

## **Chapter XXX Regulations for Stormwater Management and Erosion Control**

### **§ XXX – 1.0 Authority; purpose**

The Stormwater Authority, pursuant to the authority granted under the Stormwater Management and Erosion Control Bylaw Chapter 159 (hereinafter “Bylaw”), hereby adopts the following Regulations to protect the health, safety, environment and general welfare of the citizens of the Town of Dover in the management, operation and maintenance of the Town’s stormwater system through the regulation of non-stormwater or stormwater discharges to the storm drainage system. The Stormwater Authority is defined in the Bylaw § 159-2 as the Department of Public Works (hereinafter “DPW”).

Unless noted elsewhere herein, or agreed to in writing by Town and Applicant, Town’s review times shall be a 30-day period. Return of plans or other documents by Town with request for supplemental materials or revisions shall trigger a new 30-day review period for Town.

### **§ XXX – 2.0 Definitions**

The definitions established by the Stormwater Management and Erosion Control Bylaw shall apply to these Regulations. Terms not defined in these Regulations or in the Stormwater Management and Erosion Control Bylaw shall be construed according to their customary and usual meaning unless the context indicates a special or technical meaning, as determined by the Town Engineer.

### **§ XXX – 3.0 Erosion and Sediment Control Plan Requirements**

- A. The Erosion and Sediment Control Plan shall be developed to meet all performance and management standards in the Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas, dated March 1997 or latest edition, and include Best Management Practices (BMPs) that are appropriate for the site, including efforts to minimize the area of Land Disturbance Activities and tree removal. The DPW shall evaluate the environmental impact, effectiveness, and acceptability of the proposed measures for reducing adverse impacts from stormwater runoff during and after the Land Disturbance Activities.
- B. Applicant shall file Erosion and Sediment Control Plans using the application forms “Town of Dover, Engineering Requirements for Alteration to Land and Site Development” and “Chapter 159 Plan Review Check List” found on the Town’s website at doverma.gov. It is recommended the Applicant review the materials to be submitted and the forms for completeness with the DPW prior to submittal.
- C. The Erosion and Sediment Control Plan shall include the following information:
  - (1) Name, address and telephone number of owner, Professional Civil Engineer, Registered Land Surveyor and person responsible for implementation of the Plan;
  - (2) Property lines and Lot’s setback lines as required by Town’s Zoning Bylaw;
  - (3) Location of all existing and proposed building and impervious surfaces;
  - (4) Location of all existing and proposed stormwater utilities, including structures, pipes, swales, and detention basins;
  - (5) All trees 6-inch DBH or greater in diameter within the Lot’s dimensional setbacks as set forth in the Dover Zoning Bylaws, and showing the location of the trunk, a notation of the DBH and species, and the tree root protection zone area for each

tree to be saved. For methods of calculating DBH and measuring the tree root protection zone area refer to **§ XXX – 7.0**. All protected trees that are proposed to be removed and proposed to be saved shall be so identified;

- (6) Delineation of all wetlands, vernal pools, Riverfront Areas, natural or artificial water storage detention areas, and drainage areas and easements on the site as evaluated and determined on-site by a wetlands professional qualified to make such determinations;
- (7) Suitable contours for the existing and proposed topography;
- (8) Erosion and sediment control provisions to minimize on-site erosion and prevent off-site sediment transport, including provisions to preserve topsoil, protect tree root zones, and limit disturbance;
- (9) Design details for both temporary and permanent erosion control structures;
- (10) A sequence of construction of the development site, including stripping and clearing; protective measures for the trees to remain, rough grading; construction of utilities; infrastructure, and buildings; and final grading and landscaping. Sequencing shall identify the expected date on which clearing will begin, the estimated duration of exposure of cleared areas, areas of clearing, and establishment of permanent vegetation; and
- (11) The DPW may require additional information or data deemed appropriate and/or may impose such conditions thereto as may be deemed necessary to ensure the preservation of public health and safety.

D. **Segmentation.** Applicants shall note that Land Disturbance Activities of less than 44,000 s.f. in 2-years prior to the application for or as part of the “current project” in an attempt to avoid National Pollutant Discharge Elimination System (NPDES) thresholds and required compliance therein, and then adding additional “clearing or disturbance of land” as part of the project, after permits are issued, so that the total land clearing will then exceed 44,000 s.f., will require a NPDES permit, if the additional work is performed within 5-years of the original application date. The Applicant may be ordered to cease and desist all work thereunder until it receives a NPDES permit.

