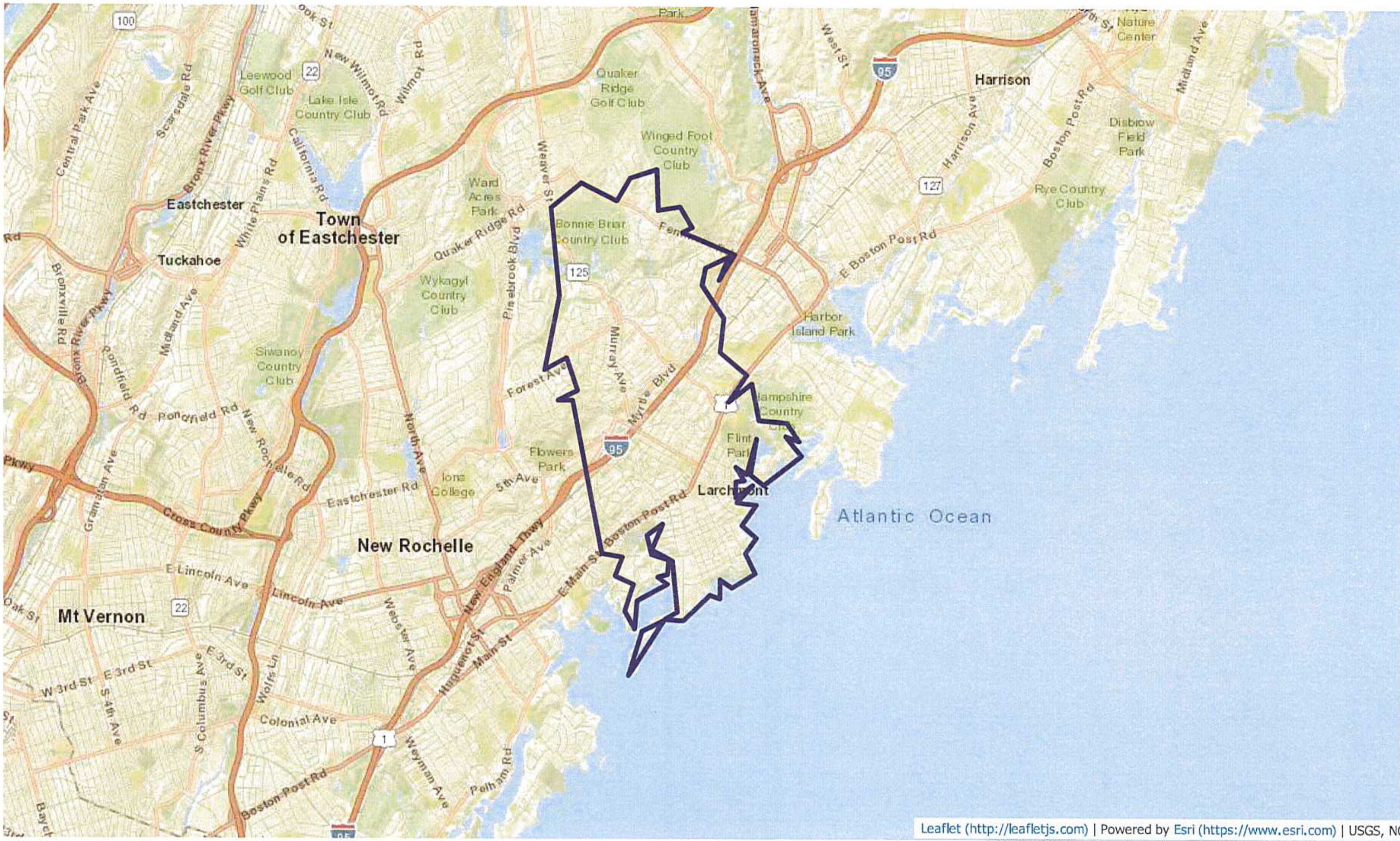
	10538 (Larchmont, NY) Count	%
2017 Est. Employed Civilian Population 16+ by Occupation Classification		
White Collar	7,263	87.02
Blue Collar	385	4.61
Service and Farming	698	8.36
2017 Est. Workers Age 16+ by Travel Time to Work		
Less than 15 Minutes	1,051	14.19
15 - 29 Minutes	1,080	14.58
30 - 44 Minutes	1,763	23.80
45 - 59 Minutes	1,559	21.05
60 or more Minutes	1,955	26.39
2017 Est. Avg Travel Time to Work in Minutes	–	45.00
2017 Est. Workers Age 16+ by Transp. to Work		
2017 Est. Workers Age 16+ by Transp. to Work	8,188	100.00
Drove Alone	3,376	41.23
Carpooled	312	3.81
Public Transport	3,374	41.21
Walked	194	2.37
Bicycle	12	0.15
Other Means	93	1.14
Worked at Home	827	10.10
2017 Est. Civ. Employed Pop 16+ by Class of Worker		
2017 Est. Civ. Employed Pop 16+ by Class of Worker	8,346	100.00
For-Profit Private Workers	5,133	61.50
Non-Profit Private Workers	867	10.39
Local Government Workers	695	8.33
State Government Workers	172	2.06
Federal Government Workers	146	1.75
Self-Employed Workers	1,319	15.80
Unpaid Family Workers	14	0.17
2017 Est. Civ. Employed Pop 16+ by Occupation		
Architecture/Engineering	98	1.17
Arts/Design/Entertainment/Sports/Media	544	6.52
Building/Grounds Cleaning/Maintenance	96	1.15
Business/Financial Operations	1,099	13.17
Community/Social Services	164	1.97
Computer/Mathematical	145	1.74
Construction/Extraction	149	1.78
Education/Training/Library	956	11.46
Farming/Fishing/Forestry	1	0.01
Food Preparation/Serving Related	42	0.50
Healthcare Practitioner/Technician	345	4.13
Healthcare Support	62	0.74
Installation/Maintenance/Repair	108	1.29
Legal	461	5.52
Life/Physical/Social Science	132	1.58
Management	1,632	19.55
Office/Administrative Support	586	7.02
Production	85	1.02
Protective Services	109	1.31
Sales/Related	1,101	13.19
Personal Care/Service	388	4.65
Transportation/Material Moving	43	0.52
2017 Est. Pop Age 16+ by Employment Status		
In Armed Forces	15	0.12
Civilian - Employed	8,320	63.75
Civilian - Unemployed	472	3.62
Not in Labor Force	4,244	32.52

Benchmark: USA

Pop-Facts Demographics Snapshot | Map

Trade Area: 10538 (Larchmont, NY)

Total Population: 17,208
Total Households: 6,430



Benchmark:USA

Pop-Facts Demographics Snapshot | Summary

Trade Area: 10528 (Harrison, NY), 10580 Rye, NY, 10804 New Rochelle

	10528 (Harrison, NY) Total	%	10580 Rye, NY Total	%	10804 New Rochelle Total	%
Population						
2000 Census	12,122	100.00	28,831	100.00	42,761	100.00
2010 Census	11,988	100.00	29,483	100.00	43,318	100.00
2017 Estimate	12,305	100.00	30,558	100.00	44,541	100.00
2022 Projection	12,555	100.00	31,357	100.00	45,470	100.00
Population Growth						
Percent Change: 2000 to 2010	–	-1.10	–	2.26	–	1.30
Percent Change: 2010 to 2017	–	2.64	–	3.65	–	2.82
Percent Change: 2017 to 2022	–	2.03	–	2.62	–	2.09

	10528 (Harrison, NY) Total	%	10580 Rye, NY Total	%	10804 New Rochelle Total	%
Households						
2000 Census	4,554	100.00	10,529	100.00	15,299	100.00
2010 Census	4,465	100.00	10,588	100.00	15,431	100.00
2017 Estimate	4,633	100.00	11,073	100.00	15,994	100.00
2022 Projection	4,754	100.00	11,414	100.00	16,394	100.00
Household Growth						
Percent Change: 2000 to 2010	–	-1.95	–	0.56	–	0.86
Percent Change: 2010 to 2017	–	3.76	–	4.58	–	3.65
Percent Change: 2017 to 2022	–	2.61	–	3.08	–	2.50

	10528 (Harrison, NY) Total	%	10580 Rye, NY Total	%	10804 New Rochelle Total	%
Family Households						
2000 Census	3,324	100.00	7,816	100.00	11,745	100.00
2010 Census	3,239	100.00	7,770	100.00	11,620	100.00
2017 Estimate	3,351	100.00	8,102	100.00	12,011	100.00
2022 Projection	3,433	100.00	8,337	100.00	12,291	100.00
Family Household Growth						
Percent Change: 2000 to 2010	–	-2.56	–	-0.59	–	-1.06
Percent Change: 2010 to 2017	–	3.46	–	4.27	–	3.37
Percent Change: 2017 to 2022	–	2.45	–	2.90	–	2.33

