TOWN OF NORTH CASTLE
WESTCHESTER COUNTY
17 Bedford Road
Armonk, New York 10504-1898

PLANNING DEPARTMENT
Adam R. Kaufman, AICP
Director of Planning

Telephone: (914) 273-3542
Fax: (914) 273-3554
www.northcastleny.com

Application for Site Development Plan Approval

Application Name

15 Old Route 22

TOWN OF NORTH CASTLE
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Important General Information

- Prior to submitting an application, the "Notice to Applicants" should be reviewed.

- To appear before the Planning Board, all required application materials shall be submitted not later than **12:00 P.M., Monday, fourteen (14) days** prior to the date of the Planning Board meeting at which the application is scheduled to be heard or as otherwise noted by the Planning Board Secretary. Continuing Business can be submitted 12 days prior to the Next Planning Board meeting by the close of business. Except where noted.
  If all required application materials, including the pertinent application fee and escrow monies are not submitted by that deadline, the application shall be automatically removed from the agenda.
  At the discretion of the Planning Board Chairman, the application may be rescheduled, if appropriate, for the next available Planning Board meeting or the application may be removed from future agendas altogether. Without prior authorization from the Planning Board, application submissions shall not be accepted at Planning Board meetings.

- At the time of submission, all required application materials shall be submitted. **Piecemeal** submissions **shall not** be accepted. Substitution of previously submitted materials shall not be permitted.

- All submissions shall be dated, with revision dates identified on new submissions.

- All submissions shall be accompanied by a cover letter describing the project and/or any changes as compared to previous submissions.

- To be considered complete for Planning Board hearing purposes, an application package shall contain the information identified in Parts IV and V of this application form.

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AT THE TIME OF SUBMISSION TO THE PLANNING DEPARTMENT PLEASE MAKE SURE THE FOLLOWING IS PROVIDED

- ✓ SUBMISSION OF A SINGLE PDF FILE (PLANS, APPLICATION FORM, OTHER PAPERWORK) ON A DISK, THUMBDRIVE OR EMAIL

- ✓ COVER LETTER DESCRIBING THE PROJECT OR CHANGES TO THE PROJECT

- ✓ ALL PLANS ARE SIGNED AND SEALED BY A LICENSED NYS PROFESSIONAL

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NOTICE TO APPLICANTS

In the Town of North Castle, the Planning Board is responsible for the review and approval of all applications concerning site plans, subdivisions and lot line changes; some applications concerning special use permits, wetlands permits and tree removal permits; and the environmental review of those applications over which it has jurisdiction. The Planning Board may also have an advisory role in connection with some applications before the Town Board, such as those involving other categories of special use permits and zoning amendments.

The Planning Board is composed of five volunteer members – all residents of North Castle – who are appointed by the Town Board for five-year terms. As part of the review of some applications, the Planning Board is assisted on an as-needed basis by other lay boards of the Town, such as the Conservation Board (CB), the Zoning Board of Appeals (ZBA), the Open Space Committee and the Architectural Review Board (ARB). As part of the review of most applications, the Planning Board is also assisted by the Director of Planning, the Town Engineer, the Town Attorney and other special consultants when required.

FEES:

If you submit an application for Planning Board review, you will be required to reimburse the Town for the cost of professional review services, including legal and engineering services, incurred in connection with the review of your application. The charges for professional planning review services have been $120/hour. If other types of professional consultant review services are required, those charges will be in accord with fees usually charged for such services and pursuant to a contractual agreement between the Town and such professional.

At the time of submission of an application, the Planning Board will require the establishment of an escrow account from which withdrawals shall be made to reimburse the Town for the cost of consultant fees and professional staff services.

ESCROW ACCOUNT:

Escrow Accounts are established for each application. Monies will be deducted from the account for professional review services rendered. Monthly escrow disbursement summaries will be mailed for your reference regarding your project. When the balance in such escrow account is reduced to one-third (1/3) of its initial amount, a letter will be mailed to the applicant and the applicant shall deposit additional funds into such account to restore its balance to the amount of the initial deposit. Additional information on these requirements is provided in the North Castle Town Code (see Sections 355-79B and 275-36.C).

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PROCEDURE:

Prior to submitting an application to the Planning Board for review and approval, prospective applicants should schedule an appointment with the Planning Board Secretary at (914) 273-3542 for a consultation with the Town Planner and the Town Engineer. When the appointment is made, a verbal description of the proposal should be provided to the Planning Board Secretary. The Town of North Castle is providing the services of the Director of Planning and the Town Engineer for ***initial*** consultation at no cost to the applicant so that it is possible to conduct the application review as efficiently as possible for the benefit of the applicant as well as the Planning Board.

After meeting with the Town Planner and Town Engineer, prospective applicants should prepare one complete set of application documents and plans. This set will be reviewed for completeness by the Town Planner. If determined to be incomplete, the Planning Department will submit a checklist indicating which items have not been adequately addressed. If determined to be complete, the checklist will be initialed and the Applicant should submit the remainder of the required application packages.

Once the checklist has been initialed and all application packages have been submitted, the Planning Board Secretary will schedule the application for the first available opening on the Planning Board's meeting agenda. However, if the required application material packages, including the pertinent application fee are not received at the Planning Board office by 12:00 PM, Monday, 14 days prior to the date of the Planning Board meeting at which you are scheduled to appear (or otherwise scheduled by the Planning Board Secretary), your application will be automatically removed from the agenda. At the discretion of the Planning Board Chairman, your application may be rescheduled, if appropriate, for the next available Planning Board meeting or the application may be removed from future agendas altogether. Additional requirements pertinent to each type of application are provided on the individual application forms, which you should carefully review prior to submitting your application.

When an application is deemed complete and submitted for review, it will be forwarded to the Planning Board Members and its professional advisors in advance of the meeting to allow adequate time for review, preparation of written reports and site inspections as necessary. Your application may also be forwarded to other boards and staff of the Town as well as to agencies outside of the Town, if required. Compliance with State Environmental Quality Review (SEQR) procedures is also required as part of the processing of all applications.

At your first appearance before the Planning Board, the Applicant will describe the project and the Planning Board will discuss any preliminary issues. The Planning Board discussion may be continued at future meetings, or if the Planning Board review has progressed sufficiently, the Application may be scheduled for a public hearing (if one is required) The public hearing may occur at a single Planning Board meeting, or it may be adjourned and continued at another Planning Board meeting. Because the nature and complexity of each application varies

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considerably, it is not possible to predict in advance the length of time needed to secure Planning Board approval. There are certain steps that you can take, however, to expedite the review process. These include, but are not limited to, the following:

- Be thoroughly familiar with the requirements pertinent to your application. Carefully review relevant provisions of the North Castle Town Code and the application form for your particular type of application. Be sure to check on what other types of approvals may be required in addition to that of the Planning Board. Approvals by other Town boards or departments as well as agencies outside of the Town may be required before you will be allowed to proceed with your project.

- Make sure that your application materials are accurately prepared and contain all required information. The information that we initially request is required, so make sure that your submission is complete. If supplementary information is requested as the review process continues, make sure that it is submitted in a timely fashion so the Planning Board can continue to move your application along.

- Follow up to make sure that your application materials are being submitted on time, or deliver them to the Planning office yourself.

- Attend the Planning Board meeting at which your application will be discussed and be on time for the meeting. If you cannot appear personally, make sure that your representative will be there and is thoroughly familiar with your application.

If the Application is approved by the Planning Board, a resolution of approval will be adopted by the Planning Board. It is the Applicant's responsibility to address any and all conditions of approval. Permits from the Building Department cannot be issued until all conditions have been addressed and the plans have been signed by the Planning Board Chair and the Town Engineer.

ON LINE AGENDAS & PLANNING DEPARTMENT MEMORANDA CAN BE REVIEWED AT

WWW.NORTHCASTLENY.COM

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INFORMATION REGARDING PUBLIC HEARINGS

1. The North Castle Assessor's Office shall prepare a list of neighbors to be notified for the neighbor notifications and public hearings - **A minimum of one week's notice is required** . The fee is $50.00 which includes the list of neighbors and two sets of labels for mailing. The Assessor's Office may be reached Monday – Friday from 8:30 a.m.– 4:30 p.m. at 273-3324. You may also e-mail your request to assessor@northcastleny.com

When requesting your list please reference the list of application types below so that you can tell the Assessor's office how many feet on all sides of the property to create the list for.

Subdivisions - All lots zoned R-10, R-5 and R-2F shall notice all neighbors within 200 feet from all sides of their property. All other zoning districts shall notice neighbors within 500 feet from all sides of their property. Public hearing notice must be published in the newspaper.

Special Use Permit for Structures over 800 sq ft. & Accessory Apartment - All Zoning Districts shall notice all neighbors within 250 feet from all sides of their property. Public hearing notice must be published in the newspaper.

Site Plan, Non Residential - All Zoning Districts shall notice all neighbors within 250 feet from all sides of their property. Public hearing notice must be published in the newspaper.

Site Plan, Residential/ Neighbor Notification – All zoning districts R-3/4A or smaller shall notice all neighbors within 250' from all sides of their property. All zoning districts zoned R-1A or larger shall notice all neighbors within 500' from all sides of the property. No public hearing required, no publication in the newspaper required.

Wetlands Permit - All Zoning Districts shall notice all abutting property owners. Public hearing notice must be published in the newspaper.

2. The Director of Planning will prepare a Public Notice. The applicant and or professional will review, sign, date and return to the Planning Department Secretary. If there are any changes necessary, please edit and return for corrections. The corrections will be made and emailed back to the applicant who will forward it to the Journal Newspaper, when applicable.

If notification to the newspaper is not required, please continue to #3.

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You may email your public notice to legals@lohud.com. Please request an affidavit of publication which must be submitted to the Planning Board secretary prior to the public hearing. The Journal News requires three days prior notice before 12 noon, not counting weekends and holidays, for ad placement. Make sure the notice placement of the ad in the Greater Westchester Area. This notice cannot be published any sooner than 20 days prior to the meeting and must be published no less than 10 days prior to the meeting.

If you have any questions regarding your publication you may call 888-516-9220:
Email Address: legals@lohud.com

It is suggested that you purchase the newspaper for your records the day the notice is published.

3. Send out the Public Hearing Notice/ Neighbor Notification by First Class Mail. Notice shall be mailed by the applicant in official envelopes provided by the North Castle Planning Department; the list of noticed neighbors will be prepared by the Assessor's Office. This must be sent out no less than 10 days prior to the meeting and no more than 20 days prior to the meeting date. A Certificate of Mailing (PS Form 3817 or 3877) shall be filled out and post marked by the Post Office on the day of mailing. Neighbor Notifications – no publication in the newspaper required.

4. The Friday before the meeting or no later than 12:00 p.m. the day of the meeting the following **must** be submitted.

- List of Neighbors prepared by the Assessor's Office
- Certificate of Mailing – PS form 3817 or 3877 post marked by the US Post Office
- Affidavit of publication from the Newspaper (only if published in the newspaper)

UNITED STATES POSTAL SERVICE®

Firm Mailing Book For Accountable Mail

Name and Address of Sender

Check type of mail or service

- ☐ Adult Signature Required
- ☐ Adult Signature Restricted Delivery
- ☐ Certified Mail
- ☐ Certified Mail Restricted Delivery
- ☐ Collect on Delivery (COD)
- ☐ Insured Mail
- ☐ Priority Mail
- ☐ Priority Mail Express
- ☐ Registered Mail
- ☐ Return Receipt for Merchandise
- ☐ Signature Confirmation
- ☐ Signature Confirmation Restricted Delivery

Affix Stamp Here

(if issued as an international certificate of mailing or for additional copies of this receipt).

Postmark with Date of Receipt.

	USPS Tracking/Article Number	Addressee (Name, Street, City, State, & ZIP Code™)	Postage	(Extra Service) Fee	Handling Charge	Actual Value if Registered	Insured Value	Due Sender if COD	ASR Fee	ASRD Fee	RD Fee	RR Fee	SC Fee	SCRD Fee	SH Fee
1.															
2.															
3.															
4.															
5.															
6.															
7.															
8.															

Handling Charge - if Registered and over $50,000 in value

Adult Signature Required

Adult Signature Restricted Delivery

Restricted Delivery

Return Receipt

Signature Confirmation

Signature Confirmation Restricted Delivery

Special Handling

Total Number of Pieces Listed by Sender	Total Number of Pieces Received at Post Office	Postmaster, Per *(Name of receiving employee)*

Complete in Ink

Privacy Notice: For more information on USPS privacy policies, visit *usps.com/privacypolicy.*

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APPLICATIONS REQUIRING PLANNING BOARD APPROVAL
SCHEDULE OF APPLICATION FEES

Type of Application	Application Fee
Site Development Plan	$200.00
Each proposed Parking Space	$10
Special Use Permit (each)	$200 (each)
Preliminary Subdivision Plat	$300 1st Lot $200 (each additional lot)
Final Subdivision Plat	$250 1st Lot $100 (each additional lot)
Tree Removal Permit	$75
Wetlands Permit	$50 (each)
Short Environmental Assessment Form	$50
Long Environmental Assessment Form	$100
Recreation Fee	$10,000 Each Additional Lot
Discussion Fee	$200.00

Prior to submission of a sketch or preliminary subdivision Plat, an applicant or an applicant's representative wishes to discuss a subdivision proposal to the Planning Board, a discussion fee of $200.00 shall be submitted for each informal appearance before the board.

Any amendment to previously approved applications requires new application forms and Fes

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PLANNING BOARD SCHEDULE OF ESCROW ACCOUNT DEPOSITS

Type of Application Deposit*	Amount of Initial Escrow Account
Concept Study	$500.00
Site Plan Waiver for Change of Use	$500.00
Site Development Plan for:	
Multifamily Developments	$3,000.00 plus $100.00 per proposed dwelling unit
Commercial Developments	$3,000.00 plus $50.00 for each required parking space
1 or 2 Family Projects	$2,000.00
Special Use Permit	$2,000.00 plus $50.00 for each required parking space
Subdivision:	
Lot Line Change resulting in no new lots	$1,500.00
All Others	$3,000.00 plus $200.00 per proposed new lot in excess of two (2)
Preparation or Review of Environmental Impact Statement	$15,000.00

* If a proposed action involves multiple approvals, a single escrow account will be established. The total amount of the initial deposit shall be the sum of the individual amounts indicated. When the balance in such escrow account is reduced to one-third (1/3) of its initial amount, the applicant shall deposit additional funds into such account to restore its balance to the amount of the initial deposit.

Applicant Signature Date:

I. IDENTIFICATION OF PROPERTY OWNER, APPLICANT AND PROFESSIONAL REPRESENTATIVES

Name of Property Owner: Gavi Restaurant

Mailing Address: 15 Old Route 22 Armonk, NY 10504

Telephone: 914-882-3226 Fax: _____ e-mail _____

Name of Applicant (if different): Joseph Crocco

Address of Applicant: 4 MacDonald Ave. Suite 5 Armonk, NY 10504

Telephone: 914-273-2774 Fax: _____ e-mail Chris@jrcarchitects.com

Interest of Applicant, if other than Property Owner:

_____

Is the Applicant (if different from the property owner) a Contract Vendee?

Yes ☐ No ☒

If yes, please submit affidavit sating such. If no, application cannot be reviewed by Planning Board

Name of Professional Preparing Site Plan:

David A. Goessl, PE

Address: 622 Sprout Brook Road Putnam Valley, NY 10579

Telephone: 914-227-0258 Fax: _____ e-mail dgoessl2@gmail.com

Name of Other Professional: Joseph R. Crocco Architects

Address: 4 MacDonald Ave. Suite 5 Armonk, NY 10504

Telephone: 914-273-2774 Fax: _____ e-mail chris@jrcarchitects.com

Name of Attorney (if any): _____

Address: _____

Telephone: _____ Fax: _____ e-mail _____

Applicant Acknowledgement

By making this application, the undersigned Applicant agrees to permit Town officials and their designated representatives to conduct on-site inspections in connection with the review of this application.

The Applicant also agrees to pay all expenses for the cost of professional review services required for this application.

It is further acknowledged by the Applicant that all bills for the professional review services shall be mailed to the Applicant, unless the Town is notified in writing by the Applicant at the time of initial submission of the application that such mailings should be sent to a designated representative instead.

Signature of Applicant: _____ Date: 05/18/23

Signature of Property Owner: _____ Date: _____

MUST HAVE BOTH SIGNATURES

II. IDENTIFICATION OF SUBJECT PROPERTY

Street Address: 15 Old Route 22 Armonk, NY 10504

Location (in relation to nearest intersecting street):

0 feet (north, south, east or west) of Labriola Court

Abutting Street(s): _____

Tax Map Designation (NEW): Section 107.04 Block 2 Lot 16

Tax Map Designation (OLD): Section _____ Block _____ Lot _____

Zoning District: RB Total Land Area 33,302 sf,

Land Area in North Castle Only (if different) _____

Fire District(s) North Castle School District(s) North Castle

Is any portion of subject property abutting or located within five hundred (500) feet of the following:

The boundary of any city, town or village?
No X Yes (adjacent) _____ Yes (within 500 feet) _____
If yes, please identify name(s): _____

The boundary of any existing or proposed County or State park or any other recreation area?
No X Yes (adjacent) _____ Yes (within 500 feet) _____

The right-of-way of any existing or proposed County or State parkway, thruway, expressway, road or highway?
No X Yes (adjacent) _____ Yes (within 500 feet) _____

The existing or proposed right-of-way of any stream or drainage channel owned by the County or for which the County has established channel lines?
No X Yes (adjacent) _____ Yes (within 500 feet) _____

The existing or proposed boundary of any county or State owned land on which a public building or institution is situated?
No X Yes (adjacent) _____ Yes (within 500 feet) _____

The boundary of a farm operation located in an agricultural district?
No X Yes (adjacent) _____ Yes (within 500 feet) _____

Does the Property Owner or Applicant have an interest in any abutting property?
No X Yes _____

If yes, please identify the tax map designation of that property:

_____

III. DESCRIPTION OF PROPOSED DEVELOPMENT

Proposed Use: Mixed Use- Residential/ Retail/ Restaurant

Gross Floor Area: Existing 3599 S.F. Proposed 5000 S.F.

Proposed Floor Area Breakdown:

Retail 2500 S.F.; Office _____ S.F.;

Industrial _____ S.F.; Institutional _____ S.F.;

Restaurant Other Nonresidential 2448 S.F.; Residential 3651 S.F.;

Number of Dwelling Units: 3

Number of Parking Spaces: Existing 35 +/- Required 55 Proposed 55

Number of Loading Spaces: Existing _____ Required _____ Proposed _____

Earthwork Balance: Cut 0 C.Y. Fill 240 C.Y.

Will Development on the subject property involve any of the following:

Areas of special flood hazard? No X Yes _____
(If yes, application for a Development Permit pursuant to Chapter 177 of the North Castle Town Code may also be required)

Trees with a diameter at breast height (DBH) of 8" or greater?

No X Yes _____
(If yes, application for a Tree Removal Permit pursuant to Chapter 308 of the North Castle Town Code may also be required.)

Town-regulated wetlands? No X Yes _____
(If yes, application for a Town Wetlands Permit pursuant to Chapter 340 of the North Castle Town Code may also be required.)

State-regulated wetlands? No X Yes _____
(If yes, application for a State Wetlands Permit may also be required.)

IV. SUBMISSION REQUIREMENTS

The site development plan application package shall include all materials submitted in support of the application, including but not limited to the application form, plans, reports, letters and SEQR Environmental Assessment Form. **Submission of the following shall be required:**

- One (1) PDF set of the site development plan application package in a single PDF file .

- A check for the required application fee and a check for the required Escrow Account, both made payable to "Town of North Castle" in the amount specified on the "Schedule of Application Fees."

(continued next page)

V. INFORMATION TO BE INCLUDED ON SITE DEVELOPMENT PLAN

The following checklist is provided to enable the Applicant to determine if he/she has provided enough information on the site development plan for the Planning Board to review his/her proposal. Applicants are advised to review ARTICLE VIII, Site Development Plan of the North Castle Town Code for a complete enumeration of pertinent requirements and standards prior to making application for site development plan approval.

The application for site development plan approval will not be accepted for Planning Board review unless all items identified below are supplied and **so indicated with a check mark in the blank line provided.** If a particular item is not relevant to the subject property or the development proposal, **the letters "NA" should be entered instead**. In addition, the project will not be scheduled on a Planning Board agenda until the Applicant receives an initialed "site plan checklist" from the Planning Department.

The information to be included on a site development plan shall include:

Legal Data:

__X__ Name of the application or other identifying title.

__X__ Name and address of the Property Owner and the Applicant, (if different).

__X__ Name, address and telephone number of the architect, engineer or other legally qualified professional who prepared the plan.

__X__ Names and locations of all owners of record of properties abutting and directly across any and all adjoining streets from the subject property, including the tax map designation of the subject property and abutting and adjoining properties, as shown on the latest tax records.

__X__ Existing zoning, fire, school, special district and municipal boundaries.

__X__ Size of the property to be developed, as well as property boundaries showing dimensions and bearings as determined by a current survey; dimensions of yards along all property lines; name and width of existing streets; and lines of existing lots, reservations, easements and areas dedicated to public use.

__X__ Reference to the location and conditions of any covenants, easements or deed restrictions that cover all or any part of the property, as well as identification of the document where such covenants, easements or deed restrictions are legally established.

__X__ Schedule of minimum zoning requirements, as well as the plan's proposed compliance with those requirements, including lot area, frontage, lot width, lot depth, lot coverage, yards, off-street parking, off-street loading and other pertinent requirements.

__X__ Locator map, at a convenient scale, showing the Applicant's entire property in relation to surrounding properties, streets, etc., within five hundred (500) feet of the site.

__X__ North arrow, written and graphic scales, and the date of the original plan and all revisions, with notation identifying the revisions.

__X__ A signature block for Planning Board endorsement of approval.

Existing Conditions Data:

X Location of existing use and design of buildings, identifying first floor elevation, and other structures.

X Location of existing parking and truck loading areas, with access and egress drives thereto.

X Location of existing facilities for water supply, sanitary sewage disposal, storm water drainage, and gas and electric service, with pipe sizes, grades, rim and inverts, direction of flow, etc. indicated.

X Location of all other existing site improvements, including pavement, walks, curbing, retaining walls and fences.

NA Location, size and design of existing signs.

X Location, type, direction, power and time of use of existing outdoor lighting.

NA Location of existing outdoor storage, if any.

X Existing topographical contours with a vertical interval of two (2) feet or less.

NA Location of existing floodplains, wetlands, slopes of 15% or greater, wooded areas, landscaped areas, single trees with a DBH of 8" or greater, rock outcrops, stone walls and any other significant existing natural or cultural features.

Proposed Development Data:

X Proposed location of lots, streets, and public areas, and property to be affected by proposed easements, deed restrictions and covenants.

X Proposed location, use and architectural design of all buildings, including proposed floor elevations and the proposed division of buildings into units of separate occupancy.

X Proposed means of vehicular and pedestrian access to and egress from the site onto adjacent streets.

X Proposed sight distance at all points of vehicular access.

X Proposed number of employees for which buildings are designed

X Proposed streets, with profiles indicating grading and cross-sections showing the width of the roadway; the location and width of sidewalks; and the location and size of utility lines.

X Proposed location and design of any pedestrian circulation on the site and off-street parking and loading areas, including handicapped parking and ramps, and including details of construction, surface materials, pavement markings and directional signage.

X Proposed location and design of facilities for water supply, sanitary sewage disposal, storm water drainage, and gas and electric service, with pipe sizes, grades, rim and inverts, direction of flow, etc. indicated.

_X_ Proposed location of all structures and other uses of land, such as walks, retaining walls, fences, designated open space and/or recreation areas and including details of design and construction.

_NA_ Location, size and design of all proposed signs.

_X_ Location, type, direction, power and time of use of proposed outdoor lighting.

_X_ Location and design of proposed outdoor garbage enclosure.

_NA_ Location of proposed outdoor storage, if any.

_X_ Location of proposed landscaping and buffer screening areas, including the type (scientific and common names), size and amount of plantings.

_NA_ Type of power to be used for any manufacturing

_NA_ Type of wastes or by-products to be produced and disposal method

_X_ In multi-family districts, floor plans, elevations and cross sections

_NA_ The proposed location, size, design and use of all temporary structures and storage areas to be used during the course of construction.

_X_ Proposed grade elevations, clearly indicating how such grades will meet existing grades of adjacent properties or the street.

_X_ Proposed soil erosion and sedimentation control measures.

_X_ For all proposed site development plans containing land within an area of special flood hazard, the data required to ensure compliance with Chapter 177 of the North Castle Town Code.

_NA_ For all proposed site development plans involving clearing or removal of trees with a DBH of 8" or greater, the data required to ensure compliance with Chapter 308 of the North Castle Town Code.

_NA_ For all proposed site development plans involving disturbance to Town-regulated wetlands, the data required to ensure compliance with Chapter 340 of the North Castle Town Code.

Short Environmental Assessment Form
Part 1 - Project Information

Instructions for Completing

Part 1 - Project Information. The applicant or project sponsor is responsible for the completion of Part 1. 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.

Complete all items in Part 1. You may also provide any additional information which you believe will be needed by or useful to the lead agency; attach additional pages as necessary to supplement any item.

Part 1 - Project and Sponsor Information

Gavi Restaurant- 15 Old Route 22

Name of Action or Project:
Proposed Mixed Use Building

Project Location (describe, and attach a location map):
15 Old Route 22

Brief Description of Proposed Action:
To add a new 5000 sf. mixed use building with retail on the first floor and 2 apartments on the second floor.

Name of Applicant or Sponsor:	Telephone: 914-882-3226
Gavi Restaurant	E-Mail:

Address:
15 Old Route 22

City/PO:	State:	Zip Code:
Armonk	NY	10504

	NO	YES
1. Does the proposed action only involve the legislative adoption of a plan, local law, ordinance, administrative rule, or regulation? If Yes, attach a narrative description of the intent of the proposed action and the environmental resources that may be affected in the municipality and proceed to Part 2. If no, continue to question 2.	☑	☐
2. Does the proposed action require a permit, approval or funding from any other governmental Agency? If Yes, list agency(s) name and permit or approval:	☑	☐

3.a. Total acreage of the site of the proposed action? 33302 sf. acres
b. Total acreage to be physically disturbed? 26000 sf. acres
c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? _____ acres

4. Check all land uses that occur on, adjoining and near the proposed action.
☐ Urban ☐ Rural (non-agriculture) ☐ Industrial ☑ Commercial ☑ Residential (suburban)
☐ Forest ☐ Agriculture ☐ Aquatic ☐ Other (specify): _____
☐ Parkland

	NO	YES	N/A
5. Is the proposed action,			
a. A permitted use under the zoning regulations?	☐	☑	☐
b. Consistent with the adopted comprehensive plan?	☐	☑	☐

	NO	YES
6. Is the proposed action consistent with the predominant character of the existing built or natural landscape?	☐	☑
7. Is the site of the proposed action located in, or does it adjoin, a state listed Critical Environmental Area? If Yes, identify: _____	☑	☐
8. a. Will the proposed action result in a substantial increase in traffic above present levels?	☑	☐
b. Are public transportation service(s) available at or near the site of the proposed action?	☐	☑
c. Are any pedestrian accommodations or bicycle routes available on or near site of the proposed action?	☐	☑
9. Does the proposed action meet or exceed the state energy code requirements? If the proposed action will exceed requirements, describe design features and technologies: _____	☐	☑
10. Will the proposed action connect to an existing public/private water supply? If No, describe method for providing potable water: _____	☐	☑
11. Will the proposed action connect to existing wastewater utilities? If No, describe method for providing wastewater treatment: _____	☐	☑
12. a. Does the site contain a structure that is listed on either the State or National Register of Historic Places?	☑	☐
b. Is the proposed action located in an archeological sensitive area?	☐	☐
13. a. Does any portion of the site of the proposed action, or lands adjoining the proposed action, contain wetlands or other waterbodies regulated by a federal, state or local agency?	☑	☐
b. Would the proposed action physically alter, or encroach into, any existing wetland or waterbody? If Yes, identify the wetland or waterbody and extent of alterations in square feet or acres: _____	☑	☐

14. Identify the typical habitat types that occur on, or are likely to be found on the project site. Check all that apply:

☐ Shoreline ☐ Forest ☐ Agricultural/grasslands ☐ Early mid-successional

☐ Wetland ☐ Urban ☐ Suburban

	NO	YES
15. Does the site of the proposed action contain any species of animal, or associated habitats, listed by the State or Federal government as threatened or endangered?	☑	☐
16. Is the project site located in the 100 year flood plain?	☑	☐
17. Will the proposed action create storm water discharge, either from point or non-point sources? If Yes, a. Will storm water discharges flow to adjacent properties? ☑ NO ☐ YES	☐	☑
b. Will storm water discharges be directed to established conveyance systems (runoff and storm drains)? If Yes, briefly describe: ☐ NO ☑ YES		

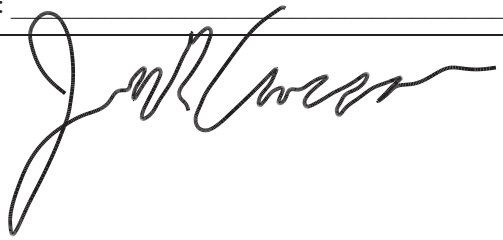
The s□stem will consist of multiple cultecs to handle stormwater.

	NO	YES
18. Does the proposed action include construction or other activities that result in the impoundment of water or other liquids (e.g. retention pond, waste lagoon, dam)? If Yes, explain purpose and size: _____	☑	☐
19. Has the site of the proposed action or an adjoining property been the location of an active or closed solid waste management facility? If Yes, describe: _____	☑	☐
20. Has the site of the proposed action or an adjoining property been the subject of remediation (ongoing or completed) for hazardous waste? If Yes, describe: _____	☑	☐

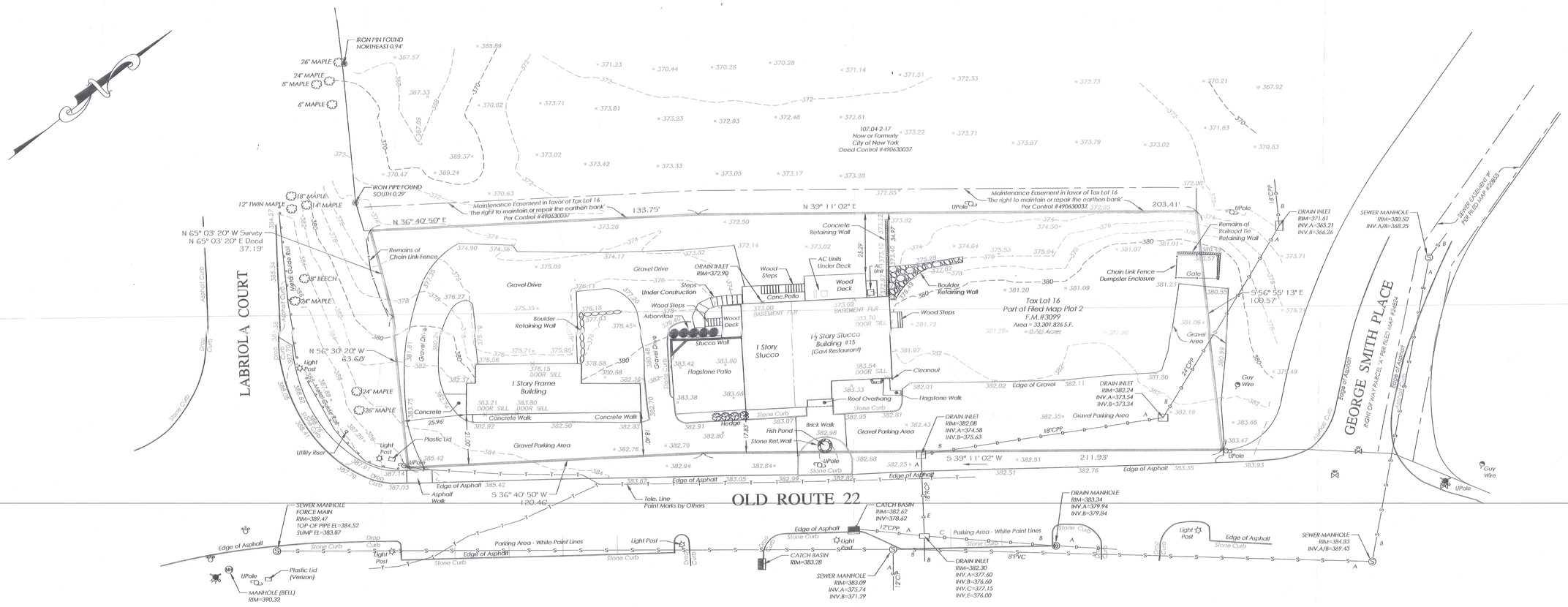
I AFFIRM THAT THE INFORMATION PROVIDED ABOVE IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE

Applicant/sponsor name: □oseph □rocco Date: 05□18□23

Signature: _____



PRINT FORM



Only copies from the original of this topography map marked with an original of the Land Surveyors embossed seal or red colored seal shall be considered to be true, valid copies.

Unauthorized alteration or addition to a map bearing a licensed Land Surveyors seal is a violation of Section 7209, Subdivision 2 of the New York State Education Law.

Possession only where indicated.

Adjacent property lines and easements not surveyed or certified.
Access to adjacent rights of way, easements and public or private lands not guaranteed or certified.

Underground utilities shown hereon are approximate and should be verified before excavating.
Additional underground utilities are not shown or certified.
Encroachments and structures below grade, if any, not shown or certified.

Subject to covenants, easements, restrictions, conditions and agreements of record.

This map is prepared to show topography only and is not to be used for title transfer purposes. Map may not be certified to title companies and/or banks.

Tree species shown hereon to be verified by a licensed arborist and are not certified by surveyor.

Elevations shown hereon generally in accordance with North American Vertical Datum 88.

Premises hereon being a portion of Plot 2 as shown on a certain map entitled, "Survey and Subdivision of Land Formerly Belonging to Thomas F. St. John, Town of North Castle, Westchester Co. N.Y." Said map filed in the Westchester County Clerk's Office, Division of Land Records January 24, 1927 as map number 3099.

Surveyed in accordance with Deed Control Number 513563062.

Premises shown hereon designated on the Town of North Castle Tax Maps as: Section 107.04, Block 2, Lot 16.

Property Address: 15 Old Route 22
Armonk, NY 10504

TOPOGRAPHY OF PROPERTY PREPARED FOR C.F.S. 15 OLD ROUTE 22, INC.

