TOWN OF HARVARD
PLANNING BOARD AGENDA
MONDAY, JANUARY 22, 2024 @ 7:00PM Revised

Pursuant to Chapter 2 of the Acts of 2023, An Act Making Appropriations for the Fiscal Year 2023 to Provide for Supplementing Certain Existing Appropriations and for Certain Other Activities and Projects, and signed into law on March 29, 2023, this meeting will be conducted via remote participation. Interested individuals can listen in and participate by phone and/or online by following the link and phone number below.

UpperTH ProWebinar is inviting you to a scheduled Zoom meeting.
Topic: Planning Board
Time: Jan 22, 2024 07:00 PM Eastern Time (US and Canada)
Join Zoom Meeting
https://us02web.zoom.us/j/87404225517?pwd=NHVyUW9wNTUyeC9DaklpaVlTUTdIdz09

Meeting ID: 874 0422 5517
Passcode: 906364
One tap mobile
+13126266799,,87404225517# US (Chicago)
+16469313860,,87404225517# US
Dial by your location
• +1 312 626 6799 US (Chicago)
• +1 646 931 3860 US
• +1 929 436 2866 US (New York)
• +1 301 715 8592 US (Washington DC)
Meeting ID: 874 0422 5517
Find your local number: https://us02web.zoom.us/u/kbTIVSFzhP

Public Comment

Old Business: a) Proposed Town Center Overlay District and Town Center Action Plan
b) 2016 Master Plan progress report
c) 2026 Master Planning steering committee & funding request
d) Ayer Road Vision update

New Business: *a) Discussion and vote to submit proposal to Montachusett Regional Planning Commission for Direct Local Technical Assistance for MBTA 3A Communities Technical Assistance*.

Public Hearings:

7:15pm **Continuation of Public Hearing 184 Ayer Road** Request for approval of Site Plan Review with a Special Permit at 184 Ayer Road by CS Bailey Landscape, Inc. or other relief as appropriate under M.G.L Chapter 40A, and the "Code of the Town of Harvard" as amended, in the Protective Bylaw Chapter 125-38 and 125-13(T) and Erosion Control Major permit §125-58E

7:45pm **Public Hearing pursuant to Massachusetts General Laws Chapter 40A, Section 3A,** to consider and receive comments from interested parties concerning proposed addition to Chapter 125 of the Code of the Town of Harvard the Protective Bylaw for a Multi-family overlay district. Potential updates to Draft Bylaw MBTA-3A Multi-family overlay district.

Standard Business: a) Review Metrics - Financials
b) Board Member Reports
- Representatives & Liaisons Update
- Community Matters

The listing of matters are those reasonably anticipated by the Chair which may be discussed at the meeting. Not all items listed may in fact be discussed and other items not listed may be brought up for discussion to the extent permitted by law, also.

c) Master Planning for 2026
d) Approve Minutes: Dec. 4, 2023 & Dec. 18, 2023
e) Approve Invoices:

- UTILE invoice #10365 for $28,737.97 (Ayer Rd. Vision Plan)
- Beals + Thomas invoice #3241.05 for $1,400 (peer review)

NEXT SCHEDULED MEETINGS:
MONDAY, FEB. 5, 2024

AS

The listing of matters are those reasonably anticipated by the Chair which may be discussed at the meeting. Not all items listed may in fact be discussed and other items not listed may be brought up for discussion to the extent permitted by law, also.

DILLIS & ROY
CIVIL DESIGN GROUP
CIVIL ENGINEERS LAND SURVEYORS WETLAND CONSULTANTS

WWW.DILLISANDROY.COM
1 MAIN STREET, SUITE 1 • LUNENBURG, MA 01462
PH. 978.779.6091
F. 978.779.0260

January 4, 2024
6932

Town of Harvard Planning Board
13 Ayer Road
Harvard, MA 01451

RE: 184 Ayer Road
Stormwater Site Plan Review
Harvard, MA

Dear Members of the Board:

We have received review comment responses from Beals and Thomas regarding the above-mentioned project dated January 2, 2024. We have addressed all plan modifications in the latest revision of plans and have summarized the changes below. The review comments are *italicized* from Beals and Thomas with the responses from Dillis & Roy below them in **bold**.

STORMWATER REVIEW COMMENTS

1. *Standard 3 of the Handbook stipulates that development projects should promote groundwater recharge to the extent practicable. Due to the presence of on-site HSG D soils on the eastern portion of the Site, the Applicant indicates that recharge is not possible. However, the western portion of the site is comprised of HSG A soils which are ideal for infiltration and recharge. We request that the Applicant evaluate the inclusion of groundwater recharge, perhaps from the roof or portions of the reconfigured paved surface to the extent practicable to document compliance with Standard 3 of the Handbook.*

   D&R – Evidence provided by the on-site soil testing (Sheet C1.1) shows that the western portion of the site is underlain by a high groundwater table. ESHGW was observed at 24" which limits the ability to provide required offsets for infiltration, per Mass DEP Stormwater Manual. Additionally, the reconfigured impervious parking area results in a net reduction of impervious coverage within the delineated HSG-A area (per web soil survey).

   Pre-developed Impervious Area within HSG-A = 0.348 ac
   Post-developed Impervious Area within HSG-A = 0.281 ac

   As such, we believe the standard is being met for the existing developed portions of the site, in virtue of the fact that the impervious area is being reduced.

   The proposed Gravel pad area is substantially within the Class D soil area. Soil testing on the

site confirms this classification. Although we did not perform soil testing in the corner of the gravel pad that is mapped as Class A soils, site conditions do not suggest that there is a significant soil change in this area of the site.

2. *Standard 4 of the Handbook requires water quality and TSS removal standards. We acknowledge the treatment train provided for the paved surface which only represents approximately ½ of the disturbed area. The majority of the gravel storage area will runoff directly to the stormwater basin without any treatment. At a curve number of 96, this area is essentially being modeled and will act as impervious surface. We request that the Applicant reevaluate if any additional treatment can be added to mitigate the runoff from the expansive gravel surface.*
   D&R – The grading of the proposed stormwater management area & western edge of the gravel area has been revised. A 1-foot high berm has been graded along the western edge of gravel to divert the overland flow towards a proposed sediment forebay for treatment prior to entering the stormwater basin. The berm will prohibit any untreated runoff from entering the basin directly. An additional sediment forebay sizing calculation has been included within the attached revised Stormwater Report (Appendix F). The mentioned calculation for the new sediment forebay has been sized as if the gravel was being treated as an impervious surface to ensure sufficient volume.

3. *Standard 8 of the Handbook requires a construction period pollution plan. Disrupting more than 1 acre, the Project will also need to file an EPA NPDES Construction General Permit with a Stormwater Water Pollution Prevention Plan (SWPPP). The Applicant had not provided construction period controls; however, intends to use the SWPPP to satisfy this requirement. The Applicant has not provided a SWPPP but intends to do so prior to construction. As a potential condition of approval, we recommend that the Applicant submit a fully compliant SWPPP prior to construction for Board review. In the meantime, we request that the Applicant update the site plan submission to include details and provisions for catch basin silt sack protections and a stabilized construction exit.*
   D&R – Plan Sheet C4.0 has been revised to include the above-mentioned soil erosion & sedimentation control provisions. The applicant does not object to a condition requiring the submittal of the SWPPP once it is prepared.

4. *Standard 9 of the Handbook requires an Operation and Maintenance (O&M) plan. We acknowledge the O&M plan provided; and note that the referenced document does not include provisions to maintain the proposed on-site catch basin. We request that maintenance of this structure (inspection schedules, cleaning, etc.) be added to the O&M plan.*
   D&R – The Operation & Maintenance Manual has been revised to include inspection & maintenance procedures relative to the proposed on-site catch basin.

5. *Standard 10 of the Handbook requires an Illicit Discharge Statement be provided by the Applicant. An Illicit Discharge Statement has not been provided; however, the Applicant indicates one will be provided prior to construction. As a potential condition of approval, we recommend that the Applicant submit a fully compliant Illicit Discharge Statement prior to construction.*
   D&R – Acknowledged. The applicant does not object to accepting a condition requiring the submittal of the illicit discharge statement prior to construction.

6. *The design intent of the stormwater detention basin is unclear. During the 10-year storm event, the basin discharges from the emergency spillway, which is not typical. The detail for the stormwater basin indicates a top of berm elevation of 307.9; however, there are no spot elevations to reflect this condition and the berm width shown does not appear accommodate the desired grade change while maintaining a defined berm. As depicted on west side of the basin, during the 2-year storm event, the stormwater basin exhibits less than the 1-ft of freeboard recommended by the Handbook that should exist during the 100-year storm event. We request that the Applicant clarify the design intent for the stormwater basin and evaluate increasing the depth or volume to address the noted conditions during smaller storm events.*

   D&R – The grading of the stormwater basin has been revised to provide at-least 1-foot of freeboard during the 100-year storm event. The intent of this basin is to capture, treat & attenuate the runoff associated with the proposed gravel & impervious areas on-site. The proposed basin will control runoff from the development such that the corresponding peak flows leaving the site will be lower than pre-developed rates. The grading has been revised to provide a consistent berm width along the perimeter of the basin. The revisions to the plan and associated calculations show that the emergency spillway will no longer discharge during the 2 or 10-year storm but will activate during 25-year storm to maintain volume. In spite of this, peak runoff rates are being reduced offsite for all design storms.

7. *Test pits appear to have been conducted based on symbology used on the existing conditions plan. This information has not been provided with stormwater report. We request that all available soil and estimated seasonal high groundwater elevation information be provided for review.*

   D&R – Plan Sheet C1.1 has been revised to include test pit data.

8. *The long-term pollution prevention plan indicates that snow storage areas are depicted within the plan set. These areas do not appear to be included as indicated. We request that the Applicant clarify protocols for snow storage and removal.*
   D&R – Plan Sheet C2.0 has been revised to depict locations for snow storage on-site.

We trust this meets your needs at this time. If you have any questions or require any additional information, please contact the undersigned

Regards,
DILLIS & ROY
Civil Design Group, Inc.

Ryan Vickers, E.I.T.
Civil Engineer

Gregory S. Roy, P.E.
Vice-President

BEALS AND THOMAS

January 11, 2024

Frank O'Connor, Jr., Director of Planning
Town of Harvard Planning Board
13 Ayer Road
Harvard, Massachusetts 01451

Via: Email to FOConnor@harvard-ma.gov

Reference: Supplemental Peer Review -Stormwater Site Plan
184 Ayer Road
Harvard, Massachusetts
B+T Project No. 3241.05

Dear Mr. O'Connor:

Beals and Thomas, Inc. (B+T) is pleased to assist the Town of Harvard Planning Board (the Board) with its supplemental review of a Site Plan Application for the proposed redevelopment at 184 Ayer Road (the Site). We understand that CS Bailey Landscape, Inc. (the Applicant) proposes to redevelop the Site including the reconfiguration and restriping of the existing parking lot (the Project). The Project will also include the installation of a gravel pad and storage area, landscaping, and a stormwater management system.

B+T issued a letter to the Board dated January 2, 2024 which presented the findings of our review of the initial documentation submitted by the Applicant. As a result of our comments, the Applicant has submitted the following supplemental documentation, which served as the basis for our current review:

- *184 Ayer Road, Stormwater Site Plan Review, Harvard, MA*, dated January 2, 2024, prepared by Dillis & Roy Civil Design Group, Inc. (4 pages)
- *Proposed Commercial Site Plan, Harvard, MA, 184 Ayer Road,* dated October 24, 2023, revised through January 4, 2024, prepared by Dillis & Roy Civil Design Group, Inc. (5 sheets)
- *Stormwater Report for 184 Ayer Road in Harvard, Massachusetts,* dated October 24, 2023, revised through January 4, 2024, prepared by Dillis & Roy Civil Design Group, Inc. (77 pages)

At the request of the Board, our review services were limited to a review of the stormwater management system design. We have reviewed the documentation submitted by the Applicant with respect to the requirements of the Massachusetts Department of Environmental Protection (MassDEP) Stormwater Regulations and Handbook (the Handbook); applicable sections of the Tonw of Harvard Bylaws; and, particularly with respect to our recent comments dated January 2, 2024.

Review Format
To maintain clarity for the Administrative Record, we have included the comments from our initial comment letter dated January 2, 2024 followed by the Applicant's responses in *italicized* font, followed by our current comments in **bold** font to document the status of our original comment.

Stormwater Review Comments

1. Standard 3 of the Handbook stipulates that development projects should promote groundwater recharge to the extent practicable. Due to the presence of on-site HSG D soils on the eastern portion of the Site, the Applicant indicates that recharge is not possible. However, the western portion of the site is comprised of HSG A soils which are ideal for infiltration and recharge. We request that the Applicant evaluate the inclusion of groundwater recharge, perhaps from the roof or portions of the reconfigured paved surface to the extent practicable to document compliance with Standard 3 of the Handbook.

   Applicant's Response: Evidence provided by the on-site soil testing (Sheet C1.1) shows that the western portion of the site is underlain by a high groundwater table. ESHGW was observed at 24" which limits the ability to provide required offsets for infiltration, per Mass DEP Stormwater Manual. Additionally, the reconfigured impervious parking area results in a net reduction of impervious coverage within the delineated HSG-A area (per web soil survey).

   Pre-developed Impervious Area within HSG-A = 0.348 ac
   Post-developed Impervious Area within HSG-A = 0.281 ac

   As such, we believe the standard is being met for the existing developed portions of the site, in virtue of the fact that the impervious area is being reduced. The proposed Gravel pad area is substantially within the Class D soil area. Soil testing on the site confirms this classification. Although we did not perform soil testing in the corner of the gravel pad that is mapped as Class A soils, site conditions do not suggest that there is a significant soil change in this area of the site.

   B+T Response: We consider this comment adequately addressed. No further action required.

2. Standard 4 of the Handbook requires water quality and TSS removal standards. We acknowledge the treatment train provided for the paved surface which only represents approximately ½ of the disturbed area. The majority of the gravel storage area will runoff directly to the stormwater basin without any treatment. At a curve number of 96, this area is essentially being modeled and will act as impervious surface. We request that the Applicant reevaluate if any additional treatment can be added to mitigate the runoff from the expansive gravel surface.

   Applicant's Response: The grading of the proposed stormwater management area & western edge of the gravel area has been revised. A 1-foot high berm has been graded along the western edge of gravel to divert the overland flow towards a proposed sediment forebay for treatment prior to entering the stormwater basin. The berm will prohibit any untreated runoff from entering the basin directly. An additional sediment forebay sizing calculation has been included within the attached revised Stormwater Report (Appendix F). The mentioned calculation for the new sediment forebay has been sized as if the gravel was being treated as an impervious surface to ensure sufficient volume.

   B+T Response: We consider this comment adequately addressed. No further action required.

3. Standard 8 of the Handbook requires a construction period pollution plan. Disrupting more than 1 acre, the Project will also need to file an EPA NPDES Construction General Permit with a Stormwater Water Pollution Prevention Plan (SWPPP). The Applicant had not provided construction period controls; however, intends to use the SWPPP to satisfy this requirement. The Applicant has not provided a SWPPP but intends to do so prior to construction. As a potential condition of approval, we recommend that the Applicant submit a fully compliant SWPPP prior to construction for Board review. In the meantime, we request that the Applicant update the site plan submission to include details and provisions for catch basin silt sack protections and a stabilized construction exit.

   Applicant's Response: Plan Sheet C4.0 has been revised to include the above-mentioned soil erosion & sedimentation control provisions. The applicant does not object to a condition requiring the submittal of the SWPPP once it is prepared.

   B+T Response: We acknowledge the revisions provided to Sheet C4.0 and consider that portion of the comment adequately addressed. We reiterate the intent of our initial comment relative to the noted recommended condition of approval for consideration by the Board.

4. Standard 9 of the Handbook requires an Operation and Maintenance (O&M) plan. We acknowledge the O&M plan provided; and note that the referenced document does not include provisions to maintain the proposed on-site catch basin. We request that maintenance of this structure (inspection schedules, cleaning, etc.) be added to the O&M plan.

   Applicant's Response: The Operation & Maintenance Manual has been revised to include inspection & maintenance procedures relative to the proposed on-site catch basin.

   B+T Response: We consider this comment adequately addressed. No further action required.

5. Standard 10 of the Handbook requires an Illicit Discharge Statement be provided by the Applicant. An Illicit Discharge Statement has not been provided; however, the Applicant indicates one will be provided prior to construction. As a potential condition of approval, we recommend that the Applicant submit a fully compliant Illicit Discharge Statement prior to construction.

   Applicant's Response: Acknowledged. The applicant does not object to accepting a condition requiring the submittal of the illicit discharge statement prior to construction.

   B+T Response: We reiterate the intent of our initial comment relative to the noted recommended condition of approval for consideration by the Board.

6. The design intent of the stormwater detention basin is unclear. During the 10-year storm event, the basin discharges from the emergency spillway, which is not typical. The detail for the stormwater basin indicates a top of berm elevation of 307.9; however, there are no spot elevations to reflect this condition and the berm width shown does not appear accommodate the desired grade change while maintaining a defined berm. As depicted on west side of the basin, during the 2-year storm event, the stormwater basin exhibits less than the 1-ft of freeboard recommended by the Handbook that should exist during the 100-year storm event. We request that the Applicant clarify the design intent for the stormwater basin and evaluate increasing the depth or volume to address the noted conditions during smaller storm events.

Applicant's Response: The grading of the stormwater basin has been revised to provide at-least 1-foot of freeboard during the 100-year storm event. The intent of this basin is to capture, treat & attenuate the runoff associated with the proposed gravel & impervious areas on-site. The proposed basin will control runoff from the development such that the corresponding peak flows leaving the site will be lower than pre-developed rates. The grading has been revised to provide a consistent berm width along the perimeter of the basin. The revisions to the plan and associated calculations show that the emergency spillway will no longer discharge during the 2 or 10-year storm but will activate during 25-year storm to maintain volume. In spite of this, peak runoff rates are being reduced offsite for all design storms.

B+T Response: We consider this comment adequately addressed. No further action required.

7. Test pits appear to have been conducted based on symbology used on the existing conditions plan. This information has not been provided with stormwater report. We request that all available soil and estimated seasonal high groundwater elevation information be provided for review.

   Applicant's Response: Plan Sheet C1.1 has been revised to include test pit data.

   B+T Response: We consider this comment adequately addressed. No further action required.

8. The long-term pollution prevention plan indicates that snow storage areas are depicted within the plan set. These areas do not appear to be included as indicated. We request that the Applicant clarify protocols for snow storage and removal.

   Applicant's Response: Plan Sheet C2.0 has been revised to depict locations for snow storage on-site.

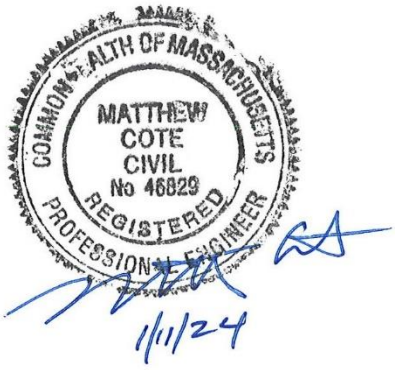
   B+T Response: We consider this comment adequately addressed. No further action required.

B+T is available to attend the public hearing scheduled for January 22, 2024, upon request, to present the results of our review and be available for discussion regarding the comments listed herein.

We thank you for the opportunity to assist the Town of Harvard with the review of this Project. Should you have any questions, please do not hesitate to contact our office.

Sincerely,

BEALS AND THOMAS, INC.