Benchmark:USA

Pop-Facts Demographics Snapshot | Population & Race

Trade Area: 10528 (Harrison, NY), 10580 Rye, NY, 10804 New Rochelle

Total Population: 12,305, 30,558, 44,541
Total Households: 4,633, 11,073, 15,994

	10528 (Harrison, NY) Count	%	10580 Rye, NY Count	%	10804 New Rochelle Count	%
2017 Est. Population by Single-Classification Race						
White Alone	9,944	80.81	26,064	85.29	37,722	84.69
Black/African American Alone	175	1.42	477	1.56	1,623	3.64
American Indian/Alaskan Native Alone	38	0.31	67	0.22	73	0.16
Asian Alone	1,308	10.63	2,477	8.11	3,172	7.12
Native Hawaiian/Pacific Islander Alone	2	0.02	3	0.01	12	0.03
Some Other Race Alone	524	4.26	760	2.49	913	2.05
Two or More Races	314	2.55	710	2.32	1,026	2.30
2017 Est. Population by Hispanic or Latino Origin						
Not Hispanic or Latino	10,836	88.06	27,760	90.84	40,892	91.81
Hispanic or Latino	1,469	11.94	2,798	9.16	3,649	8.19
Mexican	287	19.54	520	18.59	626	17.16
Puerto Rican	296	20.15	539	19.26	761	20.86
Cuban	34	2.31	144	5.15	207	5.67
All Other Hispanic or Latino	852	58.00	1,595	57.01	2,055	56.32
2017 Est. Pop by Race, Asian Alone, by Category						
Chinese, except Taiwanese	73	5.58	323	13.04	534	16.84
Filipino	18	1.38	92	3.71	131	4.13
Japanese	869	66.44	1,472	59.43	1,520	47.92
Asian Indian	160	12.23	291	11.75	506	15.95
Korean	86	6.58	111	4.48	197	6.21
Vietnamese	0	0.00	0	0.00	17	0.54
Cambodian	0	0.00	19	0.77	19	0.60
Hmong	0	0.00	1	0.04	1	0.03
Laotian	0	0.00	0	0.00	0	0.00
Thai	0	0.00	10	0.40	19	0.60
All Other Asian Races Including 2+ Category	102	7.80	158	6.38	228	7.19
2017 Est. Population by Ancestry						
Arab	164	1.33	446	1.46	499	1.12
Czech	0	0.00	1	0.00	76	0.17
Danish	13	0.11	45	0.15	45	0.10
Dutch	10	0.08	135	0.44	136	0.30
English	191	1.55	1,362	4.46	1,560	3.50
French (Excluding Basque)	110	0.89	248	0.81	609	1.37
French Canadian	0	0.00	9	0.03	16	0.04
German	423	3.44	1,816	5.94	2,230	5.01
Greek	82	0.67	179	0.59	311	0.70
Hungarian	40	0.33	103	0.34	275	0.62
Irish	885	7.19	3,111	10.18	4,008	9.00
Italian	3,049	24.78	5,491	17.97	7,826	17.57
Lithuanian	75	0.61	216	0.71	282	0.63
Norwegian	36	0.29	104	0.34	126	0.28
Polish	175	1.42	568	1.86	1,576	3.54
Portuguese	21	0.17	84	0.28	198	0.45
Russian	385	3.13	972	3.18	1,945	4.37
Scottish	90	0.73	208	0.68	258	0.58
Scotch-Irish	35	0.28	55	0.18	62	0.14
Slovak	1	0.01	39	0.13	41	0.09
Sub-Saharan African	146	1.19	160	0.52	217	0.49
Swedish	47	0.38	170	0.56	290	0.65
Swiss	0	0.00	33	0.11	58	0.13
Ukrainian	29	0.24	84	0.28	127	0.28
United States or American	1,165	9.47	3,629	11.88	4,821	10.82
Welsh	10	0.08	15	0.05	34	0.08
West Indian (except Hisp. groups)	0	0.00	76	0.25	417	0.94
Other ancestries	4,075	33.12	8,450	27.65	12,262	27.53
Ancestries Unclassified	1,048	8.52	2,749	9.00	4,236	9.51
2017 Est. Pop Age 5+ by Language Spoken At Home						
Speak Only English at Home	7,543	64.89	21,231	74.08	31,880	76.22
Speak Asian/Pacific Isl. Lang. at Home	1,334	11.48	2,063	7.20	2,366	5.66
Speak Indo-European Language at Home	1,285	11.05	2,686	9.37	4,003	9.57
Speak Spanish at Home	1,186	10.20	2,100	7.33	2,839	6.79
Speak Other Language at Home	276	2.37	580	2.02	736	1.76
2017 Est. Hisp. or Latino Pop by Single-Class. Race						
White Alone	814	55.41	1,776	63.47	2,344	64.24
Black/African American Alone	25	1.70	65	2.32	122	3.34
American Indian/Alaskan Native Alone	35	2.38	54	1.93	55	1.51
Asian Alone	4	0.27	12	0.43	22	0.60
Native Hawaiian/Pacific Islander Alone	0	0.00	0	0.00	0	0.00
Some Other Race Alone	494	33.63	702	25.09	830	22.75
Two or More Races	97	6.60	189	6.75	276	7.56

Benchmark:USA

Pop-Facts Demographics Snapshot | Population & Race

Trade Area: 10528 (Harrison, NY), 10580 Rye, NY, 10804 New Rochelle

Total Population: 12,305, 30,558, 44,541
Total Households: 4,633, 11,073, 15,994

	10528 (Harrison, NY) Count	%	10580 Rye, NY Count	%	10804 New Rochelle Count	%
2017 Est. Population by Sex						
Male	5,918	48.09	14,737	48.23	21,508	48.29
Female	6,387	51.91	15,821	51.77	23,033	51.71
2017 Est. Population by Age						
Age 0 - 4	681	5.53	1,898	6.21	2,717	6.10
Age 5 - 9	731	5.94	2,098	6.87	2,931	6.58
Age 10 - 14	866	7.04	2,514	8.23	3,519	7.90
Age 15 - 17	550	4.47	1,527	5.00	2,189	4.92
Age 18 - 20	484	3.93	1,325	4.34	1,905	4.28
Age 21 - 24	617	5.01	1,637	5.36	2,370	5.32
Age 25 - 34	1,258	10.22	2,445	8.00	3,581	8.04
Age 35 - 44	1,509	12.26	3,125	10.23	4,319	9.70
Age 45 - 54	1,969	16.00	4,931	16.14	6,897	15.48
Age 55 - 64	1,717	13.95	4,213	13.79	6,411	14.39
Age 65 - 74	1,030	8.37	2,408	7.88	3,936	8.84
Age 75 - 84	603	4.90	1,447	4.74	2,338	5.25
Age 85 and over	290	2.36	990	3.24	1,428	3.21
Age 16 and over	9,842	79.98	23,541	77.04	34,647	77.79
Age 18 and over	9,477	77.02	22,521	73.70	33,185	74.50
Age 21 and over	8,993	73.08	21,196	69.36	31,280	70.23
Age 65 and over	1,923	15.63	4,845	15.86	7,702	17.29
Median Age	–	41.67	–	41.35	–	42.49
Average Age	–	40.30	–	39.58	–	40.37
2017 Est. Pop Age 15+ by Marital Status						
Total, Never Married	2,734	27.27	5,716	23.77	8,351	23.61
Male, Never Married	1,535	15.31	3,072	12.77	4,351	12.30
Female, Never Married	1,199	11.96	2,644	10.99	4,000	11.31
Married, Spouse Present	5,682	56.67	14,493	60.27	21,740	61.46
Married, Spouse Absent	376	3.75	956	3.98	1,252	3.54
Widowed	530	5.29	1,364	5.67	2,096	5.92
Male, Widowed	96	0.96	216	0.90	375	1.06
Female, Widowed	434	4.33	1,148	4.77	1,721	4.87
Divorced	705	7.03	1,519	6.32	1,935	5.47
Male, Divorced	203	2.02	526	2.19	677	1.91
Female, Divorced	502	5.01	993	4.13	1,258	3.56
2017 Est. Male Population by Age						
Male: Age 0 - 4	348	5.88	970	6.58	1,386	6.44
Male: Age 5 - 9	364	6.15	1,051	7.13	1,473	6.85
Male: Age 10 - 14	441	7.45	1,315	8.92	1,844	8.57
Male: Age 15 - 17	269	4.54	779	5.29	1,127	5.24
Male: Age 18 - 20	239	4.04	678	4.60	983	4.57
Male: Age 21 - 24	304	5.14	824	5.59	1,207	5.61
Male: Age 25 - 34	623	10.53	1,191	8.08	1,742	8.10
Male: Age 35 - 44	723	12.22	1,462	9.92	2,003	9.31
Male: Age 45 - 54	949	16.04	2,364	16.04	3,284	15.27
Male: Age 55 - 64	821	13.87	2,053	13.93	3,098	14.40
Male: Age 65 - 74	476	8.04	1,125	7.63	1,848	8.59
Male: Age 75 - 84	251	4.24	597	4.05	1,008	4.69
Male: Age 85 and over	110	1.86	328	2.23	505	2.35
Median Age, Male	–	40.41	–	39.27	–	40.42
Average Age, Male	–	39.30	–	38.16	–	39.02
2017 Est. Female Population by Age						
Female: Age 0 - 4	333	5.21	928	5.87	1,331	5.78
Female: Age 5 - 9	367	5.75	1,047	6.62	1,458	6.33
Female: Age 10 - 14	425	6.65	1,199	7.58	1,675	7.27
Female: Age 15 - 17	281	4.40	748	4.73	1,062	4.61
Female: Age 18 - 20	245	3.84	647	4.09	922	4.00
Female: Age 21 - 24	313	4.90	813	5.14	1,163	5.05
Female: Age 25 - 34	635	9.94	1,254	7.93	1,839	7.98
Female: Age 35 - 44	786	12.31	1,663	10.51	2,316	10.05
Female: Age 45 - 54	1,020	15.97	2,567	16.23	3,613	15.69
Female: Age 55 - 64	896	14.03	2,160	13.65	3,313	14.38
Female: Age 65 - 74	554	8.67	1,283	8.11	2,088	9.06
Female: Age 75 - 84	352	5.51	850	5.37	1,330	5.77
Female: Age 85 and over	180	2.82	662	4.18	923	4.01
Median Age, Female	–	42.79	–	43.01	–	44.10
Average Age, Female	–	41.20	–	40.90	–	41.62

