NYC Environmental Protection

New York City STORMWATER DESIGN MANUAL

Contents

Environmental Protection

Acronyms

Environmental Protection

Acronyms

BBL Borough-Block-Lot

BIN Building Identification Number

Blue Book New York State Standards and Specifications for Erosion and Sediment Control

BMP Best Management Practice

CAFO Concentrated Animal Feeding Operation

CEQR City Environmental Quality Review

CGP New York State Department of Environmental Conservation SPDES General Permit for Stormwater Discharges from Construction Activity

Cpv Channel Protection Volume

CSO Combined Sewer Overflow

DEP New York City Department of Environmental Protection

ESC Erosion and Sediment Control

GI Green Infrastructure

GIS Geographic Information System

LID Low Impact Development

MS4 Municipal Separate Storm Sewer System

MS4CP MS4 Construction Permitting

NNI No-Net-Increase

NOI Notice of Intent

NOT Notice of Termination

NYC New York City

NYC LL New York City Local Law

NYS New York State

NYSDEC New York State Department of Environmental Conservation

POC Pollutant of Concern

Qf Extreme Flood Control Criteria

Qp Overbank Flood Control Criteria

RRv Runoff Reduction Volume

SMP Stormwater Management Practice

SOP Standard Operating Procedure

SPDES State Pollutant Discharge Elimination System

SWDM NYC Stormwater Design Manual

SWMDM Stormwater Management Design Manual

SWMP Stormwater Management Program

SWPPP Stormwater Pollution Prevention Plan

SWPTS Stormwater Permitting and Tracking System

TAPE Washington State's Technology Assistance Protocol - Ecology

TARP Technology Acceptance Reciprocity Partnership

TN Total Nitrogen

TP Total Phosphorus

USEPA United States Environmental Protection Agency

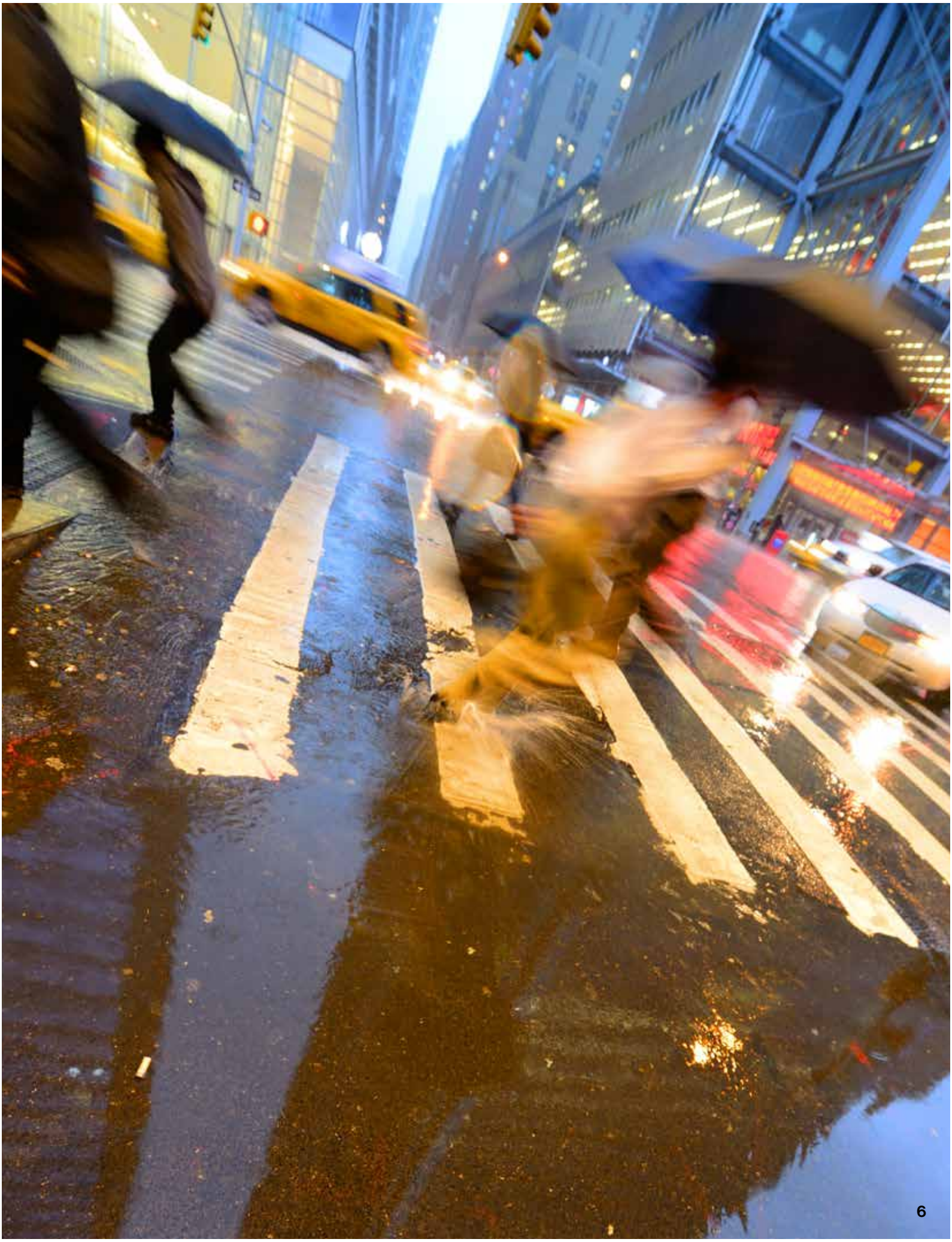
WQv Water Quality Volume

WWTP Wastewater Treatment Plant

Chapter 1

Introduction

NYC Environmental Protection



1.1 Introduction

This New York City (NYC) Stormwater Design Manual (SWDM) provides guidance for developers and design professionals of covered development projects that must comply with the requirements of the Department of Environmental Protection (DEP) MS4 Construction Permitting (MS4CP) Program. The MS4CP Program was designed to establish a stormwater management approach that meets the requirements of the State Pollutant Discharge Elimination System (SPDES) Permit from the New York State Department of Environmental Conservation (NYSDEC) for the City's Municipal Separate Storm Sewer System (MS4) (NYC MS4 Permit, NY-0287890) and seeks to improve the health and water quality of NYC watersheds.

This NYC SWDM provides information, procedures, and policies on how to comply with the NYC DEP Municipal Separate Storm Sewer System Construction Permitting (MS4CP) Program.

This SWDM provides the information needed to complete and submit applications for Stormwater Construction Permits and Stormwater Maintenance Permits in NYC. Prior to starting the application process and developing a SWPPP for a project, applicants should confirm that they are using the most recent version of the SWDM (https://www1.nyc.gov/html/dep/html/stormwater/construction-and-post-construction.shtml).

This SWDM provides guidance on:

- Using the Stormwater Permitting and Tracking System (SWPTS);
- Meeting additional NYC Stormwater Pollution Prevention Plan (SWPPP) requirements;
- Selecting stormwater management practices (SMPs) for NYC specific conditions;
- Preparing SMP operation and maintenance (O&M) manuals.

Table 1-1 details the chapters in this SWDM and the purpose of each. A SWPPP template has been included as Attachment 1, to aid applicants in developing SWPPPs that comply with the MS4CP Program.

Table 1-1. Chapters of the New York City Stormwater Design Manual

Chapter	Purpose
Chapter 1 Introduction	Provides an overview of the NYC Stormwater Design Manual and the MS4 Construction Permitting Program.
Chapter 2 SWPPP Application Guidance and the SWPTS for NYC	Provides the step by step process for submitting applications for and obtaining DEP approval of covered development projects in NYC MS4 areas.
Chapter 3 Stormwater Pollution Prevention Plan Development for NYC	Details the preferred SWPPP development process, including the hierarchy for stormwater management practice selection in NYC as well as the NYC MS4 No-Net-Increase (NNI) requirements.
Chapter 4 SMP and BMP Operation and Maintenance Guidance	Provides guidance on the proper operation and maintenance practices to maintain SMP functionality.
Attachment 1 SWPPP Template	Provides a template for a SWPPP to be developed and submitted to the DEP.
Attachment 2 NYC MS4 No-Net-Increase Calculator for Nitrogen Example	Provides an example for NYC MS4 No-Net-Increase Calculator for Nitrogen.
Attachment 3 Geotechnical Investigation Procedures	Provides infiltration testing and soil sampling procedures to be used for SMP design.
Attachment 4 NYCDEP On-Site Green Infrastructure Standards	Design details for types of on-site green infrastructure SMPs in NYC.

1.2 Project Applicability

Covered Development Projects

The MS4CP Program requirements apply to any covered development projects (development or redevelopment), private or public, that meet the following project applicability criteria:

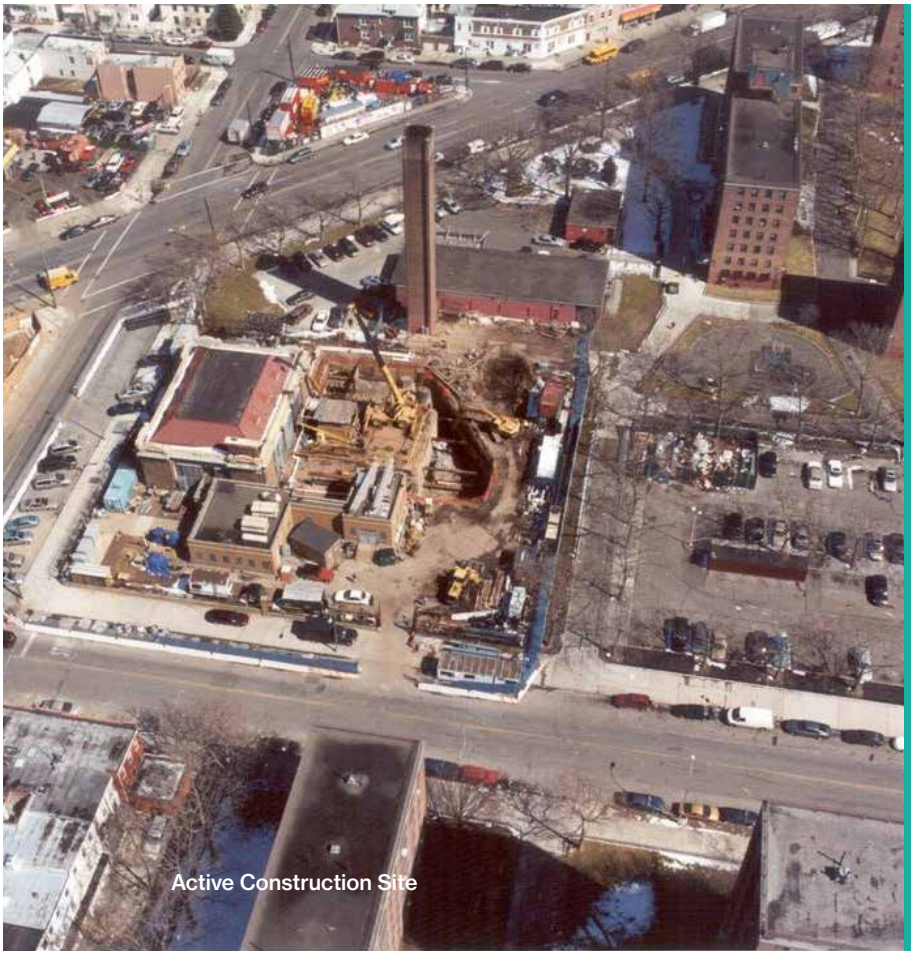
- Contributes runoff to the NYC MS4; and
- Involves development activity that exceeds the soil disturbance threshold.[1]

A project is in the MS4 area if stormwater drains from the project to surface waters though a separate storm sewer, high-level storm sewer, or bluebelt owned or operated by the City that is connected to either an MS4 outfall or combined sewer overflow outfall downstream of a regulator.

Projects involving NYC municipal operations and facilities where stormwater drains from the project directly to surface waters, are also considered to be in the NYC MS4 area.

The following activities are not considered covered development projects per the Chapter 19.1 of Title 15 of the Rules of the City of New York:

- Routine maintenance activities;
- Repairs to any stormwater management practice or facility deemed necessary by the department; and
- Emergency activities that are immediately necessary for the protection of life, property, or natural resources.



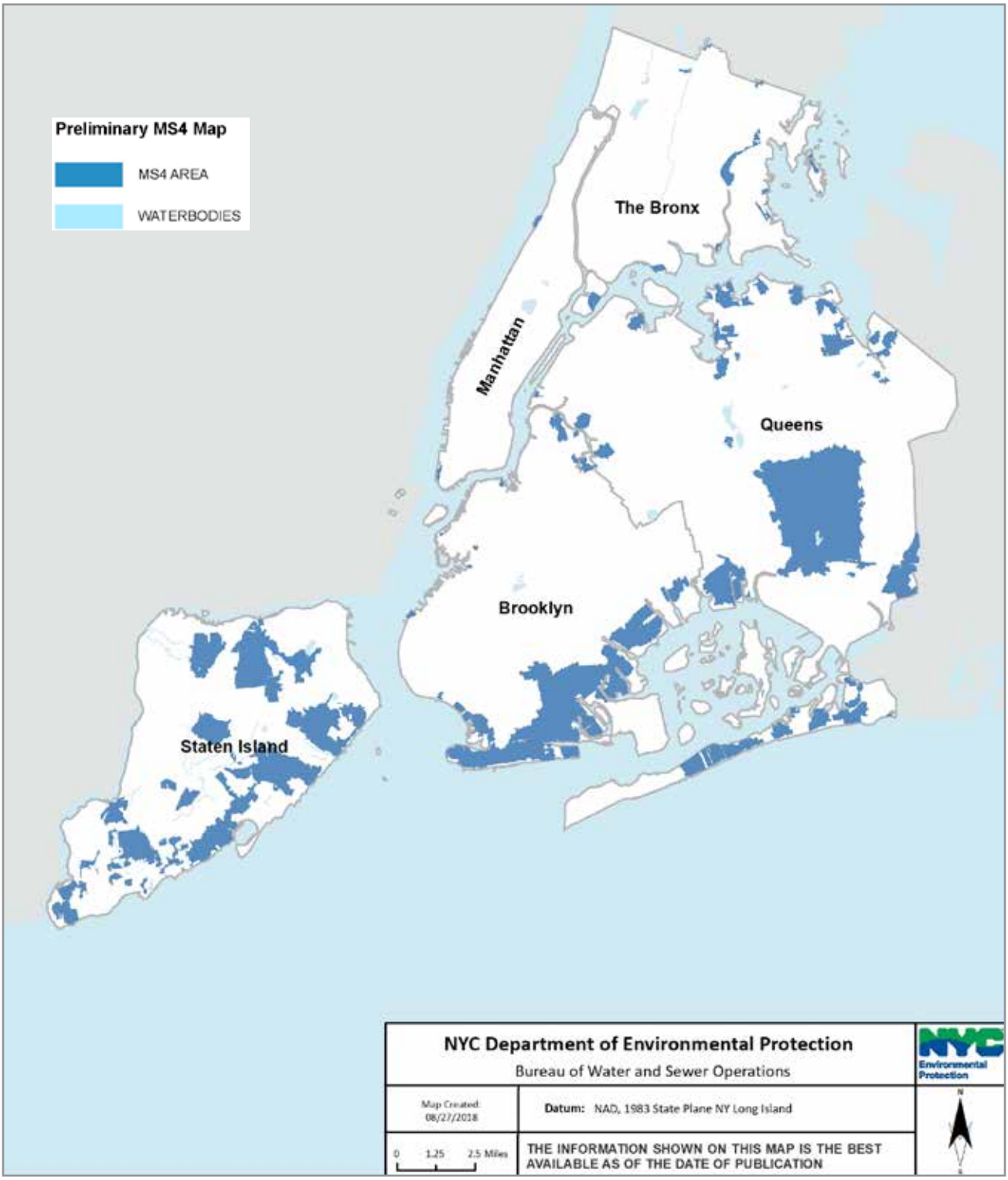
Active Construction Site

A "covered development project" is defined as development activity, private or public, that involves or results in a land disturbance within the MS4 area that exceeds the soil disturbance threshold, including disturbances that are part of a larger common plan of development or sale that will ultimately exceed the soil disturbance threshold.

[1]If an individual project disturbs less than the soil disturbance threshold but is part of a larger common plan of development or sale that will exceed the soil disturbance threshold, the individual project is also considered a covered development project.

The MS4 Interactive Map (http://www.nyc.gov/html/dep/html/stormwater/ms4.shtml) is available to assist in locating outfalls and drainage areas that are part of the NYC MS4 area. Applicants should recognize that all projects that require site connection proposal approval for connection to a DEP storm sewer are likely located in the MS4 area. The Preliminary MS4 Map, as of August 2018, is included below for reference.

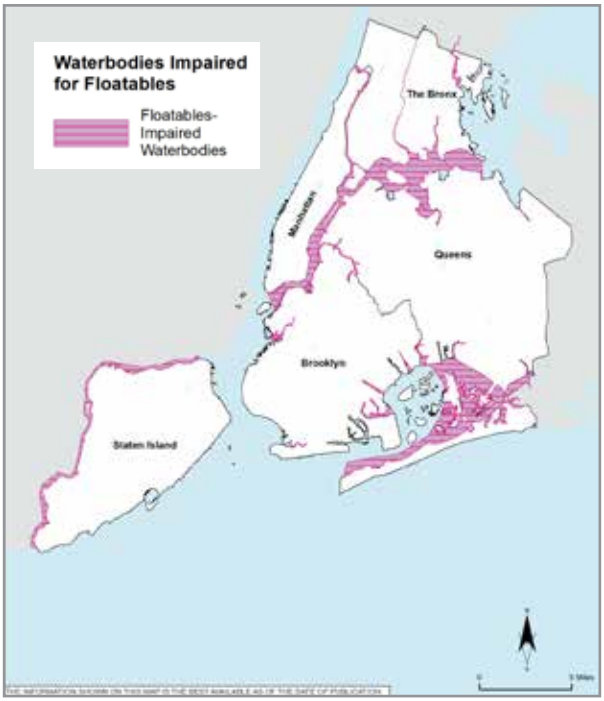
The definitions of development and redevelopment for projects within NYC will follow the standards and associated requirements outlined in the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity, referred to as the Construction General Permit (CGP).

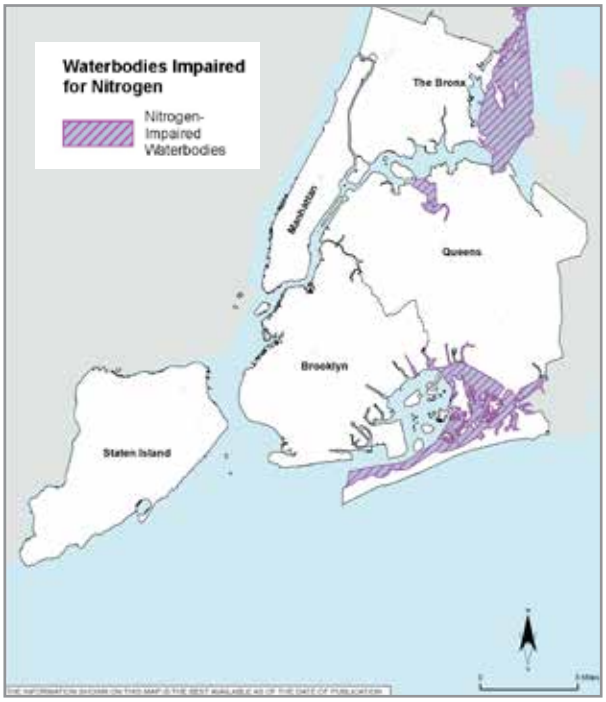


As part of the MS4CP Program, SWPPPs for covered development projects must also address pollutants of concern (POCs) as applicable for their respective receiving waterbodies. Appendix 2 of the NYC MS4 Permit (http://www.nyc.gov/html/dep/pdf/water_sewer/spdes-ms4-permit.pdf) contains a list of impaired waterbodies in and around NYC, as well as the relevant POCs for each waterbody listed. Maps of the impaired waterbodies in and around NYC are included below for reference. The waterbodies and their respective impairments are listed in Table 1-2.

Pollutants of Concern in and around NYC Waterbodies

Pathogens – disease-producing agents such as bacteria, viruses, or other microorganisms.
Floatables – manmade materials such as plastics, papers, or other products, which have made their way to a waterbody.
Phosphorus - a nutrient that can lead to algae blooms that deplete oxygen in the water, which can kill aquatic life.
Nitrogen - a nutrient that can lead to algae blooms that deplete oxygen in the water, which can kill aquatic life.





Impaired waterbodies in and around NYC

Table 1-2. Impaired Water Segments and Pollutants of Concern in and Around NYC (Source: Appendix 2 of the NYC MS4 Permit)

COUNTY	Waterbody Identification Number (WIN)	WATERBODY NAME	POLLUTANT
Bronx	(MW2.4) ER-3	Bronx River, Lower	Floatables
Bronx	(MW2.4) ER-3	Bronx River, Lower	Pathogens
Bronx	(MW2.4) ER-3	Bronx River, Middle, and tribs	Floatables
Bronx	(MW2.4) ER-3	Bronx River, Middle, and tribs	Pathogens
Bronx	(MW2.6) LIS (portion 1a)	Eastchester Bay	Pathogens
Bronx	(MW3.2) LIS-2	Hutchinson River, Lower, and tribs	Floatables
Bronx	(MW2.6) LIS (portion 1)	Long Island Sound, Western Portion	Nitrogen
Bronx	(MW3.2) LIS-2-P1075	Reservoir No. 1/Lake Isle	Phosphorus
Bronx	(MW2.3) ER-1-5-P1043	Van Cortlandt Lake	Phosphorus
Bronx	(MW2.4) ER-4	Westchester Creek	Floatables
Kings	(MW1.1) LB/GB-253	Coney Island Creek	Floatables
Kings	(MW1.1) LB/GB-253	Coney Island Creek	Pathogens
Kings	(MW1.3) UB-EB-1	Gowanus Canal	Floatables
Kings	(MW8.6a) JB-249a	Hendrix Creek	Floatables
Kings	(MW8.6a) JB-249a	Hendrix Creek	Nitrogen
Kings	(MW8.6a) JB-249a	Hendrix Creek	Pathogens
Kings	(MW8.6a) JB-250b	Mill Basin and tidal tribs	Floatables
Kings	(MW8.6a) JB-250a	Paerdegat Basin	Floatables
New York	(MW2.1) ER (portion 1)	East River, Lower	Floatables
New York	(MW2.3) ER-1	Harlem River	Floatables
Queens	(MW2.5) ER/LIS-LNB-19 thru 20	Alley Creek/Little Neck Bay Trib	Floatables
Queens	(MW0.0) AO (portion 1)	Atlantic Ocean Coastline	Pathogens
Queens	(MW8.5a) JB-247	Bergen Basin	Floatables
Queens	(MW8.5a) JB-247	Bergen Basin	Nitrogen
Queens	(MW8.5a) JB-247	Bergen Basin	Pathogens
Queens	(MW2.3) ER (portion 2)	East River, Upper	Floatables
Queens	(MW2.3) ER (portion 3)	East River, Upper	Floatables
Queens	(MW2.5) ER-LI-12	Flushing Creek/Bay	Floatables
Queens	(MW2.5) ER-LI-12	Flushing Creek/Bay	Nitrogen
Queens	(MW8.5) JB	Jamaica Bay, Eastern, and tribs (Queens)	Floatables
Queens	(MW8.5) JB	Jamaica Bay, Eastern, and tribs (Queens)	Nitrogen
Queens	(MW8.5) JB	Jamaica Bay, Eastern, and tribs (Queens)	Pathogens
Queens	(MW2.5) ER/LIS-LNB	Little Neck Bay	Pathogens
Queens	(MW2.1) ER-LI-4	Newtown Creek and tidal tribs	Floatables
Queens	(MW8.5a) JB-248a	Shellbank Basin	Nitrogen
Queens	(MW8.5a) JB-249	Spring Creek and tribs	Floatables
Queens	(MW8.5a) JB-249	Spring Creek and tribs	Pathogens
Queens	(MW8.5a) JB-241a	Thurston Basin	Floatables
Richmond	(MW1.2) SI (portion 1)	Arthur Kill (Class I) and minor tribs	Floatables
Richmond	(MW1.2) SI (portion 2)	Arthur Kill (Class SD) and minor tribs	Floatables
Richmond	(MW1.2) SI..P1039, P1051, P1053	Grasmere, Arbutus and Wolfes Lakes	Phosphorus
Richmond	(MW1.2) SI (portion 4)	Kill Van Kull	Floatables
Richmond	(MW1.2) SI (portion 3)	Newark Bay	Floatables
Richmond	(MW1.2) SI (portion 1)	Raritan Bay (Class SA)	Pathogens

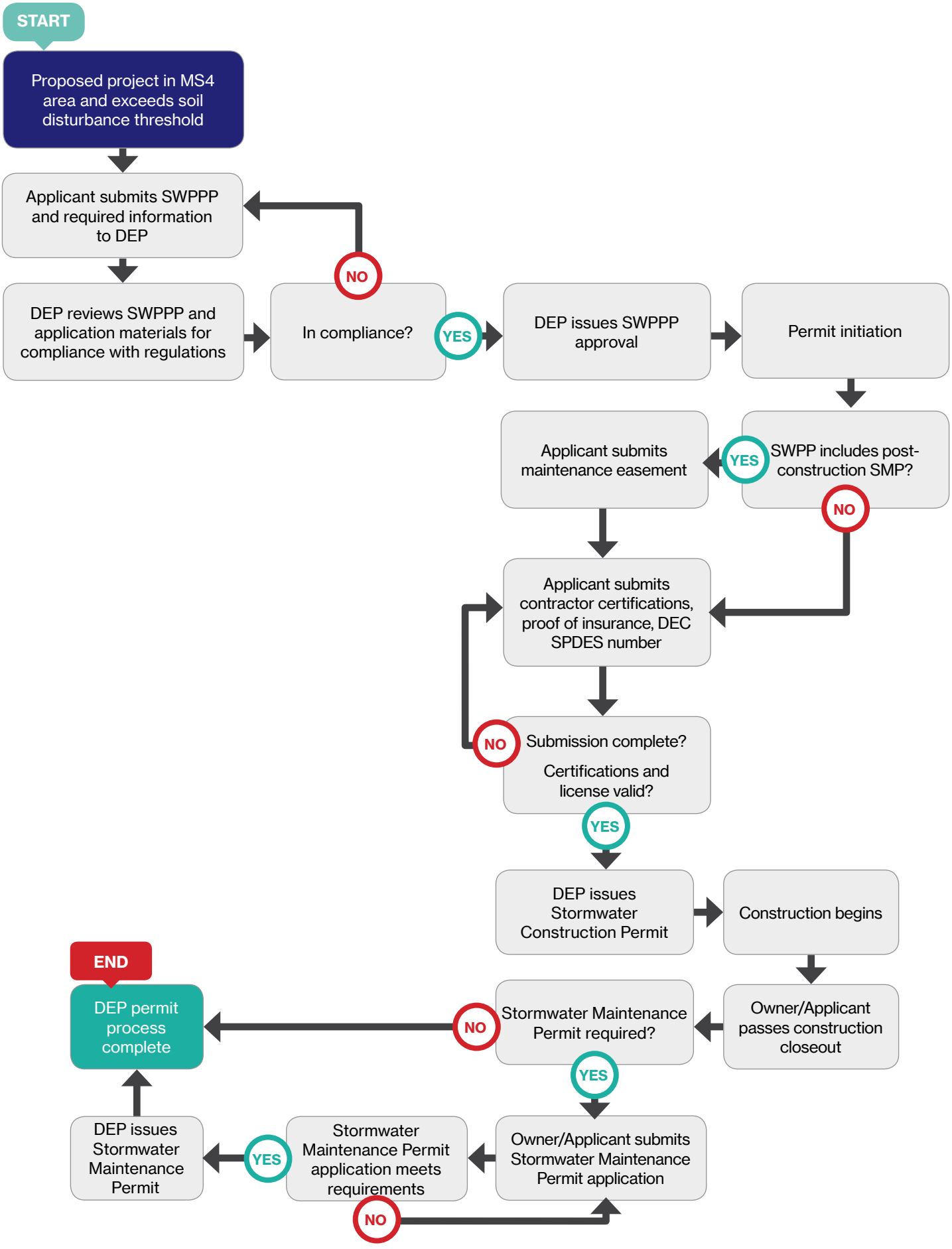
1.3 Rules for the Use of Municipal Separate Storm Sewer Systems

In 2019, NYC issued the rules for the use of the MS4 in Chapter 19.1 of Title 15 of the Rules of the City of New York (RCNY). In accordance with the rules, covered development projects within the MS4 area must comply with the DEP MS4CP Program.

DEP has established a procedure for developers to follow in order to comply with the MS4CP Program requirements. DEP's permitting procedure for covered development projects is presented in Figure 1-1. Covered development projects must satisfy these requirements in addition to the requirements of the CGP. The integration of the MS4CP Program and the CGP process is detailed in Chapter 2 and illustrated in Figure 2-2.

An overview of the SWPPP development procedures, DEP application and permit requirements and post-construction requirements are provided below. Additional details can be found in Chapters 2, 3 and 4 of this SWDM.

Figure 1-1. DEP Permitting Procedure for Covered Development Projects
(For full process, see Chapter 2.)



SWPPP Development

As shown in Figure 1-1, the applicant must develop a SWPPP that is in compliance with the DEP rules and the CGP. To develop a SWPPP in compliance with CGP rules, adjustments to the SWPPP must be made to suit the ultra-urban environment of NYC. The preferred DEP approach for SWPPP development for covered development projects is detailed in Chapter 3, with a SWPPP template provided as Attachment 1.

All covered development projects will require erosion and sediment controls equivalent to those required by the CGP. To obtain a Stormwater Construction Permit, an applicant must develop a SWPPP that incorporates the New York State Standards and Specifications for Erosion and Sediment Control (The Blue Book), dated November 2016 (https://www.dec.ny.gov/chemical/29066.html). Subsequent versions of this SWDM may require SWPPP preparers to adhere to more stringent requirements for stormwater management-based construction activities within NYC.

In addition to erosion and sediment controls for construction activities, certain covered development projects will be required to implement post-construction stormwater controls. To obtain a Stormwater Maintenance Permit, SWPPP preparers for covered development projects must implement the standards for SMPs established in the New York State (NYS) Stormwater Management Design Manual (SWMDM) dated January 2015 (https://www.dec.ny.gov/chemical/29072.html). Subsequent versions of this SWDM may require SWPPP preparers to adhere to more stringent requirements for SMP designs implemented within NYC. Covered development projects that do not require post-construction SMPs are listed in Table 1-3.

Table 1-3. Some Covered Development Projects that Require the Preparation of a SWPPP that Only Includes Erosion and Sediment Controls (Sources: CGP Appendix B, DEP MS4 Rules)

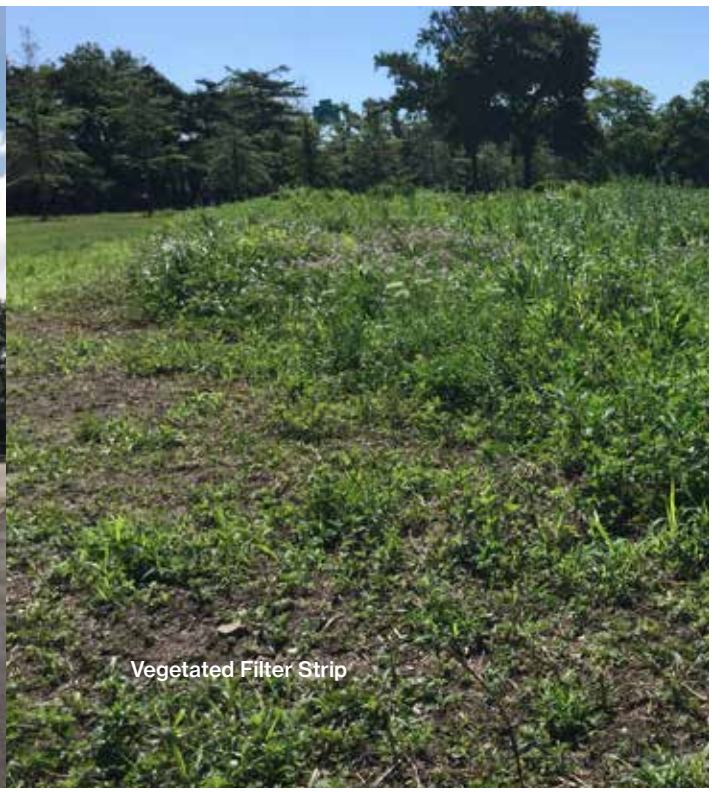
Soil Disturbance Amounts	Development Activity
Exceeds the soil disturbance threshold.	Installation of underground, linear utilities; such as gas lines, fiber-optic cable, cable TV, electric, telephone, sewer mains, and water mains where surfaces will be restored to the existing condition.
	Sidewalk construction projects that are not part of a road/highway construction or reconstruction project
	Demolition project where vegetation will be established, and no redevelopment is planned
	Spoil areas that will be covered with vegetation
	Environmental enhancement projects, such as wetland mitigation projects, stormwater retrofits and stream restoration projects
	Bike paths and trails
	Slope stabilization projects
	Slope flattening that changes the grade of the site but does not significantly change the runoff characteristics
	Land clearing and grading for the purposes of creating vegetated open space (i.e. recreational parks, lawns, meadows, fields), excluding projects that alter hydrology from pre- to post-development conditions
	Athletic fields (natural grass) that do not include the construction or reconstruction of impervious area and do not alter hydrology from pre- to post-development conditions
	Overhead electric transmission line project that does not include the construction of permanent access roads or parking areas surfaced with impervious cover
Exceeds the soil disturbance threshold, but not more than five (5) acres.	Single family residential subdivisions with 25% or less impervious cover at total site build-out and not located in one of the watersheds listed in Appendix C of the CGP and not directly discharging to one of the 303(d) segments listed in Appendix E of the CGP

Application Submission and Required DEP Permits

The SWPPP and associated materials must be submitted to DEP via the Stormwater Permitting and Tracking System (SWPTS) for approval. If DEP approves the SWPPP, the Permit Initiation phase of the permitting process will start. If the covered development project does not require a post-construction SMP(s), then the developer needs to identify the contractor and qualified professional that will be responsible for the project. If the covered development project requires a post-construction SMP(s), a maintenance easement will be required along with the other project documentation to complete the permit initiation.

Once permit initiation has been completed by the developer, the designated contractor will input their information into the SWPTS. If the application submission is complete, DEP will issue a Stormwater Construction Permit. Once DEP issues the Stormwater Construction Permit, construction may commence.

At the conclusion of construction, DEP may conduct a construction closeout inspection. If the covered development project passes the construction closeout inspection and does not require a post-construction SMP(s), the DEP permit procedure is complete. If the covered development project passes the construction closeout inspection and requires a post-construction SMP(s), the applicant must submit a Stormwater Maintenance Permit application. The Stormwater Maintenance Permit application must include as-builts of the SMPs and an SMP operation and maintenance manual.



Vegetated Filter Strip

Post-Construction Requirements for Covered Development Projects with SMPs

As part of the Stormwater Maintenance Permit requirements, the owner must ensure that the SMP is functioning as designed, via conducting routine maintenance and correcting any issues noted with the SMP functionality. The owner must submit annual certifications on the SMP functionality and submit a permit renewal application and fee every five (5) years. The renewal application must contain a certification from a qualified professional that the SMP is operating as designed.

A more in-depth description of the SWPPP Application Guidance and the SWPTS is presented in Chapter 2. Procedures for developing a SWPPP in compliance with the MS4CP Program is presented in Chapter 3. SMP Operation and Maintenance Guidance is Provided in Chapter 4.

Chapter 2

SWPPP Application Guidance and the SWPTS for NYC

Environmental Protection

Green Roof at Zerega EMS Station

This chapter provides an overview of the DEP Stormwater Pollution Prevention Plan (SWPPP) application process, as well as the roles and responsibilities of the parties involved. Upon receiving DEP SWPPP approval, the applicant may proceed to request coverage under the New York State Department of Environmental Conservation (NYSDEC) State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activity (CGP) for the covered development project. Prior to using Chapter 2, the applicant must review the stormwater regulations and project applicability requirements described in Chapter 1.

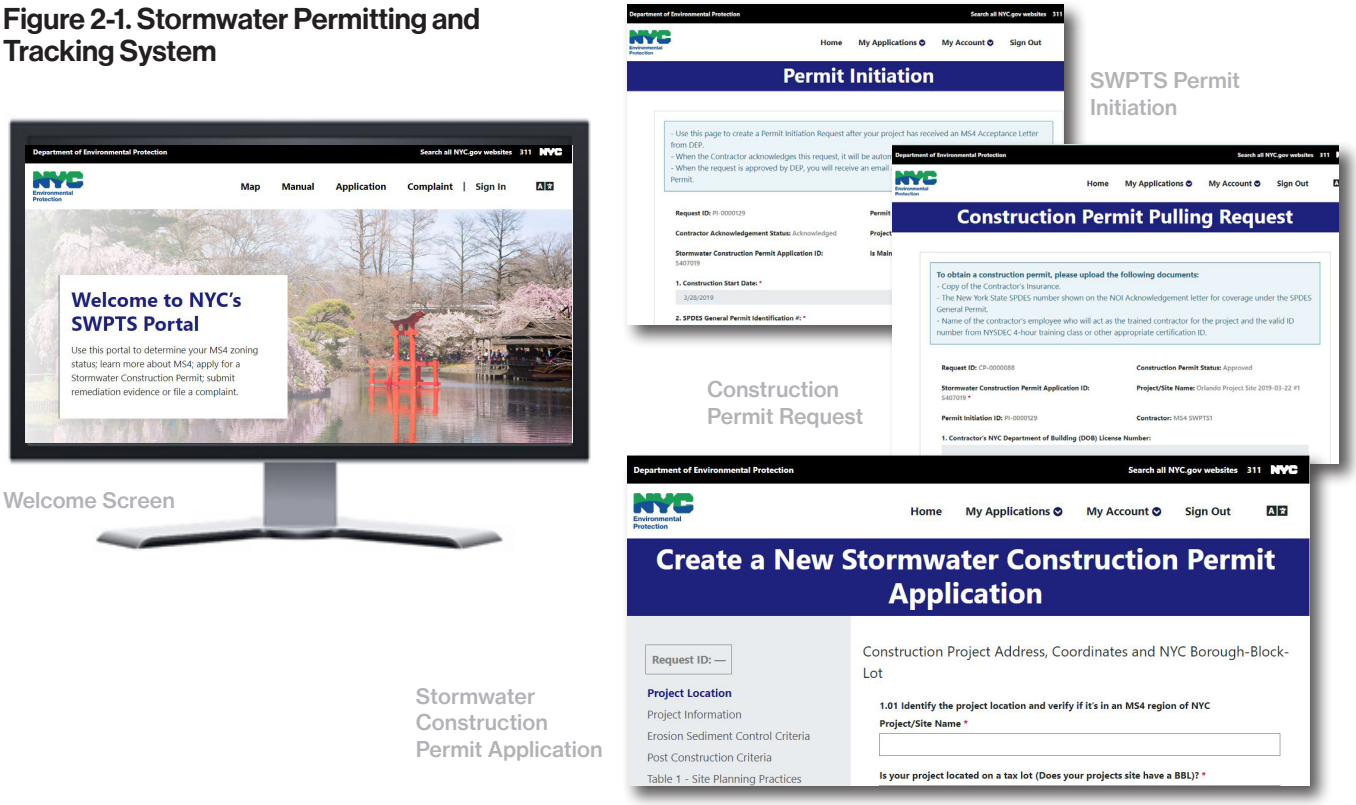
To simplify the submittal and approval process, DEP has created an online project application system, the Stormwater Permitting and Tracking System (SWPTS), Figure 2-1 (https://deppermits.microsoftcrmportals.com/), which will enable applicants to submit permit applications and follow the status of DEP's review.

The SWPTS will allow DEP to confirm that each permit application meets the conditions of the DEP MS4 Construction Permitting (MS4CP) Program as well as the CGP. The review time for the DEP SWPPP approval process is forty-five (45) days. Applicants should note that DEP Stormwater Construction Permits and DEP Stormwater Maintenance Permits issued under the requirements of Title 15, Chapter 19.1, do not replace any existing city, state or federal permit that may be required for the covered development project.

As part of the SWPTS, DEP has identified roles and responsibilities for people involved with the development project, provided below and in Table 2-1. While in some instances the roles and responsibilities may overlap, the following major roles are identified in the SWPTS and used throughout the following sections of this manual.

- Owner – Owner of the property undergoing development is the individual, corporation, partnership, limited-liability company or other legal entity having legal title to premises, a mortgagee or vendee in possession, a trustee in bankruptcy, a receiver, or any other person having legal ownership or control of premises. Owners must certify that they are aware of the development activity and understand their role under RCNY Title 15 Chapter 19.1. The owner may also be the Developer.
- Developer – Primary project contact, the person that owns or leases land on which development activity that is part of a covered development project is occurring, or a person that has operational control over the development activity's construction plans and specifications, including the ability to make modifications to the construction plans and specifications. Developers must certify that they oversaw the SWPPP development and that the project was completed as designed. The Developer may also be the Owner.
- Applicant – Fills in applications and uploads reports, plans and other documentation to the SWPTS.

Figure 2-1. Stormwater Permitting and Tracking System



- SWPPP Preparer – Must be a qualified professional. Creates the SWPPP for review and submittal to the SWPTS. The SWPPP Preparer must certify that the SWPPP was prepared in accordance with RCNY Title 15 Chapter 19.1 and typically works for the Developer.
- Qualified Professional (Construction) – Responsible for inspection and certification of installed SMPs. Qualified Professional (Construction) must certify all stormwater management practices (SMPs) have been constructed in accordance with the SWPPP and typically works for the Developer.
- Qualified Inspector – Responsible for inspection and certification that final stabilization has been acheived at the site. Performs weekly inspections of erosion and sediment control (ESC) practices. The Qualified Inspector must certify that all ESC SMPs are constructed and removed in accordance with the SWPPP and typically works for the Developer.
- Contractor – Responsible for construction of project and implementation of SWPPP. Contractors must certify that they will agree to comply with the SWPPP as well as all applicable permits, including the NYC Stormwater Construction Permit and the CGP. The Contractor reports to the Developer.
- Trained Contractor – Responsible for daily inspection, implementation and maintenance of ESC. Reports to Contractor and must be an employee of the Contractor.

Table 2-1. Roles and Responsibilities in the SWPTS

Role	Responsibility	Minimum Professional Registration/ Certification	Signoff/ Certification Required for Plan Approval/ Construction Permitting?	Signoff/ Certification Required for Construction Closeout/ Maintenance Permitting?
Applicant	Fills in application and uploads reports and plans to the SWPTS.	N/A	N/A	N/A
Contractor	Responsible for construction of project and implementation of SWPPP.	NYC DOB	Yes	N/A
Developer	Primary project contact, responsible for payments and project staff. May be the same entity as Owner.	N/A	Yes	Yes
Owner	Must provide permission for work to occur on property. May be liable for all fees and fines.	N/A	Yes	N/A
Owner/Developer	See 'Owner ' and 'Developer'.	N/A	Yes	Yes
Qualified Inspector	Responsible for weekly (bi-weekly) inspections. Reports to Developer.	NYS PE or RLA or works under the direct supervision of same or CPESC.	N/A	Yes
Qualified Professional (Construction)	Responsible for inspection and certification of installed SMPs. Reports to Developer. May also serve as the SWPPP Preparer or Qualified Inspector.	NYS PE or RLA	N/A	Yes
SWPPP Preparer	Responsible for creating the SWPPP for review and approval. Works for Developer. May also serve as the Qualified Professional (Construction) or Qualified Inspector.	NYS PE, RLA or CPESC (E&SC Plan only)	Yes	N/A
Trained Contractor	Responsible for daily inspection, implementation and maintenance of ESC. Reports to Contractor and must be an employee of Contractor.	NYSDEC 4-hour ESC Class	N/A	N/A

2.1 DEP SWPPP Submittal and Review Process

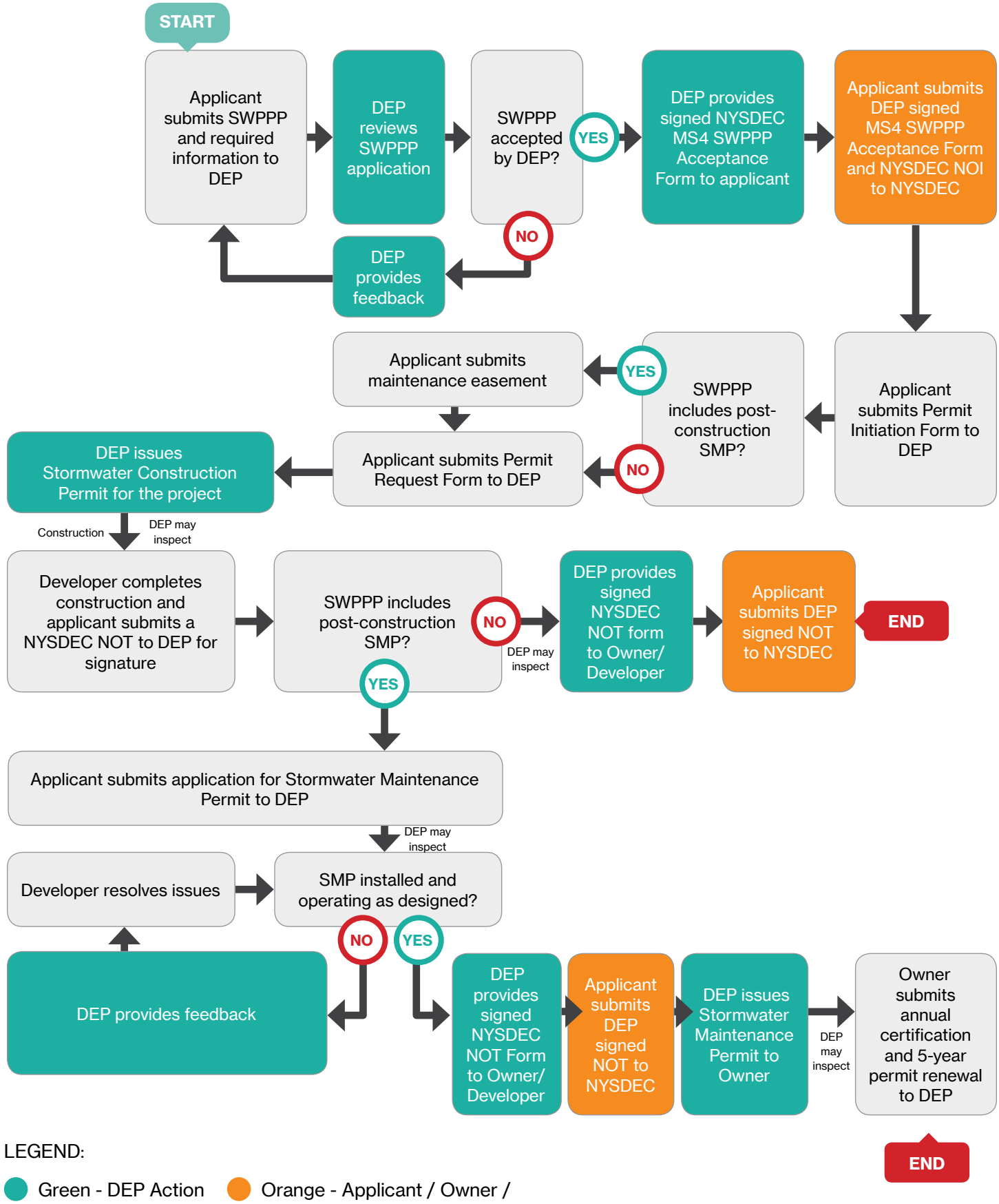
Figure 2-2 details, from start to finish, the complete DEP SWPPP submittal, review, and approval process for a covered development project in the MS4 area. The responsible party for each step in the process is designated by color, with decision points for approvals and other actions noted accordingly.

As part of the SWPPP approval and permitting process, all users will be required to register in the SWPTS to use the system. Users include the owner, applicant, developer, contractor, etc. Each responsible party will be required to provide requested information in the SWPTS to be able to submit an application and receive DEP approval.

An in-depth, step by step description of the process is provided in Sections 2.2 and 2.3. DEP encourages SWPPP preparers, developers, and applicants to read Chapter 2 in its entirety to understand the entire submittal and review process along with the associated requirements and decision points. During development of the SWPPP, SWPPP preparers, developers, and applicants should also review Chapter 3 and make sure they understand what is required in order to develop a SWPPP that will obtain DEP approval.

