INSPECTION, MAINTENANCE AND HOUSEKEEPING PLAN

Bates College

55 & 65 Campus Avenue Housing
Lewiston, Maine

Introduction

The following plan outlines the anticipated inspection and maintenance procedures for the erosion and sedimentation controls as well as stormwater management devices for the project site. Also, this plan outlines several housekeeping requirements that shall be followed during and after construction. These procedures should be followed in order to ensure the intended function of the designed measures and to prevent unreasonable adverse impacts to the surrounding environment.

The procedures outlined in this inspection and maintenance plan are provided as an overview of the anticipated practices to be used on this site. In some instances, additional measures may be required due to unexpected conditions. For additional detail on any of the erosion and sedimentation control measures or stormwater management devices to be utilized on this project, refer to the most recently revised edition of the "Maine Erosion and Sediment Control BMPs" manual and/or the "Maine Stormwater Best Practices Manual (BMPs)" manual as published by the Maine Department of Environmental Protection (MDEP).

During Construction

1. **Inspection:** During the construction process, it is the Contractor's responsibility to comply with the inspection and maintenance procedures outlined in this section. These responsibilities include inspecting disturbed and impervious areas, erosion control measures, material storage areas that are exposed to precipitation, and locations where vehicles enter or exit the site. These areas shall be inspected at least once a week as well as before and after a storm event, and prior to completing permanent stabilization measures. A person with knowledge of erosion and stormwater control, including the standards and conditions in any applicable permits, shall conduct the inspections.

2. **Maintenance:** All measures shall be maintained in an effective operating condition until areas are permanently stabilized. If Best Management Practices (BMPs) need to be maintained or modified, additional BMPs are necessary, or other corrective action is needed, implementation must be completed within 7 calendar days and prior to any storm event (rainfall).

3. **Documentation:** A log summarizing the inspections and any corrective action taken must be maintained on-site. The log must include the name(s) and qualifications of the person making the inspections, the date(s) of the inspections, and major observations about the operation and maintenance of erosion and sedimentation controls, material storage areas, and vehicle access points to the site. Major observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and locations where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action

taken and when it was taken. The log must be made accessible to the appropriate regulatory agency upon request.

4. **Specific Inspection and Maintenance Tasks:** The following is a list of erosion control and stormwater management measures and the specific inspection and maintenance tasks to be performed during construction.

A. Sediment Barriers:

- Hay bale barriers, silt fences, and filter berms shall be inspected immediately after each rainfall and at least daily during prolonged rainfall.
- If the fabric on silt fence or filter barrier should decompose or become ineffective prior to the end of the expected usable life and the barrier is still necessary, it shall be replaced.
- Sediment deposits should be removed after each storm event. They must be removed before deposits reach approximately one-half the height ofthe barrier.
- Filter berms shall be reshaped as needed.
- Any sediment deposits remaining in place after the silt fence or filter barrier is no longer required should be dressed to conform to the existing grade, prepared, and seeded.

B. Erosion Control Blankets:

- Inspect these reinforced areas semi-annually and after significant rainfall events for slumping, sliding, seepage, and scour. Pay close attention to unreinforced areas adjacent to the erosion control blankets, which may experience accelerated erosion.
- Review all applicable inspection and maintenance procedures recommended by the specific blanket manufacturer. These tasks shall be included in addition to the requirements of this plan.

C. Temporary Storm Drain Inlet Protection:

- The inlet protection structure shall be inspected before each rain event and repaired as necessary.
- Sediment shall be removed and the storm drain sediment barrier restored to its original dimensions when the sediment has accumulated to half of the design depth of the trap.
- Barriers shall be removed upon permanent stabilization ofthe tributary area.
- Upon removal of the barrier, all accumulated sediments downstream of the structure shall be cleaned from the stormdrain system.

D. Stabilized Construction Entrances/Exits:

- The exit shall be maintained in a condition that will prevent tracking of sediment onto public rights-of-way.
- When the control pad becomes ineffective, the stone shall be removed along with the collected soil material. The entrance should then be reconstructed.
- Areas that have received mud-tracking or sediment deposits shall be swept or washed. Washing shall be done on an area stabilized with aggregate, which drains into an approved sediment-trapping device (not into storm drains, ditches, or waterways).

