

ARTICLE XI Regulations for Stormwater Management and Land Disturbance

Introduction

These Regulations establish stormwater management as well as erosion and sedimentation control standards and a permitting process for the conditions that are outlined in the Town's General By-Law Article XL (adopted at the Annual Town Meeting May 6, 2008 and amended June 20, 2020). As established in the by-law, the Planning Board is the designated permitting authority. These Regulations ensure compliance with the purpose and objectives of the by-law through inspection, monitoring and enforcement. *They are hereby adopted by the Planning Board after a public hearing held on April 29, 2021.*

11.1 Administration

The Planning Board shall administer, implement and enforce these regulations. Any powers or duties of the Planning Board may be delegated in writing by the Planning Board to its employees, representatives or agents. The Land Disturbance Permit shall be submitted and processed concurrently with other applicable Planning Board permits including Site Plan Approval, Subdivision Approval or Special Permit. Nothing in the Regulations is intended to replace or be in derogation of the requirements of the Town of Holliston Wetlands Protection Bylaw or any other Town of Holliston Zoning By-Law, General By-Law or any Rules and Regulations adopted thereunder.

11.2 Definitions

Best Management Practice: An activity, procedure, restraint or structural improvement that helps to reduce the quantity or improve the quality of stormwater runoff.

Board: Planning Board of the Town of Holliston.

Abutter: The owner(s) of land abutting the land disturbance site.

Clearing: Any activity that removes the vegetative surface cover. Clearing activities generally include grubbing activity as defined below.

Erosion: The wearing away of the land surface by natural or artificial forces such as wind, water, ice, gravity, or vehicle traffic and the subsequent detachment and transportation of soil particles.

Grubbing: The act of clearing land surface by digging up roots and stumps.

Impervious Surface: Any surface that prevents or significantly impedes the infiltration of water into the underlying soil. This can include but is not limited to: roads, driveways, parking areas and other areas created using non porous material; buildings, rooftops, structures, artificial turf and compacted gravel or soil.

Infeasible: Not technologically possible, or not economically practicable and achievable in light of best industry practices.

Land-Disturbing Activity: Any activity, including without limitation: clearing, grubbing, grading, digging, cutting, excavation of soil, placement of fill, and construction that causes a change in the position or location of soil, sand, rock, gravel, or similar earth material.

New Development: Any construction activities or land alteration resulting in earth disturbances on an area that has not previously been developed to include impervious cover.

Owner: A person with a legal or equitable interest in property.

Practicable: Available and capable of being done after taking into consideration costs, existing technology, proposed use, and logistics in light of overall project purposes.

Redevelopment: Any construction, land alteration, or improvement of impervious surfaces resulting in earth disturbances that does not meet the definition of new development.

Responsible Parties: Owner(s), persons with financial responsibility, and persons with operational responsibility.

Runoff: Rainfall, snowmelt, or irrigation water flowing over the ground surface.

Sediment: The process or act of deposition of sediment.

Site: Any lot or parcel of land or area of property where land-disturbing activities are, were, or will be performed.

Stabilization: The use, singly or in combination, of mechanical, structural, or vegetative methods, to prevent or retard erosion.

Stormwater: Stormwater runoff, snow melt runoff, and surface water runoff and drainage.

11.3 Minor Land Disturbance Permit Requirements

11.3.1 Application Package

The site owner or designated agent (Applicant) shall file with the Planning Board a completed application package for a Minor Land Disturbance permit (hereinafter Permit) prior to any Land Disturbing Activity. The application for a Minor Land Disturbance Permit shall contain sufficient information for the Board to evaluate the environmental impact, effectiveness, and acceptability of the measures proposed by the Applicant to reduce adverse impacts from stormwater runoff during construction, and on a long-term basis.

A Minor Land Disturbance Permit Application shall include a paper or .pdf copy of the following as well as payment of the application and review fees (see Section 11.6.2):

1. Completed application form.
2. A narrative describing the proposed work including existing site conditions, proposed work and methods to mitigate any stormwater impacts.
3. A site plan that includes:
 - a. Existing site features including structures, pavement, plantings, and stormwater management systems, etc.
 - b. Proposed work including proposed stormwater management systems and limits of disturbance.
 - c. Basic erosion and sedimentation controls.
 - d. Operation and Maintenance (O&M) Plan (see Section 11.5).