E. **Stormwater Discharges to MS4.** Construction site operators performing Land Disturbance Activities within the MS4 jurisdiction that result in stormwater discharges to the MS4 are required to implement a sediment and erosion control program that includes BMPs appropriate for the conditions on the construction site. All BMPs implemented on site must meet design standards in the Massachusetts Stormwater Handbook, most recent edition. Construction site operators must control wastes that may be discharged during construction, including discarded building materials, concrete truck wash out, chemicals, litter and sanitary wastes. Other control measures that may be utilized include:

- (1) Minimizing the amount of disturbed area and protect natural resources, including trees, tree root zones, shrubs and other vegetation;
- (2) Stabilizing sites when projects are complete or operations have temporarily ceased;
- (3) Protecting slopes on the construction site;
- (4) Protecting tree root zones as outlined in **§ XXX - 7.0**;
- (5) Protecting all storm drain inlets and armor all newly constructed outlets;

- (6) Using perimeter controls at the site;
- (7) Stabilizing construction site entrances and exits to prevent off-site tracking; or
- (8) Inspecting stormwater controls at consistent intervals.

F. **Plans Pending Approval.** Pending approval of a revised Erosion and Sediment Control Plan, development activities may be allowed to proceed in accordance with conditions established by the DPW. In no event, however, shall the Applicant start Land Disturbance Activities or clearance requiring a NPDES permit until such NPDES permit is obtained.

#### **§ XXX – 4.0 Preconstruction Project Meeting**

Once Erosion and Sediment Control Plans have been permitted for construction, a preconstruction meeting must be held with the Applicant, the Applicant's technical representative, or the general contractor and the DPW before the start of any Land Disturbance Activity to review the approved plans pursuant to Bylaw § 159-9 and their implementation. The Applicant shall provide a construction schedule to the DPW prior to the preconstruction meeting and a complete contact list with phone numbers and email addresses of those supervising the construction.

At the preconstruction meeting, the parties shall determine the project schedule and related inspection. The schedule may be modified based on work progress and related issues.

#### **§ XXX – 5.0 Stormwater Management Plan Requirements**

##### **A. Major and Minor Projects**

- (1) Land Disturbance Activities at the thresholds set forth in Bylaw §159-8 will be classified as either major or minor projects.
- (2) Major projects are defined as activities which require:
  - (a) the change of existing grade or removal of existing vegetation on more than 44,000 sq. ft.; or
  - (b) storage of excavate or fill in excess of 1,300 c.y.
- (3) Minor projects are defined as activities which require:
  - (a) the change of existing grade of more than 5,500 sq. ft. or 25% of the lot, whichever is smaller;
  - (b) removal of existing vegetation (clearing) of more than 5,500 sq. ft. or 25% of the lot, whichever is smaller;
  - (c) storage of excavate or fill between 100 and 1,300 cubic yards (c.y.), on any parcel of less than 44,000 sq. ft.; or
  - (d) separate permits from the Dover Conservation Commission if the Activities are within Wetland Resources Areas and their Protected Buffer Zones.
- (4) Major projects must either meet the requirements of the stormwater management standards set forth in **§ XXX -5.0(B)** or demonstrate that an equivalent level of environmental protection is provided in the event that one or more of the standards are not met;
- (5) Minor projects must meet the stormwater management performance standards, however, at the discretion of the DPW and after public hearing, certain aspects of the Stormwater Management Plan may be waived pursuant to **§ XXX -8.0(B)**.