SITUATE IN THE
TOWN OF NORTH CASTLE
WESTCHESTER COUNTY, NEW YORK

SCALE: 1" = 20'

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

TC MERRITTS LAND SURVEYORS
394 BEDFORD ROAD • PLEASANTVILLE • NY 10570
(914) 769-8003 • (203) 622-8899

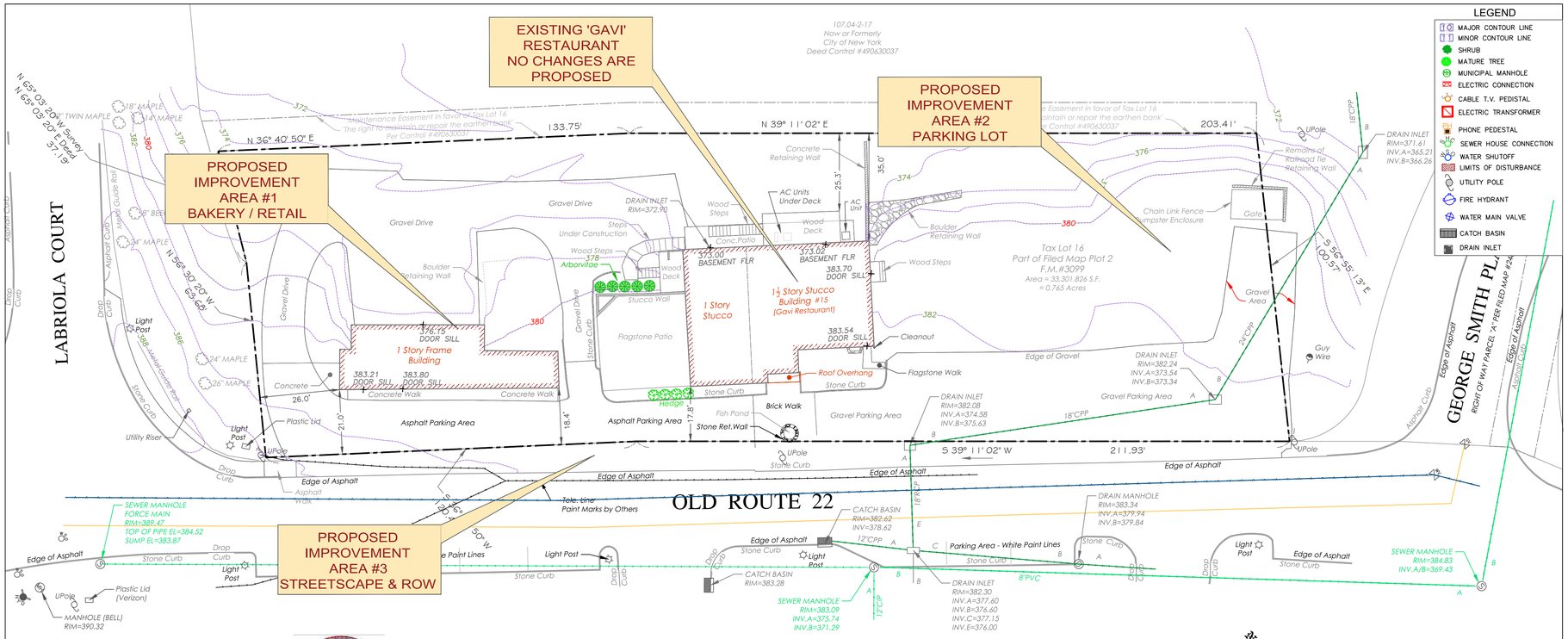
STATE OF NEW YORK
DANIEL THOMAS MERRITTS
050604
LICENSED LAND SURVEYOR

Surveyed: October 27, 2020
Map Prepared: October 29, 2020

By: Daniel T. Merritts
New York State Licensed Land Surveyor No.050604

Project: Ref.07-227 20-420	*Field Survey By: CR/AP*
Drawn By: DA	*Checked By: DM*

EXISTING CONDITIONS - TOPOGRAPHICAL SITE PLAN



PROJECT LOCATION MAP

AERIAL IMAGERY OF EXISTING CONDITIONS - NORTHERLY VIEW

MAP OF PROPERTY SITUATED AT
TOWN OF NORTH CASTLE–WESTCHESTER COUNTY, N.Y.
TAX IDENTIFICATION #: 107.04-02-16

GRAPHIC SCALE

20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

THE LOCATION OF UNDERGROUND UTILITIES AS SHOWN HEREON ARE BASED ON ABOVEGROUND STRUCTURES. LOCATIONS OF UNDERGROUND UTILITIES/STRUCTURES MAY VARY FROM LOCATIONS SHOWN HEREON. ADDITIONAL BURIED UTILITIES/STRUCTURES MAY BE ENCOUNTERED. FOR INFORMATION REGARDING THESE UTILITIES OR FACILITIES, PLEASE CONTACT THE APPROPRIATE AGENCIES.

STATE OF NEW YORK DANIEL THOMAS MERRITTS 050604 LICENSED LAND SURVEYOR

Surveyed: December 22, 2021
Map Prepared: December 27, 2021

TC MERRITTS LAND SURVEYORS
394 BEDFORD ROAD • PLEASANTVILLE • NY 10570
(914) 769-8003 • survey@tcmerritts.com

SITE PHOTOS - EXISTING CONDITIONS

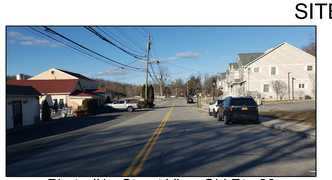


Photo #1 - Street View Old Rte 22


Photo #2 - Street View Gavi Restaurant

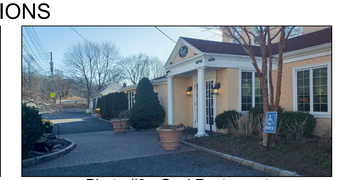


Photo #3 - Gavi Restaurant


Photo #4 - Proposed Bakery


Photo #5 - Rear Yard Proposed Bakery


Photo #6 - Side Yard Gavi Restaurant


Photo #7 - Driveway Entrance Proposed Bakery


Photo #8 - Rear Yard Proposed Bakery


Photo #9 - Proposed Parking Lot Gavi Restaurant

ANY UNAUTHORIZED ALTERATION OR ADDITION TO A PLAN BEARING A SEAL OF A LICENSED LAND SURVEYOR OR PROFESSIONAL ENGINEER IS A VIOLATION OF SECTION 7209 OF THE NYS EDUCATION LAW.

NOTE: ADDITIONAL PLANIMETRIC SURVEY DATA SHOWN HERIEN ON THIS PLAN OF THE PROPERTY OF 15 OLD ROUTE 22, TOWN OF NORTH CASTLE, WESTCHESTER COUNTY, NEW YORK, 10504 WAS PREPARED FROM CONCEPTUAL PLANS PREPARED BY JOSEPH R. CROCCO ARCHITECTS, WESTCHESTER COUNTY GIS DATA, REFERENCED LAND SURVEY AND RECORDED DEED FOR SAID PROPERTY. ENGINEER ACCEPTS NO LIABILITY TO ERRORS AND OMISSIONS PROVIDED ON REFERENCED MAP SOURCES.

GENERAL NOTES:

SCOPE: THE PURPOSE OF THIS MAP IS TO PRESENT AN ASSESSMENT OF EXISTING CONDITIONS FOR THE ROADSIDE BUSINESS PROPERTY RESIDENTIAL PROPERTY LOCATED AT 15 OLD ROUTE 22 IN THE TOWN OF NORTH CASTLE, NY. PROPOSED ON THE SUBJECT PROPERTY IS THE RECONSTRUCTION OF A VACANT BUILDING TO SERVE AS FOOD SERVICE/ RETAIL USE (BAKERY) AND OTHER SITE IMPROVEMENTS RELATED TO CONSTRICTION OF PAVED PARKING LOTS, ACCESS DRIVEWAYS, WALKWAYS, MODULAR BLOCK GRAVITY RETAINING WALLS AND STORMWATER MANAGEMENT SYSTEMS AS REQUIRED BY CODE. AS THE PROPERTY IS ZONED AS NON-RESIDENTIAL ROADSIDE BUSINESS, ALL PROJECTS INVOLVING THIS DEGREE OF IMPROVEMENT REQUIRES SITE PLAN APPROVAL FROM THE TOWN PLANNING BOARD AS PRESENTED IN CHAPTER 355 OF TOWN CODE. THE PROPOSED USE IS CONSISTENT WITH LOCAL ZONING.

1. **MAPPING:** THE BASE MAP DEPICTED HEREIN WAS PREPARED FROM A LAND SURVEY PREPARED BY TC MERRITTS LAND SURVEYORS OF PLEASANTVILLE, NEW YORK, DATED OCTOBER 29, 2020 AND FROM AN ARCHITECTURAL CONCEPTUAL SITE PLAN PREPARED BY JOSEPH R. CROCCO ARCHITECTS.
2. **PLANNING BOARD APPROVALS:** THE INTENT OF THE THIS SUBMISSION IS TO SEEK APPROVAL FROM THE PLANNING BOARD FOR A SITE PLAN APPROVAL FOR THE AFOREMENTIONED PROPOSED BUILDING AND SITE IMPROVEMENTS. THE INTENT OF THE SUBMISSION IS TO MEET ALL ZONING REQUIREMENTS WHERE POSSIBLE AND OBTAIN VARIANCES AS NEEDED WITH GUIDANCE FROM THE TOWN.
3. **RELEVANT TOWN CODE:** TOWN OF NORTH CASTLE CODE CHAPTER 355 REGULATES ZONING, OFF STREET PARKING AND SITE PLAN APPROVAL AND CHAPTER 267 PROVIDE STATUTE ON LAND DEVELOPMENT ACTIVITY AND REQUIRED STORMWATER POLLUTION AND PREVENTION PLANNING (SWPPP).
4. **CURRENT CONDITIONS:** THE EXISTING PROPERTY HAS 33,302 SQUARE FEET OF LAND WHICH CONTAINS TWO ROADSIDE BUSINESS ZONED BUILDINGS; ONE VACANT AND ANOTHER OPERATING AS A RESTAURANT. THE PROPERTY CONTAINS MULTIPLE OFF STREET PARKING SPACES WITHIN GRAVEL/UNPAVED DESIGNATED LOCATIONS TO ACCOMMODATE CURRENT USE AND IS SERVED BY MUNICIPAL SEWER, WATER AND NATURAL GAS. ROAD FRONTAGE IS PROVIDED ALONG OLD ROUTE 22. THE BUILDINGS AND DEVELOPED AREAS APPEAR MEET ZONING LOT COVERAGE AND DIMENSIONAL REQUIREMENTS FOR SIDE, FRONT YARD SETBACKS FOR THE RB ZONING DISTRICT. REAR YARD SETBACK IS PRE-EXISTING NON-CONFORMING.
5. **CRITICAL/SENSITIVE AREAS:** THIS PROPERTY DOES NOT CONTAIN ANY FRESHWATER WETLANDS,WETLAND BUFFER AREAS, STEEP SLOPES OR AND FEMA DESIGNATED SPECIAL FLOODPLAIN HAZARD AREAS.
6. **LIMITATIONS:** THIS PLAN IS NOT TO BE CONSTRUED TO SUPERCEDE ANY APPROVALS BY THE TOWN OF NORTH CASTLE PLANNING BOARD OR OTHER LAND USE BOARDS FOR SITE PLAN OR COMPLETE ZONING/CODE COMPLIANCE, FACILITY USE, OPERATION OR DESIGN. THIS MAP WAS PREPARED STRICTLY TO ASSESS THE CURRENT AND PROPOSED CONDITIONS CONSISTENT WITH THIS APPLICATION BEFORE THE LOCAL PLANNING BOARD.

ZONING SCHEDULE (RB) - BULK REQUIREMENTS

SCHEDULE ITEM	REQUIRED	EXISTING	PROPOSED
Lot Area (min)	30,000 s.f.	33,302 s.f.	N/C
Street Frontage (min)	100 ft.	212 ft.	N/C
Lot Depth	300 ft.	100 ft.	N/C
Front Yard	10 ft.	17.8 ft.	10.0 ft.
Yard (1 Side)	10 ft.	26.0 ft.	56.6 ft.
Yard (Rear)	50 ft.	35.0 ft.	N/C
Max Coverage (Building)	25% (8,325 s.f.)	10.9% (3,640 s.f.)	14.7% (4,900 s.f.)
Building Height (Feet)	24 ft.	24 ft.	N/C
Building Height (Stories)	2.0	2.0	N/C
Max FAR	0.30	0.30	N/C
Impervious Coverage	n/a	25.8% (8,601 s.f.)	77.2% (25,693 s.f.)

GENERAL SITE DATA:

PROPERTY INFORMATION & OWNER:

GAVI RESTAURANT
15 OLD ROUTE 22
ARMONK, N.Y. 10504
TAX ID: 107.04-2-16

1. **ZONING DISTRICT & USE:**

RB- ROADSIDE BUSINESS DISTRICT

2. **ZONING BULK REQUIREMENTS:**

FOR ROADSIDE BUSINESS DISTRICT USE:

- LOT AREA (MIN) -	30,000 SF
- TOTAL BUILDING COVERAGE	25% (8,325 SF)
- LOT DEPTH (MIN) -	300 FEET
- FRONT YARD (MIN) -	10 FEET
- SIDE (MIN ONE) -	10 FEET
- REAR (MIN) -	50 FEET
- HEIGHT (MAX STORIES) -	2.0 STORIES
- PARKING REQ'D RESTAURANT	1 PER 75 SF = 32
- PARKING REQ'D RETAIL	1 PER 200 SF = 12.5
- PARKING REQ'D RESIDENTIAL	2 PER UNIT = 6
- PARKING REQ'D STORAGE	1 PER 1200 SF = 2
- PARKING REQ'D ADA (1 PER 50)	2 SPACES
- TOTAL PARKING PROPOSED =	55 SPACES

3. **LAND USE DEVELOPED AREA SUMMARY:**

EXISTING LOT AREA -	33,302 SF
EXISTING TOTAL BUILDING COVERAGE -	3,640 SF (10.9%)
EXISTING IMP. COVERAGE -	8,601 SF (25.8%)
EXISTING PARKING PROVIDED -	36+/- ESTIMATED

4. **UTILITY SERVICES:**

WATER -	ARMONK WATER DISTRICT #4
SEWER -	ARMONK SEWER DISTRICT #2
GAS -	CON EDISON COMPANY OF NY

5. **ENVIRONMENTAL CRITICAL AREAS:**

-	LOCAL STEEP SLOPES -	NONE
-	FEMA SFHA -	NONE
-	FRESHWATER WETLANDS -	NONE
-	WATERCOURSES -	NONE

6. **NRCS - USDA SOIL CLASSIFICATION:**

Soil Type: Ub - Udorthents, smoothed

Hydrologic Soils: Group B
Slope: 0 to 8 percent slopes
Depth to restrictive feature: 40 to 60 inches
Drainage class: Moderate to Well drained
Depth to water table: 80 inches +

811 Know what's below. Call before you dig. 1-(800) 962-7962

DAVID A. GOESSL, PE
CIVIL ENGINEER
622 SPROUT BROOK ROAD
PUTNAM VALLEY, NY 10579 (914) 227-0258

PROPOSED SITE IMPROVEMENTS TO
GAVI RESTAURANT
15 OLD ROUTE 22, ARMONK, NY 10504

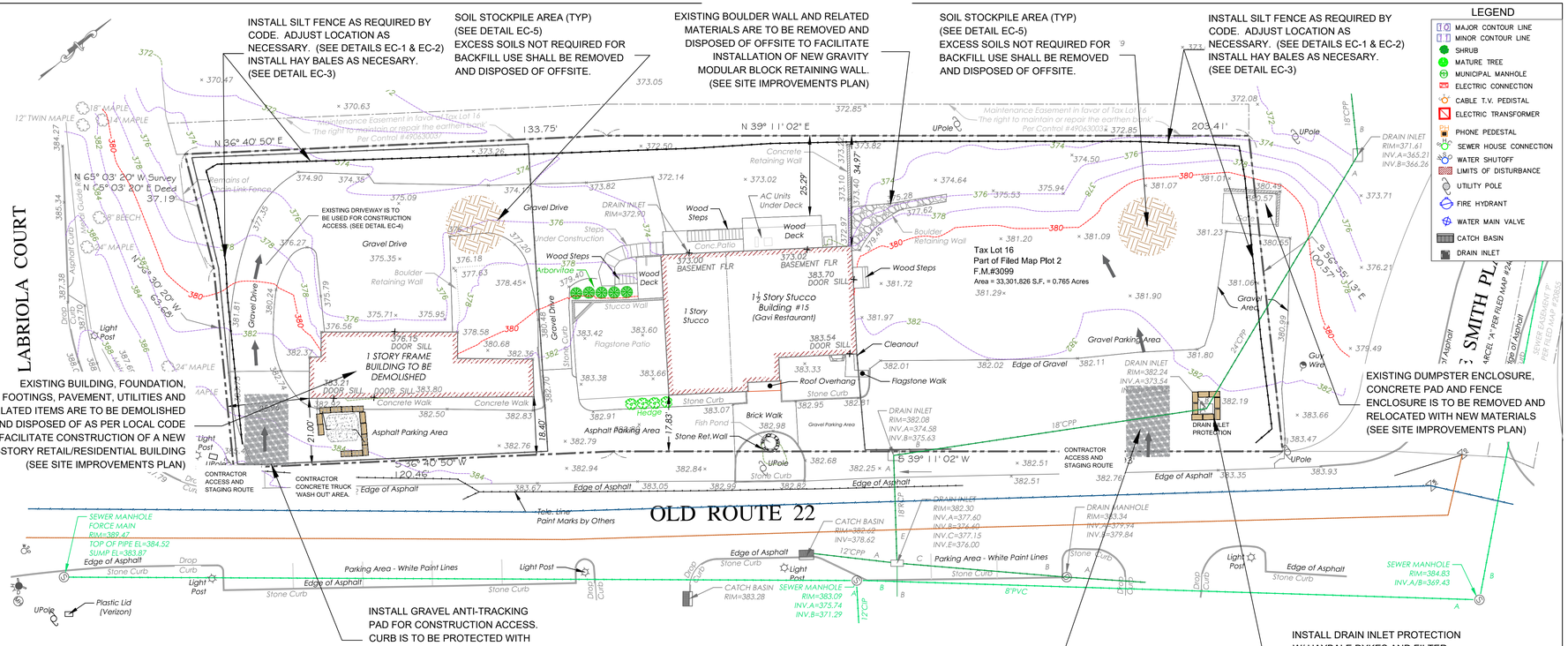
PREPARED BY: DAVID GOESSL, P.E. PREPARED FOR: FRANCO DECARLO

DATE: APRIL 26, 2023 SCALE: 1"= 20 FEET SHEET: 1 OF 9

STATE OF NEW YORK DAVID ALEX GOESSL 081017 LICENSED PROFESSIONAL ENGINEER

NO.	REVISION	DATE

EROSION AND SEDIMENT CONTROL PLAN WITH PROPOSED DEMOLITION & REMOVALS



MAP OF PROPERTY SITUATED AT
TOWN OF NORTH CASTLE–WESTCHESTER COUNTY, N.Y.
TAX IDENTIFICATION #: 107.04-02-16

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

TC MERRITTS LAND SURVEYORS
394 BEDFORD ROAD • PLEASANTVILLE • NY 10570
(914) 769-8003 • survey@tcmerritts.com

STATE OF NEW YORK — DANIEL THOMAS MERRITTS — LICENSED LAND SURVEYOR — 050904
Surveyed: December 23, 2021
Map Prepared: December 27, 2022
Daniel T. Merritts
New York State Licensed Land Surveyor No. 050904

INSTALLATION & MAINTENANCE OF EROSION CONTROL

CONSTRUCTION SCHEDULE: NOTIFY APPROPRIATE MUNICIPAL AGENCY HAVING JURISDICTION AT LEAST 5 DAYS PRIOR TO START

1. PRE-CONSTRUCTION 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 finish. All pre-construction measures shall be in full conformance with any NYSDEC SWPPP permits that may be issued for the project.
2. MAINTENANCE ACTIVITIES 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.
   - Inspections for NYSDEC SWPPP permitting shall be documented and filed on the job for access and viewing and with the appropriate Town officials
3. STOCKPILING OF SOILS AND ROUGH GRADING OF SITE
   - Strip topsoil and stockpile soil for reuse and properly dispose of all excess soils.
   - Stockpile excavation subgrade materials and properly dispose of all excess soils.
   - Seed stockpiles with 1 lb. total annual rye or mix as per engineer.
   - Perform rough grading activities as soon as practical. Call for Inspections as required.
4. FINE GRADING OF SITE
   - Remove all remaining excess soils from site. Compact all graded materials as required.
   - Call for inspection from the appropriate Municipal Agency having jurisdiction at least 2 days prior to finish.
   - Perform all additional fine grading activities as required. Call for reinspection.
5. ESTABLISHMENT OF TURF, FINAL LANDSCAPING AND PLANTINGS
   - Spread topsoil evenly over areas to be seeded. Hand rake level.
   - Broadcast 1:25 lb. Bag of Jonathan Green Tall Fescue mix or equal over areas to be seeded. Apply straw mulch and water within 2 days of completion of top placement. Application Rate 20 lbs per acre.
   - Install turf (optional) landscaping materials and any replacement trees.
   - Demobilize all equipment and materials from site as necessary. Erosion controls may be removed upon 80% established uniform density of restorative turf and plantings.
   - Call for inspection from the appropriate Municipal Agency having jurisdiction at least 2 days prior to finish.

FINAL INSPECTION
- Perform any as-built drawings, land surveys and or engineering certifications. Submit documents to the appropriate Municipal Agency having jurisdiction, Contractor/Owner shall file Notice of Termination for any open NYSDEC SWPPP permit(s).
- Call for inspection from the appropriate Municipal Agency having jurisdiction at least 2 days prior to finish.
- Remove all erosion control measures upon establishment of turf or as per the Municipal Agency having jurisdiction.

CONTRACTOR CERTIFICATION FOR SWPPP/SWEC COMPLIANCE:

THE UNDERSIGNED HEREBY CERTIFIES AND AGREES TO COMPLY WITH THE TERMS AND CONDITIONS OF THE STORM WATER, POLLUTION PREVENTION PLAN AND AGREES TO IMPLEMENT ANY AND ALL CORRECTIVE ACTIONS IDENTIFIED BY THE NYSDEC QUALIFIED INSPECTOR AND/OR TOWN ENGINEER AND/OR BUILDING INSPECTOR DURING ALL SITE INSPECTIONS. FURTHERMORE THE UNDERSIGNED UNDERSTANDS THAT THE OWNER AND/OR PERMIT HOLDER SHALL COMPLY WITH ALL LOCAL CODES FOR STORMWATER MANAGEMENT AND ALL TERMS AND CONDITIONS OF NEW YORK STATE POLLUTANT DISCHARGE ELIMINATION SYSTEM (SPDES) GENERAL PERMIT FOR STORMWATER DISCHARGES FROM ACTIVE CONSTRUCTION SITES AS IT IS UNLAWFUL FOR ANY PERSON TO CAUSE OR CONTRIBUTE TO A VIOLATION(S) OF WATER QUALITY STANDARDS.

NAME:_____

SIGNATURE:_____

DATED:_____

OWNER ACKNOWLEDGEMENT FOR POST CONSTRUCTION MAINTENANCE & COMPLIANCE:

1. **PRIOR TO THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY, THE APPLICANT SHALL PROVIDE A MAINTENANCE SCHEDULE AND PROCEDURES FOR ALL PROPOSED STORMWATER MANAGEMENT INFRASTRUCTURE.**
2. **PRIOR TO THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY, THE APPLICANT SHALL SUBMIT A STORMWATER AS-BUILT SURVEY THAT INCLUDES TOPOGRAPHY AND THE LOCATION, RIM ELEVATIONS AND INVERT ELEVATIONS OF ALL ON-SITE STORMWATER FACILITIES FOR REVIEW BY THE VILLAGE.**
3. **PRIOR TO THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY, A CONSTRUCTION, MAINTENANCE AND INSPECTION DECLARATION FOR THE STORMWATER MANAGEMENT FACILITIES INSTALLED, IN A FORM SATISFACTORY TO THE VILLAGE, SHALL BE FULLY EXECUTED AND SUBMITTED TO THE TOWN.**

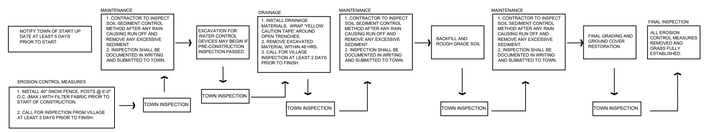
NAME:_____

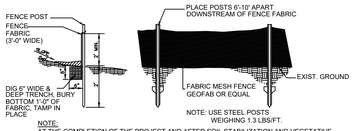
SIGNATURE:_____

DATED:_____

THE LOCATION OF UNDERGROUND UTILITIES AS SHOWN HEREON ARE BASED ON ABOVEGROUND STRUCTURES. LOCATIONS OF UNDERGROUND UTILITIES/STRUCTURES MAY VARY FROM LOCATIONS SHOWN HEREON. ADDITIONAL BURIED UTILITIES/STRUCTURES MAY BE ENCOUNTERED. FOR INFORMATION REGARDING THESE UTILITIES OR FACILITIES, PLEASE CONTACT THE APPROPRIATE AGENCIES.

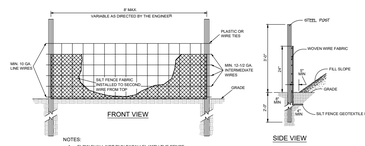
EROSION CONTROL SCHEDULE AND DETAILS





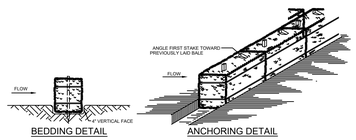
NOTE:
AT THE COMPLETION OF THE PROJECT AND AFTER SOIL STABILIZATION AND VEGETATIVE GROWTH HAVE BEEN ASSURED, THE SILT FENCE MUST BE COMPLETELY REMOVED AND THE EMBEDMENT TRENCH RESTORED TO A NATURAL CONDITION.

EC-1 SILT FENCE DETAIL
SCALE : NOT TO SCALE



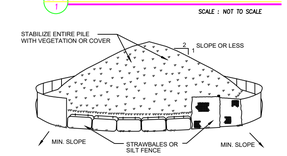
NOTES:
1. FLOW SHALL NOT RUN PARALLEL WITH THE FENCE.
2. END OF SILT FENCE NEEDS TO BE TURNED UPHILL.
3. SEE NYSDEC DESIGN MANUAL FOR CONSTRUCTION SPECIFICATIONS FOR APPLICATION AND PLANNING CONSIDERATIONS.
4. SILT FENCE SHOULD NOT BE USED ALONE BELOW GRADED SLOPES GREATER THAN 10' IN HEIGHT.
5. SILT FENCE SHOULD BE REMOVED WHEN, CLEAN AT 50 % CAPACITY AND REPLACE AS NECESSARY.

EC-2 ALT. SILT FENCE DETAIL
SCALE : NOT TO SCALE



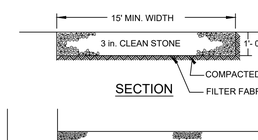
INSTALLATION NOTES
1. BALES SHALL BE PLACED AT THE TOE OF A SLOPE OR ON THE CONTOUR AND IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES.
2. EACH BALE SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF 4 INCHES AND PLACED SO THE BINDINGS ARE HORIZONTAL.
3. BALES SHALL BE SECURELY ANCHORED IN PLACE BY EITHER TWO STAKES OR RE-BARS DRIVEN THROUGH THE BALE. THE FIRST STAKE IN EACH BALE SHALL BE DRIVEN TOWARD THE PREVIOUSLY LAID BALE AT AN ANGLE TO FORCE THE BALES TOGETHER STAKES SHALL BE DRIVEN FLUSH WITH THE BALE.

EC-3 HAYBALE DETAIL
SCALE : NOT TO SCALE



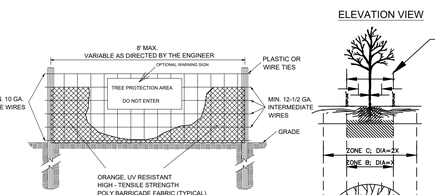
INSTALLATION NOTES
1. AREA CHOSEN FOR STOCKPILING OPERATIONS SHALL BE DRY AND STABLE.
2. SOILS OR FILL TO BE STOCKPILED ON SITE DURING CUTTING AND FILLING ACTIVITIES SETBACKS FROM TEMPORARY DRAINAGE SWALES.
3. MAXIMUM SLOPE OF STOCKPILE SHALL BE 1:2.
4. UPON COMPLETION OF SOIL STOCKPILING, EACH PILE SHALL BE SURROUNDED WITH EITHER SILT FENCING OR STRAWBALES, THEN STABILIZED WITH VEGETATION OR COVERED.
5. STOCKPILES REMAINING IN PLACE FOR MORE THAN A WEEK SHOULD BE SEEDED AND MULCHED OR COVERED WITH GEOTEXTILE FABRIC SURROUNDED BY SILT FENCE.
6. SEE SPECIFICATIONS (NYSDEC MANUAL) FOR INSTALLATION OF SILT FENCE.

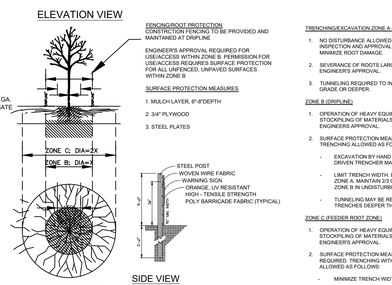
EC-5 SOIL STOCKPILE DETAIL
SCALE : NOT TO SCALE



INSTALLATION NOTES
1. STONE SIZE - USE 1" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - AS REQUIRED, BUT NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY).
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.
4. WIDTH - 25 FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCUR.
5. FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE. FILTER CLOTH WILL NOT BE REQUIRED ON A SINGLE FAMILY RESIDENCE LOT.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT OF WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHT OF WAY MUST BE REMOVED IMMEDIATELY.
8. WASHING - WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHT OF WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

EC-4 STABILIZED CONSTRUCTION ENTRANCE
SCALE : NOT TO SCALE





FENCING/ROOT PROTECTION
CONSTRUCTION FENCING TO BE PROVIDED AND MAINTAINED AT DRIPLINE

ENGINEER'S APPROVAL REQUIRED FOR USE/ACCESS WITHIN ZONE B. PERMISSION FOR USE/ACCESS REQUIRES SURFACE PROTECTION FOR ALL UNPAVED, UNPAVED SURFACES WITHIN ZONE B

SURFACE PROTECTION MEASURES

1. MULCH LAYER, 6"-8"DEPTH
2. 3/4" PLYWOOD
3. STEEL PLATES

TRENCHING/EXCAVATION ZONE A (CRITICAL ROOT ZONE)

1. NO DISTURBANCE ALLOWED WITHOUT SITE-SPECIFIC INSPECTION AND APPROVAL OF METHODS TO MINIMIZE ROOT DAMAGE.
2. SEVERANCE OF ROOTS LARGER THAN 2"DIA REQUIRES ENGINEER'S APPROVAL.
3. TUNNELING REQUIRED TO INSTALL LINES 3'-0" BELOW GRADE OR DEEPER.

ZONE B (DRIPLINE)

1. OPERATION OF HEAVY EQUIPMENT AND/OR STOCKPILING OF MATERIALS SUBJECT TO ENGINEERS APPROVAL.
2. SURFACE PROTECTION MEASURES REQUIRED TRENCHING ALLOWED AS FOLLOWS:
   - EXCAVATION BY HAND OR WITH HAND DRIVEN TRENCHER MAY BE REQUIRED.
   - LIMIT TRENCH WIDTH. DO NOT DISTURB MORE THAN 25% OF ROOTS IN ZONE B IN UNDISTURBED CONDITION.
   - TUNNELING MAY BE REQUIRED FOR TRENCHES DEEPER THAN 3'-0"

ZONE C (FEEDER ROOT ZONE)

1. OPERATION OF HEAVY EQUIPMENT AND/OR STOCKPILING OF MATERIALS SUBJECT TO ENGINEER'S APPROVAL.
2. SURFACE PROTECTION MEASURES MAY BE REQUIRED. TRENCHING WITH HEAVY EQUIPMENT ALLOWED AS FOLLOWS:
   - MINIMIZE TRENCH WIDTH
   - MAINTAIN 2/3 OR MORE OF ZONE C IN UNDISTURBED CONDITION.

EC-6 TREE FENCE PROTECTION
SCALE : NOT TO SCALE

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DAVID A. GOESSL, PE
CIVIL ENGINEER
622 SPROUT BROOK ROAD
PUTNAM VALLEY, NY 10579 (914) 227-0258

PROPOSED SITE IMPROVEMENTS TO
GAVI RESTAURANT
15 OLD ROUTE 22, ARMONK, NY 10504

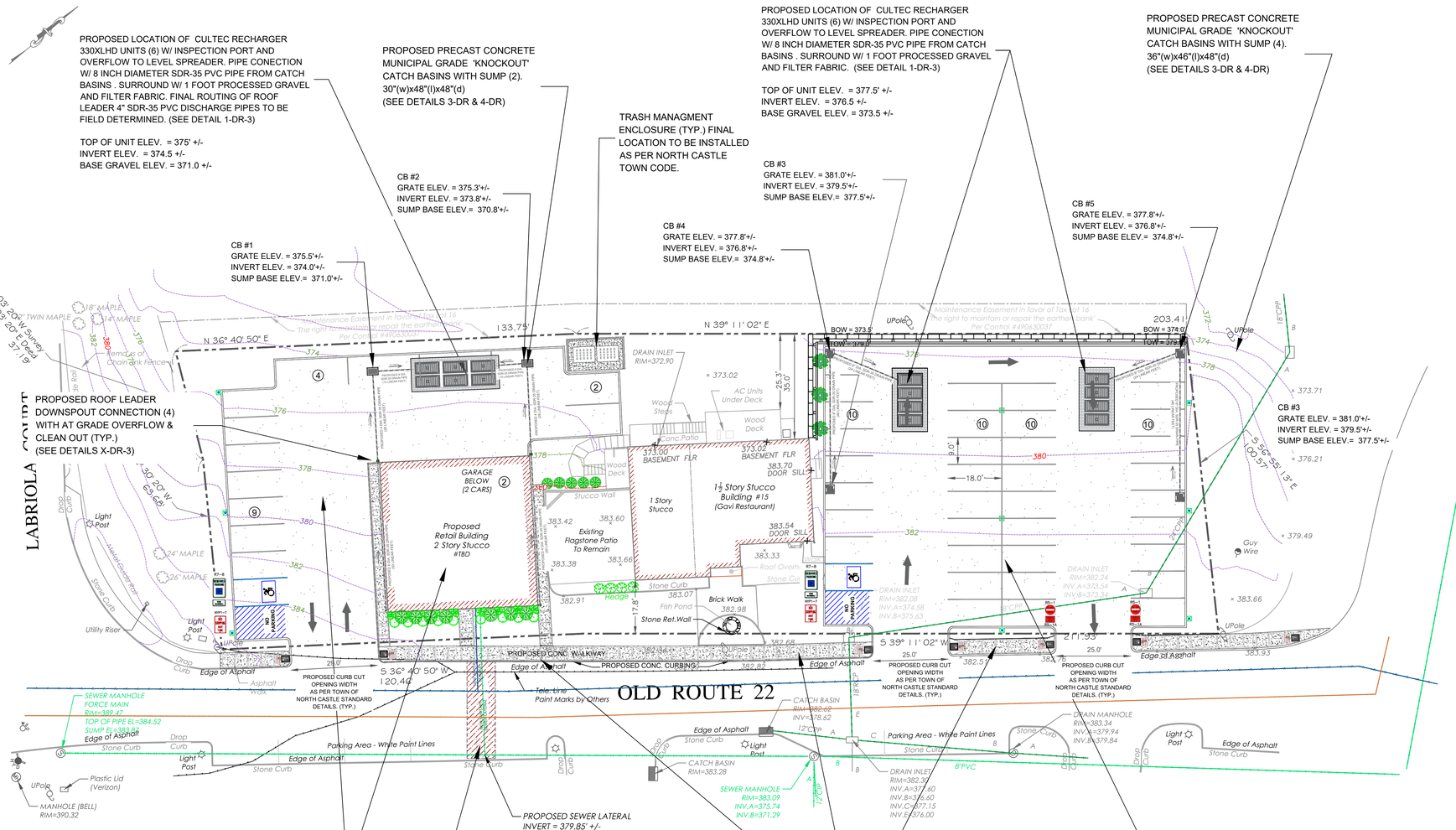
PREPARED BY: DAVID GOESSL, P.E. PREPARED FOR: FRANCO DECARLO

DATE: APRIL 26, 2023 SCALE: 1"= 20 FEET SHEET: 2 OF 9

STATE OF NEW YORK — DAVID KLEIN GOESSL — 081017 — LICENSED PROFESSIONAL ENGINEER

NO.	REVISION	DATE

PROPOSED CONDITIONS - SITE IMPROVEMENTS AND DRAINAGE PLAN



GENERAL CONSTRUCTION NOTES:

1. The Applicant shall secure all of the necessary permits from the Town of North Castle to ensure compliance with Local, County and State Building, Highway and Sanitary Codes. The Applicant is responsible to contact the Building Department to schedule an inspection of the sediment and erosion control practices prior to the start of construction.
2. During work and upon completion, the Applicant shall schedule all of the necessary inspections and certificates of approval with the Town of North Castle officials.
3. The Applicant shall secure the services of a NYS licensed land surveyor as necessary to stake out the exact location of proposed improvements and as required by the Town for record documents.
4. The Applicant shall verify location of all underground utilities by calling Dig Safe NY @ 1-(800) 962-7962 to ensure that there are no conflicts with existing systems. Private installations shall also be identified as required.
5. Any existing utilities, pavement, sidewalk, curbing, grass areas etc., disturbed and/or damages during construction, must be replaced and/or repaired at the Applicant's expense.
6. The Applicant shall secure the work zone through proper placement of construction fencing materials, cones, barricades, and caution tape.
7. All debris, excess soils and waste materials, as a result of this proposed improvement, shall be removed from site and disposed of properly.All construction fuels and chemicals shall be transported in approved sealed containers and shall be removed from the site by the Contractor daily.
8. All fill material shall consist of clean soils, or soil-rock mixture free from organic matter, construction debris or other deleterious material. Materials shall contain no rock or lump over 6" in greatest dimension and not more than 15% of the rocks or lumps shall be larger than 2.5" in greatest dimension.
9. Should unforeseen conditions or circumstances develop or other causes necessitate changes to the approved plans, the Applicant shall notify the Design Engineer of record.
10. All erosion controls and protective measures shall conform to the "New York State Standards and Specifications for Erosion and Sediment Control." The Town Inspector may specify additional sediment and erosion control measures to safeguard the public right of way and adjacent properties.All areas of disturbance shall be restored at the earliest practical date and/or immediately upon suspension of work. Temporary erosion and sediment control measures shall not be removed until site stabilization (80% uniform density of permanent vegetation or permanent mulch/stone) has been achieved.
11. Construction erosion control and protection measures shall be inspected by a qualified engineer or trained individual having received NYSDEC 4-hour erosion and sediment control training at a minimum of weekly and following all rain events greater than 0.5 inch.