Matthew Cote PE, SITES AP, ENV SP
Senior Civil Engineer

MC/dmf/cmv/324105LT002

STORMWATER REPORT

FOR

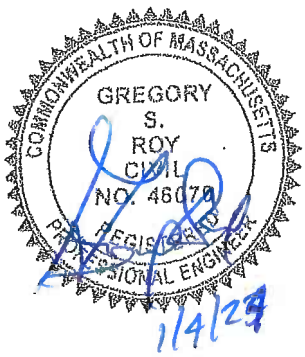
184 AYER ROAD

IN

HARVARD,
MASSACHUSETTS

PREPARED BY: DILLIS & ROY
CIVIL DESIGN GROUP, INC.
1 MAIN STREET, SUITE 1
LUNENBURG, MA 01462

PREPARED FOR: CS BAILEY LANDSCAPE, INC.
19 WHITTEMORE STREET
ARLINGTON, MA 02474



OCTOBER 24TH, 2023
REVISED: JANUARY 4TH, 2024
CDG PROJECT # 6932

DILLIS & ROY CIVIL DESIGN GROUP
CIVIL ENGINEERS LAND SURVEYORS WETLAND CONSULTANTS

TABLE OF CONTENTS

1.0 Project Narrative

1.1 Project Type

The proposed project includes the reconfiguration of the existing paved parking area, and the construction of a gravel pad for additional storage area. The scope of work also includes the removal & replacement of an existing brick walkway around the existing structure.

1.2 Purpose and Scope

This report has been prepared to comply with the requirements of the Stormwater Management Standards incorporated in the Massachusetts Wetlands Protection Act Regulations, 310 CMR 10.00. These standards are intended to promote increased groundwater recharge and prevent stormwater discharges from causing or contributing to the pollution of surface waters and ground waters of the Commonwealth. The standards aim to accomplish these goals by encouraging the greater use of low impact development (LID) techniques and improving the operation and maintenance of stormwater best management practices (BMP).

This report addresses compliance of the proposed development with each of the ten stormwater standards, it provides calculations to support the compliance information, and it provides a Long-Term Pollution Prevention Plan and an Operation and Maintenance Plan for the stormwater management system.

1.3 LID Measures

Care has been taken to lay out the proposed site in a manner that works with existing topography. BMPs, have been specified to manage the stormwater runoff. Stormwater from the proposed impervious surface locations is routed to a stormwater basin via the proposed drainage pipe system. The stormwater basin will reduce run off rates below pre-developed rates while providing water quality pre-treatment by sediment forebays.

1.4 Site Description

The subject property is located at 184 Ayer Road which is shown on assessors Map 8, as Parcel 41. The property is located on the eastern side of Ayer Road (Route 111), at the corner of Route 111 and the Route 2 west off ramp. The property has approximately 2.27 acres of land and contains an existing 2,574 SF structure. The parking areas to the North, East, and South of the building are paved with no identifiable striping. An existing sewage disposal system is located to the rear of the structure. The remaining undeveloped East side of the site is heavily wooded. The natural drainage pattern flows from West to East with no stormwater management devices in place. The stormwater runoff flows overland

from the existing infrastructure towards the western undeveloped portion of the site unattenuated. There are no wetlands or flood plain areas located on site.

The Natural Resource Conservation Service (NRCS) soil survey information indicates that the site is underlain by soil classified as belonging to Hydrologic Soil Group D soils, which is confirmed by soil testing on the site. The soil consists of Woodbridge fine sandy loam.

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

Please refer to Appendix C for further information regarding the soils on-site & existing test hole data.

1.5 Proposed Stormwater Management System

Runoff from the proposed development will be conveyed and treated through a combination of Best Management Practices (BMP's). The following is a brief discussion of each conveyance and treatment BMP proposed.

Deep Sump Hooded Catch Basin

One deep sump hooded catch basin is proposed to convey the runoff from the proposed paved area and roof to the stormwater basin. The catch basin will discharge to the proposed stormwater basin via conventional storm drain.

Stormwater Basin

The stormwater basin is designed to reduce the runoff rates. Due to high groundwater tables on site & HSG D Soils, infiltration cannot be accounted for in the hydrologic design. The basin will discharge via a 12" culvert with a low-flow restriction in the form of an orifice. An emergency spillway has been designed to allow for overflow during sever rainfall events. Riprap will also be installed at the outlet of the basin to control the overflow of stormwater into the adjacent areas and will reduce the potential for scouring. A sediment forebay designed at the entrance of the basin was included to decrease the velocity of flow and increase the settlement of heavy solids prior to the stormwater basin.

1.6 Methods of Analysis

The United States Department of Agriculture Natural Resources Conservation Service (NRCS) soil cover complex methods (TR-20) were employed to compute runoff quantities for the subject property. Watershed analysis demonstrates that natural drainage patterns drain towards Nashua Road (design point). One design point was modeled to analyze the total runoff from the site. HydroCAD 10.0 computer software was employed in this hydrologic analysis.

A comparison of pre- and post-development runoff quantities at the analysis point was performed in order to design a stormwater management system that will limit peak rates of runoff from the development to predevelopment levels for 24-hour rainfall events of 2-, 10-, 25- and 100-year return frequencies.

2.0 Stormwater Standards Compliance

2.1 Standard 1 – Untreated Discharge

The stormwater management system for the proposed development will not result in any new discharges of untreated stormwater to wetland resource areas. Stormwater management structures have been designed such that there is no erosion or scour to wetland resource areas or waters of the Commonwealth.

2.2 Standard 2 – Peak Rate Attenuation

Hydrologic calculations for existing and proposed site conditions are included in Appendices D and E respectively. Calculations for 24-hour rainfall events of 2-, 10-, 25- and 100-year return frequencies are provided. The "Northeast Regional Climate Center – Extreme Precipitation Tables (Cornell)" rainfall rates were used in the hydraulic model. The following table provides a summary of peak rates of runoff related to each of these storms for the design point through which all runoff from the subject property must flow. For all rainfall events considered, the proposed stormwater management system will control runoff from the development such that corresponding peak flows at the design point will be lower than pre-developed rates.

Table 1: Design Point – A (DP-A) Runoff Summary

	Pre-Developed (ft^3 / sec)	**Post-Developed (ft^3 / sec)**
Design Point "A"		
2-Year	1.59	1.54
10-Year	3.77	2.79
25-Year	5.68	4.25
100-Year	9.83	9.43

2.3 Standard 3 – Recharge

The NRCS soil survey information indicates that the site is underlain by soils classified as belonging to Hydrologic Soil Groups D. The soil testing on-site confirms a high groundwater water table. Due to high groundwater tables on site, infiltration cannot be accounted for in the hydrologic design. Please refer to Appendix C for further information regarding the soils on-site & test hole data.

2.4 Standard 4 – Water Quality

TSS removal calculations have been provided (Appendix F) showing that the proposed TSS removal efficiency from the impervious areas will be >80% using the stormwater basin with the sediment forebay for pretreatment.

2.5 Standard 5 – Land Uses with Higher Pollutant Loads

The current and proposed uses of the subject site do not constitute land use with higher potential pollutant load, thus Standard 5 does not apply to the proposed project.

2.6 Standard 6 –Critical Areas

The proposed project does not contain a stormwater discharge within or near to any of the areas as defined as “Critical Areas” at 314 CMR 9.02 and 310 CMR 10.04.

2.7 Standard 7 – Redevelopment

The proposed project does not meet the standards to be considered a Redevelopment project.

2.8 Standard 8 – Construction Period Pollution Prevention Plan and Erosion and Sediment Control

The project is subject to the filing of an Environmental Protection Agency Notice of Intent (EPA NOI), and the work will be pursuant to the NPDES Construction General Permit for disturbance to an area greater than 1 acre, a copy of the Stormwater Pollution Prevention Plan (SWPPP) will be submitted prior to construction. The SWPPP will satisfy the Standard 8 Construction Period Pollution prevention.

2.9 Standard 9 – Operation and Maintenance Plan

Refer to Appendix G for a complete copy of the Stormwater Operation and Maintenance Plan.

2.10 Standard 10 – Prohibition of Illicit Discharge

An illicit discharge statement will be prepared after approvals are received and prior to construction.

3.0 Appendices

Appendix A - Locus & Flood Map

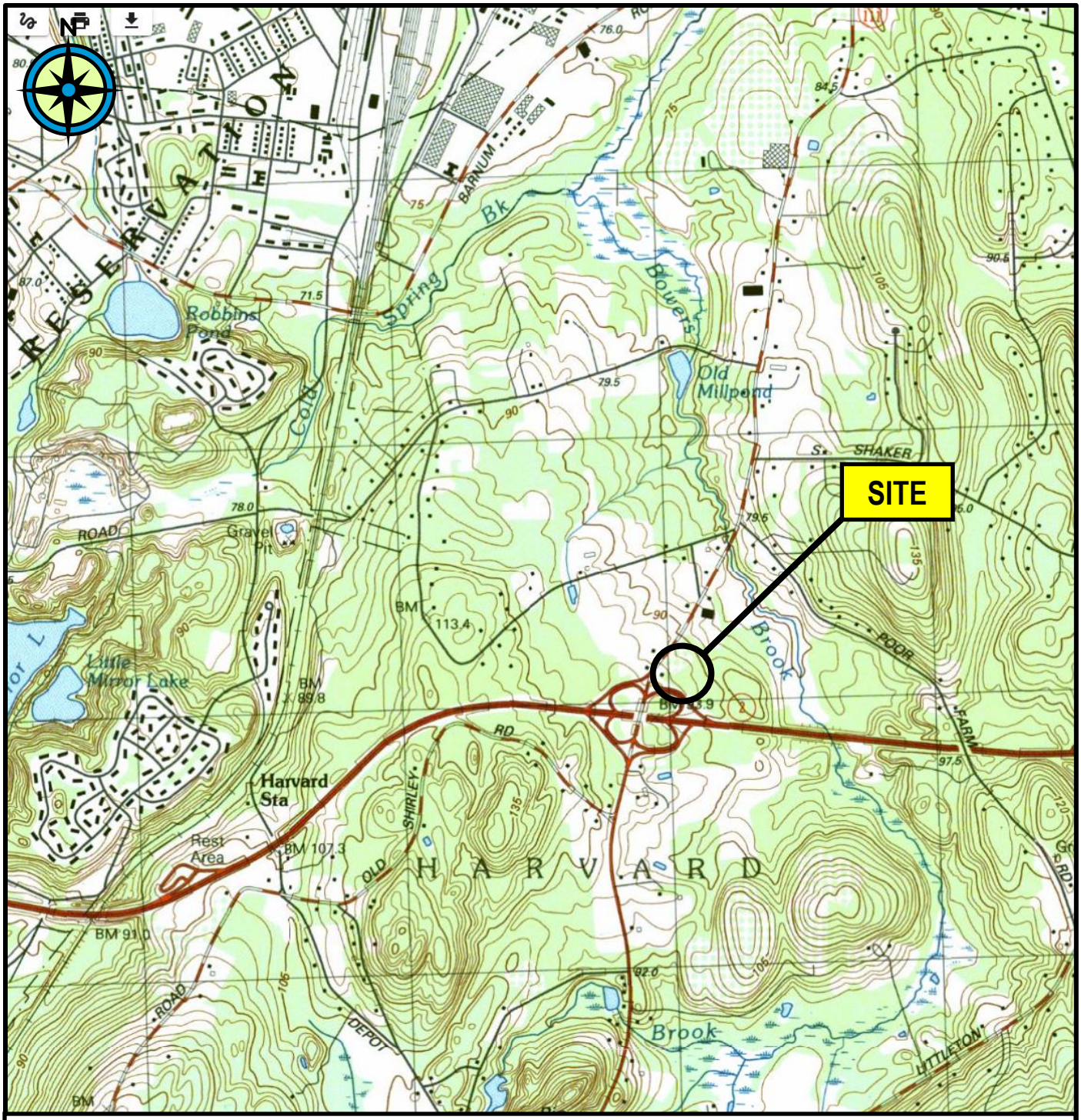


FIGURE 1 – Locus Map

1' = 1000'

Prepared By: Dillis & Roy Civil Design Group, Inc.
1 Main Street, Suite 1
Lunenburg, MA 01462

Prepared For: CS Bailey Landscape, Inc.
19 Whittemore Street
Arlington, MA 02474

References: Massachusetts Topographic Map

DILLIS & ROY CIVIL DESIGN GROUP
CIVIL ENGINEERS LAND SURVEYORS WETLAND CONSULTANTS

CDG #: 6932

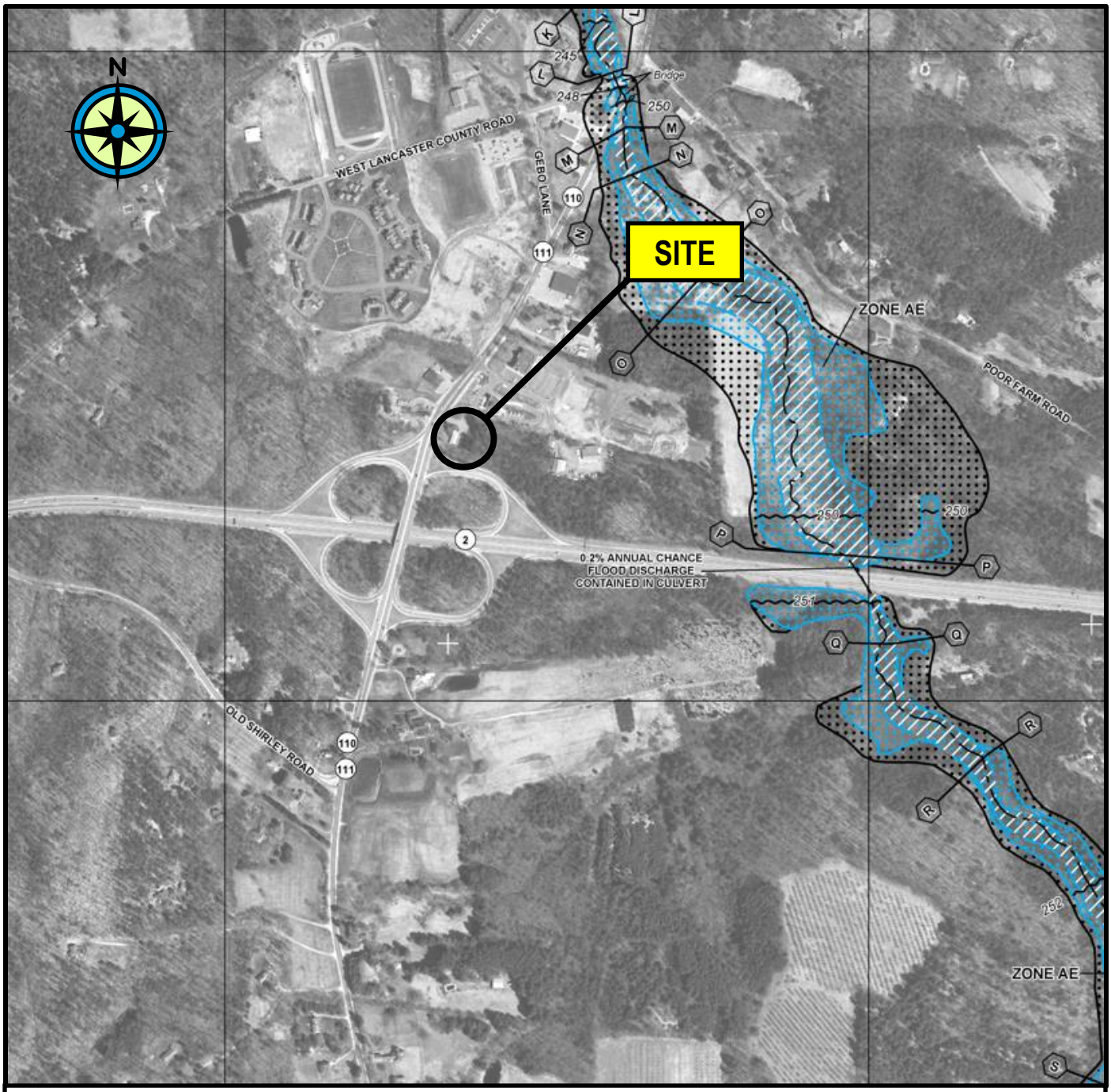


FIGURE 2 – Floodplain Map

1' = 1000'

Prepared By: Dillis & Roy Civil Design Group, Inc.
1 Main Street, Suite 1
Lunenburg, MA 01462

Prepared For: CS Bailey Landscape, Inc.
19 Whittemore Street
Arlington, MA 02474

References: FEMA Floodplain Map
Panel : 25027C0314E
Date : 07/04/2011

DILLIS & ROY
CIVIL DESIGN GROUP

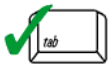
Appendix B - Checklist for Stormwater Report

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

A. Introduction

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A Stormwater Report must be submitted with the Notice of Intent permit application to document compliance with the Stormwater Management Standards. The following checklist is NOT a substitute for the Stormwater Report (which should provide more substantive and detailed information) but is offered here as a tool to help the applicant organize their Stormwater Management documentation for their Report and for the reviewer to assess this information in a consistent format. As noted in the Checklist, the Stormwater Report must contain the engineering computations and supporting information set forth in Volume 3 of the Massachusetts Stormwater Handbook. The Stormwater Report must be prepared and certified by a Registered Professional Engineer (RPE) licensed in the Commonwealth.

The Stormwater Report must include:

- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (see page 2) that certifies that the Stormwater Report contains all required submittals.[1] This Checklist is to be used as the cover for the completed Stormwater Report.
- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8[2]
- Operation and Maintenance Plan required by Standard 9

In addition to all plans and supporting information, the Stormwater Report must include a brief narrative describing stormwater management practices, including environmentally sensitive site design and LID techniques, along with a diagram depicting runoff through the proposed BMP treatment train. Plans are required to show existing and proposed conditions, identify all wetland resource areas, NRCS soil types, critical areas, Land Uses with Higher Potential Pollutant Loads (LUHPPL), and any areas on the site where infiltration rate is greater than 2.4 inches per hour. The Plans shall identify the drainage areas for both existing and proposed conditions at a scale that enables verification of supporting calculations.

As noted in the Checklist, the Stormwater Management Report shall document compliance with each of the Stormwater Management Standards as provided in the Massachusetts Stormwater Handbook. The soils evaluation and calculations shall be done using the methodologies set forth in Volume 3 of the Massachusetts Stormwater Handbook.

To ensure that the Stormwater Report is complete, applicants are required to fill in the Stormwater Report Checklist by checking the box to indicate that the specified information has been included in the Stormwater Report. If any of the information specified in the checklist has not been submitted, the applicant must provide an explanation. The completed Stormwater Report Checklist and Certification must be submitted with the Stormwater Report.

[1] The Stormwater Report may also include the Illicit Discharge Compliance Statement required by Standard 10. If not included in the Stormwater Report, the Illicit Discharge Compliance Statement must be submitted prior to the discharge of stormwater runoff to the post-construction best management practices.

[2] For some complex projects, it may not be possible to include the Construction Period Erosion and Sedimentation Control Plan in the Stormwater Report. In that event, the issuing authority has the discretion to issue an Order of Conditions that approves the project and includes a condition requiring the proponent to submit the Construction Period Erosion and Sedimentation Control Plan before commencing any land disturbance activity on the site.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

B. Stormwater Checklist and Certification

The following checklist is intended to serve as a guide for applicants as to the elements that ordinarily need to be addressed in a complete Stormwater Report. The checklist is also intended to provide conservation commissions and other reviewing authorities with a summary of the components necessary for a comprehensive Stormwater Report that addresses the ten Stormwater Standards.

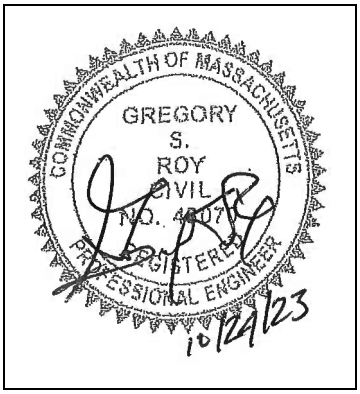
Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the item is not applicable (N.A.) and provide the reasons for that determination.

A complete checklist must include the Certification set forth below signed by the Registered Professional Engineer who prepared the Stormwater Report.

Registered Professional Engineer's Certification

I have reviewed the Stormwater Report, including the soil evaluation, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan (if included), the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement (if included) and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature



Signature and Date

Checklist

Project Type: Is the application for new development, redevelopment, or a mix of new and redevelopment?