DEP Skimmer Boat
Collecting Trash and Debris

Figure 2-2. Detailed NYC Stormwater Permit Submission, Review, and Approval Process



Electronic Submissions

The SWPPP and all associated application information must be submitted electronically using the SWPTS. All required information except for the SWPPP document itself will be entered directly into the SWPTS using the online input forms. The complete SWPPP, including all drawings and associated materials, must be uploaded into the SWPTS as a pdf. If issues arise during the upload of the SWPPP document, paper copies and electronic copies saved to a disc or flash drive of the entire SWPPP, including all drawings and associated materials, can be delivered by hand to the following address during regular business hours:

DEP MS4 Construction Permitting
59-17 Junction Boulevard
9th Floor
Flushing, NY 11373

Contacting DEP Staff

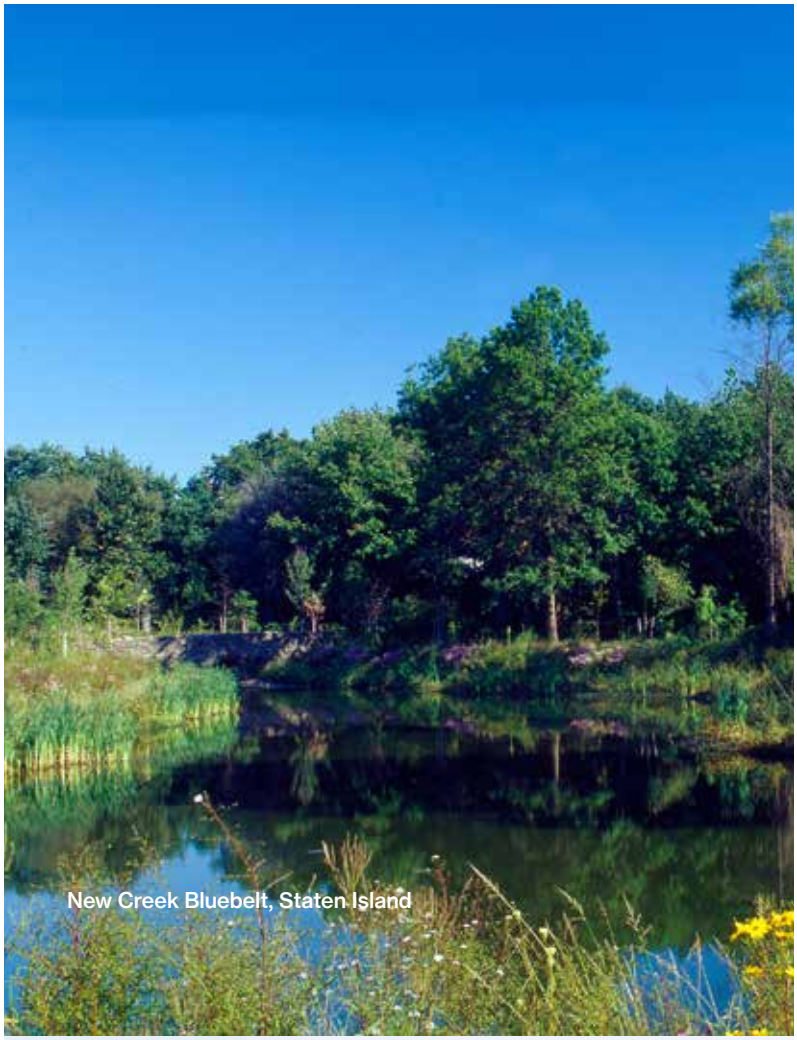
DEP encourages SWPPP preparers and applicants to contact the DEP SWPPP Review and Inspection Team for assistance at any point during development of the SWPPP and/or the submittal and review process. For additional information and answers to frequently asked questions, SWPPP preparers and applicants can:

Visit the DEP SWPTS website at https://deppermits.microsoftcrmportals.com/

- Email the DEP SWPPP Review and Inspection Staff at MS4Construction@dep.nyc.gov

SWPPP preparers and applicants may request discussions with DEP to address site challenges and proposed innovative stormwater management approaches. Each project will be assessed on a case-by-case basis to determine if the concerns require an in-person meeting. All questions or requests for in-person meetings should be emailed to MS4Construction@dep.nyc.gov.

Parties requesting an in-person meeting will need to provide a project description, preliminary site plan, a description of the issues/concerns that need to be discussed and three (3) preferred dates and times to meet with DEP within two (2) weeks of the meeting request submittal. DEP staff will determine the final meeting date and time based on availability.


New Creek Bluebelt, Staten Island


Newtown Creek

2.2 SWPPP Submission, Review and Approval Details

The following sections provide detailed information about the specific phases of the DEP SWPPP submittal and approval process shown in Figure 2-2.

SWPPP Submission Materials

To begin the DEP submittal and approval process, the applicant for the covered development project must:

- Complete the online application in the SWPTS;
- Upload a complete SWPPP in the SWPTS; and
- Pay the associated permit fees.

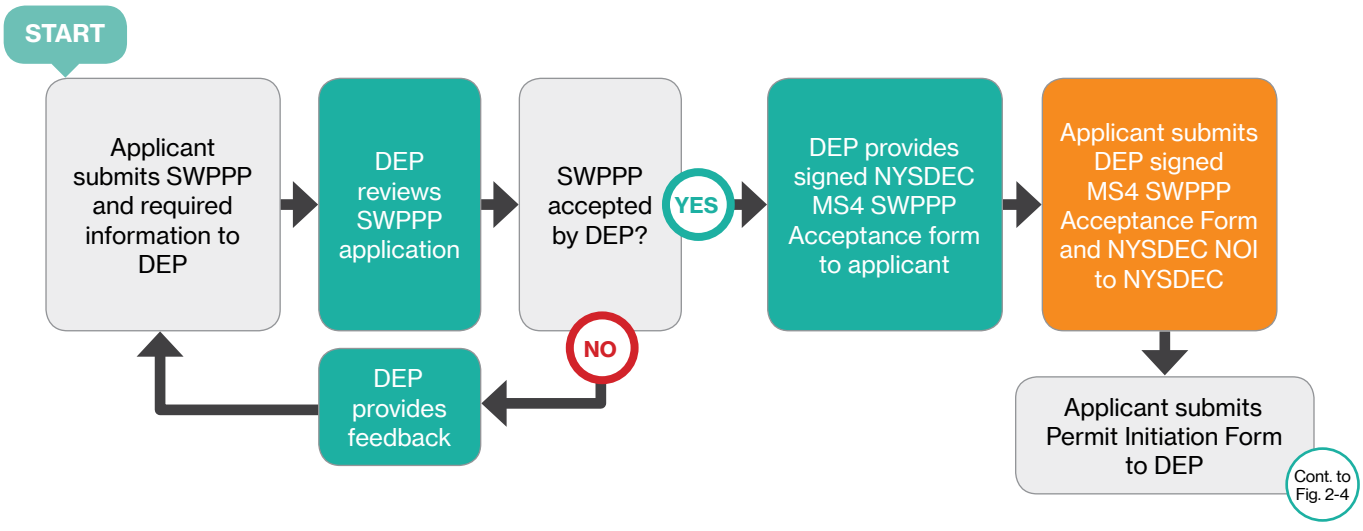
SWPPP Acceptance

If DEP disapproves the submitted SWPPP application, it will provide the applicant with a notice identifying the deficiencies within the SWPPP that will need to be addressed to obtain DEP approval as shown in Figure 2-3. A new application will need to be submitted to DEP for review and approval.

If DEP approves the submitted SWPPP application, DEP will provide the applicant with a signed MS4 SWPPP Acceptance Form for the project. The applicant then includes the signed MS4 SWPPP Acceptance Form with the NYSDEC Notice of Intent (NOI) when applying to obtain coverage for the proposed project under the CGP.

NYC Catch Basin Covered with Trash and Debris

Figure 2-3. SWPPP Acceptance Decision Point



SWPPPs without Post-Construction SMP(s)

If the SWPPP does not require a post-construction SMP, the Permit Initiation Form may be submitted in the SWPTS without a stormwater maintenance easement, as shown in Figure 2-4.

DEP will issue a Stormwater Construction Permit for the project once all the required information in the Permit Request Form has been submitted and approved. Once the DEP Stormwater Construction Permit has been issued, construction may begin. DEP may conduct inspections at any time during the construction process.

After the completion of construction, the applicant will submit the NYSDEC Notice of Termination (NOT) to DEP for the MS4 acceptance signature, as shown in Figure 2-5. DEP may inspect the project site and if satisfied, provide the signed NOT to the applicant. The applicant then submits a signed NOT to NYSDEC.

Figure 2-4. Permit Initiation Form and Maintenance Easement Requirements

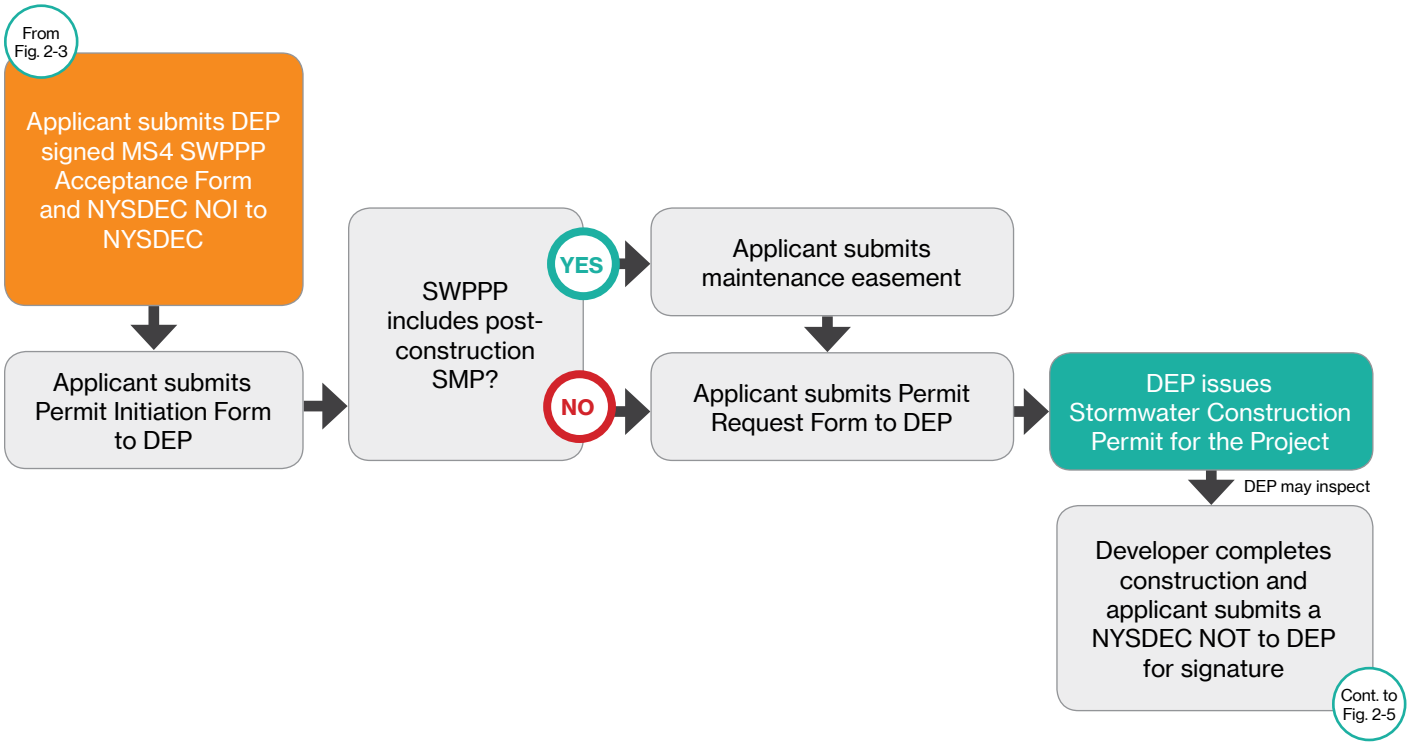
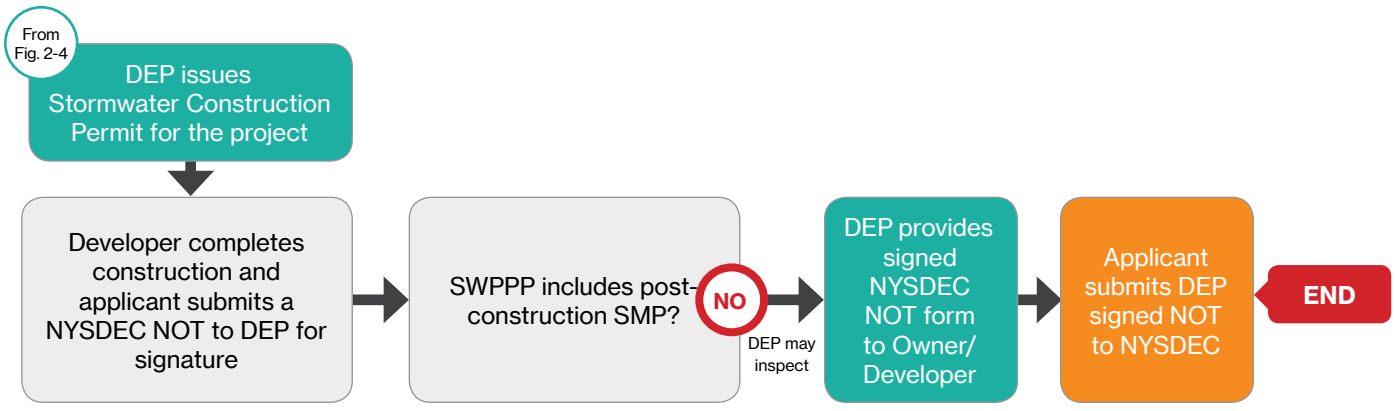


Figure 2-5. SWPPP Does Not Include Post-Construction SMP Decision Point



SWPPP with Post-Construction SMP(s)

If a SWPPP includes one or more post-construction SMPs, the applicant must obtain a maintenance easement. A copy of the maintenance easement and the information required on the Permit Initiation Form must be submitted via SWPTS as shown in Figure 2-4. DEP will issue a Stormwater Construction Permit for the project once all the required information in the Permit Request Form has been submitted and approved. Once the DEP Stormwater Construction Permit has been issued, construction may begin.

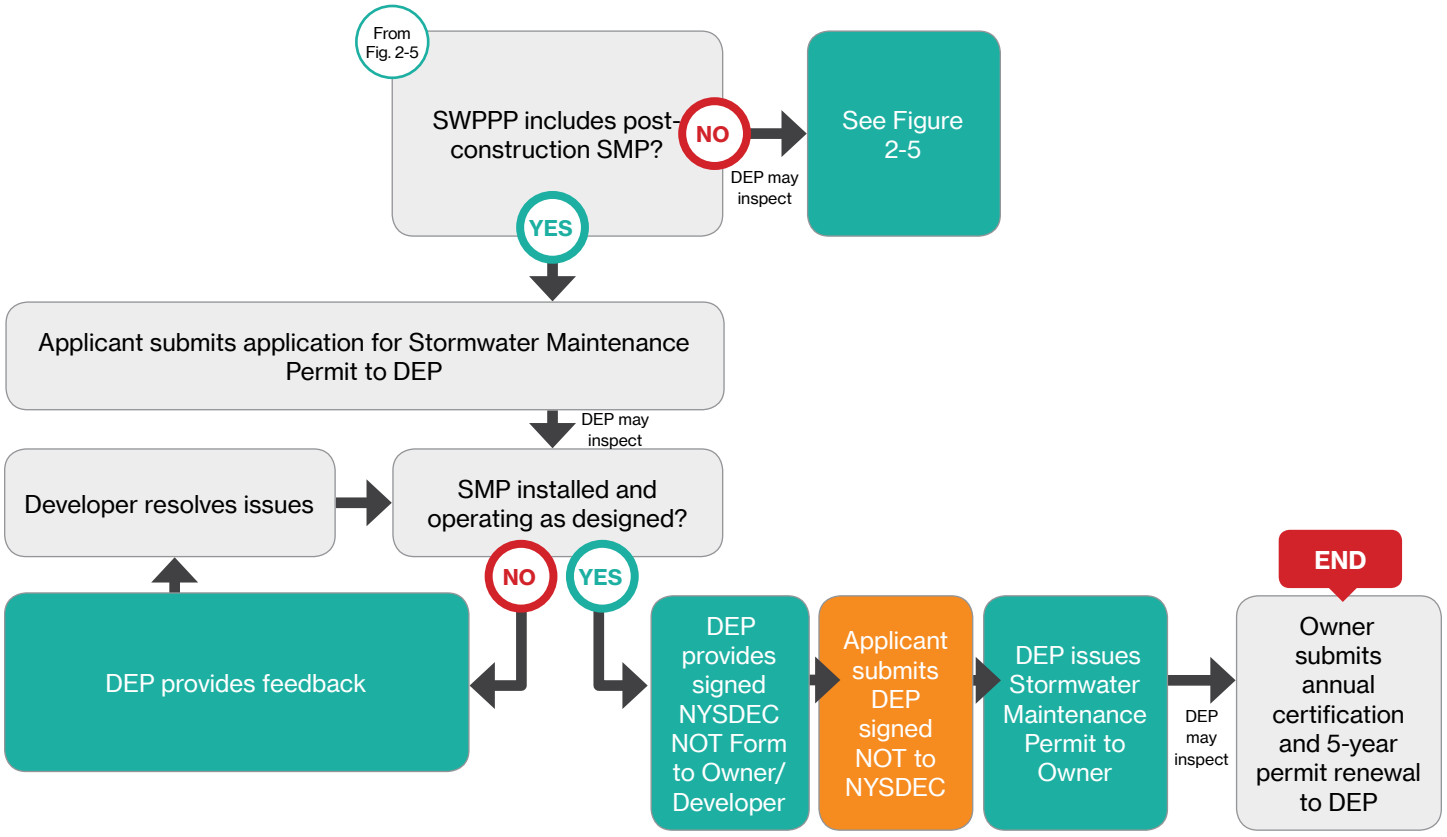
Once construction is completed, the applicant must also submit the application for a Stormwater Maintenance Permit to DEP as shown in Figure 2-6. The Stormwater Maintenance Permit application shall consist of the following:

- NOT;
- As-built plan;
- Operation and maintenance manual that designates the entity responsible the for long term maintenance;
- Fee specified in the DEP MS4 Stormwater Rule.

An electronic version of the Notice of termination is available on the SWPTS. As-built plans and a final Operation and Maintenance Manual will need to be uploaded in a PDF or other acceptable format. The Operation and Maintenance plan should be finalized based on the installed SMP(s), reflecting any changes that were made during the construction period.

DEP may inspect the SMP(s) at any time. If the SMP is not installed or operating as designed, DEP will provide feedback and the applicant must resolve the issue(s). Once the SMP(s) is installed and operating as designed, DEP will provide the MS4 acceptance signature for the NOT and issue the Stormwater Maintenance Permit. The applicant will then submit a signed NOT to NYSDEC. The owner must submit an annual certification for the SMP as well as a 5-year permit renewal to DEP via the SWPTS. Requirements for inspection schedules as well as typical SMP operation and maintenance requirements are detailed in Chapter 4.

Figure 2-6. SWPPP Does Include Post-Construction SMP Decision Point



2.3 Expiration Policy

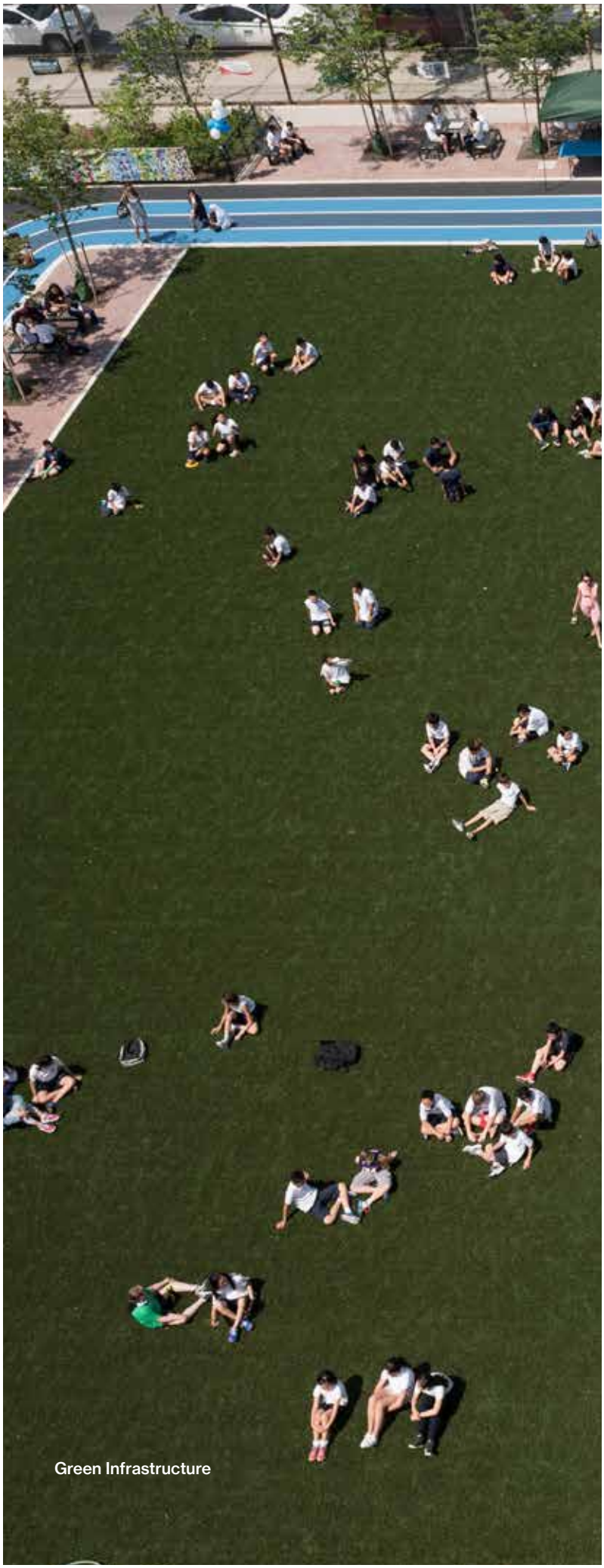
SWPPP approvals expire if a permit is not requested within 2 years of the plan approval date. A Stormwater Construction Permit will expire if the commencement of development activities does not take place within one year or is not completed by a date specified in the permit. Furthermore, a Stormwater Construction Permit will expire if the permitted work is suspended or abandoned for a continuous period of 12 months unless such permit expires earlier. Expired permits will require reapplication as detailed in the permit conditions.

2.4 Partial Shutdowns

If a covered development project requires temporary shutdown for less than 12 months, the developer must notify DEP a minimum of seven days before the shutdown and submit documentation showing that the site is stable and that all stormwater management practices are operational. The developer will be responsible for having a qualified inspector visit the site and inspect it at least once every 30 days during the shutdown. In addition, all permits must be kept current during the suspension of development activity.

If a covered development project requires a planned shutdown with partial project completion for 12 months or longer, the owner or developer must submit a completed NOT to DEP for sign-off prior to submitting the NOT to NYSDEC. The department will review the completed NOT to ensure that the following conditions have been met:

- All soil disturbance has ceased;
- All areas disturbed as of the project shutdown date have achieved final stabilization;
- All temporary structural erosion and sediment control measures have been removed; and
- Any post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational.



Green Infrastructure

Chapter 3

Stormwater Pollution Prevention Plan Development for NYC

Environmental Protection

Stormwater Detention Basin

Trust for Public Land (TPL) Green Infrastructure Playground at P.S. 154, Manhattan

The goal of the Stormwater Pollution Prevention Plan (SWPPP) development approach detailed in this chapter is to develop site designs that preserve natural features and successfully incorporate stormwater management practices (SMPs). Prior to the development of the SWPPP and associated materials, SWPPP preparers should confirm that they are using the most recent version of this manual (https://www1.nyc.gov/html/dep/html/stormwater/construction-and-post-construction.shtml).

The SWPPP preparer should start the site design process by including stormwater management considerations to maximize the utility of the natural attributes and the designed SMPs within a project site. This integrated design procedure is based on recommendations from the New York State Department of Environmental Conservation (NYSDEC) and approaches developed by other urban stormwater management programs across the country, with some modifications adapted to conditions encountered within NYC.

The design approach in NYC emphasizes the reduction in impervious cover, including the implementation of green infrastructure (GI) and infiltration practices as the primary methods for stormwater management. To optimize the design process, the SWPPP preparer should be familiar with the general development plan for the site as this will affect the post-construction conditions and associated stormwater management requirements. The SWPPP preparer should understand the stormwater regulations and project applicability requirements outlined in Chapter 1 as well as the DEP SWPPP Application Guidance and the Stormwater Permit Tracking System (SWPTS) processes detailed in Chapter 2. Familiarity with the proposed development plan along with the regulatory and review requirements will allow the SWPPP preparer to adequately assess the anticipated level of stormwater management and associated review processes required for approval in NYC. Figure 3-1 presents the site design post-construction criteria required to be input into the SWPTS.

Figure 3-1. Post-Construction Criteria for Site Design Required in the Stormwater Permitting and Tracking System

3.1 Existing Conditions Assessment

The site design process begins with the SWPPP preparer conducting an existing conditions assessment of the project site to determine the physical features that may affect the site layout and associated stormwater pollution prevention strategy. It is necessary to assess physical features within the project site to create a SWPPP that will meet the needs of the development and promote water quality. Existing physical features to be evaluated may include:

- Property boundaries, easements, permits and deed restrictions;
- Current site and surrounding land use zoning;
- General soil characteristics;
- Ground surface elevations;
- Existing green space;
- Drainage features; and
- Surface and subsurface structures.

As part of the initial SWPPP development, the existing physical features should be incorporated into the design where feasible as part of a desktop assessment. For example, existing property boundary easements may leave large portions of a project site undevelopable. These areas can however, serve as locations for non-structural SMPs such as vegetated areas, which can add green space to the site and provide disconnections for surrounding impervious areas. Soil characteristics, ground surface elevations and existing drainage features can serve as guidelines as to where SMPs can be located onsite.

Once the desktop existing conditions assessment is completed and field verified, the SWPPP preparer can begin to develop the SWPPP in accordance with the covered development project flowchart presented in Figure 3-2. While presented as a linear process, development of a SWPPP is typically iterative, with adjustments made to the site design impacting all steps in the development process. Requirements for each step in Figure 3-2 are detailed in the following sections.

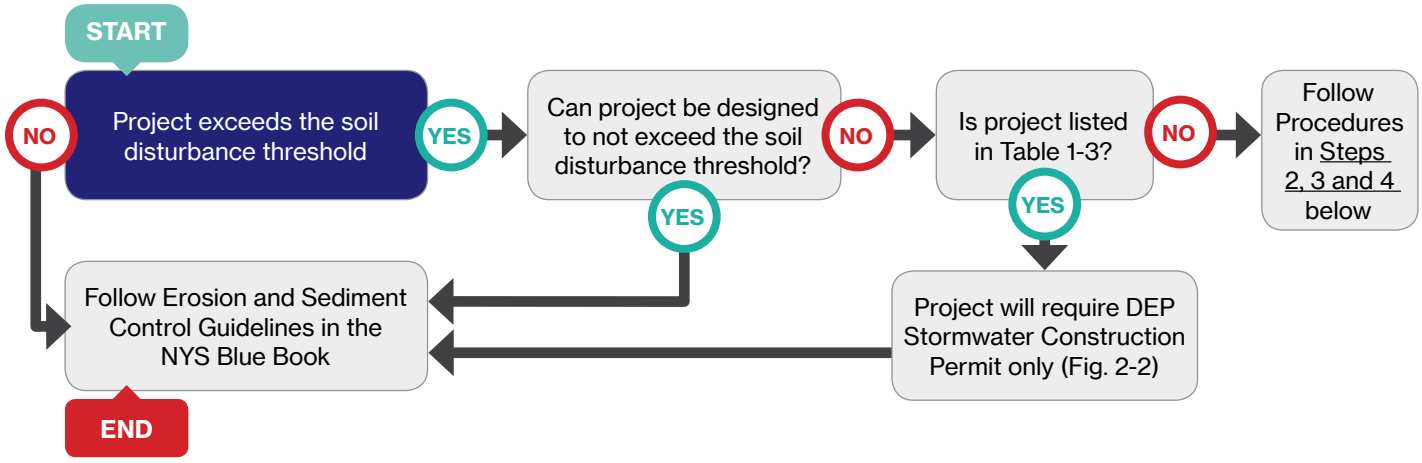
Figure 3-2. Covered Development Project Flowchart

LEGEND:

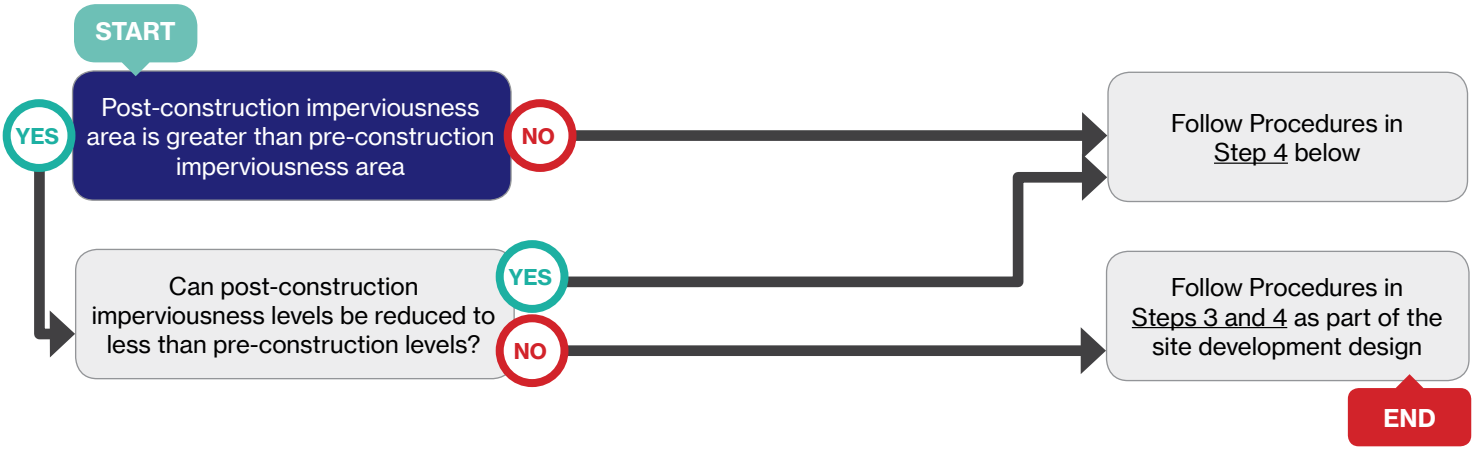
- Blue - Starting Point for Each Step
- Magenta - Not Meeting DEP Requirements
- Dark Green - Meeting DEP Requirements
- Gray - Project Development Step

Other Colors - SMPs in Preferred Order

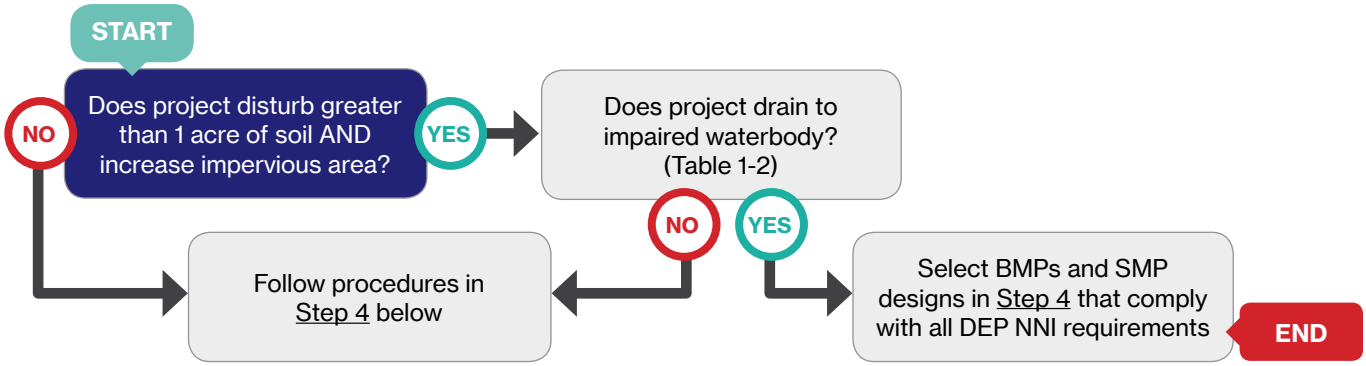
Step 1. Covered Development Project Assessment (Section 3.2)



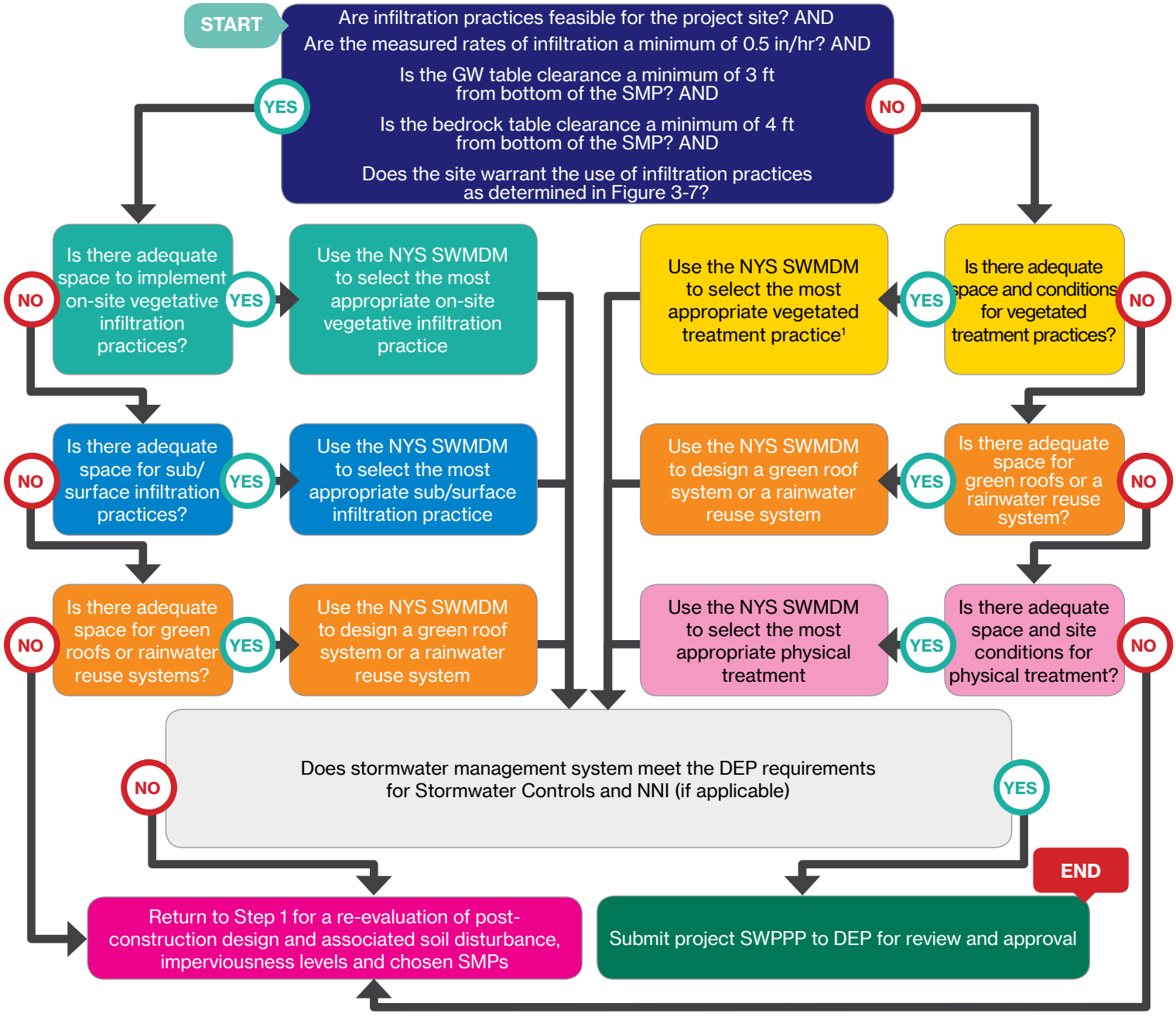
Step 2. Impervious Area Reduction (Section 3.3)



Step 3. No-Net-Increase (NNI) Analysis (Section 3.4)



Step 4. SMP Selection and Design Criteria (Section 3.5)



[1]New projects must meet NYSDEC Runoff Reduction criteria in the MS4 area.

3.2 Covered Development Projects

(Step 1 of Figure 3-2)

After evaluating existing conditions, the applicant should evaluate the soil disturbance associated with the development project. DEP encourages SWPPP preparers to incorporate techniques into the site development plan to help minimize soil disturbance during construction activities.

DEP also encourages developers to preserve the existing natural features, reduce disturbance activities and preserve the onsite water cycle to the greatest extent possible. The associated reduction of clearing and grading activities during site development will also reduce the project development costs.

A project is not a covered development project under DEP rules if it does not exceed the soil disturbance threshold. Only covered development projects have to comply with the DEP MS4 Construction Permitting (MS4CP) requirements. Developers and their contractors should always implement the erosion and sediment control practices detailed in NYS Standards and Specifications for Erosion and Sediment Control (Blue Book), regardless of the project size.

If the project is a covered development project, a more detailed evaluation of the site design and associated activities should be conducted to determine if the soil disturbance onsite can be reduced to less than the soil disturbance threshold. If the project will exceed the soil disturbance threshold and is a project type that is listed in Table 1-3, the project is required to obtain a Stormwater Construction Permit from DEP, but it will not be subject to post-construction stormwater management requirements. During construction, the Developer is still required to implement the erosion and sediment control practices detailed in NYS Standards and Specifications for Erosion and Sediment Control (Blue Book). If the project will exceed the soil disturbance threshold, and is not listed in Table 1-3, the applicant must proceed with Step 2 in Figure 3-2.

Removal of excavated soil from a project site

Storm Chambers at Hope Gardens Parking Lot, Brooklyn

Covered Stockpile at the 26th Ward Wastewater Treatment Plant

3.3 Impervious Area Reduction

(Step 2 of Figure 3-2)

Many development projects in NYC MS4 areas will be redevelopment projects. For these projects, DEP emphasizes the importance of decreasing the post-construction impervious cover. Previous studies have shown that reduction in impervious cover as part of a GI-based site design improves runoff water quality and decreases downstream flooding events, among other benefits.

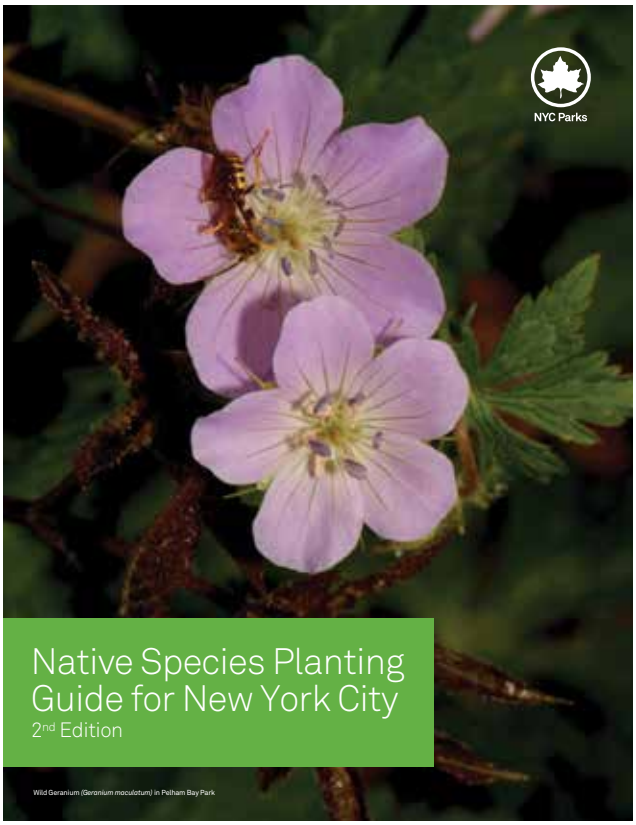
As part of the site design process, impervious areas should be disconnected from one another using green space. The SWPPP preparer can propose pervious areas on a project site to break up the impervious cover. The inclusion of green space within the site design to disconnect impervious cover areas will also reduce the required stormwater volume to be treated by SMPs.

Impervious cover disconnection strategies can range from simple to extensive, depending on site characteristics and the proposed site design. Examples of impervious area disconnection strategies include:

- Redirection of roof leaders to pervious areas such as filter strips and bioswales;
- Installation of green roofs;
- Separation of impervious surfaces using pervious surfaces such as grassed filter strips and vegetated areas[1]; and
- Installation of porous pavement to reduce runoff.

When integrated into the site development process, the decrease in impervious cover can also result in savings to the developer by reducing the regulatory requirements for stormwater management associated with the NNI requirements (see Section 3.4), reducing the size and associated design complexity of the required SMPs, and reducing the SMP inspection and operation and maintenance (O&M) requirements.

[1]SWPPP Preparers should reference "Native Species Planting Guide for New York City," 2nd Edition, developed by the NYC Parks Department when selecting vegetation for SMPs.



The Native Species Planting Guide for New York City developed by the NYC Parks Department

In the ultra-urban environment of NYC, zoning may allow for lot-line to lot-line construction, reducing the viable options for impervious cover reduction and disconnection. When impervious disconnection spaces are limited, more complex strategies for impervious area disconnection can be implemented. These may include the installation of green roof systems as well as the integration of grassed areas within the site design (e.g. court yards, back yards, other green spaces) to allow for onsite infiltration and natural areas that may be used by site occupants. The SWPPP preparer should investigate the potential for co-locating infiltration-based SMPs in the proposed pervious areas of the site as part of the integrated SWPPP development. If the increase of impervious area for a covered development project is unavoidable, the SWPPP preparer must proceed with Step 3 of Figure 3-2.

3.4 No-Net-Increase Analysis

(Step 3 of Figure 3-2)

All covered development projects that meet the NNI criteria are required to conduct an NNI Analysis and implement stormwater controls to mitigate the pollutants of concern (POCs) for the impaired receiving waterbody(ies). The following section details how to determine if a covered development project is subject to NNI requirements under Chapter 19.1 of Title 15 of the Rules of the City of New York and details the City's policies, guidelines, and tools for addressing POCs. It also provides guidelines for:

- Documenting compliance with the NNI requirements in the SWPPP;
- Selecting SMPs for nitrogen removal; and
- Selecting the appropriate best management practices (BMPs) for pathogen reductions.

No-Net-Increase Applicability

NNI requirements apply to covered development projects in an MS4 drainage area that result in a non-negligible land use change and drain to an impaired waterbody.

Non-Negligible Land Use Change

The MS4CP Program defines non-negligible land use changes as those that disturb 1 acre of soil or more and result in an increase in impervious cover. If a project does not meet the criteria for non-negligible change in land use, then the NNI requirements do not apply, and the SWPPP preparer can proceed to Step 4 of Figure 3-2. If a project does meet the criteria for non-negligible change in land use, then the NNI requirements may apply, and the SWPPP preparer must continue with the assessments described in this section and Step 3 of Figure 3-2.

NNI Criteria:

- Located in an MS4 drainage area;
- Drains to one or more of the impaired waterbodies identified in Appendix 2 of the NYC MS4 Permit; and
- Results in a non-negligible land use change:
  - » Disturbs 1 acre of soil or more; and
  - » Increases impervious area when compared to existing conditions.

Four-acre site in Flushing Bay watershed with proposed increase in impervious surfaces that must meet NNI requirements

Impaired Waters and POCs

Impaired waterbodies in and around NYC are identified in Appendix 2 of the NYC MS4 Permit. The list of impaired NYC waterbodies from the NYC MS4 Permit is included in Table 1-2. However, please refer to the DEP interactive MS4 map (www.nyc.gov/dep/ms4map) for updated information about impaired waterbodies and related POCs.

If a development project does not drain to an impaired waterbody, the project is not subject to the NNI requirements and the SWPPP preparer can proceed to Step 4 of Figure 3-2.

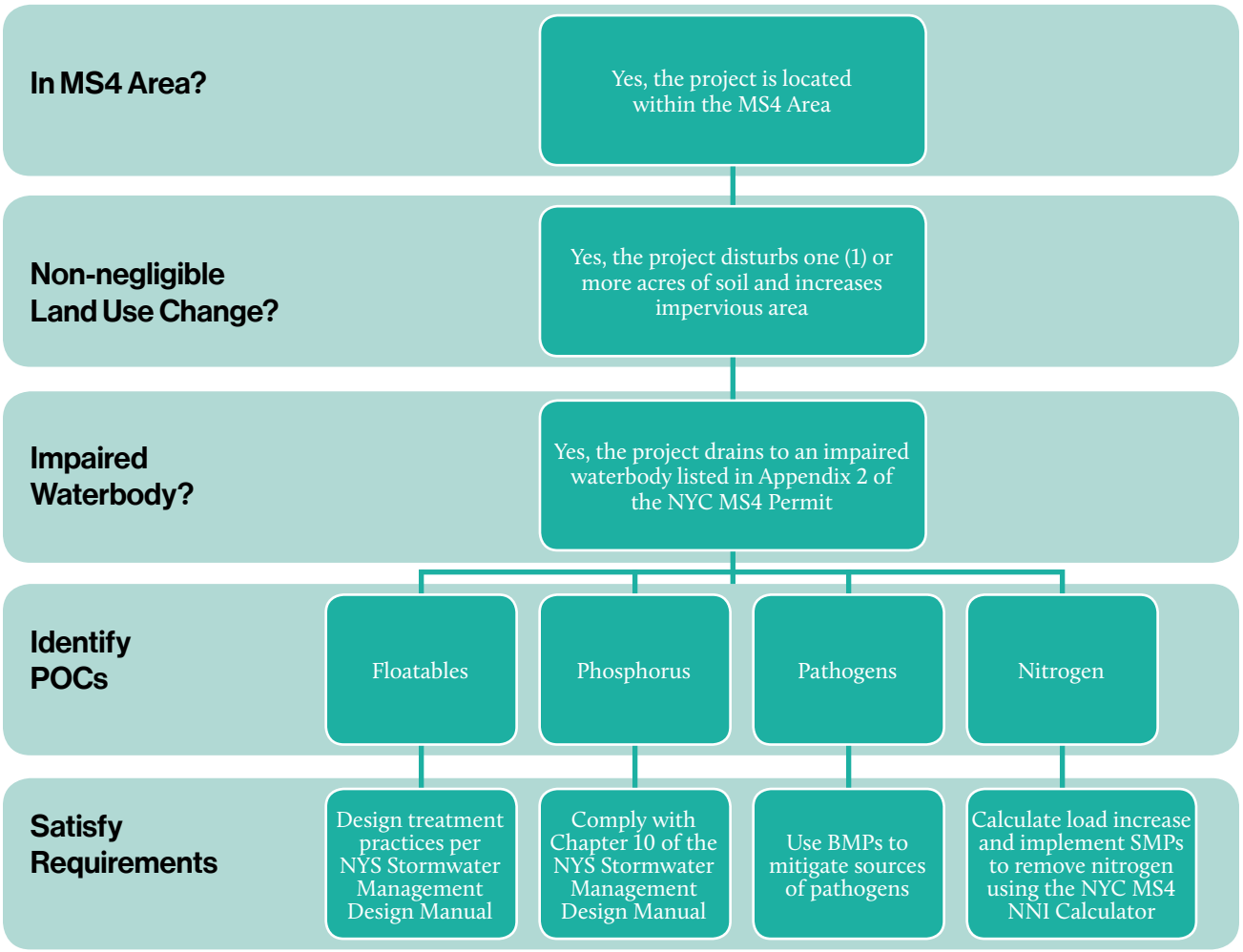
If a development project drains to an impaired waterbody, and results in a non-negligible land use change, the SWPPP preparer needs to identify the associated POCs. The four POCs identified for waterbodies in the NYC MS4 area are floatables, pathogens, nitrogen, and phosphorus.

Requirements by POC

Projects that meet the first three requirements of Figure 3-3 require an NNI analysis and are required to address the respective POCs. The NNI analysis is required to limit and reduce the POCs entering the impaired waters. Each POC listed in Table 1-2 and Figure 3-3, as well as the associated treatment requirements are detailed below.

Figure 3-3 illustrates the process for determining when a project must meet the NNI requirements. If a SWPPP preparer or a developer answers "no" to any of the first three questions in Figure 3-3, then NNI requirements do not apply to the project. However, other construction or post-construction requirements may apply as part of SWPPP development for a covered development project.

Figure 3-3. Applicability of No-Net-Increase Requirements



Floatables

Floatables are manmade materials, such as plastics, papers, or other products that, when improperly disposed of onto streets or into catch basins, can ultimately find their way to local waterbodies.

The NYS SWMDM contains provisions for floatables control in the design of SMPs. These provisions include pretreatment, settling or filtration, outlet controls and maintenance that will effectively capture and remove floatables and settleable trash and debris prior to discharge.

To meet the NNI requirements for floatables, SWPPP preparers are to refer to the NYS SWMDM to determine the post-construction water quality volume (WQv) and design runoff reduction or treatment SMPs for submittal to DEP as part of a complete SWPPP.