STORMWATER SYSTEM NOTES:

1. The Applicant shall safeguard the limits of improvements through proper installation of silt fencing and hay bales downgrade from all excavation areas and stockpiles soil and gravels materials.
2. The Contractor shall verify all field dimensions and drainage layouts prior to performing any installation. Any discrepancies shall be immediately reported to the Engineer of record.
3. The Contractor shall verify depth upon excavation for suitable soils and consult with the Design Engineer prior to installing any drainage systems. The Design Engineer will verify soil percolation rates and prior test results at the time of construction. Any design changes to the storm water system during construction due to unforeseen circumstances such as shallow groundwater, rock, utility conflict etc., must be resubmitted to the Town of North Castle Building and Engineering Departments for approval prior to construction.
4. The Contractor shall schedule required inspections at least 48 hours in advance to both Engineer of record and Town Inspector, and that no work shall be covered or concealed until the required inspections are passed.
5. Stormwater drainage systems shall be installed along the proposed pathway as indicated on the plans. Pipe materials for catch basin and roof leader downspouts shall be SDR-35 PVC (or Sch. 40) piping. Underground infiltrating stormwater chamber(s) shall not be buried within ten feet of a building foundation nor ten feet from any adjacent developed property or right of way. The proposed drainage system is designed to handle a 24 hour, 25 year design storm in accordance with NYSDEC Stormwater Design Manual for net impervious surfaces created by the proposed parking lots, paved surfaces and building improvements and shall be phased with this work to be commenced upon completion of the proposed building, site regrading and Redi-Rock retaining walls as to avoid incidental damage from construction and heavy equipment.
6. The proposed stormwater system consists of 6 Cultec 330XLHD Chambers for the retail bakery portion of the property and another 8 Cultec 330XLHD Chambers for the paved parking lot adjacent to Gavi Restaurant. All chambers are to be set level and include interconnections consisting of 6" diameter PVC (or HDPE) piping.
7. The proposed location of the drywell systems shall be in the rear and right side yards maintaining minimum 10 foot setbacks from building and property lines. Owner/Contractor shall contact the Design Engineer should conflict(s) exist.

OWNER POST CONSTRUCTION MAINTENANCE:

1. The owner shall inspect all roof leader downspouts fittings, inspection ports and cleanout caps once per year to ensure proper connections are in place.
2. The owner shall inspect and remove all debris from the grate of any open yard drain and catch basins regularly with additional emphasis during the fall and winter months.
3. The owner shall inspect and remove all accumulated debris from the sumps of any catch basin or yard drain at a minimum of once per year. Adjust frequency as necessary.
4. Storm water facilities shall be maintained in accordance with best management practices and and Cultec maintenance literature. The owner shall have the said system inspected and certified at 5-year intervals (minimum) or in accordance to local codes whichever is more stringent.

MAP OF PROPERTY SITUATED AT
TOWN OF NORTH CASTLE--WESTCHESTER COUNTY, N.Y.
TAX IDENTIFICATION #: 107.04-02-16

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

THE LOCATION OF UNDERGROUND UTILITIES AS SHOWN HEREON ARE BASED ON ABOVEGROUND STRUCTURES. LOCATIONS OF UNDERGROUND UTILITIES/STRUCTURES MAY VARY FROM LOCATIONS SHOWN HEREON. ADDITIONAL BURIED UTILITIES/STRUCTURES MAY BE ENCOUNTERED. FOR INFORMATION REGARDING THESE UTILITIES OR FACILITIES, PLEASE CONTACT THE APPROPRIATE AGENCIES.

TC MERRITTS LAND SURVEYORS
394 BEDFORD ROAD • PLEASANTVILLE • NY 10570
(914) 769-8003 • survey@tcmerritts.com

STATE OF NEW YORK DANIEL THOMAS MERRITTS 050604 LICENSED LAND SURVEYOR
Surveyed December 23, 2021
Map Prepared December 23, 2021
Daniel T. Merritts
New York State Licensed Land Surveyor No.050604

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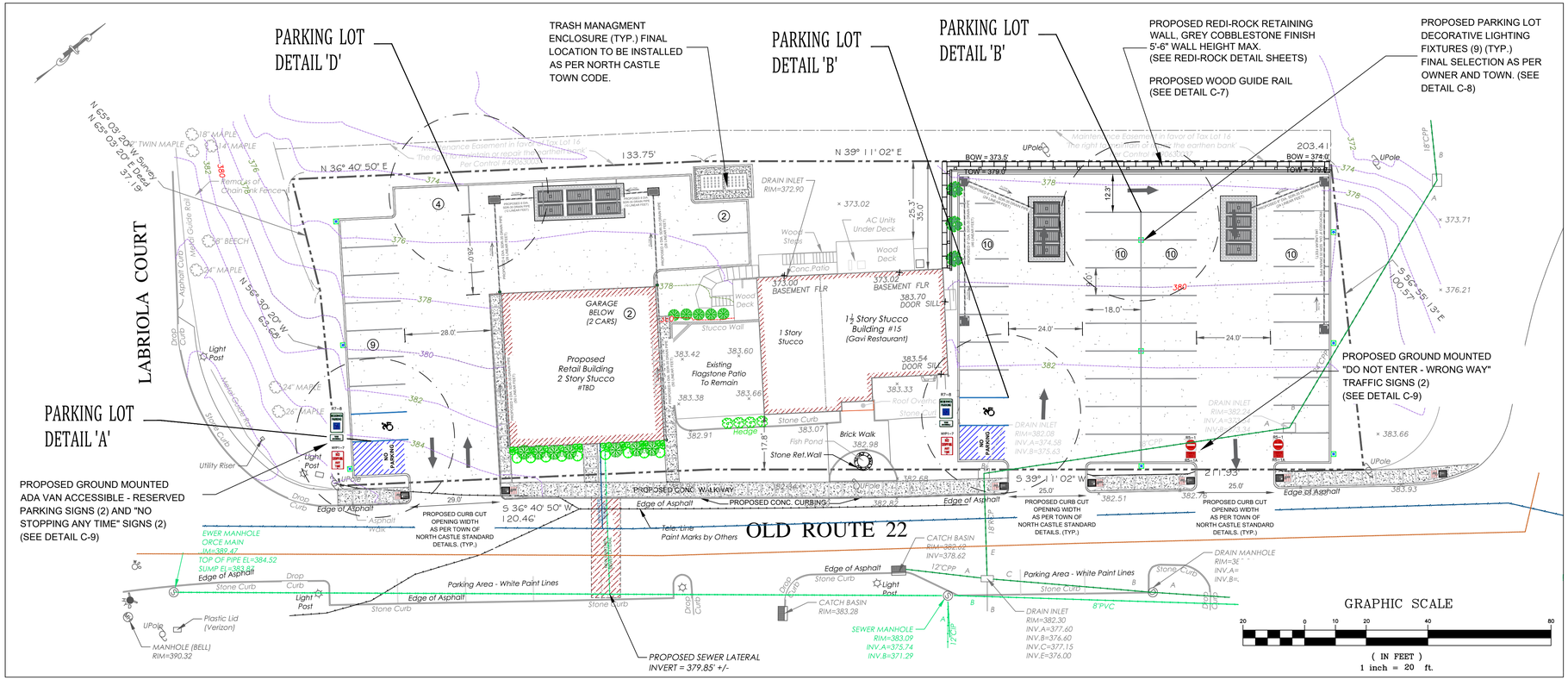
DATE: APRIL 26, 2023 SCALE: 1"= 15 FEET SHEET: 3 OF 9

STATE OF NEW YORK DAVID ALLEN GOESSL 081017 LICENSED PROFESSIONAL ENGINEER

NO.	REVISION	DATE

PARKING LOT LAYOUT PLAN



SIGN AND SYMBOL INDEX

R7-8 — VAN ACCESSIBLE ADA SIGN MUTCD R7-8 - 2 EACH

NYP1-7 — VAN ACCESSIBLE "NO STOPPING ANY TIME" SIGN MUTCD NYP1-7 - 2 EACH

R5-1 — TRAFFIC PROHIBITION "DO NOT ENTER" SIGN - MUTCD R5-1 2 EACH

R5-1A — TRAFFIC PROHIBITION "WRONG WAY" SIGN - MUTCD R5-1A - 2 EACH

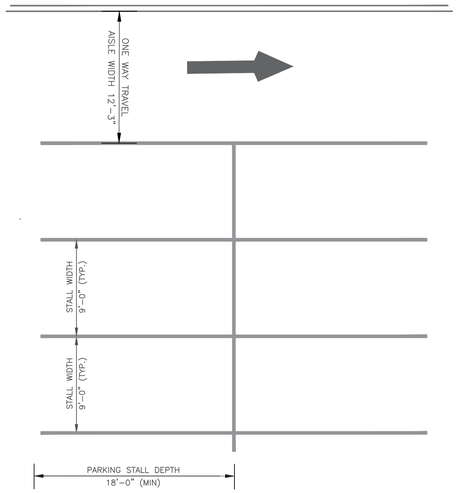
VAN ACCESSIBLE ADA PAVEMENT MARKING SYMBOL - 2 EACH

NO PARKING — VAN ACCESSIBLE NO PARKING PAVEMENT MARKING SYMBOL - 2 EACH

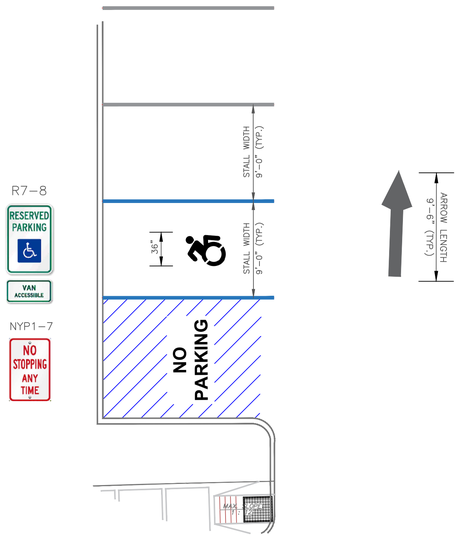
DIRECTIONAL ARROW PAVEMENT MARKING SYMBOL - 5 EACH

PARKING LOT DETAIL 'A'

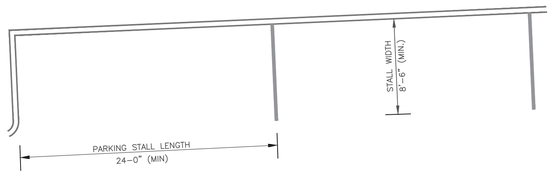
PARKING LOT DETAIL 'B'



PARKING LOT DETAIL 'C'



PARKING LOT DETAIL 'D'



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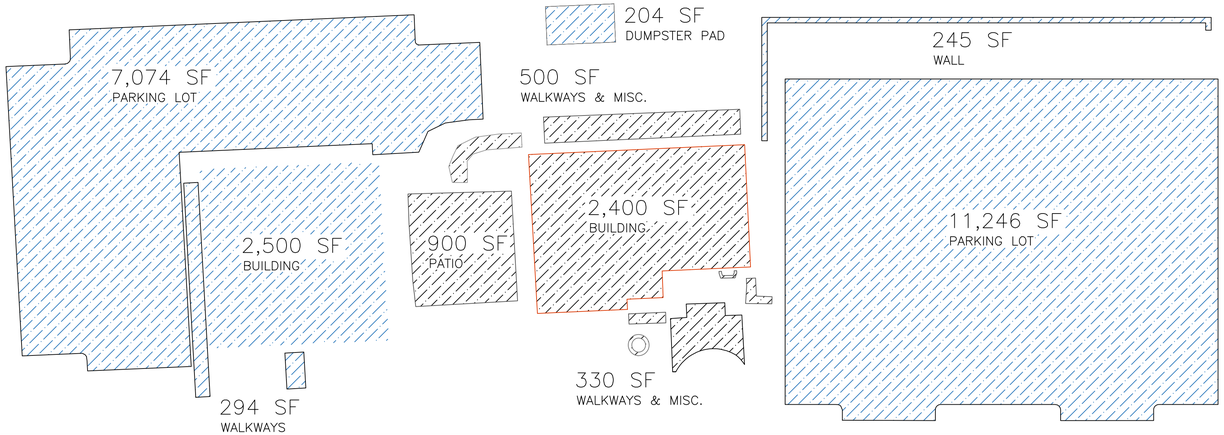
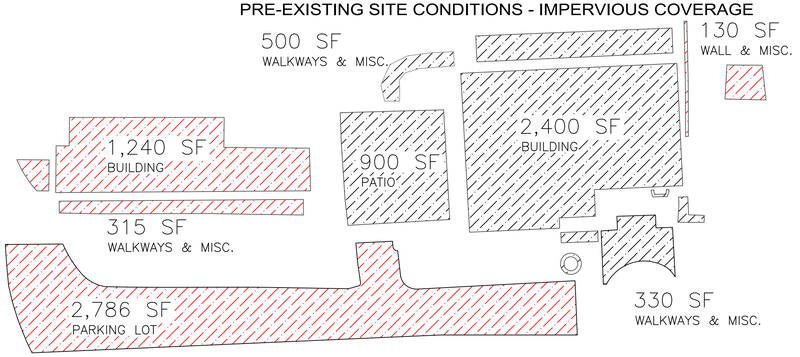
POST-DEVELOPMENT SITE CONDITIONS - IMPERVIOUS COVERAGE



PRE-EXISTING SITE CONDITIONS - IMPERVIOUS COVERAGE



PRE-EXISTING COVERAGE:

BUILDING AREA = 3,640 SF
PARKING LOT PAVEMENT = 2,786 SF
WALL & MISC. = 130 SF
PATIO AREA = 900 SF
WALKWAYS & MISC. = 1,145 SF

LOT AREA = 33,302 SF
PRE-EXISTING IMPERVIOUS AREA = 8,601 SF
REMAINING "LAWN" AREAS = 24,701 SF

POST-DEVELOPED COVERAGE:

BUILDING AREA = 4,900 SF
PARKING LOT PAVEMENT = 18,320 SF
WALL & MISC. = 245 SF
PATIO AREA = 900 SF
WALKWAYS & MISC. = 1,124 SF
DUMPSTER PAD = 204 SF

LOT AREA = 33,302 SF
POST-DEVELOPED IMPERVIOUS AREA = 25,693 SF
REMAINING "LAWN" AREAS = 7,609 SF

NET INCREASE = 17,092 SF

PERCOLATION AND DEEP TEST PIT DATA:

TEST DATE: TBD
WEATHER: TBD
PRE-SOAK TBD
WITNESS: N/A

DEEP TEST PIT:

** CONTRACTOR SHALL PROVIDE DESIGN ENGINEER WITH ADDITIONAL DEEP TEST PIT DATA AT TIME OF CONSTRUCTION.

PERCOLATION TEST #1
(3 RUNS PERFORMED)

FINAL RUN RESULTS:
START TIME: TBD
END TIME: TBD

START DEPTH
FROM SURFACE: 0"
END DEPTH
FROM SURFACE: 3"
RESULT: TBD / 3"DROP

PERCOLATION TEST #2
(3 RUNS PERFORMED)

FINAL RUN RESULTS:
START TIME: TBD
END TIME: TBD

START DEPTH
FROM SURFACE: 0"
END DEPTH
FROM SURFACE: 3"
RESULT: TBD / 3"DROP

PERCOLATION TEST #3
(3 RUNS PERFORMED)

FINAL RUN RESULTS:
START TIME: TBD
END TIME: TBD

START DEPTH
FROM SURFACE: 0"
END DEPTH
FROM SURFACE: 3"
RESULT: TBD / 3"DROP

(FOR DESIGN, USE 20 MIN PER 1 INCH DROP IN FRONT YARD)

Constant Slope

Smooth Wall PVC	GPM with 1%	Flow Velocity (ft/sec)	GPM with 2%	Flow Velocity (ft/sec)	GPM with 3%	Flow Velocity (ft/sec)	GPM with 4%	Flow Velocity (ft/sec)	GPM with 5%	Flow Velocity (ft/sec)
1/2"	0.6	0.9	0.8	1.3	1	1.7	1.2	2	1.4	2.2
3/4"	1.6	1.2	2.4	1.7	3	2.2	3.5	2.5	3.9	2.9
1"	3.5	1.4	5.1	2.1	6.4	2.6	7.4	3	8.4	3.4
1 1/4"	6.3	1.7	9.2	2.4	11.4	3	13.4	3.5	15.1	3.9
1 1/2"	10.2	1.9	14.8	2.7	18.5	3.4	21.6	3.9	24.3	4.4
2"	21.7	2.2	31.6	3.2	39	4	46	4.7	52	5.3
3"	63	2.9	92	4.2	114	5.2	133	6.1	151	6.8
* 4"	135	3.4	196	5	244	6.2	284	7.3	321	8.2
* 6"	391	4.4	568	6.4	707	8	826	9.4	932	10.6

PIPE SIZE ADEQUACY: FOR PROPOSED 4" DIAMETER PVC PIPE SET AT 2% SLOPE, DESIGN FLOW RATE AS PROVIDED BY MANUFACTURER IS 196 GALLONS PER MINUTE. 24 HOUR DESIGN VOLUME IS 276 CUBIC FEET WHICH IS EQUIVALENT 2,065 GALLONS. USING CONVERSION FACTOR, STANDARDIZED PER MINUTE VOLUME IS 1.43 GALLONS PER MINUTE. AS SUCH, THE PROPOSED DISCHARGE ROUTED TO THE DESIGNED CULTEC DRAINAGE SYSTEM ARE SIZED ACCORDINGLY.

DRAINAGE MODELING (AS PER NYSDEC SWDM)

STORMWATER DRAINAGE DESIGN
FOR
15 OLD ROUTE 22
ARMONK, NY 10504

The proposed storm water modeling utilized is for a net zero increase in site surface runoff. The modeling will capture surface water runoff from the increased impervious surfaces for the new building, paved parking areas, walkways and related. The total net increase of developed impervious surface areas, equating to 17,092 square feet, is modeled using the 24 hour, 25 year design storm of 6.4 inches. Proposed drainage consists of onsite percolation using Cultec Recharger drywells beneath the paved parking areas of the property surrounded by one foot of crushed processed gravel. Water quality pretreatment is proposed with use catch basin "drop in basket" type filters for the 6 proposed catch basins coupled with 1'-6" sumps provided in each of the basins.

LOT AREA FOR DESIGN:

DESCRIPTION	SQUARE FEET	CONVERSION	ACRES
Total Lot Area	33,302	43,560	0.765

PRE-DEVELOPMENT – EXISTING CONDITIONS

DESCRIPTION	SQUARE FEET	CONVERSION	ACRES	CURVE NUMBER
Total Lot Area	33,302	43,560	0.765	--
Buildings	3,640	43,560	0.084	98
Parking Lot	2,786	43,560	0.064	98
Patios, Walls & Wa	2,175	43,560	0.050	98
Open Space	24,701	43,560	0.567	72

COMPOSITE CURVE NUMBER = **78.7**
TOTAL IMPERVIOUS AREAS = **8,696** SF

WATER QUANTITY VOLUME ANALYSIS:

- Reference NYSDEC Stormwater Design Manual Chapter 4 and NRCS TR-55 Modeling for Urban Hydrology for Small Watersheds
- Design Storm used is 25 year, 24 hour

- Pre-Developed Composite Curve Number (CN) 78.7
- Post-Developed Composite Curve Number (CN) 92.1
- Rainfall Intensity (i) 6.4 Inches/day
- Pre-Developed Impervious Area (A) 8,696 ft²
- Post-Developed Impervious Area (A) 24,848 ft²

Using the TR-55 SCS Runoff Equation

Max Retention (S) = 1,000/(CN) -10
Runoff (Q) = (P – 0.2S)^2/(P+0.8SS)
Runoff Volume (V) = Q x A

1.) Pre-Development Runoff Determination

Pre-Development S 2.704 Inches
Pre-Development Q 3.95 Inches

Pre-Development Vs = **2,856.8 Cubic Feet**

2.) Post-Development Runoff Determination

Post-Development S 0.863 Inches
Post-Development Q 5.44 Inches

Post-Development Vs = **11,257.8 Cubic Feet**

3.) Water Quantity Volume for Storage

Storage Volume = Vs post – Vs pre
Stor. Volume = **8,401.05 Cubic Feet**

SOIL PERCOLATION RATE:

a) Area of Percolation (A_p):

1) Surface Area of Cylinder (A_c)
Perc Hole Depth 32
Diameter = 4 Inches
Water Depth (h_{wg}) = 0 Inches
$A_c = \pi x Dia_{wg}$
A_c= **0.00** ft²

2) Cylinder Bottom Area
$A_b = \pi r^2$
A_b= **0.087** ft²

3) Percolation Area
$A_p = A_c + A_b$
A_p= **0.09**

VOLUME PER DRYWELL (Vw):

Cultec Recharger Stormwater Chamber, Model #: 330 XLHD

Chamber Volume (CF)	Stone Length (inches)	Stone Width (inches)	Stone Height (inches)	Stone Volume (CF)	# Units	Total Volume (CF)
52.27	126.00	76.00	42.50	73.30	1	125.57

Total Storage Provided, Vw = V_w= 125.57 ft³

24-HOUR PERCOLATION VOLUME PER DRYWELL (Vp):

Percolation Volume of Drywell V_p= 498.75 ft³

b) Volume of Percolation (V_p):

h= 1 inches
$V_p = A_p * h$
V_p= **0.007** ft²

c) Soil percolation rate (Sr):

Time 12.00 minutes

S_r = volume / area / time
S_r= 0.00694 ft³/ft²/min
S_r= **10.00** ft³/ft²/day
-25%clogging factor adjustment
S_r= **7.50** ft³/ft²/day

OF SIDES EXPOSED 2
OF ENDS EXPOSED 2
BOTTOM AREA UNIT 30.33 SF
BOTTOM AREA OF GRAVEL: 66.50 SF

TOTAL 24-HOUR VOLUME PER DRYWELL (Vt):

Cultec Recharger Stormwater Chamber, Model # 330 XLHD
V_t= volume of drywells (Vw) + percolation volume (Vp)
V_t= 624.32 ft²

NUMBER OF DRYWELLS REQUIRED (DWR):

DW_R= Required Volume of Storage (Vs) / Total Volume per Drywell (Vt)

DW_R= **13.46** **(Round to 14 Units)**

WATER QUALITY VOLUME ANALYSIS (WQv & Vf):

- Reference NYSDEC Stormwater Design Manual Chapter 4, Sections 4.2 and 4.3

Water Quality Volume (WQv) = 236.78 Cubic Feet
Total Volume (Vf) of SMP's Provided = 8,740.48 Cubic Feet NOTE: Storage provided by drywells is greater than WQv

- Reference NYSDEC Stormwater Design Manual Chapter 6, Sections 6.2 and 6.3

Water Quality Volume (WQv) = 236.78 Cubic Feet
48 Hour Perc. Volume of Drywells (Vp/2) + #Units Proposed = 13,965.00 Cubic Feet NOTE: Storage provided by drywells is sufficient for 48 hour dewatering of full WQv

WATER QUALITY VOLUME PRE-TREATMENT ANALYSIS:

- Reference NYSDEC Stormwater Design Manual Chapter 6, Sections 6.4.3

Camp-Hazen Equation $A_s = -1*(Q_r x W_f)/(1-E)$

A_s = **1.91** **Square Feet**

A_s = Sedimentation Basin Surface Area (ft^2)
E = Sedimentation Trap Efficiency (90%)
W = Particle Setling Velocity (0.0033FPS)
Q_r = Basin Discharge Rate (WQv/24/3600)
WQv = Water Quality Volume

POST-DEVELOPMENT – PROPOSED CONDITIONS

DESCRIPTION	SQUARE FEET	CONVERSION	ACRES	CURVE NUMBER
Total Lot Area	33,302	43,560	0.765	--
Buildings	4,900	43,560	0.112	98
Parking Lot	18,320	43,560	0.421	98
Patios, Walls & Wa	2,289	43,560	0.052	98
Dumpster Pad	204	43,560	0.005	98
Open Space	7,609	43,560	0.175	72

COMPOSITE CURVE NUMBER = **92.1**
TOTAL IMPERVIOUS AREAS = **24,848** SF

WATER QUALITY VOLUME ANALYSIS:

- Reference NYSDEC Stormwater Design Manual Chapter 4, Section 4.2

WQv = (P x Rv x A) / 12 90 % Rainfall Event (P) = 1.5 Inches
% Impervious Cover (I) = 0.75 %
Rv = 0.05 + 0.009 x I Site Area (A) = 0.7645 Acres
Rv = 0.057
WQv = 0.00544 Acre-Ft
WQv = **236.78 Cubic Feet**

RRv(min) = (P x Rv x $A_{C\ x\ I}$) / 12 Hydrologic Soil B, S = 0.4
New Impervious Cover (A_{NI}) = 0.5704 Acres
RRv(min) = 0.0016223 Acre-Ft
RRv(min) = **70.67 Cubic Feet**

NOTES:

1. WQv is greater than RRv(min)
2. Storage provided by drywells is greater than WQv

Calculations determine that fourteen Cultec Model 330XLHD chambers are sufficient to handle the design impervious surfaces while managing the design water quality volume (WQv). The proposed system meets NYSDEC design criteria for 48-hour infiltration of WQv. Furthermore the field determined infiltration rates meet the minimum design parameters of 0.5 inch/hour. The proposed stormwater management system consists of three sets of chambers surrounded by one foot of ¾ to 1½ inch nominal size processed gravel adjacent to the percolation test pit locations. For NYSDEC water quality pre-treatment qualification, all parking lot catch basins will contain 1-1/2 foot minimum depth sumps and each basin will be retrofitted with "drop in basket" type filters.

PHOTOS - FIELD PERCOLATION TESTING FOR SOILS

TBD
FRONT RIGHT YARD - PERC TEST #1

TBD
FRONT RIGHT YARD - PERC TEST #2

TBD
REAR LEFT YARD - PERC TEST #3

DAVID A. GOESSL, PE
CIVIL ENGINEER
622 SPROUT BROOK ROAD
PUTNAM VALLEY, NY 10579 (914) 227-0258

PROPOSED SITE IMPROVEMENTS TO
GAVI RESTAURANT
15 OLD ROUTE 22, ARMONK, NY 10504

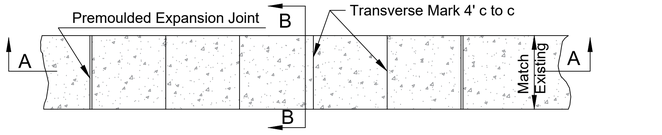
PREPARED BY: DAVID GOESSL, P.E. PREPARED FOR: FRANCO DECARLO

DATE: APRIL 26, 2023 SCALE: NONE SHEET: 5 OF 9

NO.	REVISION	DATE

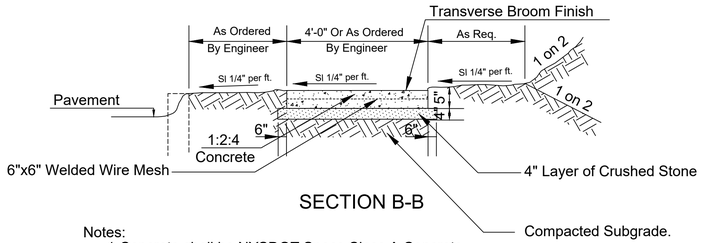
STATE OF NEW YORK — DAVID A. GOESSL — 081017 — LICENSED PROFESSIONAL ENGINEER

STANDARD CONSTRUCTION DETAILS



SECTION A-A

NOTES:
1. NEW 4" LAYER OF CRUSHED STONE UNDER NEW CONCRETE SIDEWALK IS INCLUDED UNDER THIS ITEM.

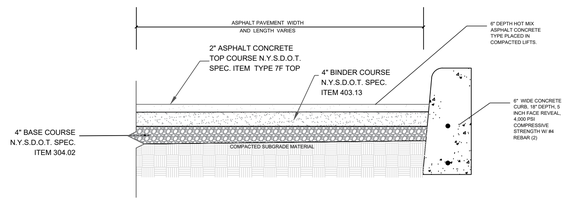


SECTION B-B

Notes:
1. Concrete shall be NYSDOT Specs Class A Concrete.
2. Sidewalks Not At Driveways Shall Be 5 inches Thick On a 4 inch Base of crushed stone, With 6"x6" Welded Wire Mesh.
3. Sidewalks at Driveways Shall Be 7 inches Thick, on a 4 inch Base of crushed stone, With 6"x6" Welded Wire Mesh.

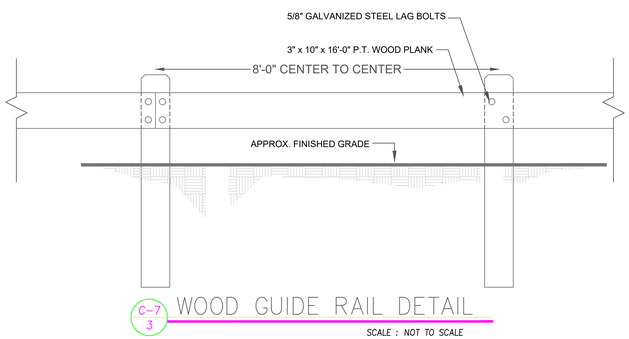
C-1 / 3 CONCRETE SIDEWALK SECTIONS

SCALE : NOT TO SCALE



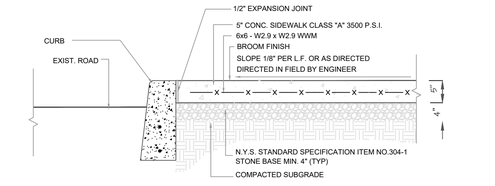
C-6 / 3 ASPHALT PAVEMENT DETAIL

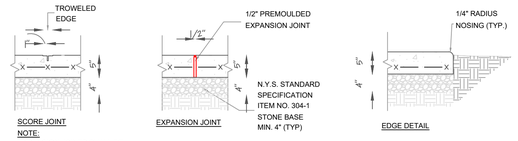
SCALE : NOT TO SCALE



C-7 / 3 WOOD GUIDE RAIL DETAIL

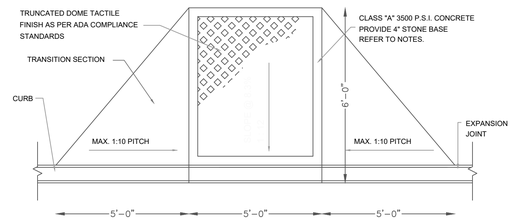
SCALE : NOT TO SCALE





C-2 / 3 5" REINFORCED CLASS "A" CONCRETE SIDEWALK

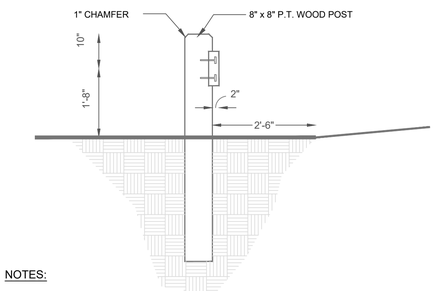
SCALE : NOT TO SCALE



NOTES 1. NEW 4" N.Y.S. STANDARD SPECIFICATION ITEM NO. 304-1 304-1 STONE BASE
2. PEDESTRIAN RAMP INCLUDES ALL WORK INCLUDING TRANSITION SECTIONS & DROP CURB.

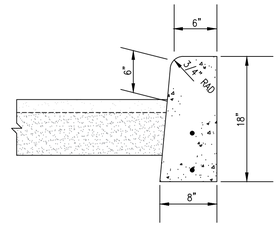
C-4 / 3 PEDESTRIAN RAMP AND DROP CURB DETAIL

SCALE : NOT TO SCALE



NOTES:

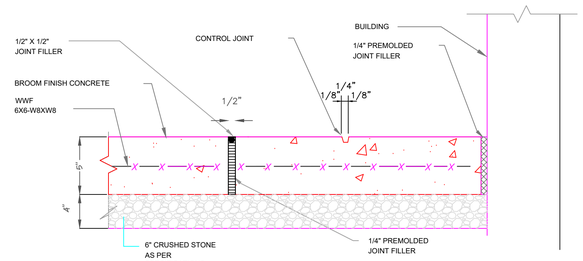
1. ALL WOOD TO BE SEASONED No.1 DOUGLAS FIR, SOUTHERN PINE OR OTHER APPROVED STRUCTURAL LUMBER.
2. ALL WOOD TO BE PRESSURE TREATED.



Note:
1. Concrete Shall Be N.Y.S.D.O.T. Specs. Class "A" Concrete. 4,000 psi comp. strength
2. Drop Curbs For Driveways Shall Have 1-1/2" Reveal.
3. Full Height Curb Sections Shall Have a Min. Reveal of 6-inches along municipal road.

C-3 / 3 CONCRETE CURB STANDARD SECTION

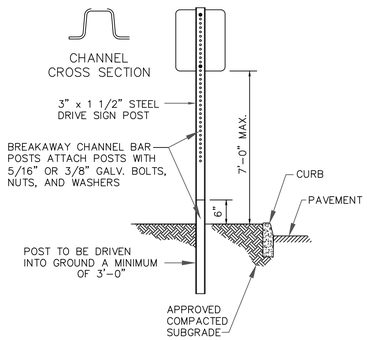
SCALE : NOT TO SCALE



C-5 / 3 TYPICAL SIDEWALK SECTION

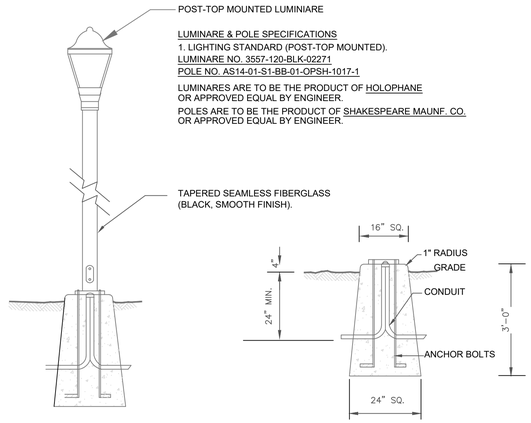
SCALE : NOT TO SCALE

SIGN POST DETAIL
NTS



C-9 / 3 STANDARD SIGN POST DETAIL

SCALE : NOT TO SCALE



LUMINARE & POLE SPECIFICATIONS
1. LIGHTING STANDARD (POST-TOP MOUNTED).
LUMINARE NO. 3557-120-BLK-02271
POLE NO. AS14-01-S1-BB-01-OPSH-1017-1

LUMINARES ARE TO BE THE PRODUCT OF HOLOPHANE OR APPROVED EQUAL BY ENGINEER.

POLES ARE TO BE THE PRODUCT OF SHAKESPEARE MAUNF. CO. OR APPROVED EQUAL BY ENGINEER.

NOTE: LOCATION OF LIGHT POLE TO BE VERIFIED IN FIELD.

NOTES:

1. POLES SHALL BE 14'-0" LENGTH TAPERED SEAMLESS FIBERGLASS WITH HAND HOLE FOR SPLICE AND FUSE HOLDER. POLE IS TO BE ANCHORED TO CONCRETE BASE IN ACCORDANCE WITH MANUF. SPECIFICATIONS.
2. FACE OF POLE TO BE SET BACK A MINIMUM OF 3'-0" BEHIND EDGE OF ASPHALT PAVEMENT.
3. LUMINARIES FOR HIGH PRESSURE SODIUM TO BE MANUFACTURED BY HOLOPHANE, (RSL350).
4. POLE BASES TO BE INSPECTED PRIOR TO INSTALLATION OR BACKFILL.
5. CONCRETE BASE MUST PROJECT A MINIMUM OF 4" ABOVE FINISHED GRADE.
6. ALL EXCAVATION FOR LIGHT POST BASES SHALL BE INSPECTED PRIOR TO BASE INSTALLATION.
7. EACH LIGHT SHOULD BE WIRED SEPARATELY, AND NOT SERIES, AND EACH LAMP SHOULD BE SEPARATELY FUSED.