☒ New development

☐ Redevelopment

☐ Mix of New Development and Redevelopment

Checklist for Stormwater Report

Checklist (continued)

LID Measures: Stormwater Standards require LID measures to be considered. Document what environmentally sensitive design and LID Techniques were considered during the planning and design of the project:

- ☒ No disturbance to any Wetland Resource Areas
- ☐ Site Design Practices (e.g. clustered development, reduced frontage setbacks)
- ☐ Reduced Impervious Area (Redevelopment Only)
- ☒ Minimizing disturbance to existing trees and shrubs
- ☐ LID Site Design Credit Requested:
  - ☐ Credit 1
  - ☐ Credit 2
  - ☐ Credit 3
- ☐ Use of “country drainage” versus curb and gutter conveyance and pipe
- ☐ Bioretention Cells (includes Rain Gardens)
- ☐ Constructed Stormwater Wetlands (includes Gravel Wetlands designs)
- ☐ Treebox Filter
- ☐ Water Quality Swale
- ☐ Grass Channel
- ☐ Green Roof
- ☐ Other (describe): _____

Standard 1: No New Untreated Discharges

- ☒ No new untreated discharges
- ☐ Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth
- ☐ Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.

Checklist for Stormwater Report

Checklist (continued)

Standard 2: Peak Rate Attenuation

☐ Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.

☐ Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.

☒ Calculations provided to show that post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm.

Standard 3: Recharge

☒ Soil Analysis provided.

☒ Required Recharge Volume calculation provided.

☐ Required Recharge volume reduced through use of the LID site Design Credits.

☒ Sizing the infiltration, BMPs is based on the following method: Check the method used.

☐ Static ☒ Simple Dynamic ☐ Dynamic Field[1]

☐ Runoff from all impervious areas at the site discharging to the infiltration BMP.

☒ Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.

☐ Recharge BMPs have been sized to infiltrate the Required Recharge Volume.

☒ Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:

- ☒ Site is comprised solely of C and D soils and/or bedrock at the land surface
- ☐ M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
- ☐ Solid Waste Landfill pursuant to 310 CMR 19.000
- ☐ Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.

☐ Calculations showing that the infiltration BMPs will drain in 72 hours are provided.

☐ Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

[1] 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.

Checklist for Stormwater Report

Checklist (continued)

Standard 3: Recharge (continued)

☒ The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.

☒ Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

Standard 4: Water Quality

The Long-Term Pollution Prevention Plan typically includes the following:

- Good housekeeping practices;
- Provisions for storing materials and waste products inside or under cover;
- Vehicle washing controls;
- Requirements for routine inspections and maintenance of stormwater BMPs;
- Spill prevention and response plans;
- Provisions for maintenance of lawns, gardens, and other landscaped areas;
- Requirements for storage and use of fertilizers, herbicides, and pesticides;
- Pet waste management provisions;
- Provisions for operation and management of septic systems;
- Provisions for solid waste management;
- Snow disposal and plowing plans relative to Wetland Resource Areas;
- Winter Road Salt and/or Sand Use and Storage restrictions;
- Street sweeping schedules;
- Provisions for prevention of illicit discharges to the stormwater management system;
- Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
- Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
- List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.

☒ A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent.

☐ Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:

- ☐ is within the Zone II or Interim Wellhead Protection Area
- ☐ is near or to other critical areas
- ☐ is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
- ☐ involves runoff from land uses with higher potential pollutant loads.

☐ The Required Water Quality Volume is reduced through use of the LID site Design Credits.

☒ Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.

Checklist for Stormwater Report

Checklist (continued)

Standard 4: Water Quality (continued)

☒ The BMP is sized (and calculations provided) based on:

- ☒ The ½" or 1" Water Quality Volume or
- ☐ The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.

☐ The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.

☐ A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

Standard 5: Land Uses With Higher Potential Pollutant Loads (LUHPPLs)

☐ The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.

☐ The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted ***prior to*** the discharge of stormwater to the post-construction stormwater BMPs.

☐ The NPDES Multi-Sector General Permit does ***not*** cover the land use.

☐ LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.

☐ All exposure has been eliminated.

☐ All exposure has ***not*** been eliminated and all BMPs selected are on MassDEP LUHPPL list.

☐ The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

Standard 6: Critical Areas

☐ The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.

☐ Critical areas and BMPs are identified in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

Standard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable

☐ The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:

- ☐ Limited Project
- ☐ Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.
- ☐ Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area
- ☐ Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
- ☐ Bike Path and/or Foot Path
- ☐ Redevelopment Project
- ☐ Redevelopment portion of mix of new and redevelopment.

☐ Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.

☐ The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan must include the following information:

- Narrative;
- Construction Period Operation and Maintenance Plan;
- Names of Persons or Entity Responsible for Plan Compliance;
- Construction Period Pollution Prevention Measures;
- Erosion and Sedimentation Control Plan Drawings;
- Detail drawings and specifications for erosion control BMPs, including sizing calculations;
- Vegetation Planning;
- Site Development Plan;
- Construction Sequencing Plan;
- Sequencing of Erosion and Sedimentation Controls;
- Operation and Maintenance of Erosion and Sedimentation Controls;
- Inspection Schedule;
- Maintenance Schedule;
- Inspection and Maintenance Log Form.

☐ A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control (continued)

☐ The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has ***not*** been included in the Stormwater Report but will be submitted ***before*** land disturbance begins.

☐ The project is ***not*** covered by a NPDES Construction General Permit.

☐ The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.

☒ The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

Standard 9: Operation and Maintenance Plan

☒ The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:

- ☒ Name of the stormwater management system owners;
- ☒ Party responsible for operation and maintenance;
- ☒ Schedule for implementation of routine and non-routine maintenance tasks;
- ☒ Plan showing the location of all stormwater BMPs maintenance access areas;
- ☐ Description and delineation of public safety features;
- ☐ Estimated operation and maintenance budget; and
- ☐ Operation and Maintenance Log Form.

☐ The responsible party is ***not*** the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:

- ☐ A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
- ☐ A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.

Standard 10: Prohibition of Illicit Discharges

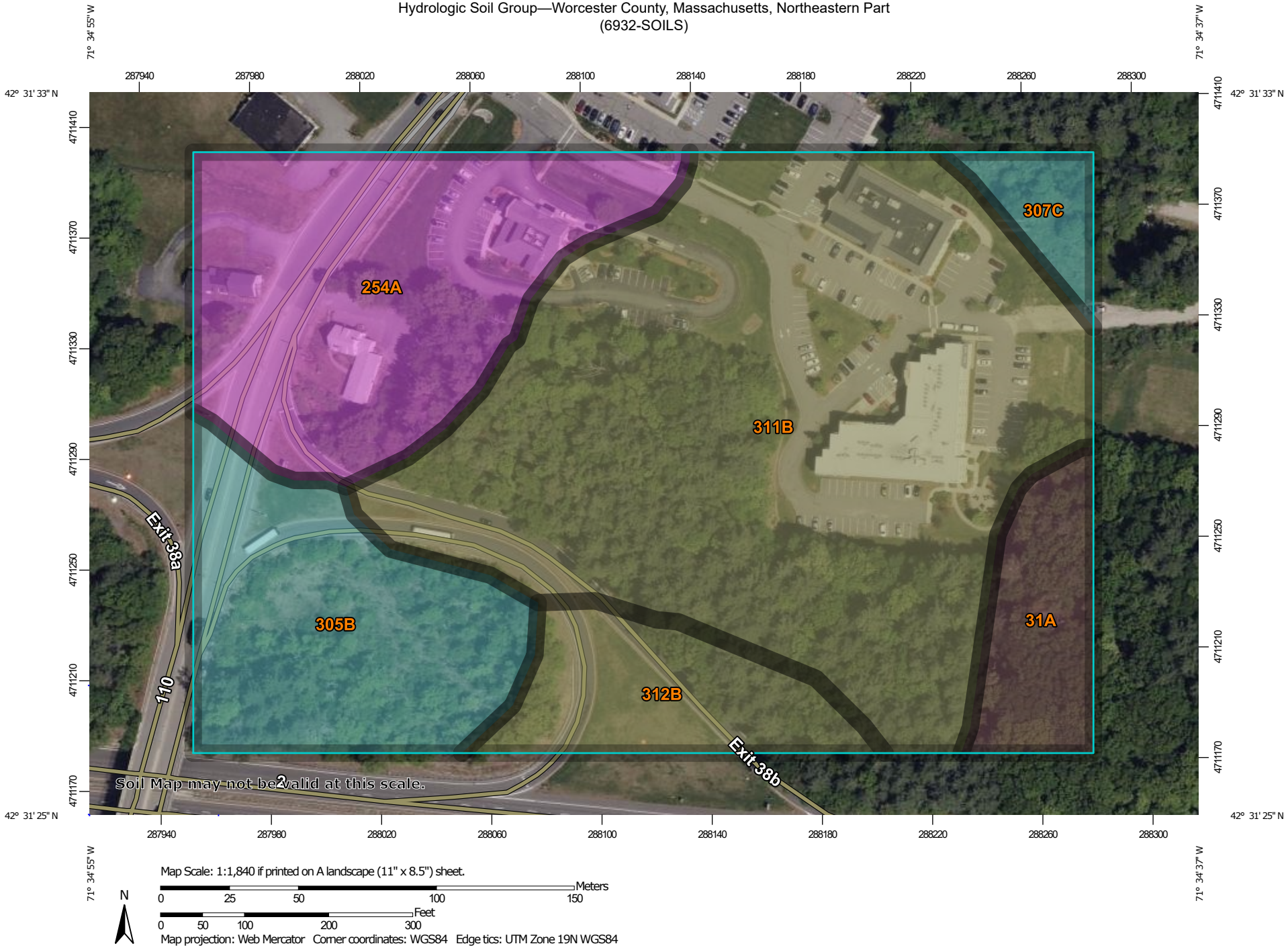
☐ The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;

☐ An Illicit Discharge Compliance Statement is attached;

☒ NO Illicit Discharge Compliance Statement is attached but will be submitted ***prior to*** the discharge of any stormwater to post-construction BMPs.

Appendix C - Soils Data

Hydrologic Soil Group—Worcester County, Massachusetts, Northeastern Part
(6932-SOILS)



Map Scale: 1:1,840 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 25 50 100 150

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

- Streams and Canals

Transportation

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

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

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

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

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

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

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

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

Soil Survey Area: Worcester County, Massachusetts, Northeastern Part
Survey Area Data: Version 18, Sep 10, 2023

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

Date(s) aerial images were photographed: May 22, 2022—Jun 5, 2022

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
31A	Walpole sandy loam, 0 to 3 percent slopes	B/D	1.0	5.6%
254A	Merrimac fine sandy loam, 0 to 3 percent slopes	A	3.6	20.3%
305B	Paxton fine sandy loam, 3 to 8 percent slopes	C	2.6	14.5%
307C	Paxton fine sandy loam, 8 to 15 percent slopes, extremely stony	C	0.4	2.4%
311B	Woodbridge fine sandy loam, 0 to 8 percent slopes, very stony	C/D	8.8	49.7%
312B	Woodbridge fine sandy loam, 0 to 8 percent slopes, extremely stony	C/D	1.3	7.5%
Totals for Area of Interest			**17.6**	**100.0%**

Description

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

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

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

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

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

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

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

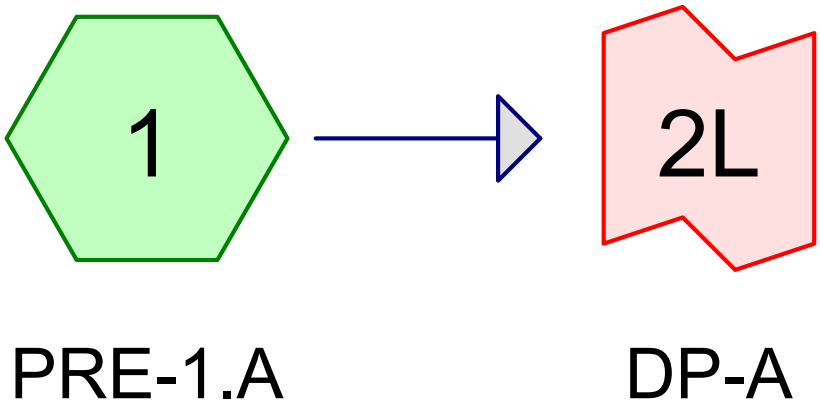
Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Appendix D - Existing Hydrologic Calculations



Subcat Reach Pond Link

Routing Diagram for 6932-PRE
Prepared by {enter your company name here}

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1: PRE-1.A Runoff Area=99,346 sf 15.28% Impervious Runoff Depth=0.85"
Flow Length=595' Tc=14.0 min CN=72 Runoff=1.59 cfs 0.162 af

Link 2L: DP-A Inflow=1.59 cfs 0.162 af
Primary=1.59 cfs 0.162 af

Total Runoff Area = 2.281 ac Runoff Volume = 0.162 af Average Runoff Depth = 0.85"
84.72% Pervious = 1.932 ac 15.28% Impervious = 0.348 ac

Summary for Subcatchment 1: PRE-1.A

Runoff = 1.59 cfs @ 12.22 hrs, Volume= 0.162 af, Depth= 0.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.07"

Area (sf)	CN	Description
12,512	98	Paved parking, HSG A
2,668	98	Roofs, HSG A
14,212	30	Woods, Good, HSG A
4,379	39	>75% Grass cover, Good, HSG A
65,575	77	Woods, Good, HSG D
99,346	72	Weighted Average
84,166		84.72% Pervious Area
15,180		15.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	50	0.0300	0.19		**Sheet Flow,** Range n= 0.130 P2= 3.07"
0.5	72	0.0167	2.62		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
9.1	473	0.0300	0.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.0	595	Total			

Summary for Link 2L: DP-A

Inflow Area = 2.281 ac, 15.28% Impervious, Inflow Depth = 0.85" for 2-yr event
Inflow = 1.59 cfs @ 12.22 hrs, Volume= 0.162 af
Primary = 1.59 cfs @ 12.22 hrs, Volume= 0.162 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1: PRE-1.A Runoff Area=99,346 sf 15.28% Impervious Runoff Depth=1.86"
Flow Length=595' Tc=14.0 min CN=72 Runoff=3.77 cfs 0.354 af

Link 2L: DP-A Inflow=3.77 cfs 0.354 af
Primary=3.77 cfs 0.354 af

Total Runoff Area = 2.281 ac Runoff Volume = 0.354 af Average Runoff Depth = 1.86"
84.72% Pervious = 1.932 ac 15.28% Impervious = 0.348 ac

Summary for Subcatchment 1: PRE-1.A

Runoff = 3.77 cfs @ 12.20 hrs, Volume= 0.354 af, Depth= 1.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.56"

Area (sf)	CN	Description
12,512	98	Paved parking, HSG A
2,668	98	Roofs, HSG A
14,212	30	Woods, Good, HSG A
4,379	39	>75% Grass cover, Good, HSG A
65,575	77	Woods, Good, HSG D
99,346	72	Weighted Average
84,166		84.72% Pervious Area
15,180		15.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	50	0.0300	0.19		**Sheet Flow,** Range n= 0.130 P2= 3.07"
0.5	72	0.0167	2.62		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
9.1	473	0.0300	0.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.0	595	Total			

Summary for Link 2L: DP-A

Inflow Area = 2.281 ac, 15.28% Impervious, Inflow Depth = 1.86" for 10-yr event
Inflow = 3.77 cfs @ 12.20 hrs, Volume= 0.354 af
Primary = 3.77 cfs @ 12.20 hrs, Volume= 0.354 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1: PRE-1.A Runoff Area=99,346 sf 15.28% Impervious Runoff Depth=2.77"
Flow Length=595' Tc=14.0 min CN=72 Runoff=5.68 cfs 0.526 af

Link 2L: DP-A Inflow=5.68 cfs 0.526 af
Primary=5.68 cfs 0.526 af

Total Runoff Area = 2.281 ac Runoff Volume = 0.526 af Average Runoff Depth = 2.77"
84.72% Pervious = 1.932 ac 15.28% Impervious = 0.348 ac

Summary for Subcatchment 1: PRE-1.A

Runoff = 5.68 cfs @ 12.20 hrs, Volume= 0.526 af, Depth= 2.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.72"

Area (sf)	CN	Description
12,512	98	Paved parking, HSG A
2,668	98	Roofs, HSG A
14,212	30	Woods, Good, HSG A
4,379	39	>75% Grass cover, Good, HSG A
65,575	77	Woods, Good, HSG D
99,346	72	Weighted Average
84,166		84.72% Pervious Area
15,180		15.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	50	0.0300	0.19		**Sheet Flow,** Range n= 0.130 P2= 3.07"
0.5	72	0.0167	2.62		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
9.1	473	0.0300	0.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.0	595	Total			

Summary for Link 2L: DP-A

Inflow Area = 2.281 ac, 15.28% Impervious, Inflow Depth = 2.77" for 25-yr event
Inflow = 5.68 cfs @ 12.20 hrs, Volume= 0.526 af
Primary = 5.68 cfs @ 12.20 hrs, Volume= 0.526 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1: PRE-1.A Runoff Area=99,346 sf 15.28% Impervious Runoff Depth=4.76"
Flow Length=595' Tc=14.0 min CN=72 Runoff=9.83 cfs 0.906 af

Link 2L: DP-A Inflow=9.83 cfs 0.906 af
Primary=9.83 cfs 0.906 af

Total Runoff Area = 2.281 ac Runoff Volume = 0.906 af Average Runoff Depth = 4.76"
84.72% Pervious = 1.932 ac 15.28% Impervious = 0.348 ac

Summary for Subcatchment 1: PRE-1.A

Runoff = 9.83 cfs @ 12.20 hrs, Volume= 0.906 af, Depth= 4.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=8.08"

Area (sf)	CN	Description
12,512	98	Paved parking, HSG A
2,668	98	Roofs, HSG A
14,212	30	Woods, Good, HSG A
4,379	39	>75% Grass cover, Good, HSG A
65,575	77	Woods, Good, HSG D
99,346	72	Weighted Average
84,166		84.72% Pervious Area
15,180		15.28% Impervious Area

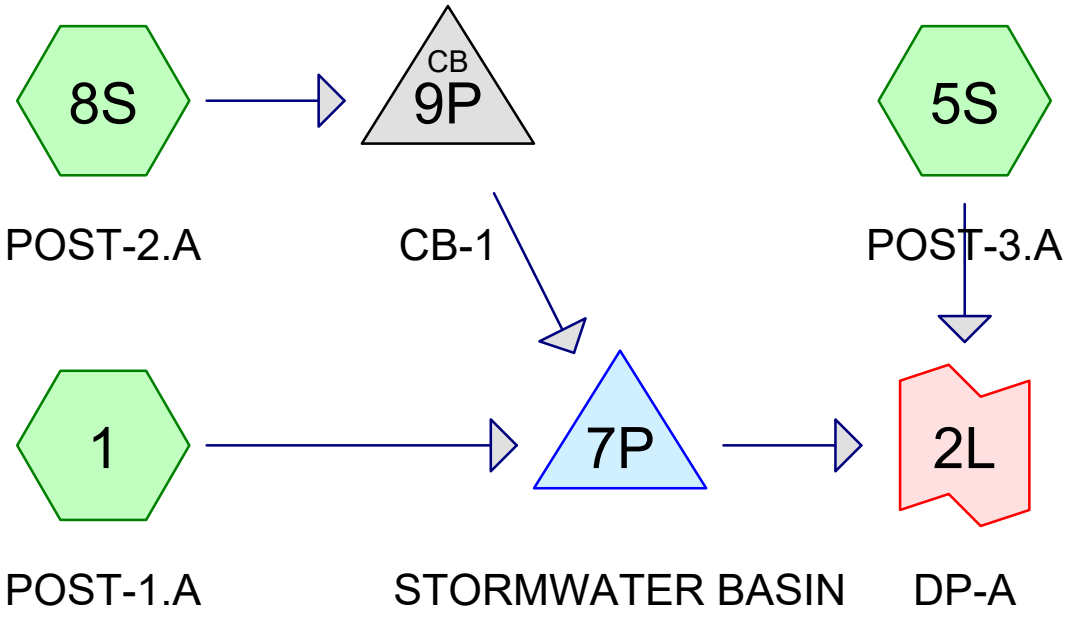
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	50	0.0300	0.19		**Sheet Flow,** Range n= 0.130 P2= 3.07"
0.5	72	0.0167	2.62		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
9.1	473	0.0300	0.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.0	595	Total			

Summary for Link 2L: DP-A

Inflow Area = 2.281 ac, 15.28% Impervious, Inflow Depth = 4.76" for 100-yr event
Inflow = 9.83 cfs @ 12.20 hrs, Volume= 0.906 af
Primary = 9.83 cfs @ 12.20 hrs, Volume= 0.906 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Appendix E - Proposed Conditions Hydrologic Calculations