Phosphorus

Phosphorus is a nutrient that is a natural part of aquatic ecosystems and supports the growth of algae and aquatic plants. However, excess phosphorus can cause nuisance algae blooms and aquatic weed growth, which reduces water clarity and dissolved oxygen (DO) and can harm aquatic life. Sources of phosphorus include lawn/plant fertilizer, illicit discharges of sanitary waste, pet and wildlife waste, and leaves, branches, and grass clippings.

Part II.B.1.b.ii of the NYC MS4 Permit states, "For phosphorus limited waterbodies, compliance with Chapter 10 of the NYS Stormwater Management Design Manual (January 2015) will satisfy the No-Net- Increase requirement." To meet the NNI requirements for phosphorus, SWPPP preparers are to refer to Chapter 10 of the SWMDM to design SMPs for submittal as part of a complete SWPPP to DEP.

Pathogens

Pathogens are disease-producing agents such as bacteria, viruses, or other microorganisms. Most pathogens found in stormwater runoff are from human and animal fecal matter.

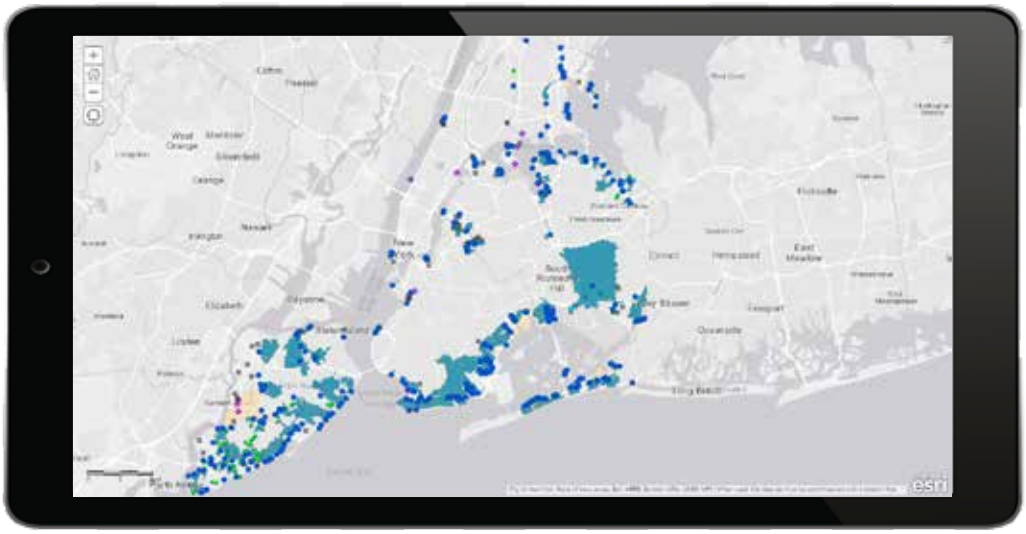
To meet the NNI requirements for pathogens, BMPs must be implemented to mitigate potential sources of pathogens present at the developed site. Examples of those BMPs are listed per land use in Table 3-3.

Nitrogen

Nitrogen is a nutrient that occurs naturally in aquatic ecosystems but can be harmful in high concentrations. Sources of nitrogen in stormwater are the same as those described above for phosphorus.

Projects in MS4 areas that discharge to nitrogen-impaired waters must provide calculations to demonstrate NNI in total nitrogen (TN) loading from existing conditions to post-development conditions. If the project will increase the TN load, excess nitrogen must be removed through the implementation of SMPs. The procedures for completing these calculations and selecting SMPs are detailed on the following pages.

A preliminary interactive map (www.nyc.gov/dep/ms4map) is available to help determine if a project lies within the MS4 area and whether the project site drains to an impaired waterbody. The interactive map also identifies the POCs for each impaired waterbody and other information required to generate a SWPPP for a covered development project.



Preliminary NYC MS4 Interactive map helps determine if a project lies within the MS4 area and POCs.

NYC MS4 No-Net-Increase Calculator for Nitrogen

Non-negligible land use changes can increase the amount of nitrogen within stormwater runoff. This increase can be calculated by comparing the existing site conditions before a project has begun (pre-construction) and after a project is completed (post-construction). The simplified procedures for using DEP's interactive tool, the NYC MS4 No-Net-Increase Calculator for Nitrogen, are described below.

DEP developed the NYC MS4 No-Net-Increase Calculator for Nitrogen to aid applicants in demonstrating NNI of nitrogen resulting from a project subject to NNI requirements. The calculator compares existing site conditions (pre-construction) to post-construction conditions and outputs the net change in nitrogen loads based on the calculated WQv.

Overview of Calculator

The NYC MS4 No-Net-Increase Calculator for Nitrogen input and output page is shown in Figure 3-4. The online version of the calculator is located on the DEP MS4 web page (https://www1.nyc.gov/html/dep/html/stormwater/construction-and-post-construction.shtml).

Figure 3-4. NYC MS4 No-Net-Increase Calculator for Nitrogen

NYC MS4 No-Net-Increase Calculator

Project Name:	*[Enter Name]*	Prepared For:	*[Enter Owner Name]*
DEP Application Number:	*[Enter Number]*	Prepared By:	*[Enter Company Name]*
Borough; Block, and Lot:	*[Enter Borough; Block #, Lot #]*	Date:	*[Enter Date]*

Step 1: Nitrogen Load Calculation (DRAFT)

This section calculates the change in nitrogen load from pre- to post-construction site conditions (see Nitrogen Load Calculation tab). Please fill in shaded cells.
Any increase in nitrogen load must be removed using stormwater management practices (SMPs).

Pre-Construction	
Project Area (acres)	
Impervious Area (acres)	
Current Land Use	
Runoff Coefficient (R_v)	
Total Nitrogen Load (Pre)	lbs

Post-Construction	
Project Area (acres)	
Impervious Area (acres)	
Proposed Land Use	
Runoff Coefficient (R_v)	
Total Nitrogen Load (Post)	lbs
Required Nitrogen Load Reduction	lbs
Percent Reduction Required	%

Step 2: SMP Nitrogen Removal Calculation (DRAFT)

This section calculates the nitrogen load reduction for proposed SMPs. Load reduction calculation considers both pervious and impervious areas within SMP catchment area.
Fill in shaded cells for post-construction conditions. Use a separate row for each catchment area draining to an SMP. SMP must be sized to manage the entire SMP catchment area.
For alternative SMPs not in drop down (manufactured technologies or treatment trains), see NYC SWDM and enter SMP type and removal rate in Rows 7-10 (must attach documentation).

	SMP Catchment Area (acres)	Impervious Area (acres)	SMP Type	Total Nitrogen Removal Rate (%)	Total Nitrogen Load Reduction (lbs)
1					
2					
3					
4					
5					
6					
7			*[Enter Other SMP Type]*		
8			*[Enter Other SMP Type]*		
9			*[Enter Other SMP Type]*		
10			*[Enter Other SMP Type]*		
	0.0	0.0			0.00

Step 3: No-Net Increase Verification (DRAFT)

This section verifies that proposed SMPs will reduce the post-construction nitrogen load equal to or less than the pre-construction nitrogen load, resulting in no net increase.

	Load (lbs)	Percent (%)	
Required Nitrogen Load Reduction			(from Step 1)
Actual Nitrogen Load Reduction			(from Step 2)

PLEASE COMPLETE STEPS 1 AND 2

NYC MS4 No-Net-Increase Calculator for Nitrogen

The TN load change is calculated by subtracting the pre-construction TN load from the post-construction TN load, using the equation below. The TN load for pre- and post-construction conditions is determined by multiplying the water quality volume (WQv) for the project area by the event mean concentration (EMC) for TN for its associated land use type, as per Table 3-1. The WQv is found using the formula from Chapter 4 of the NYS SWMDM, with a minimum value for the volumetric runoff coefficient Rv of 0.2.

WQv (post) * EMCTN (post) – WQv (pre) * EMCTN (pre) = TN load change

If the post-construction load is greater than the pre-construction load, the calculated value for the net increase serves as the basis for the stormwater management recommendations and should be included in the SWPPP. Any resulting net TN load increase must be removed using appropriately selected and designed SMPs, detailed in Table 3-2.

Accounting for Pervious and Impervious Area Conditions

Increasing pervious surface area onsite may help to avoid NNI requirements all together (see definition of "Negligible Land Use Change"). DEP encourages developers to increase pervious areas in the post-construction site condition during site planning, to the greatest extent possible. DEP considers green roofs, porous pavement, vegetated SMPs, or other landscaped pervious areas for the purpose of calculating WQv and required nitrogen load reduction in Step 1. In addition, TN removal in stormwater runoff from impervious and pervious surfaces managed by various SMPs is determined in Step 2 of the calculator as shown in Table 3-2.

Event Mean Concentrations of TN

Table 3-1 shows median values for TN EMCs for common land uses in NYC, related zoning districts, and similar or applicable land uses included in the NYSDEC Notice of Intent (NOI) form. The values in Table 3-1 were derived by comparing estimated EMCs for various land use types across 10 national studies. The NYC MS4 No-Net-Increase Calculator for Nitrogen uses the values from this table as land use loading coefficients when computing TN loadings for the project area.

Table 3-1. Median EMCs for TN

NYC Land Use	NYC Zoning Districts	Similar or Applicable Land Uses From NOI	EMC for TN (mg/L)
Commercial	C1-C8	Institutional/School, Municipal	2.08
Industrial/Manufacturing	M1-M3	Linear Utility, Well Drilling Activity (Oil, Gas, etc.), Road/ Highway, Parking Lot	2.10
Vacant/Open Space	NA	Forest, Pasture/Open Land, Cultivated Land, Recreational/ Sports Field, Bike Path/Trail, Clearing/Grading, Demolition/No Redevelopment	1.50
Lower-Density Residential	R1-R5	Single Family Home/Subdivision	2.10
Moderate- and Higher-Density Residential	R6-R10	Town Home Residential, Multifamily Residential	2.41

Note: mg/L = milligrams per liter.

User Inputs

For the NYC MS4 No-Net-Increase Calculator for Nitrogen, the SWPPP preparer will be responsible for inputting the following information:

- Total project area (acres)
- Pre-construction conditions for the total project area
  - » Impervious area (acres)
  - » Current land use type (from dropdown menu)
- Post-construction conditions for the total project area
  - » Impervious area (acres)
  - » Proposed land use type (from dropdown menu)

Calculator Outputs

Post-construction TN load will depend on land use changes and the EMCs for these land use types, as well as impervious cover changes. The calculator will compare the pre- and post-construction conditions and output the resulting net changes in TN load, as a quantity in pounds (lbs) and percentage (%).

DEP recommends reducing the post-construction impervious area to the greatest extent feasible, to mitigate stormwater runoff increases and net increases in TN load. As a next step toward compliance with NNI requirements, SMPs described in Table 3-2, must be implemented in the SWPPP to remove all net increases in TN load from the covered development project.

Post-construction conditions at a 1.7-acre site in the Jamaica Bay watershed.

SMPs for Nitrogen Removal

For projects subject to NNI requirements which drain to nitrogen-impaired receiving waterbodies, SWPPP preparers must implement SMPs to mitigate any net increases in nitrogen due to non-negligible land use changes. Table 3-2 is a list of pollutant removal rates by SMP. DEP derived these values by comparing SMP TN removal rate data from a number of different national research reports, regional design documents, and state and municipal manuals. The third column refers to the appropriate guidance in the NYS SWMDM for each SMP. However, SWPPP preparers should refer to all applicable sections in Chapters 5, 6, and 7 of the NYS SWMDM for SMP design and selection information.

Table 3-2. TN Removal by SMP

SMP	TN Removal Rate	NYS SWMDM Section
Rainwater Reuse System	100%	Section 5.3.10
Rain Garden	100%	Section 5.3.7
Bioretention	100%	Section 6.4
Porous Pavement	100%	Section 5.3.11
Infiltration Trench	100%	Section 6.3
Turf Field	40%	N/A
Sand Filter (Filtration)	40%	Section 6.4
Bioretention with Underdrain	40%	Section 6.4
Porous Pavement with Underdrain	40%	Section 5.3.11
Green Roof	35%	Section 5.3.8
Constructed Wetlands	35%	Section 6.2
Ponds	30%	Section 6.2

SMPs should be selected based on site conditions such as infiltration feasibility, available space, land use, soil suitability, site slope, depth to groundwater, and O&M requirements. The catchment areas draining to individual SMPs (or SMPs in series, as described below) need to be delineated accurately and included in the calculator to assess the overall pollutant load reduction for the entire project area.

The NYC MS4 No-Net-Increase Calculator for Nitrogen allows applicants to assign the TN removal rates in Table 3-2 to each SMP catchment area based on the selection and design of corresponding SMPs. The calculator estimates the total removal efficiencies across all SMP catchment areas and compares the TN removed by the SMPs to the net TN increase due to the development activity. The total post-construction TN load for the project area must be less than or equal to the total pre-construction TN loads. All NNI calculations for TN must be included and documented in the SWPPP. An example NYC MS4 No-Net-Increase Calculator for Nitrogen calculation is provided in Attachment 2.

Treatment Trains and Manufactured Technologies for Nitrogen Removal

SWPPP preparers may use alternative technologies not listed in Table 3-2 to achieve TN NNI requirements. SWPPPs that propose alternative technologies must include supporting documentation to verify TN removal efficiencies.

DEP will rely on the approval processes referenced in Chapter 3 of the NYS SWMDM, including the requirement that the alternative technology must be approved by a third party verification program (https://www.dec.ny.gov/chemical/29089.html).

For alternative technologies, including proprietary water quality treatment devices that are not included in or do not meet the standards of the NYS SWMDM, supporting documentation of TN removal rates must follow the approach currently employed by NYSDEC to verify technology effectiveness. Specifically, applicants must provide evidence of third party verification from Washington State's Technology Assistance Protocol - Ecology (TAPE) Program or the multi-state Technology Acceptance Reciprocity Partnership (TARP) Program for TN removal rates applied for each proposed alternative technology in the calculator.

SWPPP preparers may also elect to implement multiple SMPs in series, referred to as a treatment train, to treat runoff from the same SMP catchment area and achieve NNI requirements for the project area. This can be an effective way to achieve NNI requirements for sites where a single SMP for each catchment area cannot achieve the required TN load reduction, or for space-constrained sites.

For example, rooftop runoff can be treated with a green roof and outflow from the green roof can then be discharged to a sand filter or other approved treatment technology at ground level. With this post-construction condition, TN load is effectively reduced first through the green roof and remaining load is reduced further by the sand filter. In order for a treatment train to be effective, the SMPs utilized must be different types of technologies (i.e. placing two sand filters in a row is not considered a treatment train). Figure 3-5 represents a schematic of a treatment train with three different SMPs implemented in series.

SWPPP preparers should use the calculation below to identify the TN removal rate of an SMP treatment train for a specific SMP catchment area:

$$Rr = [1 - ((1 - rr1)*(1 - rr2)*(1 - rr3))] * 100$$

Where:

Rr = overall removal rate (%)

rr1, 2, 3 = removal rates for SMP1, SMP2, and SMP3, respectively (%)

The TN load of the inflow is first treated by SMP1 with a TN removal efficiency of rr1 (removal rate for SMP1), and the remainder pollutant load is then treated by SMP2 with a removal efficiency of rr2 (removal rate for SMP2), and so on.

The calculation for each SMP catchment area with a proposed treatment train needs to be provided as supporting documentation with the SWPPP. Removal rates in Table 3-2 should be used for each SMP proposed in series or, if an alternative technology is proposed, the guidance below should be used. The overall removal rate (Rr) calculated should be entered into the NYC MS4 No-Net-Increase Calculator as the TN removal rate for an SMP treatment train to demonstrate that NNI requirements are met.

Figure 3-5. SMP Treatment Train Schematic

Right-of-Way Rain Garden, Queens

Best Management Practices for Pathogen Reduction

Pathogen sources may come in many forms and are inherent to certain land uses. SWPPP preparers should identify potential sources of pathogens and implement BMPs to address these sources as part of the post-construction O&M manual for projects that are subject to NNI requirements. See Chapter 4 for additional information about O&M requirements.

Table 3-3 lists examples of BMPs that may address pathogen sources per land use. This list is not exhaustive or prescriptive, and applicants may propose additional BMPs to mitigate site-specific pathogen sources.

Required NNI Documentation in the SWPPP

SWPPPs for development projects subject to the NNI requirements must demonstrate and describe adequate controls that ensure NNI in the POC causing impairment of the receiving waterbody. These SWPPPs should include the pollutant load analyses and NNI analyses for all POC-impaired receiving waterbodies. The SWPPP should include a narrative that demonstrates an understanding of the POCs causing impairment and their potential sources. The SWPPP should also detail how the selected BMPs and SMPs will adequately reduce the potential for the pollutant to enter the impaired waterbody(ies) to pre-construction levels or lower.

For projects that have nitrogen-impaired receiving waterbodies, the SWPPP should include the calculations verifying that selected SMPs will be effective in reducing the TN load to pre-construction levels. A printout of the No-Net-Increase Calculator for Nitrogen results is sufficient documentation for the SWPPP. If applicable, supporting documentation for treatment trains and alternative technologies must also be provided.

Table 3-3. BMPs for Pathogen Removal by Land Use

BMP	Source of Pathogen	Applicable Land Use
Install signs, distribute public education and outreach materials, and implement trainings to support pathogen reduction programs.	All	All
Inspect and clean areas where animal waste may be present (e.g., dumpsters, grease storage, waterfowl congregation areas, and dog parks).	Pets and Wildlife	All
Discourage free-range pets. Adopt rules within a development to pick up pet wastes. Offer bags and waste receptacles to make it easy for pet owners to pick up and dispose of waste products. Distribute educational materials and signage to support program.	Pets	Residential, Open Space & Outdoor Recreation, Commercial & Office Buildings (pet store, veterinarian)
Identify areas with high bird populations and evaluate deterrents, habitat modifications, and other measures.	Wildlife	Open Space & Outdoor Recreation, Residential (common areas in a development), Vacant Lots
Reduce food sources accessible to urban wildlife (e.g., manage restaurant dumpsters/grease traps and residential garbage).	Wildlife	Residential, Commercial & Office Buildings (restaurants, groceries), Public Facilities & Institutions, Industrial
Use latched or heavy-lidded trash containers to deter wildlife.	Wildlife	Open Space & Outdoor Recreation, Residential, Commercial & Office Buildings (restaurants, groceries), Public Facilities & Institutions, Industrial
Increase collections and waste disposal for private haulers.	Wildlife	Commercial & Office Buildings (restaurants, groceries)
Reduce attractive odors that may draw wildlife.	Wildlife	Residential, Commercial & Office Buildings (restaurants, groceries)
Introduce strategies to reduce food, shelter, and habitats for overpopulated urban wildlife.	Wildlife	All
Inhibit access to open water by managing vegetation growth, limit food sources-seeds, and discourage feeding wildlife, especially on impervious surfaces, near open water, or near practices that discharge directly to open waters. Provide educational materials to support program.	Wildlife	Open Space & Outdoor Recreation, Residential (common areas in a development)
Inspect and clean catch basins regularly and distribute educational materials to support program.	Wildlife	Residential, Commercial & Office Buildings, Parking
Monitor for illegal dumping into catch basins.	Human and Pet	All
Monitor illicit connections by tenants to storm sewer. Look for dry weather flows in storm sewer system.	Human	All
Minimize stormwater runoff that is directly connected to the system from impervious areas.	All	All
Clean main sewer line that connects to building, pump septic tank, or leaching pit. Pressure test or inspect sewer main or septic tank for leakage once every five years.	Human	Residential, Commercial & Office Buildings, Industrial, Public Facilities & Institutions
Locate portable toilets away from storm drains or open water.	Human	All (especially during construction and temporary public events)

3.5 SMP Selection and Design Criteria

(Step 4 of Figure 3-2)

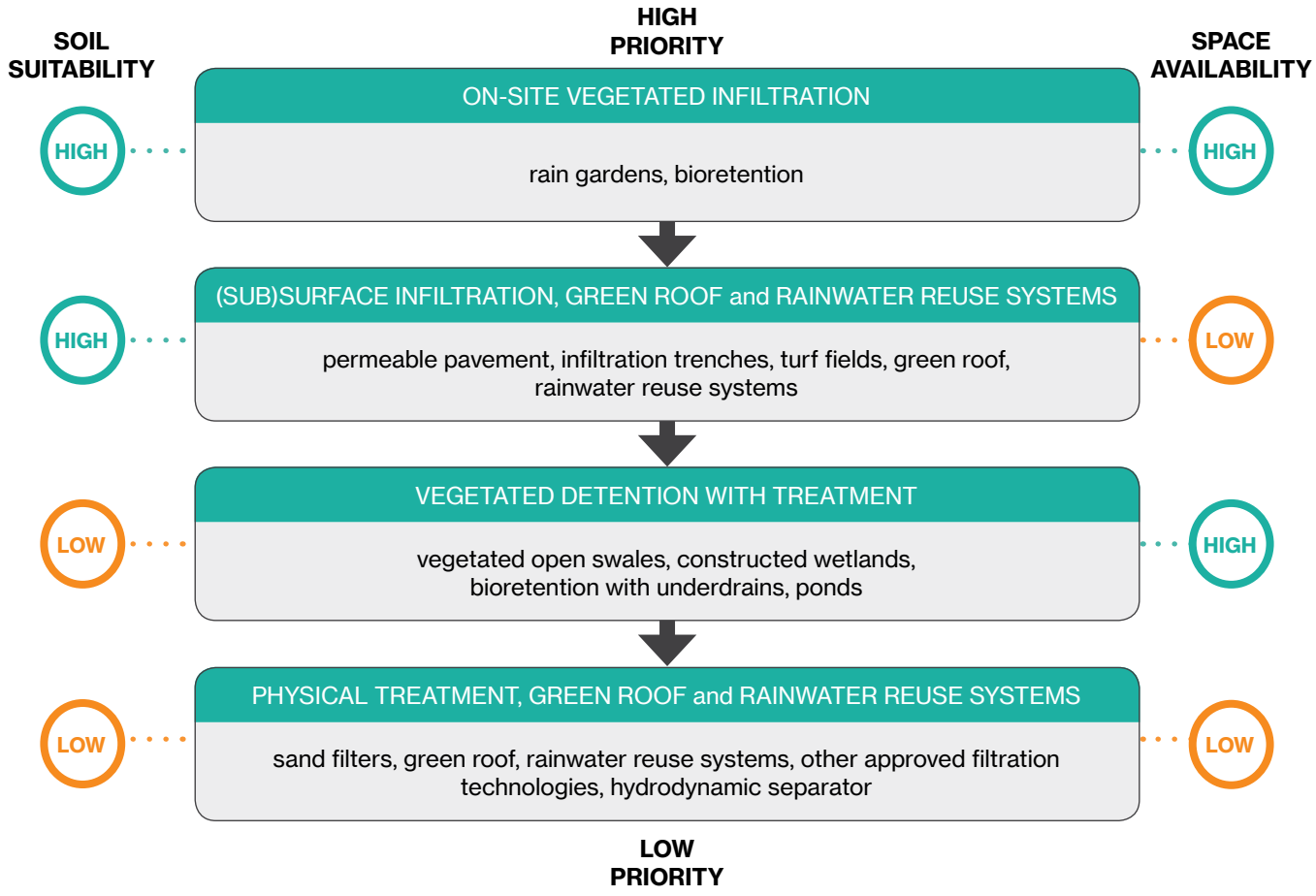
The NYS SWMDM is the primary standard for design, construction and maintenance of stormwater management practices in New York State, including NYC. SMPs implemented in NYC must be designed in accordance with the most recent version of the NYS SWMDM. Subsequent versions of this SWDM may require SWPPP preparers to adhere to more stringent requirements for SMP designs implemented within NYC.

As part of the SWPPP development, the SWPPP preparer should maximize the use of green site design and disconnected impervious area strategies prior to the selection and implementation of SMPs. This practice will allow the SWPPP preparer to minimize the number and size of the SMPs to be implemented, resulting in cost savings on both the construction and O&M of the SMPs.

As part of the ongoing GI implementation efforts in combined sewer and MS4 areas of NYC, DEP has developed a library of onsite GI practice designs to be used as SMPs in NYC. These SMP designs are optimized for ultra-urban environments typical of most NYC projects and can be used as standalone SMPs or in conjunction with SMPs designed in accordance with the NYS SWMDM. The details for the DEP onsite GI practice types that can be used as SMPs are included in Attachment 4.

When selecting and implementing SMPs as part of the site design, the SWPPP preparer should follow the SMP hierarchy shown in Step 4 of Figure 3-2 and below in Figure 3-6. DEP recognizes that all sites are unique and will therefore require unique strategies for stormwater control. DEP developed this preferred order of SMP selection based on several factors, including ongoing GI implementation and planning efforts within NYC, effective SMP implementation across NYC and NYS, and the goals of the MS4CP Program.

Figure 3-6. Preferred Hierarchy of SMP Implementation in NYC



Assessment of Infiltration Potential

As shown in Figure 3-2 and Figure 3-6, DEP emphasizes the use of infiltration where feasible as the most desirable SMP to be implemented. Infiltration based practices should be evaluated in order to satisfy the requirements of the MS4CP Program as well as the WQv treatment requirements in the NYS SWMDM. Infiltration prevents a portion of the runoff from entering the MS4, decreasing the need for traditional infrastructure expansion, which is typically costly. Along with the increased evapotranspiration associated with vegetated GI practices, infiltration also helps to restore the hydrologic cycle to the pre-construction condition.

Site conditions that could limit the implementation of infiltration-based SMPs that need to be investigated are listed below and shown in Figure 3-2:

- Low permeability soils that could limit infiltration;
- High groundwater tables with clearance of less than 3 feet from the bottom of the proposed SMP;
- Shallow bedrock or clay layers with clearance of less than 4 feet from the bottom of the proposed SMP;
- Contaminated areas;
- Proximity of proposed SMP locations to property boundaries, foundations or walls; and
- Location of underground utilities.

Implementation of infiltration practices as part of the SWPPP development requires a minimum infiltration rate of 0.5 in/hr (NYS SWMDM, Chapter 3). Infiltration testing and soil sampling for SMP design in NYC should adhere to the Geotechnical Investigation Procedures included as Attachment 3.

The presence of high groundwater tables and shallow bedrock limit the ability to infiltrate stormwater on a project site. Minimum depths to groundwater and bedrock for SMP development are provided in the NYS SWMDM. High groundwater areas and bedrock depths are generally identified within NYC from readily available sources including USGS monitoring wells, NYSDEC groundwater mapping efforts and USGS boring logs. Furthermore, as part of the installation of GI practices throughout NYC, DEP conducts groundwater and bedrock boring investigations to determine infiltration potential which could be used to identify areas where infiltration is not feasible. While the above information can be used by the SWPPP preparer to guide the decision to implement infiltration practices, this general information does not replace the requirements for onsite geotechnical investigations.

Placement of infiltration SMPs in close proximity to foundations and walls can result in preferential flow paths along existing infrastructure and potential flooding issues. Proximity of infiltration SMPs to property boundaries or existing and proposed foundation walls is limited by the NYC Plumbing Code.

The identification of contaminated areas within a project site is a vital component of the existing conditions assessment and impacts the SMP selection for a development project. Infiltration of stormwater into contaminated soils can contaminate groundwater as well as downstream receiving waterbodies.

Figure 3-7 presents the DEP preferred approach for the initial assessment of whether site contamination prohibits the use of infiltration practices, (Step 4, Figure 3-2). The approach was developed to provide SWPPP preparers and developers a simplified approach to initial contamination investigation that will be confirmed through other state and federal environmental requirements.

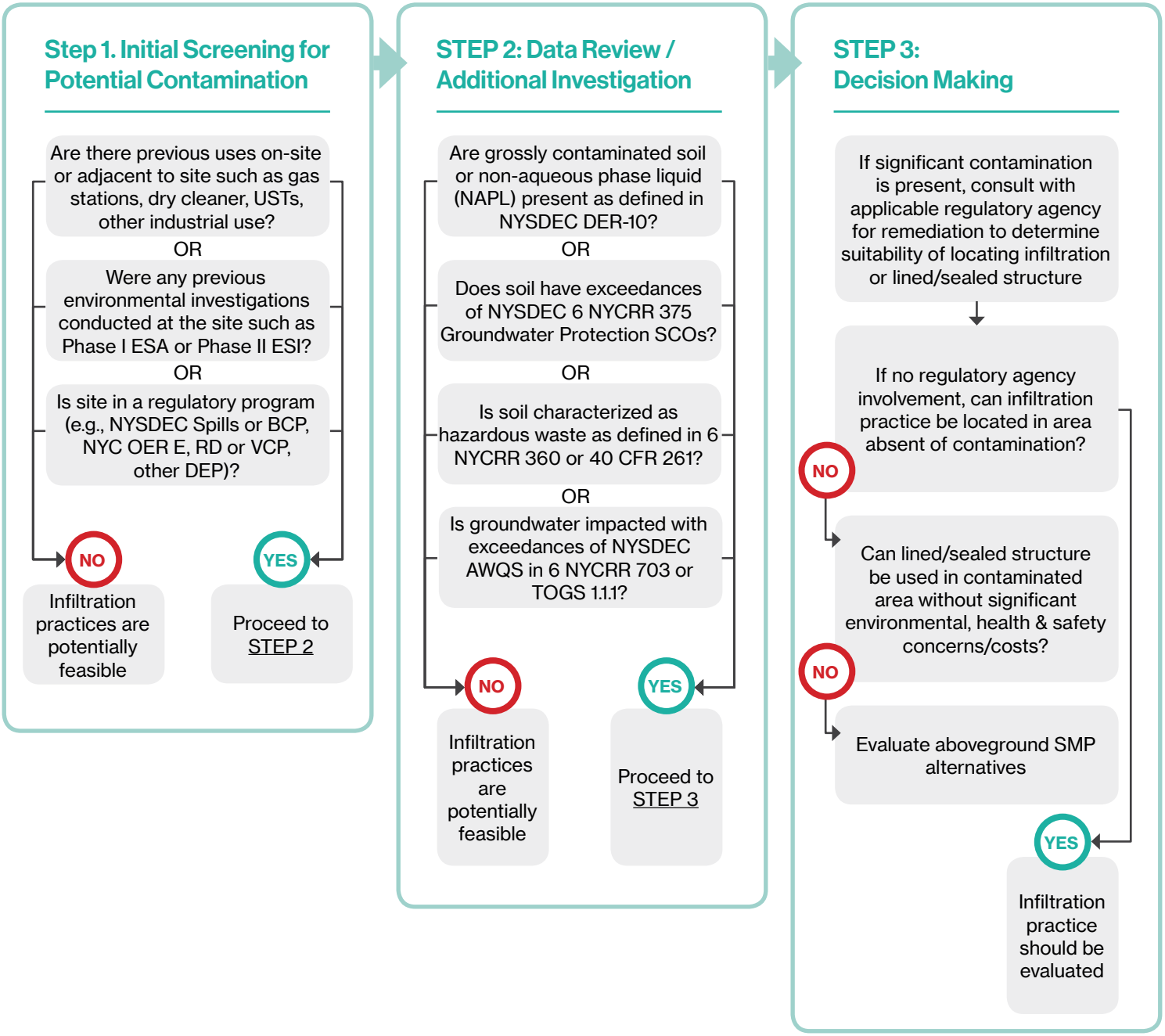
As part of the infiltration assessment, historical assessments should be conducted to determine past uses of the site. If the project site is determined to be contaminated, infiltration SMPs cannot be installed without site modifications and other stormwater control methods should be investigated when developing the SWPPP for the site.

The 2014 NYC Building Code can be found here: https://www1.nyc.gov/site/buildings/codes/2014-construction-codes.page#bldgs

The 2014 NYC Plumbing Code can be found here: https://www1.nyc.gov/site/buildings/codes/2014-construction-codes.page#plumb

Exposed Bedrock in the Bronx

Figure 3-7. Recommended Steps to Determine if Site Contamination Prohibits the Use of Infiltration Practices

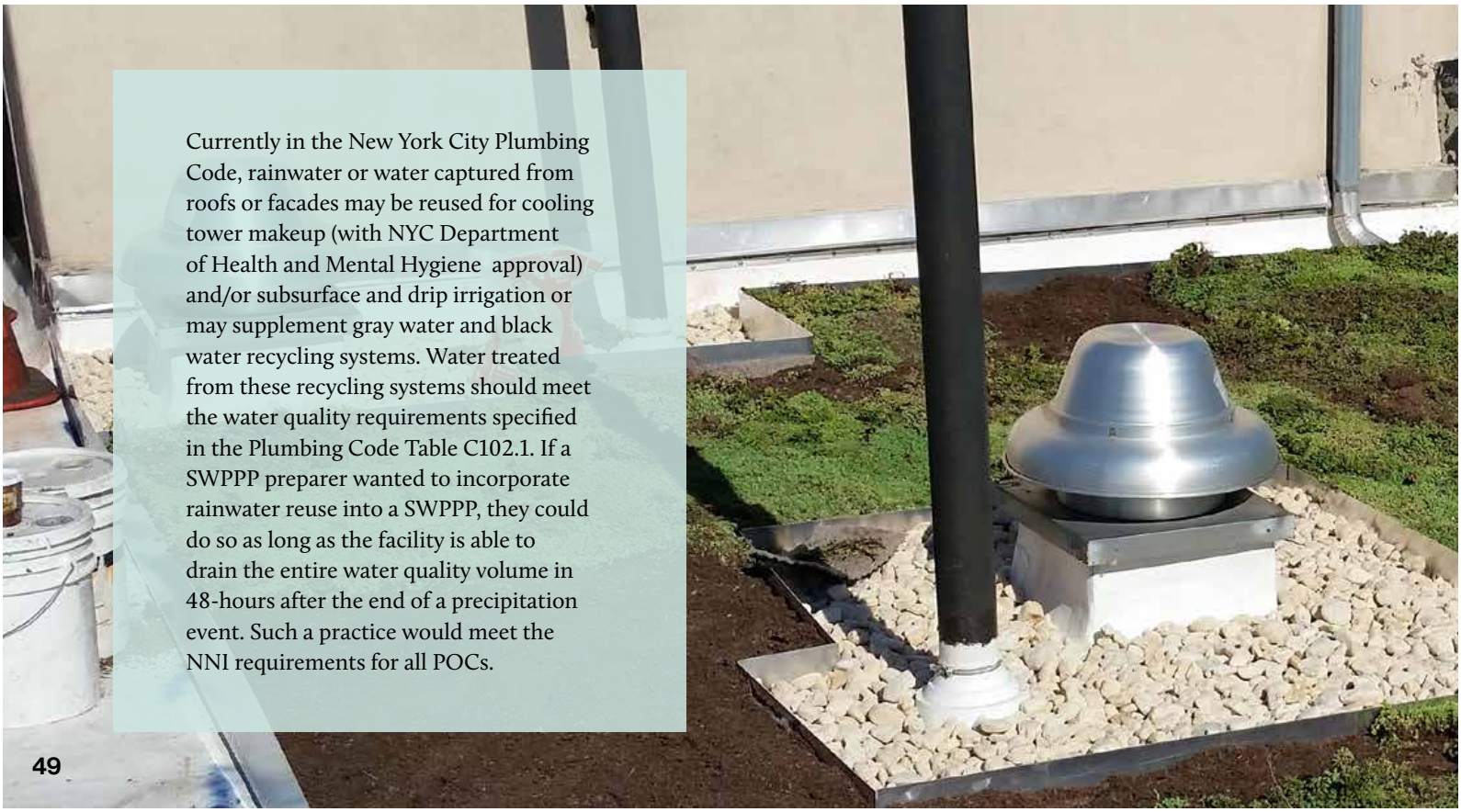


Infiltration SMPs are Feasible

If infiltration practices are deemed feasible for the project site, they should be implemented according to the preferred DEP hierarchy depicted in Figures 3-2 and 3-6. DEP has determined that onsite vegetated infiltration practices such as rain gardens and bioretention are the preferred SMPs where subsurface conditions are suitable for infiltration. These practices typically require more available open space and are more likely to be implemented in large development projects. The surface vegetation provides additional benefits to both the property and the users in the form of open space, improved aesthetics and increased rates of evapotranspiration. Subsurface infiltration practices are the next preferred SMPs when suitable subsurface conditions are present, as they can be implemented in smaller areas with limited space. While the surface benefits are decreased with these practices, the benefits of stormwater infiltration are still obtained.

If infiltration practices are deemed feasible, they should be implemented. If the site design does not allow adequate space for infiltration practices, the developer and SWPPP preparer should revisit the SMP hierarchy (Figure 3-6) and evaluate SMPs to be implemented in the order shown in the hierarchy.

The feasibility for the implementation of green roofs should be investigated for all sites. Green roofs provide stormwater management capabilities similar to those of infiltration practices, including reduced stormwater runoff rates and impervious area disconnections. Green roofs may also provide recreational space for occupants and increase property values. Structural requirements for green roof implementation should be considered by building owners and their associated SWPPP preparers.



Currently in the New York City Plumbing Code, rainwater or water captured from roofs or facades may be reused for cooling tower makeup (with NYC Department of Health and Mental Hygiene approval) and/or subsurface and drip irrigation or may supplement gray water and black water recycling systems. Water treated from these recycling systems should meet the water quality requirements specified in the Plumbing Code Table C102.1. If a SWPPP preparer wanted to incorporate rainwater reuse into a SWPPP, they could do so as long as the facility is able to drain the entire water quality volume in 48-hours after the end of a precipitation event. Such a practice would meet the NNI requirements for all POCs.

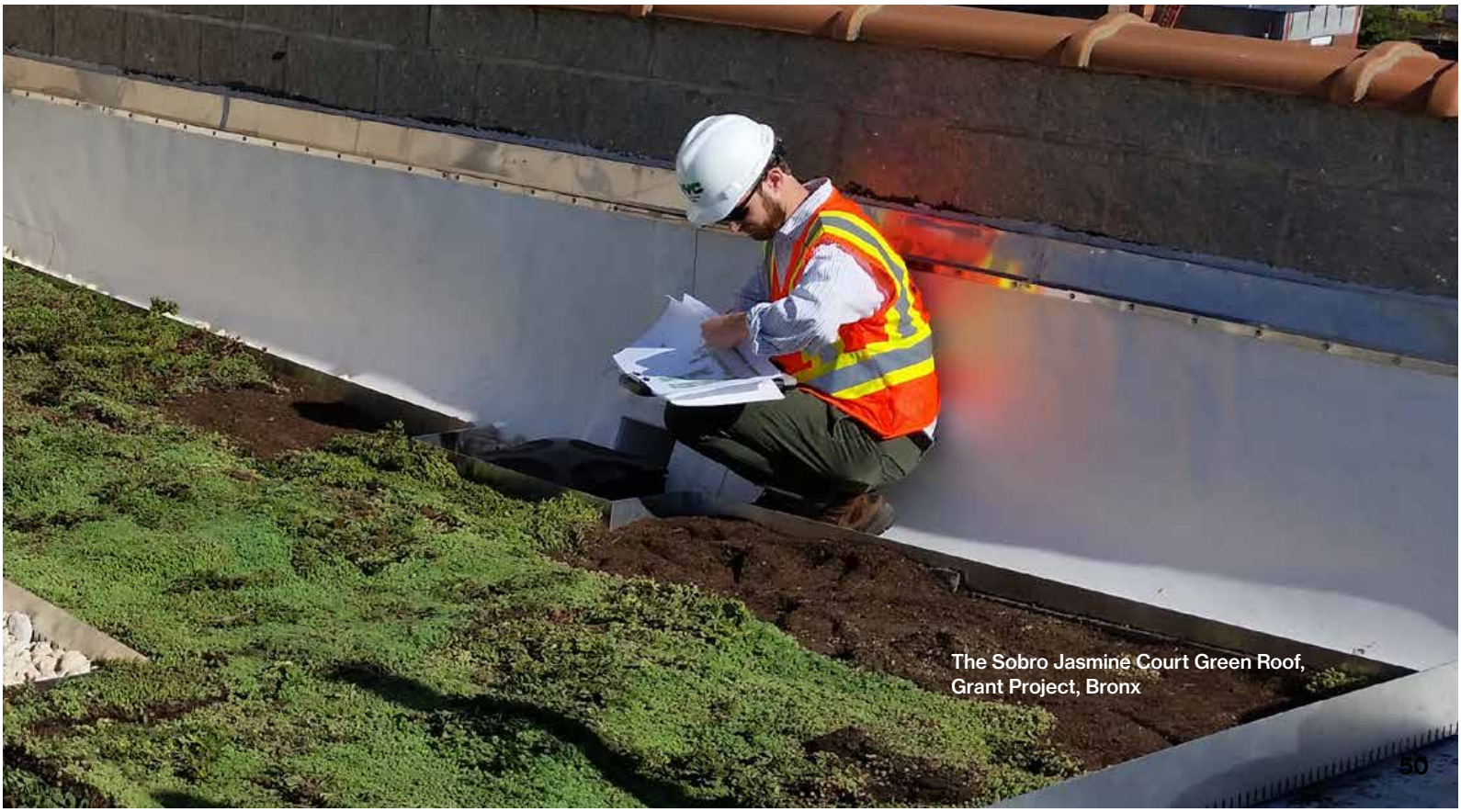
Infiltration SMPs are Infeasible

If infiltration practices are deemed infeasible for the project site, SMPs should be implemented according to the hierarchy depicted in Figure 3-2 and Figure 3-6. Surface treatment systems such as vegetated detention systems (i.e., open vegetated swales) and infiltration practices with underdrains are the preferred SMPs where subsurface conditions are not suitable for infiltration. While these types of practices do not remove as much stormwater from the MS4 system as infiltration practices without underdrains, these systems are designed to encourage infiltration of a portion of the stormwater runoff, increase the evapotranspiration potential of the project site, and reduce peak surface runoff rates, allowing for additional contaminant removal. Furthermore, these practices increase the travel time into the MS4, reducing system peaks, thereby reducing the need for traditional infrastructure expansion.

Physical treatment systems such as sand filters and other filtration-based technologies are the least preferred SMP. DEP recognizes that these systems may be the only viable option in certain development scenarios.

The stormwater management approach and the associated SMP selection and design must meet the stormwater management requirements of DEP and NYSDEC. If the site design does not allow adequate space for the required retention and physical treatment SMPs to be implemented, the developer and SWPPP preparer must revisit the proposed site design and associated soil disturbance and imperviousness levels and choose SMPs in accordance with DEP rules.

In addition to the practices cited in the NYS SWMDM, DEP encourages the development and use of innovative and proprietary practices that meet NYC and NYS stormwater management regulatory requirements. All practices that do not meet the standards of the NYS SWMDM must be approved by both DEP and NYSDEC. Please refer to Sections 3.3.2 and 9.4 of the NYS SWMDM and http://www.dec.ny.gov/chemical/29089.html for discussion on how to meet the requirements to use a proprietary practice for new development and redevelopment applications.



The Sobro Jasmine Court Green Roof, Grant Project, Bronx

Chapter 4

SMP and BMP Operation and Maintenance Guidance

Environmental Protection

Soil Replacement in Right-of-Way Rain Garden

Right-of-Way Rain Gardens, Brooklyn

Following construction, stormwater management practices (SMPs) must be regularly maintained and inspected to ensure continued performance as designed. This chapter provides guidance for:

- SMP Maintenance Procedures;
- SMP Operation and Maintenance Manual Requirements; and
- SMP Inspection, Reporting, and Re-certification Requirements.

In addition to complying with the guidance provided in this Chapter, all SMPs in New York City (NYC) Municipal Separate Storm Sewer System (MS4) areas may be maintained in accordance with the most recent version of the New York State (NYS) Maintenance Guidance for Stormwater Management Practices (https://www.dec.ny.gov/docs/water_pdf/smpmaintguidance.pdf), and Stormwater Management Design Manual (SWMDM).

Non-structural best management practices (BMPs) in the NYC MS4 area must also be continuously maintained to continue to meet the No-Net-Increase (NNI) requirements for pathogens.

Maintenance of SMPs and BMPs is the responsibility of the property owner and is required per the issued Stormwater Maintenance Permit. The Stormwater Maintenance Permit requires ongoing maintenance and periodic inspections to assess the condition and functionality of each SMP and BMP and to assess any adjustments to maintenance frequencies and tasks that may be needed to maintain performance over time. Furthermore, permittees must provide an annual certification that SMPs and BMPs have been inspected and properly maintained. Permittees are subject to random DEP inspections and must renew their Stormwater Maintenance Permit(s) every five years.

4.1 Maintenance Procedures

SMP maintenance activities generally fall into two categories: routine maintenance and non-routine maintenance.

Maintenance procedures contained in this section consist of recommended tasks and associated frequencies for routine maintenance activities, as well as general guidance on common problems and associated non-routine maintenance activities. While maintenance procedures generally apply to SMPs, the continued implementation of BMPs may also require routine and non-routine maintenance practices.

Routine maintenance comprises those activities that occur on a set frequency or that are otherwise periodically required for SMP upkeep. These are typically simpler tasks such as weeding, watering, sediment and trash removal for bioretention SMPs, that can often be accomplished during pre-set routine maintenance cycles.

Occasionally, SMPs require non-scheduled, or non-routine maintenance, to address performance issues that may arise and cannot be adequately addressed through routine maintenance activities. These activities may include replanting, erosion control, and structural repairs and may require specialized equipment and/or skilled expertise to properly implement. The alteration or modification of an approved SMP or operation and maintenance of SMPs will require prior review and approval of DEP.

Routine Maintenance

Routine maintenance consists of tasks that are performed on a set schedule or undertaken periodically based on the results of the annual inspections. Routine tasks are intended to maintain system performance under normal operating conditions, assuming SMPs have been appropriately sited, designed, and constructed. Routine maintenance tasks and suggested frequencies are provided by SMP type in the following tables.

Suggested frequencies are guidelines based on normal operating conditions. Generally, frequencies for many tasks will need to increase for high sediment loading and highly exposed SMPs (i.e., SMPs sited adjacent to commercial driveways, parking lots, or other areas with heavy vehicular traffic that receive direct runoff from these surfaces) and may be decreased for lower sediment loading and/or less exposed SMPs (i.e., SMPs sited adjacent to areas of low or no vehicular traffic and receive primarily roof runoff). Frequencies should be adjusted over time based on the results of ongoing and annual SMP inspections.