**B. Performance Standards.**

- (1) Control of stormwater runoff shall meet the performance standards for both flood control (volume and peak discharge) and nonpoint source pollution reduction as defined in the Massachusetts Stormwater Management Policy, dated March 1997 as amended. All assumptions, methodologies, and procedures used to design BMPs, and stormwater management practices shall accompany the design. All activities, project design, BMPs, and stormwater management practices should aim to minimize stormwater runoff, maximize infiltration, and recharge where appropriate, and minimize pollutants in runoff.
- (2) In compliance with the United States Environmental Protection Agency (EPA) NPDES General Permit for Stormwater Discharges from Small MS4s in Massachusetts, the following provisions address post-construction stormwater runoff from all new development and redevelopment sites that are considered major projects and discharge into the Town of Dover's MS4. The requirements under these circumstances are as follows:
  - (a) Except as expressly provided, impacts from all projects, and the design of treatment and infiltration practices and BMPs, shall meet the Standards set forth in the Massachusetts Department of Environmental Protection's Stormwater Management Handbook. Where an inconsistency exists between state requirements and these Rules and Regulations, the stricter standards shall apply.
  - (b) Low Impact Development (LID) site planning and design strategies must be implemented for all projects unless infeasible in order to reduce the discharge of stormwater from development sites. Examples of LID that promote infiltration of post-construction stormwater runoff include grassed swales, permeable pavers, and infiltration basins and trenches.
  - (c) All projects shall be designed such that post-development peak discharge rates do not exceed pre-development rates for the 2, 10, 25, and 100-year, 24-hour Type III storm event. Projects shall also be designed to ensure that post-development discharge volumes do not exceed pre-development values. The use of infiltration and LID techniques for such purposes is preferred.
  - (d) All stormwater management systems shall be designed using the then-current 24-hour rainfall data, adopted from the web tool "Extreme Precipitation in New York and New England" developed jointly by the Northeast Regional Climate Center (NRCC) at Cornell University and the Natural Resources Conservation service (NCRS) (as of 2021, the following data shall be used: 2-year storm = 3.2 inches; 10-year storm = 4.9-inches, 25-year = 6.2-inches; and 100-year = 8.9-inches).
  - (e) Stormwater management systems on new development sites shall be designed to meet an average annual pollutant removal equivalent to 90% of the average annual load of Total Suspended Solids (TSS) related to the total post-construction impervious area on the site and 60% of the average annual load of Total Phosphorous (TP) related to the total post-construction

impervious surface area on the site. The average annual pollutant removal requirements are to be achieved through one of the following methods:

- (i) 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 manuals) may be used to calculate BMP performance;
- (ii) Retaining the volume of runoff equivalent to, or greater than, one (1.0) inch multiplied by the total post-construction impervious surface area on the new development site;
- (iii) Meeting a combination of retention and treatment that achieves the above standards; or
- (iv) Utilizing offsite mitigation that meets the above standards within the same USGS HUC12 as the new development site.

(f) Stormwater management systems on redevelopment sites shall be designed to meet an average annual pollutant removal equivalent to 80% of the average annual post-construction load of Total Suspended Solids (TSS) related to the total post-construction impervious area on the site and 50% of the average annual load of Total Phosphorous (TP) related to the total post-construction impervious surface area on the site. The average annual pollutant removal requirements are to be achieved through one of the following methods:

- (i) 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's 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 manuals) may be used to calculate BMP performance;
- (ii) Retaining the volume of runoff equivalent to, or greater than, 0.8 inch multiplied by the total post-construction impervious surface area on the redeveloped site;
- (iii) Meeting a combination of retention and treatment that achieves the above standards; or
- (iv) Utilizing offsite mitigation that meets the above standards within the same USGS HUC12 as the redevelopment site.

(g) 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 exempt from § XXX – 5.0 (B)(2)(f). Roadway widening or improvements that increase the amount of impervious area on the redevelopment site by greater than or equal to a single lane width shall meet the requirements of § XXX – 5.0 (B)(2)(f).

### C. Plan Components.

- (1) A Stormwater Management Plan pursuant to Bylaw §§ 159-11 and 159-12 meeting the design requirements of § XXX – 5.0(B) shall be prepared by a Professional Civil Engineer and submitted to the DPW for approval.
- (2) The Town shall have 30 days from the receipt of a completed Stormwater Management plan from the Applicant to review. In the event the Stormwater Management Plan needs to be revised, the own shall have additional 30 days from the receipt of the revisions from the Applicant to review.
- (3) The Stormwater Management Plan must include items listed below and any additional elements that the DPW deems necessary and be designed to provide sufficient information to evaluate the environmental characteristics of the affected areas, the potential impacts of the proposed development on water resources, and the effectiveness and acceptability of measures proposed for managing stormwater runoff. The Applicant shall certify on the drawings that all clearing, grading, drainage, construction, and development shall be conducted in strict accordance with the Stormwater Management Plan. A Stormwater Management Plan shall include the following:
  - (a) Project narrative, including:
    - (i) How and where stormwater will be controlled, where ultimately stormwater from the site will reach waters of the Commonwealth and whether runoff will discharge to the Town's MS4;
    - (ii) Potential building envelopes avoiding environmental resource areas and appropriate buffers;
    - (iii) Methods to minimize impervious surfaces, and to protect and preserve open space; and
    - (iv) A description of any alternative processes or methods that were contemplated;
  - (b) Name, address and telephone number of the owner, Professional Civil Engineer, Registered Land Surveyor, and person responsible for implementation of the plan;
  - (c) Locus map;
  - (d) Drainage area map showing drainage area and stormwater flow paths;
  - (e) Location of all existing and proposed stormwater utilities, including structures, pipes, swales and detention basins;
  - (f) Topographic survey showing existing and proposed contours;
  - (g) Soils investigation, including boring or test pits, for areas where construction of infiltration practices will occur;
  - (h) Description of all watercourses, impoundments, and wetlands on or adjacent to the site or into which stormwater flows;