11.3.2 Performance Standards

All projects must be designed to meet the performance standards of 11.10 of this Regulation. On-site management of stormwater runoff is encouraged.

11.4 Major Land Disturbance Permit Requirements

11.4.1 Application Package

The site owner or designated agent (Applicant) shall file with the Planning Board a copy of a completed application package for a Major Land Disturbance permit (hereinafter Permit) prior to any Land Disturbing Activity.

Major Land Disturbance Permit Application shall include a hard copy or .pdf file of the following as well as payment of the application and review fees (see Section 11.6.2):

1. Completed application form with original signatures of all owners.
2. List of abutters, certified by the Assessor's Office.
3. Stormwater Management Plan (SMP) (see Section 11.4.3).
4. Erosion Control Plan (ECP) (see Section 11.4.4).
5. Operation and Maintenance Plan (see Section 11.5).

11.4.2 Performance Standards

All projects must be designed to meet the performance standards of 11.10 of this Regulation.

11.4.3 Stormwater Management Plan (SMP)

1. The Stormwater Management Plan (SMP) shall be prepared to meet the Performance Standards outlined in 11.10.1 of this Regulation and shall contain sufficient information for the Board to evaluate the environmental impact, effectiveness, and acceptability of the measures proposed by the Applicant for reducing adverse impacts from stormwater. The SMP shall fully describe the project in drawings, and narrative. It shall include, as a minimum:
 - a. A locus map;
 - b. The existing zoning, and land use at the site;

- c. The proposed land use;
- d. The location(s) of existing and proposed easements;
- e. The location of existing and proposed utilities;
- f. The site's existing and proposed topography with contours at 2-foot intervals;
- g. The existing site hydrology;
- h. A description and delineation of existing stormwater conveyances, impoundments, and wetlands on or adjacent to the site or into which stormwater presently flows, or is proposed to flow;
- i. A delineation of 100-year flood plains, if applicable;
- j. Estimated seasonal high groundwater elevation in areas to be used for stormwater retention, detention, or infiltration;
- k. The existing and proposed vegetation and ground surfaces with runoff coefficient for each;
- l. A drainage area map showing pre- and post-construction watershed boundaries, drainage areas, and stormwater flow paths;
- m. A description and drawings of all components of the proposed drainage system including:
 - (1) locations, cross sections, and profiles of all brooks, streams, drainage swales and their method of stabilization;
 - (2) all measures for the detention, retention, and/or infiltration of stormwater;
 - (3) all measures for the protection of water quality;
 - (4) the structural details for all components of the proposed drainage systems and stormwater management facilities;
 - (5) notes on drawings specifying materials to be used, construction specifications, and typical details and cross-sections; and,
 - (6) proposed hydrology with supporting calculations.
- n. Proposed improvements including location of buildings or other structures, impervious surfaces, and drainage facilities, if applicable;
- o. Timing, schedules, and sequence of development including clearing, stripping, rough grading, construction, final grading, and vegetative stabilization;
- p. A maintenance schedule for the period of construction;
- q. Documents must be stamped and certified by a qualified Professional Engineer (PE) registered in Massachusetts; and
- r. Any other information requested by the Board.

11.4.4 Erosion Control Plan (ECP)

- 1. The ECP shall be designed to meet the Performance Standards in 11.10.2 of these Regulations.
- 2. If a project requires a Stormwater Pollution Prevention Plan (SWPPP) per the NPDES General Permit for Storm Water Discharges from Construction Activities

(and as amended), then the Applicant is required to submit a complete copy of the SWPPP (including the signed Notice of Intent and approval letter). If the SWPPP meets the requirements of these Regulations, it will be considered equivalent to the ECP.