Subcat Reach Pond Link

Routing Diagram for 6932-POST REV1
Prepared by {enter your company name here}

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1: POST-1.A Runoff Area=31,995 sf 0.00% Impervious Runoff Depth=2.23"
Tc=6.0 min CN=92 Runoff=1.84 cfs 0.136 af

Subcatchment5S: POST-3.A Runoff Area=55,100 sf 0.00% Impervious Runoff Depth=0.58"
Tc=14.0 min CN=66 Runoff=0.51 cfs 0.061 af

Subcatchment8S: POST-2.A Runoff Area=12,278 sf 100.00% Impervious Runoff Depth=2.84"
Tc=6.0 min CN=98 Runoff=0.82 cfs 0.067 af

Pond 7P: STORMWATERBASIN Peak Elev=306.34' Storage=1,926 cf Inflow=2.66 cfs 0.203 af
Outflow=1.03 cfs 0.201 af

Pond 9P: CB-1 Peak Elev=308.83' Inflow=0.82 cfs 0.067 af
12.0" Round Culvert n=0.012 L=140.0' S=0.0093 '/' Outflow=0.82 cfs 0.067 af

Link 2L: DP-A Inflow=1.54 cfs 0.262 af
Primary=1.54 cfs 0.262 af

Total Runoff Area = 2.281 ac Runoff Volume = 0.264 af Average Runoff Depth = 1.39"
87.64% Pervious = 1.999 ac 12.36% Impervious = 0.282 ac

Summary for Subcatchment 1: POST-1.A

Runoff = 1.84 cfs @ 12.09 hrs, Volume= 0.136 af, Depth= 2.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.07"

Area (sf)	CN	Description
6,073	96	Gravel surface, HSG A
17,737	96	Gravel surface, HSG D
8,185	80	>75% Grass cover, Good, HSG D
31,995	92	Weighted Average
31,995		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 5S: POST-3.A

Runoff = 0.51 cfs @ 12.24 hrs, Volume= 0.061 af, Depth= 0.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.07"

Area (sf)	CN	Description
5,296	30	Woods, Good, HSG A
10,199	39	>75% Grass cover, Good, HSG A
5,119	80	>75% Grass cover, Good, HSG D
34,486	77	Woods, Good, HSG D
55,100	66	Weighted Average
55,100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0					**Direct Entry,**

Summary for Subcatchment 8S: POST-2.A

Runoff = 0.82 cfs @ 12.09 hrs, Volume= 0.067 af, Depth= 2.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-yr Rainfall=3.07"

Area (sf)	CN	Description
8,903	98	Paved parking, HSG A
707	98	Unconnected pavement, HSG A
2,668	98	Roofs, HSG A
12,278	98	Weighted Average
12,278		100.00% Impervious Area
707		5.76% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Pond 7P: STORMWATER BASIN

Inflow Area = 1.016 ac, 27.73% Impervious, Inflow Depth = 2.40" for 2-yr event
Inflow = 2.66 cfs @ 12.09 hrs, Volume= 0.203 af
Outflow = 1.03 cfs @ 12.33 hrs, Volume= 0.201 af, Atten= 61%, Lag= 14.3 min
Primary = 1.03 cfs @ 12.33 hrs, Volume= 0.201 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 306.34' @ 12.33 hrs Surf.Area= 3,613 sf Storage= 1,926 cf

Plug-Flow detention time= 35.4 min calculated for 0.201 af (99% of inflow)
Center-of-Mass det. time= 28.5 min (814.0 - 785.5)

Volume	Invert	Avail.Storage	Storage Description
#1	305.00'	12,685 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
305.00	22	23.0	0	0	22
306.00	2,465	220.0	907	907	3,833
307.00	6,501	357.0	4,323	5,230	10,131
308.00	8,452	425.0	7,455	12,685	14,380

Device	Routing	Invert	Outlet Devices
#1	Primary	306.80'	**10.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#2	Primary	305.00'	**12.0" Round Culvert** L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 305.00' / 304.90' S= 0.0050 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#3	Device 2	305.40'	**7.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.03 cfs @ 12.33 hrs HW=306.34' (Free Discharge)
└─**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)
└─**2=Culvert** (Passes 1.03 cfs of 2.67 cfs potential flow)
└─**3=Orifice/Grate** (Orifice Controls 1.03 cfs @ 3.87 fps)

Summary for Pond 9P: CB-1

Inflow Area = 0.282 ac,100.00% Impervious, Inflow Depth = 2.84" for 2-yr event
Inflow = 0.82 cfs @ 12.09 hrs, Volume= 0.067 af
Outflow = 0.82 cfs @ 12.09 hrs, Volume= 0.067 af, Atten= 0%, Lag= 0.0 min
Primary = 0.82 cfs @ 12.09 hrs, Volume= 0.067 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 308.83' @ 12.09 hrs
Flood Elev= 311.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	308.30'	**12.0" Round Culvert** L= 140.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 308.30' / 307.00' S= 0.0093 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.80 cfs @ 12.09 hrs HW=308.82' (Free Discharge)
1=Culvert (Inlet Controls 0.80 cfs @ 1.94 fps)

Summary for Link 2L: DP-A

Inflow Area = 2.281 ac, 12.36% Impervious, Inflow Depth = 1.38" for 2-yr event
Inflow = 1.54 cfs @ 12.26 hrs, Volume= 0.262 af
Primary = 1.54 cfs @ 12.26 hrs, Volume= 0.262 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1: POST-1.A Runoff Area=31,995 sf 0.00% Impervious Runoff Depth=3.66"
Tc=6.0 min CN=92 Runoff=2.94 cfs 0.224 af

Subcatchment5S: POST-3.A Runoff Area=55,100 sf 0.00% Impervious Runoff Depth=1.44"
Tc=14.0 min CN=66 Runoff=1.54 cfs 0.151 af

Subcatchment8S: POST-2.A Runoff Area=12,278 sf 100.00% Impervious Runoff Depth=4.32"
Tc=6.0 min CN=98 Runoff=1.23 cfs 0.102 af

Pond 7P: STORMWATERBASIN Peak Elev=306.70' Storage=3,486 cf Inflow=4.17 cfs 0.326 af
Outflow=1.29 cfs 0.324 af

Pond 9P: CB-1 Peak Elev=308.97' Inflow=1.23 cfs 0.102 af
12.0" Round Culvert n=0.012 L=140.0' S=0.0093 '/' Outflow=1.23 cfs 0.102 af

Link 2L: DP-A Inflow=2.79 cfs 0.475 af
Primary=2.79 cfs 0.475 af

Total Runoff Area = 2.281 ac Runoff Volume = 0.477 af Average Runoff Depth = 2.51"
87.64% Pervious = 1.999 ac 12.36% Impervious = 0.282 ac

Summary for Subcatchment 1: POST-1.A

Runoff = 2.94 cfs @ 12.09 hrs, Volume= 0.224 af, Depth= 3.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.56"

Area (sf)	CN	Description
6,073	96	Gravel surface, HSG A
17,737	96	Gravel surface, HSG D
8,185	80	>75% Grass cover, Good, HSG D
31,995	92	Weighted Average
31,995		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 5S: POST-3.A

Runoff = 1.54 cfs @ 12.21 hrs, Volume= 0.151 af, Depth= 1.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.56"

Area (sf)	CN	Description
5,296	30	Woods, Good, HSG A
10,199	39	>75% Grass cover, Good, HSG A
5,119	80	>75% Grass cover, Good, HSG D
34,486	77	Woods, Good, HSG D
55,100	66	Weighted Average
55,100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0					**Direct Entry,**

Summary for Subcatchment 8S: POST-2.A

Runoff = 1.23 cfs @ 12.09 hrs, Volume= 0.102 af, Depth= 4.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-yr Rainfall=4.56"

Area (sf)	CN	Description
8,903	98	Paved parking, HSG A
707	98	Unconnected pavement, HSG A
2,668	98	Roofs, HSG A
12,278	98	Weighted Average
12,278		100.00% Impervious Area
707		5.76% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Pond 7P: STORMWATER BASIN

Inflow Area = 1.016 ac, 27.73% Impervious, Inflow Depth = 3.84" for 10-yr event
Inflow = 4.17 cfs @ 12.09 hrs, Volume= 0.326 af
Outflow = 1.29 cfs @ 12.40 hrs, Volume= 0.324 af, Atten= 69%, Lag= 18.8 min
Primary = 1.29 cfs @ 12.40 hrs, Volume= 0.324 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 306.70' @ 12.40 hrs Surf.Area= 5,081 sf Storage= 3,486 cf

Plug-Flow detention time= 34.3 min calculated for 0.323 af (99% of inflow)
Center-of-Mass det. time= 30.6 min (805.0 - 774.4)

Volume	Invert	Avail.Storage	Storage Description
#1	305.00'	12,685 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
305.00	22	23.0	0	0	22
306.00	2,465	220.0	907	907	3,833
307.00	6,501	357.0	4,323	5,230	10,131
308.00	8,452	425.0	7,455	12,685	14,380

Device	Routing	Invert	Outlet Devices
#1	Primary	306.80'	**10.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#2	Primary	305.00'	**12.0" Round Culvert** L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 305.00' / 304.90' S= 0.0050 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#3	Device 2	305.40'	**7.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.29 cfs @ 12.40 hrs HW=306.70' (Free Discharge)
└─**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)
└─**2=Culvert** (Passes 1.29 cfs of 3.27 cfs potential flow)
└─**3=Orifice/Grate** (Orifice Controls 1.29 cfs @ 4.83 fps)

Summary for Pond 9P: CB-1

Inflow Area = 0.282 ac,100.00% Impervious, Inflow Depth = 4.32" for 10-yr event
Inflow = 1.23 cfs @ 12.09 hrs, Volume= 0.102 af
Outflow = 1.23 cfs @ 12.09 hrs, Volume= 0.102 af, Atten= 0%, Lag= 0.0 min
Primary = 1.23 cfs @ 12.09 hrs, Volume= 0.102 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 308.97' @ 12.09 hrs
Flood Elev= 311.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	308.30'	**12.0" Round Culvert** L= 140.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 308.30' / 307.00' S= 0.0093 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.19 cfs @ 12.09 hrs HW=308.96' (Free Discharge)
1=Culvert (Inlet Controls 1.19 cfs @ 2.18 fps)

Summary for Link 2L: DP-A

Inflow Area = 2.281 ac, 12.36% Impervious, Inflow Depth = 2.50" for 10-yr event
Inflow = 2.79 cfs @ 12.22 hrs, Volume= 0.475 af
Primary = 2.79 cfs @ 12.22 hrs, Volume= 0.475 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1: POST-1.A Runoff Area=31,995 sf 0.00% Impervious Runoff Depth=4.79"
Tc=6.0 min CN=92 Runoff=3.79 cfs 0.293 af

Subcatchment5S: POST-3.A Runoff Area=55,100 sf 0.00% Impervious Runoff Depth=2.23"
Tc=14.0 min CN=66 Runoff=2.49 cfs 0.236 af

Subcatchment8S: POST-2.A Runoff Area=12,278 sf 100.00% Impervious Runoff Depth=5.48"
Tc=6.0 min CN=98 Runoff=1.54 cfs 0.129 af

Pond 7P: STORMWATERBASIN Peak Elev=306.88' Storage=4,504 cf Inflow=5.34 cfs 0.422 af
Outflow=2.03 cfs 0.420 af

Pond 9P: CB-1 Peak Elev=309.07' Inflow=1.54 cfs 0.129 af
12.0" Round Culvert n=0.012 L=140.0' S=0.0093 '/' Outflow=1.54 cfs 0.129 af

Link 2L: DP-A Inflow=4.25 cfs 0.656 af
Primary=4.25 cfs 0.656 af

Total Runoff Area = 2.281 ac Runoff Volume = 0.658 af Average Runoff Depth = 3.46"
87.64% Pervious = 1.999 ac 12.36% Impervious = 0.282 ac

Summary for Subcatchment 1: POST-1.A

Runoff = 3.79 cfs @ 12.09 hrs, Volume= 0.293 af, Depth= 4.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.72"

Area (sf)	CN	Description
6,073	96	Gravel surface, HSG A
17,737	96	Gravel surface, HSG D
8,185	80	>75% Grass cover, Good, HSG D
31,995	92	Weighted Average
31,995		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 5S: POST-3.A

Runoff = 2.49 cfs @ 12.21 hrs, Volume= 0.236 af, Depth= 2.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.72"

Area (sf)	CN	Description
5,296	30	Woods, Good, HSG A
10,199	39	>75% Grass cover, Good, HSG A
5,119	80	>75% Grass cover, Good, HSG D
34,486	77	Woods, Good, HSG D
55,100	66	Weighted Average
55,100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0					**Direct Entry,**

Summary for Subcatchment 8S: POST-2.A

Runoff = 1.54 cfs @ 12.09 hrs, Volume= 0.129 af, Depth= 5.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-yr Rainfall=5.72"

Area (sf)	CN	Description
8,903	98	Paved parking, HSG A
707	98	Unconnected pavement, HSG A
2,668	98	Roofs, HSG A
12,278	98	Weighted Average
12,278		100.00% Impervious Area
707		5.76% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Pond 7P: STORMWATER BASIN

Inflow Area = 1.016 ac, 27.73% Impervious, Inflow Depth = 4.99" for 25-yr event
Inflow = 5.34 cfs @ 12.09 hrs, Volume= 0.422 af
Outflow = 2.03 cfs @ 12.33 hrs, Volume= 0.420 af, Atten= 62%, Lag= 14.6 min
Primary = 2.03 cfs @ 12.33 hrs, Volume= 0.420 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 306.88' @ 12.33 hrs Surf.Area= 5,931 sf Storage= 4,504 cf

Plug-Flow detention time= 35.1 min calculated for 0.420 af (100% of inflow)
Center-of-Mass det. time= 31.1 min (799.7 - 768.6)

Volume	Invert	Avail.Storage	Storage Description
#1	305.00'	12,685 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
305.00	22	23.0	0	0	22
306.00	2,465	220.0	907	907	3,833
307.00	6,501	357.0	4,323	5,230	10,131
308.00	8,452	425.0	7,455	12,685	14,380

Device	Routing	Invert	Outlet Devices
#1	Primary	306.80'	**10.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#2	Primary	305.00'	**12.0" Round Culvert** L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 305.00' / 304.90' S= 0.0050 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#3	Device 2	305.40'	**7.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.01 cfs @ 12.33 hrs HW=306.88' (Free Discharge)
└─**1=Broad-Crested Rectangular Weir** (Weir Controls 0.61 cfs @ 0.74 fps)
└─**2=Culvert** (Passes 1.40 cfs of 3.51 cfs potential flow)
└─**3=Orifice/Grate** (Orifice Controls 1.40 cfs @ 5.25 fps)

Summary for Pond 9P: CB-1

Inflow Area = 0.282 ac,100.00% Impervious, Inflow Depth = 5.48" for 25-yr event
Inflow = 1.54 cfs @ 12.09 hrs, Volume= 0.129 af
Outflow = 1.54 cfs @ 12.09 hrs, Volume= 0.129 af, Atten= 0%, Lag= 0.0 min
Primary = 1.54 cfs @ 12.09 hrs, Volume= 0.129 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 309.07' @ 12.09 hrs
Flood Elev= 311.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	308.30'	**12.0" Round Culvert** L= 140.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 308.30' / 307.00' S= 0.0093 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.50 cfs @ 12.09 hrs HW=309.06' (Free Discharge)
1=Culvert (Inlet Controls 1.50 cfs @ 2.34 fps)

Summary for Link 2L: DP-A

Inflow Area = 2.281 ac, 12.36% Impervious, Inflow Depth = 3.45" for 25-yr event
Inflow = 4.25 cfs @ 12.26 hrs, Volume= 0.656 af
Primary = 4.25 cfs @ 12.26 hrs, Volume= 0.656 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1: POST-1.A Runoff Area=31,995 sf 0.00% Impervious Runoff Depth=7.12"
Tc=6.0 min CN=92 Runoff=5.51 cfs 0.436 af

Subcatchment5S: POST-3.A Runoff Area=55,100 sf 0.00% Impervious Runoff Depth=4.07"
Tc=14.0 min CN=66 Runoff=4.65 cfs 0.429 af

Subcatchment8S: POST-2.A Runoff Area=12,278 sf 100.00% Impervious Runoff Depth=7.84"
Tc=6.0 min CN=98 Runoff=2.18 cfs 0.184 af

Pond 7P: STORMWATERBASIN Peak Elev=307.05' Storage=5,571 cf Inflow=7.69 cfs 0.620 af
Outflow=4.78 cfs 0.618 af

Pond 9P: CB-1 Peak Elev=309.33' Inflow=2.18 cfs 0.184 af
12.0" Round Culvert n=0.012 L=140.0' S=0.0093 '/' Outflow=2.18 cfs 0.184 af

Link 2L: DP-A Inflow=9.43 cfs 1.048 af
Primary=9.43 cfs 1.048 af

Total Runoff Area = 2.281 ac Runoff Volume = 1.049 af Average Runoff Depth = 5.52"
87.64% Pervious = 1.999 ac 12.36% Impervious = 0.282 ac

Summary for Subcatchment 1: POST-1.A

Runoff = 5.51 cfs @ 12.09 hrs, Volume= 0.436 af, Depth= 7.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=8.08"

Area (sf)	CN	Description
6,073	96	Gravel surface, HSG A
17,737	96	Gravel surface, HSG D
8,185	80	>75% Grass cover, Good, HSG D
31,995	92	Weighted Average
31,995		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment 5S: POST-3.A

Runoff = 4.65 cfs @ 12.20 hrs, Volume= 0.429 af, Depth= 4.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=8.08"

Area (sf)	CN	Description
5,296	30	Woods, Good, HSG A
10,199	39	>75% Grass cover, Good, HSG A
5,119	80	>75% Grass cover, Good, HSG D
34,486	77	Woods, Good, HSG D
55,100	66	Weighted Average
55,100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0					**Direct Entry,**

Summary for Subcatchment 8S: POST-2.A

Runoff = 2.18 cfs @ 12.09 hrs, Volume= 0.184 af, Depth= 7.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-yr Rainfall=8.08"

Area (sf)	CN	Description
8,903	98	Paved parking, HSG A
707	98	Unconnected pavement, HSG A
2,668	98	Roofs, HSG A
12,278	98	Weighted Average
12,278		100.00% Impervious Area
707		5.76% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Pond 7P: STORMWATER BASIN

Inflow Area = 1.016 ac, 27.73% Impervious, Inflow Depth = 7.32" for 100-yr event
Inflow = 7.69 cfs @ 12.09 hrs, Volume= 0.620 af
Outflow = 4.78 cfs @ 12.20 hrs, Volume= 0.618 af, Atten= 38%, Lag= 6.8 min
Primary = 4.78 cfs @ 12.20 hrs, Volume= 0.618 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 307.05' @ 12.20 hrs Surf.Area= 6,596 sf Storage= 5,571 cf

Plug-Flow detention time= 30.6 min calculated for 0.618 af (100% of inflow)
Center-of-Mass det. time= 27.6 min (788.2 - 760.6)

Volume	Invert	Avail.Storage	Storage Description
#1	305.00'	12,685 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
305.00	22	23.0	0	0	22
306.00	2,465	220.0	907	907	3,833
307.00	6,501	357.0	4,323	5,230	10,131
308.00	8,452	425.0	7,455	12,685	14,380

Device	Routing	Invert	Outlet Devices
#1	Primary	306.80'	**10.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#2	Primary	305.00'	**12.0" Round Culvert** L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 305.00' / 304.90' S= 0.0050 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf
#3	Device 2	305.40'	**7.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.77 cfs @ 12.20 hrs HW=307.05' (Free Discharge)
└─**1=Broad-Crested Rectangular Weir** (Weir Controls 3.27 cfs @ 1.30 fps)
└─**2=Culvert** (Passes 1.50 cfs of 3.72 cfs potential flow)
└─**3=Orifice/Grate** (Orifice Controls 1.50 cfs @ 5.62 fps)

Summary for Pond 9P: CB-1

Inflow Area = 0.282 ac,100.00% Impervious, Inflow Depth = 7.84" for 100-yr event
Inflow = 2.18 cfs @ 12.09 hrs, Volume= 0.184 af
Outflow = 2.18 cfs @ 12.09 hrs, Volume= 0.184 af, Atten= 0%, Lag= 0.0 min
Primary = 2.18 cfs @ 12.09 hrs, Volume= 0.184 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 309.33' @ 12.09 hrs
Flood Elev= 311.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	308.30'	**12.0" Round Culvert** L= 140.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 308.30' / 307.00' S= 0.0093 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.12 cfs @ 12.09 hrs HW=309.30' (Free Discharge)
1=Culvert (Inlet Controls 2.12 cfs @ 2.70 fps)

Summary for Link 2L: DP-A

Inflow Area = 2.281 ac, 12.36% Impervious, Inflow Depth = 5.51" for 100-yr event
Inflow = 9.43 cfs @ 12.20 hrs, Volume= 1.048 af
Primary = 9.43 cfs @ 12.20 hrs, Volume= 1.048 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Appendix F – Stormwater Calculations

INSTRUCTIONS:

Version 1, Automated: Mar. 4, 2008

1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Location: Overall Treatment

TSS Removal Calculation Worksheet

B BMP[1]	C TSS Removal Rate[1]	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Deep Sump and Hooded Catch Basin	**0.25**	**1.00**	**0.25**	**0.75**
Wet Basin	**0.80**	**0.75**	**0.60**	**0.15**
	0.00	**0.15**	**0.00**	**0.15**
	0.00	**0.15**	**0.00**	**0.15**
	0.00	**0.15**	**0.00**	**0.15**

Total TSS Removal = 85%

Project: **184 Ayer Road**
Prepared By: **RPV**
Date: **24-Oct-23**

*Equals remaining load from previous BMP (E) which enters the BMP

184 Ayer Road
Harvard, MA

January 4, 2024
6932

Stormwater Basin

Sediment Forebay Calculations

CALCULATIONS

Required Sediment Forebay vol (FES-1), Fv:

$F_v = A_C(cu.ft)x0.1inch$ of impervious area

[1] Imp. area captured by ponds, Ap = 0.281 Ac
Required Sediment Forebay vol, Fv= 102 C.ft

Sediment Forebay Volume Provided = 513 C.ft

Required Sediment Forebay vol (Overland Flow from Gravel Parking Area), Fv:

$F_v = A_C(cu.ft)x0.1inch$ of impervious area

[1] Imp. area captured by ponds, Ap = 0.546 Ac ***Gravel Surface being treated as if it were impervious
Required Sediment Forebay vol, Fv= 198 C.ft

Sediment Forebay Volume Provided = 628 C.ft

Water Quality Calculation:

$V_{WQ} = D_{WQ}(ft)x\ A_T(ft^2)$

Water Quality Depth = 0.5 in
Water Quality Depth , D_{WQ} = 0.04 ft.
Total impervious area on site, A_T = 0.281 Ac.
A_T = 12,240 ft^2
Required Water Quality Volume, V_{WQ} = 510 C.ft.