E. Temporary Seed and Mulch:

- Mulched areas should be inspected after rain events to check for rill erosion.
- If less than 90% of the soil surface is covered by mulch, additional mulch shall be applied in bare areas.
- In applications where seeding and mulch have been applied in conjunction with erosion control blankets, the blankets must be inspected after rain events for dislocation or undercutting.
- Mulch shall continue to be reapplied until 95% of the soil surface has established temporary vegetative cover.

F. Stabilized Temporary Drainage Swales:

- Sediment accumulation in the swale shall be removed once the cross section of the swale is reduced by 25%.
- The swales shall be inspected after rainfall events. Any evidence of sloughing of the side slopes or channel erosion shall be repaired and corrective action should be taken to prevent reoccurrence of the problem.
- In addition to the stabilized lining of the channel (i.e. erosion control blankets), stone check dams may be needed to further reduce channel velocity.

After Construction

1. **Inspection:** After construction, it is the responsibility of the owner or assigned heirs to comply with the inspection and maintenance procedures outlined in this section. All measures must be maintained in effective operating condition. A person with knowledge of erosion and stormwater control, including the standards and conditions in all applicable permits, shall conduct the inspections.

2. **Specific Inspection and Maintenance Tasks:** The following is a list of permanent erosion control and stormwater management measures and the inspection and maintenance tasks to be performed after construction.

   A. Vegetated Areas:

   - Inspect vegetated areas, particularly slopes and embankments, early in the growing season or after heavy rains to identify active or potential erosion problems.
   - Replant bare areas or areas with sparse growth. Where rill erosion is evident, armor the area with an appropriate lining or divert the erosive flows to on-site areas able to withstand the concentrated flows.

   B. Catch Basins:

   - Inspect and, if required, clean-out catch basins at least once a year, preferably in early spring.
   - Clean out must include the removal and legal disposal of accumulated sediments and debris at the bottom of the basin, at any inlet grates, at any inflow channels to the basin, and at any pipes between basins.
   - If the basin outlet is designed to trap floatable materials, then remove the floating debris and any floating oils (using oil-absorptive pads).

   C. Winter Sanding:

   - Clear accumulations of winter sand in parking lots and along roadways at least once a year, preferably in the spring.
   - Accumulations on pavement may be removed by pavement sweeping.
   - Accumulations of sand along road shoulders may be removed by grading excess sand to the pavement edge and removing it manually or by a front- end loader or other acceptable method.

D. Grassed Underdrained Soil Filters

- Inspect at least twice annually in the spring and fall.
  - Check the impoundment embankments for sloughing or erosion. The vegetation should be well established and maintained. Remove any trees or shrubs growing in the impoundment or on the inside of the soil filter embankments.
  - Check the outlet control structure for sediment accumulation or other blockages.
  - Look for sediment deposits in the sediment forebays or along edges of the pond where stormwater may enter into the soil filter. If the sediments leave less than 1 foot to the top of the berm between the forebay and the impoundment, remove the sediments and reline the forebay with stones. If the sediments extend more than 1/8 of the width of the soil filter, remove the sediments and restore the vegetation.
- Annually, monitor the time it takes for the stormwater takes to drain from the soil filter. For a 1inch or larger rainfall event, the pond should be drained in 24 to 48 hours. If the timeframe to drain the pond approaches 48 hours, the filter media should be reworked or replaced.

E. Bio-Retention Soil Filters

- Inspect at least twice annually in the spring and fall.
  - Check the impoundment embankments for sloughing or erosion. The vegetation should be well established and maintained. Remove any trees or shrubs growing in the impoundment or on the inside of the pond embankments.
  - Check the outlet control structure for sediment accumulation or other blockages.
  - Look for sediment deposits in the sediment forebays or along edges of the pond where stormwater may enter into the soil filter. If the sediments leave less than 1 foot to the top of the berm between the forebay and the impoundment, remove the sediments and reline the forebay with stones. If the sediments extend more than 1/8 of the width of the soil filter, remove the sediments and restore the vegetation.
- Annually, monitor the time it takes for the stormwater takes to drain from the bio-retention area. For a 1inch or larger rainfall event, the pond should be drained in 24 to 48 hours. If the timeframe to drain the pond approaches 48 hours, the filter media should be reworked or replaced.

F. Roof Drip Strips

- Inspect at least twice annually in the spring and fall.
  - Check the drip strips for sloughing or erosion. The stone surface should be free from debris and sediments. Remove any debris accumulation on and vegetation growing in the drip strip.
  - Check the outlet control structure for sediment accumulation or other blockages.
  - Look for sediment deposits in the drip strips and remove stone and sediments and replace stone to the require depth.
- Annually, monitor the time it takes for the stormwater takes to drain from the drip strip. For a 1inch or larger rainfall event, the pond should be drained in 24 to 48 hours. If the timeframe to drain the pond approaches 48 hours, the filter media under the stone should be reworked or replaced.

