

## **Model Land Clearing, Grading and Protection of Specimen Trees Bylaw**

### **Community Profile**

### **Comments**

Cape Cod Commission Model Bylaws and Regulations  
Model Land Clearing, Grading and Protection of Specimen Trees Bylaw

#### Background

Growth and development have created permanent changes to the Cape Cod landscape and its natural resources. Forested areas, open spaces, and other naturally vegetated areas have been permanently lost through clearing and grading activities often associated with land development. Clearing and grading activities also impact both water quality and quantity. Loss of ground cover coupled with grading, smoothing, and compaction of the land contributes to decreased groundwater infiltration, increased stormwater flow and erosion and increased sediment runoff into streams and other water bodies. This in turn results in decreased water quality in aquatic habitats and breeding grounds. Erosion and sedimentation often results in environmental damage to abutting properties.

In addition to the physical and ecological changes associated with grading and land clearing activities, aesthetic values and community character can also be impacted. Cape Cod is defined in part by its mix of woodlands, open landscapes and scenic views. As noted in the Cape Cod Commission's "Designing the Future to Honor the Past," Cape Cod is a place of abundant nature, surrounded by and connected to the sea. Land clearing and grading activities can have a direct impact on the quality of the visual experience for both residents and tourists.

Local bylaws address the issues of clearing and grading to varying degrees, ranging from limits on clearing prior to the issuance of development permits to earthmoving regulations. However, most of the existing Cape bylaws do not address the issues of combined clearing and grading activities. In addition, while local Conservation Commissions require erosion and sediment control for projects within 100 feet of wetlands through the Wetlands Protection Act and local bylaws and regulations, they do not have authority beyond the 100 foot buffer until after an erosion problem has resulted in damage to wetlands and waterways.

Through a combination of Site Plan Review Standards and Special Permit requirements, this model bylaw seeks to minimize the loss of natural vegetation and topography and to protect specimen trees, significant forest types, and the most valuable wildlife habitat when developing a site. Minimizing the loss of natural vegetation provides for a cost-effective means of controlling erosion, flooding, and managing stormwater runoff from nonpoint sources such as development sites, streets and parking lots.

Commentary: Towns may choose between two different mechanisms for minimizing clearing and grading activities. One approach involves adopting these regulations into the zoning bylaw, requiring a special permit for clearing and grading of projects that exceed a certain size. In the alternative the town may adopt Site Plan Review standards that apply to all projects requiring Site Plan approval. Where a Special Permit is required the reviewing board has authority to approve or deny a proposed use. Site Plan Review, on the other hand, simply stipulates the conditions applicable to a given use.

01.0 Purposes: The purposes of this bylaw are to:

01.1 Protect the health, safety and property of the residents of the Town of \_\_\_\_\_ by regulating clearing and grading activities associated with land development and preserving existing trees and vegetation, preventing erosion and sedimentation of inland and coastal wetlands, ponds and other waterbodies, controlling stormwater runoff, minimizing fragmentation of wildlife habitat and loss of vegetation;

01.2 Limit land clearing and alteration of natural topography prior to development review;

01.3 Protect specimen trees and significant forest communities from damage or removal during site development;

01.4 Protect water quality of adjacent wetlands and surface water bodies;

01.5 Encourage the use of Best Management Practices that prevent and reduce nonpoint sources of pollutants;

01.6 Promote land development and site planning practices that are responsive to the town's scenic character without preventing the reasonable development of land;

01.7 Protect archaeological and/or historic resources.

02.0 Definitions: In this bylaw, the following words have the meanings indicated:

02.1 Applicant - Any person proposing to engage in or engaged in any non-exempt clearing of trees or understory vegetation within the Town.

02.2 Best Management Practices (BMPs) - A structural, nonstructural, or managerial technique recognized to be the most effective and practical means to prevent and reduce nonpoint source pollutants. BMPs should be compatible with the productive use of the resource to which they are applied, and should be cost-effective.

02.3 Caliper - American Association of Nurserymen standard for measurement of trunk size of nursery stock. Caliper of the trunk shall be taken 6" above the ground up to and including 4" caliper trees, and 12" above the ground for larger sizes.