3. The ECP shall contain sufficient information to describe the nature and purpose of the proposed development, pertinent conditions of the site and the adjacent areas, and proposed erosion controls. The Applicant shall submit such material as is necessary to show that the proposed development will comply with the design standards and contain the information listed below.
4. ECP Content. The ECP shall contain the following information:
 - a. Names, addresses, and telephone numbers of the owner, Applicant, and person(s) or firm(s) preparing the plan;
 - b. Title, date, north arrow, names of abutters, scale, legend, and locus map;
 - c. Location and description of natural features including:
 - (1) Watercourses and water bodies, wetland resource areas and all floodplain information, including the 100-year flood elevation based upon the most recent Flood Insurance Rate Map, or as calculated by a professional engineer for areas not assessed on these maps;
 - (2) Existing vegetation including tree lines, canopy layer, shrub layer, and ground cover, and trees with a caliper twelve (12) inches diameter breast height or larger, noting specimen trees and forest communities; and
 - (3) Habitats mapped by the Massachusetts Natural Heritage & Endangered Species Program as Endangered, Threatened or of Special Concern, Estimated Habitats of Rare Wildlife and Certified Vernal Pools, and Priority Habitats within five hundred (500) feet of any construction activity.
 - d. Lines of existing abutting streets showing drainage and driveway locations and curb cuts;
 - e. Volume and nature of existing and proposed soil materials;
 - f. Topographical features including existing and proposed contours at intervals no greater than one (1) foot with spot elevations provided as needed;
 - g. Surveyed property lines showing distances and monument locations, all existing and proposed easements, rights-of-way, and other encumbrances, the size of the entire parcel, and the delineation and number of square feet of the land area to be disturbed;
 - h. Drainage patterns and approximate slopes anticipated after major grading activities (Construction Phase Grading Plans);
 - i. Location and details of erosion and sediment control measures with a narrative of the construction sequence/phasing of the project, including both operation and maintenance for structural and non-structural measures, interim grading, and material stockpiling areas;
 - j. Path and mechanism to divert uncontaminated water around disturbed areas, to the maximum extent practicable;

- k. Location and description of industrial discharges, including stormwater discharges from dedicated asphalt plants and dedicated concrete plants, which are covered by this permit;
- l. Stormwater runoff calculations in accordance with these regulations;
- m. Location and description of, and implementation schedule for, temporary and permanent seeding, vegetative controls, and other stabilization measures;
- n. A description of construction and waste materials expected to be stored on-site, including but not limited to, discarded building materials, concrete truck wash out, chemicals, litter, and sanitary wastes. The Plan shall include a description of controls to reduce pollutants from these materials, including storage practices to minimize exposure of the materials to stormwater, and spill prevention and response;
- o. A description of where and how construction vehicles and equipment will be cleaned within the site or at designated entry/egress stations at the site boundary;
- p. A description of how fueling of vehicles and equipment will be conducted, including how fuels and other vehicle maintenance substances will be stored and handled during construction;
- q. A description of how chemicals and any other materials that constitute a potential source of stormwater contamination will be stored and handled during construction;
- r. A detailed description of project phases;
- s. Plans must be stamped and certified by a qualified Professional Engineer (PE) registered in Massachusetts or a Certified Professional in Erosion and Sediment Control (CPESC); and
- t. Any other information requested by the Board.

11.5 Operation & Maintenance (O&M) Plan

11.5.1 Maintenance

The owner of the property subject to a permit or any other person or agent in control of such property, shall maintain in good condition and promptly repair and restore all grade surfaces, walls, drains, dams, structures, vegetation, erosion and sedimentation controls and other protective devices. Such repairs or restoration and maintenance shall be in accordance with approved plans.

11.5.2 O&M Plan

A stand-alone O&M Plan is required at the time of the application for all projects. The O&M Plan shall be designed to ensure compliance with the Land Disturbance Permit and these Regulations. The Board shall make the final decision of what maintenance option is appropriate in a given situation. The Board will consider natural features, the proximity of the site to the MS4, water bodies and wetlands, the extent of impervious surfaces, size of the site, the types of stormwater management practices, and potential need for ongoing maintenance activities when making this decision. The O&M Plan shall remain on file with the Board and shall be an ongoing requirement. The O&M Plan shall include:

- a. The name(s) of the owner(s) for all components of the system.
- b. Maintenance Agreement(s) that specifies:
 - (1) The names and addresses of the person(s) responsible for operation and maintenance;
 - (2) The person(s) responsible for financing maintenance and emergency repairs;
 - (3) A Maintenance Schedule that includes routine inspection along with routine and non-routine maintenance tasks for each BMP;
 - (4) A list of easements with the purpose and location of each; and
 - (5) The signature(s) of the owner(s).
 - (6) Estimated operation and maintenance budget.
 - (7) The responsible party shall:
 - (a) maintain a log of all operation and maintenance activities for the last three years including inspections, repair, replacement, and disposal (the log shall indicate the type of material and the disposal location);
 - (b) make this log available to the Planning Board and/or the Commonwealth of Massachusetts upon request; and,
 - (c) allow the Planning Board to inspect each BMP to determine whether the responsible party is implementing the Operation and Maintenance Plan.