G. StormCrete Porous Pavement

- Twice per year (Spring & Fall),
  - Check the surface of the porous pavement for accumulation of fines and debris.
  - Vacuum the porous pavement surface with a truck mounted regenerative air or vacuum sweeper equipment.
  - Sweep the entire parking lot in the spring to remove winter sand from the surface of the lot and contributing drainage area.
  - Observe the performance of the porous pavement during a rainfall event to see if the flow is assimilated into the porous pavement surface. Check for accumulation of sediments near the catch basin inlet for the overflow condition. If water assimilation into the porous pavement is not occurring and is entering the catch basin rim, pressure wash and vacuum the surface of the pavement. If the pavement still does not assimilate stormwater the StormCrete panels will need to be removed, back-washed and reset.

3. **Recordkeeping:** Keep a log (report) summarizing inspections, maintenance, and any corrective actions taken. The log must include the date on which each inspection or maintenance task was performed, a description of the inspection findings or maintenance completed, and the name of the inspector or maintenance personnel performing the task. If a maintenance task requires the clean-out of any sediments or debris, indicate where the sediment and debris was disposed after removal. The log must be made accessible to DEP staff and a copy provided to the DEP upon request. The permittee shall retain a copy of the log for a period of at least five years from the completion of permanent stabilization.

4. **Re-Certification:** Submit a certification of the following to the Department within three months of the expiration of each five-year interval from the date of issuance of the permit.
    - Identification and repair of erosion problems. All areas of the project site have been inspected for areas of erosion, and appropriate steps have been taken to permanently stabilize these areas.
    - Inspection and repair of stormwater control system. All aspects of the stormwater control system have been inspected for damage, wear, and malfunction, and appropriate steps have been taken to repair or replace the system, or portions of the system.
    - Maintenance. The erosion and stormwater maintenance plan for the site is being implemented as written, or modifications to the plan have been submitted to and approved by the Department, and the maintenance log is being maintained.

Housekeeping

The following general performance standards apply to the proposed project both during and after construction.

A. Spill prevention: Controls must be used to prevent pollutants from being discharged from materials and equipment on-site, including storage practices to minimize exposure of the materials to stormwater, and appropriate spill prevention, containment, and response planning and implementation.

B. Groundwater protection: During construction, liquid petroleum products and other hazardous materials with the potential to contaminate groundwater may not be stored or handled in areas of the site draining to an infiltration area. An "infiltration area" is any area of the site that by design or as a result of soils, topography and other relevant factors, accumulates runoff that infiltrates into the soil. Dikes, berms, sumps, and other forms of secondary containment that prevent discharge to groundwater may be used to isolate portions of the site for the purposes of storage and handling of these materials.

C. Fugitive sediment and dust: Actions must be taken to insure that activities do not result in noticeable erosion of soils or fugitive dust emissions during or after construction. Oil may not be used for dust control.

D. Debris and other materials: Litter, construction debris, and chemicals exposed to stormwater must be prevented from becoming a pollutant source.

E. Trench or foundation dewatering: Trench dewatering is the removal of water from trenches, foundations, cofferdams, ponds, and other areas within the construction area that retain water after excavation. In most cases, the collected water is heavily silted and hinders correct and safe construction practices. The collected water must be removed from the ponded area, either through gravity or pumping, and must be spread through natural wooded buffers or removed to areas that are specifically designed to collect the maximum amount of sediment possible, like a cofferdam sedimentation basin. Avoid allowing the water to flow over disturbed areas of the site. Equivalent measures may be taken if approved.

Stormwater Inspection and Maintenance Form

Bates College
Lewiston, Maine

Bates College 55 Campus Ave.