C-8 / 3 LIGHTING POLE AND BASE DETAIL

SCALE : NOT TO SCALE

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STATE OF NEW YORK · DAVID KLEIN GOESSL · 081017 · LICENSED PROFESSIONAL ENGINEER

NO.	REVISION	DATE

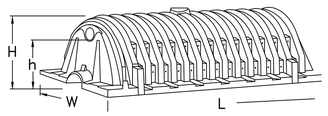
STANDARD DRAINAGE DETAILS

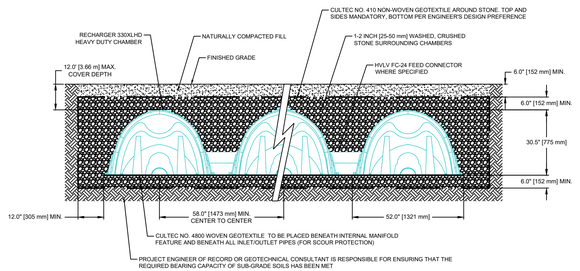
CULTEC 330XLHD INFILTRATING CHAMBERS

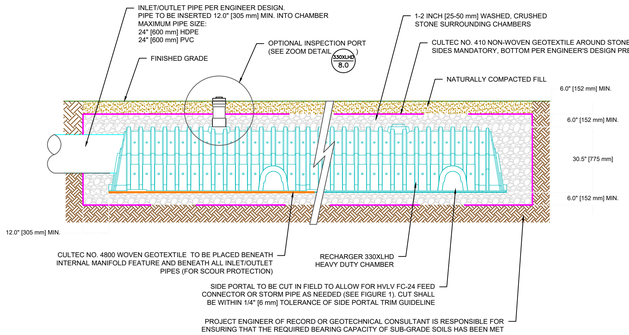
1-DR 3

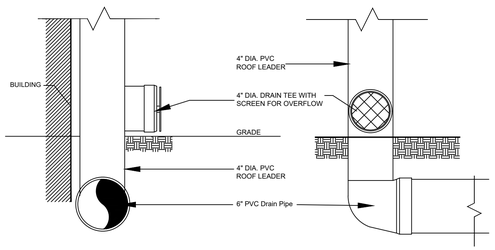
SCALE : NOT TO SCALE

CHAMBER MODEL	RECHARGER 330HD
DIMENSIONS L	84.0"
W	52.0"
H	30.5"
h	22.0"
CAPACITY (gallons)	391.0
(cubic ft.)	52.2







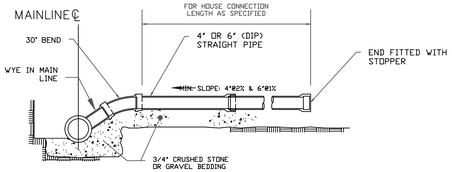


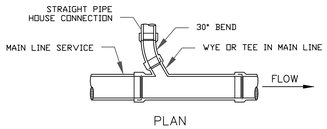
ROOF LEADER OVERFLOW @ GRADE

2-DR 2

SCALE : NOT TO SCALE

UTILITY DETAILS



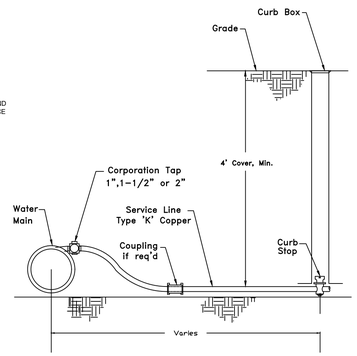


PLAN

STANDARD DETAILS FOR SANITARY SEWER LATERAL

1-U 3

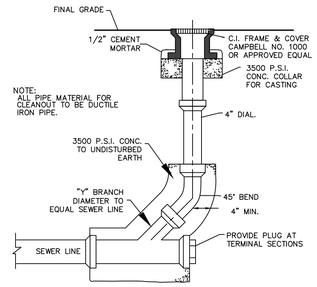
SCALE : NOT TO SCALE



STANDARD DETAILS FOR DOMESTIC WATER SERVICE

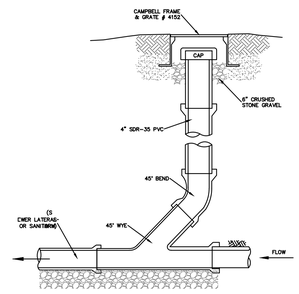
2-U 3

SCALE : NOT TO SCALE



DRAINAGE CLEANOUT IN PAVEMENT DETAIL

NTS

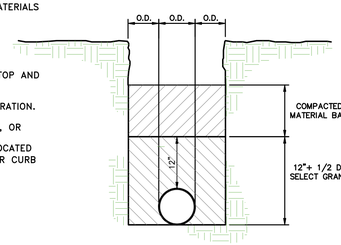


SEWER CLEANOUT DETAIL (GRAVITY)

1. REFER TO PLAN FOR SPECIFIC PIPE SIZING, SLOPE AND SPECIFICATIONS. SANITARY SEWER LATERAL SHALL BE 4" DIAMETER SDR-35 PVC PIPE ON PRIVATE PROPERTY AND MAY BE SPECIFIED AS EXTRA HEAVY CAST IRON PIPE WITHIN THE ROAD AND RIGHT OF WAY.
2. CLEANOUTS SHALL BE PLACED AT EACH SIGNIFICANT PIPE BEND OR CHANGE IN DIRECTION. MAXIMUM SPACE BETWEEN CLEANOUTS IS 50 FEET.
3. PIPE SHALL BE BEDDED WITH CLEAN SAND AND COVERED ONE FOOT WITH SAME. BACKFILL IN ROAD AND RIGHT OF WAY WITH K-CRETE MATERIALS AND SELECT FILL IN ALL OTHER AREAS.

NOTES:

1. CONTRACTOR SHALL CONFIRM CORPORATION, SERVICE TUBING, CURB STOP AND BOX MATERIALS WITH TOWN OF NORTH CASTLE
2. CONTRACTOR PROVIDES ALL EXCAVATION, LABOR, BACKFILL AND RESTORATION.
3. THE CURB BOX SHALL BE LOCATED BETWEEN THE EDGE OF PAVEMENT, OR CURB WHERE CURBS ARE IN PLACE, AND THE PROPERTY LINE. WHERE SIDEWALKS EXIST OR ARE TO BE BUILT, THE CURB STOP SHALL BE LOCATED NO FURTHER THAN THREE (3) FEET FROM THE EDGE OF PAVEMENT, OR CURB WHERE CURBS ARE IN PLACE.

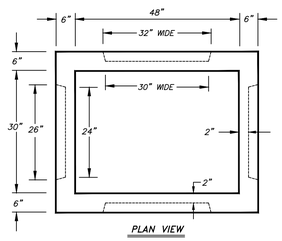


TRENCH BEDDING DETAIL

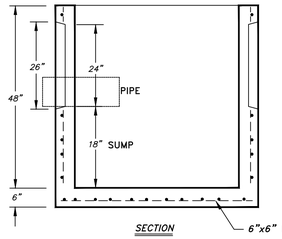
4-DR 2

SCALE : NOT TO SCALE

30"x48"x48" 'KNOCKOUT' TYPE CATCH BASIN WITH SUMP



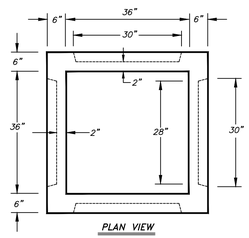
PLAN VIEW



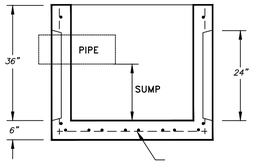
SECTION — 6"x6" W4/W4 W.W.M.

NOTES :
*CONCRETE : 4,000 PSI @ 28 DAYS
*REINFORCING : AS PER ASTM A-185
6" x 6" W4/W4 W.W.M.
*APPROX. WEIGHT : 4,853 LBS.

36"x36"x36" 'KNOCKOUT' TYPE CATCH BASIN



PLAN VIEW



SECTION — 6" x 6" W4/W4 W.W.M.

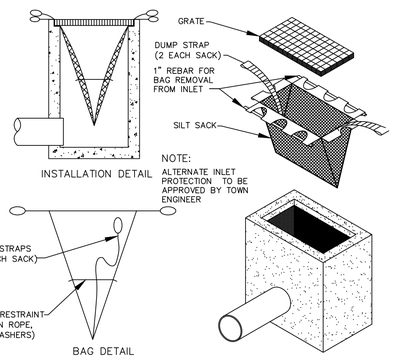
NOTES :
*CONCRETE : 4,000 PSI @ 28 DAYS
*REINFORCING : AS PER ASTM A-185
6" x 6" W4/W4 W.W.M.
*WEIGHTS :
CATCH BASIN – 3,360 LBS.

Precast Concrete Sales Co.
123 Route 303 Valley Cottage , N.Y. 10989
Tel. (845) 268-4949 – Fax (845) 268-4376

STANDARD CONCRETE KNOCKOUT CATCH BASINS

3-DR 3

SCALE : NOT TO SCALE



SILT SACK AT INLET

NTS

STANDARD CATCH BASIN SILT TRAP PROTECTION

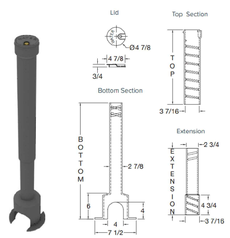
5-DR 3

SCALE : NOT TO SCALE

GENERAL FOUNDRIES

Service / Buffalo Boxes

Screw Type, Large Base



Service Box

PRODUCT NO.	TOP	BOTTOM	RANGE
38093E	18	39	36 - 54
38094E	24	39	42 - 60
38095E	30	39	41 - 64

STANDARD CAST IRON WATER SERVICE CURB STOP ASSEMBLY

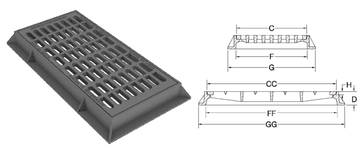
3-U 3

SCALE : NOT TO SCALE

GENERAL FOUNDRIES

Inlet Frames and Grates

Heavy Duty, Built Up Type Frame, Bike Safe Grate

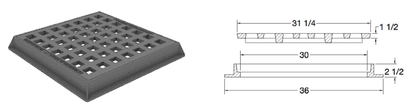


PRODUCT NO.	GRATE DIMENSION C	GRATE DIMENSION CC	FRAME HEIGHT D	INNER FLANGE DIMENSION F	INNER FLANGE DIMENSION FF	OUTER FLANGE DIMENSION G	OUTER FLANGE DIMENSION GG	GRATE THICKNESS H
23404	20-1/2	34-1/8	4	22	32-3/4	28	41-1/4	1-1/4
23405	21-3/4	47-3/4	5	22	48	28	54	1-1/4
23406	21-3/4	35-3/4	5	22	36	28	42	1-1/4
23408	30	49-1/4	5	30-1/4	49-1/2	36	55-1/2	1-1/4
23444	25-3/4	47-3/4	5	26	48	32	54	1-1/4
23449	25-3/4	47-3/4	9	26	48	34	56	1-1/4

GENERAL FOUNDRIES

Catch Basin Frames and Grates

Heavy Duty, Built Up Type Frame, Square Hole Grate



NOTES:
- Dimensions are approximate & in inches
- Gray Iron, Class 35B
- Conforms to ASTM A48 / A48M-03 specifications

PRODUCT NO.
23134

STANDARD CAST IRON FRAME AND GRATE ASSEMBLIES

5-DR 3

SCALE : NOT TO SCALE

ANY UNAUTHORIZED ALTERATION OR ADDITION TO A PLAN BEARING A SEAL OF A LICENSED LAND SURVEYOR OR PROFESSIONAL ENGINEER IS A VIOLATION OF SECTION 7209 OF THE NYS EDUCATION LAW.

DAVID A. GOESSL, PE
CIVIL ENGINEER
622 SPROUT BROOK ROAD
PUTNAM VALLEY, NY 10579 (914) 227-0258

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15 OLD ROUTE 22, ARMONK, NY 10504

PREPARED BY: DAVID GOESSL, P.E. PREPARED FOR: FRANCO DECARLO

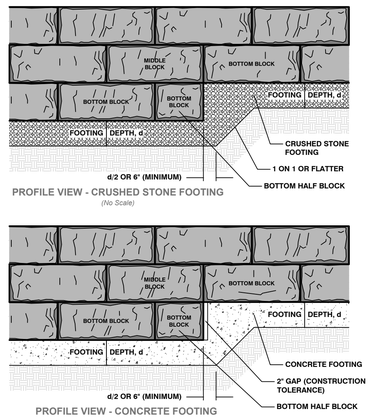
DATE: APRIL 26, 2023 SCALE: 1"= 15 FEET SHEET: 7 OF 9

STATE OF NEW YORK · DAVID ALLEN GOESSL · 081017 · LICENSED PROFESSIONAL ENGINEER

NO.	REVISION	DATE

STANDARD REDI-ROCK CONSTRUCTION DETAILS

STEP FOOTING DETAILS



PROFILE VIEW - CRUSHED STONE FOOTING
(No Scale)

PROFILE VIEW - CONCRETE FOOTING
(No Scale)

DRAWN BY:	JRJ	TITLE:	Step Footing Details
APPROVED BY:	JRJ		
DATE:	06-22-2015		
SHEET:	1 of 1	FILE:	6 Step Footing Details 062215.dwg

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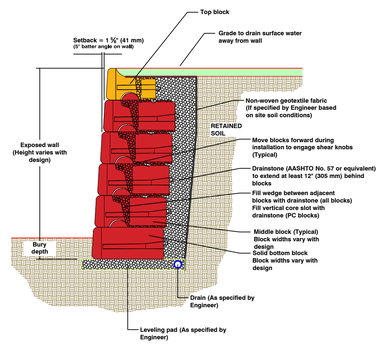
Typical Gravity Wall Section



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DRAWN BY:	JRJ	TITLE:	Typical Gravity Wall Detail
APPROVED BY:	JRJ		
DATE:	06-22-2015		
SHEET:	1 of 1	FILE:	1 Typical Gravity Wall Detail 031716.dwg

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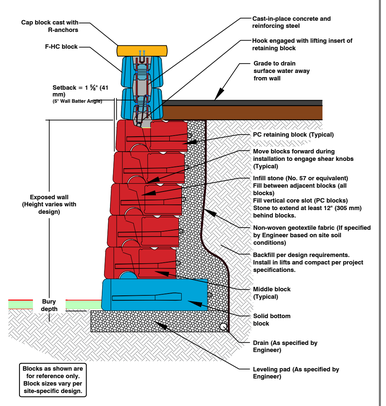
Typical Gravity Wall Section with Freestanding Hollow Core Coping



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DRAWN BY:	NWL	TITLE:	Typical Gravity Wall Detail
APPROVED BY:	JRJ		
DATE:	31MAY2018		
SHEET:	1 of 1	FILE:	Typical-Gravity-Wall-with-F-HC-Section.dwg

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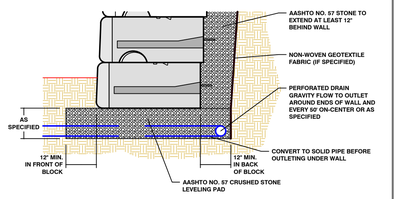
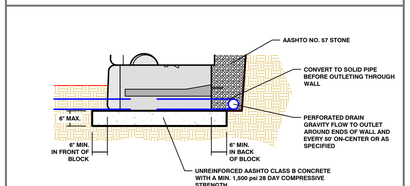
LEVELING PAD OPTIONS FOR RETAINING WALL BLOCKS

NO SCALE



OPEN-GRADED CRUSHED STONE LEVELING PAD



CONCRETE or DENSE GRADED GRAVEL LEVELING PAD

DRAWN BY:	JRJ	TITLE:	Leveling Pad Options
APPROVED BY:	JRJ		
DATE:	06-22-2015		
SHEET:	1 of 1	FILE:	3 Leveling Pad Options 062215.dwg

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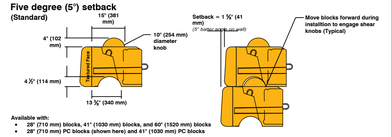
BLOCK-TO-BLOCK SETBACK OPTIONS

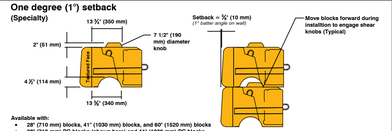
NO SCALE

Five degree (5°) setback
(Standard)



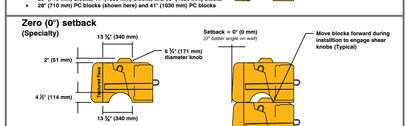
Available with:
- 28" (710 mm) blocks, 41" (1030 mm) blocks, and 60" (1520 mm) blocks
- 28" (710 mm) PC blocks (shown here) and 41" (1030 mm) PC blocks

One degree (1°) setback
(Specialty)



Available with:
- 28" (710 mm) blocks, 41" (1030 mm) blocks, and 60" (1520 mm) blocks
- 28" (710 mm) PC blocks (shown here) and 41" (1030 mm) PC blocks

Zero (0°) setback
(Specialty)



Available with:
- 28" (710 mm) blocks, 41" (1030 mm) blocks, and 60" (1520 mm) blocks
- 28" (710 mm) PC blocks (shown here) and 41" (1030 mm) PC blocks

The block-to-block setback available with Redi-Rock is controlled by the size and location of the shear knobs (domes) cast into the blocks. While the 10" (254 mm) diameter knob and the 1 5/8" (41 mm) setback position is the most common configuration, Redi-Rock has three different knob sizes and three different locations available.

DRAWN BY:	JRJ	TITLE:	Block Setback Options Normal Batter
APPROVED BY:	JRJ		
DATE:	06-22-2015		
SHEET:	1 of 1	FILE:	4 Block Setback Options Normal Batter 062215.dwg

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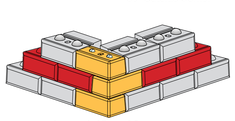
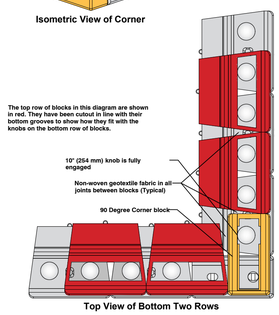
90° Outside Corner



Isometric View of Corner



Top View of Bottom Two Rows

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DRAWN BY:	JRJ	TITLE:	90° Outside Corner Detail 90° Corner Block Option
APPROVED BY:	JRJ		
DATE:	17MAR2016		
SHEET:	1 of 1	FILE:	1 90deg Outside Corner Detail -Corner Block 031716.dwg

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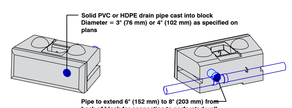
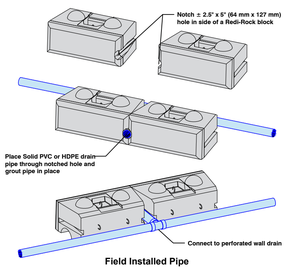
Wall Drain Weep Hole Options



Custom Pipe Cast into Block



Field Installed Pipe

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DRAWN BY:	JRJ	TITLE:	Drainage Weep Options
APPROVED BY:	JRJ		
DATE:	06-22-2015		
SHEET:	1 of 1	FILE:	5 Drainage Weep Options 062215.dwg

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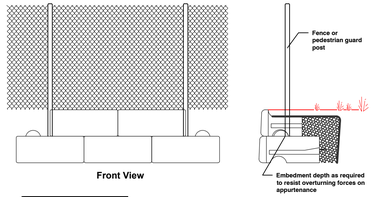
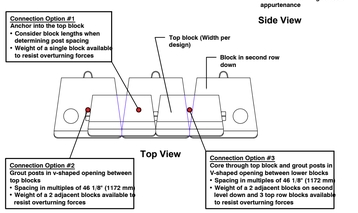
Fence or Pedestrian Guard Connection Locations



Front View **Side View**



Top View

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DRAWN BY:	JRJ	TITLE:	Fence or Pedestrian Guard Connection Locations
APPROVED BY:	JRJ		
DATE:	06-22-2015		
SHEET:	1 of 1	FILE:	6 Fence or Pedestrian Guard Connection Locations 062215.dwg

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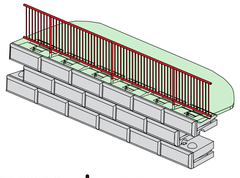
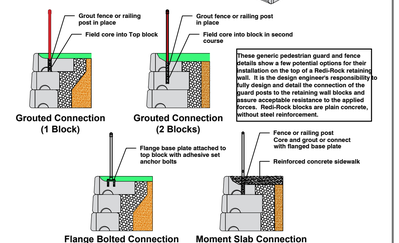
Fence or Pedestrian Guard Connection Options





Grouted Connection (1 Block) **Grouted Connection (2 Blocks)**

Flange Bolted Connection **Moment Slab Connection**

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DRAWN BY:	JRJ	TITLE:	Fence or Pedestrian Guard Connection Options
APPROVED BY:	JRJ		
DATE:	06-22-2015		
SHEET:	1 of 1	FILE:	5 Fence or Pedestrian Guard Connection Options 062215.dwg

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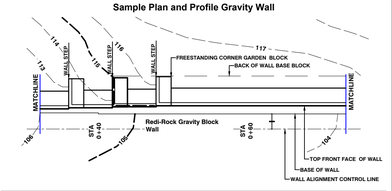
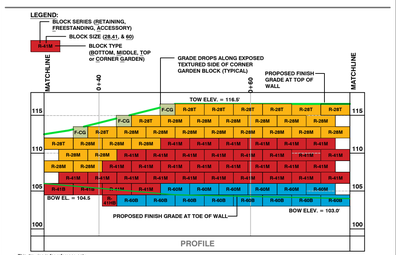
Sample Plan and Profile Gravity Wall





- *This drawing is for reference only.*
- *Final designs for construction must be prepared by a registered Professional Engineer using the actual conditions of the proposed site.*
- *Final wall design must address both internal and external drainage and shall be evaluated by the Professional Engineer who is responsible for the wall design.*

DRAWN BY:	JRJ	TITLE:	
APPROVED BY:	JRJ		
DATE:	22MAR2016		
SHEET:	1 of 1	FILE:	2 Sample Plan and Profile Gravity Wall 032216.dwg

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GENERAL CONDITIONS:

1. The applicant/contractor shall consult with a licensed professional civil engineer to verify field and site soil conditions prior to the construction of the proposed Redi-Rock retaining wall system.
2. No soils or geotechnical information was available at the time that these design drawings were prepared. The design engineer does not make any representation to the quality of existing materials on the property.
3. The foundation soils at the base of the wall shall be inspected by the licensed engineer. Any organic or unsuitable soils or improperly compacted embankment materials shall be removed and replaced with materials capable of providing proper bearing capacity.
4. The applicant/contractor shall report any groundwater or surface runoff conditions that may adversely affect the wall as additional provisions may be required in the field as determined by the licensed engineer.
5. The applicant/contractor shall only use suitable soil and gravel materials. Where materials are imported to the [project location, the applicant/contractor shall provide supplier material certifications to demonstrate acceptability. Use of processed/recycled materials may be considered for use.
6. The contractor shall establish and maintain standards for quality control to ensure that the wall construction complies with design plans and manufacturer's specifications.
7. The contractor consult with the design engineer and demonstrate the establishment of all lines, grades and slopes for compliance with the approved plans.

SPECIFIC CONDITIONS:

1. The work to be done includes sourcing, providing and installing Redi-Rock concrete modular gravity retaining wall units to the lines and grades as specified on the design plans in keeping with manufacturer's specifications.
2. The work includes the demolition and proper disposal of all pre-existing materials including timber walls, tree removals, organic soils and brush materials.
3. The work shall include furnishing and installing all related construction materials required for the installation of the Redi-Rock retaining wall system.
4. The the work includes all final restoration and cleanup. As the project progresses, the applicant/contractor shall schedule all necessary inspections with the local building officials and design engineer.

MATERIALS:

1. The wall specified is Redi-Rock gravity wall types of units as specified on the design plans. The wall units shall have a minimum 28-day compressive strength of 4,000 p.s.i. Standard weight concrete shall have 4.5% to 7.5% air entrainment by volume. Density of concrete shall be 145 lbs/cf.
2. Units shall be furnished and delivered free of stains, defects, cracks or chips. Units that contain visible defects such as, but not limited to cracks, seams, staining, form marks, color streaks or other defects shall be repaired to the satisfaction of the owner and/or design engineer or shall be removed and replaced at the contractor's and or supplier's expense.
3. The finish texture and color shall be specified by the owner prior to procuring any Redi-Rock wall materials.
4. Foundation Soils: The soil immediately beneath the retaining wall units and gravel base shall be suitable materials having soils bearing capacity capable of handling the bearing weight of the proposed wall. Unsuitable soils shall be removed and replaced with acceptable materials. Over-excavated areas shall be backfilled and brought to design grade with approved, compacted backfill materials.
5. Backfill Soils: The soils used for retaining wall backfill beyond the limits of drainage aggregate shall be free of debris or organic matter and meet the characteristics of NYSDOT designation of 'select fill.'
6. Aggregate Gravels: The gravels for leveling pad shall be a clean crushed stone or processed stone of gradation size 3/4" to 2" free of sands and/or fines. The contractor shall submit supplier material certifications to the owner for review and approval. River rock, broken shale, sands or pea gravel materials are not acceptable for use.

QUALITY CONTROL:

1. The contractor shall confirm suitable compacted foundation soils for which a gravel leveling foundation pad of minimum 6" depth may be placed.
2. Compaction of foundation soils, gravel leveling pad and backfill materials shall meet or exceed compactive effort of 95% standard proctor density.
3. Compacted lifts of no greater than 8" depths are to be installed and tamped with a vibratory plate compactor, jumping jack or other suitable equipment.
4. Each course of block wall shall be checked for level and proper alignment. The contractor shall remove and reset materials as necessary to meet manufacturer's design standards and tolerances. Units shall be installed level with a 5 degree batter on the face of wall.
5. Should any unforeseen field condition arise to prevent proper installation of the wall, the contractor shall report such matter to the owner and design engineer.

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CIVIL ENGINEER
622 SPROUT BROOK ROAD
PUTNAM VALLEY, NY 10579 (914) 227-0258

PROPOSED SITE IMPROVEMENTS TO
GAVI RESTAURANT
15 OLD ROUTE 22, ARMONK, NY 10504

PREPARED BY: DAVID GOESSL, P.E. PREPARED FOR: FRANCO DECARLO

DATE: APRIL 26, 2023 SCALE: NONE SHEET: 8 OF 9

STATE OF NEW YORK · DAVID ALLEN GOESSL · 081017 · LICENSED PROFESSIONAL ENGINEER

NO.	REVISION	DATE

STANDARD REDI-ROCK INSTALLATION NOTES FOR GRAVITY WALLS

1. PURPOSE

This manual is intended to serve as a guide for the proper installation and construction of a Redi-Rock® retaining wall. The recommendations and guidelines presented here are intended to supplement detailed construction documents, plans, and specifications for the project.

2. RESPONSIBILITIES

Redi-Rock supports a Total Quality Management approach to Quality Assurance and Quality Control (QA/QC) in the planning, design, manufacture, installation, and final acceptance of a Redi-Rock wall. This approach requires the responsible party at each stage of the project ensure that proper procedures are followed for their portion of the work. The responsible parties during the construction phase of a Redi-Rock wall include the Contractor, Engineer or Owner's Representative, and Redi-Rock licensed manufacturer. Their specific responsibilities for compliance are as follows:

CONTRACTOR

The Contractor is responsible for providing construction according to the contract documents, plans, and specifications for the project. The Contractor shall ensure that employees engaged in construction of the Redi-Rock wall understand and follow the project plans and specifications, are familiar with construction methods required, and have adequate safety training.

ENGINEER OR OWNER'S REPRESENTATIVE

The Engineer or Owner's Representative is responsible for construction review to assure that the project is being constructed according to the contract documents (plans and specifications). The representative shall fully understand the project plans and specifications and shall perform adequate field verification checks to ensure construction is in conformance with the project requirements. The presence of the Engineer or Owner's representative does not relieve the Contractor of their responsibilities for compliance with the project plans and specifications.

REDI-ROCK LICENSED MANUFACTURER

Redi-Rock blocks are produced by independently-owned licensed manufacturers. The manufacturer is responsible for the production and delivery of Redi-Rock units to the job site in accordance with published material quality, size tolerances, construction documents, plans, and specifications. The licensed manufacturer is responsible for adherence to any project specific QA/QC requirements for the production of precast concrete retaining wall units. Often, additional services—such as installation training classes—are available through the Redi-Rock manufacturer.

3. PRE-CONSTRUCTION CHECKLIST

Before you start construction of a Redi-Rock wall, take the time to complete necessary planning and preparation. This process will help ensure a safe, efficient, and quality installation. It will also help avoid costly mistakes.

☐ SAFETY

Safety is of primary concern to Redi-Rock International. Redi-Rock walls must be installed in a safe manner. All local, state, and federal safety regulations must be followed. In addition, Redi-Rock International greatly encourages installers to set up company programs to help their people stay safe at work. These programs should address items such as: personal protective equipment, maintaining safe slopes and excavations, fall protection, rigging and lifting, and other safety precautions. Safety-training materials specific to your company can be found at **www.osha.gov**, by calling 1-800-321-OSHA (6742), or from your local government safety office.

☐ ENGINEERING AND PERMITS

Obtain necessary engineering and permits for your project. Your local building department is an excellent resource to help determine the requirements for your project.

> **This installation guide is intended to supplement a detailed, site-specific wall design prepared for your project by a Professional Engineer. The construction documents for your project supersede any recommendations presented here.**

☐ REVIEW THE PROJECT PLANS

Take the time to review and understand the project plans and specifications. Make sure that the plans take into account current site, soil, and water conditions. Pay close attention to silty or clayey soils and ground water or surface water on the site as these can significantly increase the forces on the wall. A pre-construction meeting with the wall design engineer, construction inspector, wall contractor, and owner or representative is recommended.

☐ CONSTRUCTION PLANNING

Develop a plan to coordinate construction activities on your site. Make sure your plan specifically addresses how to control surface water during construction.

☐ UTILITY LOCATION

Make sure to have underground utilities located and marked on the ground before starting any construction. Call 8-1-1, go online to **www.call811.com**, or contact your local utility company to schedule utility marking for your project site.

☐ MATERIAL STAGING

Store Redi-Rock blocks in a location close to the proposed wall. Blocks should be kept clean and mud free. Blocks should also be stored in a location which will minimize the amount of handling on the project site.

Store geogrid in a clean, dry location close to the proposed wall. Keep the geogrid covered and avoid exposure to direct sunlight.

Be careful where you stockpile excavation and backfill material. Do not stockpile material over buried utility pipes, cables, or near basement walls which could be damaged by the extra weight.

☐ MATERIAL VERIFICATION

Material planned for use as drainage aggregate between and behind Redi-Rock blocks and structural backfill material proposed for use in the reinforced soil zone of mechanically stabilized earth walls must be inspected and verified to comply with requirements of the construction documents, plans, and specifications.

☐ EQUIPMENT

Make sure you have the proper equipment to handle Redi-Rock blocks and install the wall. Redi-Rock blocks are quite large and heavy. Make sure excavators and other construction equipment are properly sized to handle the blocks safely. **(Figure 1)**

Hand-operated equipment should include, at a minimum: shovels, 2-foot (0.6-meter) level, 4-foot (1.2-meter) level, broom, hammer, tape measure, string, spray paint, laser level, pry or Burke bar, walk-behind vibratory plate compactor (capable of delivering a minimum of 2000 lb (8.9 kN) centrifugal force), and a 16-inch (406-millimeter) concrete cut-off saw. **(Figure 2)**

Personal protective equipment should include, at a minimum: appropriate clothing, steel toe boots with metatarsal protection, eye protection, hard hat, gloves, hearing protection, fall protection rigging, and other items as necessary to ensure a safe working environment.

Figure 1

Figure 2

4. SUBGRADE SOILS

Proper base preparation is a critical element in the construction of your retaining wall. Not only is it important to provide a stable foundation for the wall, but a properly prepared base will greatly increase the speed and efficiency of your wall installation. Proper base preparation starts with the subgrade soils.

Existing soils must be removed to the bottom of the leveling pad elevation for the retaining wall.

The base and back of excavation should expose fresh, undisturbed soil or rock. Remove all organic, unsuitable, and disturbed soils that "fall-in" along the base of the wall or the back of the excavation. Always provide safe excavations in accordance with OSHA requirements.

The subgrade soil (below the leveling pad) should be evaluated by the Engineer or Owner's Representative to verify that it meets the design requirements and to determine its adequacy to support the retaining wall. Any unsuitable material shall be excavated and replaced as directed by the on-site representative and per the requirements of the contract drawings, plans, and specifications.

Subgrade soils must be compacted to a density as specified in the contract documents, plans, and specifications but not less than 90% maximum density at ± 2% optimum moisture content as determined by a modified proctor test (ASTM D1557). **(Figures 3 and 4)**

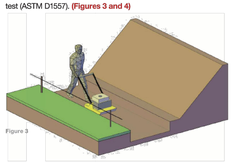


Figure 3

Figure 4

5. LEVELING PAD

Base preparation continues with proper leveling pad construction. Redi-Rock retaining walls can be designed with an open-graded crushed stone, dense-graded crushed stone (GAB), or concrete leveling pad which supports the bottom row of blocks. The choice of which type of leveling pad to use is made by the wall design engineer and depends on several factors including the bearing capacity of the native soil, location of the drain outlet, and conditions at the base of the wall.

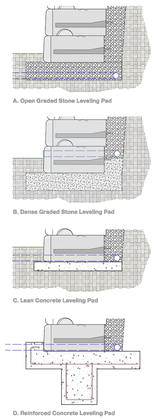
Open-graded crushed stone is typically used in cases where the wall drain can outlet to daylight (by gravity) somewhere below the elevation of the bottom of the leveling pad. **(Figure 6A)** The material should be 1-inch (25-millimeter) diameter and smaller stone. A crushed stone meeting the gradation requirements of ASTM No. 57 with no material passing the No. 200 (74 µm) sieve is preferred. The leveling pad thickness shall be as designed by the wall design engineer. A minimum thickness of 6 inches (152 millimeters) or 12 inches (305 millimeters) is common. The leveling pad should extend at least 6 inches (152 millimeter) in front and 12 inches (305 millimeters) behind the bottom block. Make sure to check your construction documents for details.

Dense-graded crushed stone or graded aggregate base (GAB) material is typically used in cases where the wall drain can only outlet to daylight somewhere above the bottom of the leveling pad. **(Figure 6B)** The material should be dense-graded crushed stone with between 8 and 20% "fines" which will pass through a No. 200 (74 µm) sieve. The leveling pad thickness shall be as designed by the wall design engineer. Minimum dimensions are the same as those for an open-graded crushed stone leveling pad.

The leveling pad material should be placed and compacted to provide a uniform, level pad on which to construct the retaining wall. **(Figure 5)** Proper elevation can be established with a laser level or transit. You can also set two 20' (6 m) long grade (screed) pipes to the desired grade and screed the crushed stone material between the pipes.

Figure 5

Figure 6



Place the stone leveling pad in uniform loose lifts a maximum of 6 inches (152 millimeter) thick. Consolidate the stone with a minimum of three passes with a 24-inch (610-millimeter) wide walk-behind vibrating plate compactor capable of delivering at least 2000 pounds (8.9 kN) of centrifugal force. This should achieve 85% relative density of the stone determined in accordance with ASTM D-4253 and D-4254. In place density of the stone fill should be confirmed using ASTM D-6938. If you don't achieve a minimum of 85% relative density, place the stone in smaller lifts or apply more compaction effort until you do achieve desired density of the stone.

Unless specifically included in the design calculations, do NOT place a thin layer of sand between the leveling pad and bottom block. This layer will reduce the sliding resistance between the leveling pad and bottom block.

In some cases, the wall design requires the construction of a concrete leveling pad. **(Figures 6C and 6D)** Construct the leveling pad according to the detailed plans for your project.

Some designs require a shear key in the bottom of the footing and/or a lip in front of the Redi-Rock blocks. These items would be shown in the project plans.

If steel rebar is to be placed in the footing, secure the bars together with wire ties in the pattern shown in the construction documents. Use rebar supports to hold the rebar structure in the proper position in the footing.

Place wood formwork at the front and back of the concrete leveling pad or footing. The top of the formwork should be placed at the elevation of the top of the concrete footing so you can screed the top smooth in preparation for block placement. It is important that the top surface be smooth and level for full contact of the retaining wall blocks. Place concrete as specified in the wall design. Once the concrete has been allowed to cure to the minimum specified strength, place the bottom blocks and continue construction of the retaining wall.