11.5.2 Changes to Operation and Maintenance Plan

The owner(s) of the stormwater management system must notify the Board of changes in ownership or assignment of financial responsibility.

The maintenance schedule in the Maintenance Agreement may be amended to achieve the purposes of these regulations by mutual agreement of the Board and the Responsible Parties. Amendments must be in writing and signed by all Responsible Parties. Responsible Parties shall include owner(s), persons with financial responsibility, and persons with operational responsibility.

11.5.3 Compliance

To ensure adequate long-term operation and maintenance of stormwater management practices, applicants are required to submit an annual certification documenting the work that has been done over the last 12 months to properly operate and maintain the stormwater control measures. The certification shall be signed by the person(s) named in the permit as being responsible for ongoing O&M; if such person(s) works for a company, the head of the company must sign the certification.

11.6 General Permit Procedures and Requirements

11.6.1 Entry

Filing an application for a permit grants the Board, or its agent, permission to enter the site to verify the information in the application and to inspect for compliance with the resulting permit.

11.6.2 Fee Structure

Each application must be accompanied by a fee, as outlined in Appendix A, payable to the Town of Holliston. Applicants shall pay review fees as determined by the Board to cover any expenses connected with the public hearing and review of the Land Disturbance Permit before the review process commences. The Board may, at the Applicant's expense, retain a Registered Professional Engineer or other professional consultant to advise the Board on any or all aspects of the Application.

11.6.3 Plan Changes

The Applicant must notify the Board in writing of any drainage change or alteration in the system authorized in a Permit before any change or alteration is made. If the Board determines that the change or alteration is significant, based on the stormwater management standards and accepted construction practices, the Board may require that an amended application be filed.

11.6.4 Permits.

The Planning Board shall, within 45 days of the receipt of a completed application:

1. Approve the application upon finding that the proposed plan will protect water resources and meets the objectives and requirements of this bylaw;
2. Approve the permit with conditions, modifications or restrictions that are required to ensure that the project will protect water resources and meets the objectives and requirements of this bylaw;
3. Disapprove the application if the proposed plan will not protect water resources or fails to meet the objectives or requirements of this bylaw.

After an application has been submitted, no tree removal, no utility installation, no ditching, grading or construction of drives, no grading of lots or land, no excavation except for purposes of soil testing, no dredging or filling, and no construction of buildings or structures shall commence on any part of the development site until the application has been reviewed and approved in accordance with this by-law and its' implementing regulations.

Failure of the Planning Board to take final action upon an application within 45 calendar days of receipt of a complete application shall be deemed to be approval of such application. Upon certification by the Town Clerk that the allowed time has passed without action by the planning Board, the Permit shall be issued.

11.6.5 Denial

The Board is empowered to deny a permit for failure to meet the requirements of the by-law; for failure to submit necessary information or plans requested by the Board; for

failure to avoid or prevent unacceptable adverse or cumulative effects upon the resources protected by the by-law; or if in the Board's final judgment such denial is necessary to preserve the quality of the surface water or groundwaters of the Commonwealth and/or the storm drainage system of the Town of Holliston. In the event a permit is denied, the Planning Board shall put its reasons for denial in writing as part of issuance.

11.6.6 Project Completion

At completion of the project, the Applicant shall submit an as-built drawing of all structural stormwater controls and treatment best management practices required for the site. The as-built drawing shall document deviations from the approved plans, if any, and be certified by a registered professional engineer. This requirement may be waived at the Planning Board's discretion. No occupancy permit shall be granted unless and until the construction of all site improvements are complete or the work remaining to be done is secured.

11.7 Enforcement

The Board or authorized agent of the Board shall enforce these regulations and may pursue all civil and criminal remedies for such violations.

11.7.1 Orders

The Board may issue a written order to enforce the provisions of these regulations or the regulations thereunder, which may include requirements to:

- Cease and desist from the land disturbing activity until there is compliance with the by-law and provisions of a permit.
- Maintain or install additional erosion and sediment control measures.
- Monitor and/or perform analyses and reporting.
- Remediate erosion and sedimentation resulting directly or indirectly from the land disturbing activity.