- (i) Delineation of all wetlands, vernal pools, Riverfront Areas, natural or artificial water storage detention areas, and drainage areas and easements on the site as evaluated and determined on-site by a wetland professional qualified to make such determinations;
- (j) Delineation of Groundwater Protection Zones and 100-year floodplains, if applicable;
- (k) Groundwater levels at the time of probable high groundwater elevation (November to April) in areas to be used for stormwater retention, detention, or infiltration;
- (l) Existing and proposed locations, cross sections, and profiles of all brooks, streams, drainage swells, and the method of stabilization;
- (m) Location of existing and proposed easements;
- (n) Proposed improvements including location of buildings or other structures, impervious surfaces, and storm drainage facilities, if applicable;
- (o) Structural details for all components of the proposed drainage systems and stormwater management facilities;
- (p) Timing schedules and sequences of development including clearing, stripping, rough grading, construction, final grading, and vegetative stabilization;
- (q) Operation and maintenance schedule;
- (r) Notes on drawings specifying materials to be used, construction specifications, and typical construction details; and
- (s) Location of areas to be cleared of more than 50 percent of the vegetation.

D. **Pre-Approval and Review.** The Applicant is encouraged to review the scope of work of the proposed project with the DPW to determine issues and requirements of the Stormwater Management Plan prior to submission to the DPW for approval.

E. **Failure to Approve.** In the event that the DPW does not approve the Stormwater Management Plan as proposed, the Applicant may not begin any site work until a Stormwater Management plan has been approved.

#### **§ XXX – 6.0 As-Built Plans**

A. **Requirements.** The As-Built Plan must show all project installed development features and on-site controls, both structural and non-structural, designed to manage the stormwater associated with the completed site as noted on the approved plans as modified by approved changes during construction. The plan must show the final design specifications of all stormwater management controls and must be prepared by a Professional Civil Engineer and Registered Licensed Surveyor. The As-Built Plan shall include the following information:

- (1) Rim elevation, location, size, length, slope, type, and inverts for all drainage structures and pipes, including roof drains;
- (2) Location, size, and type of all underground stormwater retention/detention facilities and infiltration systems and on site controls, both structural and non-structural, including, where applicable the number and bottom elevation of infiltration units or stormwater storage chambers; the bottom elevation depth, length and width of crushed stone surrounding the underground infiltration systems; location of all clean-outs; the actual dimensions of any inlet/ outlet

control structures, and the invert elevation, size slop and type of all orifices, weirs, inlet and outlet pipes, structures and headwalls;

- (3) Location of all surface retention/ detention basins, drainage swales, or other stormwater management facilities or BMPs;
- (4) The as-built storage volume of stormwater retention/ detention facilities;
- (5) Location of all building footprints and lot lines; and
- (6) Location of all driveways, walkways, patios, retaining walls, pools, and other impervious surfaces.

B. **Compliance.** The As-Built plan must be submitted in a timely manner as any Certificates of Occupancy or other legal releases will not be signed or granted until it is received, reviewed and approved. This review can take 30-days or longer should revisions be necessary.

#### **§ XXX – 7.0 Tree Protection and Mitigation**

A. **Measuring DBH.** The Bylaw § 159-2 defines Protected Trees as any tree 6-inches or greater in diameter, as measured at breast height (DBH). The following formula shall be used to calculate DBH: **Tree circumference at breast height ÷ 3.14 = DBH.**

Circumference shall be measured according to the following standards:

- (1) For a standard tree with a single trunk, measure the circumference of the tree trunk at 4.5 ft high from the existing ground at the base of the tree. If there is a large branch or blockage at the measuring point, measure the trunk immediately below the obstruction.
- (2) For a trees with a single large split at or just below the 4.5 ft measuring point, measured the circumference at the narrowest point below the split.
- (3) For a tree with two or more trunks or stems starting at the base of the tree, measure the circumference of stems or trunks at 4.5 ft. and add measurements together. Alternatively, for a tree with multiple stems, use the measurement of the largest stem and multiply it by the total number of stems.
- (4) For arborvitae and similar evergreen trees, multiply the height of the tree by .25 to calculate the corresponding circumference.