6. SETTING THE BOTTOM ROW OF WALL BLOCKS

Redi-Rock blocks are typically delivered to the construction site using a flatbed trailer or boom truck. **(Figure 7)** Rubber tired backhoes, loaders, skid steers, or excavators are used to set the retaining wall blocks. **(Figure 8)** Make sure to use the proper sized equipment to handle the large blocks. All lifting chains, rigging, or slings must be OSHA compliant and safety rated for proper working loads.

Properly mark the location of the retaining wall. A string line or offset stakes are typically used to establish horizontal and vertical alignment. If offset stakes are used, the stakes should be placed at least 5 feet (1.5 meters) but no more than 10 feet (3 meters) in front of the face of the retaining wall. A stake should be provided at every elevation change and at a maximum of 50 feet (15 meters) apart.

> **Wall construction should start at a fixed point such as a building wall, 90° corner, or at the lowest elevation of the wall.**

Place the blocks on the prepared leveling pad. Blocks shall be placed in full contact with the leveling pad and other immediately adjacent block units. **(Figure 9)** Block alignment should be established by lining up the "form line" where the face texture meets the steel form finished area at the top of the block, approximately 5 inches (127 millimeters) back from the front face. **(Figure 10)**

Check all blocks for level and alignment as they are placed. Small adjustments to the block location can be made with a large pry or Burke bar. Proper installation of the bottom block course is critical to maintaining the proper installation of all subsequent block courses within acceptable construction tolerance. It also makes installation of the upper rows of blocks much easier and more efficient.

Place and compact backfill in front of the bottom block course prior to placement of subsequent block courses or backfill. This will keep the blocks in place as drainage aggregate and backfill are placed and compacted.

Figure 7

Figure 8

Place an 18 inch x 12 inch (457 millimeter x 305 millimeter) piece of non-woven geotextile fabric in the vertical joint between the blocks to prevent the drainage aggregate and backfill material from migrating through the vertical joints between blocks. **(Figure 11)**

Place washed drainstone or open-graded crushed stone backfill between blocks and at least 12 inch (305 millimeter) behind the wall. A stone meeting the gradation requirements of ASTM No. 57 with no material passing the No. 200 (74 µm) sieve is preferred. Place the stone in uniform loose lifts a maximum of 6 inches (157 millimeter) thick. Consolidate the stone with a minimum of three passes with a 24-inch (610 millimeter) wide, walk-behind, vibrating plate compactor capable of delivering at least 2000 lb (8.9 kN) of centrifugal force. **(Figure 12)** This should achieve 85% relative density of the stone determined in accordance with ASTM D-4253 and D-4254. In place density of the stone fill should be confirmed using ASTM D-6938. If you don't achieve a minimum of 85% relative density, place the stone in smaller lifts or apply more compaction effort until you do achieve desired density of the stone.

Place non-woven geotextile fabric between the drainstone and the remaining backfill material if specified.

Backfill behind the drainage aggregate with material as specified in the project construction documents. Place the lifts as specified, but not to exceed 9 inches (229 millimeter) maximum. Granular backfill shall be compacted to a minimum of 90% maximum density at ± 2% optimum moisture content as determined by a modified proctor test (ASTM D1557). Use proper equipment to insure complete compaction of the backfill material. It may be necessary to wet or dry the backfill material, place the material in smaller lifts, and/or apply more compaction effort to reach 90% maximum density. Do not use any organic, topsoil, frozen, soft, wet, or loose soils when backfilling the wall.

Re-check all units for level and alignment and sweep the top of each course of blocks clean before starting construction of the next course.

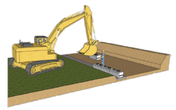


Figure 9

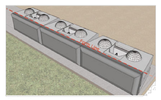


Figure 10

Figure 11

Figure 12

7. INSTALLING THE WALL DRAIN

A drain is placed behind the Redi-Rock wall blocks at the lowest elevation where the pipe can safely outlet to daylight. Drainage aggregate should be placed to the bottom of the drain as shown in the construction documents. A 4-inch (102 millimeter) perforated sock drain is commonly used for the drain pipe. Often the drain is encapsulated with drainage aggregate and wrapped with a non-woven geotextile fabric. The drain should run the entire length of the wall and needs to have proper outlets on the ends and at regularly spaced points along the wall. Solid pipe should be used for weep hole outlets through the face or under the retaining wall. **(Figure 13)**

Care needs to be taken during installation to avoid crushing or damaging the drain pipe or outlets.

8. SETTING UPPER ROWS OF WALL BLOCKS

Once the backfill is fully placed and compacted for the block course below, place the next row of blocks in a running bond configuration with the vertical joint of the lower block units centered under the mid-point of the block units above. If needed, a half block can be used at the end of every other row to maintain a running bond. **(Figure 14)**

Push the Redi-Rock blocks forward until the groove on the bottom of the block comes in full contact with the knobs on the blocks below. Adjacent blocks shall be placed with their front edges tightly abutted together.

Place non-woven geotextile fabric in the vertical joint between the blocks, and place and compact the drainage aggregate and backfill material the same way you did for the bottom row.

Never install more than one course of blocks without placing and compacting drainage aggregate and backfill to the full height of the block units. Placing multiple courses of blocks without backfill will prevent the proper placement and consolidation of the drainage aggregate between the blocks.

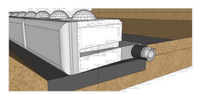


Figure 13

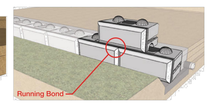


Figure 14

13. CAP INSTALLATION

Cap or step blocks are commonly used on top of freestanding walls to provide a finished look. **(Figure 25)**

Mark the center of the freestanding blocks to monitor the correct running bond spacing.

Secure the cap with construction adhesive, polyurethane sealant, or mortar. If construction adhesive is used, it should meet the requirements of ASTM D3498 and C557 and HUD/FHA Use of Materials Bulletin #60. Two examples are Titebond Heavy Duty Construction Adhesive by Franklin International or PL Premium Construction Adhesive. If polyurethane sealant is used, it should be one-component, highly-flexible, non-priming, gun-grade, high-performance elastomeric polyurethane sealant with movement of ± 25% per ASTM C719, tensile strength greater than 200 psi (1.4 MPa) per ASTM D412, and adhesion to peel on concrete greater than 20 PLI per ASTM C794.

Adhesive or sealants should be applied in 1.5 inch (38 millimeter) diameter round "Hershey Kiss" shaped dollops located in two rows at the top of the freestanding blocks at 8 inches (203 millimeter) on center.

Caps can be cut as needed for proper alignment. If desired, grout the joints between cap blocks after installation with a non-shrink grout.

Figure 25

ADDITIONAL IMPORTANT NOTES:

1. Best practice dictates that wall construction should continue without interruption or delays. This will help expedite construction and minimize the time the excavation is open.
2. The construction site should be graded and maintained to direct surface water runoff away from the retaining wall throughout the entire construction process.
3. Do not exceed the allowable construction tolerances specified in the contract documents, plans, and specifications. At no time should tolerances at the wall face exceed 1" vertically and 1 inch in 10 feet (25.4 millimeters in 3048 millimeters) (1:120) horizontally.
4. Immediately report the following site conditions, if encountered, to the Engineer or Owner's representative to determine the corrective action needed:
   - Any observed groundwater seepage.
   - Surface water run-off directed toward the retaining wall during construction.
   - Erosion or scour of material near the wall.
   - Ponded water near the wall.
   - Wet, soft, or easily compressible soils in the foundation zone.
   - Existing rock that differs in location from that shown on the project plans or rock located above the elevation of the bottom of the leveling pad.
   - Existing or proposed toe or crest slopes that differ from typical cross-sections shown in the project plans.
   - Any other items not specifically mentioned which raise questions or cause concerns during wall construction.

Immediately implement any corrective action before resuming wall construction.

811 Know what's below. Call before you dig. 1-(800) 962-7962

DAVID A. GOESSL, PE
CIVIL ENGINEER
622 SPROUT BROOK ROAD
PUTNAM VALLEY, NY 10579 (914) 227-0258

PROPOSED SITE IMPROVEMENTS TO
GAVI RESTAURANT
15 OLD ROUTE 22, ARMONK, NY 10504

PREPARED BY: DAVID GOESSL, P.E. PREPARED FOR: FRANCO DECARLO

DATE: APRIL 26, 2023 SCALE: NONE SHEET: 9 OF 9

STATE OF NEW YORK · DAVID ALLEN GOESSL · No. 081017 · LICENSED PROFESSIONAL ENGINEER

NO.	REVISION	DATE

STORMWATER POLLUTION PREVENTION PLAN AND OPERATION AND MAINTENANCE FOR DRAINAGE SYSTEM

Prepared for Construction Activities Involving Commercial Retail Building, Parking Lot, Drainage and Related Improvements

SWPPP Prepared for:

Franco DeCarlo – Gavi Restaurant
15 Old Route 22
Armonk, NY 10504

SWPPP Prepared By:

David A. Goessl, P.E.
622 Sprout Brook Road
Putnam Valley, NY 10579

SWPP Preparation Date:

April 26, 2023

Project Timeline:

August 2023 to July 2024

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Table of Contents

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CONTRACTOR CERTIFICATION
STATEMENTS
FOR SWPPP COMPLIANCE

PROPERTY LOCATION: 15 Old Route 22, Armonk, NY 10504

I. CONTRACTOR CERTIFICATION FOR SWEC COMPLIANCE:

THE UNDERSIGNED HEREBY CERTIFIES AND AGREES TO COMPLY WITH THE TERMS AND CONDITIONS OF THE STORM WATER, POLLUTION PREVENTION PLAN AND AGREES TO IMPLEMENT ANY AND ALL CORRECTIVE ACTIONS IDENTIFIED BY THE NYSDEC QUALIFIED INSPECTOR AND/OR TOWN ENGINEER AND/OR BUILDING INSPECTOR DURING ALL SITE INSPECTIONS. FURTHERMORE THE UNDERSIGNED UNDERSTANDS THAT THE OWNER AND/OR PERMIT HOLDER SHALL COMPLY WITH ALL LOCAL CODES FOR STORMWATER MANAGEMENT AND ALL TERMS AND CONDITIONS OF NEW YORK STATE POLLUTANT DISCHARGE ELIMINATION SYSTEM (SPDES) GENERAL PERMIT FOR STORMWATER DISCHARGES FROM ACTIVE CONSTRUCTION SITES AS IT IS UNLAWFUL FOR ANY PERSON TO CAUSE OR CONTRIBUTE TO A VIOLATION(S) OF WATER QUALITY STANDARDS.

NAME:_____

SIGNATURE:_____

DATED:_____

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PROPERTY OWNER CERTIFICATION
STATEMENTS
FOR SWPPP COMPLIANCE

PROPERTY LOCATION: 15 Old Route 22, Armonk, NY 10504

OWNER ACKNOWLEDGEMENT FOR POST CONSTRUCTION MAINTENANCE & COMPLIANCE:

1. **PRIOR TO THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY, THE APPLICANT SHALL PROVIDE A MAINTENANCE SCHEDULE AND PROCEDURES FOR ALL PROPOSED STORMWATER MANAGEMENT INFRASTRUCTURE.**

2. **PRIOR TO THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY, THE APPLICANT SHALL PROVIDE A MAINTENANCE AGREEMENT FOR THE PROPOSED STORMWATER MANAGEMENT FEATURES FOR REVIEW BY THE TOWN CONSULTING ENGINEER.**

3. **PRIOR TO THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY, THE APPLICANT SHALL SUBMIT A STORMWATER AS-BUILT SURVEY THAT INCLUDES TOPOGRAPHY AND THE LOCATION, RIM ELEVATIONS AND INVERT ELEVATIONS OF ALL ON-SITE STORMWATER FACILITIES FOR REVIEW BY THE TOWN CONSULTING ENGINEER.**

4. **PRIOR TO THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY, A CONSTRUCTION, MAINTENANCE, AND INSPECTION DECLARATION FOR THE STORMWATER MANAGEMENT FACILITIES INSTALLED, IN A FORM SATISFACTORY TO THE TOWN, SHALL BE FULLY EXECUTED AND SUBMITTED TO THE BUILDING DEPARTMENT WITH PROOF THAT THE DECLARATION HAS BEEN RECORDED IN THE WESTCHESTER COUNTY CLERK'S OFFICE.**

NAME:_____

SIGNATURE:_____

DATED:_____

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STORMWATER POLLUTION PREVENTION PLAN
FOR
15 Old Route 22, Armonk, NY 10504

1. INTRODUCTION: This Stormwater Pollution Prevention Plan and Stormwater Analysis presents the proposed Best Management Practices (BMPs) to control erosion, sedimentation, and manage stormwater during the demolition and reconstruction of a commercial-retail building, parking lot, sidewalks, site regrading, installation of retaining walls, landscaping and related stormwater infiltration system on a ¾ acre site located at 15 Old Route 22, Armonk, NY 10504 (SBL 107.04-02-16) in the Town of North Castle (Armonk), Westchester County, New York. The subject property, originally formed from a 1927 subdivision, is located within the Kensico Reservoir Drainage Basin. The topography of the property is relatively level with a modest slope from east to west. The property is near, but totally elevated above a FEMA special floodplain hazard area. There are no environmentally critical areas such as wetlands or watercourses. A manmade reconstructed wetland, owned by New York City Department of Environmental Protection, is near by just due west of the subject property.

The plan consists of this SWPPP narrative and a set of draft plans on file with the Town of North Castle Planning Department prepared by David A. Goessl, PE dated April 26, 2023. The proposed development and supporting stormwater design are in accordance with the Town of North Castle local zoning, building and stormwater management codes with plans having been prepared to meet the requirements of the New York State Department of Environmental Conservation (NYSDEC). As initially prepared and submitted, the total site disturbance is determined to be greater than 5,000 square feet. As such, the project does require NYSDEC permitting pursuant to the Phase II regulations under General Permit GP-0-15-002 for construction activity located in the East of Hudson Watershed.

2. PRE-DESIGN INVESTIGATIVE ANALYSIS: A pre-design investigative analysis was performed including preliminary percolation tests in the vicinity of the proposed parking lot stormwater management system as shown on the plans to evaluate potential stormwater mitigation practice using infiltration technology. The test hole(s) were presoaked 24 hours in advance with testing results indicating a stabilized percolation rate of 30 minutes for a 3-inch drop. Test pit excavation revealed brown sandy loam topsoil materials consistent with published NRCS soil data for the property. No signs of ledge rock, mottling or ground water were encountered. Weather permitting, additional deep test pit analysis and repeated percolation testing will be performed to a depth of 3-feet below the proposed drywells in the locations where they are specified.

3. STORMWATER MANAGENMENT METHODOLOGY: The stormwater analysis was developed utilizing the rational theory methodologies as provided for in the NYSDEC "New York State Stormwater Management Design Manual" (SMDM), latest edition and "Controlling Urban Runoff: A practical Manual for Planning and Designing Urban BMP'S", by the Metropolitan Washington Council of Governments and NRCS "TR-55 Modeling for Urban Hydrology for Small Watersheds." A design storm consisting of a 25-year, 24-hour rain event of 6.4 inches was modeled, data for which was obtained from NRCS, and Cornell University entitled Extreme Precipitation in New York and New England Interactive Tool available on the following website http://precip.eas.cornell.edu/. The "Complex Number" (CN) value

determination is based on soil type, vegetation, and land use. See Soil Map & Report contained herein. Credit for percolation was taken for soil properties obtained by in situ percolation field testing. The preliminary design consists of fourteen (14) Cultec 330XLHD infiltration units sized to manage all of the proposed impervious surfaces created from the commercial building and paved parking areas. Six (6) municipal grade pre-cast concrete catch basins with sumps are to be installed in parking lot areas collecting runoff with discharge into the aforementioned drywells. Stormwater quantity and quality have been analyzed in accordance with the guidelines set forth in the NYSCEC SMDM with calculations demonstrating adequate drywell and pipe routing sizing.

4. PRE-DEVELOPED CONDITIONS: The project site is approximately three quarters of an acre and is located in the Roadside Business (RB) Zoning District of the Town of North Castle. As noted earlier, the topography of the land gradually sloped from east to west with a gradual average slope of approximately eight percent the lot width of 100 feet. The property is zoning compliant with existing impervious coverages totaling 8,601 square feet, otherwise stated as 25.8 percent of the total lot area. Developed features of the property consist of two existing commercial buildings totaling 3,640 square feet, asphalt concrete driveway of 2,786 square feet, a 4,400 gravel parking area along with 2,045 square feet of patio and walkways. All other areas are observed as being maintained as open space with periphery vegetated plantings and tree lines. The property is serviced by municipal sewer and water. There do not appear to be any pre-existing stormwater management features. A customized soils report obtained from the USDA NRCS website http://www.nrcs.usda.gov characterizes the soils on the property as consisting of 100 percent smoothed udorthents (Ud), a complex of hydrologic soil Group B soils, previously altered, which possess moderate to well-draining soils characteristics. For stormwater modeling, the entire site is considered a single watershed with analysis consisting of treatment of 25-year, 24 hour runoff for the net increase in impervious coverages.

5. POST-DEVELOPED CONDITIONS: The proposed development includes the demolition and reconstruction of a retail building, construction of paved parking areas, concrete sidewalk, landscaping, and requisite stormwater management system. The developed condition would consist of approximately 25,693 square feet of new impervious surfaces for the property which would bring the total coverages to 77.3 percent; all of which falls within zoning requirements. The proposed activity requires approvals from the Town Planning Board and Board of Architectural Review prior to Building Permit submission. Zoning Variances do not appear to be required as the action meets the local zoning code for area and use. As previously mentioned, the proposed stormwater management system consists of fourteen (14) Cultec 330XLHD infiltration units sized to manage all of the proposed impervious surfaces created from the building and paved areas with collection sources consisting of pre-cast concrete catch basins with sumps that meets NYSDEC standards for water quality pre-treatment. A modular block gravity retaining wall is proposed along the parking lot proposed to the north. Improvements proposed along the public right of way include a new 5 foot width concrete sidewalk containing ADA compliant ramps at each of the three intersecting driveways. Outdoor decorative lighting is proposed in each of the two parking lots. Van accessible ADA parking is provided as per code.

6. LIST OF REQUISITE PERMITS AND APPROVALS: The following is a list of permits and approvals required for the project.

- Town of North Castle Planning Board – Site Plan
- Town of North Castle Planning Board BAR
- Town of North Castle Planning Conservation Board – Possible referral
- Town of North Castle Building Permits
- Town of North Castle Stormwater Management Permit,
- Town of North Castle Street Opening Permit,
- Local Permits for Plumbing and Electric, and
- NYSDEC Region 3 SWPPP permitting.

7. NYSDEC Standards and Specifications for Erosion and Sediment Control Design Manual Considerations: The engineering plans provided include relevant design guidelines and specifications related to a commercial site plan development project. The following listing taken from Chapter 3 of the design manual are design guidelines for mitigating practices taken into consideration with this SWPPP design report and are included in the appendix. NYSDEC reference material is provided for: 1.) Stabilized Construction Access, 2.) Concrete Washout Areas 3.) Silt Fencing, 4.) Straw Bale Dikes, 5.) Drop Inlet Protections, 6.) Vegetation Protection, 7.) Topsoil Restoration 8.) Temporary Restoration with Seed, 9.) Permanent Restoration with Seed, and 10.) Permanent Restoration with Sod.

8. CONSTRUCTION PHASE: During the construction phase of the project, a sediment and erosion control plan shall be implemented in accordance with the Town of North Castle local code, the New York State Department of Environmental Conservation's Design Manuals and NYSDEC Region 3 SWPPP permitting. The primary goals of the sediment and erosion control plan are to protect adjacent public right of ways and private properties by preventing discharges of silt laden waters during precipitation events while preventing the tracking of dirt and mud onto adjacent roads and municipal drainage facilities. Consistent with code, approved plans, with conditions set forth in this SWPPP narrative and issued permits, will comprise the basis for which sediment and erosion control maintenance and inspection oversight. During construction, the party responsible for implementing the temporary Stormwater Management facilities Maintenance Program will be the owner and their selected contractors as recorded on approved permits on file with the TOWN. A New York State Professional Engineer or Certified Professional in Erosion and Sediment Control (P.E. or CPESC) may assess 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. Given the scope of work proposed for this project, a full NYSDEC SWPPP permit is required.

9. TYPICAL CONSTRUCTION SEQUENCING SCHEDULE: The following erosion control schedule shall be utilized:

- Install construction fencing around areas to be used for exfiltration to avoid compaction.
- Install a temporary stabilized construction entrance to the development area.
- Establish construction staging area within confines of limits of disturbance.

- Install all tree protections for trees as noted on plans.
- Selective vegetation removal for silt fence installation.
- Install silt fence down slope of all areas to be disturbed as shown on the plan.
- Install concrete truck washout area.
- Remove vegetation where necessary (clear & grub) for the proposed construction.
- Strip topsoil and stockpile for reuse. Cover with tarp and enclose with silt fencing materials in accordance with approved plans.
- Demolish any existing site features and/or structures noted as being removed on the construction documents and dispose of all non-salvageable materials off-site.
- Commence construction of proposed developed features (pool, patio, drainage, and equipment.
- Install stormwater management system in accordance with approved plans.
- Perform final grading and spreading of topsoil materials.
- Perform landscaping and final restoration.
- Maintain all essential sediment and erosion controls and continue all site monitoring, inspections and record keeping until the site is fully stabilized and lawn areas established. Soil erosion and sediment control maintenance should occur weekly and prior to and after every ½" or greater rainfall event.

10. EROSION AND SEDIMENT CONTROL COMPONENTS: The primary goal 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 spraying of water on arid soil surfaces.

All proposed soil erosion and sediment control practices have been designed in accordance with the following publications:

- "New York State Department of Environmental Conservation (NYSDEC)Standards and Specifications for Erosion and Sediment Control," latest edition.
- "Westchester County's Best Management Practices for Sediment and Erosion Control"
- New York State General Permit for Stormwater Discharges, GP-0-15-002.
- "Reducing the Impacts of Stormwater Runoff from New Development," as published by the New York State Department of Environmental Conservation (NYSDEC),

The proposed soil erosion and sediment control devices generally include the planned erosion control practices outlined below. Maintenance procedures for each erosion control practice have

also been outlined below.

A. 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 any 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. 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. If any "bulges" develop in the fence, that section of fence shall be replaced within 48 hours with new fence section. Any sediment built-up against the fence shall be removed within 48 hours and deposited on-site a minimum of one hundred feet outside of any wetland or watercourse.

B. INLET PROTECTION: After any catch basin drain inlets have been installed, the contractor shall install ¾ inch stone aggregate around the perimeter of all drain inlets as illustrated on the approved plans. As an alternative, staked hay bales may be used. This barrier will allow stormwater to be filtered prior to reaching the basin inlet grate. 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 is properly located and secure and does 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 one hundred feet from wetland or watercourse. Once the parking areas are resurfaced, the contractor shall install "drop in basket" type catch basin filters.

C. TREE PROTECTION: All significant trees to be preserved located within the limits of disturbance and on the perimeter of the disturbance limits shall be protected from harm by erecting a three foot high (minimum) snow fence completely surrounding the tree. Snow fence should extend to the dripline of the tree to be preserved. Trees designated to be protected shall be identified during the staking of the limits of disturbance for each construction phase. The snow fence shall be inspected daily to ensure that the perimeter of the fence remains at the dripline of the tree to be preserved. Any damaged portions of the fence shall be repaired or replaced within 48 hours. Care shall also be taken to ensure that no construction equipment is driven or parked within the dripline of the tree to be preserved.

D. SOIL STOCKPILING: All soil stripped from the construction area during initial grading shall be stockpiled in locations as provided for in the approved plan, but in no case shall it be placed within 100 feet of a wetland or watercourse. The stockpiled soil 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. 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.

E. GENERAL LAND GRADING: The intent of the Erosion & Sediment Control Plan is to control disturbed areas such that soil is 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 twelve 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.

F. SURFACE STABILIZATION: All disturbed will be protected from erosion with the use of vegetative measures (i.e., grass seed mix, sod) hydroseed, straw much 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.

G. DEWATERING: Prevent surface water and subsurface or ground water from flowing into excavations and trenches. Pump out any accumulated water through suitable measure to screen any suspended soils. Provide temporary controls to restrict the velocity of discharged water as necessary to prevent secondary erosion and siltation of receiving areas.

11. CONSTRUCTION PRACTICES TO MINIMIZE STORMWATER CONTAMINATION: The following guidelines are presented as minimum measures 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 the following activities:

A. Waste Materials: 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 to prevent contaminants from leaving the site. Silt fencing shall be inspected on a weekly basis.

B. Materials Transport: Dump trucks hauling material from the construction site will be covered with a tarpaulin.

C. Right of Ways & Site Access: The paved street adjacent to the site entrance will be swept daily to remove excess mud, dirt, or rock tracked from the site. Anti-tracking pads shall be used and maintained in accordance with approved plans.

D. Stored Fuels: Petroleum products will be stored in tightly sealed containers that are clearly labeled. All generators, heavy equipment and/or vehicles on shall be properly maintained. All spills shall be cleaned 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 shall be readily accessible.

E. Chemicals: All construction liquids, paints, primers, and other liquid compound containers shall be tightly sealed and stored when not required for use. Excess paint in open containers shall not be exposed to rain or discharged to the storm system.

F. Sanitary Facilities: 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.

G. Spill Control & Response Activities: For all hazardous materials stored on site, the manufacturer's recommended methods for spill cleanup will be clearly posted. Site personnel will be made aware of the procedures, and the locations of the information and cleanup supplies. Appropriate MSDS sheets shall be made available where applicable. The spill area will be kept well ventilated, and personnel will wear appropriate protective clothing to prevent injury from contact with a hazardous substance. 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. 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.

H. 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/EMS
- Town of North Castle Fire Department
- NYS Department of Environmental Conservation (NYSDEC) Spill Reporting Hotline 1-(800) 457–7362
- National Response Center: 1-(800) 424-8802
- Local Emergency Planning Committee (LEPC) Westchester County Office of Emergency Management, 200 Bradhurst Avenue Hawthorne, NY 10532 (914) 864–5450Westchester 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

12. 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:

A. **Erosion & Sediment Control Maintenance**: 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.

B. **Stormwater Facilities Maintenance**: 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 one-half" (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.

C. **Drainage Sumps**; 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. For this project, permanent "drop in basket" type filters are proposed. Thes basket and 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 the 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 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.

D. **Infiltration Chambers**: The proposed Cultec Infiltration units shall be installed in accordance to approved plans and manufacturer's specification. Installation shall include inspection ports for each of the chambers installed. The runoff to said chambers shall route passively through collective devices (filter fabric curtain drain, yard drain with sump) that shall capture solids prior to discharge. The subsurface infiltration chambers shall be inspected immediately after construction. The owner shall follow the manufacturer's published literature for operations and maintenance and provide necessary documentation to local officials that may be required.

13. CONCLUSION: The stormwater management plan proposed herein in this SWPPP document is intended to complement any approvals received by the Town of North Castle and NYSDEC Region 3 SWPPP permitting. In our professional opinion, the plan provided for the subject property 15 Old Route 22, is designed to meet all the requirements and regulations set forth by the Town and the New York State Department of Environmental Conservation (NYSDEC) while complying with regulations for construction activities within public right of ways.

APPENDIX

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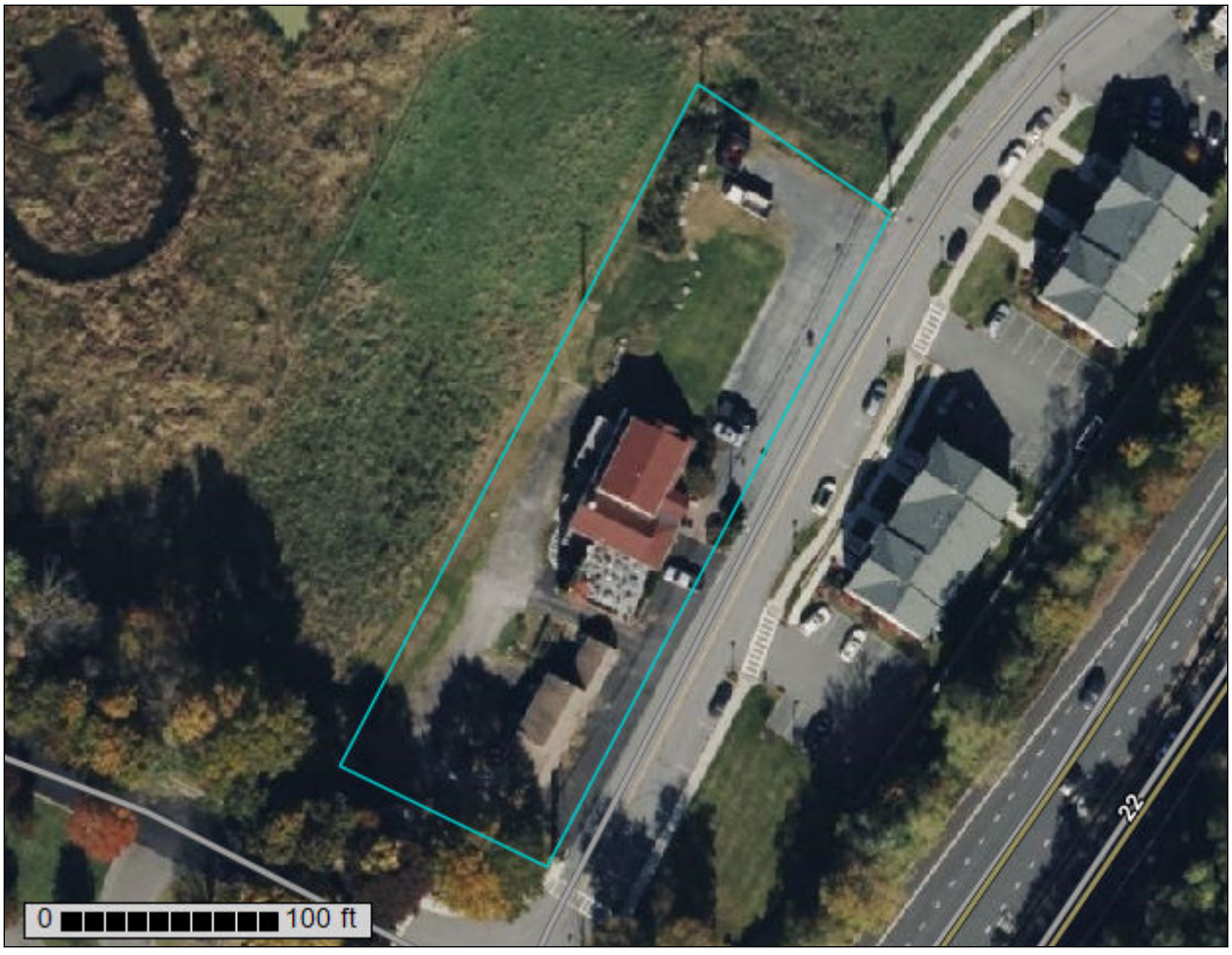
United States Department of Agriculture

NRCS

Natural Resources Conservation Service

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

Custom Soil Resource Report for Westchester County, New York



May 17, 2023

Preface

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

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

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

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

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

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

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Contents

How Soil Surveys Are Made

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

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

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

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

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

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

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

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

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

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

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

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

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

Soil Map

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

Custom Soil Resource Report
Soil Map

Map Scale: 1:643 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 5 10 20 30

Feet
0 30 60 120 180

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

MAP LEGEND

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

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

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Westchester County, New York
Survey Area Data: Version 18, Sep 10, 2022

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

Date(s) aerial images were photographed: Oct 21, 2022—Oct 27, 2022

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Ub	Udorthents, smoothed	0.9	100.0%
Totals for Area of Interest		**0.9**	**100.0%**

Map Unit Descriptions

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

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

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

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

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

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

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

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

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

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

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

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

Westchester County, New York

Ub—Udorthents, smoothed

Map Unit Setting

National map unit symbol: bd7f
Elevation: 0 to 1,080 feet
Mean annual precipitation: 46 to 50 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 115 to 215 days
Farmland classification: Not prime farmland

Map Unit Composition

Udorthents, smoothed, and similar soils: 80 percent
Minor components: 2 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents, Smoothed

Typical profile

H1 - 0 to 4 inches: gravelly loam
H2 - 4 to 70 inches: very gravelly loam

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: 40 to 60 inches to lithic bedrock
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.06 to 5.95 in/hr)
Depth to water table: About 18 to 48 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Low (about 4.6 inches)

Minor Components

Sun

Percent of map unit: 2 percent
Landform: Depressions
Hydric soil rating: Yes

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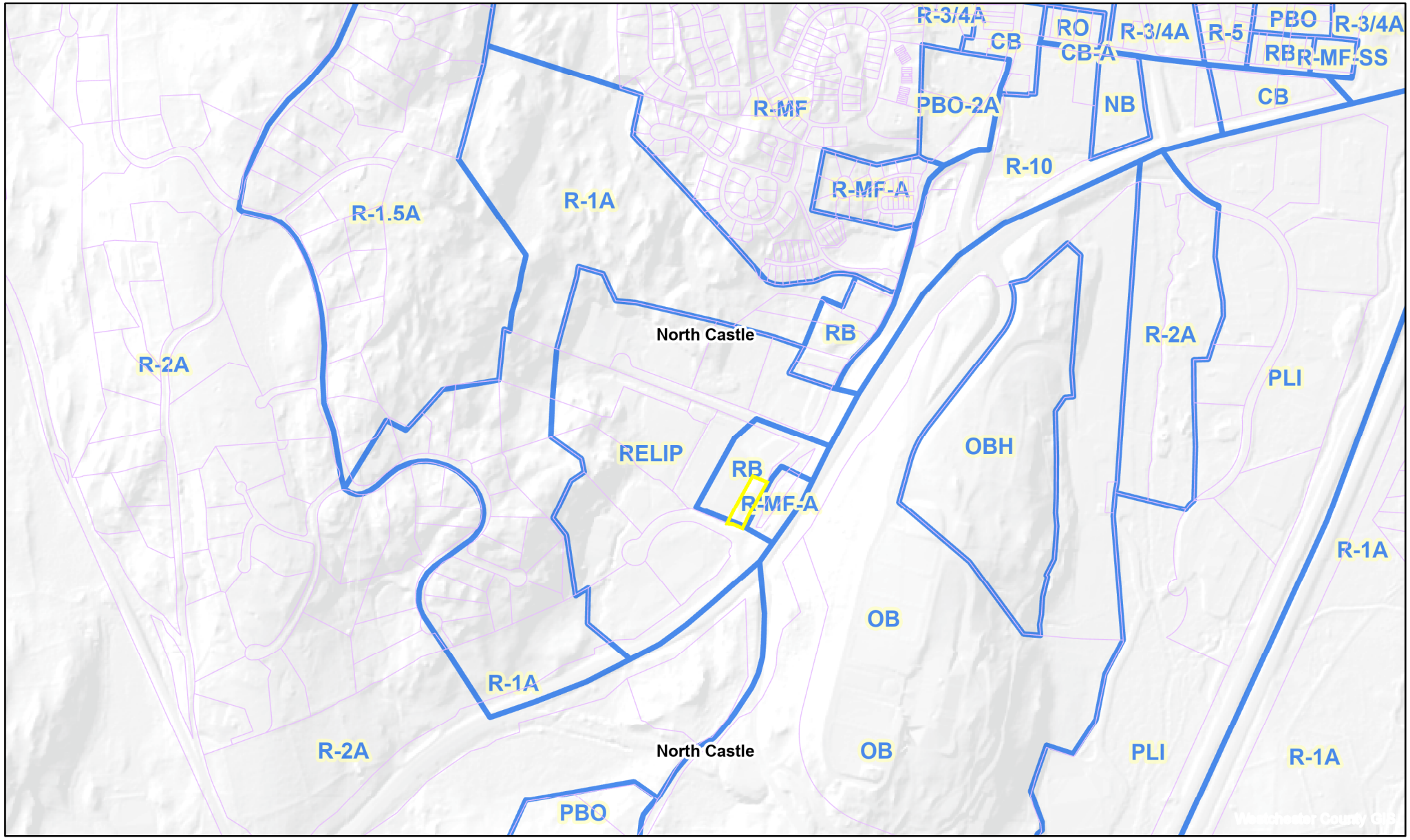
15 OLD RT 22. ID: 107.04-2-16 (North Castle)



May 20, 2023

1:10,000

0 475 950 1,900 ft

N

Tax parcel data was provided by local municipality. This map is generated as a public service to Westchester County residents for general information and planning purposes only, and should not be relied upon as a sole informational source. The County of Westchester hereby disclaims any liability from the use of this GIS mapping system by any person or entity. Tax parcel boundaries represent approximate property line location and should NOT be interpreted as or used in lieu of a survey or property boundary description. Property descriptions must be obtained from surveys or deeds. For more information please contact local municipality assessor's office.