Broken fence


Plant maintenance

Table 4-1. Routine Maintenance Tasks and Frequencies for Vegetated Bioretention SMPs

Task	Description	Frequency
Watering	Watering of new plantings during first two years of establishment	During extended dry periods of no significant precipitation within 7 days, or as needed based on plant condition
Weeding	Removal of non-native or undesirable vegetation	Quarterly at minimum during the growing season or more frequently based on inspections
Mulching	Mulching of planting beds	Once annually for first two growing seasons or until beds have filled in
Sediment Removal	Removal of accumulated sediment and debris from infiltration/ filtration areas	Twice per year or more frequently if needed based on inspections (note: leaves and other natural materials can be left in place)
Sediment Removal	Hydraulic cleaning of inflow and outflow piping	As warranted based on video pipe inspections conducted every three years
Sediment Removal	Hydraulic cleaning of underdrain piping	As warranted based on video pipe inspections conducted every three years
Inlet Cleaning	Vacuum cleaning of accumulated sediment and debris within inlets	Twice per year or more frequently based on inspections if sediment and debris accumulation is rapid
Outlet Cleaning	Removal of accumulated sediment and debris from risers (vacuum cleaning), trash racks, and spillways	Annually at minimum or more frequently based on ongoing and annual inspections

Table 4-2. Routine Maintenance Tasks and Frequencies for Porous Pavement SMPs

Task	Description	Frequency
Sediment Removal	Vacuum porous asphalt or concrete surfaces with regenerative air sweeper or commercial vacuum sweeper (pavement washing systems and compressed air units are not recommended)	Twice per year or more frequently based on ongoing and annual inspections
Sediment Removal	Hydraulic cleaning of inflow and outflow piping	As warranted based on video pipe inspections conducted every three years
Sediment Removal	Hydraulic cleaning of underdrain piping	As warranted based on video pipe inspections conducted every three years
Inlet Cleaning	Vacuuming cleaning of accumulated sediment and debris within inlets	Twice per year or more frequently if sediment accumulation is rapid

Table 4-3. Routine Maintenance Tasks and Frequencies for Infiltration Basins and Trenches

Task	Description	Frequency
Sediment Removal	Removal of accumulated sediment from infiltration surface	Twice per year or more frequently for high loading systems based on ongoing and annual inspections
Sediment Removal	Hydraulic cleaning of inflow and outflow piping	As warranted based on video pipe inspections conducted every three years
Inlet Cleaning	Vacuum cleaning of accumulated sediment and debris within inlets	Twice per year or more frequently based on inspections if sediment and debris accumulation is rapid
Outlet Cleaning	Removal of accumulated sediment and debris from risers (vacuum cleaning), trash racks, and spillways	Annually at minimum or more frequently based on ongoing and annual inspections
Sediment Removal	Hydraulic cleaning of underdrain piping	As warranted based on video pipe inspections conducted every three years
Inlet Cleaning	Vacuum cleaning of accumulated sediment and debris within inlets	Twice per year or more frequently based on inspections if sediment and debris accumulation is rapid
Outlet Cleaning	Removal of accumulated sediment and debris from risers (vacuum cleaning), trash racks, and spillways	Annually at minimum or more frequently based on ongoing and annual inspections

Table 4-4. Routine Maintenance Tasks and Frequencies for Green Roofs

Task	Description	Frequency
Watering	Watering of new plantings during first two years of establishment	During extended dry periods of no significant precipitation within 7 days, or as needed based on plant condition
Weeding	Removal of non-native or undesirable vegetation	Quarterly at minimum during the growing season or more frequently based on ongoing and annual inspections
Vegetation Management	Manually cut detrital herbaceous vegetation from the previous growing season to four to six inches above the ground	Annually
Sediment Removal	Remove sediment from drain outlet	Twice per year
Sediment Removal	Hydraulic cleaning of inflow and outflow piping	As warranted based on video pipe inspections conducted every three years
Sediment Removal	Hydraulic cleaning of underdrain piping	As warranted based on video pipe inspections conducted every three years
Inlet Cleaning	Vacuum cleaning of accumulated sediment and debris within inlets	Twice per year or more frequently based on inspections if sediment and debris accumulation is rapid
Outlet Cleaning	Removal of accumulated sediment and debris from risers (vacuum cleaning), trash racks, and spillways	Annually at minimum or more frequently based on ongoing and annual inspections

Table 4-5. Routine Maintenance Tasks and Frequencies for Subsurface Detention and Infiltration SMPs

Task	Description	Frequency
Sediment Removal	Vacuum cleaning of accumulated sediment and debris within primary storage chambers. Cleaning method will depend on storage type.	Every three years or more frequently based on inspections
Sediment Removal	Hydraulic cleaning of inflow and outflow piping	As warranted based on video pipe inspections conducted every three years
Inlet Cleaning	Vacuum cleaning of accumulated sediment within inlets, including hooded catch basins	Twice per year or more frequently if sediment accumulation is rapid
Inlet Cleaning	Vacuum cleaning of accumulated sediment and debris within inlets	Twice per year or more frequently if sediment accumulation is rapid

Table 4-6. Routine Maintenance Tasks and Frequencies for Ponds and Wetlands

Task	Description	Frequency
Watering	Watering of new plantings during first two years of establishment	During extended dry periods of no significant precipitation within 7 days, or as needed based on plant condition
Weeding	Removal of non-native or undesirable vegetation	Quarterly at minimum during the growing season or more frequently based on ongoing and annual inspections
Woody Vegetation Removal	Removal of woody vegetation from berms and embankments	Annually
Sediment Removal	Removal of accumulated sediment and debris from forebay and open water areas	Every 5 years or when 50% of capacity has been lost
Sediment Removal	Hydraulic cleaning of inflow and outflow piping	As warranted based on video pipe inspections conducted every three years
Inlet Cleaning	Vacuum cleaning of accumulated sediment and debris within inlets, including hooded catch basins	Twice per year or more frequently based on inspections if sediment and debris accumulation is rapid
Outlet Cleaning	Removal of accumulated sediment and debris from risers (vacuum cleaning), trash racks, and spillways	Annually at minimum or more frequently based on ongoing and annual inspections

Table 4-7. Routine Maintenance Tasks and Frequencies for Sand Filters

Task	Description	Frequency
Filter Media Raking	Raking of filter media surface for the removal of trash and debris from control openings	As needed
Media Surface Layer Replacement	Removal of the top few inches of filter media and cultivation of the surface when filter bed is clogged	Annually

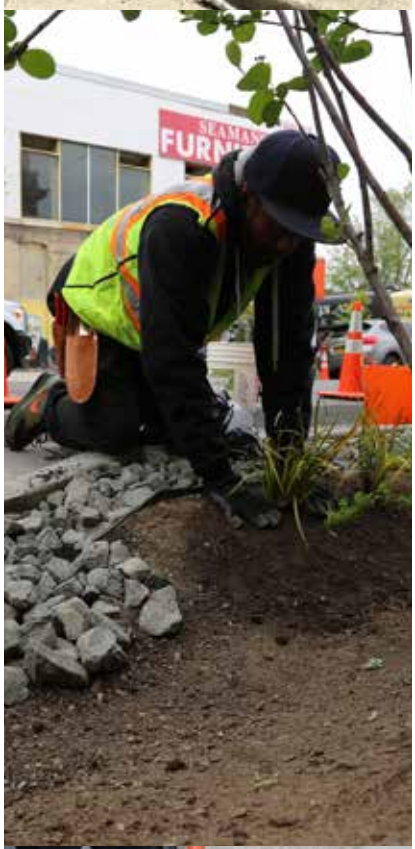
Task	Description	Frequency
Sediment Removal	Vacuum cleaning of accumulated sediment from filter bed chamber and sedimentation chamber	Annually or when the sediment within the sedimentation chamber accumulates to a depth of more than 6 inches
Sediment Removal	Hydraulic cleaning of inflow and outflow piping	As warranted based on video pipe inspections conducted every three years
Sediment Removal	Hydraulic cleaning of underdrain piping	As warranted based on video pipe inspections conducted every three years
Inlet Cleaning	Vacuum cleaning of accumulated sediment and debris within inlets	Twice per year or more frequently based on inspections if sediment and debris accumulation is rapid
Outlet Cleaning	Removal of accumulated sediment and debris from risers (vacuum cleaning), trash racks, and spillways	Annually at minimum or more frequently based on ongoing and annual inspections

Table 4-8. Routine Maintenance Tasks and Frequencies for Rain Barrels and Cisterns

Task	Description	Frequency
Sediment Removal	Vacuum cleaning of accumulated sediment from primary tank	Annually
Sediment Removal	Clean sediment from intake screen and flexible intake hose	Quarterly
Sediment Removal	Hydraulic cleaning of inflow and outflow piping	As warranted based on video pipe inspections conducted every three years
Sediment Removal	Cleaning of gutters, downspouts, and first flush chambers	Twice per year or more frequently based on ongoing and annual inspections
Inlet Cleaning	Vacuuming cleaning of accumulated sediment and debris within inlets	Twice per year or more frequently if sediment accumulation is rapid

Table 4-9. Routine Maintenance Tasks and Frequencies for Other Physical Treatment Systems

Task	Description	Frequency
Sediment Removal	Hydraulic cleaning of inflow and outflow piping	As warranted based on video pipe inspections conducted every three years
Sediment Removal	Hydraulic cleaning of underdrain piping	As warranted based on video pipe inspections conducted every three years
Inlet Cleaning	Vacuum cleaning of accumulated sediment and debris within inlets including hooded catch basins	Twice per year or more frequently based on inspections if sediment and debris accumulation is rapid
Outlet Cleaning	Removal of accumulated sediment and debris from risers (vacuum cleaning), trash racks, and spillways	Annually at minimum or more frequently based on ongoing and annual inspections



Non-Routine Maintenance

Non-routine maintenance includes activities intended to repair or remediate SMPs that are not functioning properly. Non-routine maintenance needs are usually identified during the course of an annual inspection or during other informal visual assessments. The need for non-routine maintenance activities may indicate an underlying performance issue that may require additional investigation and analysis, particularly if the performance issues are recurring. The assistance of a qualified professional will likely be required in order to perform diagnostic activities needed to properly remediate recurring problems. Examples of some common problems addressed via non-routine maintenance are provided below.

Erosion Problems

Erosion issues are common at the system inflow points for vegetated SMPs such as areas downslope of curb cuts conveying flow into a stormwater planter system. Erosion problems can typically be remedied by either replanting the area with an extended term erosion blanket or turf reinforcement matting or by adding structural measures such as rip-rap or river stone.

Geotextile and stone to stabilize erosion

Poorly Performing Plantings

Vegetation health is integral to any vegetated SMP, such as bioretention systems and green roofs. Poorly performing plantings may be an indication of one or more underlying problems, particularly if plantings fare poorly in the same location within the SMP on a recurring basis. Poor plant performance commonly results from improper plant selection and can be effectively addressed by replanting with an adjusted plant palette that is more appropriate for the soil and moisture conditions in the area. Plantings can also be negatively affected by various other external factors including erosion, sedimentation, poor soil conditions, disease, shade, road salt, and foot traffic compaction. A landscape or horticultural qualified professional can help diagnose areas and causes of poor plant performance and recommend a combination of adjusted plantings and/or soil amendments, among other remedies.

Disease daylilies

Differential Settlement

Differential settlement occurs where portions of the ground surface become depressed relative to surrounding areas. Some minor settlement is common after construction, but more severe settlement could indicate the presence of soft soils or improperly compacted subgrade. Monitoring areas of settlement once they are identified is critical for assessing the need for excavation and repair. Diagnostic activities to assess the soil and subsurface conditions in areas of settlement include ground penetrating radar scans or other geophysical methods, soil borings, and dye testing. Potential remedial activities could include excavation of poorly compacted underlying soils and replacement with suitable compactable backfill. Major settlement issues often require a qualified professional to perform an evaluation and determine the correct solution.

Erosion/settling

Sedimentation and Clogging

Routine maintenance activities involve removal of sediment from SMPs, particularly inlet areas and forebays. However, in some cases, rates of sedimentation may be excessive and may lead to performance issues such as clogging and planting failure. In these situations, it is important to assess the contributing drainage area to identify any areas of bare soil, active construction, or other activities that may be the source of high rates of sediment delivery to the SMP. Cessation of these activities or the implementation of temporary or permanent erosion control measures can help to lower rates of sediment delivery and reduce the frequency of sediment removal from the SMP. Remediation of severe sedimentation and clogging conditions may require a qualified professional to identify where the removal and replacement of some or all storage/filtration media. Adequate pre-treatment and routine maintenance can help to extend SMP service life and reduce the frequency of storage/filtration media replacement.

Removing concrete washout at ROWB

Structural Defects

Structural defects can cause a wide array of performance issues and most commonly include broken or cracked hydraulic control structures and/or piping and damaged concrete edging or metal edge restraints around structures such as stormwater planters. Areas of surface wear on porous pavement also fall into this category. Depending on the issue, inspection by a qualified structural professional may be warranted to determine if and how a structure can be safety repaired.

Broken downspout pipe

4.2 Operation and Maintenance Manuals

All permitted SMPs installed in MS4 areas must have an Operation and Maintenance Manual that sets forth a specific plan for operation and maintenance (O&M) of each permitted SMP. Submission and approval of the Operation and Maintenance Manual is a pre-requisite of Stormwater Maintenance Permit issuance.

At minimum, the O&M manual must contain the following:

- List of SMPs to be maintained;
- Copy of the as-built plans showing locations and elevations of SMPs;
- Location map depicting SMPs to be maintained;
- Contact information for responsible party;
- Information regarding whether the maintenance will be performed by the responsible party and/or contracted to an outside party;
- Table of proposed routine maintenance tasks and frequencies for each SMP type;
- Schedule of proposed self-inspections; and
- Copy of the Stormwater Maintenance Permit issued by DEP.

In addition, if the permitted project is subject to NNI requirements for pathogens, the O&M manual must contain a list of BMPs to address the applicable pathogen sources. The list should also be included as an inspection form or checklist to be submitted as annual certification that proper maintenance has been performed. See Table 3-3 for an example list of BMPs for pathogen removal by land use.

Replanting ROWB

4.3 Inspection, Reporting, and Recertification Requirements

Property Owner Inspections

Property owners are responsible for conducting periodic inspections of SMPs to ensure that the systems are working properly, to reassess routine maintenance frequency, and to identify non-routine maintenance work required to address any condition or performance deficits. Table 4-10 provides types and frequencies of inspections as a guideline for developing an ongoing SMP inspection program. Property owners are also responsible for maintaining BMPs to continue to meet the NNI requirements for pathogens.

Inspection forms

All inspections must be logged and recorded on an inspection form. The owner must keep and maintain copies of all inspection records and tests for five years after performance of such inspections or tests.

Annual Certification

Property owners are responsible for providing an Annual Certification attesting that any permitted SMPs and BMPs have been properly inspected and maintained. The Annual Certification must be submitted via the SWPTS.

Table 4-10. Routine Inspection Frequency Summary Table

Type of Inspection	Purpose	Applicable Components or SMPs	Suggested frequency
Video pipe inspection	To identify accumulated sediment and defects in piping systems	Inflow and outflow piping	Every three years
Annual vegetation inspection	To assess the health and condition of vegetation	Vegetated SMPs	Annually during the growing season
Annual structural inspection	To identify areas of differential settlement or structural concern	Structural components including concrete structures, piping, fencing	Annually

DEP Inspections

As the permitting agency, DEP reserves the right to perform periodic inspections of permitted SMPs. DEP inspectors will typically perform a visual assessment of key components to check for issues such as poor plant cover, erosion, sedimentation, clogging, or structural damage. DEP inspectors may also ask to see inspection and maintenance records, which must be kept up-to-date and available on premises. DEP inspections may be more frequent immediately following construction to ensure that property owners are effectively transitioning to an active O&M phase.

Deficiencies

If DEP inspections reveal deficiencies in the SMPs, DEP will issue a deficiency notice and the property owner must initiate a remedial action plan to address any noted deficiencies. Annual certification and permit renewal will depend on the resolution of any outstanding deficiencies. Deficiencies that are not resolved in a timely manner as determined by DEP may result in Notices of Violation and, ultimately, fines.

Permit Renewal

DEP rules require that Stormwater Maintenance Permits be renewed every 5 years. Permit renewal requires a certification from a qualified professional, depending on the type of professional that signed and sealed the original construction drawings). Permit renewal applications must be filed on the SWPTS.

Glossary

Environmental Protection

Glossary

Applicant: The term "applicant" means the person filing the online application. This may be the owner, developer, qualified professional, or other person that is a registered user in the online application system.

Best Management Practice (BMP): The term "best management practices" or "BMPs" means schedules of activities, prohibitions of practices, maintenance procedures and other management practices to prevent or reduce the discharge of pollutants to waters of the state. BMPs also include treatment requirements (if deemed necessary by the department), operating procedures, and practices to control site runoff, spillage and leaks, sludge or waste disposal, or drainage from raw material storage.

Borough-Block-Lot: Parcel numbers used to identify the location of properties.

Combined Sewer Overflow (CSO): Sometimes, during heavy rain and snow storms, a combined sewer system receives higher than normal flows. NYC WWTPs are unable to handle flows that are more than twice their design capacity and when this occurs, a mix of excess stormwater and untreated wastewater discharges directly into the City's waterways at certain outfalls to prevent upstream flooding. This is called a combined sewer overflow.

Combined Sewer System: A sewer system used to convey both wastewater and stormwater in a single pipe to wastewater treatment plants (WWTPs).

Covered Development Project: The term "covered development project" means development activity, private or public, that involves or results in an amount of soil disturbance within the MS4 area greater than or equal to the soil disturbance threshold. Such term includes development activity that is part of a larger common plan of development or sale involving or resulting in soil disturbance within the MS4 area exceeding the soil disturbance threshold. Such term shall include all development activity within the MS4 area that requires a SWPPP pursuant to the New York State Department of Environmental Conservation SPDES General Permit for Stormwater Discharges from Construction Activity (CGP).

CSO Outfall: The physical point where a municipally owned or operated combined sewer discharges to surface waters of the state.

CSO Regulator: A flow control structure in a combined sewer system that diverts a controlled portion of flow from the collection system to an intercepting sewer for treatment at a WWTP and allows the remaining flow to discharge to nearby waters as a combined sewer overflow.

Design Point: designated general location/ point(s) that water discharges from the drainage area that are generally treated with SMPs (includes practice outflows and subsurface outflows).

Developer: The term "developer" means a person that owns or leases land on which development activity that is part of a covered development project is occurring, and/or a person that has operational control over the development activity's construction plans and specifications, including the ability to make modifications to the construction plans and specifications.

Development Activity: The term "development activity" means soil disturbance on a site, including but not limited to land contour work, clearing, grading, excavation, demolition, construction, reconstruction, new development, redevelopment, creation or replacement of impervious surface, stockpiling activities or placement of fill. Clearing activities include but are not limited to the cutting and skidding of trees, stump removal, and brush root removal. Such term does not include routine maintenance (such as road resurfacing) performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility

Disturbance Threshold: The minimum area of soil disturbed as a result of development activities that triggers the need for a Stormwater Construction Permit, currently 1-acre.

Erosion and sediment controls: The term "erosion and sediment controls" means stormwater management practices designed to minimize the discharge of pollutants during development activities including, but not limited to, structural erosion and sediment control practices, construction sequencing to minimize exposed soils, soil stabilization, dewatering control measures, and other pollution prevention and good housekeeping practices appropriate for construction sites.

Floatables: Manmade materials, such as plastics, papers, or other products which, when improperly disposed of onto streets or into catch basins, can ultimately find their way to waterbodies and may create nuisance conditions with regard to aesthetics, recreation, navigation, and waterbody ecology.

Green Infrastructure (GI): Green infrastructure practices essentially infiltrate, evapotranspire, or reuse stormwater, with significant use of soils and vegetation rather than traditional collection, conveyance, and storage structures. Common green infrastructure approaches include green roofs, trees and tree boxes, rain gardens, vegetated swales, pocket wetlands, infiltration planters, vegetated median strips, reforestation, and protection and enhancement of riparian buffers and floodplains. See also Low Impact Development and Better Site Design.

Illicit Discharge: means any discharge to a municipal separate storm sewer that is not composed entirely of stormwater except discharges pursuant to a SPDES permit (other than the SPDES permit for discharges from the municipal separate storm sewer) and discharges resulting from firefighting activities.

Impaired Water: The term "impaired water" includes (i) a water body for which NYSDEC has established a total maximum daily load ("TMDL"), (ii) a water body for which NYSDEC expects that existing controls such as permits will resolve the impairment, and (iii) a water body identified by NYSDEC as needing a TMDL. A list of impaired waters is issued by NYSDEC pursuant to section 303(d) of the federal water pollution control act, chapter 26 of title 33 of the United States code. For NNI requirements, impaired waterbodies are identifed in Appendix 2 of the NYC MS4 Permit with updated information available on the DEP interactive MS4 map (www.nyc.gov/dep/ms4map).

Impervious Cover or Area: The term "impervious area (cover)" means all impermeable surfaces that cannot effectively infiltrate rainfall. This includes paved, concrete and gravel surfaces (e.g., parking lots, driveways, roads, runways and sidewalks); building rooftops and miscellaneous impermeable structures such as patios, pools, and sheds.

Larger Common Plan of Development or Sale: The term "larger common plan of development or sale" means a contiguous area where multiple separate and distinct development activities are occurring, or will occur, under one plan. The term "plan" in larger common plan of development or sale" is broadly defined as any announcement or piece of documentation including a sign, public notice of hearing, sales pitch, advertisement, drawing, permit application, uniform land use review procedure (ULURP) application, state environmental quality review act (SEQRA) or city environmental quality review (CEQR) application, application for a special permit, authorization, variance or certification pursuant to the zoning resolution, subdivision application, computer design, or physical demarcation (including boundary signs, lot stakes, and surveyor markings) indicating that development activities may occur on a specific plot. Such term does not include area-wide rezonings or projects discussed in general planning documents. For discrete development activities that are located within a larger common plan of development or sale that are at least 1/4 mile apart, each activity can be treated as a separate plan of development or sale provided that any interconnecting road, pipeline or utility project that is part of the same "common plan" is not concurrently being disturbed.

MS4 Area: The term "MS4 area" means those portions of the City of New York served by separate storm sewers and separate stormwater outfalls owned or operated by the City of New York or areas served by separate storm sewers owned or operated by the City of New York that connect to combined sewer overflow pipes downstream of the regulator owned or operated by the City of New York, and areas in which municipal operations and facilities drain by overland flow to waters of the state, as determined by the department and described on maps of the MS4 area set forth in Title 15, Chapter 19.1 of the Rules of the City of New York (RCNY) and available on the department's website (www.nyc.gov/dep/ms4map).

Municipal Operations and Facilities: The term "municipal operations and facilities" means any operation or facility serving a New York City governmental purpose and over which the City of New York has operational control.

No-Net-Increase: A pollutant load analysis included in the SWPPP that demonstrates adequate controls are in place such that the change in pollutant loading will not result in a net increase.

Non-negligible Land Use Change: Development activities which involve one or more acres of soil disturbance and a net increase in impervious cover.

NYC MS4 No-Net-Increase Calculator for Nitrogen: Interactive spreadsheet tool developed by DEP to help developers calculate post-development nitrogen load increases and select SMPs to manage total nitrogen. The calculator takes pre- and post-development inputs from the user and outputs net runoff volume and nitrogen load changes. The calculator can be accessed here (https://deppermits.microsoftcrmportals.com/).

NYC MS4 Permit: The term "NYC MS4 permit" means the SPDES permit for MS4s of New York City, SPDES No. NY-0287890 or its successor.

NYSDEC Construction General Permit (CGP): The term "NYSDEC construction general permit" means the SPDES general permit for stormwater discharges from construction activities, Permit No. GP-0-15-002 or its successor.

Owner: The term "owner" means a person having legal title to premises, a mortgagee or vendee in possession, a trustee in bankruptcy, a receiver, or any other person having legal ownership or control of premises.

Pollutant: The term "pollutant" means dredged soil, filter backwash, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand and industrial, municipal, and agricultural waste discharged into water; which may cause or might reasonably be expected to cause pollution of the waters of the State in contravention of the standards or guidance values adopted as provided in 6 New York codes, rules and regulations ("NYCRR") section 750-1.2(a).

Pollutant of Concern (POC): The term "pollutants of concern" or "POCs" means pollutants that might reasonably be expected to be present in stormwater in quantities that may cause or contribute to an exceedance of water quality standards. These pollutants include but are not limited to nitrogen, phosphorus, silt and sediment, pathogens, floatables, petroleum hydrocarbons, heavy metals, and polycyclic aromatic hydrocarbons (PAHs). For NNI requirements, impaired waterbodies are identified in Appendix 2 of the NYC MS4 Permit with updated information available on the DEP interactive MS4 map (www.nyc.gov/dep/ms4map).

Post-Development (Construction): Relating to the site conditions such as land use, land coverage, topography, zoning, and corresponding hydrologic functions that will exist following proposed development activities.

Pre-Development: Relating to the site conditions such as land use, land coverage, topography, zoning, and corresponding hydrologic functions that exist prior to proposed development activities.

Qualified professional: The term "qualified professional" means a person who is knowledgeable in the principles and practices of stormwater management and treatment such as a licensed professional engineer or a registered landscape architect or other NYSDEC endorsed individual(s). Individuals preparing SWPPPs that require the post-construction stormwater management practice component must have an understanding of the principles of hydrology, water quality management practice design, water quantity control design, and, in many cases, the principles of hydraulics. All components of the SWPPP that involve the practice of engineering, as defined by Article 145 of the NYS Education Law, shall be prepared by, or under the direct supervision of, a professional engineer licensed to practice in the State of New York.

Rainwater: The term "Rainwater" means precipitation collected directly from the sky or from roof and balcony runoff.

Redevelopment: The term "redevelopment" means reconstruction of or modification to any existing previously developed land such as residential, commercial, industrial, institutional or road/highway, which involves soil disturbance. Redevelopment is distinguished from new development in that new development refers to construction on land where there had not been previous construction. Redevelopment specifically applies to constructed areas with impervious surface or fill.

Stormwater Construction Permit: The term "stormwater construction permit" means a permit issued by the department authorizing development activity on land on which there is a covered development project with an approved Stormwater Pollution Prevention Plan (SWPPP).

Stormwater Maintenance Permit: The term "stormwater maintenance permit" means a permit issued by the DEP where maintenance is required of post-construction stormwater management facilities by owners of real property benefited by such facilities.

Stormwater Management Practices (SMPs): The term "stormwater management practices" or "SMPs" means measures to prevent flood damage or to prevent or reduce point source or nonpoint source pollution inputs to stormwater runoff and water bodies. Such term includes erosion and sediment controls, post-construction stormwater management facilities, and practices to manage stormwater runoff from industrial activities.

Stormwater Management Program (SWMP): The suite of programs developed and implemented by the City of New York, which provides a comprehensive integrated planning approach involving public participation and, where necessary, intergovernmental coordination, to reduce the discharge of POCs and specified pollutants to the maximum extent practicable, using management practices, control techniques and systems, design and engineering methods, and other appropriate provisions.

Stormwater Pollution Prevention Plan (SWPPP): The term "stormwater pollution prevention plan" or SWPPP" means a plan for controlling stormwater runoff and pollutants during construction and, where required by these rules, after construction is completed.

Treatment Train: Stormwater management practices implemented in series to treat runoff from a single catchment area.

Water Quality Standard: Measure(s) of purity or quality for any waters in relation to their reasonable and necessary use as promulgated in 6 NYCRR Part 700 et seq.

Waters of the State: Includes lakes, bays, sounds, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Atlantic Ocean within the territorial seas of the State of New York, and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters that do not combine or effect a junction with natural surface or underground waters), which are wholly or partially within or bordering the state or within its jurisdiction.

Attachment 1

SWPPP Template

NYC Environmental Protection

Construction Stormwater Pollution Prevention Plan Template

The Department of Environmental Protection's (DEP) Stormwater Construction Permit application requires applicants to submit a Stormwater Pollution Prevention Plan (SWPPP). This customizable SWPPP Template is meant to be a guide to help professionals with the development of a SWPPP that is compliant with DEP Rules.

Instructions for Using the SWPPP Template

Each section of the SWPPP Template includes instructions that may be removed when finalizing the document and fillable areas for project and site information. Read the instructions for each section before completing that section. The blue text indicates information to include in each text field. Click on the blue text and the instructions will disappear once you start typing. The SWPPP Template is an editable document file that you can add tables and additional text to and delete unneeded or non-applicable fields. Note that some sections may require only a brief description while others may require several pages of explanation.

The following tips for using this template will help ensure that you meet the minimum permit requirements:

- Read the NYC Rules and Regulations and the New York State Construction General Permit thoroughly before you begin preparation of your SWPPP to ensure that you have a working knowledge of the underlying requirements.
- Complete the SWPPP prior to beginning your permit application.
- The SWPPP approval will include a copy of the NYSDEC SWPPP Acceptance form that will allow you to submit your Notice of Intent to NYSDEC.
- Disturbances greater than 5 acres at one time requires written approval from NYC DEP.

While DEP has made every effort to ensure the accuracy of all instructions contained in this SWPPP Template, it is the Rules of the City of New York, not the template, that govern your obligations with respect to regulated stormwater discharges. In the event of a conflict between the SWPPP Template and any corresponding provision of the Rules, you must abide by the requirements in the Rules. DEP welcomes comments on the SWPPP Template at any time and will consider those comments in any future revision of this document. You may contact DEP for SWPPP-related inquiries at ms4construction@dep.nyc.gov.

Note:

This is a .pdf version of the SWPPP Template. The editable word document file can be found on DEP's MS4 web page here:
https://www1.nyc.gov/html/dep/html/stormwater/construction-and-post-construction.shtml

Stormwater Pollution Prevention Plan (SWPPP)

Prepared for Construction Activities At:

Insert Project/Site Location/Name

Insert Project Site Address, City, State, Zip Code

Insert Project/Site Phone Number

SWPPP Prepared For:

Insert Owner Company or Organization Name

Insert Contact Name

Insert Address, City, State, Zip Code

Insert Phone Number

Insert Fax/Email

SWPPP Prepared By:

Insert Company or Organization Name

Insert Name

Insert Address, City, State, Zip Code

Insert Phone Number

Insert Fax/Email

SWPPP Preparation Date:

Insert Date

Estimated Project Start and End Dates:

Insert Start Date — Insert Completion Date

Table of Contents

SECTION 1: CONTACT INFORMATION/ RESPONSIBLITIES

1.1 Construction Stormwater Team

Instructions:

- This list will be complete before construction begins and after the SWPPP is approved by DEP.
- Each Developer or Contractor must sign a certification to be included in the on-site document and with the approved SWPPP. See **Appendix E** for examples. The developer and the contractor with primary responsibility for the site work will have to electronically sign certifications in SWPTS to pull the permit.
- Identify the Developer(s) and Contractor(s) who will be engaged in construction activities at the site. Indicate respective responsibilities, where appropriate. Also include the 24-hour emergency contact.
- List subcontractors expected to work on-site in the Subcontractor section below. Notify subcontractors of stormwater requirements applicable to their work. Make sure to identify what part of the project each subcontractor is responsible for under Responsibilities.
- Each Subcontractor with ESC responsibilities must sign the appropriate certifications (**Appendix E**) and designate their trained contractor (Section 4).

Construction Stormwater Team		
Name, company/organization, position, and contact information	Responsibilities	I Have Read and Understand the Applicable Requirements of Title 15, Chapter 19.1 NYC Rules and Regulations
Developer Name Insert Company/Organization Insert Position Insert Phone Number Insert Email	Insert Responsibility	☐ Yes Date: Click or tap to enter a date.
Primary Contractor Name Insert Company/Organization Insert Position Insert Phone Number Insert Email	Insert Responsibility	☐ Yes Date: Click or tap to enter a date.
Sub-Contractor Name Insert Company/Organization Insert Position Insert Phone Number Insert Email	Insert Responsibility	☐ Yes Date: Click or tap to enter a date.
Emergency 24-hour Name Insert Company/Organization Insert Position Insert Phone Number Insert Email	Insert Responsibility	☐ Yes Date: Click or tap to enter a date.

[Repeat as necessary.]

1.2 Design Stormwater Team

Instructions:

- Identify the individuals (by name or position) that are part of the project's stormwater team, their individual responsibilities. At a minimum the stormwater team is comprised of individuals who are responsible for overseeing the development of the SWPPP, any later modifications to it, and for compliance with the permit requirements.
- Each member of the stormwater team must have ready access to either an electronic or paper copy of the SWPPP.
- Additional names and certification should be added to this section before the project begins construction.

Design Stormwater Team		
Name, company/organization, position, and contact information	Responsibilities	I Have Read and Understand the Applicable Requirements of Title 15, Chapter 19.1 NYC Rules and Regulations
Insert Name of Responsible Person Insert Company/Organization Insert Position Insert Phone Number Insert Email	Owner/Developer	☐ Yes Date: Click or tap to enter a date.
Insert Name of Responsible Person Insert Company/Organization Insert Position Insert Phone Number Insert Email	SWPPP Preparer	☐ Yes Date: Click or tap to enter a date.
Insert Name of Responsible Person Insert Company/Organization Insert Position Insert Phone Number Insert Email	Responsibility	☐ Yes Date: Click or tap to enter a date.

[Include additional rows or delete as necessary.]

SECTION 2: SITE EVALUATION, ASSESSMENT, AND PLANNING

2.1 Project Site Information

Instructions:

- In this section, compile basic site information. When completing this section make sure to check your location information with the MS4 Preliminary Map.
- Please make sure to note where the location map is in your plan.

Project Name and Address

Project/ Site Name: Insert Text Here

Project Street/ Location: Insert Text Here

City: Insert Text Here

State: New York

Zip Code: Insert Text Here

Borough: Insert Text Here

Block(s) and Lot(s): Insert Text Here from GIS

DEC Region: 2

Business Days and hours for the project: Insert Text Here

Project Latitude/ Longitude (from GIS)

Latitude: _ _._ _ _ _ _ _ _ ° N
(Decimal degrees)

Longitude: -_ _._ _ _ _ _ _ _ ° W
(Decimal degrees)

Latitude/longitude data source:

☐ MAP ☐ GPS ☐ OTHER (Please specify): Insert Text Here

Horizontal Reference Datum:

☐ NAD 27 ☐ NAD 83 ☐ WGS 85

Type of Construction Site *(check all that apply)*:

☐ Single-Family Residential ☐ Multi-Family Residential ☐ Commercial ☐ Industrial
☐ Institutional ☐ Highway or Road ☐ Utility ☐ Other: Insert Text Here

Size of Construction Site

Size of Property	INSERT SIZE OF PROPERTY (in acres)
Total Area Expected to be Disturbed by Construction Activities	INSERT TOTAL AREA OF CONSTRUCTION DISTURBANCES (to the nearest quarter acre)
Maximum Area Expected to be Disturbed at Any One Time	INSERT MAXIMUM AREA TO BE DISTURBED AT ANY ONE TIME (in acres)

2.2 Nature of the Construction Activity

Instructions (see NYC Code 19.1-03. (b)(3) NYSDEC GP015002, Part III.B.1.):

- Provide a general description of the nature of the construction activities at your site.
- Describe the size of the property, scope of the project, location, and type.
- Indicate the type of construction site, past, existing and proposed land use.
- Include natural and constructed features of the site.
- Include if the project is located in an impaired watershed. If it is, identify the impairment and write a narrative analysis to identify and address potential sources.
- Provide a list and description of all pollutant-generating activities (e.g., paving operations; concrete, paint, and stucco washout and waste disposal; solid waste storage and disposal; and dewatering operations) and indicate for each activity the type of pollutant that will be generated (e.g., sediment, fertilizers, pesticides, paints, caulks, sealants, fluorescent light ballasts, contaminated substrates, solvents, fuels) that could be discharged in stormwater from your site.
- Describe the construction support activities covered by this permit.
- Make sure plans include a general location map showing the site and surrounding area.

General Description of Project

Provide a general description of the nature of your construction activities, including the age/dates of past renovations for structures that are undergoing demolition, existing SMPs, past uses, existing use, and future use of the site:

Insert Text Here

Site Limitations/Assessment

Provide any site limitations you have encountered (watershed impairments, state or federal wetlands, etc.) and any additional permits required to implement the project. Information from section 2.3-2.5 may be useful to reference in this section.

Insert Text Here

Soils

Provide a description of soils including the hydrologic soil groups (HSGs), slope classifications, and any site-specific testing results, make sure to note which plan/map soil information is shown on. Soil testing results and Boring Locations Map should be included in **Appendix I**.

Insert Text Here

[Repeat as necessary for individual project phases.]

2.3 Surface Waters

Instructions:

- In this section, include information relating to the discharge point from the site and identify the pollutant of concern, if any, for the receiving water from table 1-2 in the NYC SWDM. This information corresponds to section 2.17 of the Construction Stormwater Permit Application.
- List all of the stormwater discharge points from the site. Identify each with a unique 3-digit ID (e.g., 001, 002). Make sure plans and reports use the same numbers.
  - ✓ Discharge Point is the point that the release of any substance, whether knowing or unknowing, accidental or otherwise connects to a to a public sewer or waters of the State, including indirect discharges.
- For each unique discharge point, specify the name of the first water of the State that receives stormwater from the MS4. You may have multiple discharge points that flow into the same or multiple receiving waters.
- Next, specify whether any waters of the State that the site discharges to are listed as "impaired" in table 1-2 in the NYC SWDM and the pollutants causing the impairment.
- Note the practice numbers from section 5.1 of this template that address No-Net-Increase requirements.

For each point of discharge, provide a point of discharge ID (a unique 3-digit ID, e.g., 001, 002), the name of the first water of the State that receives stormwater from the MS4 outfall. If the receiving water is on Table 1-2 of the NYC SWDM, identify the pollutant of concern and the practices used to meet no net increase (NNI) requirement by the practice number indicated in Section 5.1 of this template.					
Point of Discharge ID	Name of receiving water:	Is the receiving water impaired (on the CWA 303(d) list)?	If yes, list the pollutants that are causing the impairment:	Identify possible pollutant source on site based on location and intended use:	SMP/BMP used to meet NNI
[001]		☐ Yes ☐ No			
[002]		☐ Yes ☐ No			
[003]		☐ Yes ☐ No			
[004]		☐ Yes ☐ No			
[005]		☐ Yes ☐ No			
[006]		☐ Yes ☐ No			

[Include additional rows or delete as necessary.]

2.4 Other SPDES discharges:

Instructions (see NYSDEC GP015002, Part III.B.1.k):

- Note any other SPDES number(s) associated with the site – like MSGP or an individual SPDES for wastewater or groundwater discharges.

Provide a description of the location of any stormwater discharges associated with industrial activity, other than construction, at the site including but not limited to, stormwater discharges from asphalt plant and concrete plants located on the construction site. Support activities on or near the site, not covered in this section must be addressed in this plan under section 3.3 Pollution Prevention and Good House Keeping.

Site Plan Map Location	**Discharge Type** (e.g., paving operations; concrete, paint, and stucco washout and waste disposal; solid waste storage and disposal; and dewatering operations)	**Pollutants or Pollutant Constituents** (e.g., sediment, fertilizers, pesticides, paints, caulks, sealants, fluorescent light ballasts, contaminated substrates, solvents, fuels)	**NYSDEC SPDES Permit Number**
	INSERT POLLUTANT-GENERATING ACTIVITY	INSERT POLLUTANTS	
	INSERT POLLUTANT-GENERATING ACTIVITY	INSERT POLLUTANTS	

[Include additional rows or delete as necessary.]

Construction Support Activities *(only provide if applicable)*

Describe any construction support activities for the project including large offsite areas used by the project (e.g., concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, borrow areas) Reference section 3.3 where appropriate to avoid repeating information.

INSERT DESCRIPTION OF CONSTRUCTION SUPPORT ACTIVITY

Contact information for construction support activity (to be filled in by contractor that pulls the permit):

INSERT NAME
INSERT PHONE NUMBER
INSERT EMAIL
INSERT ADDRESS AND/OR LATITUDE/LONGITUDE

[Repeat as necessary.]

2.5 Allowable Non-Stormwater Discharges

Instructions (see NYS DEC GP015002 Part I.E.):

- Identify all authorized sources of non-stormwater discharges. The authorized non-stormwater discharges identified in Part 1.E. of the NYS DEC GP015002 include:
  - ✓ *Discharge*s from firefighting activities;
  - ✓ Fire hydrant flushing;
  - ✓ Waters to which cleansers or other components have not been added that are used to wash vehicles or control dust in accordance with the SWPPP, routine external building wash-down which does not use detergents;
  - ✓ Pavement wash waters where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents are not used;
  - ✓ Air conditioning condensate;
  - ✓ Uncontaminated *groundwater* or spring water;
  - ✓ Uncontaminated *discharge*s from construction site de-watering operations; and
  - ✓ Foundation or footing drains where flows are not contaminated with process materials such as solvents.
- For those entities required to obtain coverage under this permit, and who *discharge* as noted in this paragraph, and with the exception of flows from firefighting activities, these *discharge*s must be identified in the SWPPP.

List of Authorized Non-Stormwater Discharges Present at the Site

For each of the following authorized non-stormwater discharges, indicate whether it will be present at your construction site, and identify the likely locations of the discharges on your site map.

Type of Authorized Non-Stormwater Discharge	Likely to be Present at Your Site?
Landscape irrigation	☐ Yes ☐ No
Waters used to wash vehicles and equipment (cleansers are not used)	☐ Yes ☐ No
Water used to control dust	☐ Yes ☐ No
Potable water including uncontaminated water line flushing's	☐ Yes ☐ No
External building wash down (soaps/solvents are not used, and external surfaces do not contain hazardous substances)	☐ Yes ☐ No
Pavement wash waters (spills or leaks have not occurred)	☐ Yes ☐ No
Uncontaminated air conditioning or compressor condensate*	☐ Yes ☐ No
Uncontaminated, non-turbid discharges of ground water or spring water*	☐ Yes ☐ No
Foundation or footing drains*	☐ Yes ☐ No
Discharges from construction de-watering operations*	☐ Yes ☐ No

***Require permits from DEP's Bureau of Water and Sewer Operations, DEP's Bureau of Waste Water Treatment, Department of Buildings and/or NYSDEC.**

SECTION 3: EROSION AND SEDIMENT CONTROLS

General Instructions (See NYC Code 19.1-03. (b)(3) and NYSDEC GP015002 Part III.B.1.):

- Describe the erosion and sediment controls (ESCs) that will be installed and maintained at your site.
- Describe any applicable stormwater control design specifications (including references to any manufacturer specifications and/or erosion and sediment control manuals/ordinances relied upon).
- Describe any routine stormwater control maintenance specifications.
- Describe the projected schedule for stormwater control installation/implementation.

3.1 Practices

3.1.1 General ESC Practices

INSERT GENERAL DESCRIPTION OF EROSION AND SEDIMENT CONTROLS THAT WILL BE USED FOR THIS PROJECT. IF IT IS INFEASIBLE TO USE STANDARD EROSION AND SEDIMENT CONTROLS, REFER TO SECTION 3.1.2 BELOW.

Specific Erosion and Sediment Controls

Choose an item.	
Reference Detail	Drawing Sheet and detail number from ESC plans
Reference Standard Design Specifications	NYS Blue Book Reference
How does this practice meet the standards and requirements?	The practice will be used to …. Where ….

[Repeat as needed for individual erosion and sediment controls.]

3.1.2 Nonstandard ESC Practices

IF IT IS INFEASIBLE TO USE STANDARD EROSION AND SEDIMENT CONTROLS, PROVIDE AN EXPLANATION FOR WHY THIS IS THE CASE AND HOW THE PRACTICES INCORPORATED WILL MEET THE PREVENT EROSION AND SEDIMENTATION ON THE SITE AND IN THE SURFACE WATERS OF THE STATE. IF FIVE (5) OR MORE ACRES OF LAND WILL BE DISTURBED AT ONE TIME ON A SITE, INCLUDE AN EXPLANATION OF WHY THIS IS NECESSARY AND HOW EROSION AND SEDIMENTATION WILL BE PREVENTED, REFER TO CONSTRUCTION SEQUENCE IN SECTION 3.2 IF NECESSARY.

Specific Erosion and Sediment Controls

Click or tap here to enter text.	
Reference Drawing Details	
Reference Standard	
How does this practice meet the standards? If not, please explain why and provide justification.	INCLUDE COPIES OF DESIGN SPECIFICATIONS IN APPENDIX H

3.2 Construction (Phasing and) Sequence of Operations

Instructions (see NYC Code 19.1-03. (b)(3) and NYSDEC GP015002 Part III.B.1.d):

- Describe the intended construction sequence and duration of major activities.
- For each portion or phase of the construction work, include the following:
  - ✓ A construction phasing plan and sequence of operations describing the intended order of construction and duration of construction activities, including clearing and grubbing, mass grading, demolition activities, site preparation (i.e., excavating, cutting and filling), final grading, and creation of soil and vegetation stockpiles requiring stabilization;
  - ✓ Plans, included in **Appendix N**, should have a detailed construction sequence that has the erosion and sediment control practices tied to each operation;
  - ✓ Installation of utilities that include land disturbing activities;
  - ✓ Temporary or permanent cessation of construction activities;
  - ✓ Temporary or final stabilization of areas of exposed soil; and
  - ✓ Removal of temporary stormwater controls and construction equipment or vehicles, and cessation of any pollutant-generating activities.
- The construction sequence must reflect the following requirements:
  - ✓ Installation of stormwater controls
  - ✓ Stabilization method and installation
- These plans must follow the technical standard, NYS Standards and Specifications for Erosion and Sediment Control, dated Nov. 2016
  - ✓ Found here: https://www.dec.ny.gov/chemical/29066.html
- For projects that will disturb 5 or more acres at one time:
  - ✓ A Qualified Inspector must Inspect 2-times every 7-days;
  - ✓ Soil stabilization measures must be initiated within 1-day and completed with 7-days;
  - ✓ A phasing plan that defines the maximum disturbed area per phase and shows cuts and fills; and
  - ✓ Install site specific practices to protect water quality.

INSERT OVERVIEW AND GENERAL DESCRIPTION OF EXPECTED CONSTRUCTION SEQUENCE INCLUDING INSTALLATION, MAINTENANCE, AND REMOVAL OF EROSION AND SEDIMENT CONTROL PRACTICES. ACTIVITIES USUALLY DONE BY SUBCONTRACTORS, SUCH AS UTILITY INSTALLATION, MAY BE REPRESENTED IN A SEPARATE SECTION FOR EASE OF IMPLEMENTATION. INCLUDE FINAL STABILIZATION METHOD AS THE LAST STEP IN EACH 'PHASE'.

Phase I

INSERT GENERAL DESCRIPTION OF PHASE			
Activity (In order of construction)	Erosion and sediment control practice	When will practice be installed	Maintenance, replacement and removal of ESCs
(Demolition, clearing and grubbing, grading, building construction, etc.)	Choose an item.	(before, during, after activity)	(days, weeks, months, years, and when should it be replaced/maintained – all practices must be replaced as needed.)
	Choose an item.		
	Choose an item.		
	Choose an item.		

Phase II

INSERT GENERAL DESCRIPTION OF PHASE			
Activity (In order of construction)	Erosion and sediment control practice	When will practice be installed	How long is practice expected to be in place
(Demolition, clearing and grubbing, grading, building construction, etc.)	Choose an item.	(before, during, after activity)	(days, weeks, months, years, and when should it be replaced/maintained – all practices must be replaced as needed, but many practices have a limited useful life)
	Choose an item.		
	Choose an item.		
	Choose an item.		

[Repeat as necessary.]

3.3 Pollution Prevention and Good Housekeeping Practices

3.3.1 Construction Site Pollutants

Instructions (see NYSDEC GP015002 Parts I.B.1.d and III.B.1.j):

- Identify and describe all pollutant-generating activities at your site (e.g., paving operations; concrete, paint, and stucco washout and waste disposal; solid waste storage and disposal).
- For each pollutant-generating activity, complete the subsections below to include an inventory of pollutants or pollutant constituents associated with that activity (e.g., sediment, fertilizers, and/or pesticides, paints, solvents, fuels), which could be exposed to rainfall or snowmelt, and could be discharged from your construction site. You must take into account where potential spills and leaks could occur that contribute pollutants to stormwater discharges, and any known hazardous or toxic substances, such as PCBs and asbestos that will be disturbed or removed during construction.
- Delete and renumber subsections as required.
- Note, post construction storage and use of these materials may need to be addressed in the operation and maintenance plan as well.

Insert Text Here Or Use Table Below

Pollutant-Generating Activity	**Pollutants or Pollutant Constituents** (that could be discharged if exposed to stormwater)	**Location on Site** (or reference SWPPP site map where this is shown)

[Include additional rows or delete as necessary.]

3.3.2 Spill Prevention and Response

Instructions:

- For storage and use of certain materials, spill prevention and response must be addressed.
- At a minimum all spills of petroleum products of 5 or more gallons must be reported to NYSDEC Spill Hotline at **1-800-457-7362.**
- Describe procedures you will use to prevent and respond to leaks, spills, and other releases. You must implement the following at a minimum:
  - ✓ Procedures for expeditiously stopping, containing, and cleaning up spills, leaks, and other releases. Identify the name or title of the employee(s) responsible for detection and response of spills or leaks; and
  - ✓ Procedures for notification of appropriate facility personnel, emergency response agencies, and regulatory agencies where a leak, spill, or other release containing a hazardous substance or oil in an amount equal to or in excess of a reportable quantity consistent with Part 2.3.6 and established under either 40 CFR Part 110, 40 CFR Part 117, or 40 CFR Part 302, occurs during a 24-hour period. Contact information must be in locations that are readily accessible and available.
- Some projects/site may be required to develop a Spill Prevention Control and Countermeasure (SPCC) plan under a separate regulatory program (40 CFR 112). If you are required to develop an SPCC plan, or you already have one, you should include references to the relevant requirements from your plan.

INSERT SPILL PREVENTION AND RESPONSE PROCEDURES HERE

3.3.3 Fueling and Maintenance of Equipment or Vehicles

Instructions:

- Describe equipment/vehicle fueling and maintenance practices that will be implemented to eliminate the discharge of spilled or leaked chemicals (e.g., providing secondary containment *(examples: spill berms, decks, spill containment pallets* and cover where appropriate, and/or having spill kits readily available.)

General

INSERT GENERAL DESCRIPTION

Specific Pollution Prevention Practices

INSERT NAME OF POLLUTION PREVENTION PRACTICE	
Description	INSERT DESCRIPTION OF PRACTICE TO BE INSTALLED
Installation	INSERT APPROXIMATE DATE OF INSTALLATION
Maintenance Requirements	INSERT MAINTENANCE REQUIREMENTS FOR THE POLLUTION PREVENTION PRACTICE
Design Specifications	IF APPLICABLE, REFERENCE DESIGN SPECIFICATIONS HERE AND INCLUDE COPIES OF DESIGN SPECIFICATIONS IN APPENDIX H

[Repeat as needed.]

3.3.4 Washing of Equipment and Vehicles

Instructions:

- Describe equipment/vehicle washing practices that will be used to minimize the discharge of pollutants from equipment and vehicle washing, wheel wash water, and other types of wash waters (e.g., locating activities away from waters of the State and stormwater inlets or conveyances and directing wash waters to a sediment basin or sediment trap, using filtration devices, such as filter bags or sand filters, or using other similarly effective controls).
- Describe how you will prevent the discharge of soaps, detergents, or solvents by providing either (1) cover (*examples: plastic sheeting or temporary roofs*) to prevent these detergents from coming into contact with rainwater, or (2) a similarly effective means designed to prevent the discharge of pollutants from these areas.

General

I INSERT GENERAL DESCRIPTION

Specific Pollution Prevention Practices

INSERT NAME OF POLLUTION PREVENTION PRACTICE	
Description	INSERT DESCRIPTION OF PRACTICE TO BE INSTALLED
Installation	INSERT APPROXIMATE DATE OF INSTALLATION
Maintenance Requirements	INSERT MAINTENANCE REQUIREMENTS FOR THE POLLUTION PREVENTION PRACTICE
Design Specifications	IF APPLICABLE, REFERENCE DESIGN SPECIFICATIONS HERE AND INCLUDE COPIES OF DESIGN SPECIFICATIONS IN APPENDIX H

[Repeat as needed.]