Inspector: _____ Date: _____

Maintenance Personnel: _____

	Inspection		Maintenance	
SITE AREA	Date	Comments	Date	Corrective Action
55-A RoofLine Drip Strip East				
55-B Rain Garden (Bio retention Cell)				
55-Droofline Drip Strip West				
55-E Underdrained Bio Retention Cell				
55-F Roof Line Drip Strip South				
55-G Subsurface Gravel Filter, Porous Concrete				
55-H Underdrained BioRetention Cell				
55-I-Roofline Drip Strip South				
55-J Underdrained BioRetention Cell				
55-L Underdrained BioRetention Cell				
55-M Roofline Drip Strip West				
Rain Garden (Bioretention Cell - Campus Ave)				
Catch Basins/Manholes				
Overflow Structures				
Vegetated areas adjacent to pavement runoff				
Lawn Vegetation				
Slope Vegetation				
Parking Lot Sweeping				

Sediment/Debris Disposal

Location of Sediment/Debris Accumulation	Location of Sediment/Debris Disposal	Date of Disposal

Stormwater Inspection and Maintenance Form

Bates College
Lewiston, Maine

Bates College 65 Campus Ave.

Inspector: _____ Date: _____

Maintenance Personnel: _____

	Inspection		Maintenance	
SITE AREA	Date	Comments	Date	Corrective Action
65-A Underdrained Bioretention Cell				
65-B Roofline Drip Strip East of Building				
65-C Underdrained Bioretention Cell				
56-D Roof Line Drip Strip East of Building				
65-F Subsurface Gravel Filter, Porous Concete				
65-I Grassed Underdrained Soil Filter				
65-J Roofline Drip Strip West				
65-K-Roofline Drip Strip South				
65-K Rain Garden (Bioretention Cell)				
65-L Underdrained BioRetention Cell				
65-M Roofline Drip Strip West				
Rain Garden (Bioretention Cell - Campus Ave)				
Catch Basins/Manholes				
Overflow Structures				
Vegetated areas adjacent to pavement runoff				
Lawn Vegetation				
Slope Vegetation				
Parking Lot Sweeping				

Sediment/Debris Disposal

Location of Sediment/Debris Accumulation	Location of Sediment/Debris Disposal	Date of Disposal

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Bureau of Land and Water Quality
17 State House Station
Augusta, Maine 04333

FIVE-YEAR RECERTIFICATION FOR LONG-TERM MAINTENANCE OF STORMWATER MANAGEMENT SYSTEMS

For Site Location & Stormwater Projects

This form complies with the condition that requires reporting every 5 years on the long-term maintenance of stormwater management structures of projects permitted under the Stormwater Management Law since 2005. Complete the following sections, include appropriate photos if available, and use additional paper if needed. A copy of the report if the inspection was performed by a professional experienced in BMP maintenance should be included. This form is available on the Maine DEP website at: http://www.maine.gov/dep/land/stormwater/stormwaterbmps/