REFERENCES

1 inch depth
Zone II discharges
IWPA discharges
Critical Area
Runoff from LUHPPL
Infiltration rate >2.4 inches/hour
1/2 inch depth
Discharge to other ares
8 inch
9 inch
10 inch
11 inch

Appendix G – Construction Period Pollution Prevention

The project is covered under the National Pollutant Discharge Elimination System (NPDES) Construction General Permit, which will be submitted in place of the Construction Period Pollution Prevention Plan, prior to any land disturbance.

Appendix H - Operation and Maintenance Plan

STORMWATER OPERATION & MAINTENANCE MANUAL

FOR

184 AYER ROAD

IN

HARVARD,
MASSACHUSETTS

PREPARED BY: DILLIS & ROY
CIVIL DESIGN GROUP, INC.
1 Main Street, Suite 1
Lunenburg, MA 01462

PREPARED FOR: CS BAILEY LANDSCAPE, INC.
19 WHITTEMORE STREET
ARLINGTON, MA 02474

OCTOBER 24TH, 2023
REVISED: JANUARY 4TH, 2024

CDG PROJECT #6932

DILLIS & ROY CIVIL DESIGN GROUP
CIVIL ENGINEERS LAND SURVEYORS WETLAND CONSULTANTS

TABLE OF CONTENTS:

1.0 Project Narrative

1.1 Proposed Stormwater Management System

The proposed stormwater management system was designed to reduce the peak rate of stormwater leaving the site and increase the water quality. Runoff from the proposed development will be conveyed and treated using sedimentation forebays & an infiltration basin.

Stormwater Basin with Sediment Forebay

One stormwater basin with a sediment forebay will treat the runoff. The volumes of the infiltration basins were designed to reduce runoff rates up to the 100-year storm event and sized to handle the appropriate water quality volume. The sediment forebays are designed to reduce the velocity of flow which will increase the settlement of heavy solids before emptying to the basins.

Deep Sump Hooded Catch Basins

One Deep sump hooded catch basin is proposed to convey the runoff from the proposed impervious areas & roof to the stormwater basin.

1.2 Operation & Maintenance Tasks

The following activities should be performed routinely to allow for proper functioning of the stormwater system. The following are guidelines referring to each major component of the stormwater management system.

1.2.1 Sediment Forebay

A sediment forebay is required as a pretreatment device prior to discharging stormwater to the stormwater basin. It will provide pretreatment by slowing stormwater runoff and increasing settlement of the sediment. The sediment forebay should be inspected monthly and cleaned of accumulated sediment on a quarterly basis. After sediment removal, repair any damaged vegetation by reseeding or resodding. Maintain grass at a height of 4-6 inches.

1.2.2 Stormwater Basin

Stormwater basins are stormwater runoff impoundments that are constructed over permeable soils and require pretreatment from sediment forebays. The basin is located to capture all the runoff from the impervious areas of the site.

Stormwater basins are prone to clogging and failure if proper maintenance is not scheduled. The basin should be inspected at least twice per year or after a major storm event to ensure that the basin is operating as intended. The outlet structures should be inspected for clogging or overflow release velocities that are causing scouring or erosion. The upper stage, side slopes, embankments and emergency spillway should be mowed twice a year.

1.2.3 Stone Rip Rap

The proposed swales have been designed with angular stone riprap. The stone riprap will be placed approximately 1-foot deep over Tencate Mirafi filter fabric.

Rip Rap should be inspected periodically for signs of failure. Such signs would include, undermining, high velocity wear (displacement of stones downstream), sliding, settlement, siltation, etc. Riprap should be repaired immediately upon the observation of such conditions mentioned.

Periodically, rip rap should be cleaned of silt. Siltation will be most prevalent in low velocity areas (such as directly up-stream of outlet control structures). Silt and sediment should be removed from these areas by hand.

1.2.4 Deep Sump Catch Basins

Deep sump catch basins shall be inspected at least semi-annually for signs of wear, settling, cracking or other fatigue. Catch basin castings should be inspected for signs of root intrusion or significant water infiltration. Catch basin sump should be check for silt/sediment buildup and cleaned as necessary. Cleaning should be performed by a vacuum truck. Catch basins should be resealed as required and outlets should be inspected incidentally with all structure inspections.

1.2.5 Storm Drain Lines

Storm drainage inlets and outlets should be inspected incidentally with all structure inspections. Evidence of debris intrusion or excessive siltation or sedimentation could result in the need to clean a storm drain line. Flushing or jetting should be performed as required. All flushing and jetting should be performed in the direction away from any outlet devices. A vacuum truck should be used at the opposite end of the flushing or jetting to remove any silt or sediment that is cleaned from the storm drain.

O&M Schedule

	O&M Task	Monthly	Quarterly	Spring	Fall	2-years	As-required
1.	**Stormwater Basin**						
	Inspection			**x**	**x**		**x**
	Mowing	**3-4 times during the growing season**					
	Remove Debris			**x**	**x**		**x**
	Remove Sediment						**x**
	Re-seed						**x**
2.	**Sediment Forebay**						
	Inspection	**x**		**x**	**x**		**x**
	Mowing	**3-4 times during the growing season**					
	Remove Debris		**x**				**x**
	Remove Sediment		**x**				**x**
	Re-seed						**x**
3.	**Stone Rip Rap**						
	Inspection			**x**			
	Remove Debris			**x**			**x**
	Remove Silt/Sediment					**x**	**x**
	Repair						**x**
4.	**Catch Basin**						
	Inspection			**x**	**x**		
	Remove Debris						**x**
	Remove Silt/Sediment						**x**
5.	**Storm Drain Lines**						
	Inspection			**x**			**x**
	Clean						**x**

APPENDIX A

Stormwater Management System Owners/Operators

1.	Stormwater Management System Owners:	CS Bailey Landscape, Inc.
2.	Current and future operators:	CS Bailey Landscape, Inc.
3.	Emergency contact information:	CS Bailey Landscape, Inc.
4.	Change of trustee:	CS Bailey Landscape, Inc.
5.	Financial Responsible Party:	CS Bailey Landscape, Inc.
6.	Routine Maintenance:	CS Bailey Landscape, Inc.
7.	O&M activities:	CS Bailey Landscape, Inc.
8.	Record keeping	CS Bailey Landscape, Inc.

Appendix I - Long Term Pollution Prevention Plan

LONG-TERM POLLUTION PREVENTION PLAN

FOR

184 AYER ROAD

IN

HARVARD,
MASSACHUSETTS

PREPARED BY: DILLIS & ROY CIVIL DESIGN GROUP, INC.
1 MAIN STREET, SUITE 1
LUNENBURG, MA 01462

PREPARED FOR: CS BAILEY LANDSCAPE, INC.
19 WHITTEMORE STREET
ARLINGTON, MA 02474

OCTOBER 24TH, 2023

CDG PROJECT # 6932

1.0 Summary

This Long-Term Pollution Prevention Plan (LTPPP) has been prepared by Dillis & Roy Civil Design Group, Inc. pursuant to the Massachusetts Stormwater Regulations. The applicant, CS Bailey Landscape, Inc. is proposing the reconfiguration of the existing paved parking area, and the construction of a gravel pad for additional storage area. The scope of work also includes the removal & replacement of an existing brick walkway around the existing structure.

The stormwater management system has been designed in accordance with the Massachusetts Stormwater Regulations to provide pretreatment of the stormwater prior to discharge.

2.0 Spill Prevention Plan

No hazardous materials other than normal cleaning items are expected to be stored on site after the construction period has ended.

It is expected that normal DEP notification procedures would be triggered for major spills such as heating oil or propane and natural gas leaks.

3.0 Stormwater System O&M

A Stormwater Operation & Maintenance plan has been prepared for the proposed stormwater management system. Refer to this document for details pertaining to the required inspections, routine maintenance and operation details including erosion stabilization.

4.0 Fertilizers, herbicides and pesticides

The application of fertilizer, herbicides and pesticides shall be performed in a manner consistent with the industry standards for the application.

No application of chemicals is to be performed within the stormwater management areas on the site.

5.0 Snow/Salt Management

5.1 Snow Plowing

It is expected that the site will be plowed by private personnel. Snow removal contractors shall be directed to stockpile snow to the areas depicted on the attached Site Plans prepared by Dillis & Roy Civil Design Group, Inc. In compliance with Town regulations, snow storage shall be prohibited in areas on or in stormwater systems. It shall not impact the sight lines where driveways

meet public roads.

5.2 Salt/Sand Usage

It is expected that sanding and salting will be performed on an infrequent basis during times when unusually icy conditions persist for periods of time.

5.3 Street Sweeping

The Stormwater Operation & Maintenance Plan calls for the parking area to be swept in the spring, after the threat of winter precipitation has passed, and in the fall.

6.0 Waste Management

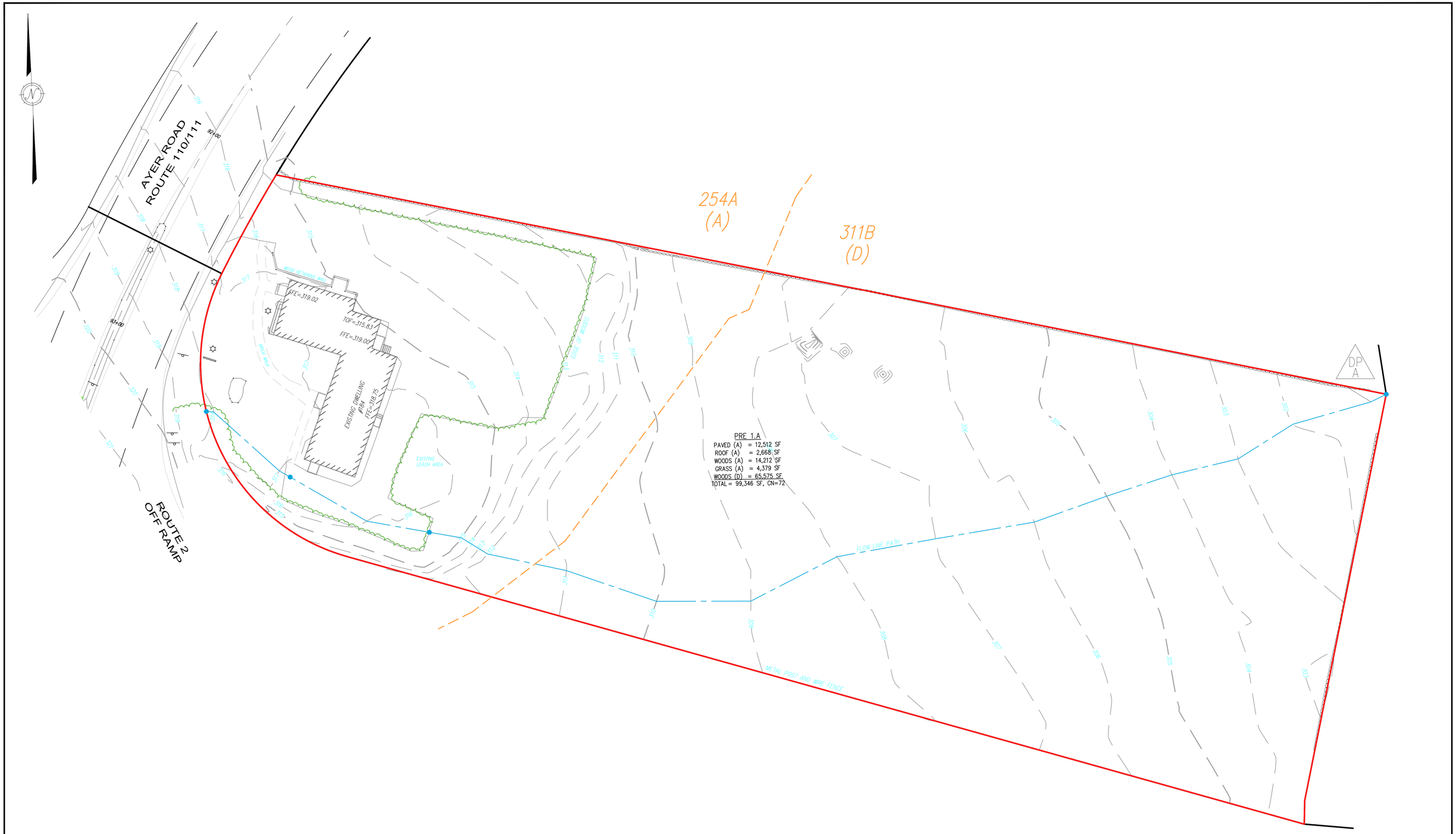
6.1 Solid Waste

During construction, a dumpster will be located on the site. This area will be the primary area for the on-site storage of solid waste prior to pick-up by a waste management company.

After construction, a dumpster will be located on the site within the proposed dumpster enclosure.

4.0 Plans

Pre-development Watershed Map



PREPARED BY:

DILLIS & ROY
CIVIL DESIGN GROUP

CIVIL ENGINEERS LAND SURVEYORS WETLAND CONSULTANTS

1 MAIN STREET, SUITE 1
LUNENBURG, MA 01462

PHONE: (978) 779-6091
www.dillisandroy.com

OWNER:
PHOENIX-DURANGO LLC
345 MAIN STREET
NORTHBOROUGH MASSACHUSETTS

APPLICANT:
CS BAILEY LANDSCAPE, INC
19 WHITTEMORE SREET
ARLINGTON, MASSACHUSETTS

SCALE:
20 0 10 20 40 80
1 in. = 20 ft.

DIG SAFE 1-888-344-7233

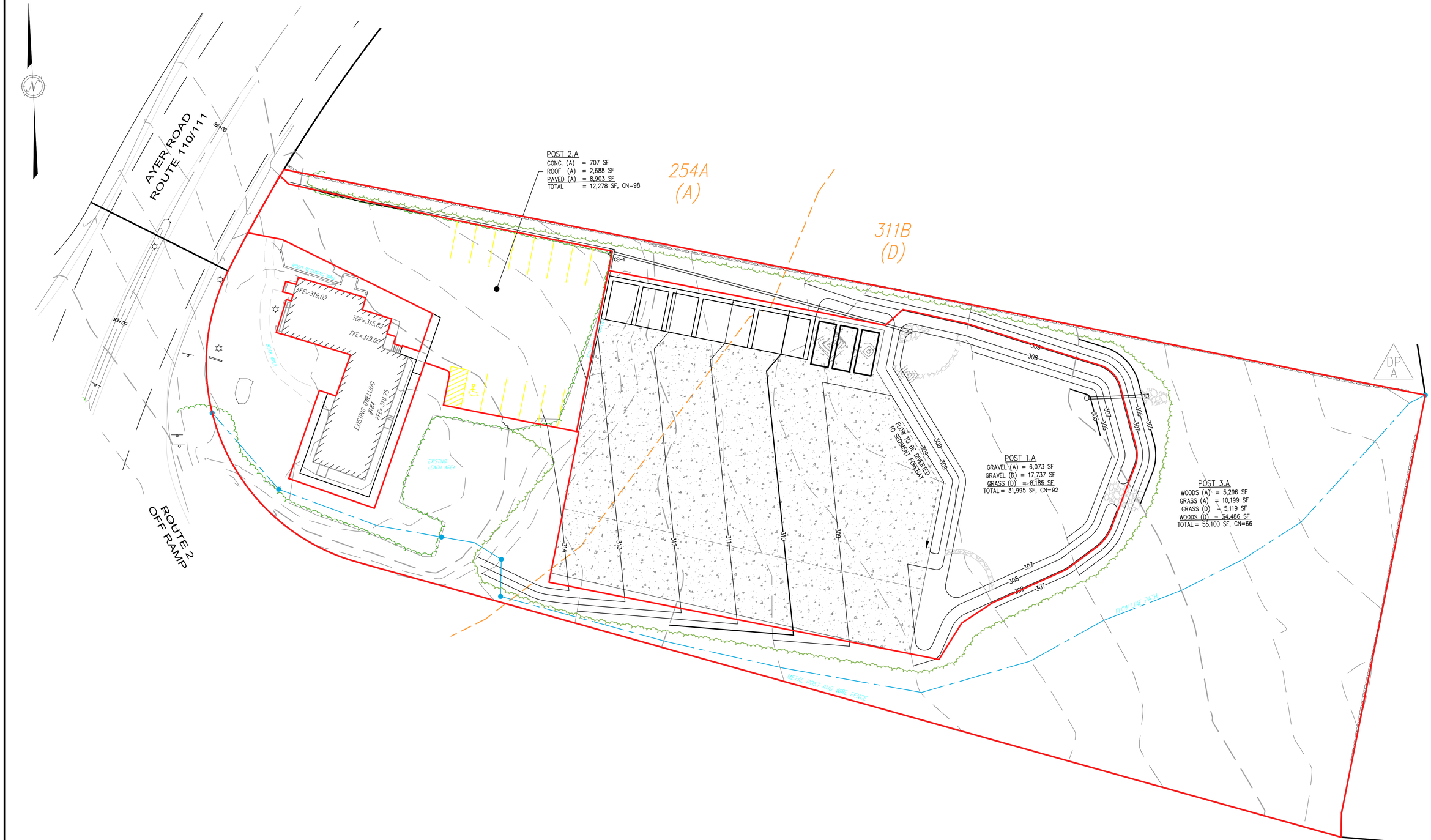
DATE: 10/24/2023
DESIGN BY: GSR
DRAWN BY: MMK
CHECKED BY: GSR

PRE-DEVELOPED WATERSHED MAP
184 AYER ROAD
HARVARD, MASSACHUSETTS

NO.	DATE	DESCRIPTION	BY

JOB NO. 6632-C
DRAWING NO. 6632-C-DRN
SHEET NO. DRN

Post-development Watershed Map



PREPARED BY:

DILLIS & ROY
CIVIL DESIGN GROUP

CIVIL ENGINEERS LAND SURVEYORS WETLAND CONSULTANTS

1 MAIN STREET, SUITE 1
LUNENBURG, MA 01462
PHONE: (978) 779-6091
www.dillisandroy.com

OWNER:
PHOENIX-DURANGO LLC
345 MAIN STREET
NORTHBOROUGH MASSACHUSETTS

APPLICANT:
CS BAILEY LANDSCAPE, INC
19 WHITTEMORE SREET
ARLINGTON, MASSACHUSETTS

SCALE:
20 0 10 20 40 80
1 in. = 20 ft.