3.3.5 Storage, Handling, and Disposal of Construction Products, Materials, and Wastes

Instructions:

– For any of the types of building products, materials, and wastes that you expect to use or store at your site, provide the information on how you will prevent the discharge of materials to the MS4 and the specific practices that you will be employ.

3.3.5.1 Building Products

(***Note:*** Examples include asphalt sealants, copper flashing, roofing materials, adhesives, concrete admixtures, and gravel and mulch stockpiles.)

General

I INSERT GENERAL DESCRIPTION

Specific Pollution Prevention Practices

INSERT NAME OF POLLUTION PREVENTION PRACTICE	
Description	INSERT DESCRIPTION OF PRACTICE TO BE INSTALLED
Installation	INSERT APPROXIMATE DATE OF INSTALLATION
Maintenance Requirements	INSERT MAINTENANCE REQUIREMENTS FOR THE POLLUTION PREVENTION PRACTICE
Design Specifications	IF APPLICABLE, REFERENCE DESIGN SPECIFICATIONS HERE AND INCLUDE COPIES OF DESIGN SPECIFICATIONS IN APPENDIX H

[Repeat as needed.]

3.3.5.2 Pesticides, Herbicides, Insecticides, Fertilizers, and Landscape Materials

General

INSERT GENERAL DESCRIPTION

Specific Pollution Prevention Practices

INSERT NAME OF POLLUTION PREVENTION PRACTICE	
Description	INSERT DESCRIPTION OF PRACTICE TO BE INSTALLED
Installation	INSERT APPROXIMATE DATE OF INSTALLATION
Maintenance Requirements	INSERT MAINTENANCE REQUIREMENTS FOR THE POLLUTION PREVENTION PRACTICE
Design Specifications	IF APPLICABLE, REFERENCE DESIGN SPECIFICATIONS HERE AND INCLUDE COPIES OF DESIGN SPECIFICATIONS IN APPENDIX H

[Repeat as needed.]

3.3.5.3 Diesel Fuel, Oil, Hydraulic Fluids, Other Petroleum Products, and Other Chemicals

General

INSERT GENERAL DESCRIPTION

Specific Pollution Prevention Practices

INSERT NAME OF POLLUTION PREVENTION PRACTICE	
Description	INSERT DESCRIPTION OF PRACTICE TO BE INSTALLED
Installation	INSERT APPROXIMATE DATE OF INSTALLATION
Maintenance Requirements	INSERT MAINTENANCE REQUIREMENTS FOR THE POLLUTION PREVENTION PRACTICE
Design Specifications	IF APPLICABLE, REFERENCE DESIGN SPECIFICATIONS HERE AND INCLUDE COPIES OF DESIGN SPECIFICATIONS IN APPENDIX H

[Repeat as needed.]

3.3.5.4 Hazardous or Toxic Waste

(***Note:*** Examples include paints, solvents, petroleum-based products, wood preservatives, additives, curing compounds, acids.)

General

INSERT GENERAL DESCRIPTION

Specific Pollution Prevention Practices

INSERT NAME OF POLLUTION PREVENTION PRACTICE	
Description	INSERT DESCRIPTION OF PRACTICE TO BE INSTALLED
Installation	INSERT APPROXIMATE DATE OF INSTALLATION
Maintenance Requirements	INSERT MAINTENANCE REQUIREMENTS FOR THE POLLUTION PREVENTION PRACTICE
Design Specifications	IF APPLICABLE, REFERENCE DESIGN SPECIFICATIONS HERE AND INCLUDE COPIES OF DESIGN SPECIFICATIONS IN APPENDIX H

[Repeat as needed.]

3.3.5.5 Construction and Domestic Waste

(***Note:*** Examples include packaging materials, scrap construction materials, masonry products, timber, pipe and electrical cuttings, plastics, Styrofoam, concrete, and other trash or building materials.)

General

INSERT GENERAL DESCRIPTION

Specific Pollution Prevention Practices

INSERT NAME OF POLLUTION PREVENTION PRACTICE	
Description	INSERT DESCRIPTION OF PRACTICE TO BE INSTALLED
Installation	INSERT APPROXIMATE DATE OF INSTALLATION
Maintenance Requirements	INSERT MAINTENANCE REQUIREMENTS FOR THE POLLUTION PREVENTION PRACTICE
Design Specifications	IF APPLICABLE, REFERENCE DESIGN SPECIFICATIONS HERE AND INCLUDE COPIES OF DESIGN SPECIFICATIONS IN APPENDIX H

[Repeat as needed.]

3.3.5.6 Sanitary Waste

General

INSERT GENERAL DESCRIPTION

Specific Pollution Prevention Practices

INSERT NAME OF POLLUTION PREVENTION PRACTICE	
Description	INSERT DESCRIPTION OF PRACTICE TO BE INSTALLED
Installation	INSERT APPROXIMATE DATE OF INSTALLATION
Maintenance Requirements	INSERT MAINTENANCE REQUIREMENTS FOR THE POLLUTION PREVENTION PRACTICE
Design Specifications	IF APPLICABLE, REFERENCE DESIGN SPECIFICATIONS HERE AND INCLUDE COPIES OF DESIGN SPECIFICATIONS IN APPENDIX H

[Repeat as needed.]

3.3.6 Washing of Applicators and Containers used for Paint, Concrete, or Other Materials

Instructions:

– Describe how discharge of pollutants to the MS4 will be prevented including practices employed.

General

INSERT GENERAL DESCRIPTION

Specific Pollution Prevention Practices

INSERT NAME OF POLLUTION PREVENTION PRACTICE	
Description	INSERT DESCRIPTION OF PRACTICE TO BE INSTALLED
Installation	INSERT APPROXIMATE DATE OF INSTALLATION
Maintenance Requirements	INSERT MAINTENANCE REQUIREMENTS FOR THE POLLUTION PREVENTION PRACTICE
Design Specifications	IF APPLICABLE, REFERENCE DESIGN SPECIFICATIONS HERE AND INCLUDE COPIES OF DESIGN SPECIFICATIONS IN APPENDIX H

[Repeat as needed.]

3.3.7 Other Pollution Prevention Practices

Instructions:

– Describe any additional pollution prevention practices that do not fit into the above categories.

General

INSERT GENERAL DESCRIPTION

Specific Pollution Prevention Practices

INSERT NAME OF POLLUTION PREVENTION PRACTICE	
Description	INSERT DESCRIPTION OF PRACTICE TO BE INSTALLED
Installation	INSERT APPROXIMATE DATE OF INSTALLATION
Maintenance Requirements	INSERT MAINTENANCE REQUIREMENTS FOR THE POLLUTION PREVENTION PRACTICE
Design Specifications	IF APPLICABLE, REFERENCE DESIGN SPECIFICATIONS HERE AND INCLUDE COPIES OF DESIGN SPECIFICATIONS IN APPENDIX H

[Repeat as needed.]

SECTION 4: CONSTRUCTION INSPECTION

4.1 Inspection Personnel and Procedures

Instructions (see NYC Code 19.1-03. (b)(8)(vii) and (viii) and NYSDEC GP015002 Parts II.C and Part IV):

Describe the procedures you will follow for conducting inspections in accordance with the above referenced codes. This section should provide the Qualified Inspector (QI) and contractor that pulls the permit a frame work for inspection and corrections. All completed inspection forms, corrections and certification of change by the contractor forms must be kept on site in a **site log book** that becomes an addendum to this plan.

Make sure:

- ✓ The QI is a professional user in SWPTS
- ✓ The inspection forms reflect the erosion and sediment controls and construction schedule from section 3, above
- ✓ If the project will shut down for less than twelve (12) months include temporary shutdown procedures, including notifying DEP
- ✓ Make sure to note in the plan that trained contractors should inspect all the ESCs listed as their responsibility at the beginning and end of each day.
- ✓ Include step that should be taken to correct deficiencies, including when a design professional should be consulted. **Appendix E** includes a Certificate of Change by Contractor, which may be used to document changes.

Table 4-1: Inspection frequency and Qualified Inspector(s)

Standard Frequency:
☐ Every 7 days and within 24 hours of a 0.5-inch rainfall event
Increased Frequency (if applicable):
For areas where 5 or more acres are disturbed or for projects that discharge to a 303d listed water ☐ Twice every 7 days and within 24 hours of a 0.5-inch rainfall event, at least 2-days between inspections
Temporary Shutdown Frequency:
With DEP approval of temporary shutdown ☐ Once every 30 days and within 24 hours of a 0.5-inch rainfall event
Qualified Inspector
Insert Company or Organization Name Insert Name Insert Address, City, State, Zip Code Insert Phone Number Insert Fax/Email Insert Area of Control (if more than one QI at site) Insert name of professional, if QI is working under direction *[Repeat as necessary.]*

Inspection Report Forms

INSERT COPIES OF ANY INSPECTION REPORT FORMS IN **APPENDIX C**.

4.2 Trained Contractor List

Instructions (see NYSDEC GP015002 Part II.C.6.):

- Complete the table below to provide documentation that the personnel required to be trained have completed the appropriate training
- The Construction (Phasing and) Sequence of Operations should be referenced for each trained contractor to know the extent of the erosion and sediment control practices they are responsible for inspecting and maintaining. The sequence should include the operation that the practice is associated with and the regular maintenance needed to keep the practice operational.

Table 4-2: Documentation for Completion of Training

Contractor	Name of Trained Contractor	NYS DEC Erosion and Sediment Control Training Certificate Number	Expiration Date
Contractor Name	INSERT NAME OF PERSONNEL	INSERT CERTIFICATE NUMBER	Click or tap to enter a date.
Contractor Name	INSERT NAME OF PERSONNEL	INSERT CERTIFICATE NUMBER	Click or tap to enter a date.
Contractor Name	INSERT NAME OF PERSONNEL	INSERT CERTIFICATE NUMBER	Click or tap to enter a date.
Contractor Name	INSERT NAME OF PERSONNEL	INSERT CERTIFICATE NUMBER	Click or tap to enter a date.
Contractor Name	INSERT NAME OF PERSONNEL	INSERT CERTIFICATE NUMBER	Click or tap to enter a date.
Contractor Name	INSERT NAME OF PERSONNEL	INSERT CERTIFICATE NUMBER	Click or tap to enter a date.

[Include additional rows or delete as necessary.]

SECTION 5: POST CONSTRUCTION STORMWATER CONTROLS

If any of the following sections do not apply to your project delete the unneeded/ inapplicable section(s).

5.1 Post Construction Stormwater Management Practices (SMPs)

Instructions (See NYC Code 19.1-03. (b)(4) and NYSDEC GP015002 Parts III.B):

- Please fill out table below with the Site Design Point
  - ✓ Design Point is a designated general location/ point(s) that water discharges from the drainage area that are generally treated with SMPs (includes practice outflows and subsurface outflows).
- Please indicate how the practice is being used on the site:
  - ✓ Runoff Reduction
  - ✓ Water Quality Treatment
  - ✓ Channel Protection
  - ✓ Overbank Control
  - ✓ Extreme Flood Control
- Please refer to **Appendix N** for required plans.
- Please reference design points in Construction Drawings specified in **Appendix N.**
- Please include all sizing and routing calculations in **Appendix J**, or for small projects on plans.
- Please include your Preliminary Operation and Maintenance (O&M) Manual for the SMPs planned for the project in **Appendix K**. It is the Developer or Owner's responsibility to update the O&M manual if there are any changes are made that effects the Post Construction SMPs specified.
- Please include SMP sizing calculations in **Appendix J.**
- If practice for a certain design point addresses nitrogen removal requirements, please also include this information in Section 5.2.

Design Point #1				
Location Description				
Located in Site Map/Drawing				
#	**Practice**	**Practice #**	**Total Contributing Area (acres)**	**Impervious Contributing Area (acres)**
1	Choose an item.			
	Description (Practice name and type if not identified above. If Alternative SMP is used, include Manufacturer Name and product data and documentation required by NYS SWMDM in **Appendix H**. Please specify if this practice is used to meet No-Net increase Requirements and if it partially or fully meets the required pollutant load reduction.)			Reference Drawing: (e.g. C-410)
#	**Practice**	**Practice #**	**Total Contributing Area (acres)**	**Impervious Contributing Area (acres)**
2	Choose an item.			
	Description			Reference Drawing:

Design Point #2				
Location Description				
Located in Site Map/Drawing				
#	**Practice**	**Practice #**	**Total Contributing Area (acres)**	**Impervious Contributing Area (acres)**
1	Choose an item.			
	Description			Reference Drawing:
#	**Practice**	**Practice #**	**Total Contributing Area (acres)**	**Impervious Contributing Area (acres)**
2	Choose an item.			
	Description			Reference Drawing:

A long-term operation and maintenance plan addressing all permanent SMPs and BMPs is included as **Appendix K**. The entity that will be responsible for long term operation and maintenance of the practices must be designated in **Appendix K**. (Note this manual must include best management practices to reduce pathogens if required.)

5.2 No-Net-Increase

Instructions (see NYCDEP Stormwater Design Manual Part 3.5):

- All covered development projects that meet the No-Net-Increase (NNI) criteria are required to conduct an NNI Analysis and implement stormwater controls to mitigate the pollutants of concern for the impaired receiving waterbody. To determine if the covered development project is subject to NNI requirements under section 19.1-03.3(b) (4) (x) Title 15 of the Rules of the City of New York, refer to the following NYCDEP website: http://www.nyc.gov/html/dep/html/stormwater/construction-and-post-construction.shtml.
- All NNI analysis must include a description of the most likely sources of the pollutant(s) of concern, and how the selected practice(s) reduces the load to the pre-existing load or less. The operation and maintenance plan may also be referenced for this section.
- If nitrogen is the pollutant of concern, use the NYC MS4 No-Net-Increase Calculator or provide your calculations to demonstrate that the pollutant load in the newly developed condition is the same or less than the existing condition.
- If phosphorous is the pollutant of concern the practice must comply with Chapter 10 of the NYS SMDM.
- If floatables are the pollutant of concern practices must be in compliance with the NYS SWMDM.
- If Pathogens are the pollutant of concern, use Chapter 3 of the NYC SWDM to determine the appropriate BMPs and make sure that they BMPs are noted in the operation and maintenance plan.

Total Pollutant Removal by SMP/ Alternative SMP *

INSERT NAME OF STORMWATER MANAGEMENT PRACTICE	
Description	INCLUDE OR REFER TO THE NNI ANALYSIS AND INSERT DESCRIPTION OF PRACTICE TO BE INSTALLED OR IMPLEMENTED, INCLUDING AN EXPLANATION OF HOW THE POLLUTANT LOAD WILL BE REDUCED.
Maintenance Requirements	INSERT MAINTENANCE REQUIREMENTS FOR THE STORMWATER MANAGEMENT PRACTICE
Reference Drawing	INSERT REFERENCE DRAWING THAT SHOWS DESIGN SPECS
Design Point	INSERT DESIGN POINT HERE

IF APPLICABLE, INCLUDE COPIES OF DESIGN SPECIFICATIONS HERE

[Repeat as needed for each practice applied.]

Please include Practice Maintenance in the O&M Manual

5.3 Safe Drinking Water Act Underground Injection Controls Requirements

Instructions:

- Some infiltration practices may require compliance with EPAs Underground Injection Controls (UIC) requirements, please refer to the EPA web site for more information.
- For state UIC program contacts, refer to the following EPA website: https://www.epa.gov/uic
- For Stormwater Drainage Wells minimum federal requirements, BMPs, and information, refer to the following EPA website: https://www.epa.gov/uic/stormwater-drainage-wells#reqs

Do you plan to install any of the following controls? Check all that apply below.

☐ Infiltration trenches (if stormwater is directed to any bored, drilled, driven shaft or dug hole that is deeper than its widest surface dimension, or has a subsurface fluid distribution system)

☐ Commercially manufactured pre-cast or pre-built proprietary subsurface detention vaults, chambers, or other devices designed to capture and infiltrate stormwater flow

☐ Drywells, seepage pits, or improved sinkholes (if stormwater is directed to any bored, drilled, driven shaft or dug hole that is deeper than its widest surface dimension, or has a subsurface fluid distribution system)

(***Note:*** If compliance with UIC is needed, insert copies of letters, emails, or other communication between you and the City Agency, State Agency, or EPA Regional Office in **Appendix M**)

SECTION 6: CERTIFICATION AND NOTIFICATION

Instructions:

– The following certifications forms are to be reviewed, understood, filled out, and signed by the appropriate personnel:

1. A site-specific Draft Maintenance Easement shall be included as **Appendix A**. (***Note:*** The Maintenance Easement must be recorded in the Office of the City Register or, for project on Staten Island, the Richmond County Clerk's office before a permit may be issued.)
2. The Pre-Construction Documents & Certifications provided in **Appendix B** shall be filled out by the owner/developer, preparer, and qualified professional, as appropriately shown in the section.
3. The site-specific Construction Duration Inspection form shall be provided in **Appendix C** and is to be filled out and signed by the qualified professional that performs site inspections and oversee installation of ESCs for this project.
4. The Monthly Summary of Site Inspection Activities form provided in **Appendix D** is to be filled out and signed by the owner, or the duly authorized representative of the owner.
5. The Contractor's Certification Statement provided in **Appendix E** is to be filled out and signed by the contractor with primary responsibility for the project site.
6. The Contractor's Certification Statement provided in **Appendix E** is to be filled out and signed by all subcontractors.
7. The Certificate of Issuance provided in **Appendix E** is to be filled out and signed by the contractor with primary responsibility for the project site prior to performing any site work.
8. The Erosion and Water Quality Control Identification form provided in **Appendix E** is to be filled out by the developer/contractor.
9. Records of site work and site stabilization are to be kept on the Construction Stabilization form provided in **Appendix E** and is to be filled out by the developer/contractor as necessary.
10. The Certificate of Change by the Contractor provided in **Appendix E** is to be filled out and signed by the operator upon implementation of any requested changes to the SWPPP by the owner, preparer, or any local authority having jurisdiction over the project site. Changes to the SWPPP are only to be made when the plan or contractor's implementation proves to be ineffective in eliminating or significantly minimizing pollutants from the construction activity.
11. The Final Stabilization and Retention of Records form provided in **Appendix F** is to be filled out and signed by the qualified professional that will perform site inspections and oversee installation of erosion control measures for this project.
12. The Certificate of Return provided in **Appendix F** is to be filled out and signed by the operator and owner after final stabilization of the site has been completed.
13. The NYC DEP Notice of Termination (NOT) will be filed by the owner or its representative upon completion of the site's final stabilization using the online form.

SECTION 7: RETENTION OF RECORDS

Instructions (See NYC Code 19.1-03. (b)(11)):

- The following are to be retained by the owner at the site and for a period of five years from the date the site is finally stabilized:

1. SWPPP
2. Contract Documents including contract drawings and technical specifications
3. Stormwater inspections and maintenance reports
4. Contractor Certification
5. SWPPP Certification Statement of Satisfactory Completion
6. Correspondence regarding stormwater practices

SECTION 8: REQUIRED DRAWINGS

Instructions (See NYC Code 19.1-03. (b)(3) and (b) (4)):

- Please include required plans and drawings in **Appendix N**.
- Please include Soil testing results and Boring Location Maps in **Appendix I**.
- Plan view should show existing and proposed layout, scale should be at least 1"=50'. For small projects may be one sheet for larger projects could be many sheets. Should include adjacent sites within at least 50-feet of the property line and information noted below. Show any surface waters within 50-feet of the property boundary and include a note stating what the name of the receiving water) that is the ultimate discharged point.
- Plans should include the construction sequence and maintenance details for the described practice or phase.

Appendix A - Draft Maintenance Easement

Instructions:

- Required for all projects that require post construction stormwater management practices.
- Fill in the Maintenance Easement Template (soon to be available on DEP's MS4 web page) with any site-specific information.
- When the SWPPP is approved and before pulling the construction permit file the maintenance easement in the office of the City Register or, for projects in Staten Island, the Richmond County Clerk's office. You will not be able to pull the permit if DEP cannot verify that the Maintenance Easement is filed.

Appendix B - Certifications

Instructions:

- The following certification statements must be signed and dated by a person who meets the requirements of Owner, Developer and SWPPP Preparer.
- This certification must be re-signed in the event of a SWPPP Amendment.

Pre-Development

Project Name: _____

Name of Owner/Developer: _____

Name of Preparer: _____

Preamble to Site Assessment and Inspections

The following information to be read by all person's involved in the construction of stormwater related activities:

A qualified professional shall conduct an assessment of the site prior to the development activity (1) and certify in this inspection report that the appropriate erosion and sediment controls described in the SWPPP have been adequately installed or implemented to ensure overall preparedness of the site for the commencement of construction.

Prior to the commencement of construction, the Preparer shall certify in this site logbook that the SWPPP has been prepared in accordance with the State's standards and meets all Federal, State and local erosion and sediment control requirements.

When construction starts, site inspections shall be conducted by the qualified professional at least every 7 calendar days or within 24 hours of the end of a storm event of 0.5 inches or greater (Construction Duration Inspections), except as otherwise required during "temporary shutdown". The developer shall maintain a record of all inspection reports in this **site logbook**. The site logbook shall be maintained on site and be made available to the permitting authorities upon request. The developer shall post at the site, in a publicly accessible location, a summary of the site inspection activities on a monthly basis (Monthly Summary Report).

A qualified professional shall perform a final site inspection. The qualified professional shall certify that the site had undergone final stabilization (2) using either vegetative or structural stabilization methods and that all temporary erosion and sediment controls (such as silt fencing) not needed for long-term erosion control have been removed. In addition, a qualified professional must identify and certify that all permanent structures described in the SWPPP have been constructed and provide the owner(s) with an operation and maintenance plan that ensures the structure(s) continuously functions as designed.

The Owner, qualified inspector and qualified professional must submit a Notice of Termination Request to NYCDEP via the SWPTS. DEP may inspect the site to confirm that it meets the requirements of the NOT. If post construction practices are present an application for a Stormwater Maintenance Permit must also be submitted via SWPTS.

(1) "Development activity" means soil disturbance on a site including but not limited to land contour work, clearing, grading, excavation, demolition, construction, reconstruction, new development, redevelopment, creation or replacement of impervious surface, stockpiling activities or placement of fill. Clearing activities include but are not limited to the cutting and skidding of trees, stump removal and brush root removal. Such term does not include routine maintenance (such as road resurfacing) that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility.

(2) "Final stabilization" means that all soil-disturbing activities at the site have been completed and a uniform, perennial vegetative cover with a density of eighty (80) percent has been established or equivalent stabilization measures (such as the use of mulches or geotextiles) have been employed on all unpaved areas and areas not covered by permanent structures.

Certifications

Owner's Certification

I certify that I am the Owner of this property and have read or been advised of the applicable sections of the Rules of the City of New York (RCNY) Title 15, Chapter 19.1 and I believe that I understand them. I also understand that, under RCNY, I am responsible for submitting a fee to initiate review of the stormwater pollution prevention plan (SWPPP). I hereby certify that this SWPPP and all associated documentation provided were prepared under my direction or supervision. I understand that certifying false, incorrect or inaccurate information is a violation of the laws of the City of New York and could subject me to criminal or civil penalties and/or administrative proceedings. I also understand that, by submitting this application, I am acknowledging that the SWPPP has been developed and will be implemented as the first element of construction.

Name: _____ Title: _____

Signature: _____ Date: _____

Developer's Certification

I have read or been advised of the applicable sections of RCNY Title 15 Chapter 19.1 and believe that I understand them. I also understand that, under the RCNY I am responsible for submitting a fee to initiate review of this application. I hereby certify that this document and the corresponding documents were prepared under my direction or supervision. I understand that certifying false, incorrect or inaccurate information is a violation of the laws of the City of New York and could subject me to criminal or civil penalties and/or administrative proceedings. I also understand that, by submitting this application, I am acknowledging that the SWPPP has been developed and will be implemented as the first element of construction.

Name: _____ Title: _____

Signature: _____ Date: _____

SWPPP Preparer Certification

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project was prepared by me or under my direct supervision in accordance with the RCNY Title 15 Chapter 19.1 and terms and conditions of the most recent NYSDEC SPDES General Permit for Stormwater Discharges from Construction Sites. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and the laws of the City New York and could subject me to criminal, civil and/or administrative proceedings.

Name: _____ Title: _____

Signature: _____ Date: _____

Appendix C - Construction Duration Inspections

Instructions:

- Inspection Forms will be filled out during the entire construction phase of the project.
- Complete inspections must include:
  - ✓ An inspection form
  - ✓ A site plan showing the areas under active construction
  - ✓ Color Photos with date and time stamps showing any deficiencies or corrections to previous deficiencies
  - ✓ The signature of the QI
  - ✓ If the QI is working under the direction of a PE or RLA, the signature of the PE or RLA.

Required Elements:

- ✓ On a site map, indicate the extent of all disturbed site areas and drainage pathways.
  - Indicate site areas that are expected to undergo initial disturbance or significant site work within the next 14-day period.
  - Indicate, on a site map, all areas of the site that have undergone temporary or permanent stabilization.
  - Indicate all disturbed site areas that have not undergone active site work during the previous 14-day period.
- ✓ Inspect all sediment control practices and record the approximate degree of sediment accumulation as a percentage of sediment storage volume (for example, 10 percent, 20 percent, and 50 percent).
- ✓ Inspect all erosion and sediment control practices and record all maintenance requirements such as verifying the integrity of barrier or diversion systems (earthen berms or silt fencing) and containment systems (sediment basins and sediment traps).
- ✓ Identify any evidence of rill or gully erosion occurring on slopes and any loss of stabilizing vegetation or seeding/mulching.
- ✓ Document any excessive deposition of sediment or ponding water along barrier or diversion systems. Record the depth of sediment within containment structures, any erosion near outlet and overflow structures, and verify the ability of rock filters around perforated risers pipes to pass water.
- ✓ Immediately report to the Developer any deficiencies that are identified with the implementation of the SWPPP.
- ✓ Take color photos with time and date stamps of any identified deficiencies or corrections to previous deficiencies
- ✓ Maintain onsite a record of all inspection documents and reports in the site log book.

Example Construction Duration Inspection Form

Maintaining Water Quality

Yes No N/A

☐ ☐ ☐ Is there an increase in turbidity causing or reasonably likely to cause a substantial visible contrast to natural conditions?

☐ ☐ ☐ Is there residue from oil and floating substances, visible oil film, or globules or grease?

☐ ☐ ☐ All disturbance is within the limits of the approved plans.

☐ ☐ ☐ Have receiving lake/bay, stream, and/or wetland been impacted by silt from the project?

Housekeeping

1. General Site Conditions

Yes No N/A

☐ ☐ ☐ Is construction site litter and debris appropriately managed?

☐ ☐ ☐ Are facilities and equipment necessary for implementation or erosion and sediment control in working order and/or properly maintained?

☐ ☐ ☐ Is construction impacting the adjacent property?

☐ ☐ ☐ Is dust adequately controlled?

Runoff Control Practices

1. Excavation Dewatering

Yes No N/A

☐ ☐ ☐ Upstream and downstream berms (sandbags, inflatable dams, etc.) are installed per plan.

☐ ☐ ☐ Clean water from upstream pool is being pumped to the downstream pool.

☐ ☐ ☐ Sediment laden water from work area is being discharged to a silt trapping device.

☐ ☐ ☐ Constructed upstream berm with one-foot minimum freeboard.

Soil Stabilization

1. Topsoil and Spoil Stockpiles

Yes No N/A

☐ ☐ ☐ Stockpiles are stabilized with vegetation and/or mulch.

☐ ☐ ☐ Sediment control is installed at the toe of the slope.

2. Revegetation

Yes No N/A

☐ ☐ ☐ Temporary seeding and mulch have been applied to idle areas.

☐ ☐ ☐ 6 inches minimum of topsoil has been applied under permanent seeding.

Sediment Control Practices

1. Stabilized Construction Entrance

Yes No N/A

☐ ☐ ☐ Stone is clean enough to effectively remove mud from vehicles.
☐ ☐ ☐ Installed per standards and specifications?
☐ ☐ ☐ Does all traffic use the stabilized entrance to enter and leave site?
☐ ☐ ☐ Is adequate drainage provided to prevent ponding at entrance?

2. Silt Fence

Yes No N/A

☐ ☐ ☐ Installed on Contour, 10 feet from toe of slope (not across conveyance channels).
☐ ☐ ☐ Joints constructed by wrapping the two ends together for continuous support.
☐ ☐ ☐ Fabric buried 6 inches minimum.
☐ ☐ ☐ Post are stable, fabric is tight and without rips or frayed areas. Sediment accumulation is ___% of design capacity.

3. Storm Drain Inlet Protection

(Use for Stone & Block, Filter Fabric, Curb, or Excavated practices)

Yes No N/A

☐ ☐ ☐ Installed concrete blocks lengthwise so open ends face outward, not upward.
☐ ☐ ☐ Placed wire screen between No. 3 crushed stone and concrete blocks.
☐ ☐ ☐ Drainage area is 1 acre or less.
☐ ☐ ☐ Excavated area is 900 cubic feet.
☐ ☐ ☐ Excavated side slopes should be 2:1.
☐ ☐ ☐ 2" x 5" frame is constructed and structurally sound.
☐ ☐ ☐ Posts 3-foot maximum spacing between posts.
☐ ☐ ☐ Fabric is embedded 1 to 1.5 feet below ground and secured to frame/posts with staples at max 8-inch spacing.
☐ ☐ ☐ Posts are stable, fabric is tight and without rips or frayed areas. Sediments accumulation ___% of design capacity.

(***Note:*** *Not all erosion and sediment control practices are included in this listing. Add additional pages to this list as required by site specific design. Construction inspection checklists for post-development stormwater Management practices can be found in Appendix F of the New York State Stormwater Management Design Manual.)*

CONSTRUCTION DURATION INSPECTIONS

Modifications to the SWPPP (To be completed as described below)

The Developer shall amend the SWPPP whenever:

1. There is a significant change in design, construction, operation, or maintenance which may have a significant effect on the potential for the discharge of pollutants to the waters of the State and which has not otherwise been addressed in the SWPPP; or
2. The SWPPP proves to be ineffective in;
    a. Eliminating or significantly minimizing pollutants from sources identified in the SWPPP and as required by this permit; or
    b. Achieving the general objectives of controlling pollutants in stormwater discharges from permitted construction activity; and
3. Additionally, the SWPPP shall be amended to identify any new contractor or subcontractor that will implement any measure of the SWPPP.

Modification & Reason:

Insert Text Here

SITE PLAN/SKETCH

PHOTOS

Inspector (Print name)	Date of Inspection
Qualified Professional (print name)	Qualified Professional Signature

The above signed acknowledges that, to the best of his/her knowledge, all information provided on the forms is accurate and complete.

Appendix D - Monthly Summary Reports

Monthly Summary of Site Inspection Activities

Name of Facility:	**Today's Date:**	**Reporting Month:**
Location:		
Name of Site Inspector:	**Telephone # of Site Inspector:**	

Date of Inspection	Regular/Rainfall Based Inspection	Name of Inspector	Items of Concern

[Include additional rows or delete as necessary.]

Qualified Inspector's Certification:
"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I understand that certifying false, incorrect or inaccurate information is a violation of the laws of the City of New York and could subject me to criminal or civil penalties and/or administrative proceedings.

_____ _____

Qualified Professional (print name) Qualified Professional Signature

Appendix E - Contractor's Certifications & Forms

CONTRACTOR'S CERTIFICATION STATEMENT

I. SITE INFORMATION

Construction Site Name: Insert Construction Site Name

Site Location: Insert Site Location

II. CONTRACTORS INFORMATION

Contracting Firm Name: Insert Contracting Firm Name
Contracting Firm Address: Insert Address
Telephone Number(s): Insert Telephone No.
Contact(s): 1) Insert Contact's Name
2) Insert Contact's Name

III. STORMWATER MEASURES

Contractor is responsible for all stormwater pollution prevention measures described within the SWPPP and Erosion and Sediment Control Plan, but not limited to the following storm water measures:

1. Insert Stormwater Measure
2. Insert Stormwater Measure
3. Insert Stormwater Measure
4. Insert Stormwater Measure
5. Insert Stormwater Measure
6. Insert Stormwater Measure
7. Insert Stormwater Measure
8. Insert Stormwater Measure
9. Insert Stormwater Measure

IV. CERTIFICATION

"I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the qualified inspector during a site inspection. I also understand that the developer must comply with the terms and conditions of the NYC Stormwater Construction Permit, the most current version of the New York State Pollutant Discharge Elimination System (SPDES") general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I am aware that there are significant penalties for submitting false information that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations."

_____ _____
Contractor (print name) Contractor Signature

_____ _____
Title Date

SUBCONTRACTOR'S CERTIFICATION STATEMENT

I. SITE INFORMATION

Construction Site Name: Insert Construction Site Name

Site Location: Insert Site Location

II. CONTRACTORS INFORMATION

Contracting Firm Name: Insert Contracting Firm Name
Contracting Firm Address: Insert Address
Telephone Number(s): Insert Telephone No.
Contact(s): 1) Insert Contact's Name
2) Insert Contact's Name

III. STORMWATER MEASURES

Subcontractor is responsible for all stormwater pollution prevention measures described within the SWPPP and Erosion and Sediment Control Plan, but not limited to the following storm water measures:

1. Insert Stormwater Measure
2. Insert Stormwater Measure
3. Insert Stormwater Measure
4. Insert Stormwater Measure
5. Insert Stormwater Measure
6. Insert Stormwater Measure
7. Insert Stormwater Measure
8. Insert Stormwater Measure
9. Insert Stormwater Measure

IV. CERTIFICATION

"I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the qualified inspector during a site inspection. I also understand that the developer must comply with the terms and conditions of the NYC Stormwater Construction Permit, the most current version of the New York State Pollutant Discharge Elimination System (SPDES") general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I am aware that there are significant penalties for submitting false information that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations."

_____ _____
Subcontractor (print name) Subcontractor Signature

_____ _____
Title Date

CERTIFICATE OF ISSUANCE

As directed by the developer, a copy of the SWPPP will be retained at the site, along with all signed statements, reports and schedules contained herein for completion by the contractor. Upon completion, the SWPPP and all records shall be returned to the developer.

Date of issuance: Insert Date of Issuance
Name: Insert Name
Title: Insert Title
Firm: Insert Firm Name

Signature: _____

Received from:
Name: Insert Name
Title: Insert Title
Address: Insert Address
Tel. Number(s): Insert Telephone No.

Signature: _____

(***Note:*** Inquiries in regard to copies of SWPPP by either the State Director or any local agency having jurisdiction to be directed to owner's project representative.)

EROSION AND WATER QUALITY CONTROL IDENTIFICATION

The contractor and/or subcontractors that will implement each erosion control measure must be identified:

IDENTIFICATION

Name of Contractor and/or Subcontractor	Measure to be Implemented

[Include additional rows or delete as necessary.]

*(**Note:** Each contractor and subcontractor identified must sign a copy of the certification statement. Those copies must be filed with the SWPPP, kept on-site, and kept up to date.*

This identification does not reassign or remove responsibility for all measures as agreed to the contract documents. The contractor is responsible for all subcontractors.)

CONSTRUCTION STABILIZATION

The contractor shall initiate stabilization measures as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased. When construction activity is precluded by snow cover, stabilization measures shall be initiated as soon as practicable. When construction activity will resume within 21 days from when activity ceased, then stabilization measures do not have to be initiated on that portion of the site by the 14th day after construction activity temporarily ceased.

Major Work Activity	Portion of the Site	Date Commenced	Date Ceased (Permanently/Temporarily)	Date Stabilization Measures Initiated

[Include additional rows or delete as necessary.]

***THESE MUST BE KEPT UP TO DATE AND ON-SITE FOR INSPECTION AT ANYTIME.**

CERTIFICATE OF CHANGE BY THE CONTRACTOR

To: Insert Name

Project: Insert Name

Site Address: Insert Address

Enclosed, please find your written notification of the following provision(s) of the SWPPP not being met:

Insert Text Here

Provisions of the plan requiring modification:

Insert Text Here

Action taken to modify plan to bring project into compliance:

Insert Text Here

Date Completed: Insert Date

Received By:
Name: Insert Name
Title: Insert Title
Contracting Firm:
Insert Contracting Firm Name
Address: Insert Address
Tel. Number: Insert Telephone No.

Signature:
_____

Received By:
Name: Insert Name
Title: Insert Title
Contracting Firm:
Insert Contracting Firm Name
Address: Insert Address
Tel. Number: Insert Telephone No.

Signature:
_____

*(**Note:** Plan amendments – major and minor need to be filed on-line. Major amendments include changes to structural components that would require design review. All others shall be filed as a minor amendment, but will not require review.)*

[PLEASE INCLUDE CORRECTIVE ACTIONS FORM HERE]

Appendix F - End of Construction Documents

FINAL STABILIZATION AND RETENTION OF RECORDS

A. Qualified Professional Certification: A qualified professional shall perform a final site inspection.

Yes	No	N/A	
☐	☐	☐	Final site drainage will prevent erosion, concentrated flows to adjacent properties, uncontrolled overflow, and ponding.
☐	☐	☐	Conveyance systems are stabilized.
☐	☐	☐	Channels and stream banks are seeded at the outlet points.

"I hereby certify that the site has undergone final stabilization. Final stabilization means that all soil disturbing activities have been completed and a uniform, perennial vegetative cover with a density of eighty (80) percent has been established or equivalent stabilization measures (such as the use of mulches or geotextiles) have been employed on all unpaved areas and areas not covered by permanent structures. Further, all temporary erosion and sediment controls (such as silt fence) not specified for permanent erosion control have been removed. I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the City and State of New York and could subject me to criminal, civil and/or administrative proceedings. "

_____ _____

Qualified Professional (print name) Qualified Professional Signature

_____

Date

B. Retention of Records: The developer shall retain copies of SWPPPs, all reports, and records of all data for a period of at least five years from the date that the site is finally stabilized.

C. Maintenance of SWPPP and Reports at the Construction Site: The operator shall retain a copy of the SWPPP at the construction site from the data of initiation of construction activities to the date of final stabilization.

CERTIFICATE OF RETURN

As directed by the owner's representative, the copy of the storm water pollution prevention plan retained at the site, along with all signed statements, reports and schedules contained herein for completion by the contractor are to be returned to the owner. The owner shall retain the plan, reports and records of all data for a period of five years from the date that the site is stabilized. This period may be extended by the City director at any time upon written notification.

Date of issuance: Insert Date of Issuance
Name: Insert Name
Title: Insert Title
Firm: Insert Firm Name

Signature: _____

Received from:
Name: Insert Name
Title: Insert Title
Address: Insert Address
Tel. Number(s): Insert Telephone No.

Signature: _____

*(**Note:** Inquiries in regard to copies of pollution prevention plan by either the State Director or any local agency having jurisdiction to be directed to owner's project representative.)*

Appendix G – NYSDEC Notice of Intent Form

Instructions:

- A copy of the NYSDEC NOI is required to complete a SWPPP
- When updating SWPPPs or responding to comments, the NOI must also be updated.

Appendix H - Water Quality Product Data

Instructions:

- Please include required data to support the use of SMPs not included in the NYS SWMDM
- Data must verify that SMP meets the requirements of NYSDEC and if necessary NYC NNI.

Appendix I – Soil Testing Data

Instructions:

- Please include Soil Testing Results, Boring Log Data and Boring Location Maps for background and practice location.
- Permeability data to support use or nonuse of infiltration practices.

Appendix J - Stormwater Modeling and Calculations

Instructions (see NYC Code 19.1-03. (b)(3) and (4) and NYSDEC GP015002 Parts III.B)

- Please include WQv calculations and RRv calculations required for this project.
- Summarize the specific site limitations and justify not reducing 100% of WQv required (Including any supporting documents or evaluations of site limitations.
- Please include Channel Protection and Flood Control Calculations and/or justification for Channel Protection and Flood Control waiver.
- Include routing calculations to demonstrate that practices will operate as designed during the WQ storm, the 1-yr, 10-yr and 100yr 24 hour storm.

Appendix K - Preliminary Operation and Maintenance Manual for Post Construction SMPs

Instructions (see NYC Code 19.1-03. (c)(1)(ii) (viii) and NYSDEC GP015002 Parts V.A. (5)):

- All projects that require post construction practices must include an Operation and Maintenance (O&M) manual for long term operation and maintenance of the proposed SMPs.
- When submitting an application for a Stormwater Maintenance Permit from NYC, the O&M manual must be updated to reflect any changes during construction and submitted with the application materials.

Appendix L - Copy of the NYS Construction General Permit

Instructions (see NYSDEC GP015002):

- A copy of the NYSDEC general permit for construction activities is required to complete a SWPPP.

Appendix M – Documentation for Underground Injection Control Requirements

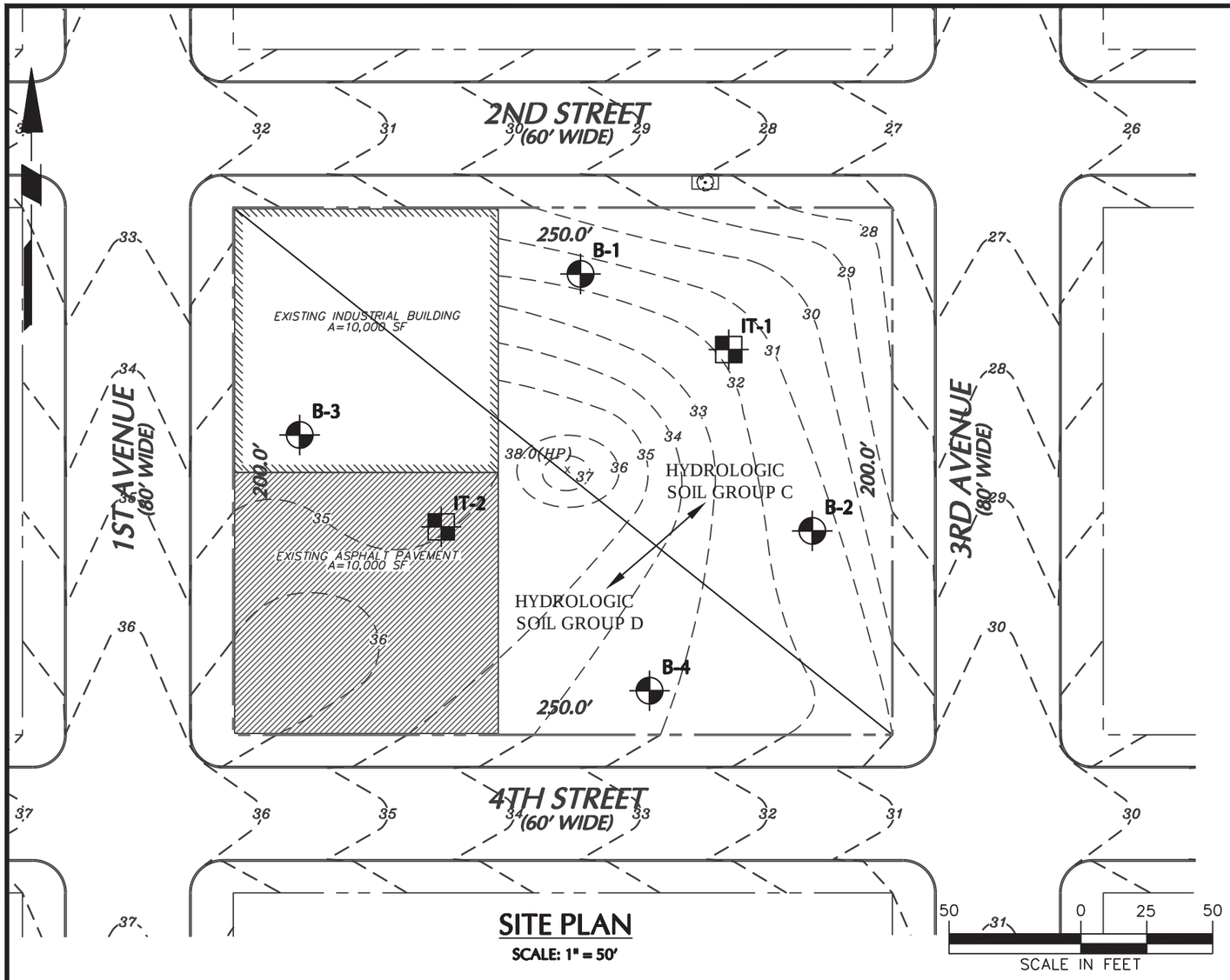
Instructions (see EPA web site for more information):

- Include any supporting documentation.

Appendix N – Required Drawings

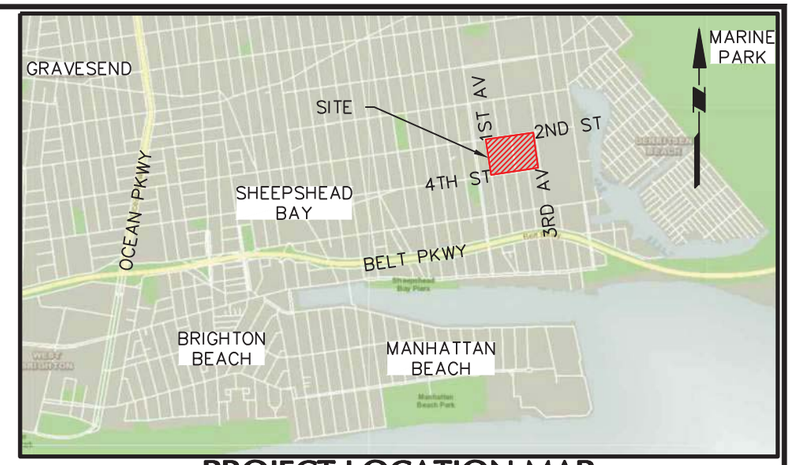
Instructions (See NYC Code 19.1-03. (b)(3) and (b) (4)):

- Please include required plans and drawings.
- Please include Soil testing results and Boring Location Maps in **Appendix I**.
- Plan view should show existing and proposed layout, scale should be at least 1"=50'. For small projects may be one sheet for larger projects could be many sheets. Should include adjacent sites within at least 50-feet of the property line and information noted below. Show any surface waters within 50-feet of the property boundary and include a note stating what the name of the receiving water) that is the ultimate discharged point.
- Plans should include the construction sequence and maintenance details for the described practice or phase.



SITE PLAN

SCALE: 1" = 50'



PROJECT LOCATION MAP

NOT TO SCALE

SOURCE: NYC DOITT - NYC CITY MAP

LEGEND

B-1 GEOTECHNICAL BORING

IT-1 INFILTRATION TEST

GENERAL NOTES:

1. EXISTING CONDITIONS AND TOPOGRAPHIC INFORMATION SHOWN ARE TAKEN FROM A SURVEY BY ABC SURVEYORS, 'SAMPLE PROJECT - TOPOGRAPHIC SURVEY', DATED 1/1/2018.
2. ELEVATIONS ARE IN REFERENCE TO THE NORTH AMERICAN VERTICAL DATUM 1988.

OWNER'S NAME AND ADDRESS

SIGNATURE DATE SIGNED

FIRST LAST

PROFESSIONAL ENGINEER NY Lic. #_____

Project

SAMPLE PROJECT

100 3RD AVENUE
BLOCK No. 10, LOT No. 2
SHEEPSHEAD BAY

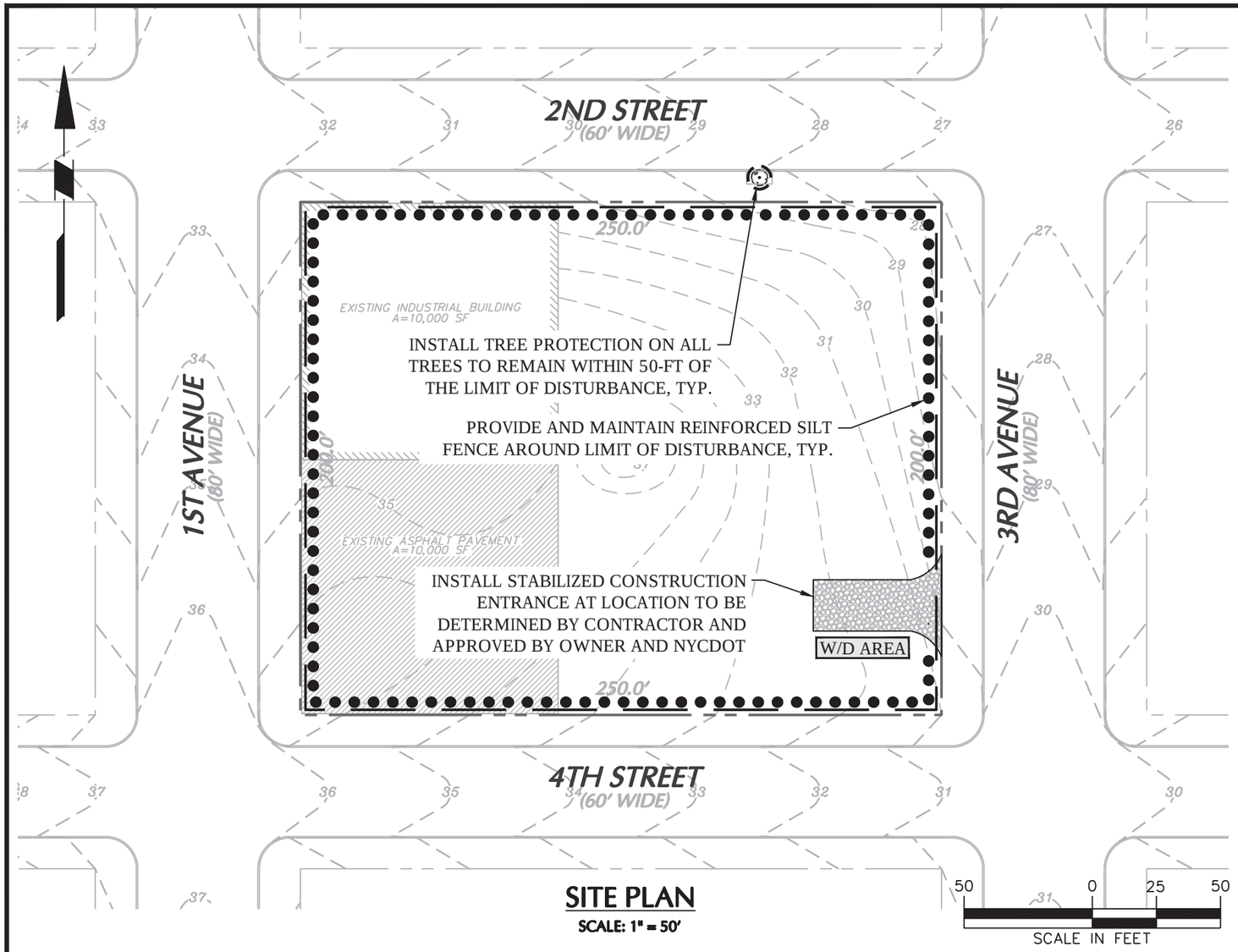
BROOKLYN **NEW YORK**

Drawing Title

EXISTING CONDITIONS PLAN

Drawing No.