Please type or print in black ink only

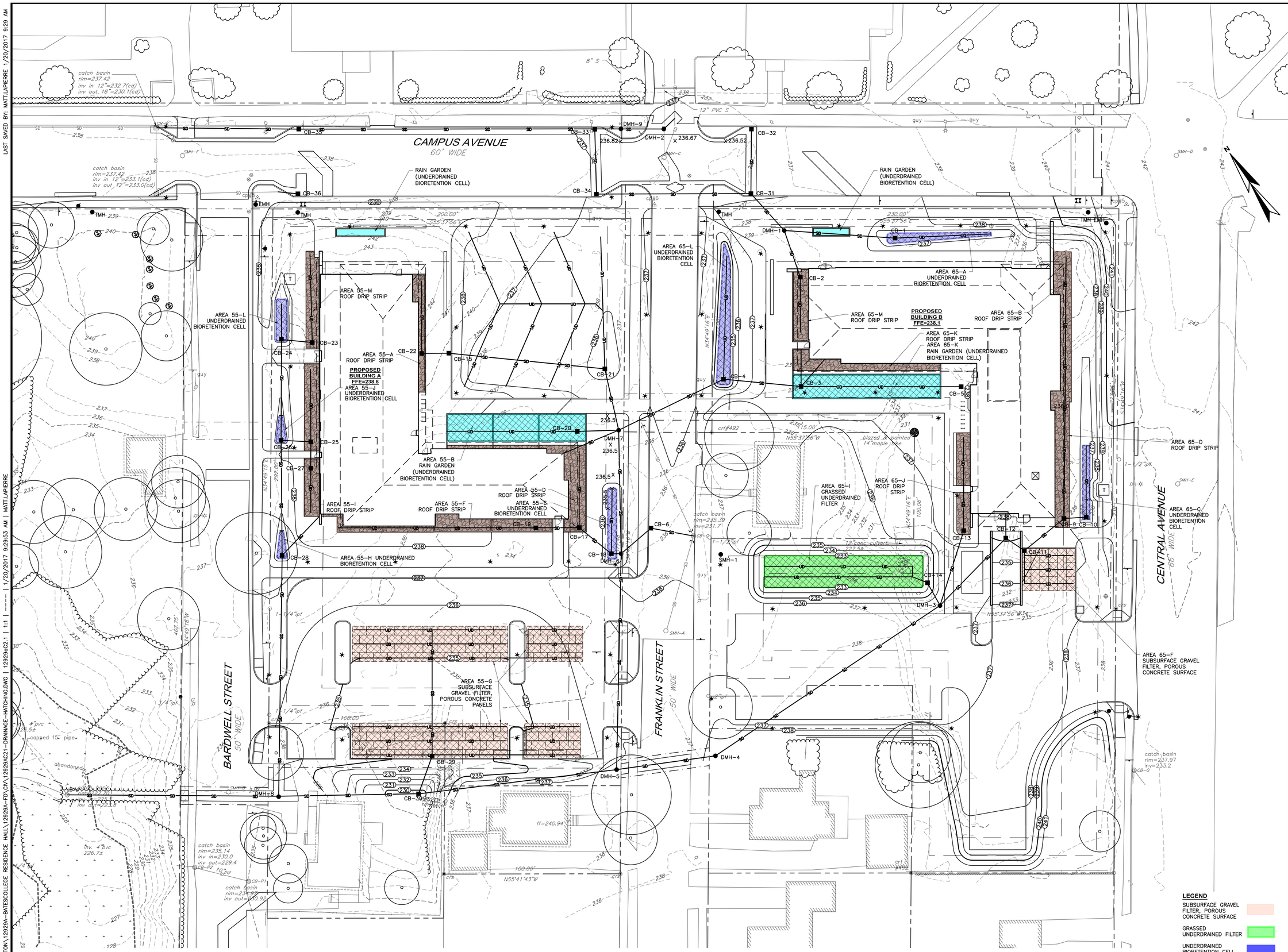
Owner/Licensee or Homeowners Association Representative:		**Inspector/operator or preparer of report:**	
Company:		**Company:**	
Mailing Address:		**Mailing Address:**	
Daytime Phone #:		**Daytime Phone #:**	

LOCATION OF DEVELOPMENT	
Name of Project:	
Address and Town:	
DEP Permit Number:	

PROJECT SPECIFICS	
If the project is unfinished, please describe its current status and your plans for the future of the development. Filing this report to the Department of on-site long-term maintenance activities is still required.	
If the project is within a MPDES Regulated Town and a maintenance report has been prepared for this project, please attach the existing report.	
If the project is a subdivision with a Homeowner's association, identify the responsible party.	
Confirm that the required recording of deed restrictions for the protection of buffers or conservation land has been done and that the buffers are being maintained in accordance with the restrictions.	
Identify the contractor for the renewed 5-year maintenance contract for the inspection, cleaning and maintenance of manufactured proprietary structures.	
Is a maintenance log available for review?	

LONG-TERM MAINTENANCE (please comment on the following):
All areas of the development have been inspected for erosion, and appropriate steps have been taken to permanently stabilize these areas.
All stormwater control structures have been inspected for damage, wear, malfunction, and appropriate steps have been taken to repair or replace the failing systems
The erosion control and stormwater maintenance plan for the site is being implemented as written, and a maintenance log has been created and is being maintained.

CERTIFICATIONS/SIGNATURES
By signing below. the owner (or authorized agent) certifies that all stormwater management structures at the project described above are stable and operational as designed.
Signed:_____ **Title**_____**Date:**_____
This completed form and all supporting documents summarized above shall be sent to the following address. An emailed report is appropriate and should be sent to kerem.gungor@maine.gov Kerem Gungor, Bureau of Land and Water Quality 17 State House Station Augusta, ME 04333 Tel: (207) 446-3915



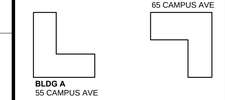
PLAN
SCALE: 1"=20'

BATES COLLEGE

55 & 65 CAMPUS AVENUE HOUSING

LEWISTON, MAINE 04240

KEY PLAN



LEGEND

NO.	REVISION	DATE

WRIGHT-PIERCE
Engineering a Better Environment
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AnnBeha Architects
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Job Number: 01313.01

Project: BATES COLLEGE

Drawn By: MRL Checked By: JBW

Date: 1/9/2017

Scale: 1"=20'

Drawing Title:

PROPOSED GRADING & DRAINAGE PLAN

C2.1