Benchmark:USA

Pop-Facts Demographics Snapshot | Housing & Households

Trade Area: 10528 (Harrison, NY), 10580 Rye, NY, 10804 New Rochelle

Total Population: 12,305, 30,558, 44,541
Total Households: 4,633, 11,073, 15,994

	10528 (Harrison, NY)		10580 Rye, NY		10804 New Rochelle	
	Count	%	Count	%	Count	%
2017 Est. Households by Household Type						
Family Households	3,351	72.33	8,102	73.17	12,011	75.10
NonFamily Households	1,282	27.67	2,971	26.83	3,983	24.90
2017 Est. Group Quarters Population						
2017 Est. Group Quarters Population	11	0.09	167	0.55	240	0.54
2017 HHs By Ethnicity, Hispanic/Latino						
2017 HHs By Ethnicity, Hispanic/Latino	441	9.52	817	7.38	1,044	6.53
2017 Est. Family HH Type by Presence of Own Child.						
Married Couple Family, own children	1,389	41.45	3,879	47.88	5,528	46.02
Married Couple Family, no own children	1,352	40.35	3,086	38.09	4,933	41.07
Male Householder, own children	46	1.37	107	1.32	135	1.12
Male Householder, no own children	92	2.75	163	2.01	239	1.99
Female Householder, own children	215	6.42	420	5.18	550	4.58
Female Householder, no own children	257	7.67	447	5.52	626	5.21
2017 Est. Households by Household Size						
1-Person Household	1,102	23.79	2,641	23.85	3,559	22.25
2-Person Household	1,361	29.38	3,074	27.76	4,652	29.09
3-Person Household	842	18.17	1,819	16.43	2,668	16.68
4-Person Household	857	18.50	2,088	18.86	2,985	18.66
5-Person Household	343	7.40	1,047	9.46	1,535	9.60
6-Person Household	108	2.33	322	2.91	456	2.85
7-or-more-person	20	0.43	82	0.74	139	0.87
2017 Est. Average Household Size	–	2.65	–	2.74	–	2.77
2017 Est. Households by Number of Vehicles						
No Vehicles	309	6.67	741	6.69	970	6.07
1 Vehicle	1,797	38.79	3,509	31.69	4,633	28.97
2 Vehicles	1,583	34.17	4,679	42.26	7,055	44.11
3 Vehicles	678	14.63	1,559	14.08	2,502	15.64
4 Vehicles	225	4.86	492	4.44	691	4.32
5 or more Vehicles	41	0.89	93	0.84	143	0.89
2017 Est. Average Number of Vehicles	–	1.80	–	1.86	–	1.90
2017 Est. Occupied Housing Units by Tenure						
Housing Units, Owner-Occupied	2,792	60.26	7,540	68.09	12,189	76.21
Housing Units, Renter-Occupied	1,841	39.74	3,533	31.91	3,805	23.79
2017 Owner Occ. HUs: Avg. Length of Residence						
2017 Owner Occ. HUs: Avg. Length of Residence	–	20.80	–	18.65	–	18.97
2017 Renter Occ. HUs: Avg. Length of Residence						
2017 Renter Occ. HUs: Avg. Length of Residence	–	7.70	–	7.35	–	7.52
2017 Est. Owner-Occupied Housing Units by Value						
Value Less than $20,000	67	2.40	117	1.55	195	1.60
Value $20,000 - $39,999	13	0.47	19	0.25	21	0.17
Value $40,000 - $59,999	8	0.29	11	0.15	13	0.11
Value $60,000 - $79,999	10	0.36	47	0.62	55	0.45
Value $80,000 - $99,999	15	0.54	38	0.50	40	0.33
Value $100,000 - $149,999	16	0.57	49	0.65	81	0.67
Value $150,000 - $199,999	54	1.93	115	1.52	193	1.58
Value $200,000 - $299,999	152	5.44	240	3.18	385	3.16
Value $300,000 - $399,999	130	4.66	283	3.75	453	3.72
Value $400,000 - $499,999	165	5.91	306	4.06	515	4.22
Value $500,000 - $749,999	778	27.86	1,263	16.75	2,921	23.96
Value $750,000 - $999,999	362	12.97	1,256	16.66	2,357	19.34
Value $1,000,000 or more	1,022	36.60	3,796	50.34	4,960	40.69
2017 Est. Median All Owner-Occupied Housing Value	–	745,558.95	–	1,000,000.01	–	965,023.01

Benchmark: USA

Pop-Facts Demographics Snapshot | Housing & Households

Trade Area: 10528 (Harrison, NY), 10580 Rye, NY, 10804 New Rochelle

Total Population: 12,305, 30,558, 44,541
Total Households: 4,633, 11,073, 15,994

	10528 (Harrison, NY) Count	%	10580 Rye, NY Count	%	10804 New Rochelle Count	%
2017 Est. Housing Units by Units in Structure						
1 Unit Attached	172	3.50	505	4.25	580	3.41
1 Unit Detached	2,620	53.24	7,244	61.03	11,645	68.43
2 Units	1,139	23.15	1,462	12.32	1,519	8.93
3 to 4 Units	321	6.52	520	4.38	524	3.08
5 to 19 Units	189	3.84	636	5.36	673	3.96
20 to 49 Units	246	5.00	492	4.14	735	4.32
50 or More Units	223	4.53	994	8.38	1,325	7.79
Mobile Home or Trailer	11	0.22	16	0.14	16	0.09
Boat, RV, Van, etc.	0	0.00	0	0.00	0	0.00
2017 Est. Housing Units by Year Structure Built						
Built 2010 or Later	235	4.78	615	5.18	713	4.19
Built 2000 to 2009	347	7.05	666	5.61	803	4.72
Built 1990 to 1999	163	3.31	495	4.17	540	3.17
Built 1980 to 1989	304	6.18	786	6.62	1,014	5.96
Built 1970 to 1979	403	8.19	883	7.44	1,193	7.01
Built 1960 to 1969	664	13.49	1,462	12.32	1,950	11.46
Built 1950 to 1959	941	19.12	2,232	18.80	3,766	22.13
Built 1940 to 1949	456	9.27	916	7.72	1,327	7.80
Built 1939 or Earlier	1,408	28.61	3,814	32.13	5,711	33.56
2017 Housing Units by Year Structure Built						
2017 Est. Median Year Structure Built	–	1,956.37	–	1,955.51	–	1,954.14
2017 Est. Households by Presence of People Under 18						
2017 Est. Households by Presence of People Under 18	1,723	37.19	4,536	40.97	6,412	40.09
Households with 1 or More People under Age 18						
Married Couple Family	1,409	81.78	3,930	86.64	5,611	87.51
Other Family, Male Householder	53	3.08	124	2.73	161	2.51
Other Family, Female Householder	252	14.63	473	10.43	629	9.81
NonFamily Household, Male Householder	8	0.46	8	0.18	10	0.16
NonFamily Household, Female Householder	1	0.06	1	0.02	1	0.02
Households with No People under Age 18						
Households with No People under Age 18	2,910	62.81	6,537	59.03	9,582	59.91
Married Couple Family	1,331	45.74	3,032	46.38	4,847	50.58
Other Family, Male Householder	86	2.96	146	2.23	213	2.22
Other Family, Female Householder	222	7.63	395	6.04	549	5.73
NonFamily, Male Householder	524	18.01	1,081	16.54	1,402	14.63
NonFamily, Female Householder	747	25.67	1,883	28.80	2,571	26.83

Benchmark: USA

Pop-Facts Demographics Snapshot | Affluence & Education

Trade Area: 10528 (Harrison, NY), 10580 Rye, NY, 10804 New Rochelle

Total Population: 12,305, 30,558, 44,541
Total Households: 4,633, 11,073, 15,994

	10528 (Harrison, NY) Count	%	10580 Rye, NY Count	%	10804 New Rochelle Count	%
2017 Est. Pop Age 25+ by Edu. Attainment						
Less than 9th Grade	417	4.98	636	3.25	757	2.62
Some High School, No Diploma	311	3.71	542	2.77	657	2.27
High School Graduate (or GED)	1,471	17.56	2,478	12.67	3,290	11.38
Some College, No Degree	1,220	14.56	2,414	12.34	3,413	11.81
Associate's Degree	444	5.30	883	4.51	1,229	4.25
Bachelor's Degree	2,501	29.86	6,662	34.06	9,430	32.62
Master's Degree	1,314	15.69	3,897	19.92	6,177	21.37
Professional Degree	505	6.03	1,553	7.94	3,029	10.48
Doctorate Degree	193	2.30	494	2.53	928	3.21
2017 Est. Pop Age 25+ by Edu. Attain., Hisp./Lat.						
High School Diploma	222	24.61	286	17.62	325	15.43
High School Graduate	204	22.62	332	20.46	387	18.37
Some College or Associate's Degree	234	25.94	369	22.74	495	23.49
Bachelor's Degree or Higher	242	26.83	636	39.19	900	42.72
2017 Est. Households by HH Income						
Income < $15,000	265	5.72	595	5.37	737	4.61
Income $15,000 - $24,999	291	6.28	529	4.78	705	4.41
Income $25,000 - $34,999	216	4.66	434	3.92	601	3.76
Income $35,000 - $49,999	424	9.15	774	6.99	1,061	6.63
Income $50,000 - $74,999	479	10.34	921	8.32	1,298	8.12
Income $75,000 - $99,999	374	8.07	828	7.48	1,157	7.23
Income $100,000 - $124,999	401	8.65	927	8.37	1,319	8.25
Income $125,000 - $149,999	376	8.12	765	6.91	1,139	7.12
Income $150,000 - $199,999	527	11.38	1,280	11.56	1,886	11.79
Income $200,000 - $249,999	312	6.73	804	7.26	1,179	7.37
Income $250,000 - $499,999	525	11.33	1,522	13.74	2,316	14.48
Income $500,000+	443	9.56	1,694	15.30	2,596	16.23
2017 Est. Average Household Income	–	169,335.00	–	206,160.42	–	214,047.00
2017 Est. Median Household Income	–	116,638.50	–	141,873.15	–	149,532.32
2017 Median HH Inc. by Single-Class. Race or Eth.						
White Alone	–	117,124.18	–	145,509.75	–	180,283.31
Black or African American Alone	–	147,497.70	–	114,641.99	–	148,966.17
American Indian and Alaskan Native Alone	–	55,768.21	–	78,490.22	–	77,945.61
Asian Alone	–	191,666.48	–	200,000.06	–	200,000.02
Native Hawaiian and Other Pacific Islander Alone	–	100,000.00	–	67,984.38	–	50,000.00
Some Other Race Alone	–	31,533.95	–	29,545.50	–	35,738.56
Two or More Races	–	90,515.68	–	111,432.16	–	116,161.91
Hispanic or Latino	–	44,767.50	–	52,055.63	–	84,639.12
Not Hispanic or Latino	–	127,753.65	–	149,962.62	–	183,691.19
2017 Est. Families by Poverty Status						
2017 Families at or Above Poverty	3,148	93.94	7,768	95.88	11,587	96.47
2017 Families at or Above Poverty with children	1,697	50.64	4,358	53.79	6,127	51.01
2017 Families Below Poverty	203	6.06	334	4.12	424	3.53
2017 Families Below Poverty with children	130	3.88	212	2.62	250	2.08