DIG SAFE 1-888-344-7233

DATE: 10/24/2023
DESIGN BY: GSR
DRAWN BY: MMK
CHECKED BY: GSR

POST-DEVELOPED WATERSHED MAP
184 AYER ROAD
HARVARD, MASSACHUSETTS

NO.	DATE	DESCRIPTION	BY
1.	01/04/24	REVISED PER PER REVIEW COMMENTS	RPV

JOB NO. 6632-C
DRAWING NO. 6632-C-DRN
SHEET NO. DRN

PROPOSED COMMERCIAL SITE PLAN

HARVARD, MA

184 AYER ROAD

SHEET INDEX

SHEET NUMBER	SHEET TITLE	LAST REVISED
SHEET C1.0	TITLE SHEET	10/24/2023
SHEET C1.1	EXISTING CONDITIONS PLAN	10/24/2023
SHEET C2.0	LAYOUT & MATERIALS	10/24/2023
SHEET C3.0	GRADING & DRAINAGE PLAN	10/24/2023
SHEET C4.0	LANDSCAPE PLAN	10/24/2023

RECORD INFORMATION

RECORD OWNER:
PHOENIX-DURANGO LLC
345 MAIN STREET
NORTHBOROUGH, MA

DEED REFERENCE:
BOOK 64869 PAGE 275

PARCEL NUMBER:
008-0041-00

ZONING DISTRICT:
COMMERCIAL

GENERAL NOTES:

1. TOPOGRAPHIC INFORMATION SHOWN ON THIS PLAN WAS PREPARED BY DILLIS & ROY CIVIL DESIGN GROUP, INC. BASED ON AN ON-THE-GROUND SURVEY PERFORM IN 2022 AND COMPLIED INFORMATION FROM THE MASS GIS SYSTEM. WETLAND RESOURCES AREAS WERE DELINEATED BY DILLIS & ROY CIVIL DESIGN GROUP, INC. IN 2022.
2. PROPERTY LINE INFORMATION SHOWN ON THIS PLAN WAS PREPARED BY DILLIS & ROY CIVIL DESIGN GROUP, INC. BASED ON AN ON-THE-GROUND SURVEY PERFORM IN 2022 AND RECORDED PLANS AND DEEDS.
3. EXISTING UTILITIES SHOWN ON THIS PLAN WERE COMPILED FROM FIELD MEASUREMENT AND RECORD PLANS. THE UTILITIES SHOWN ON THIS PLAN ARE FOR REFERENCE ONLY AND SHOULD NOT BE ASSUMED TO BE CORRECT NOR SHOULD IT BE ASSUMED THAT THE UTILITIES SHOWN ARE THE ONLY UTILITIES LOCATED ON OR NEAR THE SITE. THE CONTRACTOR SHALL CALL DIG SAFE 1-888-DIG-SAFE PRIOR TO CONSTRUCTION IN ACCORDANCE WITH STATE LAWS.
4. THE PROPERTY IS LOCATED WITHIN THE COMMERCIAL ZONING DISTRICT.

LOCUS MAP

SCALE: 1"=1,100'±

LEGEND

EXIST. FEATURE	DESCRIPTION	EXIST. SYM.	DESCRIPTION
	STREAMS/RIVERS		LIGHT POLE
	WETLANDS		TELEPHONE POLE
	LIMIT OF BUFFER ZONE		GUY WIRE
	STONE WALL		HYDRANT
W	WATER LINE		SEWER MANHOLE
OW	EXISTING OVER-HEAD WIRES	WF A1	WETLAND FLAG
400	EXISTING CONTOUR (INDEX)		CATCH BASIN
401	EXISTING CONTOUR (INTERMEDIATE)	WV	WATER GATE VALVE
	EXISTING BUILDING/HOUSE		FLAG POLE
TREE LINE	TREE LINE		SHRUB

PROP. FEATURE	DESCRIPTION	PROP. SYM.	DESCRIPTION
	PROPERTY LINE	DMH-1	PROPOSED STORM WATER MANHOLE
	HAYBALES	CB-1	PROPOSED CATCH BASIN
W	PROPOSED WATER LINE	FES	PROPOSED FLARED END SECTION
S	PROPOSED SANITARY SEWER		PROPOSED RIPRAP
D	PROPOSED STORM DRAIN		STANDARD TREE
BCCB	PROPOSED BACK CAPE COD BERM		PINE TREE
EOP	PROPOSED EDGE OF PAVEMENT		SHRUB
	PROPOSED UNPAVED ROAD		
400	PROPOSED CONTOUR (INDEX)		
401	PROPOSED CONTOUR (INTERMEDIATE)		
410x5	PROPOSED SPOT ELEVATION		
TREE LINE	TREE LINE		

APPROVAL REQUIRED UNDER BOARD
RULES AND REGULATIONS FOR SITE PLAN
APPROVAL AND SPECIAL PERMITS
HARVARD PLANNING BOARD

BEING A MAJORITY
DATE APPROVED: _____
DATE ENDORSED: _____

ISSUED FOR SITE PLAN APPROVAL

PREPARED BY:
DILLIS & ROY CIVIL DESIGN GROUP
CIVIL ENGINEERS LAND SURVEYORS WETLAND CONSULTANTS
1 MAIN STREET, SUITE 1
LUNENBURG, MA 01462
PHONE: (978) 779-6091
www.dillisandroy.com

OWNER:
PHOENIX-DURANGO LLC
345 MAIN STREET
NORTHBOROUGH MASSACHUSETTS

APPLICANT:
CS BAILEY LANDSCAPE, INC
19 WHITTEMORE SREET
ARLINGTON, MASSACHUSETTS

SCALE:

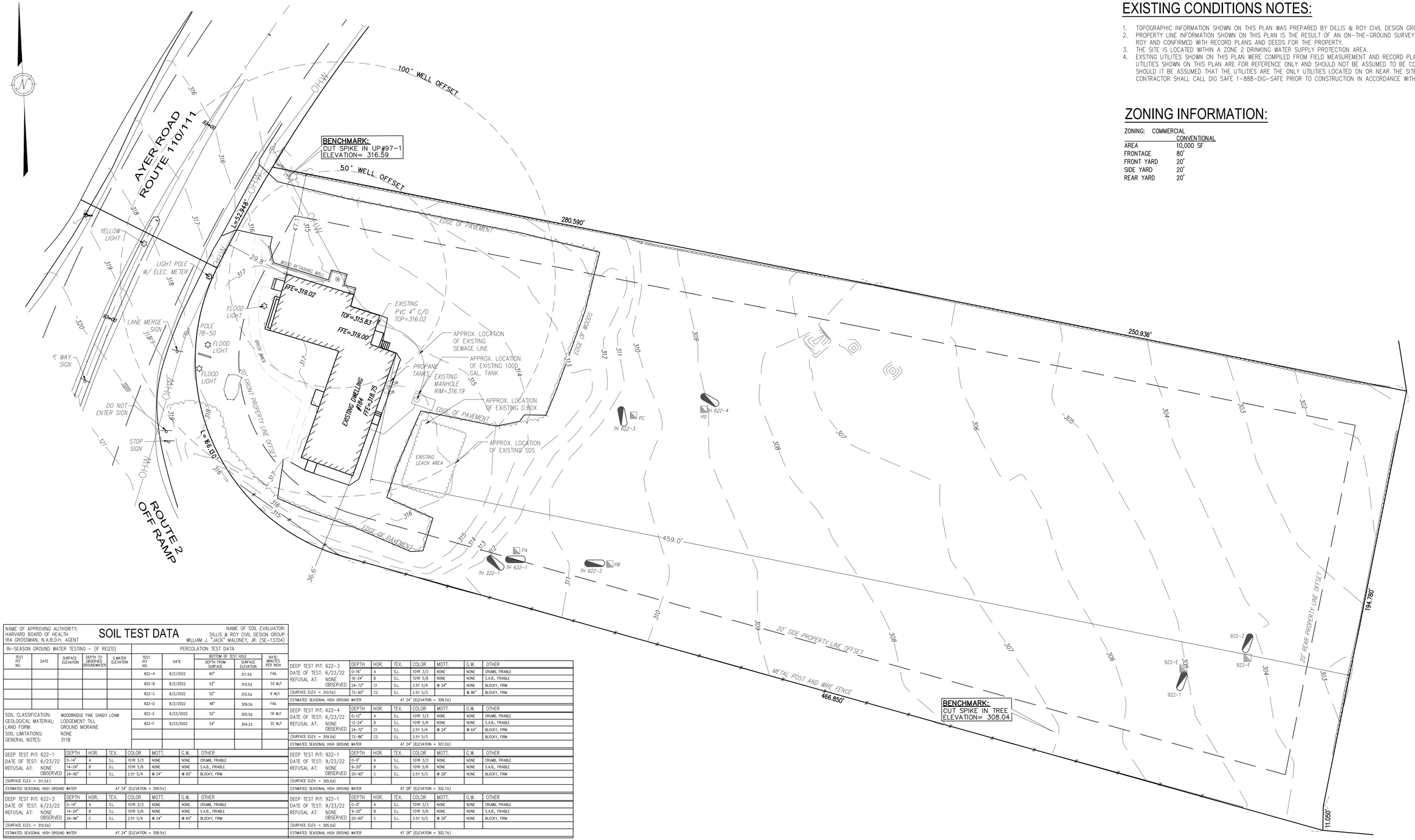
COMMONWEALTH OF MASSACHUSETTS
GREGORY S. ROY
CIVIL
NO. 46078
REGISTERED PROFESSIONAL ENGINEER
1/4/24

DATE: 10/24/2023
DESIGN BY: GSR
DRAWN BY: MMK
CHECKED BY: GSR

TITLE SHEET
184 AYER ROAD
HARVARD, MASSACHUSETTS

NO.	DATE	DESCRIPTION	BY
1.	01/04/24	REVISED PER PER REVIEW COMMENTS	RPV

JOB NO. 6632-C
DRAWING NO. 6632-C-TITLE
SHEET NO. C1.0



EXISTING CONDITIONS NOTES:

1. TOPOGRAPHIC INFORMATION SHOWN ON THIS PLAN WAS PREPARED BY DILLIS & ROY CIVIL DESIGN GROUP, INC.
2. PROPERTY LINE INFORMATION SHOWN ON THIS PLAN IS THE RESULT OF AN ON-THE-GROUND SURVEY BY DILLIS & ROY AND CONFIRMED WITH RECORD PLANS AND DEEDS FOR THE PROPERTY.
3. THE SITE IS LOCATED WITHIN A ZONE 2 DRINKING WATER SUPPLY PROTECTION AREA.
4. EXSTING UTILITES SHOWN ON THIS PLAN WERE COMPILED FROM FIELD MEASUREMENT AND RECORD PLANS. THE UTILITIES SHOWN ON THIS PLAN ARE FOR REFERENCE ONLY AND SHOULD NOT BE ASSUMED TO BE CORRECT NOR SHOULD IT BE ASSUMED THAT THE UTILITIES ARE THE ONLY UTILITIES LOCATED ON OR NEAR THE SITE. THE CONTRACTOR SHALL CALL DIG SAFE 1-888-DIG-SAFE PRIOR TO CONSTRUCTION IN ACCORDANCE WITH STATE LAWS.

ZONING INFORMATION:

ZONING: COMMERCIAL

	CONVENTIONAL
AREA	10,000 SF
FRONTAGE	80'
FRONT YARD	20'
SIDE YARD	20'
REAR YARD	20'

SOIL TEST DATA

NAME OF APPROVING AUTHORITY:
HARVARD BOARD OF HEALTH
IRA GROSSMAN, N.A.B.O.H. AGENT

NAME OF SOIL EVALUATOR:
DILLIS & ROY CIVIL DESIGN GROUP
WILLIAM J. "JACK" MALONEY, JR. (SE-13704)

IN-SEASON GROUND WATER TESTING - (IF REQ'D)

PERCOLATION TEST DATA

TEST PIT NO.	DATE	SURFACE ELEVATION	DEPTH TO OBSERVED GROUNDWATER	G.WATER ELEVATION	TEST PIT NO.	DATE	BOTTOM OF TEST HOLE: DEPTH FROM SURFACE	BOTTOM OF TEST HOLE: SURFACE ELEVATION	RATE: MINUTES PER INCH
					822-A	8/2/2022	60"	311.5±	FAIL
					822-B	8/2/2022	52"	310.5±	33 M/I
					822-C	8/2/2022	52"	310.5±	6 M/I
					822-D	8/2/2022	48"	309.0±	FAIL
					822-E	9/23/2022	52"	305.0±	18 M/I
					822-F	9/23/2022	54"	304.2±	22 M/I

SOIL CLASSIFICATION: WOODBRIDGE FINE SANDY LOAM
GEOLOGICAL MATERIAL: LODGEMENT TILL
LAND FORM: GROUND MORAINE
SOIL LIMITATIONS: NONE
GENERAL NOTES: 311B

DEEP TEST PIT: 622-1
DATE OF TEST: 6/23/22
REFUSAL AT: NONE OBSERVED
(SURFACE ELEV. = 311.5±)
ESTIMATED SEASONAL HIGH GROUND WATER AT 24" (ELEVATION = 309.5±)

DEPTH	HOR.	TEX.	COLOR	MOTT.	G.W.	OTHER
0-14"	A	S.L.	10YR 3/3	NONE	NONE	CRUMB, FRIABLE
14-24"	B	S.L.	10YR 5/6	NONE	NONE	S.A.B., FRIABLE
24-90"	C	S.L.	2.5Y 5/4	@ 24"	@ 60"	BLOCKY, FIRM

DEEP TEST PIT: 622-2
DATE OF TEST: 6/23/22
REFUSAL AT: NONE OBSERVED
(SURFACE ELEV. = 310.5±)
ESTIMATED SEASONAL HIGH GROUND WATER AT 24" (ELEVATION = 308.5±)

DEPTH	HOR.	TEX.	COLOR	MOTT.	G.W.	OTHER
0-14"	A	S.L.	10YR 3/3	NONE	NONE	CRUMB, FRIABLE
14-24"	B	S.L.	10YR 5/6	NONE	NONE	S.A.B., FRIABLE
24-96"	C	S.L.	2.5Y 5/4	@ 24"	@ 60"	BLOCKY, FIRM

DEEP TEST PIT: 622-3
DATE OF TEST: 6/23/22
REFUSAL AT: NONE OBSERVED
(SURFACE ELEV. = 310.5±)
ESTIMATED SEASONAL HIGH GROUND WATER AT 24" (ELEVATION = 308.5±)

DEPTH	HOR.	TEX.	COLOR	MOTT.	G.W.	OTHER
0-16"	A	S.L.	10YR 3/3	NONE	NONE	CRUMB, FRIABLE
16-24"	B	S.L.	10YR 5/6	NONE	NONE	S.A.B., FRIABLE
24-72"	C1	S.L.	2.5Y 5/4	@ 24"	NONE	BLOCKY, FIRM
72-90"	C2	S.L.	2.5Y 5/3		@ 86"	BLOCKY, FIRM

DEEP TEST PIT: 622-4
DATE OF TEST: 6/23/22
REFUSAL AT: NONE OBSERVED
(SURFACE ELEV. = 309.0±)
ESTIMATED SEASONAL HIGH GROUND WATER AT 24" (ELEVATION = 307.0±)

DEPTH	HOR.	TEX.	COLOR	MOTT.	G.W.	OTHER
0-12"	A	S.L.	10YR 3/3	NONE	NONE	CRUMB, FRIABLE
12-24"	B	S.L.	10YR 5/6	NONE	NONE	S.A.B., FRIABLE
24-72"	C1	S.L.	2.5Y 5/4	@ 24"	@ 64"	BLOCKY, FIRM
72-96"	C2	S.L.	2.5Y 5/3			BLOCKY, FIRM

DEEP TEST PIT: 922-1
DATE OF TEST: 9/23/22
REFUSAL AT: NONE OBSERVED
(SURFACE ELEV. = 305.0±)
ESTIMATED SEASONAL HIGH GROUND WATER AT 28" (ELEVATION = 302.7±)

DEPTH	HOR.	TEX.	COLOR	MOTT.	G.W.	OTHER
0-9"	A	S.L.	10YR 3/3	NONE	NONE	CRUMB, FRIABLE
9-20"	B	S.L.	10YR 5/6	NONE	NONE	S.A.B., FRIABLE
20-90"	C	S.L.	2.5Y 5/3	@ 28"	NONE	BLOCKY, FIRM

DEEP TEST PIT: 922-1
DATE OF TEST: 9/23/22
REFUSAL AT: NONE OBSERVED
(SURFACE ELEV. = 305.0±)
ESTIMATED SEASONAL HIGH GROUND WATER AT 28" (ELEVATION = 302.7±)

DEPTH	HOR.	TEX.	COLOR	MOTT.	G.W.	OTHER
0-9"	A	S.L.	10YR 3/3	NONE	NONE	CRUMB, FRIABLE
9-20"	B	S.L.	10YR 5/6	NONE	NONE	S.A.B., FRIABLE
20-90"	C	S.L.	2.5Y 5/3	@ 28"	NONE	BLOCKY, FIRM

PREPARED BY:
DILLIS & ROY CIVIL DESIGN GROUP
CIVIL ENGINEERS LAND SURVEYORS WETLAND CONSULTANTS
1 MAIN STREET, SUITE 1
LUNENBURG, MA 01462
PHONE: (978) 779-6091
www.dillisandroy.com

OWNER:
PHOENIX-DURANGO LLC
345 MAIN STREET
NORTHBOROUGH MASSACHUSETTS

APPLICANT:
CS BAILEY LANDSCAPE, INC
19 WHITTEMORE SREET
ARLINGTON, MASSACHUSETTS

SCALE:
20 0 10 20 40 80
1 in. = 20 ft.

DIG SAFE 1-888-344-7233

COMMONWEALTH OF MASSACHUSETTS
GREGORY S. ROY
CIVIL
NO. 46078
REGISTERED PROFESSIONAL ENGINEER
11/1/23

DATE: 10/24/2023
DESIGN BY: GSR
DRAWN BY: MMK
CHECKED BY: GSR

EXISTING CONDITIONS PLAN
184 AYER ROAD
HARVARD, MASSACHUSETTS

NO.	DATE	DESCRIPTION	BY
1.	01/04/24	REVISED PER PER REVIEW COMMENTS	RPV

JOB NO. 6632-C
DRAWING NO. 6632-C-EXIST
SHEET NO. C1.1

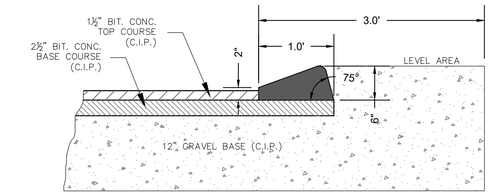
ZONING INFORMATION:

ZONING: COMMERCIAL

	CONVENTIONAL
AREA	10,000 SF
FRONTAGE	80'
FRONT YARD	20'
SIDE YARD	20'
REAR YARD	20'

LAYOUT & MATERIALS NOTES:

1. SIDEWALK DEPICTED ON THIS PLAN SHALL BE REINFORCED CONCRETE IN AREAS ADJACENT TO PROPOSED PAVEMENTS AND PARKING AREAS. TRANSITION TO CONCRETE PAVERS AROUND THE BUILDING TO THE FRONT ENTRANCE.
2. HANDICAPPED RAMP SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE AMERICAN DISABILITIES ACT AND THE MASSACHUSETTS ARCHITECTURAL ACCESS BOARD REGULATIONS. REFER TO THE DETAIL FOR ADDITIONAL INFORMATION.
3. SAWCUT EXISTING PAVEMENT ALONG PAVEMENT REMOVAL AREAS PRIOR TO REMOVAL OF EXISTING PAVEMENT. ALL PAVEMENT SHALL BE REMOVED AND DISPOSED OF OFF SITE IN ACCORDANCE WITH LOCAL AND STATE REGULATIONS.
4. ALL PAVED AREAS SHALL BE STRIPPED WITH WHITE OR YELLOW PAINT IN ACCORDANCE WITH THE STRIPING SHOWN ON THE LAYOUT PLAN.
5. PROPOSED DRIVEWAY SHALL BE MAINTAINED AT 24-FEET IN WIDTH AT THE NARROWEST POINT.
6. PROVIDE A MINIMUM OF 19-FEET BETWEEN THE PROPOSED STORAGE BINS AND EDGE OF THE GRAVEL PAD TO THE PROPERTY LINES.