V-100



SITE PLAN
SCALE: 1" = 50'

EROSION AND SEDIMENT CONTROL NOTES

1.
2.
3.
4.

CONSTRUCTION SCHEDULE

THIS LIST OF ITEMS HAS BEEN PREPARED TO GENERALLY OUTLINE THE MAJOR CONSTRUCTION ELEMENTS AND THE SEQUENCE FOR IMPLEMENTATION OF THE SOIL EROSION AND SEDIMENT CONTROL MEASURES:

1. OBTAIN ALL REQUIRED LOCAL AND STATE PERMITS AND APPROVALS PRIOR TO COMMENCING EARTHWORK.
2. INSTALL PERIMETER EROSION AND SEDIMENT CONTROL MEASURES, SUCH AS STABILIZED CONSTRUCTION ENTRANCE, REINFORCED SILT FENCE AND TREE PROTECTION, AS SHOWN ON THE PLANS.
3. COMMENCE SITE IMPROVEMENT AND INSTALL PERMANENT STORMWATER DRAINAGE SYSTEM. IMMEDIATELY UPON INSTALLATION OF AREA DRAINS, INSTALL DROP FABRIC INLET PROTECTION AS SHOWN ON THE PLANS.
4. CLEAR AND GRUB SITE AS REQUIRED PRIOR TO ROUGH GRADING OF AN AREA. SPRINKLE AREAS OF EXPOSED SOIL AND SOIL STOCKPILES WITH POTABLE WATER AS NECESSARY TO CONTROL DUST.
5. COMPLETE FINE-GRADING AND PERMANENT STABILIZATION. INSTALL CONCRETE/ASPHALT CAP ACROSS THE ENTIRE SITE.
6. REMOVE ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES AFTER THE SITE HAS BEEN COMPLETELY STABILIZED. ALL STORMWATER STRUCTURES WITHIN THE SITE MUST BE CLEAR OF SEDIMENT.

MAINTENANCE OF EROSION AND SEDIMENT CONTROL MEASURES

1.
2.
3.
4. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO MAINTAIN ALL METHODS AS FOLLOWS:
   - SILT FENCE:
   - TEMPORARY TREE PROTECTION:
   - STABILIZED CONSTRUCTION ENTRANCE:
   - WASH/DOWN AREA:
   - FABRIC INLET PROTECTION:
   - DUST CONTROL:
   - STOCKPILE:
   - AREA OF LAND WITHIN THE LIMITS OF DISTURBANCE:

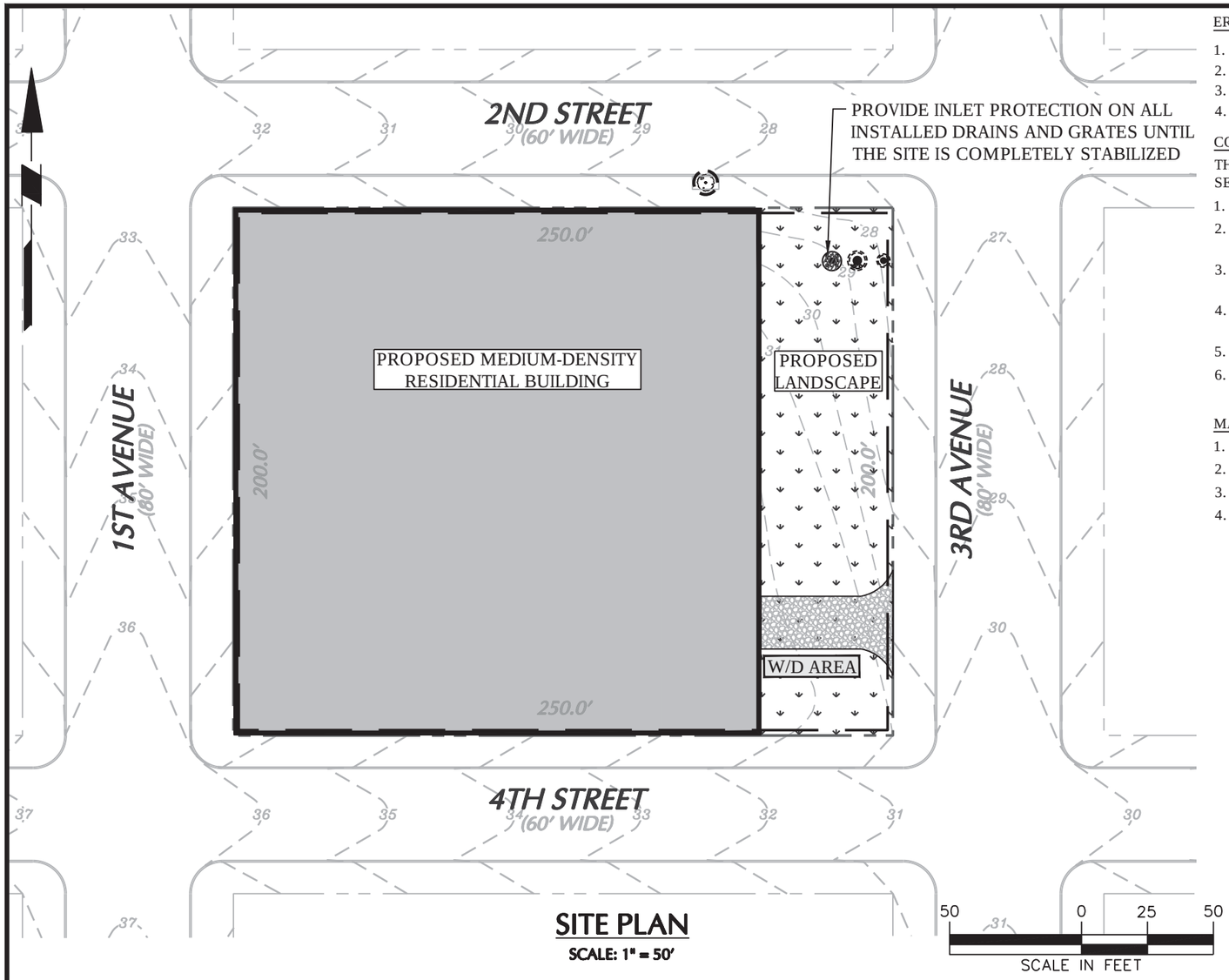
LEGEND

- LIMIT OF DISTURBANCE
- SILT FENCE
- TREE PROTECTION
- INLET PROTECTION
- CONSTRUCTION ENTRANCE
- PROPERTY LINE

GENERAL NOTES:

1. EXISTING CONDITIONS AND TOPOGRAPHIC INFORMATION SHOWN ARE TAKEN FROM A SURVEY BY ABC SURVEYORS, 'SAMPLE PROJECT - TOPOGRAPHIC SURVEY', DATED 1/1/2018.
2. ELEVATIONS ARE IN REFERENCE TO THE NORTH AMERICAN VERTICAL DATUM 1988.

OWNER'S NAME AND ADDRESS	SIGNATURE DATE SIGNED FIRST LAST PROFESSIONAL ENGINEER NY Lic. #_____	Project **SAMPLE PROJECT** 100 3RD AVENUE BLOCK No. 10, LOT No. 2 SHEEPSHEAD BAY BROOKLYN NEW YORK	Drawing Title **SOIL EROSION & SEDIMENT CONTROL PHASE I PLAN** Drawing No. C-100



SITE PLAN
SCALE: 1" = 50'

EROSION AND SEDIMENT CONTROL NOTES

1.
2.
3.
4.

CONSTRUCTION SCHEDULE

THIS LIST OF ITEMS HAS BEEN PREPARED TO GENERALLY OUTLINE THE MAJOR CONSTRUCTION ELEMENTS AND THE SEQUENCE FOR IMPLEMENTATION OF THE SOIL EROSION AND SEDIMENT CONTROL MEASURES:

1. OBTAIN ALL REQUIRED LOCAL AND STATE PERMITS AND APPROVALS PRIOR TO COMMENCING EARTHWORK.
2. INSTALL PERIMETER EROSION AND SEDIMENT CONTROL MEASURES, SUCH AS STABILIZED CONSTRUCTION ENTRANCE, REINFORCED SILT FENCE, AND TREE PROTECTION, AS SHOWN ON THE PLANS.
3. COMMENCE SITE IMPROVEMENTS AND INSTALL PERMANENT STORMWATER DRAINAGE SYSTEM. IMMEDIATELY UPON INSTALLATION OF AREA DRAINS, INSTALL DROP FABRIC INLET PROTECTION AS SHOWN ON THE PLANS.
4. CLEAR AND GRUB SITE AS REQUIRED PRIOR TO ROUGH GRADING OF AN AREA. SPRINKLE AREAS OF EXPOSED SOIL AND SOIL STOCKPILES WITH POTABLE WATER AS NECESSARY TO CONTROL DUST.
5. COMPLETE FINE-GRADING AND PERMANENT STABILIZATION. INSTALL CONCRETE/ASPHALT CAP ACROSS THE ENTIRE SITE.
6. REMOVE ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES AFTER THE SITE HAS BEEN COMPLETELY STABILIZED. ALL STORMWATER STRUCTURES WITHIN THE SITE MUST BE CLEAR OF SEDIMENT.

MAINTENANCE OF EROSION AND SEDIMENT CONTROL MEASURES

1.
2.
3.
4. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO MAINTAIN ALL METHODS AS FOLLOWS:
   - SILT FENCE:
   - TEMPORARY TREE PROTECTION:
   - STABILIZED CONSTRUCTION ENTRANCE:
   - WASH/DOWN AREA:
   - FABRIC INLET PROTECTION:
   - DUST CONTROL:
   - STOCKPILE:
   - AREA OF LAND WITHIN THE LIMITS OF DISTURBANCE:

LEGEND

- LIMIT OF DISTURBANCE
- TREE PROTECTION
- INLET PROTECTION
- CONSTRUCTION ENTRANCE
- PROPERTY LINE
- PROPOSED BUILDING
- PROPOSED LANDSCAPE
- PROPOSED CATCH BASIN
- WATER QUALITY UNIT
- 4-FT CONCRETE MANHOLE

GENERAL NOTES:

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2. ELEVATIONS ARE IN REFERENCE TO THE NORTH AMERICAN VERTICAL DATUM 1988.

OWNER'S NAME AND ADDRESS

SIGNATURE DATE SIGNED

FIRST LAST

PROFESSIONAL ENGINEER NY Lic. #_____

Project

SAMPLE PROJECT

100 3RD AVENUE
BLOCK No. 10, LOT No. 2
SHEEPSHEAD BAY

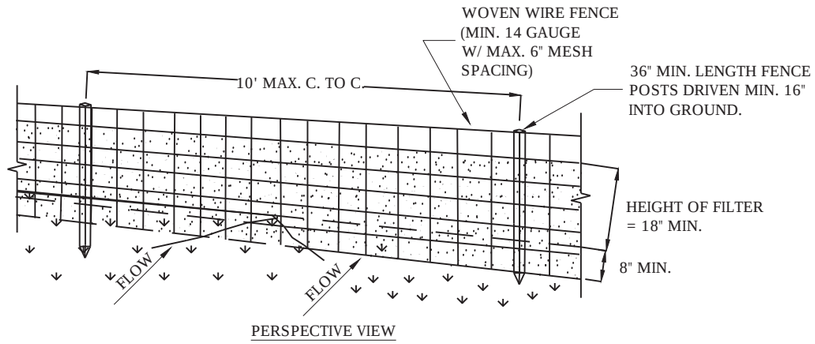
BROOKLYN **NEW YORK**

Drawing Title

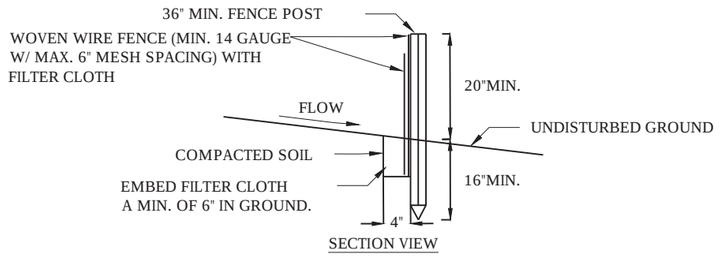
SOIL EROSION & SEDIMENT CONTROL PHASE II PLAN

Drawing No.

C-110



PERSPECTIVE VIEW



SECTION VIEW

NOTES:

1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. POSTS SHALL BE STEEL EITHER "T" OR "U" TYPE OR HARDWOOD.

2. FILTER CLOTH TO BE TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION. FENCE SHALL BE WOVEN WIRE, 6" MAXIMUM MESH OPENING.

3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY SIX INCHES AND FOLDED. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI 100X, STABILENKA T140N, OR APPROVED EQUIVALENT.

4. PREFABRICATED UNITS SHALL MEET THE MINIMUM REQUIREMENTS SHOWN.

5. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

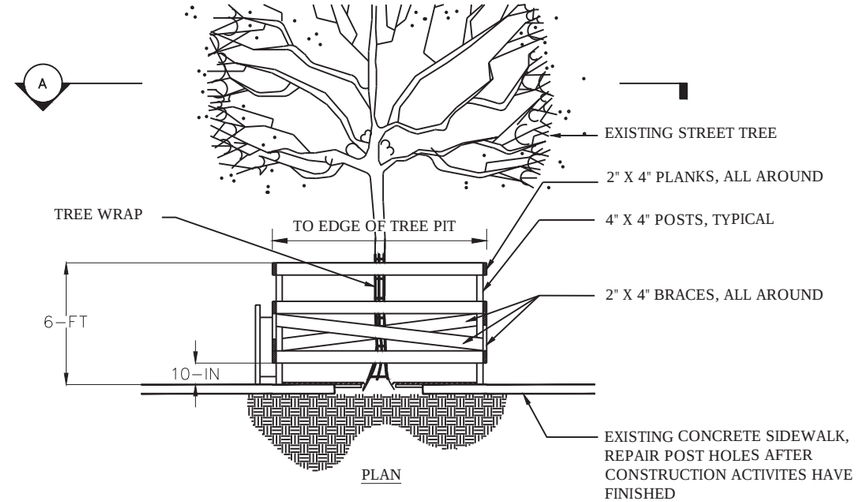
SUGGESTED MAINTENANCE:

1. IF SEDIMENT ACCUMULATES TO HALF THE EXPOSED FABRIC OF THE SILT FENCE, THE SEDIMENT SHALL BE REMOVED AND DISPOSED OF PROPERLY.

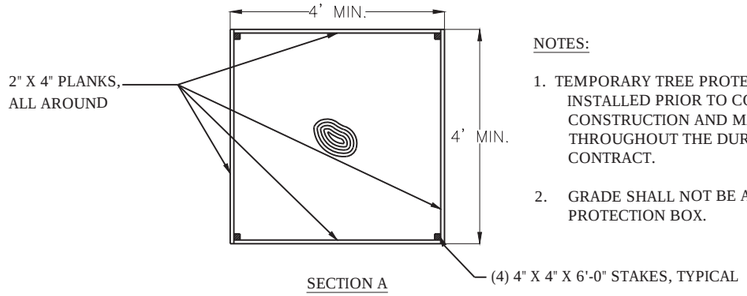
2. RIPS AND TEARS SHALL BE REPAIRED.

3. AREA DISTURBED WHEN THE SILT FENCE IS REMOVED SHALL BE STABILIZED.

REINFORCED SILT FENCE



PLAN



SECTION A

NOTES:

1. TEMPORARY TREE PROTECTION BOX SHALL BE INSTALLED PRIOR TO COMMENCING CONSTRUCTION AND MAINTAINED THROUGHOUT THE DURATION OF THE CONTRACT.

2. GRADE SHALL NOT BE ALTERED WITHIN TREE PROTECTION BOX.

NOTES:

1. TREE PROTECTION SHALL BE PROVIDED FOR ALL TREES TO BE PRESERVED DURING AND AFTER CONSTRUCTION.
2. BOARDS SHALL NOT BE NAILED TO TREES DURING CONSTRUCTION.
3. ROOTS SHALL NOT BE CUT IN AN AREA INSIDE THE DRIP LINE OF THE TREE BRANCHES.
4. PRUNING OF LIMBS IF NECESSARY SHALL BE UNDER THE SUPERVISION OF A LICENSED NURSERYMAN.

SUGGESTED MAINTENANCE:

1. SHALL BE REPAIRED IF BROKEN.

2. SHALL BE INSPECTED FOR STABILITY.

TREE PROTECTION

NOT TO SCALE

OWNER'S NAME AND ADDRESS

SIGNATURE DATE SIGNED

FIRST LAST

PROFESSIONAL ENGINEER NY Lic. #_____

Project

SAMPLE PROJECT

100 3RD AVENUE
BLOCK No. 10, LOT No. 2
SHEEPSHEAD BAY

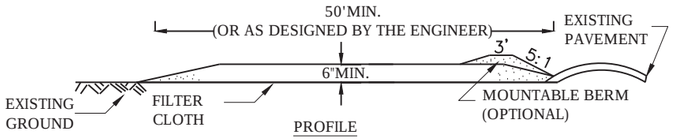
BROOKLYN **NEW YORK**

Drawing Title

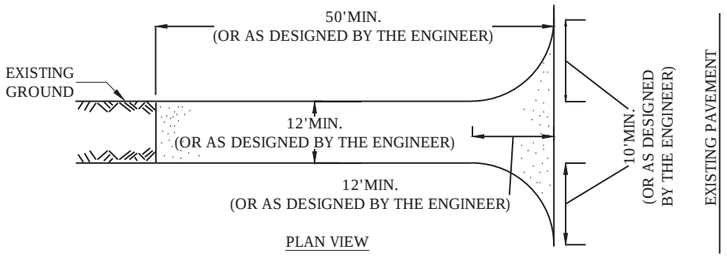
SOIL EROSION & SEDIMENT CONTROL DETAILS (1 OF 3)

Drawing No.

C-120



PROFILE



PLAN VIEW

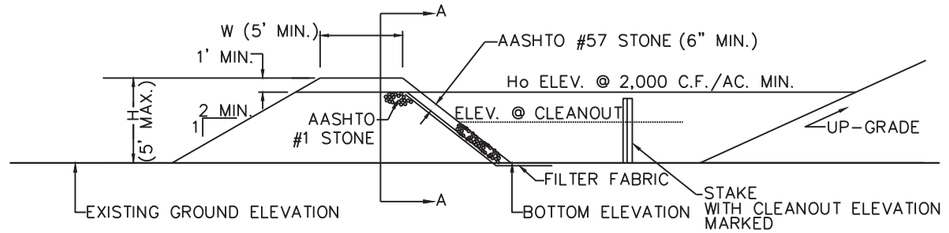
NOTES:

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 ENTRANCES 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.

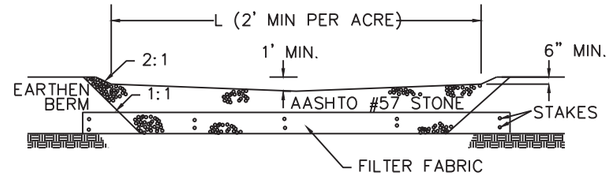
SUGGESTED MAINTENANCE:

1. SHALL BE INSPECTED FOR SEDIMENT ACCUMULATION , MUD, AND OVERALL FUNCTIONALITY.
2. SHALL BE RESHAPED AS NEEDED TO MAINTAIN FUNCTION.
3. STONES SHALL BE WASHED AND REPLACED AS NEEDED.

STABILIZED CONSTRUCTION ENTRANCE



PROFILE VIEW



SECTION A–A

NOTES:

1. AREA UNDER EMBANKMENT SHALL BE CLEARED, GRUBBED AND STRIPPED OF ANY VEGETATION AND ROOT MAT. THE POOL AREA SHALL BE CLEARED.
2. THE FILL MATERIAL FOR THE EMBANKMENT SHALL BE FREE OF ROOTS AND OTHER WOODY VEGETATION AS WELL AS OVERSIZED STONES, ROCKS, ORGANIC MATERIAL OR OTHER OBJECTIONABLE MATERIAL. THE EMBANKMENT SHALL BE COMPACTED BY TRAVERSING WITH EQUIPMENT WHILE IT IS BEING CONSTRUCTED.
3. ALL CUT AND FILL SLOPES SHALL BE 2:1 OR FLATTER
4. THE STONE USED IN THE OUTLET SHALL BE SMALL RIPRAP 4-INCH TO 8-INCH ALONG WITH A 1-FT THICKNESS OF 2-INCH AGGREGATE PLACED ON THE UP-GRADE SIDE ON THE SMALL RIPRAP OR EMBEDDED FILTER CLOTH IN THE RIPRAP.
5. SEDIMENT SHALL BE REMOVED AND TRAP RESTORED TO ITS ORIGINAL DIMENSIONS. WHEN THE SEDIMENT HAS ACCUMULATED TO $\frac{1}{2}$ THE DESIGN DEPTH OF THE TRAP, IT SHALL BE PLACED ON SITE AND STABILIZED.
6. THE STRUCTURE SHALL BE INSPECTED AFTER EACH RAIN EVENT BY THE CONTRACTOR. REPAIRS SHALL BE MADE AS NEEDED.
7. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER THAT EROSION AND SEDIMENT ARE CONTROLLED.
8. THE STRUCTURE SHALL BE REMOVED AND THE AREA STABILIZED WHEN THE DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.
9. THE MAXIMUM DRAINAGE AREA IS 5 ACRES.
10. THE MINIMUM STORAGE VOLUME IS 2000 CUBIC FEET PER TRIBUTARY AREA

SUGGESTED MAINTENANCE:

1. STONES SHALL BE WASHED AND REPLACED AS NEEDED.
2. FILTER FABRIC SHALL BE REPLACED IF DEEMED NONFUNCTIONAL.

EQUIPMENT WASH DOWN

NOT TO SCALE

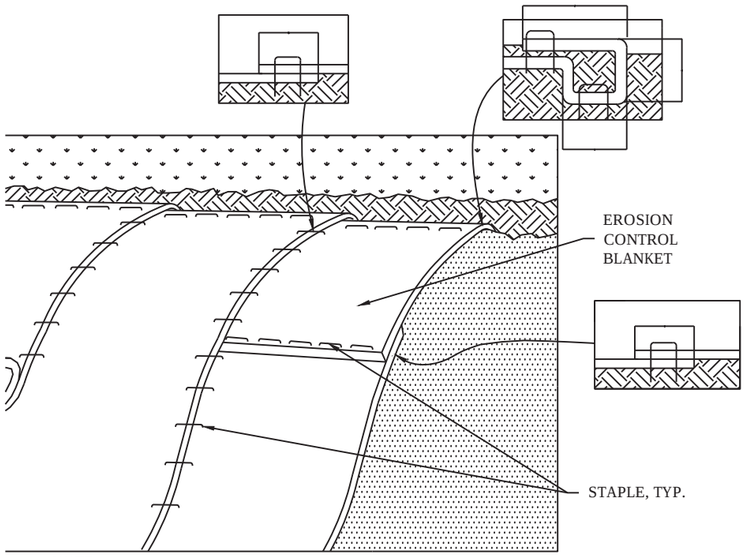
OWNER'S NAME AND ADDRESS

SIGNATURE DATE SIGNED
FIRST LAST
PROFESSIONAL ENGINEER NY Lic. #_____

Project
SAMPLE PROJECT
100 3RD AVENUE
BLOCK No. 10, LOT No. 2
SHEEPSHEAD BAY
BROOKLYN NEW YORK

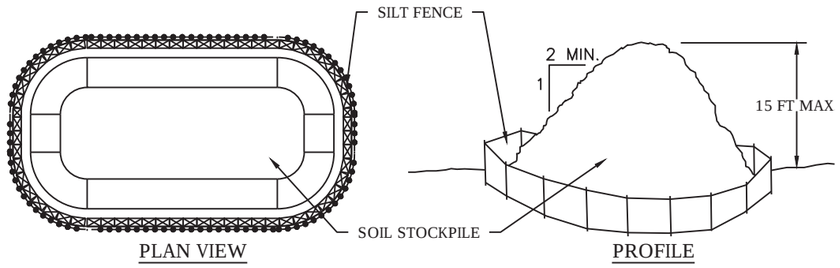
Drawing Title
SOIL EROSION & SEDIMENT CONTROL DETAILS (2 OF 3)

Drawing No.
C-130



NOTE:
1. EROSION CONTROL BLANKETS SHALL BE INSTALLED AS NEEDED ON DISTURBED SLOPES WITH GRADES STEEPER THAN 5H:1V.

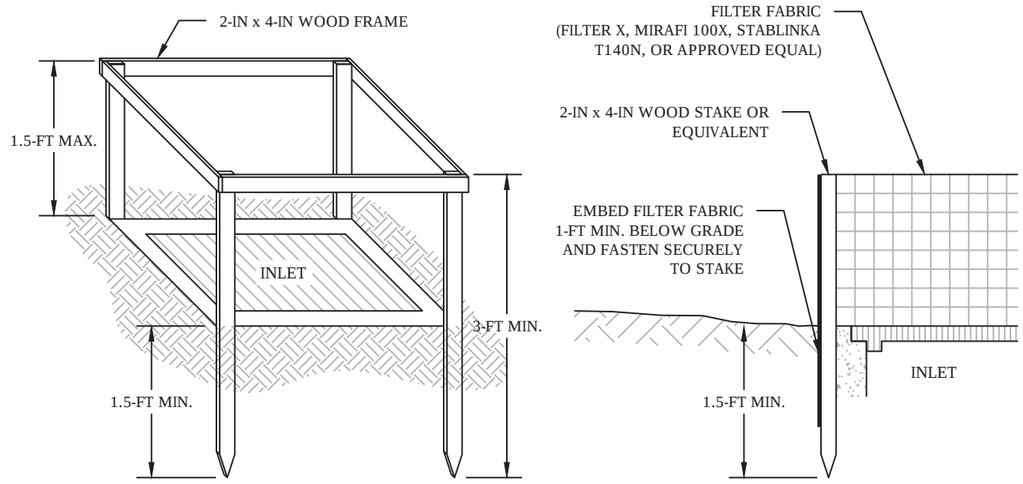
EROSION CONTROL BLANKET INSTALLATION



PLAN VIEW PROFILE

NOTES:
1. SILT FENCE AND STRAW BALES MUST BE PLACED CONTINUOUSLY AROUND THE PERIMETER OF ALL STOCKPILES.
2. IMMEDIATELY APPLY TEMPORARY SEEDING TO ALL STOCKPILES WHICH WILL BE INACTIVE FOR 21 DAYS OR LONGER. IN LIEU OF SEEDING, STOCKPILES MAY BE COVERED WITH A SECURE TARP.
3. REFER TO SPECIFICATION.

SOIL STOCKPILE



ISOMETRIC VIEW SECTION VIEW

NOTES:
1. FILTER FABRIC SHALL HAVE AN EOS OF 40-85. BURLAP MAY BE USED FOR SHORT TERM APPLICATIONS.
2. CUT FABRIC FROM A CONTINUOUS ROLL TO ELIMINATE JOINTS. IF JOINTS ARE NEEDED THEY WILL BE OVERLAPPED TO THE NEXT STAKE.
3. STAKE MATERIALS WILL BE STANDARD 2-IN x 4-IN WOOD, OR EQUIVALENT METAL, WITH A MINIMUM LENGTH OF 3-FT.
4. SPACE STAKES EVENLY AROUND INLET 3-FT APART AND DRIVE A MINIMUM OF 18-IN DEEP. SPANS GREATER THAN 3-FT MAY BE BRIDGED WITH THE USE OF WIRE MESH BEHIND THE FILTER FABRIC FOR SUPPORT.
5. FABRIC SHALL BE EMBEDDED A MINIMUM OF 1-FT BELOW GRADE AND BACKFILLED. IT SHALL BE SECURELY FASTENED TO THE STAKES AND FRAME.
6. A 2-IN x 4-IN WOOD FRAME SHALL BE COMPLETED AROUND THE CREST OF THE FABRIC FOR OVERFLOW STABILITY.
7. MAXIMUM DRAINAGE AREA IS 1 ACRE.

SUGGESTED MAINTENANCE:

1. IF THE EROSION CONTROL BLANKET IS UNDERMINED OR DAMAGED, IT SHALL BE REPAIRED OR REPLACED.
2. PERIMETER CONTROLS AND TRAP SHALL BE REPAIRED AND REPLACED TO KEEP PRATICE FUNCTIONAL.
3. FABRIC DROP INLET PROTECTION SHALL BE REPAIRED AS NEEDED.
4. SEDIMENT DEPOSITS SHALL BE REMOVED AND DISPOSED OF PROPERLY WHEN THE DEPOSITS REACH 1/2 THE FEIGHT OF THE DESIGNED FABRIC DROP HEIGHT TO PROVIDE NECESSARY STORAGE VOLUME.

FABRIC DROP INLET PROTECTION

NOT TO SCALE

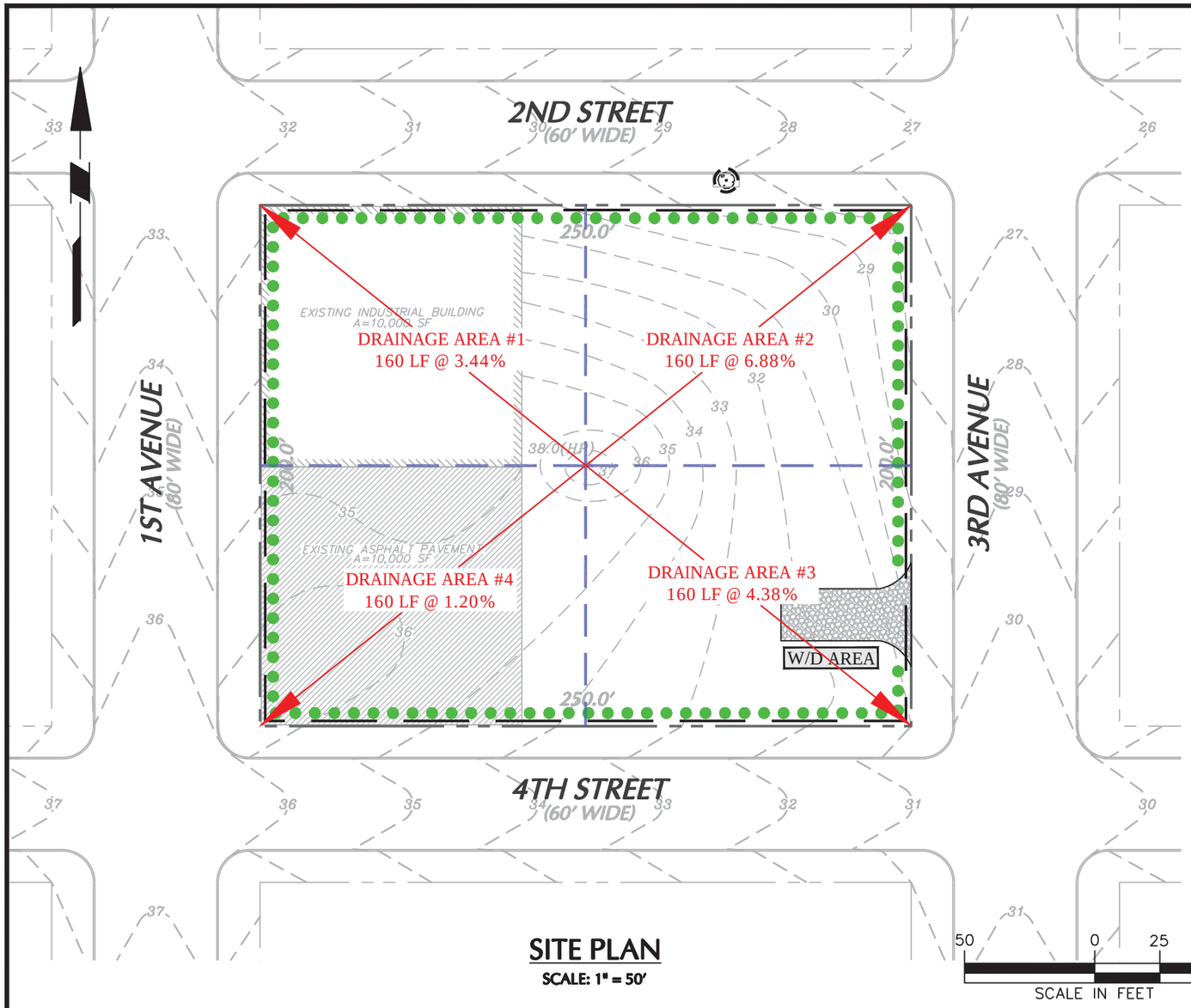
OWNER'S NAME AND ADDRESS

SIGNATURE DATE SIGNED
FIRST LAST
PROFESSIONAL ENGINEER NY Lic. #_____

Project
SAMPLE PROJECT
100 3RD AVENUE
BLOCK No. 10, LOT No. 2
SHEEPSHEAD BAY
BROOKLYN NEW YORK

Drawing Title
SOIL EROSION & SEDIMENT CONTROL DETAILS (3 OF 3)

Drawing No.
C-140



SITE PLAN

SCALE: 1" = 50'

REINFORCED SILT FENCE LIMITATIONS

REINFORCED SILT FENCE SHALL NOT EXCEED THE MAXIMUM SLOPE LENGTH AND MAXIMUM FENCE LENGTH REQUIREMENTS IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS FOR SILT FENCE, SECTION 5 OF THE NEW YORK STATE STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL (NOVEMBER 2016).

FOR SLOPES LESS THAN 10%: MAXIMUM SLOPE LENGTH = 250 LF
MAXIMUM FENCE LENGTH = 2,000 LF

DRAINAGE AREA #1:	SLOPE LENGTH = 160 LF FENCE LENGTH = 225 LF	OKAY
DRAINAGE AREA #2:	SLOPE LENGTH = 160 LF FENCE LENGTH = 225LF	OKAY
DRAINAGE AREA #3:	SLOPE LENGTH = 160 LF FENCE LENGTH = 225 LF	OKAY
DRAINAGE AREA #4:	SLOPE LENGTH = 160 LF FENCE LENGTH = 225 LF	OKAY

LEGEND

- LIMIT OF DISTURBANCE
- SILT FENCE
- TREE PROTECTION
- CONSTRUCTION ENTRANCE
- PROPERTY LINE

GENERAL NOTES:

1. EXISTING CONDITIONS AND TOPOGRAPHIC INFORMATION SHOWN ARE TAKEN FROM A SURVEY BY ABC SURVEYORS, 'SAMPLE PROJECT - TOPOGRAPHIC SURVEY', DATED 1/1/2018.
2. ELEVATIONS ARE IN REFERENCE TO THE NORTH AMERICAN VERTICAL DATUM 1988.

OWNER'S NAME AND ADDRESS

SIGNATURE DATE SIGNED
FIRST LAST
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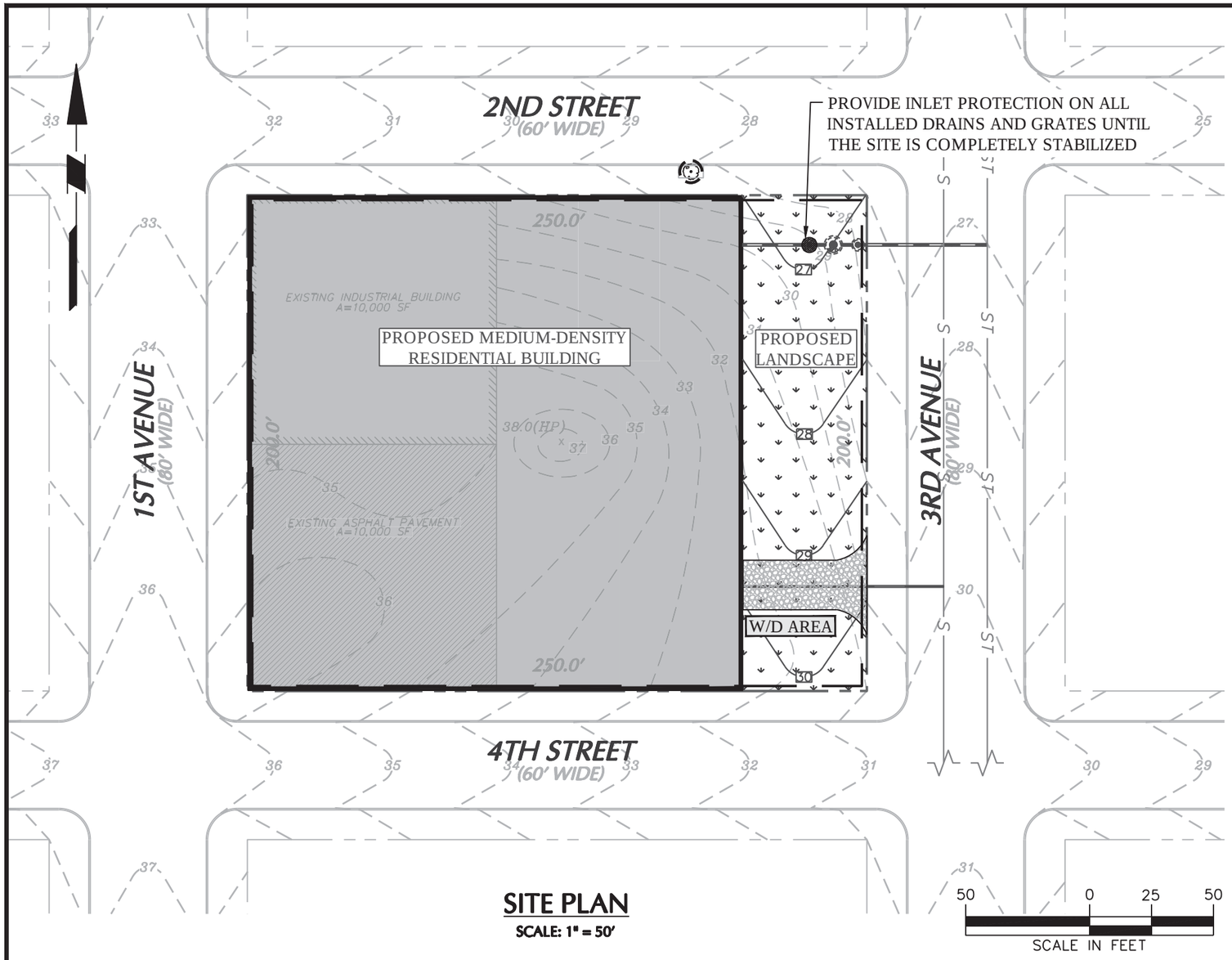
Project

SAMPLE PROJECT

100 3RD AVENUE
BLOCK No. 10, LOT No. 2
SHEEPSHEAD BAY
BROOKLYN NEW YORK

Drawing Title
SOIL EROSION & SEDIMENT CONTROL PHASE I CALCULATIONS

Drawing No.
C-200



SITE PLAN
SCALE: 1" = 50'

INLET PROTECTION LIMITATIONS

THE DRAINAGE AREA FOR STORM DRAIN INLETS SHALL NOT EXCEED ONE ACRE IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS FOR STORM DRAIN INLET PROTECTION, SECTION 5 OF THE NEW YORK STATE STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL (NOVEMBER 2016).

MAXIMUM DRAINAGE AREA FOR STORM DRAIN INLETS IS 1 ACRE

PROPOSED DRAINAGE AREA FROM LANDSCAPE : 10,000 SQFT = 0.23 ACRE OKAY

LEGEND

- LIMIT OF DISTURBANCE
- INLET PROTECTION
- TREE PROTECTION
- CONSTRUCTION ENTRANCE
- PROPERTY LINE

GENERAL NOTES:

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OWNER'S NAME AND ADDRESS

SIGNATURE DATE SIGNED

FIRST LAST

PROFESSIONAL ENGINEER NY Lic. #_____

Project

SAMPLE PROJECT

100 3RD AVENUE
BLOCK No. 10, LOT No. 2
SHEEPSHEAD BAY

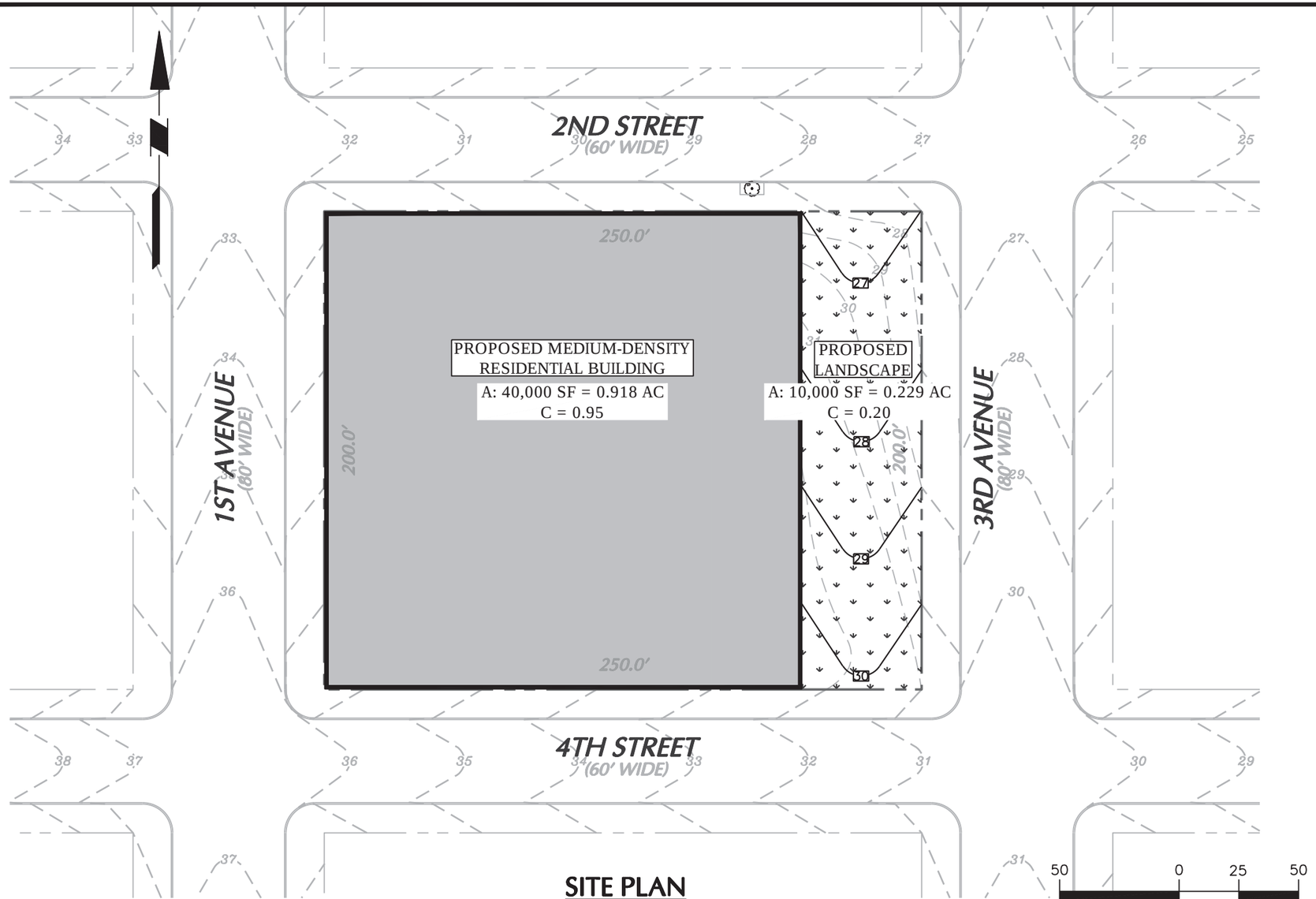
BROOKLYN **NEW YORK**

Drawing Title

SOIL EROSION & SEDIMENT CONTROL PHASE II CALCULATIONS

Drawing No.

C-210



SITE PLAN

SCALE: 1" = 50'

50 0 25 50

SCALE IN FEET

LEGEND

- PROPERTY LINE
- PROPOSED BUILDING
- PROPOSED LANDSCAPE
- 5 PROPOSED CONTOUR

GENERAL NOTES:

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OWNER'S NAME AND ADDRESS

SIGNATURE DATE SIGNED

FIRST LAST

PROFESSIONAL ENGINEER NY Lic. #_____

Project

SAMPLE PROJECT

100 3RD AVENUE
BLOCK No. 10, LOT No. 2
SHEEPSHEAD BAY

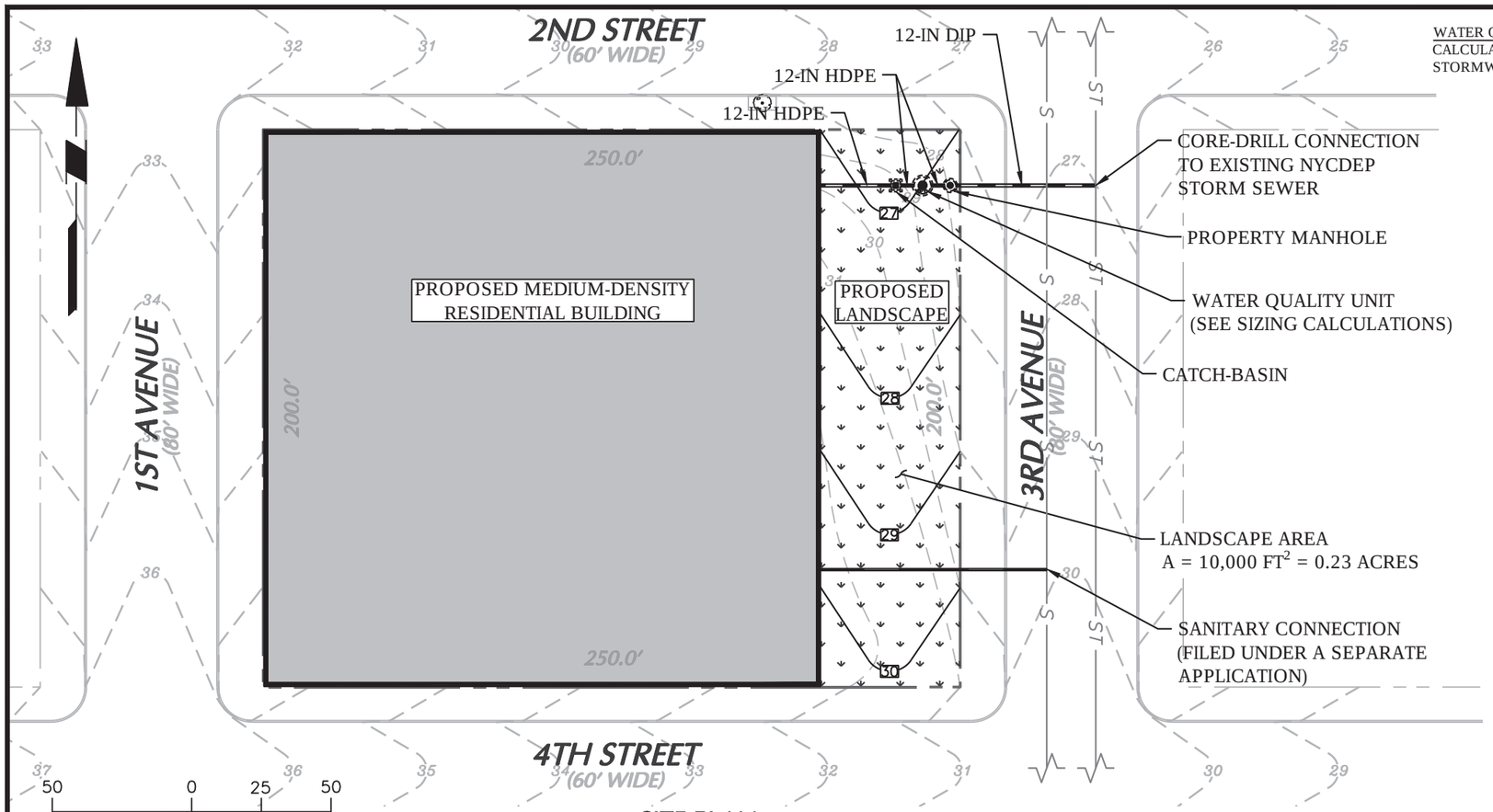
BROOKLYN **NEW YORK**

Drawing Title

POST-DEVELOPMENT PLAN

Drawing No.