Benchmark:USA

Pop-Facts Demographics Snapshot | Employment & Occupation

Trade Area: 10528 (Harrison, NY), 10580 Rye, NY, 10804 New Rochelle

Total Population: 12,305, 30,558, 44,541
Total Households: 4,633, 11,073, 15,994

	10528 (Harrison, NY)		10580 Rye, NY		10804 New Rochelle	
	Count	%	Count	%	Count	%
2017 Est. Employed Civilian Population 16+ by Occupation Classification						
White Collar	4,836	79.12	11,381	82.73	17,459	84.19
Blue Collar	553	9.05	953	6.93	1,321	6.37
Service and Farming	723	11.83	1,423	10.34	1,958	9.44
2017 Est. Workers Age 16+ by Travel Time to Work						
Less than 15 Minutes	1,465	25.44	2,999	23.84	4,056	21.79
15 - 29 Minutes	1,680	29.18	3,284	26.11	4,933	26.50
30 - 44 Minutes	658	11.43	1,382	10.99	2,482	13.33
45 - 59 Minutes	655	11.38	1,657	13.17	2,407	12.93
60 or more Minutes	1,300	22.58	3,256	25.89	4,736	25.44
2017 Est. Avg Travel Time to Work in Minutes	–	36.00	–	38.71	–	38.80
2017 Est. Workers Age 16+ by Transp. to Work						
2017 Est. Workers Age 16+ by Transp. to Work	6,002	100.00	13,375	100.00	20,198	100.00
Drove Alone	3,557	59.26	7,295	54.54	11,158	55.24
Carpooled	290	4.83	631	4.72	989	4.90
Public Transport	1,608	26.79	4,072	30.45	5,693	28.19
Walked	217	3.62	379	2.83	537	2.66
Bicycle	35	0.58	53	0.40	56	0.28
Other Means	46	0.77	156	1.17	178	0.88
Worked at Home	249	4.15	789	5.90	1,587	7.86
2017 Est. Civ. Employed Pop 16+ by Class of Worker						
2017 Est. Civ. Employed Pop 16+ by Class of Worker	6,112	100.00	13,757	100.00	20,738	100.00
For-Profit Private Workers	3,750	61.35	8,820	64.11	12,467	60.12
Non-Profit Private Workers	666	10.90	1,252	9.10	2,048	9.88
Local Government Workers	578	9.46	975	7.09	1,618	7.80
State Government Workers	82	1.34	305	2.22	407	1.96
Federal Government Workers	120	1.96	249	1.81	382	1.84
Self-Employed Workers	911	14.90	2,141	15.56	3,797	18.31
Unpaid Family Workers	5	0.08	15	0.11	19	0.09
2017 Est. Civ. Employed Pop 16+ by Occupation						
Architecture/Engineering	65	1.06	105	0.76	229	1.10
Arts/Design/Entertainment/Sports/Media	266	4.35	687	4.99	923	4.45
Building/Grounds Cleaning/Maintenance	153	2.50	319	2.32	418	2.02
Business/Financial Operations	455	7.44	1,244	9.04	1,857	8.96
Community/Social Services	73	1.19	122	0.89	252	1.22
Computer/Mathematical	73	1.19	215	1.56	410	1.98
Construction/Extraction	265	4.34	427	3.10	554	2.67
Education/Training/Library	572	9.36	1,171	8.51	1,827	8.81
Farming/Fishing/Forestry	2	0.03	6	0.04	7	0.03
Food Preparation/Serving Related	189	3.09	368	2.67	475	2.29
Healthcare Practitioner/Technician	346	5.66	803	5.84	1,626	7.84
Healthcare Support	76	1.24	134	0.97	166	0.80
Installation/Maintenance/Repair	163	2.67	247	1.79	361	1.74
Legal	212	3.47	491	3.57	990	4.77
Life/Physical/Social Science	40	0.65	174	1.26	311	1.50
Management	1,272	20.81	2,910	21.15	4,167	20.09
Office/Administrative Support	624	10.21	1,224	8.90	1,715	8.27
Production	73	1.19	131	0.95	202	0.97
Protective Services	103	1.69	172	1.25	313	1.51
Sales/Related	838	13.71	2,235	16.25	3,152	15.20
Personal Care/Service	200	3.27	424	3.08	579	2.79
Transportation/Material Moving	52	0.85	148	1.08	204	0.98
2017 Est. Pop Age 16+ by Employment Status						
In Armed Forces	0	0.00	0	0.00	3	0.01
Civilian - Employed	6,101	61.99	13,740	58.37	20,749	59.89
Civilian - Unemployed	376	3.82	813	3.45	1,215	3.51
Not in Labor Force	3,365	34.19	8,988	38.18	12,680	36.60

Benchmark: USA

Pop-Facts Demographics Snapshot | Map

Trade Area: 10528 (Harrison, NY), 10580 Rye, NY, 10804 New Rochelle

Total Population: 12,305, 30,558, 44,541
Total Households: 4,633, 11,073, 15,994

Pop-Facts Demographics Snapshot | Summary

ENVIRONICS ANALYTICS

Trade Area: 10804 New Rochelle

	10804 New Rochelle Total	%
Population		
2000 Census	42,761	100.00
2010 Census	43,318	100.00
2017 Estimate	44,541	100.00
2022 Projection	45,470	100.00
Population Growth		
Percent Change: 2000 to 2010	–	1.30
Percent Change: 2010 to 2017	–	2.82
Percent Change: 2017 to 2022	–	2.09

	10804 New Rochelle Total	%
Households		
2000 Census	15,299	100.00
2010 Census	15,431	100.00
2017 Estimate	15,994	100.00
2022 Projection	16,394	100.00
Household Growth		
Percent Change: 2000 to 2010	–	0.86
Percent Change: 2010 to 2017	–	3.65
Percent Change: 2017 to 2022	–	2.50

	10804 New Rochelle Total	%
Family Households		
2000 Census	11,745	100.00
2010 Census	11,620	100.00
2017 Estimate	12,011	100.00
2022 Projection	12,291	100.00
Family Household Growth		
Percent Change: 2000 to 2010	–	-1.06
Percent Change: 2010 to 2017	–	3.37
Percent Change: 2017 to 2022	–	2.33

Benchmark:USA

Pop-Facts Demographics Snapshot | Population & Race

Trade Area: 10804 New Rochelle

Total Population: 44,541
Total Households: 15,994

	10804 New Rochelle Count	%
2017 Est. Population by Single-Classification Race		
White Alone	37,722	84.69
Black/African American Alone	1,623	3.64
American Indian/Alaskan Native Alone	73	0.16
Asian Alone	3,172	7.12
Native Hawaiian/Pacific Islander Alone	12	0.03
Some Other Race Alone	913	2.05
Two or More Races	1,026	2.30
2017 Est. Population by Hispanic or Latino Origin		
Not Hispanic or Latino	40,892	91.81
Hispanic or Latino	3,649	8.19
Mexican	626	17.16
Puerto Rican	761	20.86
Cuban	207	5.67
All Other Hispanic or Latino	2,055	56.32
2017 Est. Pop by Race, Asian Alone, by Category		
Chinese, except Taiwanese	534	16.84
Filipino	131	4.13
Japanese	1,520	47.92
Asian Indian	506	15.95
Korean	197	6.21
Vietnamese	17	0.54
Cambodian	19	0.60
Hmong	1	0.03
Laotian	0	0.00
Thai	19	0.60
All Other Asian Races Including 2+ Category	228	7.19
2017 Est. Population by Ancestry		
Arab	499	1.12
Czech	76	0.17
Danish	45	0.10
Dutch	136	0.30
English	1,560	3.50
French (Excluding Basque)	609	1.37
French Canadian	16	0.04
German	2,230	5.01
Greek	311	0.70
Hungarian	275	0.62
Irish	4,008	9.00
Italian	7,826	17.57
Lithuanian	282	0.63
Norwegian	126	0.28
Polish	1,576	3.54
Portuguese	198	0.45
Russian	1,945	4.37
Scottish	258	0.58
Scotch-Irish	62	0.14
Slovak	41	0.09
Sub-Saharan African	217	0.49
Swedish	290	0.65
Swiss	58	0.13
Ukrainian	127	0.28
United States or American	4,821	10.82
Welsh	34	0.08
West Indian (except Hisp. groups)	417	0.94
Other ancestries	12,262	27.53
Ancestries Unclassified	4,236	9.51
2017 Est. Pop Age 5+ by Language Spoken At Home		
Speak Only English at Home	31,880	76.22
Speak Asian/Pacific Isl. Lang. at Home	2,366	5.66
Speak Indo-European Language at Home	4,003	9.57
Speak Spanish at Home	2,839	6.79
Speak Other Language at Home	736	1.76
2017 Est. Hisp. or Latino Pop by Single-Class. Race		
White Alone	2,344	64.24
Black/African American Alone	122	3.34
American Indian/Alaskan Native Alone	55	1.51
Asian Alone	22	0.60
Native Hawaiian/Pacific Islander Alone	0	0.00
Some Other Race Alone	830	22.75
Two or More Races	276	7.56

Benchmark:USA

Pop-Facts Demographics Snapshot | Population & Race

Trade Area: 10804 New Rochelle

Total Population: 44,541
Total Households: 15,994

	10804 New Rochelle Count	%
2017 Est. Population by Sex		
Male	21,508	48.29
Female	23,033	51.71
2017 Est. Population by Age		
Age 0 - 4	2,717	6.10
Age 5 - 9	2,931	6.58
Age 10 - 14	3,519	7.90
Age 15 - 17	2,189	4.92
Age 18 - 20	1,905	4.28
Age 21 - 24	2,370	5.32
Age 25 - 34	3,581	8.04
Age 35 - 44	4,319	9.70
Age 45 - 54	6,897	15.48
Age 55 - 64	6,411	14.39
Age 65 - 74	3,936	8.84
Age 75 - 84	2,338	5.25
Age 85 and over	1,428	3.21
Age 16 and over	34,647	77.79
Age 18 and over	33,185	74.50
Age 21 and over	31,280	70.23
Age 65 and over	7,702	17.29
Median Age	–	42.49
Average Age	–	40.37
2017 Est. Pop Age 15+ by Marital Status		
Total, Never Married	8,351	23.61
Male, Never Married	4,351	12.30
Female, Never Married	4,000	11.31
Married, Spouse Present	21,740	61.46
Married, Spouse Absent	1,252	3.54
Widowed	2,096	5.92
Male, Widowed	375	1.06
Female, Widowed	1,721	4.87
Divorced	1,935	5.47
Male, Divorced	677	1.91
Female, Divorced	1,258	3.56
2017 Est. Male Population by Age		
Male: Age 0 - 4	1,386	6.44
Male: Age 5 - 9	1,473	6.85
Male: Age 10 - 14	1,844	8.57
Male: Age 15 - 17	1,127	5.24
Male: Age 18 - 20	983	4.57
Male: Age 21 - 24	1,207	5.61
Male: Age 25 - 34	1,742	8.10
Male: Age 35 - 44	2,003	9.31
Male: Age 45 - 54	3,284	15.27
Male: Age 55 - 64	3,098	14.40
Male: Age 65 - 74	1,848	8.59
Male: Age 75 - 84	1,008	4.69
Male: Age 85 and over	505	2.35
Median Age, Male	–	40.42
Average Age, Male	–	39.02
2017 Est. Female Population by Age		
Female: Age 0 - 4	1,331	5.78
Female: Age 5 - 9	1,458	6.33
Female: Age 10 - 14	1,675	7.27
Female: Age 15 - 17	1,062	4.61
Female: Age 18 - 20	922	4.00
Female: Age 21 - 24	1,163	5.05
Female: Age 25 - 34	1,839	7.98
Female: Age 35 - 44	2,316	10.05
Female: Age 45 - 54	3,613	15.69
Female: Age 55 - 64	3,313	14.38
Female: Age 65 - 74	2,088	9.06
Female: Age 75 - 84	1,330	5.77
Female: Age 85 and over	923	4.01
Median Age, Female	–	44.10
Average Age, Female	–	41.62