Westchester County GIS

GIS GEOGRAPHIC INFORMATION SYSTEMS

http://giswww.westchestergov.com

Michaelian Office Building
148 Martine Avenue Rm 214
White Plains, New York 10601

STORMWATER DRAINAGE DESIGN
FOR
15 OLD ROUTE 22
ARMONK, NY 10504

The proposed storm water modeling utilized is for a net zero increase in site surface runoff. The modeling will capture surface water runoff from the increased impervious surfaces for the new building, paved parking areas, walkways and related. The total net increase of developed impervious surface areas, equating to 17,092 square feet, is modeled using the 24 hour, 25 year design storm of 6.4 inches. Proposed drainage consists of onsite percolation using Cultec Recharger drywells beneath the paved parking areas of the property surrounded by one foot of crushed processed gravel. Water quality pretreatment is proposed with use catch basin "drop in basket" type filters for the 6 proposed catch basins coupled with 1'-6" sumps provided in each of the basins.

LOT AREA FOR DESIGN:

DESCRIPTION	SQUARE FEET	CONVERSION	ACRES
Total Lot Area	33,302	43,560	0.765

PRE-DEVELOPMENT – EXISTING CONDITIONS

DESCRIPTION	SQUARE FEET	CONVERSION	ACRES	CURVE NUMBER
Total Lot Area	33,302	43,560	0.765	---
Buildings	3,640	43,560	0.084	98
Parking Lot	2,786	43,560	0.064	98
Patios, Walls & W	2,175	43,560	0.050	98
Open Space	24,701	43,560	0.567	72

COMPOSITE CURVE NUMBER = **78.7**
TOTAL IMPERVIOUS AREAS = **8,686** **SF**

POST-DEVELOPMENT – PROPOSED CONDITIONS

DESCRIPTION	SQUARE FEET	CONVERSION	ACRES	CURVE NUMBER
Total Lot Area	33,302	43,560	0.765	---
Buildings	4,900	43,560	0.112	98
Parking Lot	18,320	43,560	0.421	98
Patios, Walls & W	2,269	43,560	0.052	98
Dumpster Pad	204	43,560	0.005	98
Open Space	7,609	43,560	0.175	72

COMPOSITE CURVE NUMBER = **92.1**
TOTAL IMPERVIOUS AREAS = **24,848** **SF**

WATER QUANTITY VOLUME ANALYSIS:

- Reference NYSDEC Stormwater Design Manual Chapter 4 and NRCS TR-55 Modeling for Urban Hydrology for Small Watersheds
- Design Storm used is 25 year, 24 hour

- Pre-Developed Composite Curve Number (CN) 78.7
- Post-Developed Composite Curve Number (CN) 92.1
- Rainfall Intensity (i) 6.4 Inches/day
- Pre-Developed Impervious Area (A) 8,686 ft^2
- Post-Developed Impervious Area (A) 24,848 ft^2

Using the TR-55 SCS Runoff Equation

Max Retention (S) = 1,000/(CN) -10
Runoff (Q) = (P – 0.2S)^2/(P+0.85S)
Runoff Volume (V) = Q x A

1.) Pre-Development Runoff Determination

Pre-Development S 2.704 Inches
Pre-Development Q 3.95 Inches

Pre-Development Vs = **2,856.8** **Cubic Feet**

2.) Post-Development Runoff Determination

Post-Development S ################ Inches
Post-Development Q 5.44 Inches

Post-Development Vs = **11,257.8** **Cubic Feet**

3.) Water Quantity Volume for Storage

Storage Volume = Vs post – Vs pre

Stor. Volume = **8,401.05** **Cubic Feet**

WATER QUALITY VOLUME ANALYSIS:

- Reference NYSDEC Stormwater Design Manual Chapter 4, Section 4.2

WQv = (P x Rv x A) / 12 — 90 % Rainfall Event (P) = 1.5 Inches
% Impervious Cover (I) = 0.75 %
Rv = 0.05 + 0.009 x I — Site Area (A) = 0.7645 Acres
Rv = 0.057 Acre-Ft

WQv = 0.00544 Acre-Ft
WQv = **236.78** **Cubic Feet**

RRv(min) = (P x Rv x $A_{IC\ x\ S}$) / 12 — Hydrologic Soil B, S = 0.4
New Impervious Cover (A_{IC}) = 0.5704 Acres

RRv(min) = 0.0016223 Acre-Ft

RRv(min) = **70.67** **Cubic Feet**

NOTES:

1. WQv is greater than RRv(min)
2. Storage provided by drywells is greater than WQv

SOIL PERCOLATION RATE:

a) Area of Percolation (A_p):

1) Surface Area of Cylinder (A_c)

Perc Hole Depth **32**
Diameter = **4** Inches
Water Depth (h_{avg}) **0** Inches

$Ac=\pi xDxh_{avg}$

Ac= **0.00** ft^2

2) Cylinder Bottom Area

$A_b=\pi*r^2$

A_b= **0.087** ft^2

3) Percolation Area

$A_p=A_c+A_b$

A_p= **0.09**

b) Volume of Percolation (V_p):

h= 1 inches
$V_p=A_b*h$
V_p= **0.007** ft^2

c) Soil percolation rate (Sr):

Time 12.00 minutes

S_r=volume / area / time

S_r= 0.00694 $ft^3/ft^2/min$
S_r= **10.00** $ft^3/ft^2/day$
-25%clogging factor adjustment
S_r= **7.50** **$ft^3/ft^2/day$**

VOLUME PER DRYWELL (Vw):

Cultec Recharger Stormwater Chamber, Model #: 330 XLHD

Chamber Volume (CF)	Stone Length (inches)	Stone Width (inches)	Stone Height (inches)	Stone Volume (CF)	# Units	Total Volume (CF)
52.27	126.00	76.00	42.50	73.30	1	125.57

Total Storage Provided, Vw = V_w= 125.57 ft^3

24-HOUR PERCOLATION VOLUME PER DRYWELL (Vp):

Percolation Volume of Drywell V_p= 498.75 ft^3

OF SIDES EXPOSED 2
OF ENDS EXPOSED 2
BOTTOM AREA UNIT 30.33 SF
BOTTOM AREA OF GRAVEL: 66.50 SF

TOTAL 24-HOUR VOLUME PER DRYWELL (Vt):

Cultec Recharger Stormwater Chamber, Model #: 330 XLHD
V_t= volume of drywells (Vw) + percolation volume (Vp)
V_t= 624.32 ft^3

NUMBER OF DRYWELLS REQUIRED (DWR):

DW_R= Required Volume of Storage (Vs) / Total Volume per Drywell (Vt)

DW_R= **13.46** **(Round to 14 Units)**

WATER QUALITY VOLUME ANALYSIS (WQv & Vt):

- Reference NYSDEC Stormwater Design Manual Chapter 4, Sections 4.2 and 4.3

Water Quality Volume (WQv) =	236.78	Cubic Feet	
Total Volume (Vt) of SMP's Provided =	8,740.48	Cubic Feet	NOTE: Storage provided by drywells is greater than WQv

- Reference NYSDEC Stormwater Design Manual Chapter 6, Sections 6.2 and 6.3

Water Quality Volume (WQv) =	236.78	Cubic Feet	
48 Hour Perc. Volume of Drywells (Vpx2) x #Units Proposed =	13,965.00	Cubic Feet	NOTE: Storage provided by drywells is sufficient for 48 hour dewatering of full WQv

WATER QUALITY VOLUME PRE-TREATMENT ANALYSIS:

- Reference NYSDEC Stormwater Design Manual Chapter 6, Sections 6.4.3

Camp-Hazen Equation $A_S = -1*(Q_0/W)\ln(1-E)$

A_S =	**1.91**	**Square Feet**

A_S = Sedimentation Basin Surface Area (ft^2)
E = Sedimentation Trap Efficiency (90%)
W = Particle Setling Velocity (0.0033FPS)
Q_0 = Basin Discharge Rate (WQv/24/3600)
WQv = Water Quality Volume

Calculations determine that fourteen Cultec Model 330XLHD chambers are sufficient to handle the design impervious surfaces while managing the design water quality volume (WQv). The proposed system meets NYSDEC design criteria for 48-hour infiltration of WQv. Furthermore the field determined infiltration rates meet the minimum design parameters of 0.5 inch/hour. The proposed stormwater management system consists of three sets of chambers surrounded by one foot of ¾ to 1½ inch nominal size processed gravel adjacent to the percolation test pit locations. For NYSDEC water quality pre-treatment qualification, all parking lot catch basins will contain 1-1/2 foot minimum depth sumps and each basin will be retrofitted with "drop in basket" type filters.

STANDARD AND SPECIFICATIONS FOR STABILIZED CONSTRUCTION ACCESS

Definition & Scope

A stabilized pad of aggregate underlain with geotextile located at any point where traffic will be entering or leaving a construction site to or from a public right-of-way, street, alley, sidewalk, or parking area. The purpose of stabilized construction access is to reduce or eliminate the tracking of sediment onto public rights-of-way or streets.

Conditions Where Practice Applies

A stabilized construction access shall be used at all points of construction ingress and egress.

Design Criteria

See Figure 2.1 on page 2.31 for details.

Aggregate Size: Use a matrix of 1-4 inch stone, or reclaimed or recycled concrete equivalent.

Thickness: Not less than six (6) inches.

Width: 12-foot minimum but not less than the full width of points where ingress or egress occurs. 24-foot minimum if there is only one access to the site.

Length: As required, but not less than 50 feet (except on a single residence lot where a 30 foot minimum would apply).

Geotextile: To be placed over the entire area to be covered with aggregate. Filter cloth will not be required on a single-family residence lot. Piping of surface water under entrance shall be provided as required. If piping is impossible, a mountable berm with 5:1 slopes will be permitted.

Criteria for Geotextile: The geotextile shall be woven or nonwoven fabric consisting only of continuous chain polymeric filaments or yarns of polyester. The fabric shall be inert to commonly encountered chemicals, hydro-carbons, mildew, rot resistant, and conform to the fabric properties as shown:

Fabric Properties[3]	Light Duty[1] Roads Grade Subgrade	Heavy Duty[2] Haul Roads Rough Graded	Test Method
Grab Tensile Strength (lbs)	200	220	ASTM D1682
Elongation at Failure (%)	50	60	ASTM D1682
Mullen Burst Strength (lbs)	190	430	ASTM D3786
Puncture Strength (lbs)	40	125	ASTM D751 Modified
Equivalent	40-80	40-80	US Std Sieve
Opening Size			CW-02215
Aggregate Depth	6	10	-

[1]Light Duty Road: Area sites that have been graded to subgrade and where most travel would be single axle vehicles and an occasional multi-axle truck. Acceptable materials are Trevira Spunbond 1115, Mirafi 100X, Typar 3401, or equivalent.

[2]Heavy Duty Road: Area sites with only rough grading, and where most travel would be multi-axle vehicles. Acceptable materials are Trevira Spunbond 1135, Mirafi 600X, or equivalent.

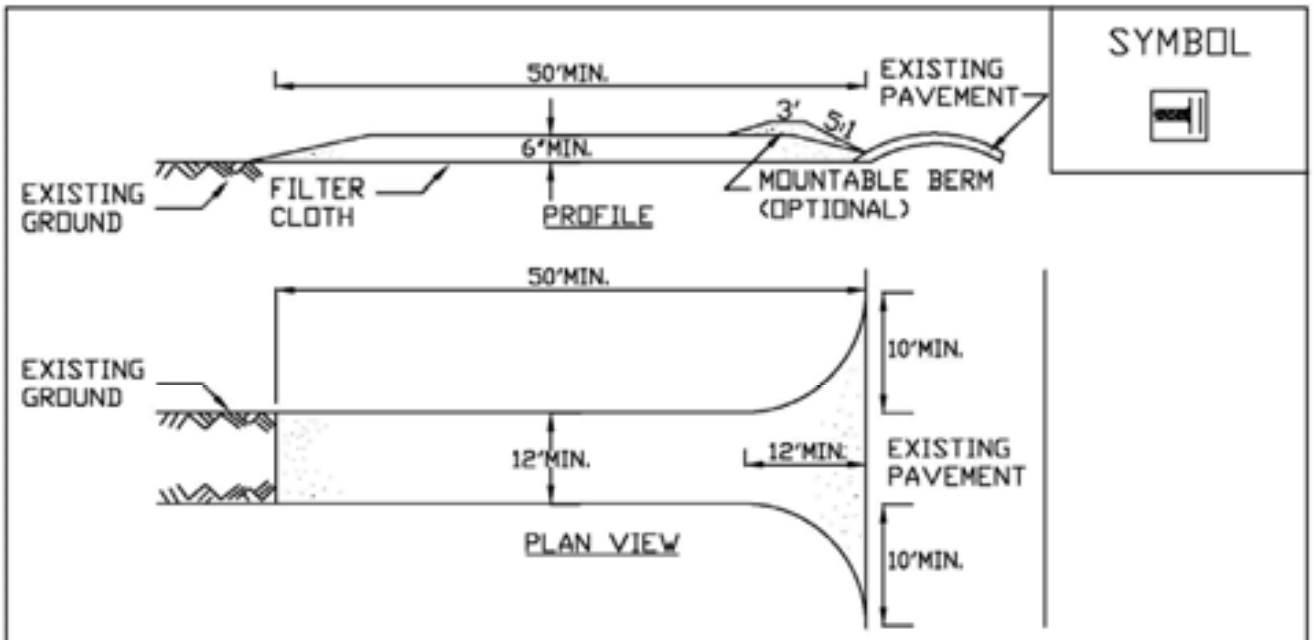
[3]Fabrics not meeting these specifications may be used only when design procedure and supporting documentation are supplied to determine aggregate depth and fabric strength.

Maintenance

The access shall be maintained in a condition which will prevent tracking of sediment onto public rights-of-way or streets. This may require periodic top dressing with additional aggregate. All sediment spilled, dropped, or washed onto public rights-of-way must be removed immediately.

When necessary, wheels must be cleaned to remove sediment prior to entrance onto public rights-of-way. When washing is required, it shall be done on an area stabilized with aggregate, which drains into an approved sediment-trapping device. All sediment shall be prevented from entering storm drains, ditches, or watercourses.

Figure 2.1
Stabilized Construction Access



CONSTRUCTION SPECIFICATIONS

1. STONE SIZE - USE 1-4 INCH STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY).
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.
4. WIDTH - TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
5. GEOTEXTILE - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ACCESS SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON A AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE

STABILIZED CONSTRUCTION ACCESS

STANDARD AND SPECIFICATIONS FOR CONCRETE TRUCK WASHOUT

Definition & Scope

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

Conditions Where Practice Applies

Washout facilities shall be provided for every project where concrete will be poured or otherwise formed on the site. This facility will receive highly alkaline wash water from the cleaning of chutes, mixers, hoppers, vibrators, placing equipment, trowels, and screeds. Under no circumstances will wash water from these operations be allowed to infiltrate into the soil or enter surface waters.

Design Criteria

Capacity: The washout facility should be sized to contain solids, wash water, and rainfall and sized to allow for the evaporation of the wash water and rainfall. Wash water shall be estimated at 7 gallons per chute and 50 gallons per hopper of the concrete pump truck and/or discharging drum. The minimum size shall be 8 feet by 8 feet at the bottom and 2 feet deep. If excavated, the side slopes shall be 2 horizontal to 1 vertical.

Location: Locate the facility a minimum of 100 feet from drainage swales, storm drain inlets, wetlands, streams and other surface waters. Prevent surface water from entering the structure except for the access road. Provide appropriate access with a gravel access road sloped down to the structure. Signs shall be placed to direct drivers to the facility after their load is discharged.

Liner: All washout facilities will be lined to prevent leaching of liquids into the ground. The liner shall be plastic sheeting with a minimum thickness of 10 mils with no holes or tears, and anchored beyond the top of the pit with an earthen berm, sand bags, stone, or other structural appurtenance except at the access point.

If pre-fabricated washouts are used they must ensure the capture and containment of the concrete wash and be sized based on the expected frequency of concrete pours. They shall be sited as noted in the location criteria.

Maintenance

- All concrete washout facilities shall be inspected daily. Damaged or leaking facilities shall be deactivated and repaired or replaced immediately. Excess rainwater that has accumulated over hardened concrete should be pumped to a stabilized area, such as a grass filter strip.
- Accumulated hardened material shall be removed when 75% of the storage capacity of the structure is filled. Any excess wash water shall be pumped into a containment vessel and properly disposed of off site.
- Dispose of the hardened material off-site in a construction/demolition landfill. On-site disposal may be allowed if this has been approved and accepted as part of the projects SWPPP. In that case, the material should be recycled as specified, or buried and covered with a minimum of 2 feet of clean compacted earthfill that is permanently stabilized to prevent erosion.
- The plastic liner shall be replaced with each cleaning of the washout facility.
- Inspect the project site frequently to ensure that no concrete discharges are taking place in non-designated areas.

STANDARD AND SPECIFICATIONS FOR SILT FENCE

Definition & Scope

A **temporary** barrier of geotextile fabric installed on the contours across a slope used to intercept sediment laden runoff from small drainage areas of disturbed soil by temporarily ponding the sediment laden runoff allowing settling to occur. The maximum period of use is limited by the ultraviolet stability of the fabric (approximately one year).

Conditions Where Practice Applies

A silt fence may be used subject to the following conditions:

1. Maximum allowable slope length and fence length will not exceed the limits shown in the Design Criteria for the specific type of silt fence used ; and
2. Maximum ponding depth of 1.5 feet behind the fence; and
3. Erosion would occur in the form of sheet erosion; and
4. There is no concentration of water flowing to the barrier; and
5. Soil conditions allow for proper keying of fabric, or other anchorage, to prevent blowouts.

Design Criteria

1. Design computations are not required for installations of 1 month or less. Longer installation periods should be designed for expected runoff.
2. All silt fences shall be placed as close to the disturbed area as possible, but at least 10 feet from the toe of a slope steeper than 3H:1V, to allow for maintenance and roll down. The area beyond the fence must be undisturbed or stabilized.
3. The type of silt fence specified for each location on the plan shall not exceed the maximum slope length and maximum fence length requirements shown in the following table:

		Slope Length/Fence Length (ft.)		
Slope	Steepness	Standard	Reinforced	Super
<2%	< 50:1	300/1500	N/A	N/A
2-10%	50:1 to 10:1	125/1000	250/2000	300/2500
10-20%	10:1 to 5:1	100/750	150/1000	200/1000
20-33%	5:1 to 3:1	60/500	80/750	100/1000
33-50%	3:1 to 2:1	40/250	70/350	100/500
>50%	> 2:1	20/125	30/175	50/250

Standard Silt Fence (SF) is fabric rolls stapled to wooden stakes driven 16 inches in the ground.
Reinforced Silt Fence (RSF) is fabric placed against welded wire fabric with anchored steel posts driven 16 inches in the ground.
Super Silt Fence (SSF) is fabric placed against chain link fence as support backing with posts driven 3 feet in the ground.

4. Silt fence shall be removed as soon as the disturbed area has achieved final stabilization.

The silt fence shall be installed in accordance with the appropriate details. Where ends of filter cloth come together, they shall be overlapped, folded and stapled to prevent sediment bypass. Butt joints are not acceptable. A detail of the silt fence shall be shown on the plan. See Figure 5.30 on page 5.56 for Reinforced Silt Fence as an example of details to be provided.

Criteria for Silt Fence Materials

1. Silt Fence Fabric: The fabric shall meet the following specifications unless otherwise approved by the appropriate erosion and sediment control plan approval authority. Such approval shall not constitute statewide acceptance.

Fabric Properties	Minimum Acceptable Value	Test Method
Grab Tensile Strength (lbs)	110	ASTM D 4632
Elongation at Failure (%)	20	ASTM D 4632
Mullen Burst Strength (PSI)	300	ASTM D 3786
Puncture Strength (lbs)	60	ASTM D 4833
Minimum Trapezoidal Tear Strength (lbs)	50	ASTM D 4533
Flow Through Rate (gal/ min/sf)	25	ASTM D 4491
Equivalent Opening Size	40-80	US Std Sieve ASTM D 4751
Minimum UV Residual (%)	70	ASTM D 4355

2. Fence Posts (for fabricated units): The length shall be a minimum of 36 inches long. Wood posts will be of sound quality hardwood with a minimum cross sectional area of 3.5 square inches. Steel posts will be standard T and U section weighing not less than 1.00 pound per linear foot. Posts for super silt fence shall be standard chain link fence posts.

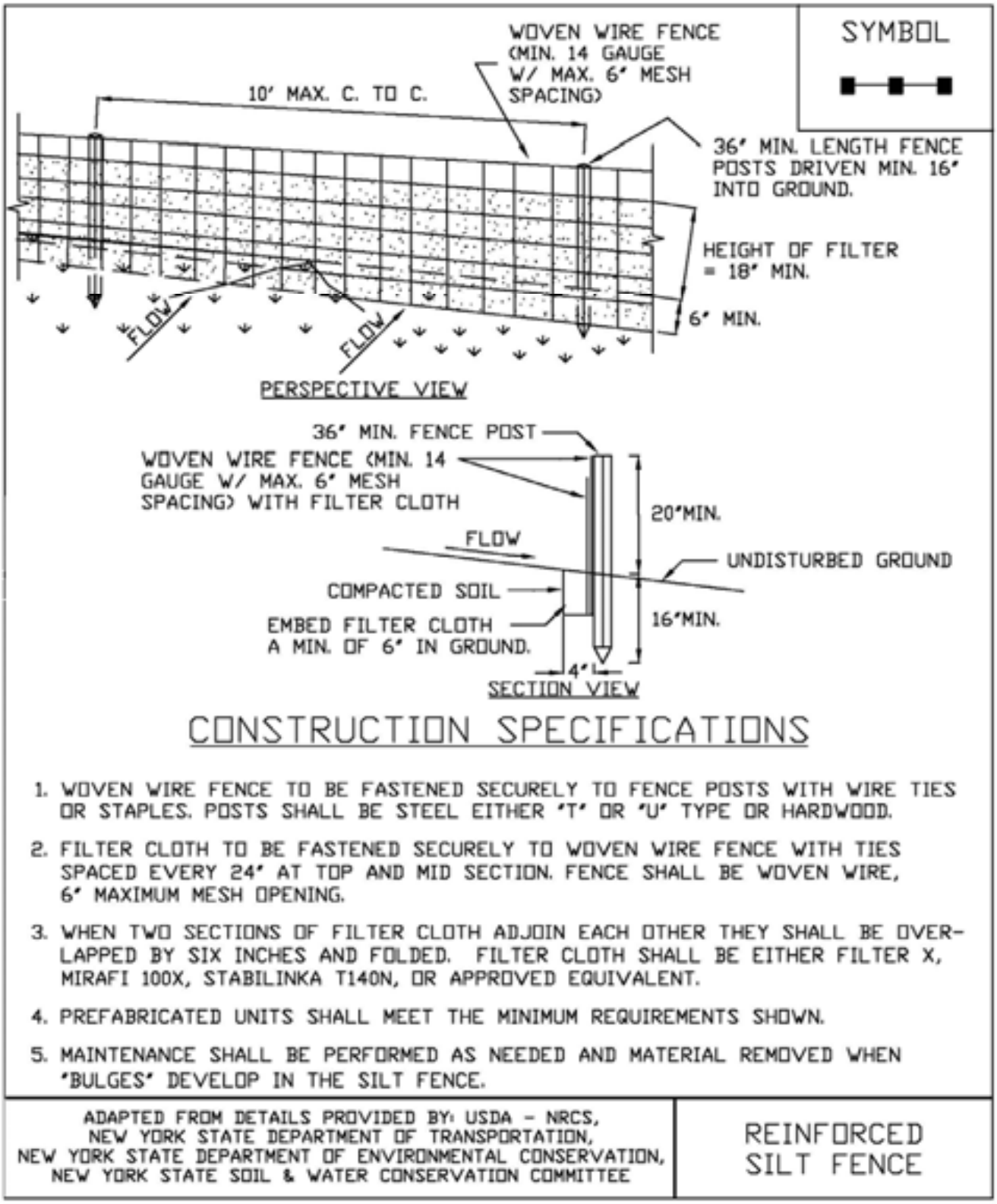
3. Wire Fence for reinforced silt fence: Wire fencing shall be a minimum 14 gage with a maximum 6 in. mesh opening, or as approved.

4. Prefabricated silt fence is acceptable as long as all material specifications are met.

Super Silt Fence

Reinforced Silt Fence

Figure 5.30
Reinforced Silt Fence



STANDARD AND SPECIFICATIONS FOR STRAW BALE DIKE

Definition & Scope

A **temporary** barrier of straw, or similar material, used to intercept sediment laden runoff from small drainage areas of disturbed soil to reduce runoff velocity and effect deposition of the transported sediment load. Straw bale dikes have an estimated design life of three (3) months.

Condition Where Practice Applies

The straw bale dike is used where:

1. No other practice is feasible.
2. There is no concentration of water in a channel or other drainageway above the barrier.
3. Erosion would occur in the form of sheet erosion.
4. Length of slope above the straw bale dike does not exceed the following limits with the bale placed 10 feet from the toe of the slope:

Constructed Slope	Percent Slope	Slope Length (ft.)
2:1	50	25
3:1	33	50
4:1	25	75

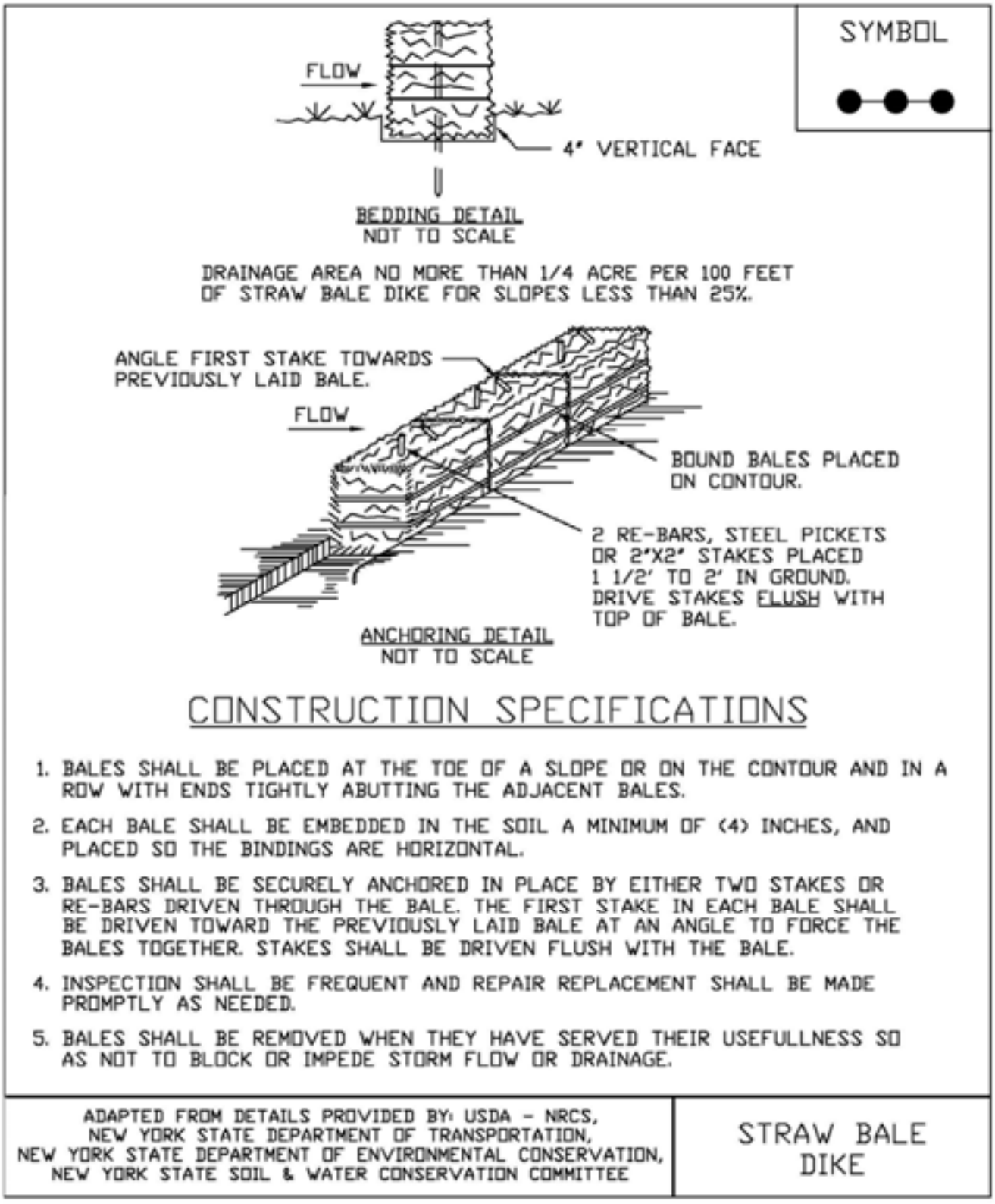
Where slope gradient changes through the drainage area, steepness refers to the steepest slope section contributing to the straw bale dike.

The practice may also be used for a single family lot if the slope is less than 15 percent. The contributing drainage areas in this instance shall be less than one quarter of an acre per 100 feet of dike and the length of slope above the dike shall be less than 100 feet.

Design Criteria

The above table is adequate, in general, for a one-inch rainfall event. Larger storms could cause failure of this practice. Use of this practice in sensitive areas for longer than one month should be specifically designed to store expected runoff. All bales shall be placed on the contour with cut edge of bale adhering to the ground. See Figure 5.34 on page 5.64 for details.

Figure 5.34
Straw Bale Dike



STANDARD AND SPECIFICATIONS FOR STORM DRAIN INLET PROTECTION

Definition & Scope

A **temporary** barrier with low permeability, installed around inlets in the form of a fence, berm or excavation around an opening, detaining water and thereby reducing the sediment content of sediment laden water by settling thus preventing heavily sediment laden water from entering a storm drain system.

Conditions Where Practice Applies

This practice shall be used where the drainage area to an inlet is disturbed, it is not possible to temporarily divert the storm drain outfall into a trapping device, and watertight blocking of inlets is not advisable. **It is not to be used in place of sediment trapping devices.** This practice shall be used with an upstream buffer strip if placed at a storm drain inlet on a paved surface. It may be used in conjunction with storm drain diversion to help prevent siltation of pipes installed with low slope angle.

Types of Storm Drain Inlet Practices

There are five (5) specific types of storm drain inlet protection practices that vary according to their function, location, drainage area, and availability of materials:

I. Excavated Drop Inlet Protection
II. Fabric Drop Inlet Protection
III. Stone & Block Drop Inlet Protection
IV. Paved Surface Inlet Protection
V. Manufactured Insert Inlet Protection

Design Criteria

Drainage Area – The drainage area for storm drain inlets shall not exceed one acre. Erosion control/temporary stabilization measures must be implemented on the disturbed drainage area tributary to the inlet. The crest elevations of these practices shall provide storage and minimize bypass flow.

Type I – Excavated Drop Inlet Protection

This practice is generally used during initial overlot grading after the storm drain trunk line is installed.

Limit the drainage area to the inlet device to 1 acre. Excavated side slopes shall be no steeper than 2:1. The minimum depth shall be 1 foot and the maximum depth 2 feet as measured from the crest of the inlet structure. Shape the excavated basin to fit conditions with the longest dimension oriented toward the longest inflow area to provide maximum trap efficiency. The capacity of the excavated basin should be established to contain 900 cubic feet per acre of disturbed area. Weep holes, protected by fabric and stone, should be provided for draining the temporary pool.

Inspect and clean the excavated basin after every storm. Sediment should be removed when 50 percent of the storage volume is achieved This material should be incorporated into the site in a stabilized manner.

Type II – Fabric Drop Inlet Protection

This practice is generally used during final elevation grading phases after the storm drain system is completed.

Limit the drainage area to 1 acre per inlet device. Land area slope immediately surrounding this device should not exceed 1 percent. The maximum height of the fabric above the inlet crest shall not exceed 1.5 feet unless reinforced.

The top of the barrier should be maintained to allow overflow to drop into the drop inlet and not bypass the inlet to

unprotected lower areas. Support stakes for fabric shall be a minimum of 3 feet long, spaced a maximum 3 feet apart. They should be driven close to the inlet so any overflow drops into the inlet and not on the unprotected soil. Improved performance and sediment storage volume can be obtained by excavating the area.

Inspect the fabric barrier after each rain event and make repairs as needed. Remove sediment from the pool area as necessary with care not to undercut or damage the filter fabric. Upon stabilization of the drainage area, remove all materials and unstable sediment and dispose of properly. Bring the adjacent area of the drop inlet to grade, smooth and compact and stabilize in the appropriate manner to the site.

Type III – Stone and Block Drop Inlet Protection

This practice is generally used during the initial and intermediate overlot grading of a construction site.

Limit the drainage area to 1 acre at the drop inlet. The stone barrier should have a minimum height of 1 foot and a maximum height of 2 feet. Do not use mortar. The height should be limited to prevent excess ponding and bypass flow.

Recess the first course of blocks at least 2 inches below the crest opening of the storm drain for lateral support. Subsequent courses can be supported laterally if needed by placing a 2x4 inch wood stud through the block openings perpendicular to the course. The bottom row should have a few blocks oriented so flow can drain through the block to dewater the basin area.

The stone should be placed just below the top of the blocks on slopes of 2:1 or flatter. Place hardware cloth of wire mesh with ½ inch openings over all block openings to hold stone in place.

As an optional design, the concrete blocks may be omitted and the entire structure constructed of stone, ringing the outlet (“doughnut”). The stone should be kept at a 3:1 slope toward the inlet to keep it from being washed into the inlet. A level area 1 foot wide and four inches below the crest will further prevent wash. Stone on the slope toward the inlet should be at least 3 inches in size for stability and 1 inch or smaller away from the inlet to control flow rate. The elevation of the top of the stone crest must be maintained 6 inches lower than the ground elevation down slope from the inlet to ensure that all storm flows pass over the stone into the storm drain and not past the structure. Temporary diking should be used as necessary to prevent bypass flow.

The barrier should be inspected after each rain event and repairs made where needed. Remove sediment as necessary to provide for accurate storage volume for subsequent rains. Upon stabilization of contributing drainage area, remove all materials and any unstable soil and dispose of properly.

Bring the disturbed area to proper grade, smooth, compact and stabilize in a manner appropriate to the site.

Type IV – Paved Surface Inlet Protection

This practice is generally used after pavement construction has been done while final grading and soil stabilization is occurring. These practices should be used with upstream buffer strips in linear construction applications, and with temporary surface stabilization for overlot areas, to reduce the sediment load at the practice. This practice includes sand bags, compost filter socks, geo-tubes filled with ballast, and manufactured surface barriers. Pea gravel can also be used in conjunction with these practices to improve performance. When the inlet is not at a low point, and is offset from the pavement or gutter line, protection should be selected and installed so that flows are not diverted around the inlet.

The drainage area should be limited to 1 acre at the drain inlet. All practices will be placed at the inlet perimeter or beyond to maximize the flow capacity of the inlet. Practices shall be weighted, braced, tied, or otherwise anchored to prevent movement or shifting of location on paved surfaces. Traffic safety shall be integrated with the use of this practice. All practices should be marked with traffic safety cones as appropriate. Structure height shall not cause flooding or by-pass flow that would cause additional erosion.

The structure should be inspected after every storm event. Any sediment should be removed and disposed of on the site. Any broken or damaged components should be replaced. Check all materials for proper anchorage and secure as necessary.

Type V - Manufactured Insert Inlet Protection

The drainage area shall be limited to 1 acre at the drain inlet. All inserts will be installed and anchored in accordance with the manufacturers recommendations and design details. The fabric portion of the structure will equal or exceed the performance standard for the silt fence fabric. The inserts will be installed to preserve a minimum of 50 percent of the open, unobstructed design flow area of the storm drain inlet opening to maintain capacity for storm events.