If the Planning Board determines that abatement or remediation of stormwater, erosion and sedimentation is required, the order shall set forth a deadline by which such abatement or remediation must be completed.

11.7.2 Penalties

Any person who violates any provisions of this by-law, regulation, order or permit issued thereunder, shall be punished by a fine of more than \$300. Each day or part thereof that such violation occurs or continues shall constitute a separate offense. As an alternative to criminal prosecution or civil action, the Planning Board may elect to utilize the non-criminal disposition procedure set forth in GL, c. 40, s. 21D in the following manner:

A written warning, clearly stating the nature of the violation, the Section of the by-law violated, the required corrective action and the right of appeal to the Board of Selectmen, shall be issued to the alleged violator. This warning may be appealed to the Selectmen within twenty-one (21) days from receipt.

Thirty (30) days after issuance of the warning, a fine of \$200 may be imposed in accordance with the provisions of General Laws Chapter 40D, Section 21D if the violation is not corrected or an appeal has not been made to the Board of Selectmen within the aforementioned twenty-one (21) days or upon appeal, the Selectmen find that the warning is legitimate. The penalty for the second violation shall be \$400. The penalty for the 3rd and subsequent violations shall be \$800. Any fine imposed may be appealed to the Clerk-Magistrate of the Framingham District Court. Each day or part thereof that such violation occurs or continues shall constitute a separate offense.

11.8 Waiver

The Board may waive strict compliance with any requirement of these Regulations where such action is in the public interest and is not inconsistent with the purpose and intent of these regulations. Any Applicant may submit a written request to be granted such a waiver. Such a request shall be accompanied by an explanation or documentation supporting the waiver request and demonstrating that strict application of these regulations does not further the purposes or objectives of these regulations. All waiver requests shall be discussed and voted on by the Board. If in the Board's opinion, additional information is required for a review of a waiver request and the 30-day timeframe for action is approached, the waiver shall be denied.

11.9 Inspections and Site Supervision

11.9.1 Pre-construction Meeting

Prior to starting clearing, excavation, construction, or land disturbing activity the Applicant, the Applicant's technical representative, the general contractor or any other person with authority to make changes to the project, shall meet with the Board to review the permitted plans and their implementation. The need for a pre-construction meeting shall be determined by the Board based on the project scope.

11.9.2 Planning Board Inspection

The Board or its agent shall make inspections as hereinafter required and shall either approve that portion of the work completed or shall notify the Applicant wherein the work fails to comply with the Land Disturbance Permit, as approved. The Permit and associated Stormwater Management Plan, Erosion Control Plan, and Operation and Maintenance Plan, bearing the signature of approval of the Board, shall be maintained at the site during the progress of the work. In order to obtain inspections, the Applicant must notify the Planning Board at least two (2) working days before each of the following:

- Erosion and sediment control measures are in place and stabilized;
- Site Clearing has been substantially completed;
- Rough Grading has been substantially completed;
- Final Grading has been substantially completed;
- Close of the Construction Season; and
- Final landscaping (permanent stabilization) and project final completion.

11.9.3 Applicant Inspections

The Applicant or his/her agent shall conduct and document inspections of all erosion and sediment control measures at least once every seven (7) calendar days or as specified in the Permit, and prior to and within 24 hours of the end of a storm event of 0.25 inch or greater, from the start of construction until the site is permanently stabilized. Inspection frequency may be reduced to at least once a month if the site is determined by the Planning Board or its designee to be temporarily stabilized, such as runoff is unlikely due to winter conditions (e.g., site is covered with snow, ice, or the ground is frozen), or if construction is occurring during seasonal dry periods. The Applicant is required to notify the Stormwater Agency or its designee of any change in inspection frequency, including termination of inspections due to site stabilization.

Erosion control inspections shall be conducted by an approved person knowledgeable in the principles and practice of erosion and sediment controls and pollution prevention, who possesses the skills to assess conditions at the construction site that could impact stormwater quality, and the skills to assess the effectiveness of any stormwater controls selected and installed to meet the requirements of these Regulations. The Applicant shall submit monthly erosion and sediment control reports to the Board in a format approved by the Board.