Benchmark:USA

Pop-Facts Demographics Snapshot | Housing & Households

Trade Area: 10804 New Rochelle

Total Population: 44,541
Total Households: 15,994

	10804 New Rochelle Count	%
2017 Est. Households by Household Type		
Family Households	12,011	75.10
NonFamily Households	3,983	24.90
2017 Est. Group Quarters Population		
2017 Est. Group Quarters Population	240	0.54
2017 HHs By Ethnicity, Hispanic/Latino		
2017 HHs By Ethnicity, Hispanic/Latino	1,044	6.53
2017 Est. Family HH Type by Presence of Own Child.		
Married Couple Family, own children	5,528	46.02
Married Couple Family, no own children	4,933	41.07
Male Householder, own children	135	1.12
Male Householder, no own children	239	1.99
Female Householder, own children	550	4.58
Female Householder, no own children	626	5.21
2017 Est. Households by Household Size		
1-Person Household	3,559	22.25
2-Person Household	4,652	29.09
3-Person Household	2,668	16.68
4-Person Household	2,985	18.66
5-Person Household	1,535	9.60
6-Person Household	456	2.85
7-or-more-person	139	0.87
2017 Est. Average Household Size	–	2.77
2017 Est. Households by Number of Vehicles		
No Vehicles	970	6.07
1 Vehicle	4,633	28.97
2 Vehicles	7,055	44.11
3 Vehicles	2,502	15.64
4 Vehicles	691	4.32
5 or more Vehicles	143	0.89
2017 Est. Average Number of Vehicles	–	1.90
2017 Est. Occupied Housing Units by Tenure		
Housing Units, Owner-Occupied	12,189	76.21
Housing Units, Renter-Occupied	3,805	23.79
2017 Owner Occ. HUs: Avg. Length of Residence		
2017 Owner Occ. HUs: Avg. Length of Residence	–	18.97
2017 Renter Occ. HUs: Avg. Length of Residence		
2017 Renter Occ. HUs: Avg. Length of Residence	–	7.52
2017 Est. Owner-Occupied Housing Units by Value		
Value Less than $20,000	195	1.60
Value $20,000 - $39,999	21	0.17
Value $40,000 - $59,999	13	0.11
Value $60,000 - $79,999	55	0.45
Value $80,000 - $99,999	40	0.33
Value $100,000 - $149,999	81	0.67
Value $150,000 - $199,999	193	1.58
Value $200,000 - $299,999	385	3.16
Value $300,000 - $399,999	453	3.72
Value $400,000 - $499,999	515	4.22
Value $500,000 - $749,999	2,921	23.96
Value $750,000 - $999,999	2,357	19.34
Value $1,000,000 or more	4,960	40.69
2017 Est. Median All Owner-Occupied Housing Value	–	965,023.01

Benchmark: USA

CHISWELL STUDY PART 2

Pop-Facts Demographics Snapshot | Housing & Households

Trade Area: 10804 New Rochelle

Total Population: 44,541
Total Households: 15,994

	10804 New Rochelle Count	%
2017 Est. Housing Units by Units in Structure		
1 Unit Attached	580	3.41
1 Unit Detached	11,645	68.43
2 Units	1,519	8.93
3 to 4 Units	524	3.08
5 to 19 Units	673	3.96
20 to 49 Units	735	4.32
50 or More Units	1,325	7.79
Mobile Home or Trailer	16	0.09
Boat, RV, Van, etc.	0	0.00
2017 Est. Housing Units by Year Structure Built		
Built 2010 or Later	713	4.19
Built 2000 to 2009	803	4.72
Built 1990 to 1999	540	3.17
Built 1980 to 1989	1,014	5.96
Built 1970 to 1979	1,193	7.01
Built 1960 to 1969	1,950	11.46
Built 1950 to 1959	3,766	22.13
Built 1940 to 1949	1,327	7.80
Built 1939 or Earlier	5,711	33.56
2017 Housing Units by Year Structure Built		
2017 Est. Median Year Structure Built	–	1,954.14
2017 Est. Households by Presence of People Under 18		
2017 Est. Households by Presence of People Under 18	6,412	40.09
Households with 1 or More People under Age 18		
Married Couple Family	5,611	87.51
Other Family, Male Householder	161	2.51
Other Family, Female Householder	629	9.81
NonFamily Household, Male Householder	10	0.16
NonFamily Household, Female Householder	1	0.02
Households with No People under Age 18		
Households with No People under Age 18	9,582	59.91
Married Couple Family	4,847	50.58
Other Family, Male Householder	213	2.22
Other Family, Female Householder	549	5.73
NonFamily, Male Householder	1,402	14.63
NonFamily, Female Householder	2,571	26.83

Benchmark: USA

Pop-Facts Demographics Snapshot | Affluence & Education

Trade Area: 10804 New Rochelle

Total Population: 44,541
Total Households: 15,994

	10804 New Rochelle Count	%
2017 Est. Pop Age 25+ by Edu. Attainment		
Less than 9th Grade	757	2.62
Some High School, No Diploma	657	2.27
High School Graduate (or GED)	3,290	11.38
Some College, No Degree	3,413	11.81
Associate's Degree	1,229	4.25
Bachelor's Degree	9,430	32.62
Master's Degree	6,177	21.37
Professional Degree	3,029	10.48
Doctorate Degree	928	3.21
2017 Est. Pop Age 25+ by Edu. Attain., Hisp./Lat.		
High School Diploma	325	15.43
High School Graduate	387	18.37
Some College or Associate's Degree	495	23.49
Bachelor's Degree or Higher	900	42.72
2017 Est. Households by HH Income		
Income < $15,000	737	4.61
Income $15,000 - $24,999	705	4.41
Income $25,000 - $34,999	601	3.76
Income $35,000 - $49,999	1,061	6.63
Income $50,000 - $74,999	1,298	8.12
Income $75,000 - $99,999	1,157	7.23
Income $100,000 - $124,999	1,319	8.25
Income $125,000 - $149,999	1,139	7.12
Income $150,000 - $199,999	1,886	11.79
Income $200,000 - $249,999	1,179	7.37
Income $250,000 - $499,999	2,316	14.48
Income $500,000+	2,596	16.23
2017 Est. Average Household Income	–	214,047.00
2017 Est. Median Household Income	–	149,532.32
2017 Median HH Inc. by Single-Class. Race or Eth.		
White Alone	–	180,283.31
Black or African American Alone	–	148,966.17
American Indian and Alaskan Native Alone	–	77,945.61
Asian Alone	–	200,000.02
Native Hawaiian and Other Pacific Islander Alone	–	50,000.00
Some Other Race Alone	–	35,738.56
Two or More Races	–	116,161.91
Hispanic or Latino	–	84,639.12
Not Hispanic or Latino	–	183,691.19
2017 Est. Families by Poverty Status		
2017 Families at or Above Poverty	11,587	96.47
2017 Families at or Above Poverty with children	6,127	51.01
2017 Families Below Poverty	424	3.53
2017 Families Below Poverty with children	250	2.08