B. **Tree Protection Zone.** The plans shall indicate the proposed Tree Protection area, calculated using the formula set forth in Bylaw § 159-9, and a description of tree protection measures to be implemented for all protected trees to be retained. Acceptable materials to create the Tree Protection Zone are metal or wooden stakes which hold a temporary fencing material or barrier, which can be plastic, twine, wood, or metal.

C. **Alternatives to creating the Tree Protection Zone area.**

- (1) If it is infeasible to complete the Tree Protection Zone due to a drastic surface grade change or other adverse situation, the DPW may approve an alternative protective measure.
- (2) If there are clusters of trees that can be protected as a group, the radius for the Tree Protection Zone shall be calculated using the DBH of the trees on the outermost edge of the cluster and the root protection zone barrier shall encircle the entire cluster of trees.
- (3) If Applicant has no other alternative than to encroach within the Tree Protection Zone, the DPW may allow for a temporary encroachment or reduced protection

area only for the unavoidable area, but only for the minimum amount of time needed during the construction or land disturbance.

**D. Tree Mitigation.** In the event that there are no alternatives than to remove protected trees, the DPW may require:

- (1) **Applicant to plant replacement trees as mitigation under Bylaw § 159-10.** The Applicant shall utilize a native tree species to the extent commercially feasible and plant closest to the location where protected trees were removed, and conduct planting during New England's planting season.
- (2) The Applicant may choose to plant replacement trees on land abutting the applicant's land. The planting may take place with the express written approval of the abutter. The plans shall show approximate locations on the adjacent property. The applicant must provide a signed acknowledgement by the abutting property owner of approval for such planting at the time of Application.
- (3) If tree replacement is infeasible, the Applicant may provide a financial contribution to the Town of Dover General Fund. If the Applicant chooses to contribute to the Town of Dover General Fund to mitigate the removal of any protected trees, the plans must indicate the aggregate DBH of Protected Trees removed and not otherwise mitigated, with the associated contribution based upon the following schedule:
  - (a) \$200/inch of DBH for inches 1" to 20";
  - (b) \$300/inch of DBH for each inch from 21" to 75"; and
  - (c) \$400/inch of DBH for each inch over 75"; or
- (4) A combination of on- or near- site tree replacement and contribution to the Town of Dover General Fund or established Tree mitigation fund.

**E. Inspection.** The Applicant must complete all required tree plantings prior to the DPW's final inspection for stormwater approval.

**F. Performance Guarantee Provisions.**

- (1) If weather conditions prevent the planting of replacement trees, the Applicant may contact the DPW prior to the final inspection to request an extension. The DPW, in its sole discretion, may issue an extension for a reasonable period of time not to exceed six months from the date of original final inspection.
- (2) Once planting is complete, the Applicant may request a final inspection by the DPW.
- (3) If the DPW determines that the Applicant damaged a Protected Tree during construction to an extent that may significantly compromise the tree's survival and future health, Town may require the Applicant to undertake mitigation to the Town as set forth in § XXX – 7.0(D).

#### **§ XXX – 8.0 Administration.**

- A. Application Fees.** Applicant shall pay a non-refundable fee to the Town of Dover in the amount of \$500.00 with each application hereunder.
- B. Waiver.** The DPW may waive strict compliance with the requirements of these regulations at its discretion pursuant to Bylaw § 159-14.

- (1) If Applicant requests a waiver for any of the requirements in the Bylaw or regulations, the DPW shall schedule a public hearing within 30 days.
- (2) No less than 14 days prior to hearing date, DPW shall publish notice of public hearing in a newspaper, on the Town's website, and post it in a conspicuous place at the town hall. Notices shall also be sent by mail to all the abutters.
- (3) The Applicant shall pay a nonrefundable fee of \$400 per minor project and \$500 per major project for each waiver request to the Town of Dover separate from other fees.
- (4) The burden of proof shall be on the Applicant to demonstrate that the proposed project meets the waiver standards as defined in the Bylaw § 159-14.

C. **Validity.** Unless otherwise set forth, any permit issued in accordance with the provisions of this Chapter shall be valid for two (2) two years from the date of issue, or until voided, suspended, or revoked.