11.10 Stormwater Management Performance Standards**11.10.1 Stormwater Management Design Standards**

Projects shall meet the following Design Standards:

1. Low Impact Development (LID) site planning and design strategies must be implemented unless infeasible in order to reduce the discharge of stormwater from development sites. LID techniques mean innovative stormwater management systems that are modeled after natural hydrologic features. LID techniques manage rainfall at the source using uniformly distributed decentralized micro-scale controls. LID techniques use small cost-effective landscape features located at the lot level.
2. BMPs shall be distributed throughout a site and not concentrated in any one location to better dilute the effects of any pollutants left untreated.
3. All BMPs and their overflow areas shall be located on the site, in drainage easements or the road right-of-way. Separate drainage lots shall not be permitted without permission from the Board.
4. Stormwater management systems design shall be consistent with these performance standards and the requirements of the 2008 Massachusetts Stormwater Handbook (as amended), whichever is more stringent.
5. Peak flows of run-off at the boundaries of the development in a two (2), ten (10), twenty-five (25), fifty (50) and one-hundred (100) year frequency storm, shall be no higher following development than prior to development.
6. Where the site is not proposed to be covered with gravel, hardscape or a building or structure, a planting plan to ensure permanent re-vegetation of the site shall be provided and approved;

7. Areas to be planted shall be loamed with not less than 6" compacted depth of good quality loam and seed with turf grass seed or other appropriate ground cover in accordance with good planting practice;
8. Stormwater management systems shall be designed to remove a percentage of the average annual load of Total Suspended Solids (TSS) and Total Phosphorus (TP) from the total post-construction impervious surface area on the site, as follows:

Pollutant	Removal from New Development Sites	Removal from Redevelopment Sites
Total Suspended Solids (TSS)	90%	80%
Total Phosphorus (TP)	60%	50%

- a. Average annual pollutant removal requirements for TSS and TP are met through one of the following methods:
 - a. Installing BMPs that meet the pollutant removal percentages based on calculations developed consistent with EPA Region 1's BMP Accounting and Tracking Tool (2016) or other BMP performance evaluation tool provided by EPA Region 1, where available. If EPA Region 1 tools do not address the planned or installed BMP performance, then any federally or State-approved BMP design guidance or performance standards (e.g., State stormwater handbooks and design guidance manual(s)) may be used to calculate BMP performance; or
 - b. Retaining the volume of runoff equivalent to, or greater than:
 - i. For *new developments*, one (1) inch multiplied by the total post-construction impervious surface area on the new development site; or
 - ii. For redevelopments, 0.8 inch multiplied by the total post-construction impervious surface area on the redeveloped site; or
 - c. Meeting a combination of retention and treatment that achieves the above standards, or
 - d. Utilizing offsite mitigation that meets the above standards within the same USGS HUC12 as the new development site.
- b. Redevelopment activities that are exclusively limited to maintenance and improvement of existing roadways, (including widening less than a single lane, adding shoulders, correcting substandard intersections improving existing drainage systems and repaving projects) shall improve existing conditions unless infeasible and are exempt from Section 11.10.1.9.a.
9. Discharges to water bodies subject to one or more approved Total Maximum Daily Loads (TMDLs) or impaired waterbodies and their tributaries, listed as Category 4b or 5 in the current Massachusetts Integrated List of Waters listed

pursuant to the Federal Clean Water Act Sections 303(d) and 305(b), without an EPA approved TMDL impaired waters shall:

- a. For nitrogen and phosphorus impaired waters, stormwater management systems shall be designed using BMPs optimized for nitrogen and/or phosphorus removal, whichever applies.
- b. For chloride impaired waters, the required Operation and Maintenance (O&M) Plan shall outline measures to minimize salt usage or use alternative deicing materials and practices. The Applicant shall consult with the Holliston Department of Public Works to develop these O&M provisions.
- c. For waters impaired due to solids (turbidity), metals, or oil and grease (hydrocarbons), commercial or industrial land use development/redevelopments shall design stormwater management systems to allow shutdown and containment in the event of an emergency spill or other unexpected event. Systems designed to infiltrate shall provide the level of pollutant removal equal to or greater than the level of pollutant removal provided through the use of biofiltration of the same volume of runoff to be infiltrated, prior to infiltration.