Benchmark:USA

Pop-Facts Demographics Snapshot | Employment & Occupation

Trade Area: 10804 New Rochelle

Total Population: 44,541
Total Households: 15,994

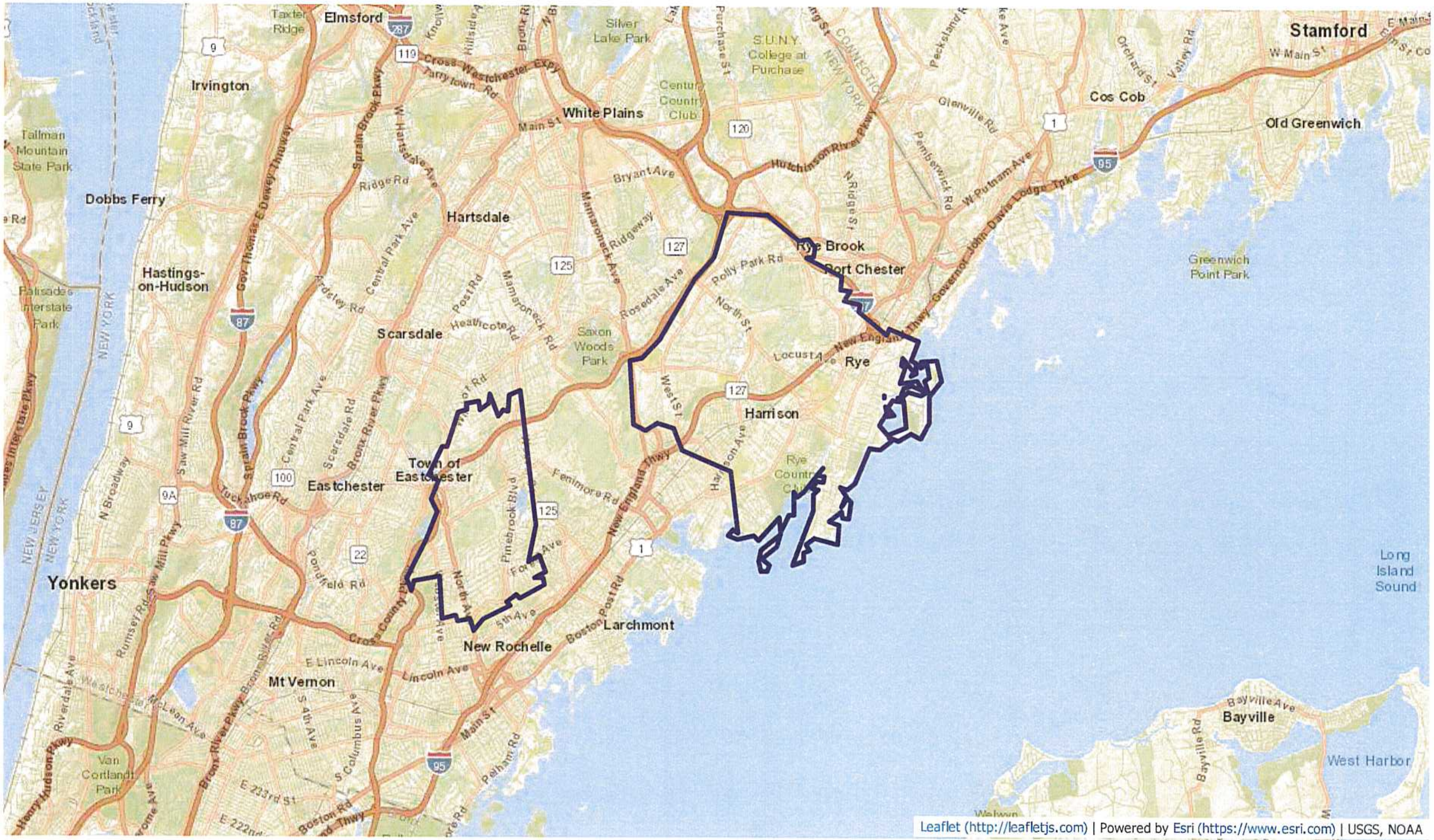
	10804 New Rochelle Count	%
2017 Est. Employed Civilian Population 16+ by Occupation Classification		
White Collar	17,459	84.19
Blue Collar	1,321	6.37
Service and Farming	1,958	9.44
2017 Est. Workers Age 16+ by Travel Time to Work		
Less than 15 Minutes	4,056	21.79
15 - 29 Minutes	4,933	26.50
30 - 44 Minutes	2,482	13.33
45 - 59 Minutes	2,407	12.93
60 or more Minutes	4,736	25.44
2017 Est. Avg Travel Time to Work in Minutes	–	38.80
2017 Est. Workers Age 16+ by Transp. to Work		
2017 Est. Workers Age 16+ by Transp. to Work	20,198	100.00
Drove Alone	11,158	55.24
Carpooled	989	4.90
Public Transport	5,693	28.19
Walked	537	2.66
Bicycle	56	0.28
Other Means	178	0.88
Worked at Home	1,587	7.86
2017 Est. Civ. Employed Pop 16+ by Class of Worker		
2017 Est. Civ. Employed Pop 16+ by Class of Worker	20,738	100.00
For-Profit Private Workers	12,467	60.12
Non-Profit Private Workers	2,048	9.88
Local Government Workers	1,618	7.80
State Government Workers	407	1.96
Federal Government Workers	382	1.84
Self-Employed Workers	3,797	18.31
Unpaid Family Workers	19	0.09
2017 Est. Civ. Employed Pop 16+ by Occupation		
Architecture/Engineering	229	1.10
Arts/Design/Entertainment/Sports/Media	923	4.45
Building/Grounds Cleaning/Maintenance	418	2.02
Business/Financial Operations	1,857	8.96
Community/Social Services	252	1.22
Computer/Mathematical	410	1.98
Construction/Extraction	554	2.67
Education/Training/Library	1,827	8.81
Farming/Fishing/Forestry	7	0.03
Food Preparation/Serving Related	475	2.29
Healthcare Practitioner/Technician	1,626	7.84
Healthcare Support	166	0.80
Installation/Maintenance/Repair	361	1.74
Legal	990	4.77
Life/Physical/Social Science	311	1.50
Management	4,167	20.09
Office/Administrative Support	1,715	8.27
Production	202	0.97
Protective Services	313	1.51
Sales/Related	3,152	15.20
Personal Care/Service	579	2.79
Transportation/Material Moving	204	0.98
2017 Est. Pop Age 16+ by Employment Status		
In Armed Forces	3	0.01
Civilian - Employed	20,749	59.89
Civilian - Unemployed	1,215	3.51
Not in Labor Force	12,680	36.60

Benchmark: USA

Pop-Facts Demographics Snapshot | Map

Trade Area: 10804 New Rochelle

Total Population: 44,541
Total Households: 15,994



Benchmark:USA

Pop-Facts Demographics Snapshot | Summary

ENVIRONICS ANALYTICS

Trade Area: 10580 Rye, NY

	10580 Rye, NY Total	%
Population		
2000 Census	28,831	100.00
2010 Census	29,483	100.00
2017 Estimate	30,558	100.00
2022 Projection	31,357	100.00
Population Growth		
Percent Change: 2000 to 2010	–	2.26
Percent Change: 2010 to 2017	–	3.65
Percent Change: 2017 to 2022	–	2.62

	10580 Rye, NY Total	%
Households		
2000 Census	10,529	100.00
2010 Census	10,588	100.00
2017 Estimate	11,073	100.00
2022 Projection	11,414	100.00
Household Growth		
Percent Change: 2000 to 2010	–	0.56
Percent Change: 2010 to 2017	–	4.58
Percent Change: 2017 to 2022	–	3.08

	10580 Rye, NY Total	%
Family Households		
2000 Census	7,816	100.00
2010 Census	7,770	100.00
2017 Estimate	8,102	100.00
2022 Projection	8,337	100.00
Family Household Growth		
Percent Change: 2000 to 2010	–	-0.59
Percent Change: 2010 to 2017	–	4.27
Percent Change: 2017 to 2022	–	2.90

Benchmark:USA

Pop-Facts Demographics Snapshot | Population & Race

Trade Area: 10580 Rye, NY

Total Population: 30,558
Total Households: 11,073

	10580 Rye, NY Count	%
2017 Est. Population by Single-Classification Race		
White Alone	26,064	85.29
Black/African American Alone	477	1.56
American Indian/Alaskan Native Alone	67	0.22
Asian Alone	2,477	8.11
Native Hawaiian/Pacific Islander Alone	3	0.01
Some Other Race Alone	760	2.49
Two or More Races	710	2.32
2017 Est. Population by Hispanic or Latino Origin		
Not Hispanic or Latino	27,760	90.84
Hispanic or Latino	2,798	9.16
Mexican	520	18.59
Puerto Rican	539	19.26
Cuban	144	5.15
All Other Hispanic or Latino	1,595	57.01
2017 Est. Pop by Race, Asian Alone, by Category		
Chinese, except Taiwanese	323	13.04
Filipino	92	3.71
Japanese	1,472	59.43
Asian Indian	291	11.75
Korean	111	4.48
Vietnamese	0	0.00
Cambodian	19	0.77
Hmong	1	0.04
Laotian	0	0.00
Thai	10	0.40
All Other Asian Races Including 2+ Category	158	6.38
2017 Est. Population by Ancestry		
Arab	446	1.46
Czech	1	0.00
Danish	45	0.15
Dutch	135	0.44
English	1,362	4.46
French (Excluding Basque)	248	0.81
French Canadian	9	0.03
German	1,816	5.94
Greek	179	0.59
Hungarian	103	0.34
Irish	3,111	10.18
Italian	5,491	17.97
Lithuanian	216	0.71
Norwegian	104	0.34
Polish	568	1.86
Portuguese	84	0.28
Russian	972	3.18
Scottish	208	0.68
Scotch-Irish	55	0.18
Slovak	39	0.13
Sub-Saharan African	160	0.52
Swedish	170	0.56
Swiss	33	0.11
Ukrainian	84	0.28
United States or American	3,629	11.88
Welsh	15	0.05
West Indian (except Hisp. groups)	76	0.25
Other ancestries	8,450	27.65
Ancestries Unclassified	2,749	9.00
2017 Est. Pop Age 5+ by Language Spoken At Home		
Speak Only English at Home	21,231	74.08
Speak Asian/Pacific Isl. Lang. at Home	2,063	7.20
Speak Indo-European Language at Home	2,686	9.37
Speak Spanish at Home	2,100	7.33
Speak Other Language at Home	580	2.02
2017 Est. Hisp. or Latino Pop by Single-Class. Race		
White Alone	1,776	63.47
Black/African American Alone	65	2.32
American Indian/Alaskan Native Alone	54	1.93
Asian Alone	12	0.43
Native Hawaiian/Pacific Islander Alone	0	0.00
Some Other Race Alone	702	25.09
Two or More Races	189	6.75

Benchmark: USA

Pop-Facts Demographics Snapshot | Population & Race

Trade Area: 10580 Rye, NY

Total Population: 30,558
Total Households: 11,073

	10580 Rye, NY Count	%
2017 Est. Population by Sex		
Male	14,737	48.23
Female	15,821	51.77
2017 Est. Population by Age		
Age 0 - 4	1,898	6.21
Age 5 - 9	2,098	6.87
Age 10 - 14	2,514	8.23
Age 15 - 17	1,527	5.00
Age 18 - 20	1,325	4.34
Age 21 - 24	1,637	5.36
Age 25 - 34	2,445	8.00
Age 35 - 44	3,125	10.23
Age 45 - 54	4,931	16.14
Age 55 - 64	4,213	13.79
Age 65 - 74	2,408	7.88
Age 75 - 84	1,447	4.74
Age 85 and over	990	3.24
Age 16 and over	23,541	77.04
Age 18 and over	22,521	73.70
Age 21 and over	21,196	69.36
Age 65 and over	4,845	15.86
Median Age	–	41.35
Average Age	–	39.58
2017 Est. Pop Age 15+ by Marital Status		
Total, Never Married	5,716	23.77
Male, Never Married	3,072	12.77
Female, Never Married	2,644	10.99
Married, Spouse Present	14,493	60.27
Married, Spouse Absent	956	3.98
Widowed	1,364	5.67
Male, Widowed	216	0.90
Female, Widowed	1,148	4.77
Divorced	1,519	6.32
Male, Divorced	526	2.19
Female, Divorced	993	4.13
2017 Est. Male Population by Age		
Male: Age 0 - 4	970	6.58
Male: Age 5 - 9	1,051	7.13
Male: Age 10 - 14	1,315	8.92
Male: Age 15 - 17	779	5.29
Male: Age 18 - 20	678	4.60
Male: Age 21 - 24	824	5.59
Male: Age 25 - 34	1,191	8.08
Male: Age 35 - 44	1,462	9.92
Male: Age 45 - 54	2,364	16.04
Male: Age 55 - 64	2,053	13.93
Male: Age 65 - 74	1,125	7.63
Male: Age 75 - 84	597	4.05
Male: Age 85 and over	328	2.23
Median Age, Male	–	39.27
Average Age, Male	–	38.16
2017 Est. Female Population by Age		
Female: Age 0 - 4	928	5.87
Female: Age 5 - 9	1,047	6.62
Female: Age 10 - 14	1,199	7.58
Female: Age 15 - 17	748	4.73
Female: Age 18 - 20	647	4.09
Female: Age 21 - 24	813	5.14
Female: Age 25 - 34	1,254	7.93
Female: Age 35 - 44	1,663	10.51
Female: Age 45 - 54	2,567	16.23
Female: Age 55 - 64	2,160	13.65
Female: Age 65 - 74	1,283	8.11
Female: Age 75 - 84	850	5.37
Female: Age 85 and over	662	4.18
Median Age, Female	–	43.01
Average Age, Female	–	40.90