BITUMINOUS CONCRETE CURB DETAIL

NOT TO SCALE

CONCRETE SIDEWALK DETAIL

NOT TO SCALE

NOTES:
1. REFER TO CURB DETAIL FOR SPECIFICATIONS PERTAINING TO INSTALLATION OF CURBING.
2. RAMPS TO BE CONSTRUCTED IN ACCORDANCE WITH ADA AND MAAB STANDARDS.
3. YELLOW DETECTIBLE TRUNCATED DOME WARNING PANELS TO BE AS MANUFACTURED BY ADA SOLUTIONS, INC.

ACCESSIBLE RAMP DETAIL

NOT TO SCALE

PREPARED BY:

DILLIS & ROY CIVIL DESIGN GROUP

CIVIL ENGINEERS LAND SURVEYORS WETLAND CONSULTANTS

1 MAIN STREET, SUITE 1
LUNENBURG, MA 01462

PHONE: (978) 779-6091
www.dillisandroy.com

OWNER:
PHOENIX-DURANGO LLC
345 MAIN STREET
NORTHBOROUGH MASSACHUSETTS

APPLICANT:
CS BAILEY LANDSCAPE, INC
19 WHITTEMORE SREET
ARLINGTON, MASSACHUSETTS

SCALE:
20 0 10 20 40 80
1 in. = 20 ft.

DIG SAFE 1-888-344-7233

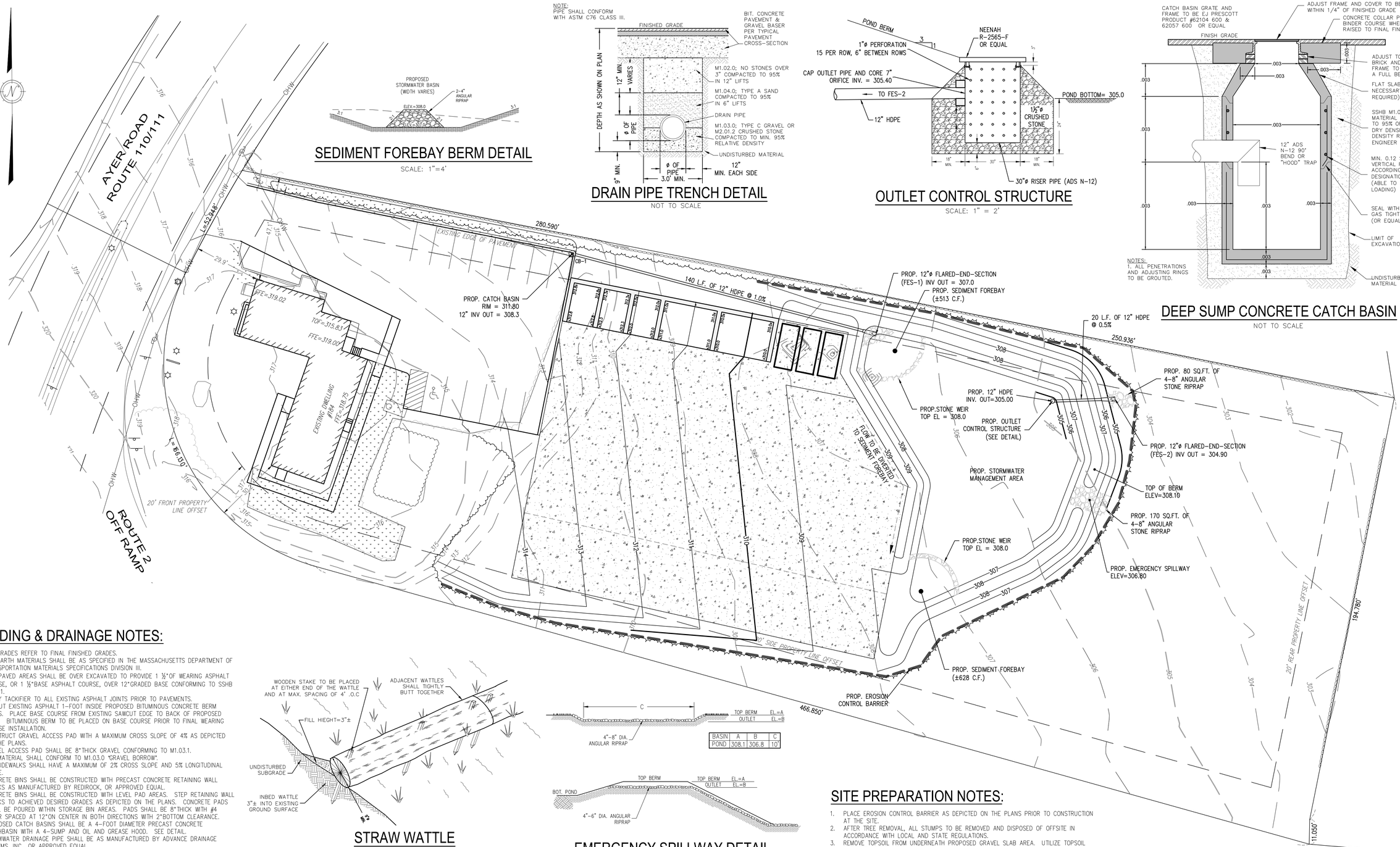
COMMONWEALTH OF MASSACHUSETTS GREGORY S. ROY CIVIL NO. 46078 REGISTERED PROFESSIONAL ENGINEER 11/1/24

DATE: 10/24/2023
DESIGN BY: GSR
DRAWN BY: MMK
CHECKED BY: GSR

LAYOUT PLAN
184 AYER ROAD
HARVARD, MASSACHUSETTS

NO.	DATE	DESCRIPTION	BY
1.	01/04/24	REVISED PER PER REVIEW COMMENTS	RPV

JOB NO. 6632-C
DRAWING NO. 6632-C-LAYOUT
SHEET NO. C2.0



SEDIMENT FOREBAY BERM DETAIL

SCALE: 1"=4'

NOTE:
PIPE SHALL CONFORM WITH ASTM C76 CLASS III.

DRAIN PIPE TRENCH DETAIL

NOT TO SCALE

OUTLET CONTROL STRUCTURE

SCALE: 1" = 2'

NOTES:
1. ALL PENETRATIONS AND ADJUSTING RINGS TO BE GROUTED.

DEEP SUMP CONCRETE CATCH BASIN

NOT TO SCALE

GRADING & DRAINAGE NOTES:

1. ALL GRADES REFER TO FINAL FINISHED GRADES.
2. ALL EARTH MATERIALS SHALL BE AS SPECIFIED IN THE MASSACHUSETTS DEPARTMENT OF TRANSPORTATION MATERIALS SPECIFICATIONS DIVISION III.
3. NEW PAVED AREAS SHALL BE OVER EXCAVATED TO PROVIDE 1 ½" OF WEARING ASPHALT COURSE, OR 1 ½" BASE ASPHALT COURSE, OVER 12" GRADED BASE CONFORMING TO SSHB M1.01.1.
4. APPLY TACKIFIER TO ALL EXISTING ASPHALT JOINTS PRIOR TO PAVEMENTS.
5. SAWCUT EXISTING ASPHALT 1-FOOT INSIDE PROPOSED BITUMINOUS CONCRETE BERM AREAS. PLACE BASE COURSE FROM EXISTING SAWCUT EDGE TO BACK OF PROPOSED BERM. BITUMINOUS BERM TO BE PLACED ON BASE COURSE PRIOR TO FINAL WEARING COURSE INSTALLATION.
6. CONSTRUCT GRAVEL ACCESS PAD WITH A MAXIMUM CROSS SLOPE OF 4% AS DEPICTED ON THE PLANS.
7. GRAVEL ACCESS PAD SHALL BE 8" THICK GRAVEL CONFORMING TO M1.03.1.
8. FILL MATERIAL SHALL CONFORM TO M1.03.0 "GRAVEL BORROW".
9. ALL SIDEWALKS SHALL HAVE A MAXIMUM OF 2% CROSS SLOPE AND 5% LONGITUDINAL GRADE.
10. CONCRETE BINS SHALL BE CONSTRUCTED WITH PRECAST CONCRETE RETAINING WALL BLACKS AS MANUFACTURED BY REDIROCK, OR APPROVED EQUAL.
11. CONCRETE BINS SHALL BE CONSTRUCTED WITH LEVEL PAD AREAS. STEP RETAINING WALL BLOCKS TO ACHIEVED DESIRED GRADES AS DEPICTED ON THE PLANS. CONCRETE PADS SHALL BE POURED WITHIN STORAGE BIN AREAS. PADS SHALL BE 8" THICK WITH #4 REBAR SPACED AT 12"ON CENTER IN BOTH DIRECTIONS WITH 2"BOTTOM CLEARANCE.
12. PROPOSED CATCH BASINS SHALL BE A 4-FOOT DIAMETER PRECAST CONCRETE CATCHBASIN WITH A 4-SUMP AND OIL AND GREASE HOOD. SEE DETAIL.
13. STORMWATER DRAINAGE PIPE SHALL BE AS MANUFACTURED BY ADVANCE DRAINAGE SSYTEMS, INC., OR APPROVED EQUAL.
14. STONE RIPRAP SHALL BE 4-8" ANGULAR STONE RIPRAP.
15. CRUSHED STONE SHALL BE 1 ½" ANGULAR CRUSHED STONE.

STRAW WATTLE

NOT TO SCALE

EMERGENCY SPILLWAY DETAIL

SCALE: 1"=4'

SITE PREPARATION NOTES:

1. PLACE EROSION CONTROL BARRIER AS DEPICTED ON THE PLANS PRIOR TO CONSTRUCTION AT THE SITE.
2. AFTER TREE REMOVAL, ALL STUMPS TO BE REMOVED AND DISPOSED OF OFFSITE IN ACCORDANCE WITH LOCAL AND STATE REGULATIONS.
3. REMOVE TOPSOIL FROM UNDERNEATH PROPOSED GRAVEL SLAB AREA. UTILIZE TOPSOIL FOR SITE RESTORATION.

PREPARED BY:
DILLIS & ROY CIVIL DESIGN GROUP
CIVIL ENGINEERS LAND SURVEYORS WETLAND CONSULTANTS
1 MAIN STREET, SUITE 1
LUNENBURG, MA 01462
PHONE: (978) 779-6091
www.dillisandroy.com

OWNER:
PHOENIX-DURANGO LLC
345 MAIN STREET
NORTHBOROUGH MASSACHUSETTS

APPLICANT:
CS BAILEY LANDSCAPE, INC
19 WHITTEMORE SREET
ARLINGTON, MASSACHUSETTS

SCALE:
20 0 10 20 40 80
1 in. = 20 ft.

DIG SAFE 1-888-344-7233

COMMONWEALTH OF MASSACHUSETTS
GREGORY S. ROY
No. 46078
REGISTERED PROFESSIONAL ENGINEER
1/4/24

DATE: 10/24/2023
DESIGN BY: GSR
DRAWN BY: MMK
CHECKED BY: GSR

GRADING & DRAINAGE PLAN
184 AYER ROAD
HARVARD, MASSACHUSETTS

NO.	DATE	DESCRIPTION	BY
1.	01/04/24	REVISED PER PER REVIEW COMMENTS	RPV

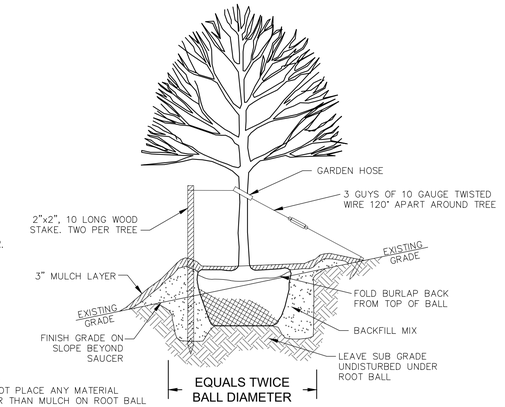
JOB NO. 6632-C
DRAWING NO. 6632-C-GRADING
SHEET NO. C3.0

PROPOSED PLANTING SCHEDULE

SYMBOL:	BOTANICAL NAME:	COMMON NAME:	SIZE:	SPACING:	QUANTITY:
BS	BUXUS SEMPERVIRENS	AMERICAN BOXWOOD	3'-4' HIGH	AS SHOWN	7
TO	THUJA OCCIDENTALIS	ARBORVITAE	5' HEIGHT	AS SHOWN	13
CF	CORNUS FLORIDA	FLOWERING DOG WOOD	2" CALIPER	AS SHOWN	3

NOTES:

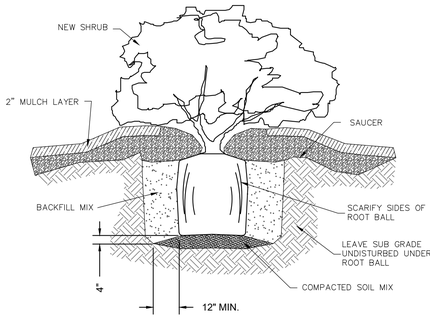
1. IN ADDITION TO PROPOSED PLANTINGS, LANDSCAPED AREAS SHALL BE LOAMED & SEEDED (4" LOAM MIN.)
2. PROPOSED PLANTING LOCATIONS MAY VARY SLIGHTLY TO ACCOMMODATE SITE CONDITIONS AND FEATURES.
3. SIGNIFICANT ALTERATIONS TO THE SPECIES OF THE PROPOSED PLANTINGS SHALL BE APPROVED BY THE ENGINEER.



NOTE:
DO NOT PLACE ANY MATERIAL OTHER THAN MULCH ON ROOT BALL

TREE PLANTING DETAIL

NOT TO SCALE



SHRUB PLANTING DETAIL

NOT TO SCALE

SILT SACK

NOT TO SCALE

NOTE:
SEE PLAN FOR LOCATION(S), LENGTH, AND WIDTH

TEMP. CONSTRUCTION ENTRANCE DETAIL

NOT TO SCALE

LIGHTING SCHEDULE:

ID	TYPE	POLE	MOUNTING	BULB	WATTAGE	MANUFACTURER	MODEL	HEIGHT
L	LANTERN	N/A	WALL	LED	150	RAB LIGHTING	VBR100	8'
WP	WALL PACK	N/A	WALL	LED	81	RAB LIGHTING	WP3LED82	8'
G	GOOSE	N/A	P-SIGN	LED	13	RAB LIGHTING	GN1LED13YACB	8'

PREPARED BY:
DILLIS & ROY CIVIL DESIGN GROUP
CIVIL ENGINEERS LAND SURVEYORS WETLAND CONSULTANTS
1 MAIN STREET, SUITE 1
LUNENBURG, MA 01462
PHONE: (978) 779-6091
www.dillisandroy.com

OWNER:
PHOENIX-DURANGO LLC
345 MAIN STREET
NORTHBOROUGH MASSACHUSETTS

APPLICANT:
CS BAILEY LANDSCAPE, INC
19 WHITTEMORE SREET
ARLINGTON, MASSACHUSETTS

SCALE:
20 0 10 20 40 80
1 in. = 20 ft.

DIG SAFE 1-888-344-7233

GREGORY S ROY CIVIL NO. 46178 COMMONWEALTH OF MASSACHUSETTS REGISTERED PROFESSIONAL ENGINEER 1/4/24

DATE: 10/24/2023
DESIGN BY: GSR
DRAWN BY: MMK
CHECKED BY: GSR

LIGHTING &LANDSCAPING PLAN
184 AYER ROAD
HARVARD, MASSACHUSETTS

NO.	DATE	DESCRIPTION	BY
1.	01/04/24	REVISED PER PER REVIEW COMMENTS	RPV

JOB NO. 6632-C
DRAWING NO. 6632-C-LAND
SHEET NO. C4.0

utile

January 1, 2024

Frank O'Connor
Director of Planning
13 Ayer R.
Harvard, MA 01451

Invoice # 10365

Harvard Ayer Ph2 Vision Plan **Project #2368.1**

Design Consulting
December 1 - December 31, 2023

Terms	**Project Fees**	**Expenses**	**Total Project**	
Project Not to Exceed	$150,305.00	$4,650.00	$154,955.00	
Consulting hours and fee				
	Rate ($/HR)	*Hrs*	*Fee/staff ($)*	
Utile				
Matthew Littell	$260	5.75	$1,495.00	
Taskina Tareen	$160	41.50	$6,640.00	
Kevin Chong	$130	72.00	$9,360.00	
Jocelyn Chiou	$115	11.50	$1,322.50	
				$18,817.50
Consultants	*Invoice*	*Date*	*Amount*	
Landwise	2309_113023	30-Nov-23	$7,588.00	
Nitsch	84052	1-Dec-23	$985.00	
Nitsch	84501	1-Jan-24	$1,310.00	
				$9,883.00
Subtotal				**$28,700.50**
Reimbursable Expenses				
	Invoice	*Date*	*Amount*	
Sub-Consultant Exp: *Landwise*	2309_113023	30-Nov-23	$37.47	
Subtotal - Reimbursable Expenses				**$37.47**
Total Invoice Amount				**$28,737.97**
Outstanding Invoices	*Invoice*	*Date*	*Amount*	
	10267	1-Dec-23	$4,205.00	
Total Balance Due				**$32,942.97**

Billed To Date:	*Invoice*	*Date*	*Fee Amount*	*Expenses*	*Total Invoice*
	10071	1-Oct-23	$21,115.00	$0.00	$21,115.00
	10178	1-Nov-23	$23,497.50	$0.00	$23,497.50
	10267	1-Dec-23	$4,205.00	$0.00	$4,205.00
	10375	1-Jan-24	$28,700.50	$37.47	$28,737.97
			$77,518.00	$37.47	$77,555.47
		Balance Remaining:	$72,787.00	$4,612.53	$77,399.53

Landwise LLC
101 Walnut St
Watertown, MA 02472-4026
(617) 852-3581

INVOICE

BILL TO
Taskina Tareen
Utile
115 Kingston Street
Boston, MA 02111

INVOICE # 2309_113023
DATE 11/30/2023
DUE DATE 01/29/2024
TERMS Net 60

ACTIVITY	AMOUNT
Professional Services September, October, November Services for Harvard Economic Impact Analysis - 37% complete	7,588.00
Harvard Ayer Site Visit Mileage	37.47

BALANCE DUE **$7,625.47**

Below are wiring instructions for your convenience:
Name: Landwise LLC
Bank Name: Bank Of America .
Bank Address: 1065 Lexington St. Waltham, MA 02452
Bank Account: 004644662826
Bank Routing: 011000138 (paper + electronic)
026009593 (wires)

OR
Mail Check to:
Landwise LLC
101 Walnut Street
Watertown, MA 02472
[Please enter Invoice Number]