C-300



SITE PLAN

SCALE: 1" = 50'

STORMWATER QUALITY SIZING METHODOLOGY

1.
2.
3.

NYSDEC UNIFORM STORMWATER SIZING CRITERIA

1.
2.
3.

LEGEND

- PROPERTY LINE
- PROPOSED BUILDING
- PROPOSED LANDSCAPE
- 12-IN STORM PIPE
- PROPOSED CATCH BASIN
- WATER QUALITY UNIT
- 4-FT CONCRETE MANHOLE
- PROPOSED CONTOUR

GENERAL NOTES:

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2. ELEVATIONS ARE IN REFERENCE TO THE NORTH AMERICAN VERTICAL DATUM 1988.

WATER QUALITY UNIT SIZING CALCULATIONS

CALCULATIONS PREFORMED ARE IN ACCORDANCE WITH THE GUIDELINES SET FORTH IN THE NEW YORK STATE STORMWATER MANAGEMENT DESIGN MANUAL (COMBINATION REDEVELOPMENT AND NEW DEVELOPMENT):

Existing Conditions

- Existing Watershed Conditions

Watershed Area =	**1.148 ac**	(entire lot)
Impervious Area =	**0.459 ac**	(existing building)

- Existing Disturbed Area

Total Area to be Disturbed (ac) =	**1.148 ac**	(entire lot)
Imp. Area within Disturbed Area (ac) =	**0.459 ac**	(existing building)
Precipition for WQ_v storm, P =	1.50 inches	
Impervious %, I% = I/A x 100% =	40.00 %	
R_v = 0.05 + 0.009 x (I%)	0.410	
WQ_v = (P x R_v x A) /12 =	0.059 ac-ft	
WQ_v = WQ_v (ac-ft)x43560=	**2,562.5 cf**	
Treatment of 75% WQv (cf) =	**1,921.9 cf**	

Proposed Conditions

- Proposed Disturbed Area

Total Proposed Impervious Area within limits of Disturbance =	0.918 ac	(proposed building)
Proposed Impervious - Existing Impervious to be Disturbed =	**0.459 ac**	
Precipition for WQ_v storm, P =	1.50 inches	
Impervious %, I% = I/A x 100% =	40.000	
R_v = 0.05 + 0.009 x (I%)	0.410	
WQ_v = (P x R_v x A) /12 =	0.0471 ac-ft	
WQ_v = WQ_v (ac-ft)x43560=	**2,050.0 cf**	

Total Water Quality Volume

75% of Ex. Disturbed Water Quality Volume =	1,922 cf	
Pr. Increase in Imp. Water Quality Volume =	2,050 cf	
Total Required Water Quality Volume =	**3,972 cf**	**= 0.0912 ac-ft**

PER APPENDIX B.2 - WATER QUALITY PEAK FLOW CALCULATIONS,QP

QP = qu*A*Q

Q = RUNOFF DEPTH = (WQV / A)*12 (in)

Q = 0.953 in

A = DRAINAGE AREA (mi2)

A = 0.001794 mi2

qu = THE UNIT PEAK DISCHARGE (cfs/mi2/in)

CURVE NUMBER, CN = 1000 / [10 + 5*P + 10*Q - 10*(Q2 + 1.25*Q*P)1/2]

CN= 94.22

PER TR-55 CHAPTER 4 - GRAPHICAL PEAK DISCHARGE METHOD, TABLE 4-1:

CN=94.22 -> INITIAL ABSTRACTION, Ia= 0.123 in

Ia/P= 0.0820

PER TR-55 EXHIBIT 4-III: TYPE III RAINFALL DISTRIBUTION (WORST CASE):

MIN tc=0.10, Ia/P=0.0820 ->

qu = 650 cfs/mi2/in

QP = 1.11 cfs

SELECT ABC-123 WATER QUALITY UNIT WITH A RATED TREATMENT CAPACITY OF 1.3 cfs.

OWNER'S NAME AND ADDRESS

SIGNATURE DATE SIGNED

FIRST LAST

PROFESSIONAL ENGINEER NY Lic. #_____

Project

SAMPLE PROJECT

100 3RD AVENUE
BLOCK No. 10, LOT No. 2
SHEEPSHEAD BAY

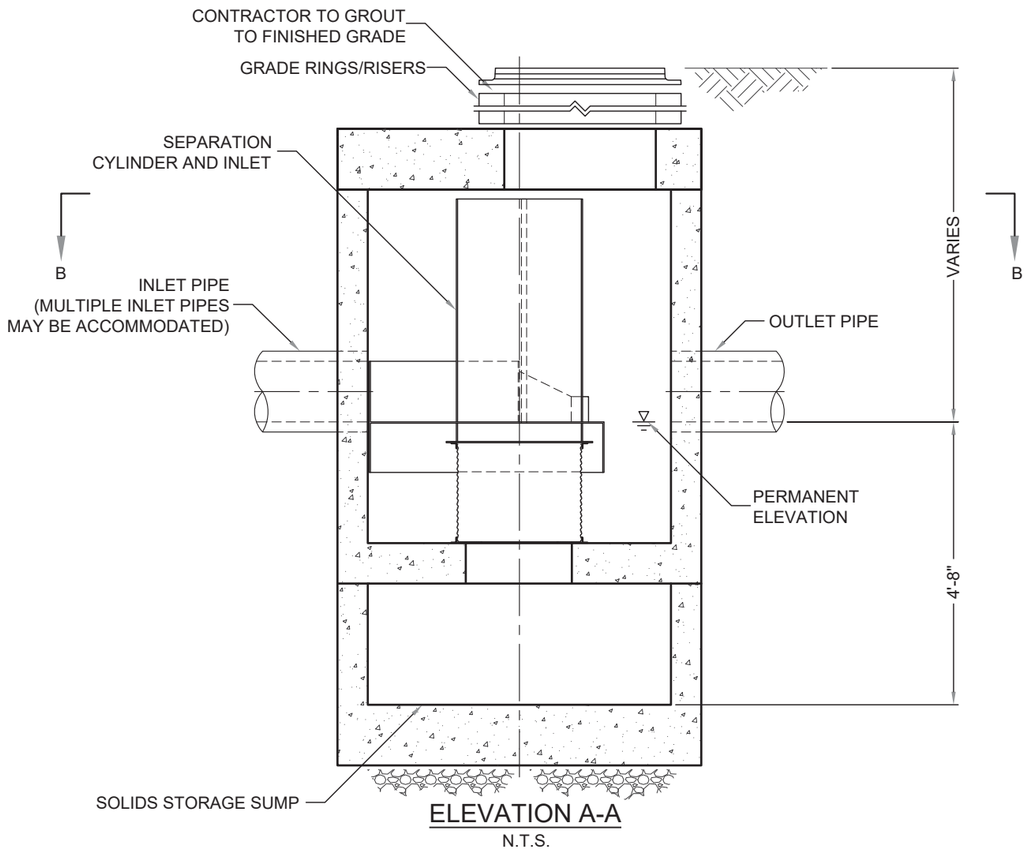
BROOKLYN **NEW YORK**

Drawing Title

WATER QUALITY CALCULATIONS
SCENARIO A: FLOW-BASED
OPTION 1: PLAN

Drawing No.

C-400



ELEVATION A-A
N.T.S.

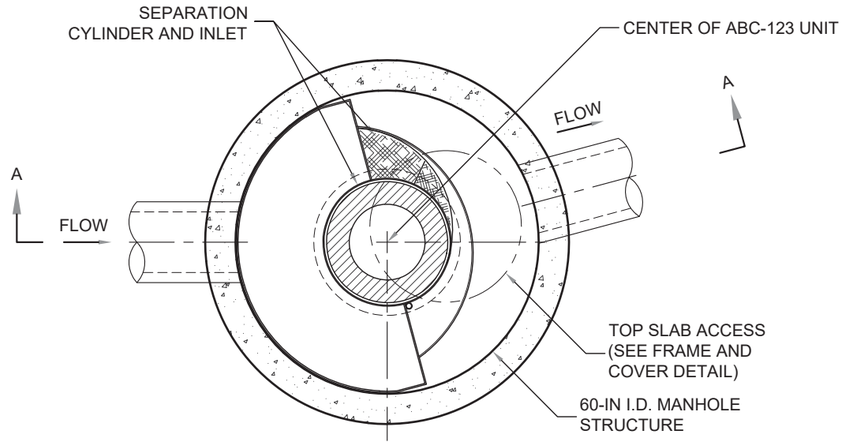
ABC-123 DESIGN NOTES

ABC-123 RATED TREATMENT CAPACITY IS 1.3 CFS. MAXIMUM HYDRAULIC INTERNAL BYPASS CAPACITY IS 10.0 CFS. IF THE SITE CONDITIONS EXCEED 14.0 CFS, AN UPSTREAM BYPASS STRUCTURE IS REQUIRED.

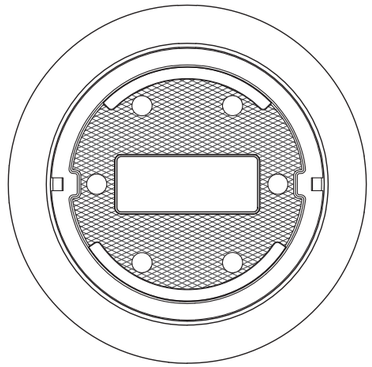
THE STANDARD ABC-123 CONFIGURATION IS SHOWN.

CONFIGURATION DESCRIPTION

1.
2.
3.
4.
5.
6.



PLAN VIEW B-B
N.T.S.



FRAME AND COVER
(DIAMETER VARIES)
N.T.S.

GENERAL NOTES

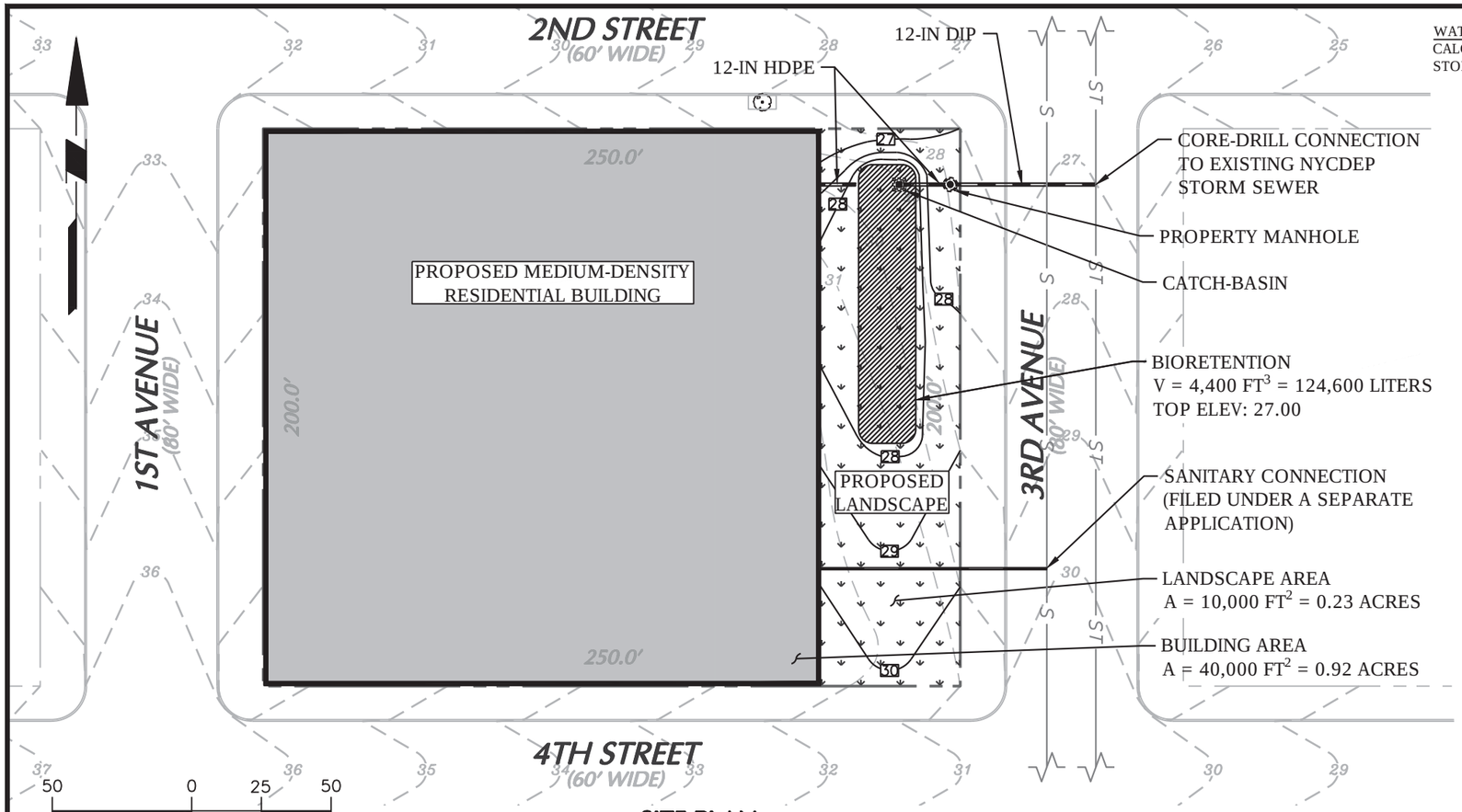
1.
2.
3.
4.
5.
6.

INTALLATION NOTES

1.
2.
3.
4.
5.
6.

WATER QUALITY UNIT (ABC-123) PRODUCT DATA SHEET

OWNER'S NAME AND ADDRESS	SIGNATURE DATE SIGNED FIRST LAST PROFESSIONAL ENGINEER NY Lic. #_____	Project SAMPLE PROJECT 100 3RD AVENUE BLOCK No. 10, LOT No. 2 SHEEPSHEAD BAY BROOKLYN NEW YORK	Drawing Title WATER QUALITY PRODUCT DATA SCENARIO A: FLOW-BASED OPTION 1: DETAIL Drawing No. C-410



SITE PLAN
SCALE: 1" = 50'

WATER QUALITY UNIT SIZING CALCULATIONS

CALCULATIONS PREFORMED ARE IN ACCORDANCE WITH THE GUIDELINES SET FORTH IN THE NEW YORK STATE STORMWATER MANAGEMENT DESIGN MANUAL (COMBINATION REDEVELOPMENT AND NEW DEVELOPMENT):

Existing Conditions

- Existing Watershed Conditions

Watershed Area =	**1.148 ac**	(entire lot)
Impervious Area =	**0.459 ac**	(existing building)

- Existing Disturbed Area

Total Area to be Disturbed (ac) =	**1.148 ac**	(entire lot)
Imp. Area within Disturbed Area (ac) =	**0.459 ac**	(existing building)
Precipition for WQ_v storm, P =	1.50 inches	
Impervious %, I% = I/A x 100% =	40.00 %	
R_v = 0.05 + 0.009 x (I%)	0.410	
WQ_v = (P x R_v x A) /12 =	0.059 ac-ft	
WQ_v = WQ_v (ac-ft)x43560=	**2,562.5 cf**	
Treatment of 75% WQv (cf) =	**1,921.9 cf**	

Proposed Conditions

- Proposed Disturbed Area

Total Proposed Impervious Area within limits of Disturbance =	0.918 ac	(proposed building)
Proposed Impervious - Existing Impervious to be Disturbed =	**0.459 ac**	
Precipition for WQ_v storm, P =	1.50 inches	
Impervious %, I% = I/A x 100% =	40.000	
R_v = 0.05 + 0.009 x (I%)	0.410	
WQ_v = (P x R_v x A) /12 =	0.0471 ac-ft	
WQ_v = WQ_v (ac-ft)x43560=	**2,050.0 cf**	

Total Water Quality Volume

75% of Ex. Disturbed Water Quality Volume =	1,922 cf	
Pr. Increase in Imp. Water Quality Volume =	2,050 cf	
Total Required Water Quality Volume =	**3,972 cf**	**= 0.0912 ac-ft**

Bioretention Size

Depth = 6 ft			
Width = 20 ft			
Length = 100 ft			
Surface Area, A_B = 2000.00 sqft			
Bioretention Volume provided, V_B			
V_B= V_P + V_S + V_G			
V_P = A_B + $d_{PONDING}$ =	1,000 cf		
V_S = A_B + d_{SOIL} x 0.25 =	1,000 cf		
V_G = A_B + d_{GRAVEL} x 0.40 =	2,400 cf		
V_B= V_P + V_S + V_G =	**4,400 cf**		
V_B > $WQ_{v\text{-REQUIRED}}$	**4,400 cf**	**>**	**3,972 cf**

STORMWATER QUALITY SIZING METHODOLOGY

1.
2.
3.

NYSDEC UNIFORM STORMWATER SIZING CRITERIA

1.
2.
3.

LEGEND

- PROPERTY LINE
- PROPOSED BUILDING
- PROPOSED LANDSCAPE
- 12-IN STORM PIPE
- PROPOSED CATCH BASIN
- WATER QUALITY UNIT
- 4-FT CONCRETE MANHOLE
- PROPOSED CONTOUR

GENERAL NOTES:

1. EXISTING CONDITIONS AND TOPOGRAPHIC INFORMATION SHOWN ARE TAKEN FROM A SURVEY BY ABC SURVEYORS, 'SAMPLE PROJECT - TOPOGRAPHIC SURVEY', DATED 1/1/2018.
2. ELEVATIONS ARE IN REFERENCE TO THE NORTH AMERICAN VERTICAL DATUM 1988.

OWNER'S NAME AND ADDRESS

SIGNATURE DATE SIGNED

FIRST LAST

PROFESSIONAL ENGINEER NY Lic. #_____

Project

SAMPLE PROJECT

100 3RD AVENUE
BLOCK No. 10, LOT No. 2
SHEEPSHEAD BAY

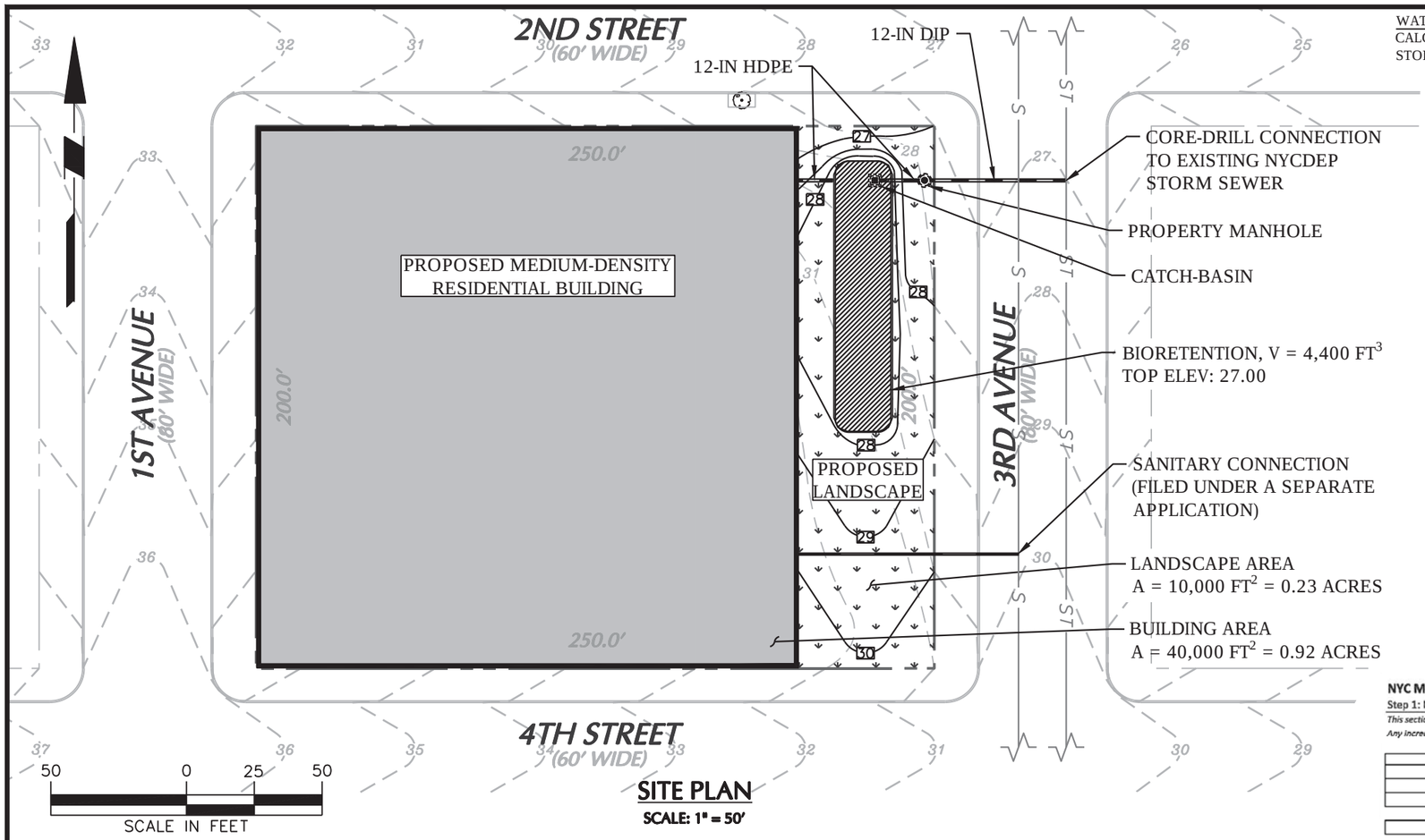
BROOKLYN **NEW YORK**

Drawing Title

WATER QUALITY CALCULATIONS SCENARIO B: VOLUME-BASED

Drawing No.

C-420



SITE PLAN
SCALE: 1" = 50'

STORMWATER QUALITY SIZING METHODOLOGY
1.
2.
3.

NYSDEC SMP SIZING CRITERIA
1.
2.
3.

LEGEND
- PROPERTY LINE
- PROPOSED BUILDING
- PROPOSED LANDSCAPE
- 12-IN STORM PIPE
- PROPOSED CATCH BASIN
- 4-FT CONCRETE MANHOLE
- PROPOSED CONTOUR

GENERAL NOTES:
1. EXISTING CONDITIONS AND TOPOGRAPHIC INFORMATION SHOWN ARE TAKEN FROM A SURVEY BY ABC SURVEYORS, 'SAMPLE PROJECT - TOPOGRAPHIC SURVEY', DATED 1/1/2018.
2. ELEVATIONS ARE IN REFERENCE TO THE NORTH AMERICAN VERTICAL DATUM 1988.

WATER QUALITY CALCULATIONS FOR NO NET INCREASE IN NITROGEN
CALCULATIONS PREFORMED ARE IN ACCORDANCE WITH THE GUIDELINES SET FORTH IN THE NEW YORK STATE STORMWATER MANAGEMENT DESIGN MANUAL:

Existing Conditions

- Existing Watershed Conditions

Watershed Area =	**1.148 ac**	(entire lot)
Impervious Area =	**0.459 ac**	(existing building)

- Existing Disturbed Area

Total Area to be Disturbed (ac) =	**1.148 ac**	(entire lot)
Imp. Area within Disturbed Area (ac) =	**0.459 ac**	(existing building)
Precipition for WQ_v storm, P =	1.50 inches	
Impervious %, I% = I/A x 100% =	40.00 %	
R_v = 0.05 + 0.009 x (I%)	0.410	
WQ_v = (P x R_v x A) /12 =	0.059 ac-ft	
WQ_v = WQ_v (ac-ft)x43560=	**2,562.5 cf**	
Treatment of 75% WQv (cf) =	**1,921.9 cf**	

Proposed Conditions

- Proposed Disturbed Area

Total Proposed Impervious Area within limits of Disturbance =	0.918 ac	(proposed building)
Proposed Impervious - Existing Impervious to be Disturbed =	**0.459 ac**	
Precipition for WQ_v storm, P =	1.50 inches	
Impervious %, I% = I/A x 100% =	40.000	
R_v = 0.05 + 0.009 x (I%)	0.410	
WQ_v = (P x R_v x A) /12 =	0.0471 ac-ft	
WQ_v = WQ_v (ac-ft)x43560=	**2,050.0 cf**	

Total Water Quality Volume

75% of Ex. Disturbed Water Quality Volume =	1,922 cf	
Pr. Increase in Imp. Water Quality Volume =	2,050 cf	
Total Required Water Quality Volume =	**3,972 cf**	**= 0.0912 ac-ft**

NYC MS4 No-Net-Increase Calculator

Step 1: Nitrogen Load Calculation (DRAFT)

This section calculates the change in Nitrogen load from pre- to post-construction site conditions (see Nitrogen Load Calculation tab). Please fill in shaded cells.
Any increase in Nitrogen load must be removed using stormwater management practices (SMPs).

Pre-Construction	
Project Area (acres)	1.15
Impervious Area (acres)	0.46
Current Land Use	Industrial
Nitrogen Load (Pre)	0.336 lbs

Post-Construction	
Project Area (acres)	1.15
Impervious Area (acres)	0.92
Proposed Land Use	Medium-Density Residential
Total Nitrogen Load (Post)	0.688 lbs
Required Nitrogen Load Reduction	**0.352** lbs
Percent Reduction Required	**51%** %

Step 2: SMP Nitrogen Removal Calculation (DRAFT)

This section calculates the Nitrogen load reduction for proposed SMPs. Load reduction calculation considers both pervious and impervious areas within SMP catchment area.
Fill in shaded cells for post-construction conditions. Use a separate row for each catchment area draining to an SMP. SMP must be sized to manage the entire SMP catchment area.
Rows 7-10 are for innovative SMPs not listed in drop down (e.g., proprietary devices or treatment trains). Enter the SMP type and Nitrogen removal rate (must attach documentation).

SMP Catchment Area (acres)	Impervious Area (acres)	SMP Type	SMP Removal Rate (%)	Nitrogen Load Reduction (lbs)
1.15	0.92	Bioretention	80%	0.550
		(Enter Other SMP Type)		
1.15	0.92			0.550

Step 3: No-Net Increase Verification (DRAFT)

This section verifies that proposed SMPs will reduce the post-construction Nitrogen load equal to or less than the pre-construction Nitrogen load, resulting in no net increase.

	Load (lbs)	Percent (%)	
Required Nitrogen Load Reduction	**0.352**	**51%**	(from Step 1)
Actual Nitrogen Load Reduction	**0.550**	**80%**	(from Step 2)

NO-NET-INCREASE REQUIREMENTS MET

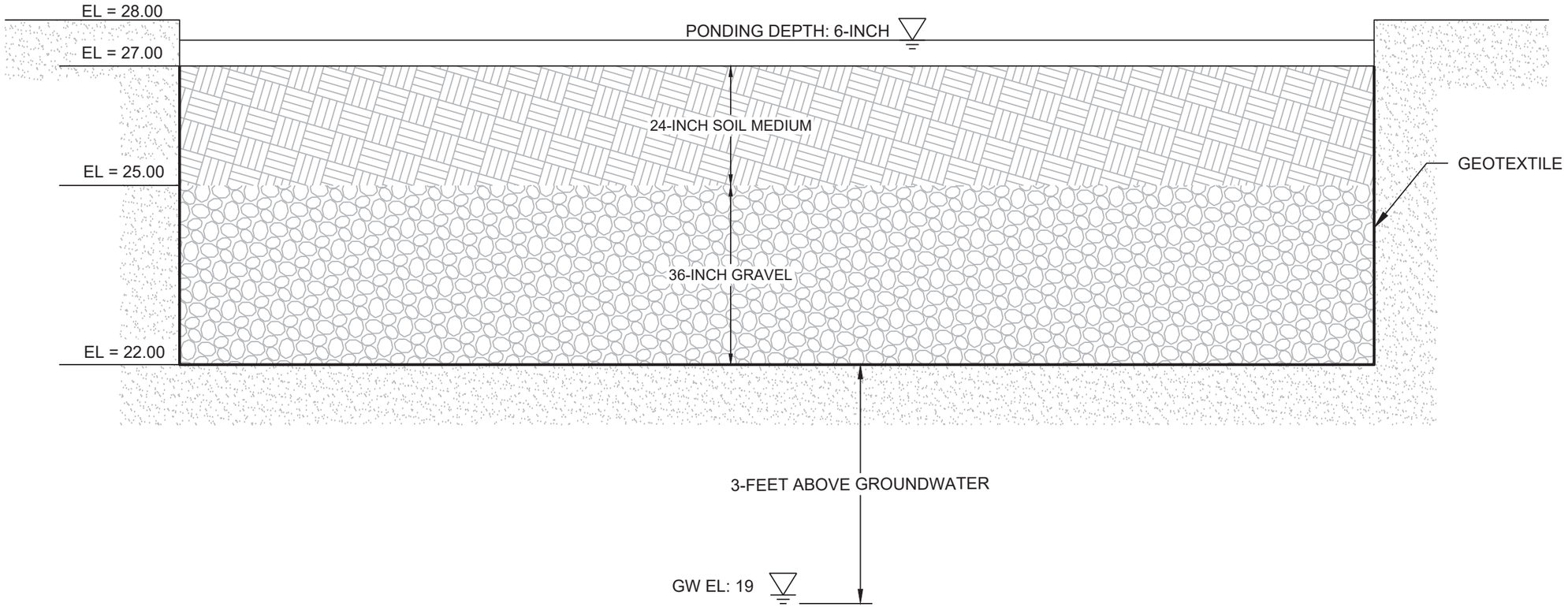
OWNER'S NAME AND ADDRESS

SIGNATURE DATE SIGNED
FIRST LAST
PROFESSIONAL ENGINEER NY Lic. #_____

Project
SAMPLE PROJECT
100 3RD AVENUE
BLOCK No. 10, LOT No. 2
SHEEPSHEAD BAY
BROOKLYN NEW YORK

Drawing Title
WATER QUALITY CALCULATIONS SCENARIO B: VOLUME-BASED, NNI NITROGEN - PLAN

Drawing No.
C-430



BIORETENTION DETAIL

OWNER'S NAME AND ADDRESS

SIGNATURE DATE SIGNED

FIRST LAST

PROFESSIONAL ENGINEER NY Lic. #_____

Project

SAMPLE PROJECT

100 3RD AVENUE
BLOCK No. 10, LOT No. 2
SHEEPSHEAD BAY

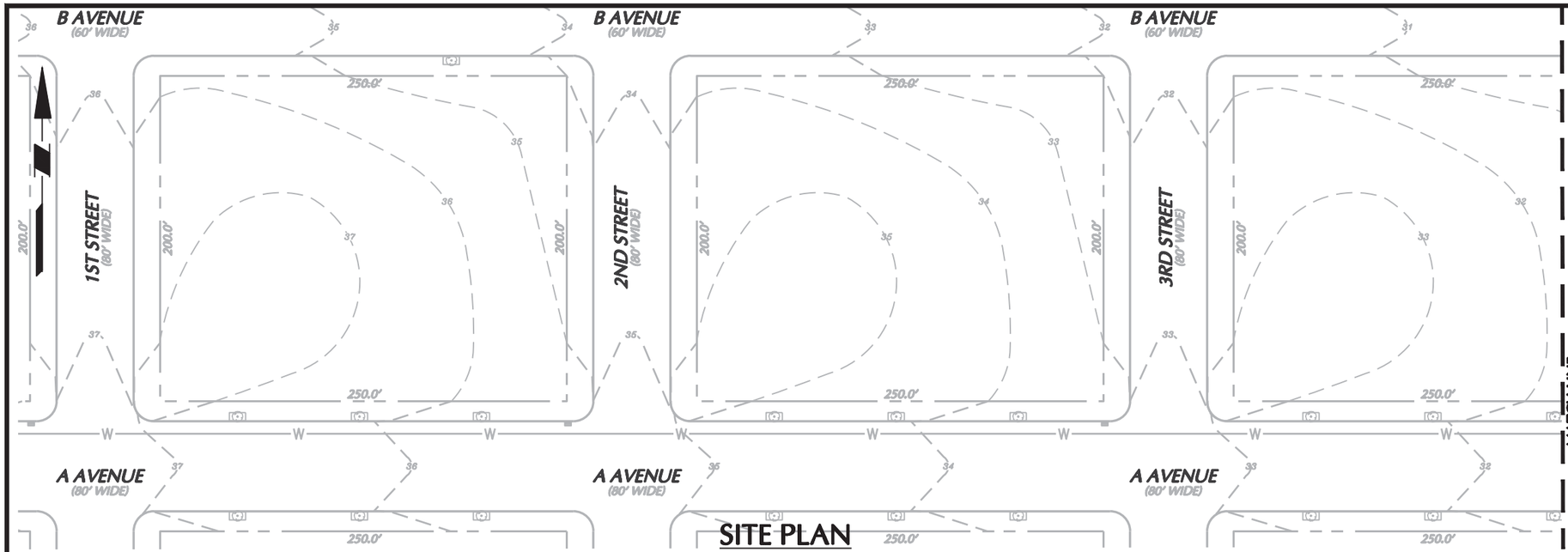
BROOKLYN **NEW YORK**

Drawing Title

WATER QUALITY DETAILS SCENARIO B: VOLUME-BASED DETAIL

Drawing No.

C-440



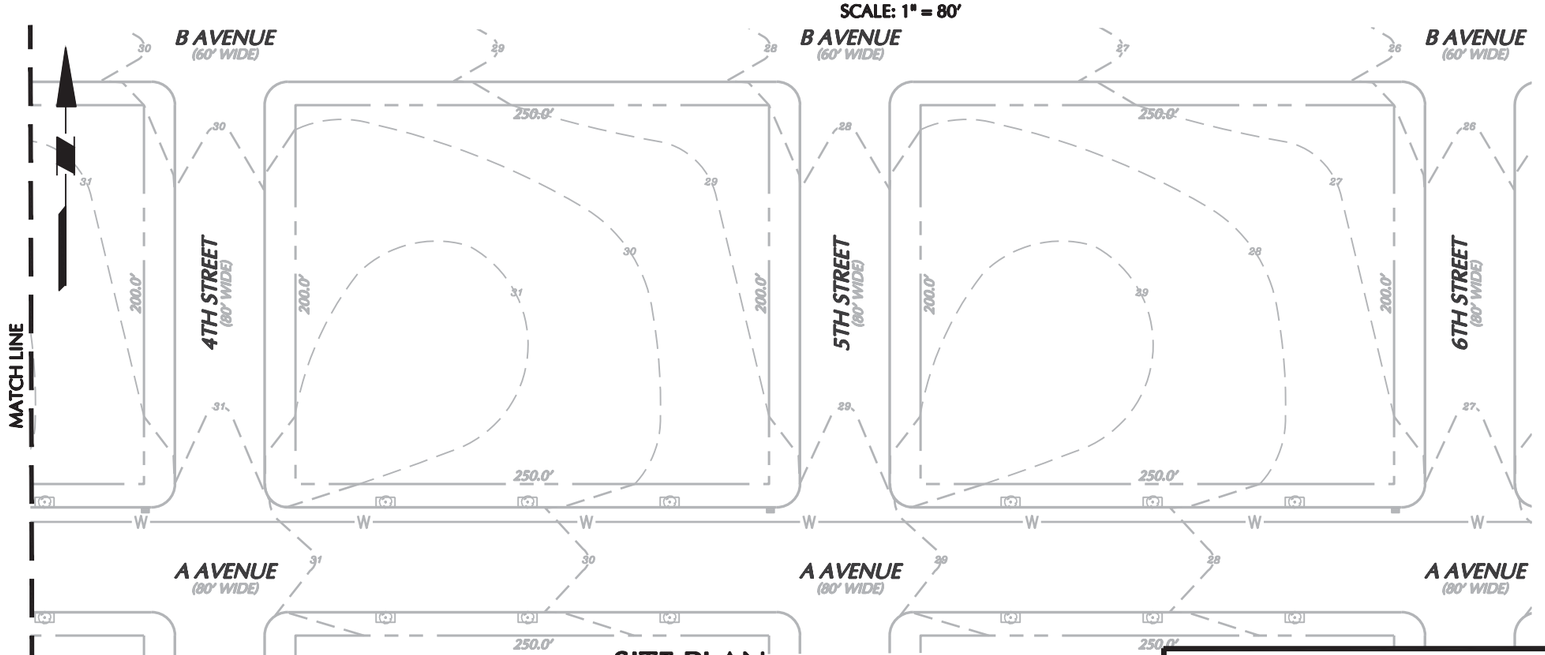
SITE PLAN

SCALE: 1" = 80'

PROJECT LOCATION MAP

NOT TO SCALE

SOURCE: NYC DOITT - NYC CITY MAP



SITE PLAN

SCALE: 1" = 80'

GENERAL NOTES:

1. EXISTING CONDITIONS AND TOPOGRAPHIC INFORMATION SHOWN ARE TAKEN FROM A SURVEY BY ABC SURVEYORS, 'SAMPLE PROJECT - TOPOGRAPHIC SURVEY', DATED 1/1/2018.
2. ELEVATIONS ARE IN REFERENCE TO THE NORTH AMERICAN VERTICAL DATUM 1988.

80 0 40 80

SCALE IN FEET

SIGNATURE DATE SIGNED

FIRST LAST

PROFESSIONAL ENGINEER NY Lic. #_____

Project

SAMPLE PROJECT

A AVENUE
BETWEEN 1ST STREET AND 6TH STREET
SHEEPSHEAD BAY

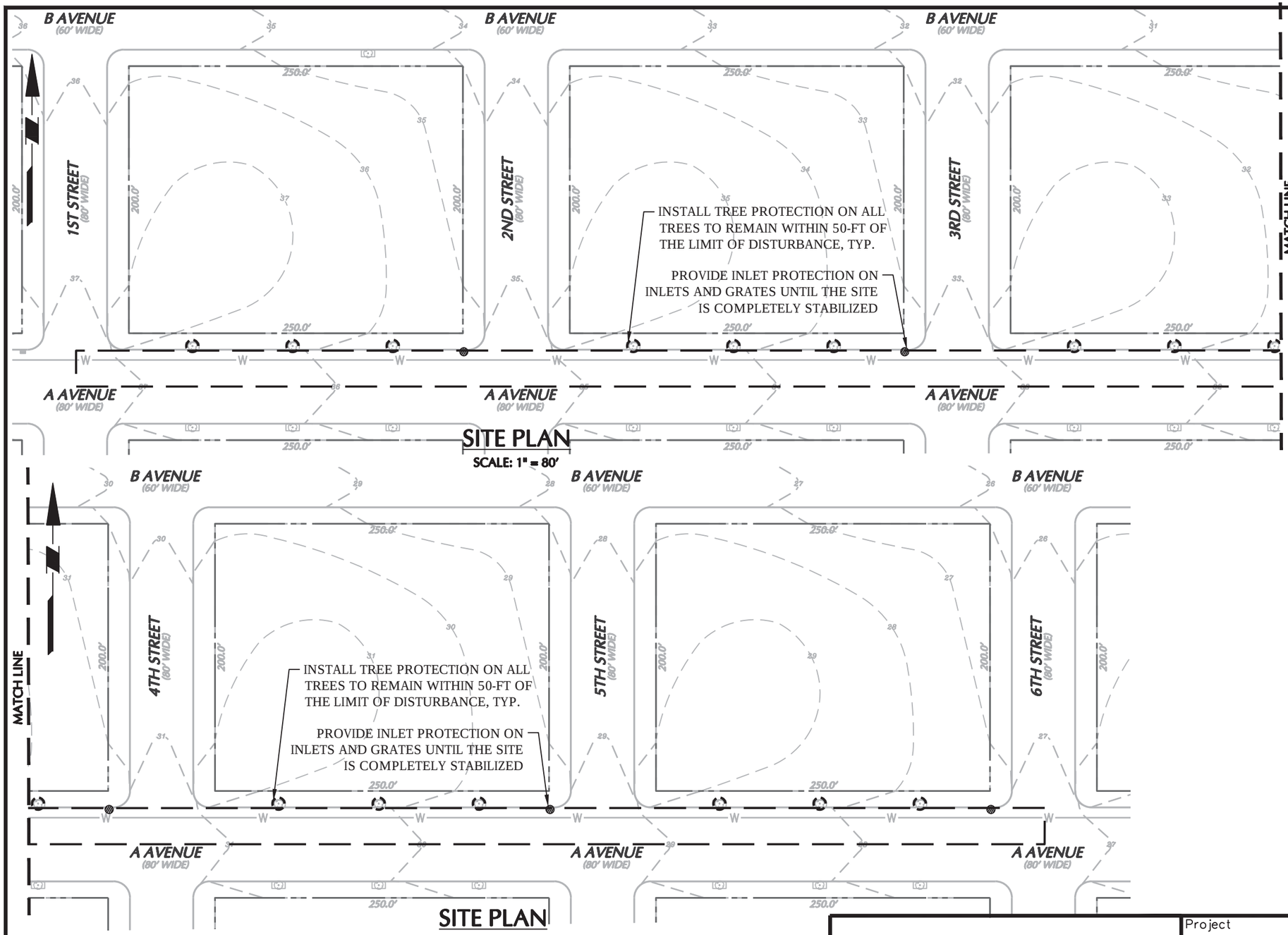
BROOKLYN **NEW YORK**

Drawing Title

EXISTING CONDITIONS PLAN

Drawing No.

V-100



SITE PLAN

SCALE: 1" = 80'

SITE PLAN

SCALE: 1" = 80'

GENERAL NOTES:

1. EXISTING CONDITIONS AND TOPOGRAPHIC INFORMATION SHOWN ARE TAKEN FROM A SURVEY BY ABC SURVEYORS, 'SAMPLE PROJECT - TOPOGRAPHIC SURVEY', DATED 1/1/2018.
2. ELEVATIONS ARE IN REFERENCE TO THE NORTH AMERICAN VERTICAL DATUM 1988.

80 0 40 80

SCALE IN FEET

EROSION AND SEDIMENT CONTROL NOTES

1.
2.
3.
4.

CONSTRUCTION SCHEDULE

THIS LIST OF ITEMS HAS BEEN PREPARED TO GENERALLY OUTLINE THE MAJOR CONSTRUCTION ELEMENTS AND THE SEQUENCE FOR IMPLEMENTATION OF THE SOIL EROSION AND SEDIMENT CONTROL MEASURES:

1. OBTAIN ALL REQUIRED LOCAL AND STATE PERMITS AND APPROVALS PRIOR TO COMMENCING EARTHWORK.
2. INSTALL EROSION AND SEDIMENT CONTROL MEASURES, SUCH AS DROP FABRIC INLET PROTECTION AND TREE PROTECTION, AS SHOWN ON THE PLANS.
3. COMMENCE SITE IMPROVEMENT AND UTILITY INSTALLATION.
4. CLEAR SITE AS REQUIRED PRIOR TO PAVEMENT INSTALLATION. SPRINKLE AREAS OF EXPOSED SOIL AND SOIL STOCKPILES WITH POTABLE WATER AS NECESSARY TO CONTROL DUST.
5. COMPLETE SITE IMPROVEMENTS AND INSTALL CONCRETE AND/OR ASPHALT PAVEMENT CAP ACROSS THE TRENCH.
6. REMOVE ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES AFTER THE SITE HAS BEEN COMPLETELY STABILIZED. ALL STORMWATER STRUCTURES WITHIN THE LIMITS OF DISTURBANCE MUST BE CLEAR OF SEDIMENT.

MAINTENANCE OF EROSION AND SEDIMENT CONTROL MEASURES

1.
2.
3.
4. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO MAINTAIN ALL METHODS AS FOLLOWS:
   - TEMPORARY TREE PROTECTION:
   - FABRIC INLET PROTECTION:
   - DUST CONTROL:
   - STOCKPILE:
   - AREA OF LAND WITHIN THE LIMITS OF DISTURBANCE:

LEGEND

- LIMIT OF DISTURBANCE
- TREE PROTECTION
- INLET PROTECTION
- PROPERTY LINE

SIGNATURE DATE SIGNED

FIRST LAST

PROFESSIONAL ENGINEER NY Lic. #_____

Project

SAMPLE PROJECT

A AVENUE
BETWEEN 1ST STREET AND 6TH STREET
SHEEPSHEAD BAY

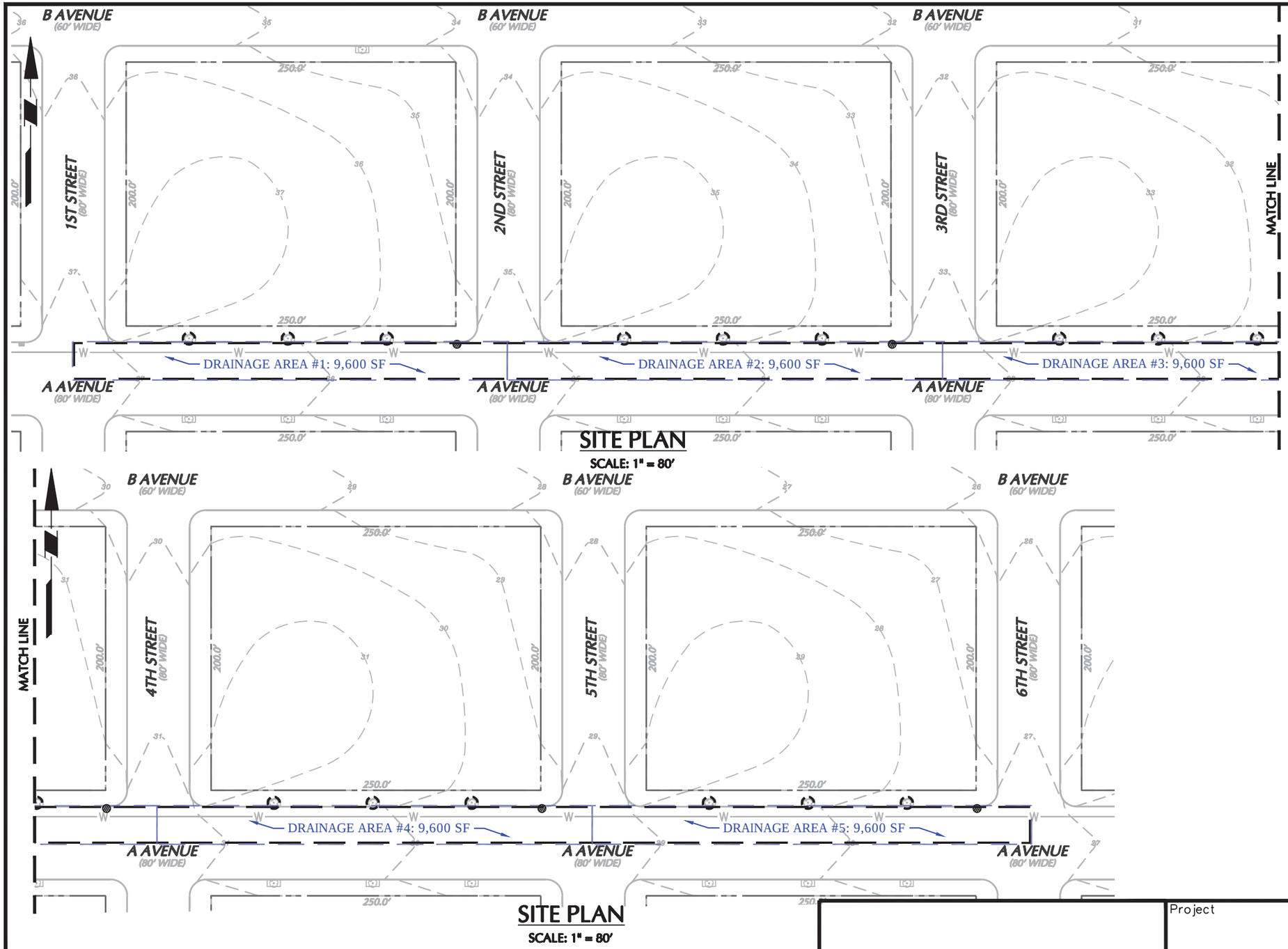
BROOKLYN **NEW YORK**

Drawing Title

SOIL EROSION & SEDIMENT CONTROL PHASE I PLAN

Drawing No.

C-100



SITE PLAN

SCALE: 1" = 80'

INLET PROTECTION LIMITATIONS

THE DRAINAGE AREA FOR STORM DRAIN INLETS SHALL NOT EXCEED ONE ACRE IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS FOR STORM DRAIN INLET PROTECTION, SECTION 5 OF THE NEW YORK STATE STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL (NOVEMBER 2016).