Figure 5.31
Excavated Drop Inlet Protection

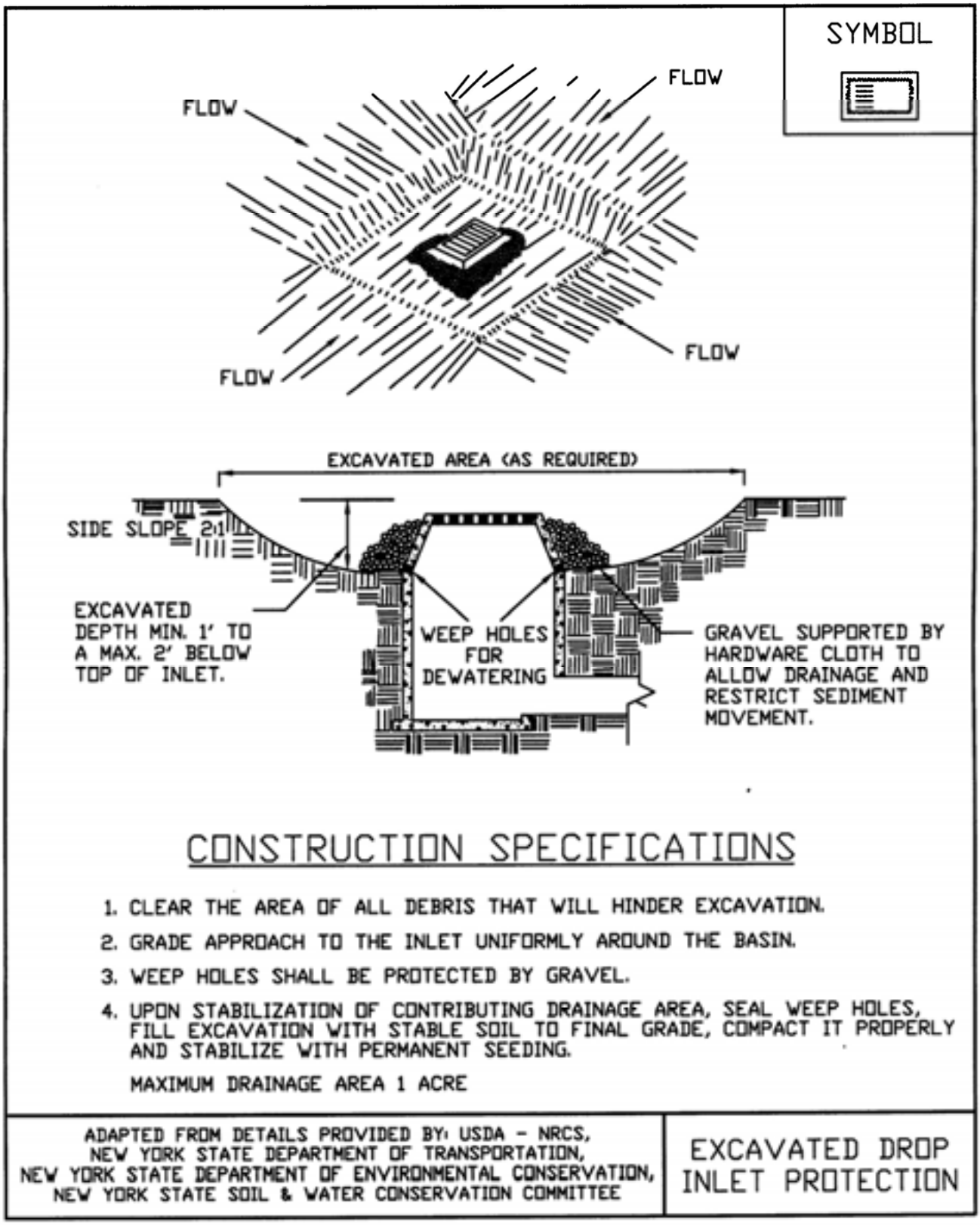


Figure 5.32
Fabric Drop Inlet Protection

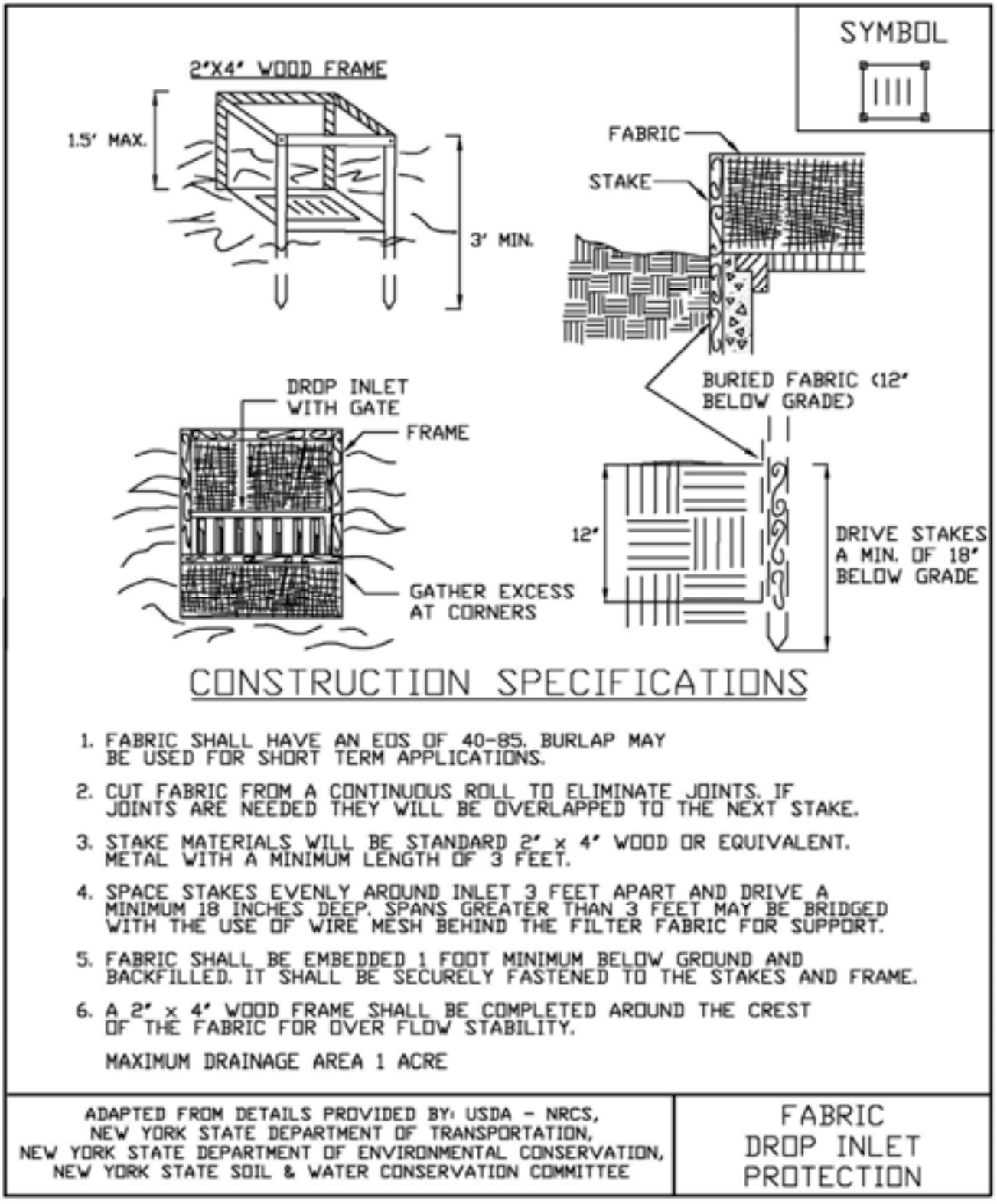
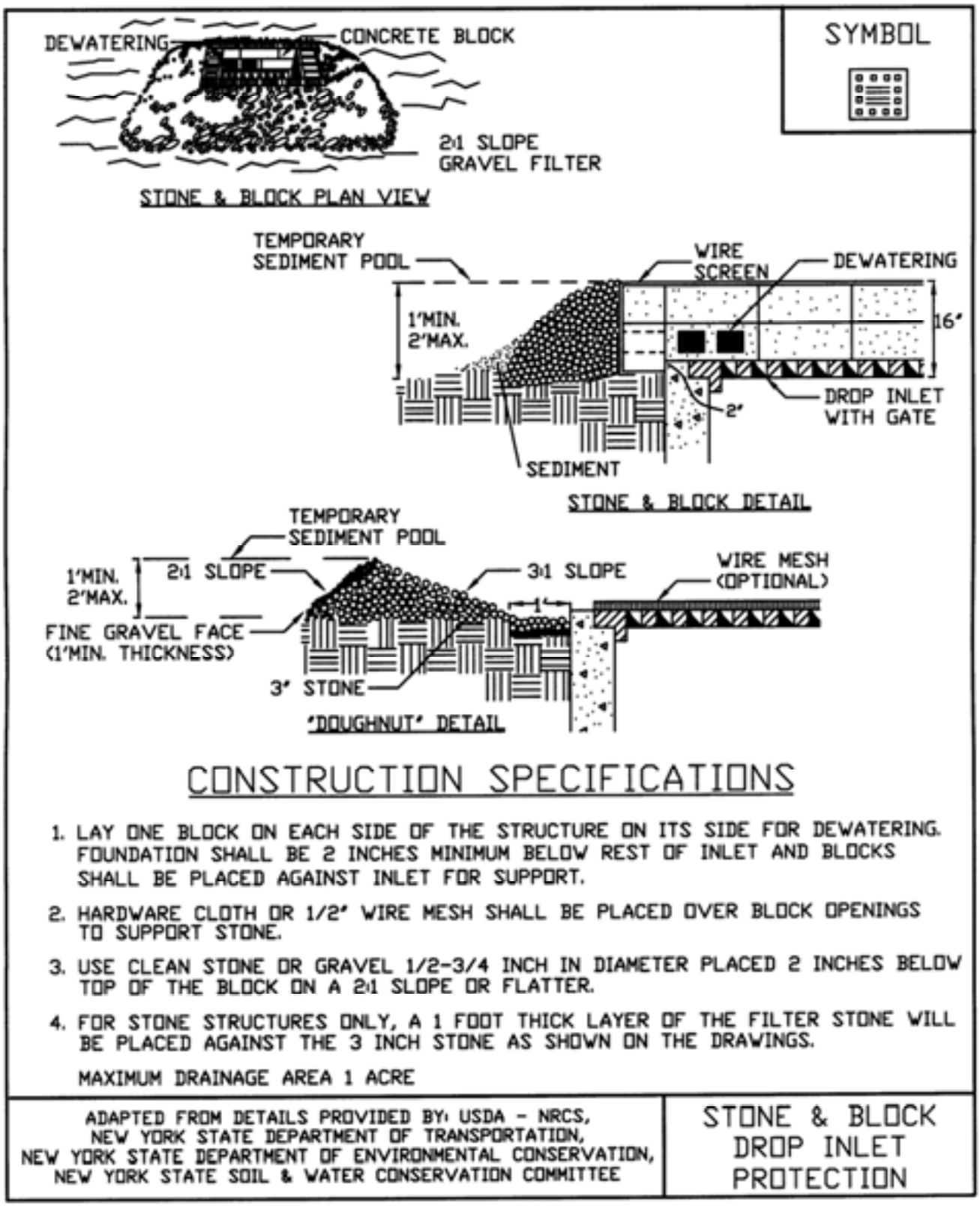


Figure 5.33
Stone & Block Drop Inlet Protection



CONSTRUCTION SPECIFICATIONS

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 1/2" WIRE MESH SHALL BE PLACED OVER BLOCK OPENINGS TO SUPPORT STONE.
3. USE CLEAN STONE OR GRAVEL 1/2-3/4 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

ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS,
NEW YORK STATE DEPARTMENT OF TRANSPORTATION,
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION,
NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE

STONE & BLOCK DROP INLET PROTECTION

STANDARD AND SPECIFICATIONS FOR PROTECTING VEGETATION DURING CONSTRUCTION

Definition & Scope

The protection of trees, shrubs, ground cover and other vegetation from damage by construction equipment. In order to preserve existing vegetation determined to be important for soil erosion control, water quality protection, shade, screening, buffers, wildlife habitat, wetland protection, and other values.

Conditions Where Practices Applies

On planned construction sites where valued vegetation exists and needs to be preserved.

Design Criteria

1. Planning Considerations

   A. Inventory:

      1) Property boundaries, topography, vegetation and soils information should be gathered. Identify potentially high erosion areas, areas with tree windthrow potential, etc. A vegetative cover type map should be made on a copy of a topographic map which shows other natural and manmade features. Vegetation that is desirable to preserve because of its value for screening, shade, critical erosion control, endangered species, aesthetics, etc., should be identified and marked on the map.

      2) Based upon this data, general statements should be prepared about the present condition, potential problem areas, and unique features of the property.

   B. Planning:

      1) After engineering plans (plot maps) are prepared, another field review should take place and recommendations made for the vegetation to be saved. Minor adjustments in location of roads, dwellings, and utilities may be needed. Construction on steep slopes, erodible soils, wetlands, and streams should be avoided. Clearing limits should be delineated (See "Determine Limits of Clearing and Grading" on page 2.2).

      2) Areas to be seeded and planted should be identified. Remaining vegetation should blend with their surroundings and/or provide special function such as a filter strip, buffer zone, or screen.

      3) Trees and shrubs of special seasonal interest, such as flowering dogwood, red maple, striped maple, serviceberry, or shadbush, and valuable potential shade trees should be identified and marked for special protective treatment as appropriate.

      4) Trees to be cut should be marked on the plans. If timber can be removed for salable products, a forester should be consulted for marketing advice.

      5) Trees that may become a hazard to people, personal property, or utilities should be removed. These include trees that are weak-wooded, disease-prone, subject to windthrow, or those that have severely damaged root systems.

      6) The vigor of remaining trees may be improved by a selective thinning. A forester should be consulted for implementing this practice.

2. Measures to Protect Vegetation

   A. Limit soil placement over existing tree and shrub roots to a maximum of 3 inches. Soils with loamy texture and good structure should be used.

   B. Use retaining walls and terraces to protect roots of trees and shrubs when grades are lowered. Lowered grades should start no closer than the dripline of the tree. For narrow-canopied trees and shrubs, the stem diameter in inches is converted to feet and doubled, such that a 10 inch tree should be protected to 20 feet.

   C. Trenching across tree root systems should be the same minimum distance from the trunk, as in "B". Tunnels under root systems for underground utilities should start 18 inches or deeper below the normal ground surface. Tree roots which must be severed should be cut clean. Backfill material that will be in contact with the roots should be topsoil or a prepared planting soil mixture.

   D. Construct sturdy fences, or barriers, of wood, steel, or other protective material around valuable

vegetation for protection from construction equipment. Place barriers far enough away from trees, but not less than the specifications in "B", so that tall equipment such as backhoes and dump trucks do not contact tree branches.

E. Construction limits should be identified and clearly marked to exclude equipment.

F. Avoid spills of oil/gas and other contaminants.

G. Obstructive and broken branches should be pruned properly. The branch collar on all branches whether living or dead should not be damaged. The 3 or 4 cut method should be used on all branches larger than two inches at the cut. First cut about one-third the way through the underside of the limb (about 6-12 inches from the tree trunk). Then (approximately an inch further out) make a second cut through the limb from the upper side. When the branch is removed, there is no splintering of the main tree trunk. Remove the stub. If the branch is larger than 5-6 inches in diameter, use the four cut system. Cuts 1 and 2 remain the same and cut 3 should be from the underside of the limb, on the outside of the branch collar. Cut 4 should be from the top and in alignment with the 3rd cut. Cut 3 should be 1/4 to 1/3 the way through the limb. This will prevent the bark from peeling down the trunk. Do not paint the cut surface.

H. Penalties for damage to valuable trees, shrubs, and herbaceous plants should be clearly spelled out in the contract.

PROTECTING TREES IN HEAVY USE AREAS

The compaction of soil over the roots of trees and shrubs by the trampling of recreationists, vehicular traffic, etc., reduces oxygen, water, and nutrient uptake by feeder roots. This weakens and may eventually kill the plants. Table 2.6 rates the “Susceptibility of Tree Species to Compaction.”

Where heavy compaction is anticipated, apply and maintain a 3 to 4 inch layer of undecayed wood chips or 2 inches of No. 2 washed, crushed gravel. In addition, use of a wooden or plastic mat may be used to lessen compaction, if applicable.

STANDARD AND SPECIFICATIONS FOR TOPSOILING

Definition & Scope

Spreading a specified quality and quantity of topsoil materials on graded or constructed subsoil areas to provide acceptable plant cover growing conditions, thereby reducing erosion; to reduce irrigation water needs; and to reduce the need for nitrogen fertilizer application.

Conditions Where Practice Applies

Topsoil is applied to subsoils that are droughty (low available moisture for plants), stony, slowly permeable, salty or extremely acid. It is also used to backfill around shrub and tree transplants. This standard does not apply to wetland soils.

Design Criteria

1. Preserve existing topsoil in place where possible, thereby reducing the need for added topsoil.

2. Conserve by stockpiling topsoil and friable fine textured subsoils that must be stripped from the excavated site and applied after final grading where vegetation will be established. Topsoil stockpiles must be stabilized. Stockpile surfaces can be stabilized by vegetation, geotextile or plastic covers. This can be aided by orientating the stockpile lengthwise into prevailing winds.

3. Refer to USDA Natural Resource Conservation Service soil surveys or soil interpretation record sheets for further soil texture information for selecting appropriate design topsoil depths.

Site Preparation

1. As needed, install erosion and sediment control practices such as diversions, channels, sediment traps, and stabilizing measures, or maintain if already installed.

2. Complete rough grading and final grade, allowing for depth of topsoil to be added.

3. Scarify all compact, slowly permeable, medium and fine textured subsoil areas. Scarify at approximately right angles to the slope direction in soil areas that are steeper than 5 percent. Areas that have been overly compacted shall be decompacted in accordance with the Soil Restoration Standard.

4. Remove refuse, woody plant parts, stones over 3 inches in diameter, and other litter.

Topsoil Materials

1. Topsoil shall have at least 6 percent by weight of fine textured stable organic material, and no greater than 20 percent. Muck soil shall not be considered topsoil.

2. Topsoil shall have not less than 20 percent fine textured material (passing the NO. 200 sieve) and not more than 15 percent clay.

3. Topsoil treated with soil sterilants or herbicides shall be so identified to the purchaser.

4. Topsoil shall be relatively free of stones over 1 1/2 inches in diameter, trash, noxious weeds such as nut sedge and quackgrass, and will have less than 10 percent gravel.

5. Topsoil containing soluble salts greater than 500 parts per million shall not be used.

6. Topsoil may be manufactured as a mixture of a mineral component and organic material such as compost.

Application and Grading

1. Topsoil shall be distributed to a uniform depth over the area. It shall not be placed when it is partly frozen, muddy, or on frozen slopes or over ice, snow, or standing water puddles.

2. Topsoil placed and graded on slopes steeper than 5 percent shall be promptly fertilized, seeded, mulched, and stabilized by “tracking” with suitable equipment.

3. Apply topsoil in the amounts shown in Table 4.7 below:

Table 4.7 - Topsoil Application Depth		
Site Conditions	**Intended Use**	**Minimum Topsoil Depth**
1. Deep sand or loamy sand	Mowed lawn	6 in.
	Tall legumes, unmowed	2 in.
	Tall grass, unmowed	1 in.
2. Deep sandy loam	Mowed lawn	5 in.
	Tall legumes, unmowed	2 in.
	Tall grass, unmowed	none
3. Six inches or more: silt loam, clay loam, loam, or silt	Mowed lawn	4 in.
	Tall legumes, unmowed	1 in.
	Tall grass, unmowed	1 in.

STANDARD AND SPECIFICATIONS FOR TEMPORARY CONSTRUCTION AREA SEEDING

Definition & Scope

Providing temporary erosion control protection to disturbed areas and/or localized critical areas for an interim period by covering all bare ground that exists as a result of construction activities or a natural event. Critical areas may include but are not limited to steep excavated cut or fill slopes and any disturbed, denuded natural slopes subject to erosion.

Conditions Where Practice Applies

Temporary seedings may be necessary on construction sites to protect an area, or section, where final grading is complete, when preparing for winter work shutdown, or to provide cover when permanent seedings are likely to fail due to mid-summer heat and drought. The intent is to provide temporary protective cover during temporary shutdown of construction and/or while waiting for optimal planting time.

Criteria

Water management practices must be installed as appropriate for site conditions. The area must be rough graded and slopes physically stable. Large debris and rocks are usually removed. Seedbed must be seeded within 24 hours of disturbance or scarification of the soil surface will be necessary prior to seeding.

Fertilizer or lime are not typically used for temporary seedings.

IF: Spring or summer or early fall, then seed the area with ryegrass (annual or perennial) at 30 lbs. per acre (Approximately 0.7 lb./1000 sq. ft. or use 1 lb./1000 sq. ft.).

IF: Late fall or early winter, then seed Certified 'Aroostook' winter rye (cereal rye) at 100 lbs. per acre (2.5 lbs./1000 sq. ft.).

Any seeding method may be used that will provide uniform application of seed to the area and result in relatively good soil to seed contact.

Mulch the area with hay or straw at 2 tons/acre (approx. 90 lbs./1000 sq. ft. or 2 bales). Quality of hay or straw mulch allowable will be determined based on long term use and visual concerns. Mulch anchoring will be required where wind or areas of concentrated water are of concern. Wood fiber hydromulch or other sprayable products approved for erosion control (nylon web or mesh) may be used if applied according to manufacturers' specification. Caution is advised when using nylon or other synthetic products. They may be difficult to remove prior to final seeding and can be a hazard to young wildlife species.

STANDARD AND SPECIFICATIONS FOR PERMANENT CONSTRUCTION AREA PLANTING

Definition & Scope

Establishing **permanent** grasses with other forbs and/or shrubs to provide a minimum 80% perennial vegetative cover on areas disturbed by construction and critical areas to reduce erosion and sediment transport. Critical areas may include but are not limited to steep excavated cut or fill slopes as well as eroding or denuded natural slopes and areas subject to erosion.

Conditions Where Practice Applies

This practice applies to all disturbed areas void of, or having insufficient, cover to prevent erosion and sediment transport. See additional standards for special situations such as sand dunes and sand and gravel pits.

Criteria

All water control measures will be installed as needed prior to final grading and seedbed preparation. Any severely compacted sections will require chiseling or disking to provide an adequate rooting zone, to a minimum depth of 12", see Soil Restoration Standard. The seedbed must be prepared to allow good soil to seed contact, with the soil not too soft and not too compact. Adequate soil moisture must be present to accomplish this. If surface is powder dry or sticky wet, postpone operations until moisture changes to a favorable condition. If seeding is accomplished within 24 hours of final grading, additional scarification is generally not needed, especially on ditch or stream banks. Remove all stones and other debris from the surface that are greater than 4 inches, or that will interfere with future mowing or maintenance.

Soil amendments should be incorporated into the upper 2 inches of soil when feasible. **The soil should be tested to determine the amounts of amendments needed.** Apply ground agricultural limestone to attain a pH of 6.0 in the upper 2 inches of soil. If soil must be fertilized before results of a soil test can be obtained to determine fertilizer needs, apply commercial fertilizer at 600 lbs. per acre of 5-5 -10 or equivalent. If manure is used, apply a quantity to meet the nutrients of the above fertilizer. This requires an appropriate manure analysis prior to applying to the site. Do not use manure on sites to be planted with birdsfoot trefoil or in the path of concentrated water flow.

Seed mixtures may vary depending on location within the state and time of seeding. Generally, warm season grasses should only be seeded during early spring, April to May. These grasses are primarily used for vegetating excessively drained sands and gravels. See Standard and Specification for Sand and Gravel Mine Reclamation. Other grasses may be seeded any time of the year when the soil is not frozen and is workable. When legumes such as birdsfoot trefoil are included, spring seeding is preferred. See Table 4.4, "Permanent Construction Area Planting Mixture Recommendations" for additional seed mixtures.

General Seed Mix:	**Variety**	**lbs./ acre**	**lbs/1000 sq. ft.**
Red Clover[1] OR	Acclaim, Rally, Red Head II, Renegade	8[2]	0.20
Common white clover[1]	Common	8	0.20
PLUS			
Creeping Red Fescue	Common	20	0.45
PLUS			
Smooth Bromegrass OR	Common	2	0.05
Ryegrass (perennial)	Pennfine/Linn	5	0.10

[1] add inoculant immediately prior to seeding
[2] Mix 4 lbs each of Empire and Pardee OR 4 lbs of Birdsfoot and 4 lbs white clover per acre. All seeding rates are given for Pure Live Seed (PLS)

Pure Live Seed, or (PLS) refers to the amount of live seed in a lot of bulk seed. Information on the seed bag label includes the type of seed, supplier, test date, source of seed, purity, and germination. Purity is the percentage of pure seed. Germination is the percentage of pure seed that will produce normal plants when planted under favorable conditions.

To compute Pure Live Seed multiply the "germination percent" times the "purity" and divide that by 100 to get Pure Live Seed.

$$\text{Pure Live Seed (PLS)} = \frac{\%\,\text{Germination} \times \%\,\text{Purity}}{100}$$

For example, the PLS for a lot of Kentucky Blue grass with 75% purity and 96% germination would be calculated as follows:

$$\frac{(96) \times (75)}{100} = 72\%\ \text{Pure Live Seed}$$

For 10lbs of PLS from this lot =

$$\frac{10}{0.72} = 13.9\ \text{lbs}$$

Therefore, 13.9 lbs of seed is the actual weight needed to meet 10lbs PSL from this specific seed lot.

Time of Seeding: The optimum timing for the general seed mixture is early spring. Permanent seedings may be made any time of year if properly mulched and adequate moisture is provided. Late June through early August is not a good time to seed, but may facilitate covering the land without additional disturbance if construction is completed. Portions of the seeding may fail due to drought and heat. These areas may need reseeding in late summer/fall or the following spring.

Method of seeding: Broadcasting, drilling, cultipack type seeding, or hydroseeding are acceptable methods. Proper soil to seed contact is key to successful seedings.

Mulching: Mulching is essential to obtain a uniform stand of seeded plants. Optimum benefits of mulching new seedings are obtained with the use of small grain straw applied at a rate of 2 tons per acre, and anchored with a netting or tackifier. See the Standard and Specifications for Mulching for choices and requirements.

Irrigation: Watering may be essential to establish a new seeding when a drought condition occurs shortly after a new seeding emerges. Irrigation is a specialized practice and care must be taken not to exceed the application rate for the soil or subsoil. When disconnecting irrigation pipe, be sure pipes are drained in a safe manor, not creating an erosion concern.

80% Perennial Vegetative Cover

50% Perennial Vegetative Cover

Table 4.4
Permanent Construction Area Planting Mixture Recommendations

Seed Mixture	Variety	Rate in lbs./acre (PLS)	Rate in lbs./ 1, 000 ft^2
Mix #1			
Creeping red fescue	Ensylva, Pennlawn, Boreal	10	.25
Perennial ryegrass	Pennfine, Linn	10	.25
*This mix is used extensively for shaded areas.			
Mix #2			
Switchgrass	Shelter, Pathfinder, Trailblazer, or Blackwell	20	.50
*This rate is in pure live seed, this would be an excellent choice along the upland edge of a wetland to filter runoff and provide wildlife benefits. In areas where erosion may be a problem, a companion seeding of sand lovegrass should be added to provide quick cover at a rate of 2 lbs. per acre (0.05 lbs. per 1000 sq. ft.).			
Mix #3			
Switchgrass	Shelter, Pathfinder, Trailblazer, or Blackwell	4	.10
Big bluestem	Niagara	4	.10
Little bluestem	Aldous or Camper	2	.05
Indiangrass	Rumsey	4	.10
Coastal panicgrass	Atlantic	2	.05
Sideoats grama	El Reno or Trailway	2	.05
Wildflower mix		.50	.01
*This mix has been successful on sand and gravel plantings. It is very difficult to seed without a warm season grass seeder such as a Truax seed drill. Broadcasting this seed is very difficult due to the fluffy nature of some of the seed, such as bluestems and indiangrass.			
Mix #4			
Switchgrass	Shelter, Pathfinder, Trailblazer, or Blackwell	10	.25
Coastal panicgrass	Atlantic	10	.25
*This mix is salt tolerant, a good choice along the upland edge of tidal areas and roadsides.			
Mix #5			
Saltmeadow cordgrass (Spartina patens)—This grass is used for tidal shoreline protection and tidal marsh restoration. It is planted by vegetative stem divisions. 'Cape' American beachgrass can be planted for sand dune stabilization above the saltmeadow cordgrass zone.			
Mix #6			
Creeping red fescue	Ensylva, Pennlawn, Boreal	20	.45
Chewings Fescue	Common	20	.45
Perennial ryegrass	Pennfine, Linn	5	.10
Red Clover	Common	10	.45
*General purpose erosion control mix. Not to be used for a turf planting or play grounds.			

STANDARD AND SPECIFICATIONS FOR RECREATION AREA SEEDING

Definition & Scope

Establishing **permanent** grasses, legumes, vines, shrubs, trees, or other plants, or selectively reducing stand density and trimming woody plants, to improve an area for recreation. To increase the attractiveness and usefulness of recreation areas and to protect the soil and plant resources.

Conditions Where Practice Applies

On any area planned for recreation use, lawns, and areas that will be maintained in a closely mowed condition.

Specifications

ESTABLISHING GRASSES (Turfgrass)

The following applies for playgrounds, parks, athletic fields, camping areas, picnic areas, passive recreation areas such as lawns, and similar areas.

1. Time of Planting

Fall planting is preferred. Seed after August 15. In the spring, plant until May 15.

If seeding is done between May 15 and August 15, irrigation may be necessary to ensure a successful seeding.

2. Site Preparation

   A. Install needed water and erosion control measures and bring area to be seeded to desired grades. A minimum of 4 in. topsoil is required.

   B. Prepare seedbed by loosening soil to a depth of 4-6 inches and decompacting required areas per Soil Restoration Standard.

   C. See Standard and Specification of Topsoiling.

   D. Lime to a pH of 6.5. See Lime Application Standard.

   E. **Fertilize as per soil test** or, if soil must be fertilized before results of a soil test can be obtained to determine fertilizer needs, apply commercial fertilizer at 850 pounds of 5-5-10 or equivalent per acre (20 lbs/1,000 sq. ft.). See Fertilizer Application Standard.

   F. Incorporate lime and fertilizer in top 2-4 inches of topsoil.

   G. Smooth. Remove sticks, foreign matter, and stones over 1 inch in diameter, from the surface. Firm the seedbed.

3. Planting

Use a cultipacker type seeder if possible. Seed to a depth of 1/8 to 1/4 inch. If seed is to be broadcast, cultipack or roll after seeding. If hyroseeded, lime and fertilizer may be applied through the seeder, and rolling is not practical.

4. Mulching

Mulch all seedings in accordance with Standard and Specifications for Mulching. Small grain straw is the best material.

5. Seed Mixtures

Select seed mixture for site conditions and intended use from Table 4.5.

6. Contact Cornell Cooperative Extension Turf Specialist for suitable varieties.

Turf-type tall fescues have replaced the old KY31 tall fescues. New varieties have finer leaves and are the most resistant grass to foot traffic. Do not mix it with fine textured grasses such as bluegrass and red fescue.

Common ryegrass and redtop, which are relatively short lived species, provide quick green cover. Improved lawn cultivars of perennial ryegrass provide excellent quality turf, but continue to lack winter hardiness.

Common white clover can be added to mixtures at the rate of 1-2 lbs/acre to help maintain green color during the dry summer period; however, they will not withstand heavy traffic. Avoid using around swimming areas as flowers attract bees which can be easily stepped on.

Table 4.5
Recreation Turfgrass Seed Mixture

Site - Use	Species (% by weight)	lbs/1.000 ft^2 (PLS)	lbs/acre (PLS)
Sunny Sites (well, moderately well, and somewhat poorly drained soils)	***Athletic fields and similar areas***		
	80% Hard fescue	2.4-3.2	105-138
	20% Perennial ryegrass	0.6-0.8	25-37
		3.0-4.0	130-175
	OR, for southern and eastern, NY 50% Hard fescue	1.5-2.0	65-88
	50% perennial ryegrass	1.5-2.0	65-87
		3.0-4.0	130-175
	OR, 100% Creeping Red Fescue	3.4-4.6	150-200
	General recreation areas and lawns (Medium to high maintenance)		
	65% Creeping red fescue	2.0-2.6	85-114
	20% Perennial ryegrass	0.6-0.8	26-35
	15% Fine fescue	0.4-0.6	19-26
		3.0-4.0	130-175
	OR, 100% Creeping red fescue	3.4-4.6	150-200
Sunny Droughty Sites (general recreation areas and lawns, low maintenance) (somewhat excessively to excessively drained soils, excluding Long Island)	65% Fine fescue	2.6-3.3	114-143
	15% Perennial ryegrass	0.6-0.7	26-33
	20% Creeping red fescue	0.8-1.0	35-44
		4.0-5.0	175-220
	OR, 100% Creeping red fescue	3.4-4.6	150-200
Shady Dry Sites (well to somewhat poorly drained soils)	65% fine fescue	2.6-3.3	114-143
	15% perennial ryegrass	0.6-0.7	26-33
	20% Creeping red fescue	0.8-1.0	35-44
	OR	4.0-5.0	174-220
	80% blend of shade-tolerant Ceral rye	2.4-3.2	105-138
	20% perennial ryegrass	0.6-0.8	25-37
	OR	3.0-4.0	130-175
	100% Creeping red fescue	3.4-4.6	150-200
Shady Wet Sites (somewhat poor to poorly drained soils)	70% Creeping red fescue	1.4-2.1	60-91
	30% blend of shade-tolerant Hard fescue	0.6-0.9	25-39
	OR	2.0-3.0	85-130
	100% Chewings fescue	3.4-4.6	150-200

For varieties suitable for specific locations, contact Cornell Cooperative Extension Turf Specialist.

Reference: Thurn, M.C., N.W. Hummel, and A.M. Petrovic. Cornell Extension Pub. Info. Bulletin 185 Revised. HomeLawns Establishment and Maintenance. 1994.

7. Fertilizing—First Year

Apply fertilizer as indicated by the soil test three to four weeks after germination (spring seedlings). If test results have not been obtained, apply 1 pound nitrogen/1,000 square feet using a complete fertilizer with a 2-1-1 or 4-1-3 ratio. Summer and early fall seedings, apply as above unless air temperatures are above 85ºF for an extended period. Wait for cooler temperatures to fertilize. Late fall/ winter seedings, fertilize in spring.

8. Restrict Use

New seedlings should be protected from use for one full year or a spring and fall growth cycle where possible to allow development of a dense sod with good root structure.

MAINTAINING GRASSES

1. Maintain a pH of 6.0 - 7.0.

2. Fertilize in late May to early June as follows with 5-5-10 analysis fertilizer at the rate of 5 lbs./1,000 sq. ft. and repeat in late August if sod density is not adequate. Avoid fertilizing when heat is greater than 85ºF. Top dress weak sod annually in the spring, but at least once every 2 to 3 years. **Fertilize in accordance with soil test analysis**, after determining adequate topsoil depth exists.

3. Aerate compacted or heavily used areas, like athletic fields, annually as soon as soil moisture conditions permit. Aerate area six to eight times using a spoon or hollow tine type aerator. Do not use solid spike equipment.

4. Reseed bare and thin areas annually with original seed mix.

STANDARD AND SPECIFICATIONS FOR STABILIZATION WITH SOD

Definition & Scope

Stabilizing restored, exposed soil surfaces by establishing long term stands of grass with sod to reduce damage from sediment and runoff to downstream areas and enhance natural beauty.

Conditions Where Practice Applies

On exposed soils that have a potential for causing off site environmental damage where a quick vegetative cover is desired. Moisture, either applied or natural, is essential to success.

Design Criteria

1. Sod shall be bluegrass or a bluegrass/red fescue mixture or a perennial ryegrass for average sites. (CAUTION: Perennial ryegrass has limited cold tolerance and may winter kill.) Use turf type cultivars of tall fescue for shady, droughty, or otherwise more critical areas. For variety selection, contact Cornell Cooperative Extension Turf Specialist.

2. Sod shall be machine cut at a uniform soil thickness of 3/4 inch, plus or minus 1/4 inch. Measurement for thickness shall exclude top growth and thatch.

3. Standard size sections of sod shall be strong enough to support their own weight and retain their size and shape when suspended vertically from a firm grasp on the upper 10 percent of the section.

4. Sod shall be free of weeds and undesirable coarse weedy grasses. Wild native or pasture grass sod shall not be used unless specified.

5. Sod shall not be harvested or transplanted when moisture content (excessively dry or wet) may adversely affect its survival.

6. Sod shall be harvested, delivered, and installed within a period of 36 hours. Sod not transplanted within this period shall be inspected and approved by the contracting officer or his designated representative prior to its installation.