Nitsch Engineering

2 Center Plaza, Suite 430
Boston, MA 02108-1928
T: 617-338-0063
F: 617-338-6472
www.nitscheng.com

Matthew Littell
Utile, Inc.
115 Kingston Street
Boston, MA 02111

December 1, 2023
Project No: 15585.
Invoice No: 84052

Project 15585. Ayer Road

Professional Services from October 29, 2023 to November 25, 2023

Task 020 Background Review & Comm Visioning

Sub-Task 01 Reference Review

Professional Personnel

	Hours	Rate	Amount	
Project Manager				
Creamer, Brian	4.00	225.00	900.00	
Totals	4.00		900.00	
Total Labor				**900.00**
		Total this Sub-Task		**$900.00**
		Total this Task		**$900.00**

Task 030 Building & Parcel Study

Sub-Task 01 Prototypical/Soft Site Selection

Professional Personnel

	Hours	Rate	Amount	
Planner				
Picard, Sydnie	.50	170.00	85.00	
Totals	.50		85.00	
Total Labor				**85.00**
		Total this Sub-Task		**$85.00**
		Total this Task		**$85.00**

Billing Limits	**Current**	**Prior**	**To-Date**	
Total Billings	985.00	9,327.50	10,312.50	
Limit			15,425.00	
Remaining			5,112.50	
		Total this Invoice		**$985.00**

Outstanding Invoices

Number	Date	Balance
83347	10/12/2023	2,027.50
83659R	11/1/2023	7,300.00
Total		**9,327.50**

Remit to Nitsch Engineering, Inc., 2 Center Plaza, Suite 430, Boston, MA 02108

Nitsch Engineering

2 Center Plaza, Suite 430
Boston, MA 02108-1928
T: 617-338-0063
F: 617-338-6472
www.nitscheng.com

Matthew Littell
Utile, Inc.
115 Kingston Street
Boston, MA 02111

January 1, 2024
Project No: 15585.
Invoice No: 84501

Project 15585. Ayer Road

Professional Services from November 26, 2023 to December 30, 2023

Task 020 Background Review & Comm Visioning

Sub-Task 01 Reference Review

Professional Personnel

	Hours	Rate	Amount	
GIS Specialist				
Peterson, Nicolas	2.00	120.00	240.00	
Totals	2.00		240.00	
Total Labor				**240.00**
		Total this Sub-Task		**$240.00**
		Total this Task		**$240.00**

Task 030 Building & Parcel Study

Sub-Task 01 Prototypical/Soft Site Selection

Professional Personnel

	Hours	Rate	Amount	
Project Manager				
Creamer, Brian	4.00	225.00	900.00	
Planner				
Picard, Sydnie	1.00	170.00	170.00	
Totals	5.00		1,070.00	
Total Labor				**1,070.00**
		Total this Sub-Task		**$1,070.00**
		Total this Task		**$1,070.00**

Billing Limits	**Current**	**Prior**	**To-Date**	
Total Billings	1,310.00	10,312.50	11,622.50	
Limit			15,425.00	
Remaining			3,802.50	
		Total this Invoice		**$1,310.00**

Project	15585.	Ayer Road	Invoice	84501

Outstanding Invoices

Number	Date	Balance
84052	12/1/2023	985.00
Total		**985.00**

BEALS + THOMAS

BEALS AND THOMAS, INC.
144 Turnpike Road
Southborough, MA 01772-2104

T 508.366.0560
F 508.366.4391
www.bealsandthomas.com
Regional Office: Plymouth, MA

Town of Harvard
13 Ayer Road
Harvard, MA 01451

Invoice number 3241.05-1
Date 12/31/2023

Project **3241.05**
Site Plan Review
184 Ayer Road
Harvard, MA

FOR PROFESSIONAL SERVICES RENDERED: this period through December 31, 2023

We have commenced our review of the stormwater components of the project documents.

Stormwater Review and Report	Hours	Amount
Senior Professional Staff V	8.00	1,400.00
Invoice total		**1,400.00**

By: _____
Daniel M. Feeney
Principal

G/L ACCOUNT - MASTER INQUIRY

Org code: 8900 AGENCY FUNDS
Object code: 250110 PB - SITE PLAN REVIEW
Project code:

Type: B L
Status: A
Budgetary: N

Fund	8900	AGENCY FUNDS
Function	0	UNDEFINED
Department	000	UNDEFINED
Budget Ctrl	000	UNDEFINED
Location	00	UNDEFINED
DESE Functn	0000	UNDEFINED
Program	0000	UNASSIGNED
Fiscal Year	0000	UNDEFINED

Full description: PB - SITE PLAN REVIEW Short desc: PB-SPR

--------- CURRENT YEAR MONTHLY AMOUNTS ----------

PER	ACTUAL	ENCUMBRANCE	BUD TRANSFER	BUDGET
00	-4,371.20	.00	.00	.00
01	3,720.00	.00	.00	.00
02	.00	.00	.00	.00
03	.00	.00	.00	.00
04	.00	.00	.00	.00
05	.00	.00	.00	.00
06	-3,888.80	.00	.00	.00
07	.00	.00	.00	.00
08	.00	.00	.00	.00
09	.00	.00	.00	.00
10	.00	.00	.00	.00
11	.00	.00	.00	.00
12	.00	.00	.00	.00
13	.00	.00	.00	.00
Tot:	-4,540.00	.00	.00	.00

---------- CURRENT YEAR TOTAL AMOUNTS ----------

Actual (Memo)	-4,540.00	Original Budget	.00
Encumbrances	.00	Budget Tranfr In	.00
Requisitions	.00	Budget Tranfr Out	.00
Total	-4,540.00	Carry Fwd Budget	.00
Available Budget	.00	Carry Fwd Bud Tfr	.00
Percent Used	.00	Revised Budget	.00
Inceptn to SOY	.00	Inceptn Orig Bud	.00
		Inceptn Revsd Bud	.00
Encumb-Last Yr	.00	REQUEST	.00
Actual-Last Yr	.00	REVIEW	.00
Estim-Actual	.00	FINAL	.00
			.00
			.00

G/L ACCOUNT - MASTER INQUIRY

LAST YEAR MONTHLY AMOUNTS

PER	ACTUAL	ENCUMBRANCE	BUDGET
00	-17,740.00	.00	.00
01	12,902.66	.00	.00
02	.00	.00	.00
03	-1,000.00	.00	.00
04	1,742.50	.00	.00
05	3,007.39	.00	.00
06	.00	.00	.00
07	-2,285.00	.00	.00
08	.00	.00	.00
09	.00	.00	.00
10	-4,000.00	.00	.00
11	.00	.00	.00
12	3,001.25	.00	.00
13	.00	.00	.00
Tot:	-4,371.20	.00	.00

PRIOR YEARS TOTAL AMOUNTS

2023 Actual	-4,371.20	2023 Orig Budget	.00
2023 Closed @ YE	-4,371.20	2023 Bud Tfr In	.00
2023 Encumbrance	.00	2023 Bud Tfr Out	.00
2023 Memo Bal	-4,371.20	2023 C Fwd Budget	.00
2022 Actual	-17,740.00	2023 Revsd Budget	.00
2021 Actual	.00		
2020 Actual	-180.00	2022 Orig Budget	.00
2019 Actual	.00	2022 Revsd Budget	.00
2018 Actual	-5,040.00	2021 Orig Budget	.00
2017 Actual	.00	2021 Revsd Budget	.00
2016 Actual	.00		
2015 Actual	.00		
2014 Actual	.00		

FUTURE YEAR AMOUNTS

PER	2025 BUDGET		BUDGET	
00	.00	2025 REQUEST	.00	.00
01	.00	2025 REVIEW	.00	.00
02	.00	2025 FINAL	.00	.00
03	.00	2025	.00	.00
04	.00	2025	.00	.00
05	.00	2025 Revised	.00	
06	.00	2026 Estimate	.00	.00
07	.00	2027 Estimate	.00	.00
08	.00	2028 Estimate	.00	.00
09	.00	2029 Estimate	.00	.00
10	.00			
11	.00	2025 Memo Bal	.00	
12	.00	2025 Encumbrance	.00	
13	.00	2025 Requisition	.00	
Tot:	.00			

ACCOUNT NOTES

** END OF REPORT - Generated by Frank O'Connor **

G/L ACCOUNT - MASTER INQUIRY

Org code: 8900 AGENCY FUNDS Type: B L
Object code: 250120 PB - DRIVEWAY INSP DEPOSITS Status: A
Project code: Budgetary: N

Fund	8900	AGENCY FUNDS
Function	0	UNDEFINED
Department	000	UNDEFINED
Budget Ctrl	000	UNDEFINED
Location	00	UNDEFINED
DESE Functn	0000	UNDEFINED
Program	0000	UNASSIGNED
Fiscal Year	0000	UNDEFINED

Full description: PB - DRIVEWAY INSP DEPOSITS Short desc: PB-

CURRENT YEAR MONTHLY AMOUNTS

PER	ACTUAL	ENCUMBRANCE	BUD TRANSFER	BUDGET
00	-2,954.53	.00	.00	.00
01	1,999.90	.00	.00	.00
02	-.11	.00	.00	.00
03	-.10	.00	.00	.00
04	-.10	.00	.00	.00
05	-.07	.00	.00	.00
06	.00	.00	.00	.00
07	.00	.00	.00	.00
08	.00	.00	.00	.00
09	.00	.00	.00	.00
10	.00	.00	.00	.00
11	.00	.00	.00	.00
12	.00	.00	.00	.00
13	.00	.00	.00	.00
Tot:	-955.01	.00	.00	.00

CURRENT YEAR TOTAL AMOUNTS

Actual (Memo)	-955.01	Original Budget	.00
Encumbrances	.00	Budget Tranfr In	.00
Requisitions	.00	Budget Tranfr Out	.00
Total	-955.01	Carry Fwd Budget	.00
Available Budget	.00	Carry Fwd Bud Tfr	.00
Percent Used	.00	Revised Budget	.00
Inceptn to SOY	.00	Inceptn Orig Bud	.00
		Inceptn Revsd Bud	.00
Encumb-Last Yr	.00	REQUEST	.00
Actual-Last Yr	.00	REVIEW	.00
Estim-Actual	.00	FINAL	.00
			.00
			.00

G/L ACCOUNT - MASTER INQUIRY

LAST YEAR MONTHLY AMOUNTS

PER	ACTUAL	ENCUMBRANCE	BUDGET
00	-1,253.74	.00	.00
01	-300.02	.00	.00
02	-.02	.00	.00
03	-1,200.02	.00	.00
04	-.03	.00	.00
05	-.02	.00	.00
06	-200.05	.00	.00
07	-.11	.00	.00
08	-.10	.00	.00
09	-.10	.00	.00
10	-.11	.00	.00
11	-.10	.00	.00
12	-.11	.00	.00
13	.00	.00	.00
Tot:	-2,954.53	.00	.00

PRIOR YEARS TOTAL AMOUNTS

2023 Actual	-2,954.53	2023 Orig Budget		.00
2023 Closed @ YE	-2,954.53	2023 Bud Tfr In		.00
2023 Encumbrance	.00	2023 Bud Tfr Out		.00
2023 Memo Bal	-2,954.53	2023 C Fwd Budget		.00
2022 Actual	-1,253.74	2023 Revsd Budget		.00
2021 Actual	-1,253.49			
2020 Actual	-953.24	2022 Orig Budget		.00
2019 Actual	-952.42	2022 Revsd Budget		.00
2018 Actual	5,038.59	2021 Orig Budget		.00
2017 Actual	798.59	2021 Revsd Budget		.00
2016 Actual	-501.41			
2015 Actual	-81.41			
2014 Actual	498.59			

FUTURE YEAR AMOUNTS

PER	2025 BUDGET		BUDGET	
00	.00	2025 REQUEST	.00	.00
01	.00	2025 REVIEW	.00	.00
02	.00	2025 FINAL	.00	.00
03	.00	2025	.00	.00
04	.00	2025	.00	.00
05	.00	2025 Revised	.00	
06	.00	2026 Estimate	.00	.00
07	.00	2027 Estimate	.00	.00
08	.00	2028 Estimate	.00	.00
09	.00	2029 Estimate	.00	.00
10	.00			
11	.00	2025 Memo Bal	.00	
12	.00	2025 Encumbrance	.00	
13	.00	2025 Requisition	.00	
Tot:	.00			

ACCOUNT NOTES

** END OF REPORT - Generated by Frank O'Connor **

G/L ACCOUNT - MASTER INQUIRY

Org code: 8900 AGENCY FUNDS Type: B L
Object code: 250121 PB - CELL TOWER CONSULTING Status: A
Project code: Budgetary: N

Fund	8900	AGENCY FUNDS
Function	0	UNDEFINED
Department	000	UNDEFINED
Budget Ctrl	000	UNDEFINED
Location	00	UNDEFINED
DESE Functn	0000	UNDEFINED
Program	0000	UNASSIGNED
Fiscal Year	0000	UNDEFINED

Full description: PB - CELL TOWER CONSULTING Short desc: PB-

--------- CURRENT YEAR MONTHLY AMOUNTS ----------

PER	ACTUAL	ENCUMBRANCE	BUD TRANSFER	BUDGET
00	-.42	.00	.00	.00
01	.00	.00	.00	.00
02	.00	.00	.00	.00
03	.00	.00	.00	.00
04	.00	.00	.00	.00
05	.00	.00	.00	.00
06	.00	.00	.00	.00
07	.00	.00	.00	.00
08	.00	.00	.00	.00
09	.00	.00	.00	.00
10	.00	.00	.00	.00
11	.00	.00	.00	.00
12	.00	.00	.00	.00
13	.00	.00	.00	.00
Tot:	-.42	.00	.00	.00

---------- CURRENT YEAR TOTAL AMOUNTS ----------

Actual (Memo)	-.42	Original Budget	.00
Encumbrances	.00	Budget Tranfr In	.00
Requisitions	.00	Budget Tranfr Out	.00
Total	-.42	Carry Fwd Budget	.00
Available Budget	.00	Carry Fwd Bud Tfr	.00
Percent Used	.00	Revised Budget	.00
Inceptn to SOY	.00	Inceptn Orig Bud	.00
		Inceptn Revsd Bud	.00
Encumb-Last Yr	.00	REQUEST	.00
Actual-Last Yr	.00	REVIEW	.00
Estim-Actual	.00	FINAL	.00
			.00
			.00

G/L ACCOUNT - MASTER INQUIRY

LAST YEAR MONTHLY AMOUNTS

PER	ACTUAL	ENCUMBRANCE	BUDGET
00	-.42	.00	.00
01	.00	.00	.00
02	.00	.00	.00
03	.00	.00	.00
04	.00	.00	.00
05	.00	.00	.00
06	.00	.00	.00
07	.00	.00	.00
08	.00	.00	.00
09	.00	.00	.00
10	.00	.00	.00
11	.00	.00	.00
12	.00	.00	.00
13	.00	.00	.00
Tot:	-.42	.00	.00

---------- PRIOR YEARS TOTAL AMOUNTS ----------

2023 Actual	-.42	2023 Orig Budget		.00
2023 Closed @ YE	-.42	2023 Bud Tfr In		.00
2023 Encumbrance	.00	2023 Bud Tfr Out		.00
2023 Memo Bal	-.42	2023 C Fwd Budget		.00
2022 Actual	-.42	2023 Revsd Budget		.00
2021 Actual	-.42			
2020 Actual	.00	2022 Orig Budget		.00
2019 Actual	.00	2022 Revsd Budget		.00
2018 Actual	.00	2021 Orig Budget		.00
2017 Actual	.00	2021 Revsd Budget		.00
2016 Actual	.00			
2015 Actual	.00			
2014 Actual	.00			

---------- FUTURE YEAR AMOUNTS ----------

PER	2025 BUDGET		BUDGET	
00	.00	2025 REQUEST	.00	.00
01	.00	2025 REVIEW	.00	.00
02	.00	2025 FINAL	.00	.00
03	.00	2025	.00	.00
04	.00	2025	.00	.00
05	.00	2025 Revised	.00	
06	.00	2026 Estimate	.00	.00
07	.00	2027 Estimate	.00	.00
08	.00	2028 Estimate	.00	.00
09	.00	2029 Estimate	.00	.00
10	.00			
11	.00	2025 Memo Bal	.00	
12	.00	2025 Encumbrance	.00	
13	.00	2025 Requisition	.00	
Tot:	.00			

---------- ACCOUNT NOTES ----------

** END OF REPORT - Generated by Frank O'Connor **

G/L ACCOUNT - MASTER INQUIRY

Org code: 8900 AGENCY FUNDS
Object code: 250123 ESCROW - PB 256 AYER RD
Project code:

Type: B L
Status: A
Budgetary: N

Fund	8900	AGENCY FUNDS
Function	0	UNDEFINED
Department	000	UNDEFINED
Budget Ctrl	000	UNDEFINED
Location	00	UNDEFINED
DESE Functn	0000	UNDEFINED
Program	0000	UNASSIGNED
Fiscal Year	0000	UNDEFINED

Full description: ESCROW - PB 256 AYER RD Short desc: 256 AYER

CURRENT YEAR MONTHLY AMOUNTS

PER	ACTUAL	ENCUMBRANCE	BUD TRANSFER	BUDGET
00	8.70	.00	.00	.00
01	-8.70	.00	.00	.00
02	.00	.00	.00	.00
03	.00	.00	.00	.00
04	.00	.00	.00	.00
05	.00	.00	.00	.00
06	.00	.00	.00	.00
07	.00	.00	.00	.00
08	.00	.00	.00	.00
09	.00	.00	.00	.00
10	.00	.00	.00	.00
11	.00	.00	.00	.00
12	.00	.00	.00	.00
13	.00	.00	.00	.00
Tot:	.00	.00	.00	.00

CURRENT YEAR TOTAL AMOUNTS

Actual (Memo)	.00	Original Budget	.00
Encumbrances	.00	Budget Tranfr In	.00
Requisitions	.00	Budget Tranfr Out	.00
Total	.00	Carry Fwd Budget	.00
Available Budget	.00	Carry Fwd Bud Tfr	.00
Percent Used	.00	Revised Budget	.00
Inceptn to SOY	.00	Inceptn Orig Bud	.00
		Inceptn Revsd Bud	.00
Encumb-Last Yr	.00	REQUEST	.00
Actual-Last Yr	.00	REVIEW	.00
Estim-Actual	.00	FINAL	.00
			.00
			.00

G/L ACCOUNT - MASTER INQUIRY

LAST YEAR MONTHLY AMOUNTS

PER	ACTUAL	ENCUMBRANCE	BUDGET
00	-4,000.00	.00	.00
01	.00	.00	.00
02	.00	.00	.00
03	.00	.00	.00
04	.00	.00	.00
05	.00	.00	.00
06	4,008.70	.00	.00
07	.00	.00	.00
08	.00	.00	.00
09	.00	.00	.00
10	.00	.00	.00
11	.00	.00	.00
12	.00	.00	.00
13	.00	.00	.00
Tot:	8.70	.00	.00

---------- PRIOR YEARS TOTAL AMOUNTS ----------

2023 Actual	8.70	2023 Orig Budget	.00
2023 Closed @ YE	8.70	2023 Bud Tfr In	.00
2023 Encumbrance	.00	2023 Bud Tfr Out	.00
2023 Memo Bal	8.70	2023 C Fwd Budget	.00
2022 Actual	-4,000.00	2023 Revsd Budget	.00
2021 Actual	-4,000.00		
2020 Actual	.00	2022 Orig Budget	.00
2019 Actual	.00	2022 Revsd Budget	.00
2018 Actual	.00	2021 Orig Budget	.00
2017 Actual	.00	2021 Revsd Budget	.00
2016 Actual	.00		
2015 Actual	.00		
2014 Actual	.00		

---------- FUTURE YEAR AMOUNTS ----------

PER	2025 BUDGET			BUDGET	
00	.00	2025	REQUEST	.00	.00
01	.00	2025	REVIEW	.00	.00
02	.00	2025	FINAL	.00	.00
03	.00	2025		.00	.00
04	.00	2025		.00	.00
05	.00	2025	Revised	.00	
06	.00	2026	Estimate	.00	.00
07	.00	2027	Estimate	.00	.00
08	.00	2028	Estimate	.00	.00
09	.00	2029	Estimate	.00	.00
10	.00				
11	.00	2025	Memo Bal	.00	
12	.00	2025	Encumbrance	.00	
13	.00	2025	Requisition	.00	
Tot:	.00				

---------- ACCOUNT NOTES ----------

** END OF REPORT - Generated by Frank O'Connor **