MAXIMUM DRAINAGE AREA FOR STORM DRAIN INLETS IS 1 ACRE

DRAINAGE AREA #1:	9,600 SQFT = 0.22 ACRE	OKAY
DRAINAGE AREA #2:	9,600 SQFT = 0.22 ACRE	OKAY
DRAINAGE AREA #3:	9,600 SQFT = 0.22 ACRE	OKAY
DRAINAGE AREA #4:	9,600 SQFT = 0.22 ACRE	OKAY
DRAINAGE AREA #5:	9,600 SQFT = 0.22 ACRE	OKAY

LEGEND

- DRAINAGE DIVIDE
- LIMIT OF DISTURBANCE
- TREE PROTECTION
- INLET PROTECTION
- PROPERTY LINE

SITE PLAN

SCALE: 1" = 80'

GENERAL NOTES:

1. EXISTING CONDITIONS AND TOPOGRAPHIC INFORMATION SHOWN ARE TAKEN FROM A SURVEY BY ABC SURVEYORS, 'SAMPLE PROJECT - TOPOGRAPHIC SURVEY', DATED 1/1/2018.
2. ELEVATIONS ARE IN REFERENCE TO THE NORTH AMERICAN VERTICAL DATUM 1988.

80 0 40 80
SCALE IN FEET

SIGNATURE DATE SIGNED
FIRST LAST
PROFESSIONAL ENGINEER NY Lic. #_____

Project
SAMPLE PROJECT
A AVENUE
BETWEEN 1ST STREET AND 6TH STREET
SHEEPSHEAD BAY
BROOKLYN NEW YORK

Drawing Title
SOIL EROSION & SEDIMENT CONTROL CALCULATIONS

Drawing No.
C-200

The following construction activities that involve soil disturbances of one (1) or more acres of land, but less than five (5) acres: • Single family home not located in one of the watersheds listed in Appendix C or not *directly discharging* to one of the 303(d) segments listed in Appendix E • Single family residential subdivisions with 25% or less impervious cover at total site build-out and not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E • Construction of a barn or other agricultural building, silo, stock yard or pen.
The following construction activities that involve soil disturbances of one (1) or more acres of land: • Installation of underground, linear utilities; such as gas lines, fiber-optic cable, cable TV, electric, telephone, sewer mains, and water mains • Environmental enhancement projects, such as wetland mitigation projects, stormwater retrofits and stream restoration projects • Bike paths and trails • Sidewalk construction projects that are not part of a road/ highway construction or reconstruction project • Slope stabilization projects • Slope flattening that changes the grade of the site, but does not significantly change the runoff characteristics • Spoil areas that will be covered with vegetation • Land clearing and grading for the purposes of creating vegetated open space (i.e. recreational parks, lawns, meadows, fields), excluding projects that *alter hydrology from pre to post development* conditions • Athletic fields (natural grass) that do not include the construction or reconstruction of *impervious area* and do not *alter hydrology from pre to post development* conditions • Demolition project where vegetation will be established and no redevelopment is planned • Overhead electric transmission line project that does not include the construction of permanent access roads or parking areas surfaced with *impervious cover* • Structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State", excluding projects that involve soil disturbances of less than five acres and construction activities that include the construction or reconstruction of impervious area
The following construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land: • All construction activities located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

TABLE 1: CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT ONLY INCLUDES EROSION AND SEDIMENT CONTROLS

SOURCE: GP-0-15-002 - APPENDIX B - REQUIRED SWPPP COMPONENTS BY PROJECT TYPE

SIGNATURE DATE SIGNED
FIRST LAST
PROFESSIONAL ENGINEER NY Lic. #_____

Project
SAMPLE PROJECT
A AVENUE
BETWEEN 1ST STREET AND 6TH STREET
SHEEPSHEAD BAY
BROOKLYN NEW YORK

Drawing Title
WATER QUALITY CALCULATIONS - NOT REQUIRED

Drawing No.
C-300

Attachment 2

NYC MS4 No-Net-Increase Calculator for Nitrogen Example

Environmental Protection

NYC MS4 No-Net-Increase Calculator for Nitrogen - Example

In this example, proposed redevelopment activities will increase the impervious area on a 4.0-acre site in the Flushing Bay watershed by 0.5 acres, which will trigger NNI requirements, Figure 1.

Figure 1 - Four-acre site in Flushing Bay watershed with proposed increase in impervious surfaces that must meet NNI requirements.

The NYC MS4 No-Net-Increase Calculator input table for the project site in Figure 1 is presented in Figure 2.

Figure 2 – NYC MS4 No-Net-Increase Calculator for the Four-acre site in Flushing Bay watershed with proposed increase in impervious surfaces that must meet NNI requirements.

NYC MS4 No-Net-Increase Calculator

Project Name:	*Four-Acre Example*	Prepared For:	*[Enter Owner Name]*
DEP Application Number:	*[Enter Number]*	Prepared By:	*[Enter Company Name]*
Borough; Block, and Lot:	*[Enter BBL]*	Date:	*[Enter Date]*

Step 1: Nitrogen Load Calculation (DRAFT)

This section calculates the change in nitrogen load from pre- to post-construction site conditions (see Nitrogen Load Calculation tab). Please fill in shaded cells.
Any increase in nitrogen load must be removed using stormwater management practices (SMPs).

Pre-Construction	
Project Area (acres)	4.00
Impervious Area (acres)	2.50
Current Land Use	Commercial
Runoff Coefficient (R_v)	0.61

Post-Construction	
Project Area (acres)	4.00
Impervious Area (acres)	3.00
Proposed Land Use	Commercial
Runoff Coefficient (R_v)	0.73

Total Nitrogen Load (Pre)	1.73	lbs

Total Nitrogen Load (Post)	2.05	lbs
Required Nitrogen Load Reduction	**0.32**	lbs
Percent Reduction Required	**16%**	

Step 2: SMP Nitrogen Removal Calculation (DRAFT)

This section calculates the nitrogen load reduction for proposed SMPs. Load reduction calculation considers both pervious and impervious areas within SMP catchment area.
Fill in shaded cells for post-construction conditions. Use a separate row for each catchment area draining to an SMP. SMP must be sized to manage the entire SMP catchment area.
For alternative SMPs not in drop down (manufactured technologies or treatment trains), see NYC SWDM and enter SMP type and removal rate in Rows 7-10 (must attach documentation).

SMP Catchment Area (acres)	Impervious Area (acres)	SMP Type	Total Nitrogen Removal Rate (%)	Total Nitrogen Load Reduction (lbs)
1.00	0.00	Green Roof	35%	0.05
1.00	1.00	Sand Filter (Filtration)	40%	0.27
		[Enter Other SMP Type]		
		[Enter Other SMP Type]		
		[Enter Other SMP Type]		
		[Enter Other SMP Type]		
2.00	1.00			0.32

Step 3: No-Net Increase Verification (DRAFT)

This section verifies that proposed SMPs will reduce the post-construction nitrogen load equal to or less than the pre-construction nitrogen load, resulting in no net increase.

	Load (lbs)	Percent (%)	
Required Nitrogen Load Reduction	**0.32**	**16%**	(from Step 1)
Actual Nitrogen Load Reduction	**0.32**	**16%**	(from Step 2)

NO-NET-INCREASE REQUIREMENTS MET

As shown in Figure 2, the pre- and post-development conditions for the inputs for Step 1: Nitrogen Load Calculation are below, together with the calculated total nitrogen load:

Pre-Construction:

- Project Area: 4.0 acres
- Impervious Area: 2.5 acres
- Current Land Use: Commercial
- Total Nitrogen Load (pre): 1.73 lbs.

Post-Construction:

- Project Area: 4.0 acres
- Impervious Area: 3.0 acres
- Proposed Land Use: Commercial
- Total Nitrogen Load (post): 2.05 lbs.

Note that the pervious surface area of green roofs, porous pavement, vegetated SMPs, or other landscaped areas should not be included in the impervious area cell under Step 1 or Step 2. In this example, a green roof is considered pervious area not impervious area and, consequently, the WQv and required nitrogen load reduction is less than if considered a regular roof. The green roof also provides limited nitrogen removal in Step 2 given a minimum runoff coefficient of 0.2 for all surfaces (impervious and pervious).

Therefore, in this example, the SWPPP preparer is required to install SMPs to remove 0.32 lbs. (or 16%) of total nitrogen, which represents the load increase between pre- and post-development.

The SWPPP preparer proposes multiple SMPs and enters their associated catchment areas into the upper rows of the table in Step 2: SMP Nitrogen Removal Calculation. The calculator assigns the appropriate nitrogen removal rates and identifies the total nitrogen load removed per SMP.

SMP 1 Type: Green Roof

Impervious Area (First SMP Catchment Area): 0.0 acres

Total Nitrogen Removal Rate: 35%

Total Nitrogen Load Reduction: 0.05 lbs.

SMP 2 Type: Porous Pavement

Impervious Area (Second SMP Catchment Area): 1.0 acre

Total Nitrogen Removal Rate: 40%

Total Nitrogen Load Reduction: 0.27 lbs.

The total nitrogen load removal for the proposed SMPs is 0.32 lbs. (or 16%), which equals the NNI requirements as verified in Step 3: No-Net Increase Verification. The developer should print the calculator results as confirmation and include it in their SWPPP submittal.

Attachment 3

Geotechnical Investigation Procedures

Environmental Protection

Geotechnical Investigation Procedures

Soil Boring Procedure and Equipment

Soil borings are to be conducted using a 4-inch inner diameter hollow-stem auger (HSA) or by a 4-inch inner diameter drilled casing. If a HSA cannot be used in a location, soil borings can be completed using a rotary tri-cone roller bit with potable water as drilling fluid. Mud drilling is not an acceptable method of boring. Pneumatic and/or hand excavation is an acceptable method of boring to use up to the depth of the first soil sample or permeability test (PT). A boring log should be used to record all pertinent data at each boring location. Boring log and borehole location templates can be found in Appendix 1.

Standard Penetration Test

In each soil boring location, a Standard Penetration Test (SPT) shall be conducted continuously in accordance with ASTM D1586 (i.e. a 24-inch long, 2-inch outside diameter split-barrel sampler driven by blows from a 140-pound hammer falling freely from a height of 30 inches).

The number of blows required to drive the 24-inch split-barrel sampler every 6-inch increment will be recorded. The Standard Penetration Resistance (N-value) shall be determined as the sum of the blows required to drive the sampler to the second and third 6-inch increments.

Soil Sampling

Observations of the soil shall be made at all sampling depths during the time of drilling and recorded for each soil boring location.

Soil samples shall be collected that are representative of the actual recovered soil core at specific depth intervals for laboratory analysis. Collected samples shall be stored in labeled jars, to be delivered to an approved AASHTO-certified laboratory for subsequent examination and testing. Laboratory testing and reporting shall include sieve analysis with plotting of gradation curves, hydrometer analysis, and soil classification based on the USCS. Distribution of all particle sizes of the soil – including the fines (silts and clays) content – shall be in accordance with ASTM D6913 and D7928.

Permeability Test Procedure and Equipment

The permeability test (PT) procedure is as follows:

- Drive the 4-inch inner diameter casing to the required test depth (refer to soil boring procedure for allowable equipment). The space (annulus) between the casing and borehole must be kept at a minimum. If the casing cannot be driven and a larger hole is first bored to allow for the casing, the annulus must be properly sealed with bentonite before any water is introduced for testing into the casing.
- Measure the depth to the bottom of the hole to the nearest inch.
- Ensure that the depth to the bottom of the hole is within 1 inch of the depth to the bottom of the casing.

- Place approximately 6 to 8 inches of coarse sand (4.75mm - 2mm) at the bottom of the casing.
- Wash out casing using a continuous flow of potable water at low water pressure (the water shall not disturb the coarse sand layer at the bottom of the casing) until the water exiting the casing runs clear.
- Saturate the soil beneath the bottom of the casing for at least thirty (30) minutes using potable water.
- Fill casing to the top with clean water and record the temperature of the water. PTs shall not be performed in frozen soils or with water at temperatures less than 5°C.
- Record the time at the beginning of the test.
- Record the falling water level in the casing at 1, 2, 3, 4, 5, 10, and 15 minutes after the beginning of the test or until the water level in the casing has stopped falling.
- At the conclusion of the test, fill the casing to the top with clean water and maintain the water at this level for five (5) minutes.
- Repeat the test once for each PT depth using the same procedure.

A PT log template can be found in Appendix 2, which should be used to record all pertinent data at each PT location.

Potable water must be used in conducting PTs; PTs conducted using dirty water creates faulty results and shall be rejected.

If a soil boring was conducted within 20 feet of a planned PT location, the borehole from the soil boring must be completely backfilled before the PT is commenced.

Termination of Permeability Tests after the Saturation Period

PTs may be terminated after the 30-minute saturation period and reported accordingly for the following conditions:

- If the casing is completely filled during the saturation period and there is no visible drop in water level after 30 minutes, the PT shall be reattempted for the same depth at another location no less than 5 feet away. If there is no visible drop in water level after 30 minutes at the reattempted location, the PT shall be terminated for that depth only and the permeability coefficient reported as “0.000 in/hr”.
- If the casing cannot be filled due to rapid infiltration (RI) during the saturation period and no water is retained in the casing after 30 minutes, the PT shall be reattempted for the same depth at another location no less than 5 feet away. If rapid infiltration is observed during the saturation period for the reattempt, the PT shall be terminated for that depth only and the permeability coefficient reported as “RI”.

Geotechnical Investigation Depths

The depth at which Geotechnical Investigation procedures are to be conducted shall be determined by the depth of the undisturbed soil below the base of the proposed GI practice.

Table 1 shows the soil boring depths, soil sampling (for laboratory testing) depths, and PT depths for typical NYC DEP on-site GI practices.

Table 1 – Depth of Soil Borings for On-site GI Practices

Type of GI Practice	Total Soil Boring Depth	Lab Sample Depth Intervals	PT Depths[2]
All On-site GI practices	15 ft bgs[1]	3-5 ft bgs 5-7 ft bgs 7-9 ft bgs 9-11 ft bgs 11-13 ft bgs 13-15 ft bgs	3 ft bgs 5 ft bgs 10 ft bgs

[1] bgs = below ground surface

[2] If the bottom of the casing cannot be properly sealed due to soil conditions or obstructions, the casing may be drilled up to an additional foot below ground surface.

Appendix 1 - Boring Log Template

COMPANY NAME/LOGO	Boring ID No. B-
Prepared for: NYC Environmental Protection	PROJECT: LOCATION / BOROUGH :
INSPECTOR: CONTRACTOR: P.E./REP.:	DRILLER: HELPER:
Start Date: Start Time:	Weather:
Total Boring Depth: ft Rig Type:	Drill Bit Type: Casing Inner Diameter: 4 in Depth of Casing: ft
Weight of Hammer for casing: lbs Weight of Hammer for spoon: lbs Type of Hammer:	
Depth to Groundwater Table (bgs): ft Depth to Bedrock (bgs): ft	Drop: 30 in Split Spoon Diameter: 2 in

B- BORING LOG

Depth Below Ground Surface (ft)	Soil Description (Field Observations)	SPT Blows per 6"	N Value	Recovery Length (inches)	Remarks
0					
	Bulk Sample 1 (S1)				
5	Bulk Sample 2 (S2)				
	Bulk Sample 3 (S3)				
10	Bulk Sample 4 (S4)				
	Bulk Sample 5 (S5)				
	Bulk Sample 6 (S6)				
15					

Boring terminated at 15 feet below ground surface unless otherwise instructed.

Inspector's Remarks:

Appendix 1 - Borehole Location Diagram Template

COMPANY NAME/LOGO	ID No.
Prepared for: NYC Environmental Protection	PROJECT: BOROUGH: LOCATION:

Borehole Location Diagram

Inspectors Remarks:

Appendix 2 - PT Log Template

COMPANY NAME/LOGO	PT ID No. PT-	
	Sheet 1 of 3	

Prepared for: NYC Environmental Protection		PROJECT:	
		LOCATION / BOROUGH :	
INSPECTOR:	DRILLER:	Start Date:	Weather:
CONTRACTOR:	HELPER:	Start Time:	
P.E./REP.:			
Depth of PT: 3 ft	Drill Bit Type: Rollerbit	Weight of Hammer for casing: 140 lbs	
Rig Type:	Casing Internal Diameter: 4 in	Type of Hammer: Auto	
	Casing Length: in		

ASTM D-6391 – 11
PERMEABILITY COEFFICIENT (Km) FORMULA:

General Formula:

$$K_m = \pi R_t \times \frac{\left[D\left\{Ln\left(\frac{h_1}{h_2}\right)\right\}\right]}{11 \times (t_2 - t_1)}$$

Formula for 4" internal diameter casing (in/hr):

$$K_m = 1.142 R_t \times \frac{\left[Ln\left(\frac{h_1}{h_2}\right)\right]}{(t_2 - t_1)}$$

where:

$$R_t = {2.2902(0.9842^T)}/{T^{0.1702}}$$

PT- @ 3 ft

TEST 1

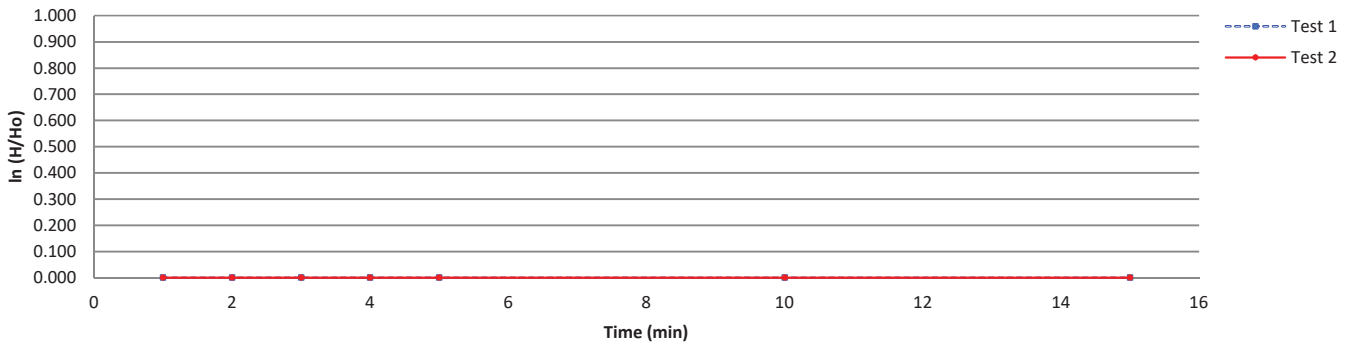
Water temperature (°C), T: Rt= -

FIELD DATA		CALCULATED DATA			
Time (min)	Depth (in)	Height (in)	Ln (H/Ho)	(t_1-t_2)	*Kv (in/hr)
1		0.000	-	0.017	-
2		0.000	-	0.017	-
3		0.000	-	0.017	-
4		0.000	-	0.017	-
5		0.000	-	0.017	-
10		0.000	-	0.083	-
15		0.000	-	0.083	-

TEST 2

Water temperature (°C), T: Rt= -

FIELD DATA		CALCULATED DATA			
Time (min)	Depth (in)	Height (in)	Ln (H/Ho)	(t_1-t_2)	*Kv (in/hr)
1		0.000	-	0.017	-
2		0.000	-	0.017	-
3		0.000	-	0.017	-
4		0.000	-	0.017	-
5		0.000	-	0.017	-
10		0.000	-	0.083	-
15		0.000	-	0.083	-



TEST 1 FINAL RESULTS			TEST 2 FINAL RESULTS		
Time Weighted Average Permeability Coefficient	Km=	0.0000 in/hr	Time Weighted Average Permeability Coefficient	Km=	0.0000 in/hr

AVERAGE PT- @ 3 ft			
Time Weighted Average Permeability Coefficient	Km=	0.0000	in/hr

Inspectors Remarks:

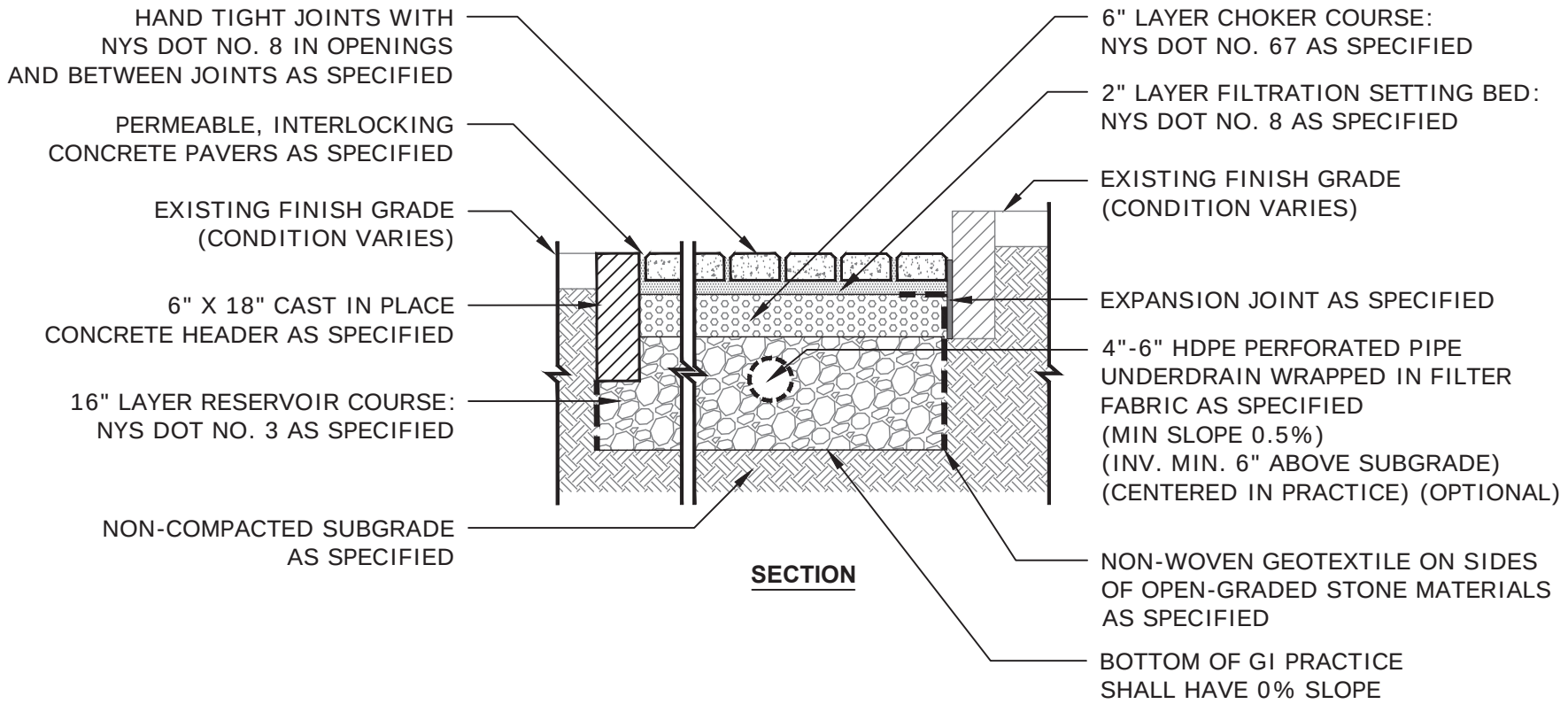
DEFINITION OF VARIABLES

*Km= Mean permeability
T = Temperature of permeant (water), in °C
Ln = Natural Logarithmic
t1 = Time at the start of the test in the same units selected for Km
t2= Time at the end of the test in the units selected for Km
h1= Height of the water above the bottom of the casing at the start of the test in the same units selected for Km
h2= Height of the water above the bottom of the casing at the end of the test in the same units selected for Km

Attachment 4

NYCDEP On-Site Green Infrastructure Standards

Environmental Protection



PERMEABLE PAVERS ON AGGREGATE BASE

DETAIL	1
1/2"=1'-0"	-

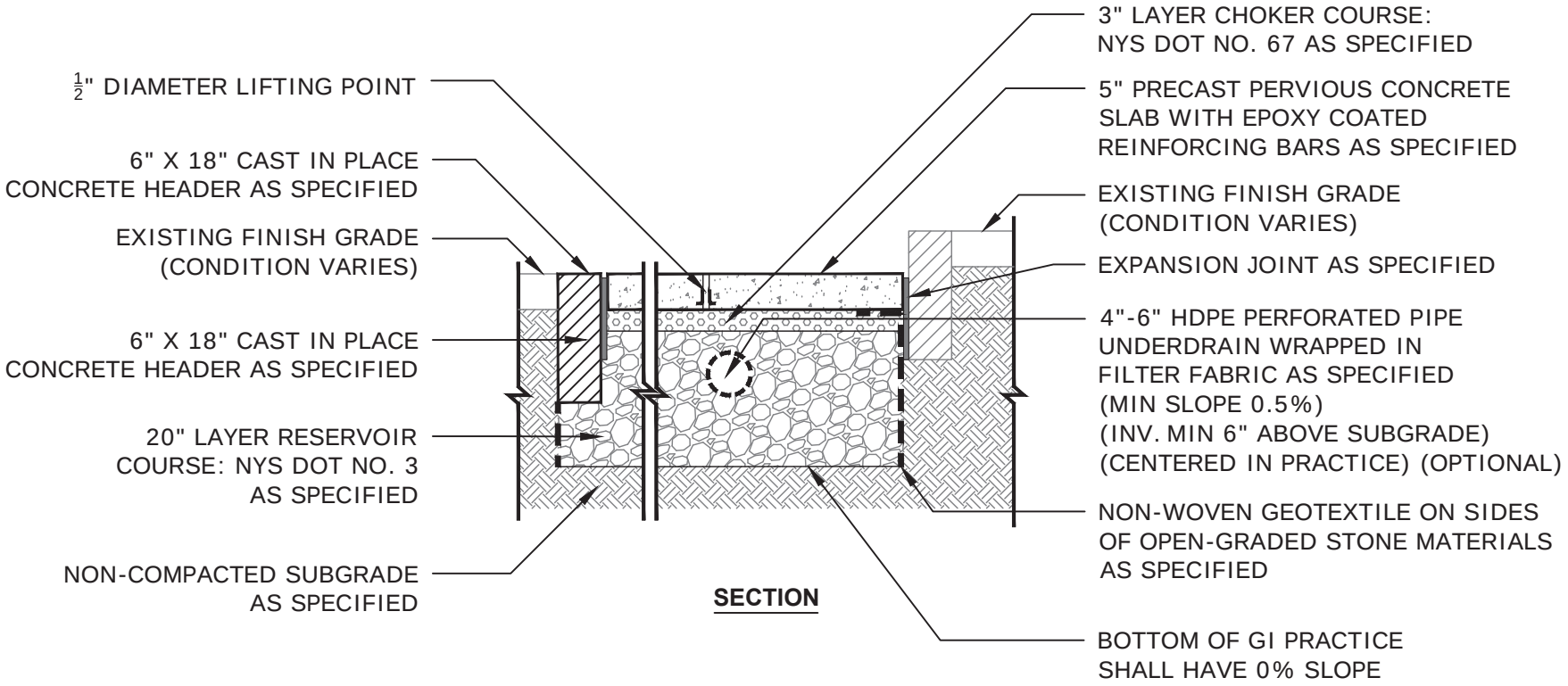
1/2" = 1'– 0"

1 0 1 2

Environmental Protection

Private On-site Green Infrastructure:
General Design Standards and Guidelines

Figure No.1
Permeable Pavers on Aggregate Base
MARCH 2018



PRECAST PERVIOUS CONCRETE ON AGGREGATE BASE

DETAIL	2
1/2"=1'-0"	-

1/2" = 1'– 0"

1 0 1 2

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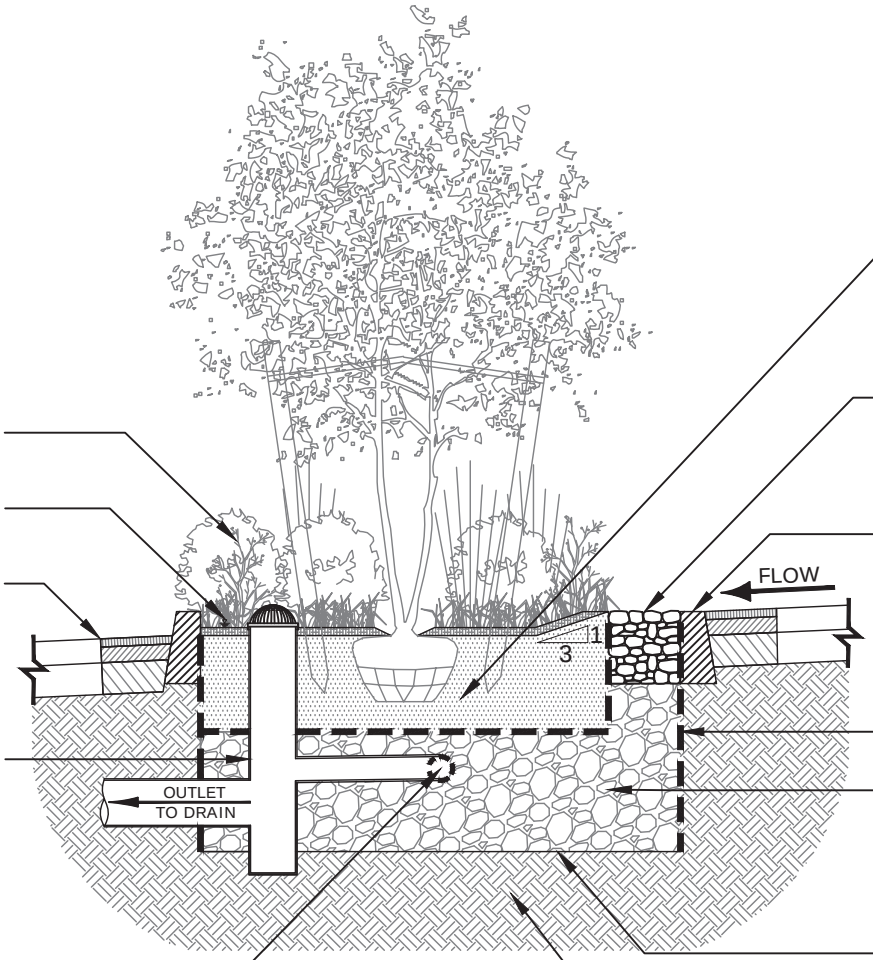
Figure No.2
Precast Pervious Concrete on Aggregate Base
MARCH 2018



RAIN GARDEN / VEGETATED BIORETENTION AREA

DETAIL	3
1/4"=1'-0"	-

1/4" = 1'– 0"

2 1 0 2 4

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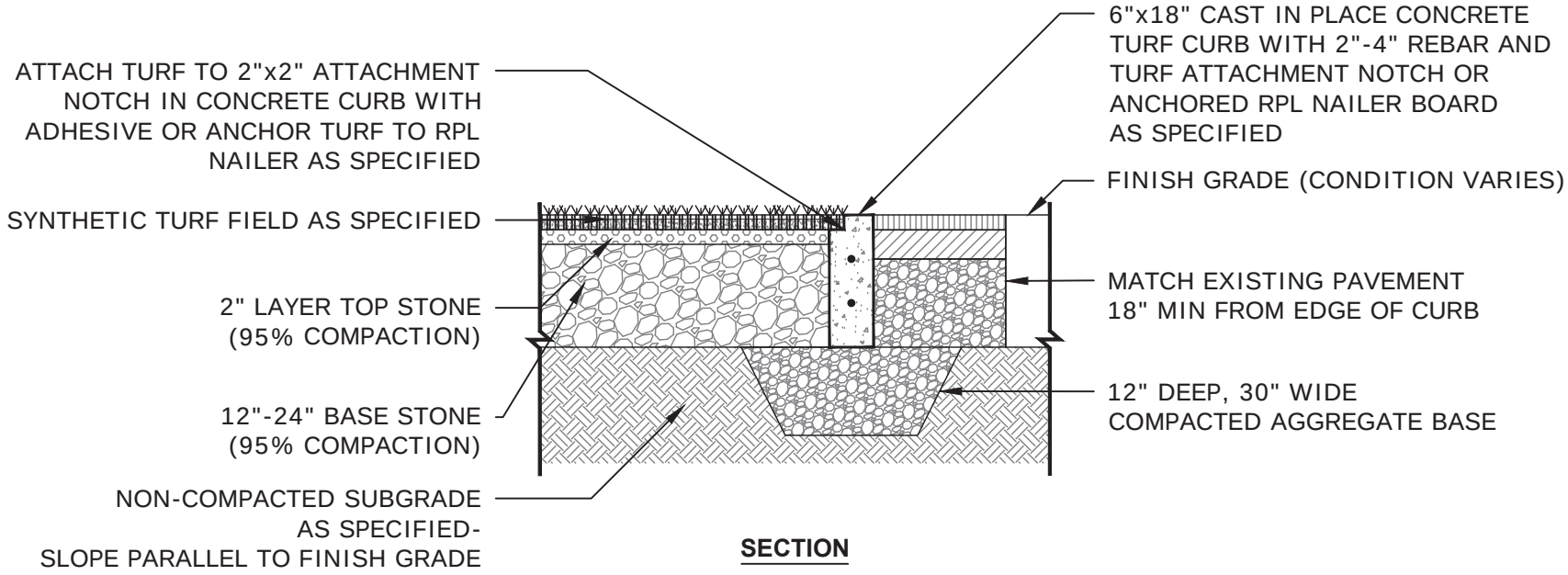
General Design Standards and Guidelines

Figure No. 3
Rain Garden / Vegetated Bioretention Area
MARCH 2018

NOTES:

1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER SPECIFICATIONS.
2. PERFORATED HDPE UNDERDRAIN TO BE INCORPORATED AS REQUIRED.



SECTION

SYNTHETIC TURF FIELD AND CONCRETE TURF CURB

DETAIL	4
1/2"=1'-0"	-

1/2" = 1'– 0"

1 0 1 2

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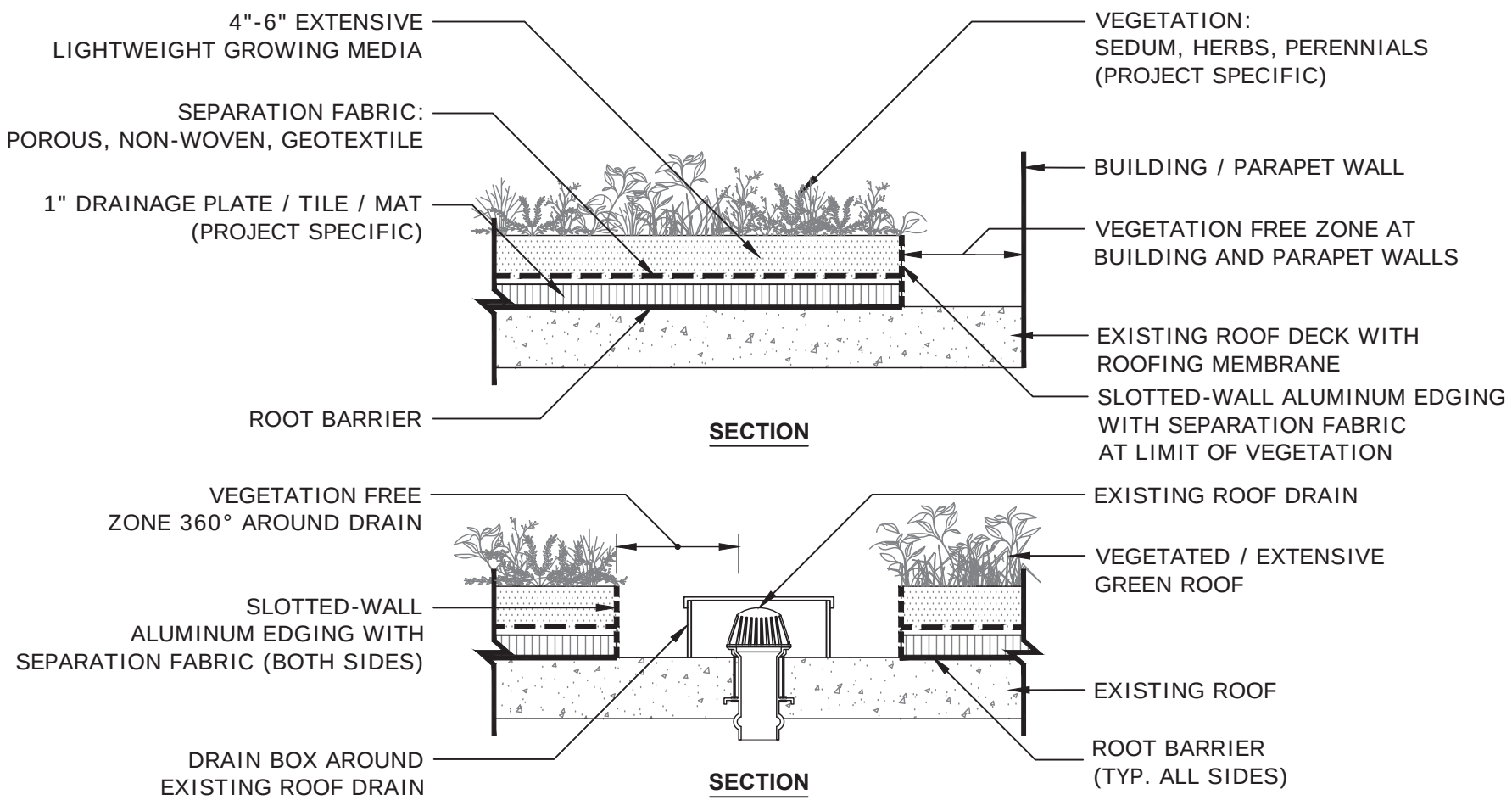
Figure No.4
Synthetic Turf Field and Concrete Turf Curb
MARCH 2018



EXTENSIVE GREEN ROOF

DETAIL	5
3/4"=1'-0"	-

3/4" = 1'– 0"

1 0 1 2

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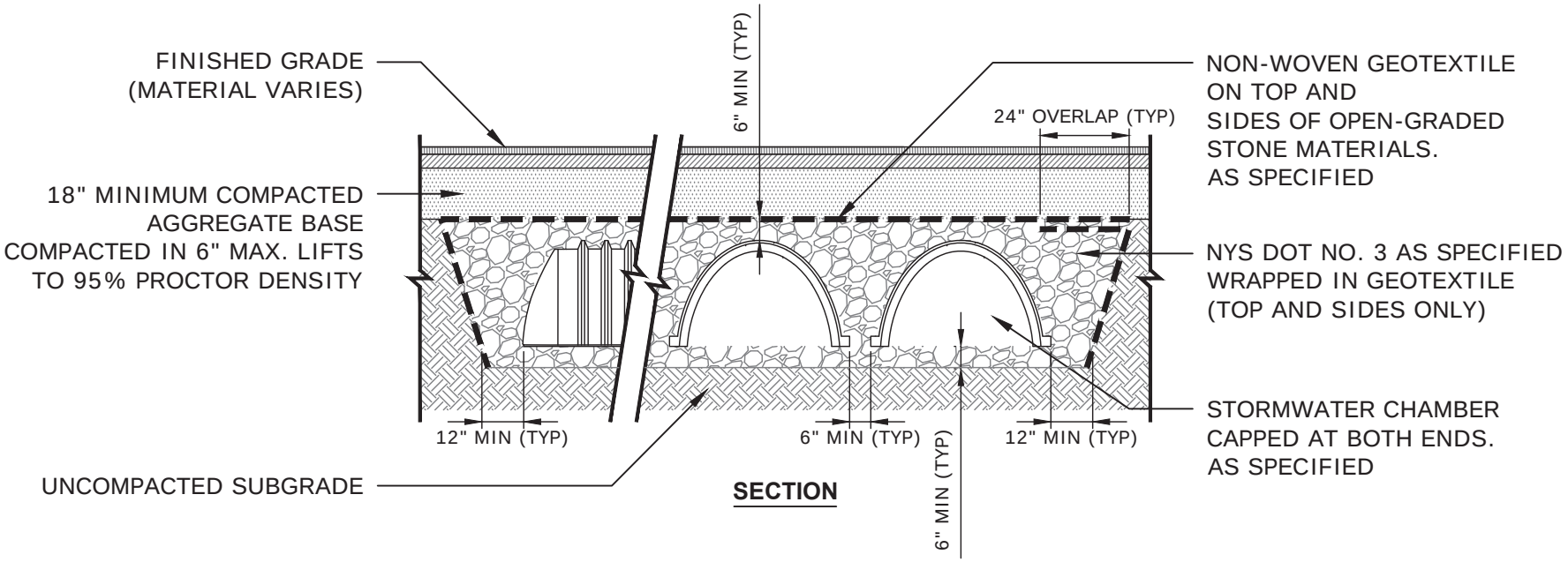
General Design Standards and Guidelines

Figure No.5
Extensive Green Roof
MARCH 2018

NOTE:

1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER SPECIFICATIONS.



SUBSURFACE RETENTION CHAMBERS

DETAIL	6
1/4"=1'-0"	-

1/4" = 1'- 0"

2 1 0 2 4

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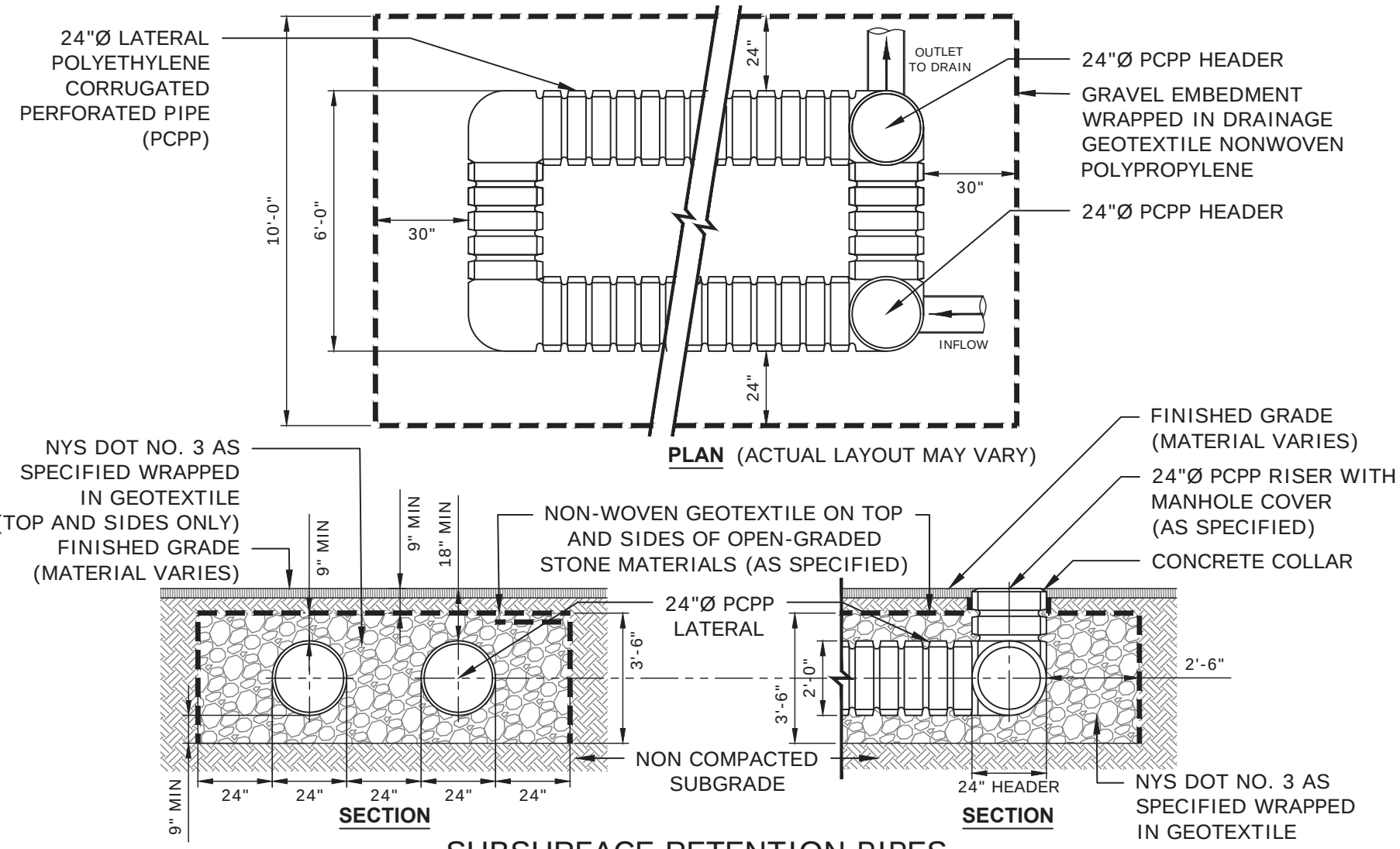
General Design Standards and Guidelines

Figure No. 6
Subsurface Retention Chambers
MARCH 2018



SUBSURFACE RETENTION PIPES

DETAIL	7
1/4"=1'-0"	-

1/4" = 1'- 0"

2 1 0 2 4

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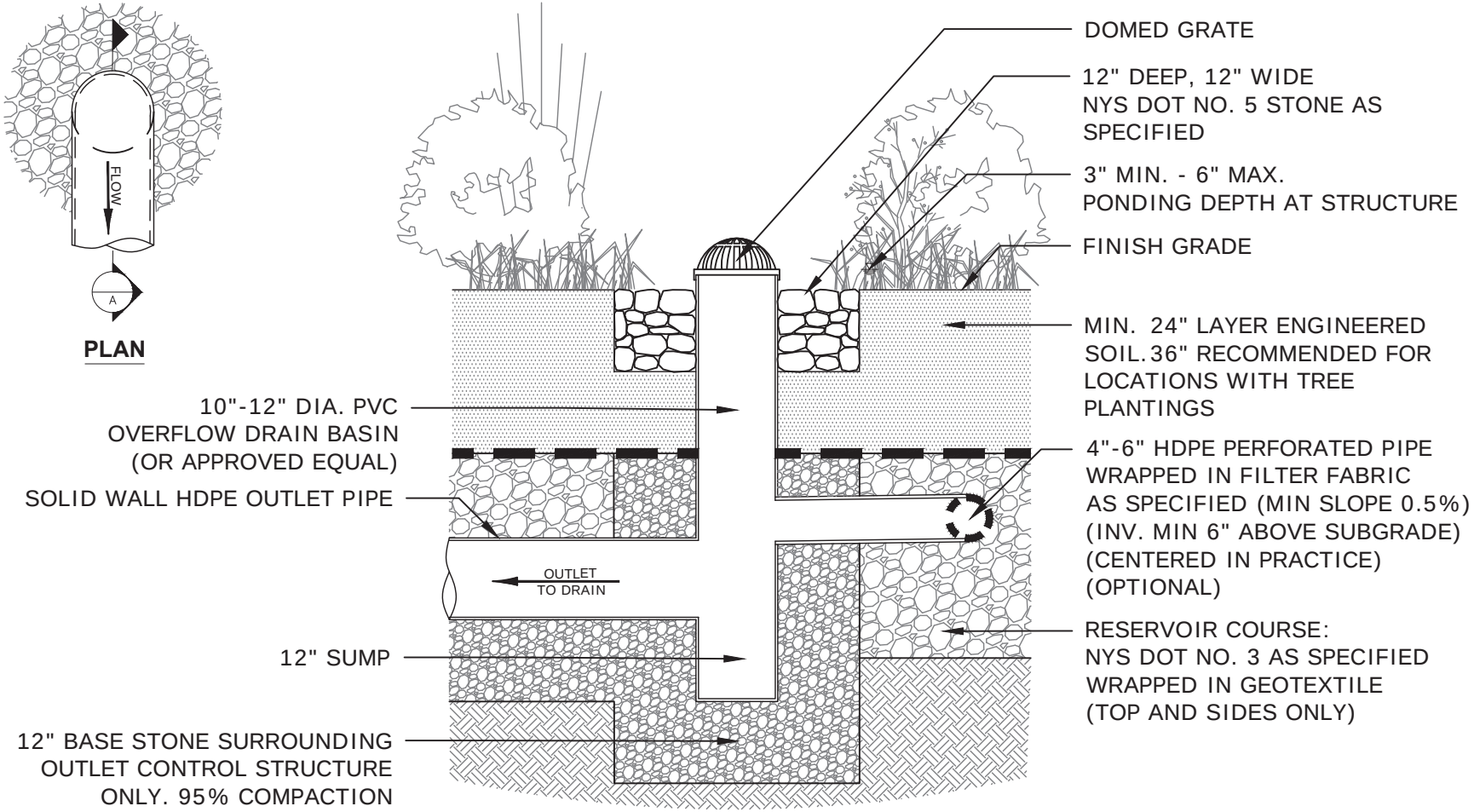
General Design Standards and Guidelines

Figure No. 7
Subsurface Retention Pipes
MARCH 2018

PLAN



SECTION A

VEGETATED BIORETENTION OVERFLOW STRUCTURE

DETAIL 8
1/2"=1'-0"

1/2" = 1'- 0"
1 0 1 2

NYC Environmental Protection

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General Design Standards and Guidelines

Figure No.8
Overflow Structure
MARCH 2018