11.10.2 Erosion Control Design Standards

The design of erosion and sediment controls shall meet the following requirements:

1. Design of erosion and sediment control practices shall conform to the guidelines described in “Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas” (1997 or amended) or alternative design guidance approved by the Board;
2. Prevent off-site transport of sediment using the following practices. There shall be no adverse impacts to abutting properties from any increase in volume of stormwater runoff including erosion, silting, flooding, sedimentation or impacts to wetlands, groundwater levels or wells;
 - a. Minimize total area of disturbance and protect natural resources. Sequence activities to minimize simultaneous areas of disturbance;
 - b. Establish perimeter controls around areas that will be disturbed, including on and off-site material storage areas (overburden and stockpiles of dirt, borrow areas, or other areas used solely by the permitted project are considered part of the project);
 - c. Maximize infiltration and groundwater recharge;
 - d. Runoff flow shall not be routed through areas of protected vegetation or re-vegetated slopes and disturbed areas. Temporary runoff from erosion and sedimentation controls shall be directed to BMPs, such as vegetated swales;
 - e. Use stabilized construction site entrances and exits to prevent offsite tracking of sediments. During construction, any site access from a public way shall be improved with a gravel apron not more than 16’ feet wide (residential) and 24’ wide (commercial and industrial) and a minimum of

- 15 feet long to prevent unstable material from being transported onto the street by vehicle tires or by runoff;
- f. Stabilize sites when projects are complete or operations have temporarily ceased. Interim and permanent stabilization measures shall be instituted on a disturbed area as soon as practicable but no more than fourteen (14) days after construction activity has temporarily or permanently ceased on that portion of the site. Until a disturbed area is permanently stabilized, sediment in runoff water shall be trapped by using a siltation barrier, siltation fences, and/or sedimentation traps;
 - g. Protect slopes on construction sites. Retaining walls may be required where side slopes are steeper than a ratio of 3:1;
 - h. Protect all storm drain inlets. The mouths of all catch basins shall be fitted with filter fabric during the entire construction process to minimize siltation or such basins shall be designed as temporary siltation basins with provisions made for final cleaning;
 - i. Armor or otherwise stabilize all newly constructed outlets;
 - j. Inspect stormwater controls at consistent intervals.
3. Re-vegetation. Proper re-vegetation techniques shall be employed during construction using native plant species, proper seed bed preparation, fertilizer and mulching to protect germinating plants. Re-vegetation shall occur on cleared sites within seven (7) calendar days of final grading and shall occur during the planting season appropriate to the selected plant species;
 4. Install and maintain all erosion and sediment control measures in accordance with the manufacturer's specifications and good engineering practices.
 5. Erosion control measures shall include the use of erosion control matting, mulches and/or temporary or permanent cover crops. Mulch areas damaged from heavy rainfalls, severe storms and construction activity shall be repaired immediately.
 6. Erosion control matting or mulch shall be anchored where plantings are on areas subject to mulch removal by wind or water flows or where side slopes are steeper than 3:1 or exceed 10 feet in height. During the months of October through March when seeding and sodding may be impractical anchored mulch may be applied at the Board's discretion.
 7. Comply with applicable Federal, State and local laws and regulations including waste disposal, sanitary sewer or septic system regulations, and air quality requirements, including dust control;
 8. Dust control shall be used during all land disturbance project;
 9. Prevent significant alteration of habitats mapped by the Massachusetts Natural Heritage and Endangered Species Program as Endangered, Threatened or Of Special Concern, Estimated Habitats of Rare Wildlife and Certified Vernal Pools, and Priority Habitats from the proposed activities;
 10. Ensure that any stormwater BMP (for post construction stormwater management) installed during construction will be protected from compaction, siltation, and erosion, or will be restored or replaced such that the BMP will be capable of functioning as designed in accordance with these stormwater regulations.

11.11 Stormwater Management Calculations and Design Practices

1. The Applicant shall provide calculations supporting the design of the stormwater management system and its compliance with the performance standards established in these regulations.
2. All calculations shall comply with the standards, procedures, and methods described in the MassDEP's Massachusetts Stormwater Handbook, Volume 3, except as follows:
 - a. The calculations of runoff volumes and peak rates required under Massachusetts Stormwater Management Standard 2 shall be based on precipitation data provided in National Oceanic and Atmospheric Administration (NOAA) -National Weather Service "NOAA Atlas 14" unless otherwise authorized by the Commission.