Site Preparation

Fertilizer and lime application rates shall be determined by soil tests. Under unusual circumstances where there is insufficient time for a complete soil test and the contracting officer agrees, fertilizer and lime materials may be applied in amounts shown in subsection 2 below. Slope land such as to provide good surface water drainage. Avoid depressions or pockets.

1. Prior to sodding, the surface shall be smoothed and cleared of all trash, debris, and of all roots, brush, wire, grade stakes and other objects that would interfere with planting, fertilizing or maintenance operations.

2. **The soil should be tested to determine the amounts of amendments needed.** Where the soil is acid or composed of heavy clays, ground limestone shall be spread to raise the pH to 6.5. If the soil must be fertilized before results of a soil test can be obtained to determine fertilizer needs, apply commercial fertilizer at 20 lbs. of 5-5-10 (or equivalent) and mix into the top 3 inches of soil with the required lime for every 1,000 square feet. Soil should be moist prior to sodding. Arrange for temporary storage of sod to keep it shaded and cool.

Sod Installation

1. For the operation of laying, tamping, and irrigating for any areas, sod shall be completed within eight hours. During periods of excessively high temperature, the soil shall be lightly moistened immediately prior to laying the sod.

2. The first row of sod shall be laid in a straight line with subsequent rows placed parallel to, and tightly wedged against, each other. Lateral joints shall be staggered to promote more uniform growth and strength. Ensure that sod is not stretched or overlapped and that all joints are butted tight in order to prevent voids which would cause air drying of the roots. On sloping areas where erosion may be a problem, sod shall be laid with the long edges parallel to the contour and with

staggered joints.

3. Secure the sod by tamping and pegging, or other approved methods. As sodding is completed in any one section, the entire area shall be rolled or tamped to ensure solid contact of roots with the soil surface.

4. Sod shall be watered immediately after rolling or tamping until the underside of the new sod pad and soil surface below the sod are thoroughly wet. Keep sod moist for at least two weeks.

Sod Maintenance

1. In the absence of adequate rainfall, watering shall be performed daily, or as often as deemed necessary by the inspector, during the first week and in sufficient quantities to maintain moist soil to a depth of 4 inches. Watering should be done in the morning. Avoid excessive watering during applications.

2. After the first week, sod shall be watered as necessary to maintain adequate moisture and ensure establishment.

3. The first mowing should not be attempted until sod is firmly rooted. No more than 1/3 of the grass leaf shall be removed by the initial cutting or subsequent cuttings. Grass height shall be maintained between 2 and 3 inches unless otherwise specified. Avoid heavy mowing equipment for several weeks to prevent rutting.

4. If the soil must be fertilized before results of a soil test can be obtained to determine fertilizer needs, apply fertilizer three to four weeks after sodding, at a rate of 1 pound nitrogen/1,000 sq.ft. Use a complete fertilizer with a 2-1-1 ratio.

5. Weed Control: Target herbicides for weeds present. Consult current Cornell Pest Control Recommendations for Commercial Turfgrass Management or consult the local office of Cornell Cooperative Extension.

6. Disease Control: Consult the local office of the Cornell Cooperative Extension.

Additional References

1. Home Lawns, Establishment and Maintenance, CCE Information Bulletin 185, Revised November 1994. Cornell University, Ithaca, NY.

2. Installing a Sod Lawn. CCE Suffolk County, NY. Thomas Kowalsick February 1994, Revised January 1999. www.cce.cornell.edu/counties/suffolk/grownet

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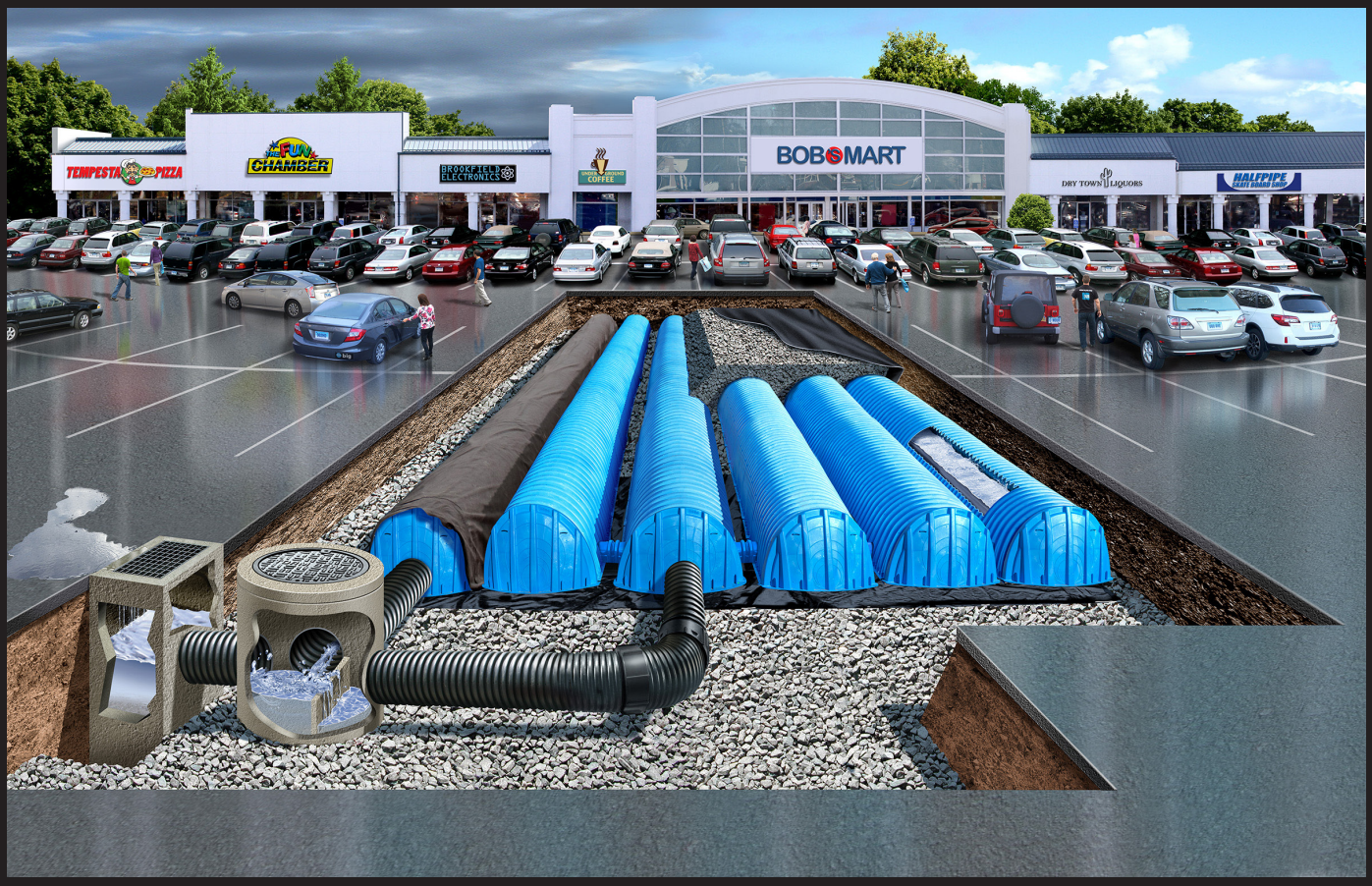
STORMWATER MANAGEMENT SOLUTIONS



OPERATION & MAINTENANCE GUIDELINES

FOR CULTEC STORMWATER MANAGEMENT SYSTEMS

CULTEC®

Published by
CULTEC, Inc.
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Brookfield, Connecticut 06804 USA
www.cultec.com

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Contact Information:
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Doc ID: CLT057 01-20
January 2020

These instructions are for single-layer traffic applications only. For multi-layer applications, contact CULTEC.
All illustrations and photos shown herein are examples of typical situations. Be sure to follow the engineer's drawings.
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This manual contains guidelines recommended by CULTEC, Inc. and may be used in conjunction with, but not to supersede, local regulations or regulatory authorities. OSHA Guidelines must be followed when inspecting or cleaning any structure.

Introduction

The CULTEC Subsurface Stormwater Management System is a high-density polyethylene (HDPE) chamber system arranged in parallel rows surrounded by washed stone. The CULTEC chambers create arch-shaped voids within the washed stone to provide stormwater detention, retention, infiltration, and reclamation. Filter fabric is placed between the native soil and stone interface to prevent the intrusion of fines into the system. In order to minimize the amount of sediment which may enter the CULTEC system, a sediment collection device (stormwater pretreatment device) is recommended upstream from the CULTEC chamber system. Examples of pretreatment devices include, but are not limited to, an appropriately sized catch basin with sump, pretreatment catchment device, oil grit separator, or baffled distribution box. Manufactured pretreatment devices may also be used in accordance with CULTEC chambers. Installation, operation, and maintenance of these devices shall be in accordance with manufacturer's recommendations. Almost all of the sediment entering the stormwater management system will be collected within the pretreatment device.

Best Management Practices allow for the maintenance of the preliminary collection systems prior to feeding the CULTEC chambers. The pretreatment structures shall be inspected for any debris that will restrict inlet flow rates. Outfall structures, if any, such as outlet control must also be inspected for any obstructions that would restrict outlet flow rates. OSHA Guidelines must be followed when inspecting or cleaning any structure.

Operation and Maintenance Requirements

I. Operation

CULTEC stormwater management systems shall be operated to receive only stormwater run-off in accordance with applicable local regulations. CULTEC subsurface stormwater management chambers operate at peak performance when installed in series with pretreatment. Pretreatment of suspended solids is superior to treatment of solids once they have been introduced into the system. The use of pretreatment is adequate as long as the structure is maintained and the site remains stable with finished impervious surfaces such as parking lots, walkways, and pervious areas are properly maintained. If there is to be an unstable condition, such as improvements to buildings or parking areas, all proper silt control measures shall be implemented according to local regulations.

II. Inspection and Maintenance Options

A. The CULTEC system may be equipped with an inspection port located on the inlet row. The inspection port is a circular cast box placed in a rectangular concrete collar. When the lid is removed, a 6-inch (150 mm) pipe with a screw-in plug will be exposed. Remove the plug. This will provide access to the CULTEC Chamber row below. From the surface, through this access, the sediment may be measured at this location. A stadia rod may be used to measure the depth of sediment if any in this row. If the depth of sediment is in excess of 3 inches (76 mm), then this row should be cleaned with high pressure water through a culvert cleaning nozzle. This would be carried out through an upstream manhole or through the CULTEC StormFilter Unit (or other pretreatment device). CCTV inspection of this row can be deployed through this access port to deter mine if any sediment has accumulated in the inlet row.

B. If the CULTEC bed is not equipped with an inspection port, then access to the inlet row will be through an upstream manhole or the CULTEC StormFilter.

1. Manhole Access
This inspection should only be carried out by persons trained in confined space entry and sewer inspection services. After the manhole cover has been removed a gas detector must be lowered into the manhole to ensure that there are not high concentrations of toxic gases present. The inspector should be lowered into the manhole with the proper safety equipment as per OSHA requirements. The inspector may be able to observe sediment from this location. If this is not possible, the inspector will need to deploy a CCTV robot to permit viewing of the sediment.

2. StormFilter Access
Remove the manhole cover to allow access to the unit. Typically a 30-inch (750 mm) pipe is used as a riser from the StormFilter to the surface. As in the case with manhole access, this access point requires a technician trained in confined space entry with proper gas detection equipment. This individual must be equipped with the proper safety equipment for entry into the StormFilter. The technician will be lowered onto the StormFilter unit. The hatch on the unit must be removed. Inside the unit are two filters which may be removed according to StormFilter maintenance guidelines. Once these filters are removed the inspector can enter the StormFilter unit to launch the CCTV camera robot.

C. The inlet row of the CULTEC system is placed on a polyethylene liner to prevent scouring of the washed stone beneath this row. This also facilitates the flushing of this row with high pressure water through a culvert cleaning nozzle. The nozzle is deployed through a manhole or the StormFilter and extended to the end of the row. The water is turned on and the inlet row is back-flushed into the manhole or StormFilter. This water is to be removed from the manhole or StormFilter using a vacuum truck.

III. Maintenance Guidelines

The following guidelines shall be adhered to for the operation and maintenance of the CULTEC stormwater management system:

A. The owner shall keep a maintenance log which shall include details of any events which would have an effect on the system's operational capacity.

B. The operation and maintenance procedure shall be reviewed periodically and changed to meet site conditions.

C. Maintenance of the stormwater management system shall be performed by qualified workers and shall follow applicable occupational health and safety requirements.

D. Debris removed from the stormwater management system shall be disposed of in accordance with applicable laws and regulations.

IV. Suggested Maintenance Schedules

A. Minor Maintenance
The following suggested schedule shall be followed for routine maintenance during the regular operation of the stormwater system:

Frequency	Action
Monthly in first year	Check inlets and outlets for clogging and remove any debris, as required.
Spring and Fall	Check inlets and outlets for clogging and remove any debris, as required.
One year after commissioning and every third year following	Check inlets and outlets for clogging and remove any debris, as required.

B. Major Maintenance
The following suggested maintenance schedule shall be followed to maintain the performance of the CULTEC stormwater management chambers. Additional work may be necessary due to insufficient performance and other issues that might be found during the inspection of the stormwater management chambers. (See table on next page)

	Frequency	Action
Inlets and Outlets	Every 3 years	• Obtain documentation that the inlets, outlets and vents have been cleaned and will function as intended.
	Spring and Fall	• Check inlet and outlets for clogging and remove any debris as required.
CULTEC Stormwater Chambers	2 years after commissioning	• Inspect the interior of the stormwater management chambers through inspection port for deficiencies using CCTV or comparable technique. • Obtain documentation that the stormwater management chambers and feed connectors will function as anticipated.
	9 years after commissioning every 9 years following	• Clean stormwater management chambers and feed connectors of any debris. • Inspect the interior of the stormwater management structures for deficiencies using CCTV or comparable technique. • Obtain documentation that the stormwater management chambers and feed connectors have been cleaned and will function as intended.
	45 years after commissioning	• Clean stormwater management chambers and feed connectors of any debris. • Determine the remaining life expectancy of the stormwater management chambers and recommended schedule and actions to rehabilitate the stormwater management chambers as required. • Inspect the interior of the stormwater management chambers for deficiencies using CCTV or comparable technique. • Replace or restore the stormwater management chambers in accordance with the schedule determined at the 45-year inspection. • Attain the appropriate approvals as required. • Establish a new operation and maintenance schedule.
Surrounding Site	Monthly in 1st year	• Check for depressions in areas over and surrounding the stormwater management system.
	Spring and Fall	• Check for depressions in areas over and surrounding the stormwater management system.
	Yearly	• Confirm that no unauthorized modifications have been performed to the site.

For additional information concerning the maintenance of CULTEC Subsurface Stormwater Management Chambers, please contact CULTEC, Inc. at 1-800-428-5832.

WQMP
Operation & Maintenance (O&M) Plan

Project Name:_____

Prepared for:

Project Name: _____

Address:_____

City, State Zip:_____

Prepared on:

Date:_____

This O&M Plan describes the designated responsible party for implementation of this WQMP, including: operation and maintenance of all the structural BMP(s), conducting the training/educational program and duties, and any other necessary activities. The O&M Plan includes detailed inspection and maintenance requirements for all structural BMPs, including copies of any maintenance contract agreements, manufacturer's maintenance requirements, permits, etc.

8.1.1 Project Information

Project name	
Address	
City, State Zip	
Site size	
List of structural BMPs, number of each	
Other notes	

8.1.2 Responsible Party

The responsible party for implementation of this WQMP is:

Name of Person or HOA Property Manager	
Address	
City, State Zip	
Phone number	
24-Hour Emergency Contact number	
Email	

8.1.3 Record Keeping

Parties responsible for the O&M plan shall retain records for at least 5 years.

All training and educational activities and BMP operation and maintenance shall be documented to verify compliance with this O&M Plan. A sample Training Log and Inspection and Maintenance Log are included in this document.

8.1.4 Electronic Data Submittal

This document along with the Site Plan and Attachments shall be provided in PDF format. AutoCAD files and/or GIS coordinates of BMPs shall also be submitted to the City.

Appendix ____

BMP SITE PLAN

Site plan is preferred on minimum 11” by 17” colored sheets, as long as legible.

BMP OPERATION & MAINTENANCE LOG

Project Name: _____

Today's Date: _____

Name of Person Performing Activity (Printed): _____

Signature: _____

BMP Name (As Shown in O&M Plan)	Brief Description of Implementation, Maintenance, and Inspection Activity Performed

Minor Maintenance

Frequency		Action
Monthly in first year		Check inlets and outlets for clogging and remove any debris, as required.
		Notes
□ Month 1	Date:	
□ Month 2	Date:	
□ Month 3	Date:	
□ Month 4	Date	
□ Month 5	Date:	
□ Month 6	Date:	
□ Month 7	Date:	
□ Month 8	Date:	
□ Month 9	Date:	
□ Month 10	Date:	
□ Month 11	Date:	
□ Month 12	Date:	
Spring and Fall		Check inlets and outlets for clogging and remove any debris, as required.
		Notes
□ Spring	Date:	
□ Fall	Date:	
□ Spring	Date:	
□ Fall	Date:	
□ Spring	Date:	
□ Fall	Date:	
□ Spring	Date:	
□ Fall	Date:	
□ Spring	Date:	
□ Fall	Date:	
□ Spring	Date:	
□ Fall	Date:	
One year after commissioning and every third year following		Check inlets and outlets for clogging and remove any debris, as required.
		Notes
□ Year 1	Date:	
□ Year 4	Date:	
□ Year 7	Date:	
□ Year 10	Date:	
□ Year 13	Date:	
□ Year 16	Date:	
□ Year 19	Date:	
□ Year 22	Date:	

Major Maintenance

	Frequency		Action
Inlets and Outlets	**Every 3 years**		Obtain documentation that the inlets, outlets and vents have been cleaned and will function as intended.
			Notes
	□ Year 1	Date:	
	□ Year 4	Date:	
	□ Year 7	Date:	
	□ Year 10	Date:	
	□ Year 13	Date:	
	□ Year 16	Date:	
	□ Year 19	Date:	
	□ Year 22	Date:	
	Spring and Fall		Check inlet and outlets for clogging and remove any debris, as required.
			Notes
	□ Spring	Date:	
	□ Fall	Date:	
	□ Spring	Date:	
	□ Fall	Date:	
	□ Spring	Date:	
	□ Fall	Date:	
	□ Spring	Date:	
	□ Fall	Date:	
	□ Spring	Date:	
	□ Fall	Date:	
	□ Spring	Date:	
	□ Fall	Date:	
CULTEC Stormwater Chambers	**2 years after commissioning**		□ Inspect the interior of the stormwater management chambers through inspection port for deficiencies using CCTV or comparable technique. □ Obtain documentation that the stormwater management chambers and feed connectors will function as anticipated.
			Notes
	□ Year 2	Date:	

Major Maintenance

	Frequency		Action
CULTEC Stormwater Chambers	**9 years after commissioning every 9 years following**		□ Clean stormwater management chambers and feed connectors of any debris. □ Inspect the interior of the stormwater management structures for deficiencies using CCTV or comparable technique. □ Obtain documentation that the stormwater management chambers and feed connectors have been cleaned and will function as intended.
			Notes
	□ Year 9	Date:	
	□ Year 18	Date:	
	□ Year 27	Date:	
	□ Year 36	Date:	
	45 years after commissioning		□ Clean stormwater management chambers and feed connectors of any debris. □ Determine the remaining life expectancy of the stormwater management chambers and recommended schedule and actions to rehabilitate the stormwater management chambers as required. □ Inspect the interior of the stormwater management chambers for deficiencies using CCTV or comparable technique. □ Replace or restore the stormwater management chambers in accordance with the schedule determined at the 45-year inspection. □ Attain the appropriate approvals as required. □ Establish a new operation and maintenance schedule.
			Notes
	□ Year 45	Date:	

Major Maintenance

	Frequency		Action
Surrounding Site	**Monthly in 1st year**		□ Check for depressions in areas over and surrounding the stormwater management system.
			Notes
	□ Month 1	Date:	
	□ Month 2	Date:	
	□ Month 3	Date:	
	□ Month 4	Date:	
	□ Month 5	Date:	
	□ Month 6	Date:	
	□ Month 7	Date:	
	□ Month 8	Date:	
	□ Month 9	Date:	
	□ Month 10	Date:	
	□ Month 11	Date:	
	□ Month 12	Date:	
	Spring and Fall		□ Check for depressions in areas over and surrounding the stormwater management system.
			Notes
	□ Spring	Date:	
	□ Fall	Date:	
	□ Spring	Date:	
	□ Fall	Date:	
	□ Spring	Date:	
	□ Fall	Date:	
	□ Spring	Date:	
	□ Fall	Date:	
	□ Spring	Date:	
	□ Fall	Date:	
	□ Spring	Date:	
	□ Fall	Date:	
	Yearly		□ Confirm that no unauthorized modifications have been performed to the site.
			Notes
	□ Year 1	Date:	
	□ Year 2	Date:	
	□ Year 3	Date:	
	□ Year 4	Date:	
	□ Year 5	Date:	
	□ Year 6	Date:	
	□ Year 7	Date:	

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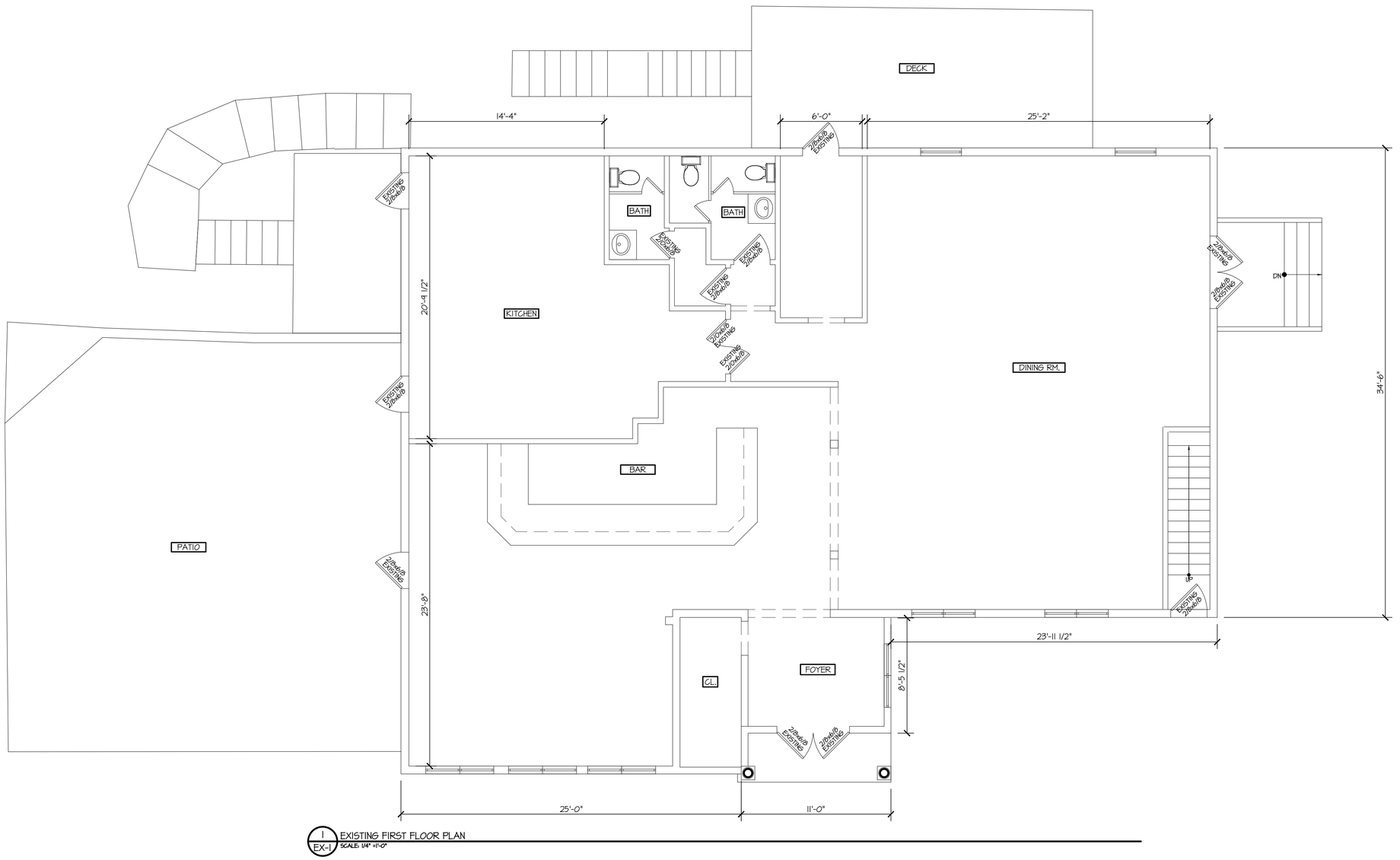
RETENTION • DETENTION • INFILTRATION • WATER QUALITY



1 EX-1 EXISTING FIRST FLOOR PLAN
SCALE: 1/4" =1'-0"

DO NOT SCALE DWGS. USE GIVEN DIMENSIONS ONLY. IF NOT SHOWN, VERIFY CORRECT DIMENSIONS WITH THE ARCHITECT. THE CONTRACTOR SHALL CHECK & VERIFY ALL DIMENSIONS & CONDITIONS AT THE SITE. PLEASE NOTIFY ARCHITECT OF ANY DISCREPANCIES.

REVISION	DATE

Seal:

REGISTERED ARCHITECT
JOSEPH R. CROCCO
15890
STATE OF NEW YORK

APPROVED BY THE TOWN OF NORTH CASTLE PLANNING BOARD
RESOLUTION DATED:

_____ DATE _____
CHRISTOPHER CARTHY, CHAIR
TOWN OF NORTH CASTLE PLANNING BOARD

ENGINEERING PLANS REVIEWED FOR CONFORMANCE TO RESOLUTION:

_____ DATE _____
JOSEPH CERMELE, P.E.
KELLARD SESSIONS CONSULTING P.C.
CONSULTING TOWN ENGINEERS

joseph r. crocco architects
new york connecticut new jersey massachusetts
4 macdonald avenue, suite 5
armonk, new york 10504
(914) 273-2774 fax (914) 273-2776

EXISTING CONDITIONS FOR:

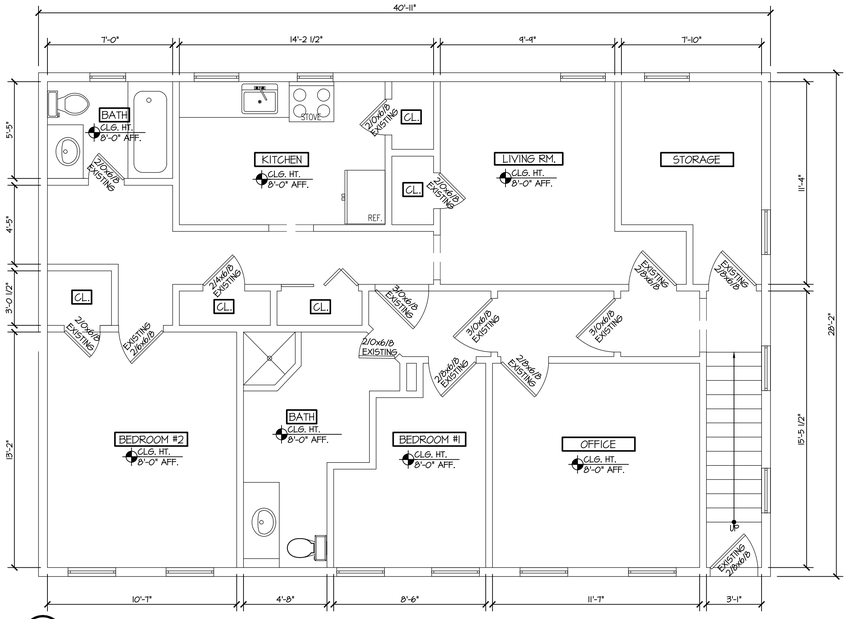
GAVI RESTAURANT
15 OLD RT.22
ARMONK, NY

Dwg. Name:
EXISTING FLOOR PLANS

Project No:
23004

Date:
MARCH. 17, 2023

Sheet Number:
EX-1



1 EX-2 EXISTING SECOND FLOOR PLAN
SCALE: 1/4" =1'-0"

2 EX-2 EXISTING FRONT ELEVATION
SCALE: 1/4" =1'-0"

REVISION	DATE

Seal:

REGISTERED ARCHITECT
JOSEPH R. CROCCO
15830
STATE OF NEW YORK

APPROVED BY THE TOWN OF NORTH CASTLE PLANNING BOARD
RESOLUTION DATED:

_____ DATE _____
CHRISTOPHER CARTHY, CHAIR
TOWN OF NORTH CASTLE PLANNING BOARD

ENGINEERING PLANS REVIEWED FOR CONFORMANCE TO RESOLUTION:

_____ DATE _____
JOSEPH CERMELE, P.E.
KELLARD SESSIONS CONSULTING P.C.
CONSULTING TOWN ENGINEERS

joseph r. crocco architects
new york connecticut new jersey massachusetts
4 macdonald avenue, suite 5
armonk, new york 10504
(914) 273-2774 fax (914) 273-2776

EXISTING CONDITIONS FOR:

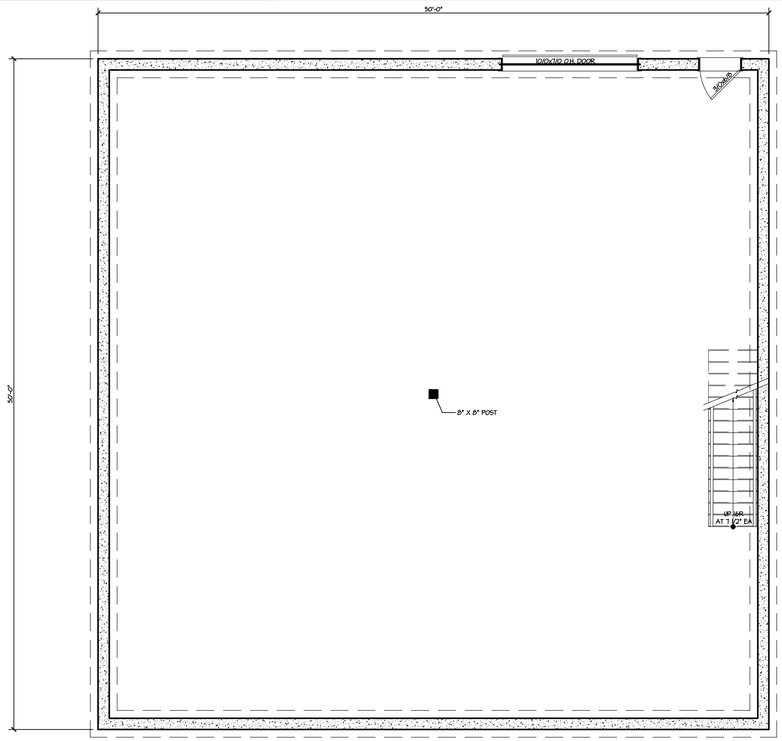
GAVI RESTAURANT
15 OLD RT.22
ARMONK, NY

Dwg. Name:
SECOND FLOOR PLAN & EXISTING ELEVATIONS

Project No: 23004

Date: MARCH. 17, 2023

Sheet Number: EX-2



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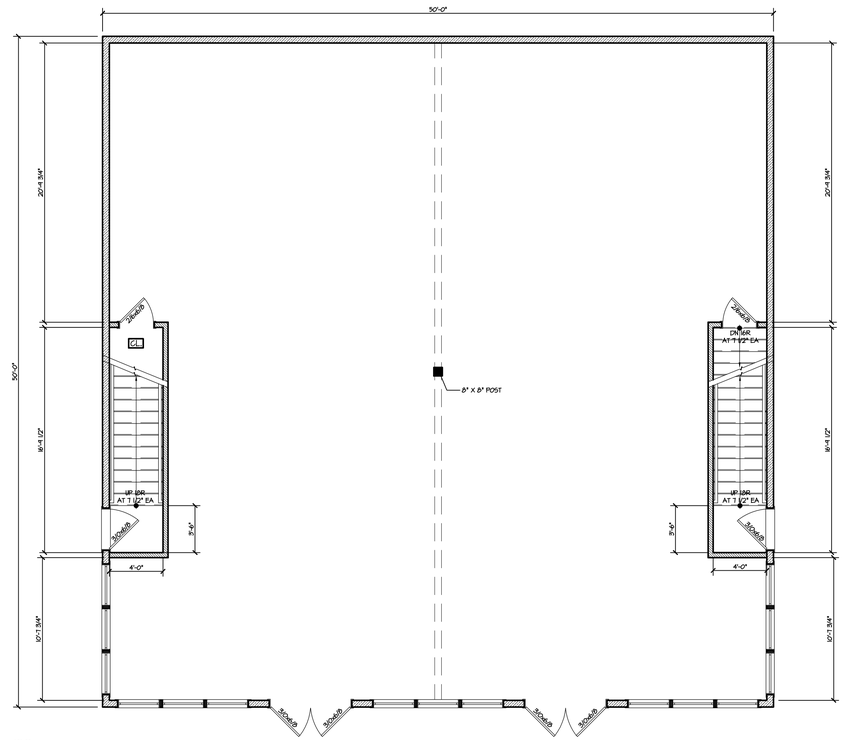

2 A-1 PROPOSED FIRST FLOOR PLAN
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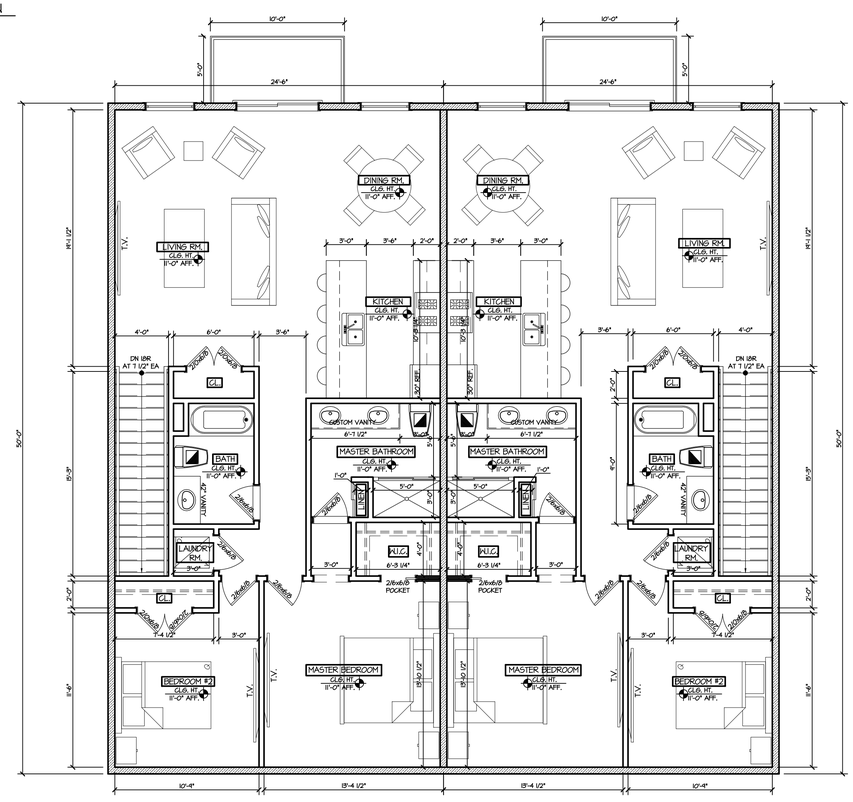

3 A-1 PROPOSED SECOND FLOOR PLAN
SCALE: 3/16"=1'-0"

REVISION	DATE

Seal:

REGISTERED ARCHITECT
JOSEPH R. CROCCO
15890
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(914) 273-2774 fax (914) 273-2776

APPROVED BY THE TOWN OF NORTH CASTLE PLANNING BOARD
RESOLUTION DATED:

_____ DATE _____
CHRISTOPHER CARTHY, CHAIR
TOWN OF NORTH CASTLE PLANNING BOARD

ENGINEERING PLANS REVIEWED FOR CONFORMANCE TO RESOLUTION:

_____ DATE _____
JOSEPH CERMELE, P.E.
KELLARD SESSIONS CONSULTING P.C.
CONSULTING TOWN ENGINEERS

PROPOSED MIXED USE STRUCTURE:

FOR:

15 OLD RTE 22
ARMONK, NY

Dwg. Name:
PROPOSED FLOOR PLANS

Project No:
23004

Date:
APRIL 4, 2023

Sheet Number:
A-1