Benchmark:USA

Pop-Facts Demographics Snapshot | Housing & Households

Trade Area: 10580 Rye, NY

Total Population: 30,558
Total Households: 11,073

	10580 Rye, NY Count	%
2017 Est. Households by Household Type		
Family Households	8,102	73.17
NonFamily Households	2,971	26.83
2017 Est. Group Quarters Population		
2017 Est. Group Quarters Population	167	0.55
2017 HHs By Ethnicity, Hispanic/Latino		
2017 HHs By Ethnicity, Hispanic/Latino	817	7.38
2017 Est. Family HH Type by Presence of Own Child.		
Married Couple Family, own children	3,879	47.88
Married Couple Family, no own children	3,086	38.09
Male Householder, own children	107	1.32
Male Householder, no own children	163	2.01
Female Householder, own children	420	5.18
Female Householder, no own children	447	5.52
2017 Est. Households by Household Size		
1-Person Household	2,641	23.85
2-Person Household	3,074	27.76
3-Person Household	1,819	16.43
4-Person Household	2,088	18.86
5-Person Household	1,047	9.46
6-Person Household	322	2.91
7-or-more-person	82	0.74
2017 Est. Average Household Size	–	2.74
2017 Est. Households by Number of Vehicles		
No Vehicles	741	6.69
1 Vehicle	3,509	31.69
2 Vehicles	4,679	42.26
3 Vehicles	1,559	14.08
4 Vehicles	492	4.44
5 or more Vehicles	93	0.84
2017 Est. Average Number of Vehicles	–	1.86
2017 Est. Occupied Housing Units by Tenure		
Housing Units, Owner-Occupied	7,540	68.09
Housing Units, Renter-Occupied	3,533	31.91
2017 Owner Occ. HUs: Avg. Length of Residence		
2017 Owner Occ. HUs: Avg. Length of Residence	–	18.65
2017 Renter Occ. HUs: Avg. Length of Residence		
2017 Renter Occ. HUs: Avg. Length of Residence	–	7.35
2017 Est. Owner-Occupied Housing Units by Value		
Value Less than $20,000	117	1.55
Value $20,000 - $39,999	19	0.25
Value $40,000 - $59,999	11	0.15
Value $60,000 - $79,999	47	0.62
Value $80,000 - $99,999	38	0.50
Value $100,000 - $149,999	49	0.65
Value $150,000 - $199,999	115	1.52
Value $200,000 - $299,999	240	3.18
Value $300,000 - $399,999	283	3.75
Value $400,000 - $499,999	306	4.06
Value $500,000 - $749,999	1,263	16.75
Value $750,000 - $999,999	1,256	16.66
Value $1,000,000 or more	3,796	50.34
2017 Est. Median All Owner-Occupied Housing Value	–	1,000,000.01

Benchmark: USA

Pop-Facts Demographics Snapshot | Housing & Households

Trade Area: 10580 Rye, NY

Total Population: 30,558
Total Households: 11,073

	10580 Rye, NY Count	%
2017 Est. Housing Units by Units in Structure		
1 Unit Attached	505	4.25
1 Unit Detached	7,244	61.03
2 Units	1,462	12.32
3 to 4 Units	520	4.38
5 to 19 Units	636	5.36
20 to 49 Units	492	4.14
50 or More Units	994	8.38
Mobile Home or Trailer	16	0.14
Boat, RV, Van, etc.	0	0.00
2017 Est. Housing Units by Year Structure Built		
Built 2010 or Later	615	5.18
Built 2000 to 2009	666	5.61
Built 1990 to 1999	495	4.17
Built 1980 to 1989	786	6.62
Built 1970 to 1979	883	7.44
Built 1960 to 1969	1,462	12.32
Built 1950 to 1959	2,232	18.80
Built 1940 to 1949	916	7.72
Built 1939 or Earlier	3,814	32.13
2017 Housing Units by Year Structure Built		
2017 Est. Median Year Structure Built	–	1,955.51
2017 Est. Households by Presence of People Under 18		
2017 Est. Households by Presence of People Under 18	4,536	40.97
Households with 1 or More People under Age 18		
Married Couple Family	3,930	86.64
Other Family, Male Householder	124	2.73
Other Family, Female Householder	473	10.43
NonFamily Household, Male Householder	8	0.18
NonFamily Household, Female Householder	1	0.02
Households with No People under Age 18		
Households with No People under Age 18	6,537	59.03
Married Couple Family	3,032	46.38
Other Family, Male Householder	146	2.23
Other Family, Female Householder	395	6.04
NonFamily, Male Householder	1,081	16.54
NonFamily, Female Householder	1,883	28.80

Benchmark: USA

Pop-Facts Demographics Snapshot | Affluence & Education

Trade Area: 10580 Rye, NY

Total Population: 30,558
Total Households: 11,073

	10580 Rye, NY Count	%
2017 Est. Pop Age 25+ by Edu. Attainment		
Less than 9th Grade	636	3.25
Some High School, No Diploma	542	2.77
High School Graduate (or GED)	2,478	12.67
Some College, No Degree	2,414	12.34
Associate's Degree	883	4.51
Bachelor's Degree	6,662	34.06
Master's Degree	3,897	19.92
Professional Degree	1,553	7.94
Doctorate Degree	494	2.53
2017 Est. Pop Age 25+ by Edu. Attain., Hisp./Lat.		
High School Diploma	286	17.62
High School Graduate	332	20.46
Some College or Associate's Degree	369	22.74
Bachelor's Degree or Higher	636	39.19
2017 Est. Households by HH Income		
Income < $15,000	595	5.37
Income $15,000 - $24,999	529	4.78
Income $25,000 - $34,999	434	3.92
Income $35,000 - $49,999	774	6.99
Income $50,000 - $74,999	921	8.32
Income $75,000 - $99,999	828	7.48
Income $100,000 - $124,999	927	8.37
Income $125,000 - $149,999	765	6.91
Income $150,000 - $199,999	1,280	11.56
Income $200,000 - $249,999	804	7.26
Income $250,000 - $499,999	1,522	13.74
Income $500,000+	1,694	15.30
2017 Est. Average Household Income	–	206,160.42
2017 Est. Median Household Income	–	141,873.15
2017 Median HH Inc. by Single-Class. Race or Eth.		
White Alone	–	145,509.75
Black or African American Alone	–	114,641.99
American Indian and Alaskan Native Alone	–	78,490.22
Asian Alone	–	200,000.06
Native Hawaiian and Other Pacific Islander Alone	–	67,984.38
Some Other Race Alone	–	29,545.50
Two or More Races	–	111,432.16
Hispanic or Latino	–	52,055.63
Not Hispanic or Latino	–	149,962.62
2017 Est. Families by Poverty Status		
2017 Families at or Above Poverty	7,768	95.88
2017 Families at or Above Poverty with children	4,358	53.79
2017 Families Below Poverty	334	4.12
2017 Families Below Poverty with children	212	2.62

Benchmark:USA

Pop-Facts Demographics Snapshot | Employment & Occupation

Trade Area: 10580 Rye, NY

Total Population: 30,558
Total Households: 11,073

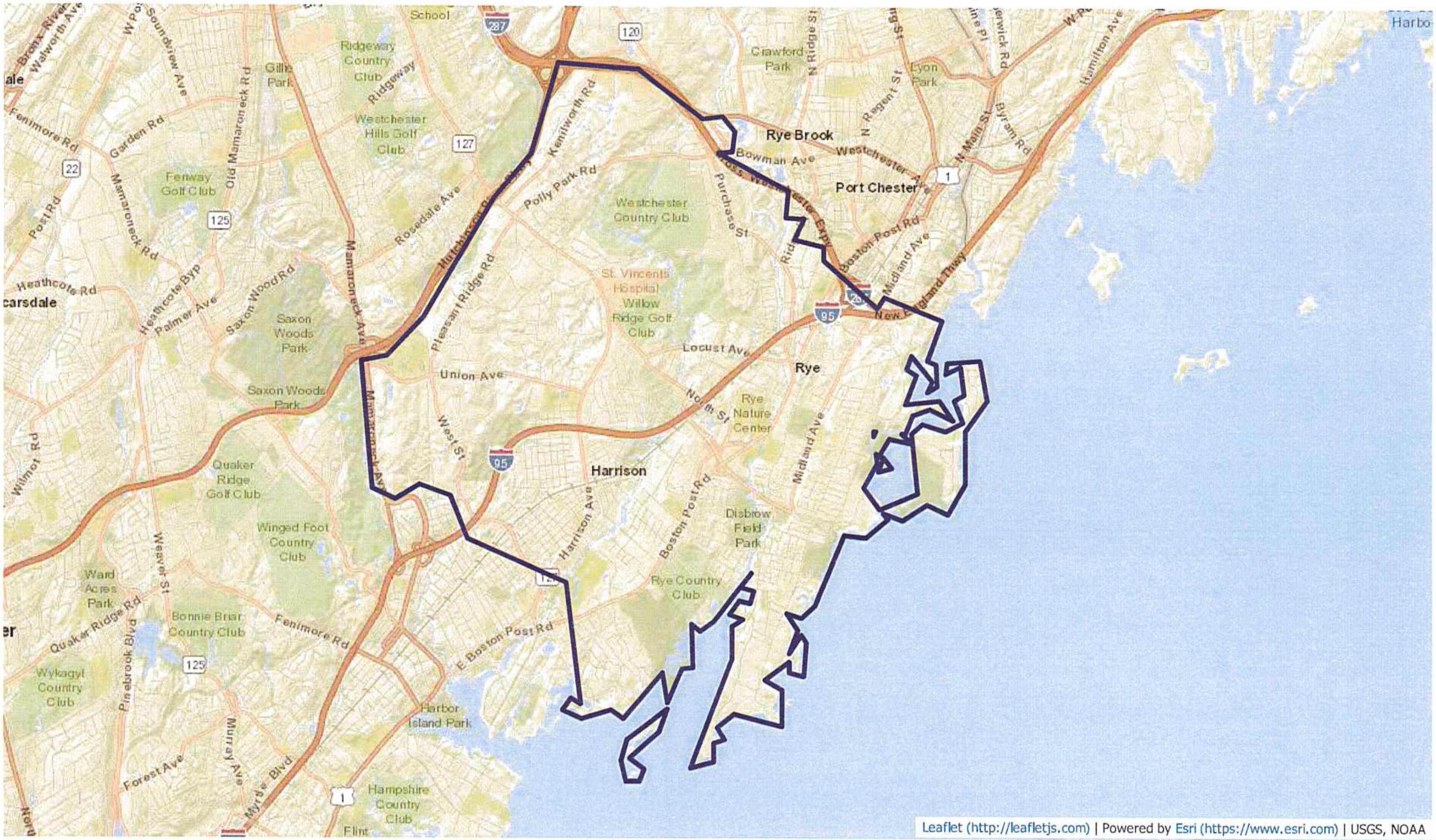
	10580 Rye, NY Count	%
2017 Est. Employed Civilian Population 16+ by Occupation Classification		
White Collar	11,381	82.73
Blue Collar	953	6.93
Service and Farming	1,423	10.34
2017 Est. Workers Age 16+ by Travel Time to Work		
Less than 15 Minutes	2,999	23.84
15 - 29 Minutes	3,284	26.11
30 - 44 Minutes	1,382	10.99
45 - 59 Minutes	1,657	13.17
60 or more Minutes	3,256	25.89
2017 Est. Avg Travel Time to Work in Minutes	--	38.71
2017 Est. Workers Age 16+ by Transp. to Work		
2017 Est. Workers Age 16+ by Transp. to Work	13,375	100.00
Drove Alone	7,295	54.54
Carpooled	631	4.72
Public Transport	4,072	30.45
Walked	379	2.83
Bicycle	53	0.40
Other Means	156	1.17
Worked at Home	789	5.90
2017 Est. Civ. Employed Pop 16+ by Class of Worker		
2017 Est. Civ. Employed Pop 16+ by Class of Worker	13,757	100.00
For-Profit Private Workers	8,820	64.11
Non-Profit Private Workers	1,252	9.10
Local Government Workers	975	7.09
State Government Workers	305	2.22
Federal Government Workers	249	1.81
Self-Employed Workers	2,141	15.56
Unpaid Family Workers	15	0.11
2017 Est. Civ. Employed Pop 16+ by Occupation		
Architecture/Engineering	105	0.76
Arts/Design/Entertainment/Sports/Media	687	4.99
Building/Grounds Cleaning/Maintenance	319	2.32
Business/Financial Operations	1,244	9.04
Community/Social Services	122	0.89
Computer/Mathematical	215	1.56
Construction/Extraction	427	3.10
Education/Training/Library	1,171	8.51
Farming/Fishing/Forestry	6	0.04
Food Preparation/Serving Related	368	2.67
Healthcare Practitioner/Technician	803	5.84
Healthcare Support	134	0.97
Installation/Maintenance/Repair	247	1.79
Legal	491	3.57
Life/Physical/Social Science	174	1.26
Management	2,910	21.15
Office/Administrative Support	1,224	8.90
Production	131	0.95
Protective Services	172	1.25
Sales/Related	2,235	16.25
Personal Care/Service	424	3.08
Transportation/Material Moving	148	1.08
2017 Est. Pop Age 16+ by Employment Status		
In Armed Forces	0	0.00
Civilian - Employed	13,740	58.37
Civilian - Unemployed	813	3.45
Not in Labor Force	8,988	38.18

Benchmark: USA

Pop-Facts Demographics Snapshot | Map

Trade Area: 10580 Rye, NY

Total Population: 30,558
Total Households: 11,073



Benchmark:USA

Hudson Engineering Water & Sewer Load Calculations

HEC HUDSON ENGINEERING & CONSULTING, P.C.

Proposed Water and Sewer Load Calculations

The proposed building is with four bathrooms, 1 service sink and 1 water fountain. Based upon the New York State Plumbing Code, Appendix E, the existing buildings to be removed and the storage building is utilizing an estimated 32 (public) water supply fixture units (wsfu) (see calculation below). The peak flow rate for the facility is estimated at 24.9 gpm.

Based upon the New York State Department of Environmental Conservation's Design Standards for Wastewater Treatment Works (1988), the Expected Hydraulic daily Loading is 15 gallons per person per day per shift ("factory"). It is anticipated that there will be 2-shifts of 5-employee each at the facility; therefore, The Total Daily Hydraulic Loading is 150 gallons per day.

WATER FIXTURE LOADING
BASED UPON PLUMBING CODE OF NEW YORK STATE
TABLE E101B

FIXTURE	OCCUPANCY	TYPE OF SUPPLY CONTROL	LOAD VALUES, IN WATER SUPPLY FIXTURE UNITS (wsfu)			QUANTITY	TOTAL LOAD VALUE
			Cold	Hot	Total		
Bathroom group	Private	Flush tank	2.7	1.5	3.6		0
Bathroom group	Private	Flush valve	6	3	8		0
Bathtub	Private	Faucet	1	1	1.4		0
Bathtub	Public	Faucet	3	3	4		0
Bidet	Private	Faucet	1.5	1.5	2		0
Combination fixture	Private	Faucet	2.25	2.25	3		0
Dishwashing machine	Private	Automatic	—	1.4	1.4		0
Drinking fountain	Offices, etc.	3/8″ valve	0.25	—	0.25	1	0.25
Kitchen sink	Private	Faucet	1	1	1.4		0
Kitchen sink	Hotel, restaurant	Faucet	3	3	4		0
Laundry trays (1 to 3)	Private	Faucet	1	1	1.4		0
Lavatory	Private	Faucet	0.5	0.5	0.7		0
Lavatory	Public	Faucet	1.5	1.5	2	4	8
Service sink	Offices, etc.	Faucet	2.25	2.25	3	1	3
Shower head	Public	Mixing valve	3	3	4		0
Shower head	Private	Mixing valve	1	1	1.4		0
Urinal	Public	1″flush valve	10	—	10		0
Urinal	Public	3/4″flush valve	5	—	5		0
Urinal	Public	Flush tank	3	—	3		0
Washing machine (8 lb)	Private	Automatic	1	1	1.4		0
Washing machine (8 lb)	Public	Automatic	2.25	2.25	3		0
Washing machine (15 lb)	Public	Automatic	3	3	4		0
Water closet	Private	Flush valve	6	—	6		0
Water closet	Private	Flush tank	2.2	—	2.2		0
Water closet	Public	Flush valve	10	—	10		0
Water closet	Public	Flush tank	5	—	5	4	20
Water closet	Public or private	Flushometer tank	2	—	2		0
						TOTAL LOAD FOR DEVELOPMENT (wsfu)	31.25

Existing Water and Sewer Load Calculations

The existing buildings to be removed and the existing storage facility have a total of 6 bathrooms, 2 service sinks, and 1 kitchen sink. Based upon the New York State Plumbing Code, Appendix E, the building is utilizing an estimated 42 (public) water supply fixture units (wsfu) (see attached calculation). The peak flow rate for the facility is estimated at 27.7 gpm.

Based upon the New York State Department of Environmental Conservation's Design Standards for Wastewater Treatment Works (1988), the Expected Hydraulic daily Loading is 15 gallons per person per day per shift ("office"). The existing employee load for the 7 rentable contractor units and the existing self-storage is approximated at 2-shifts of 9-employee (1 per each rentable contractor unit and 2 employees for the storage area) at the facility; therefore, The Total Daily Hydraulic Loading is 270 gallons per day.

WATER FIXTURE LOADING
BASED UPON PLUMBING CODE OF NEW YORK STATE
TABLE E101B

FIXTURE	OCCUPANCY	TYPE OF SUPPLY CONTROL	LOAD VALUES, IN WATER SUPPLY FIXTURE UNITS (wsfu)			QUANTITY	TOTAL LOAD VALUE
			Cold	Hot	Total		
Bathroom group	Private	Flush tank	2.7	1.5	3.6		0
Bathroom group	Private	Flush valve	6	3	8		0
Bathtub	Private	Faucet	1	1	1.4		0
Bathtub	Public	Faucet	3	3	4		0
Bidet	Private	Faucet	1.5	1.5	2		0
Combination fixture	Private	Faucet	2.25	2.25	3		0
Dishwashing machine	Private	Automatic	—	1.4	1.4		0
Drinking fountain	Offices, etc.	3/8″ valve	0.25	—	0.25		0
Kitchen sink	Private	Faucet	1	1	1.4		0
Kitchen sink	Hotel, restaurant	Faucet	3	3	4		1
Laundry trays (1 to 3)	Private	Faucet	1	1	1.4		0
Lavatory	Private	Faucet	0.5	0.5	0.7		0
Lavatory	Public	Faucet	1.5	1.5	2	5	10
Service sink	Offices, etc.	Faucet	2.25	2.25	3	2	6
Shower head	Public	Mixing valve	3	3	4		0
Shower head	Private	Mixing valve	1	1	1.4		0
Urinal	Public	1″ flush valve	10	—	10		0
Urinal	Public	3/4″ flush valve	5	—	5		0
Urinal	Public	Flush tank	3	—	3		0
Washing machine (8 lb)	Private	Automatic	1	1	1.4		0
Washing machine (8 lb)	Public	Automatic	2.25	2.25	3		0
Washing machine (15 lb)	Public	Automatic	3	3	4		0
Water closet	Private	Flush valve	6	—	6		0
Water closet	Private	Flush tank	2.2	—	2.2		0
Water closet	Public	Flush valve	10	—	10		0
Water closet	Public	Flush tank	5	—	5	5	25
Water closet	Public or private	Flushometer tank	2	—	2		0
						TOTAL LOAD FOR DEVELOPMENT (wsfu)	**42**

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