02.4 Certified arborist - A professional who possesses the technical competence through experience and related training to provide for or supervise the maintenance of trees and other woody plants in the residential, commercial, and public landscape.

02.5 Clearing - Removal or causing to be removed, through either direct or indirect actions, trees, shrubs and/or topsoil from a site, or any material change in the use or appearance of the land. Actions considered to be clearing include, but are not limited to: causing irreversible damage to roots or trunks; destroying the structural integrity of vegetation; and/or any filling, excavation, grading, or trenching in the root area of a tree which has the potential to cause irreversible damage.

02.6 Dripline - An area encircling the base of a tree which is delineated by a vertical line extending from the outer limit of a tree's branch tips down to the ground.

02.7 Essential Root Zone - An area located on the ground between the tree trunk and 10 feet beyond the dripline of a tree which is required for protection of a tree's root system.

02.8 Diameter/diameter-breast-height (dbh) - The diameter of any tree trunk, measured at 4.5 feet above existing grade.

02.9 Filling - The act of transporting or placing (by any manner or mechanism) material from, to, or on any soil surface or natural vegetation.

02.10 Grading - Any excavating, filling, clearing, or the creation of impervious surface, or any combination thereof, which alters the existing surface of the land.

02.11 Hazardous tree - A tree with a structural defect or disease, or which impedes safe sight distance or traffic flow, or otherwise currently poses a threat to life or property.

02.12 Landscape architect - A person licensed by the Commonwealth of Massachusetts to engage in the practice of landscape architecture.

02.13 Protected tree/vegetation - A tree or area of understory vegetation identified on an approved landscape plan to be retained and protected during construction.

02.14 Specimen tree - A native, introduced or naturalized tree which is important because of its impact on community character, its significance in the historic/cultural landscape or its value in enhancing the effects of wildlife habitat. Any tree with a dbh of 6" or larger is eligible to be considered a specimen tree. Trees that have a small height at maturity or are slow growing, such as flowering dogwood or american holly with a dbh of 4" or larger are eligible to be considered specimen trees.

02.15 Significant forest community - Unfragmented forests including forest types that provide habitat for rare species, unusual ecological processes, highly diverse forest communities, rare forest types, and those forest types which maintain connections between similar or different habitat patches.

02.16 Site Alteration Special Permit - A special permit issued by the Planning Board authorizing land clearing and grading activities in the town of \_\_\_\_\_.

02.17 Understory vegetation - Small trees, shrubs, and groundcover plants, growing beneath and shaded by the canopy of trees.

03.0 Applicability: No person shall undertake land clearing/grading activities of an area greater than 40,000 square feet without first obtaining a Site Alteration Special Permit from the Planning Board, unless specifically exempted under Section 05.0 of this bylaw.

Commentary: The Cape Cod Commission has proposed this threshold for review, however, towns may wish to adopt a higher or lower threshold depending on their particular circumstances.

04.0 Review and Decision: Upon receipt of a completed application and required plans as described in Section 06.0 below, the Planning Board shall transmit one copy each to the Conservation Commission, Building Inspector, and Department of Public Works. Within 45 days of receipt of completed application/plans, these agencies shall submit recommendations to the Planning Board. The Planning Board shall act on applications according to the procedure specified in G.L. c. 40A, §9.

05.0 Exemptions: The provisions of this bylaw shall not apply to the following activities:

05.1 Removal of hazardous trees, as defined herein;

05.2 Routine maintenance of vegetation and removal of dead or diseased limbs and/or trees necessary to maintain the health of cultivated plants, to contain noxious weeds and/or vines in accordance with a Department of Environmental Management (DEM) - approved Forest Management Plan, or to remedy a potential fire or health hazard or threat to public safety;

05.3 Construction and maintenance of public and private streets and utilities within town-approved roadway layouts and easements;

05.4 Work conducted in accordance with a valid earth removal permit issued by the Town of \_\_\_\_\_;

05.5 Agricultural activities in existence at the time a bylaw is adopted, work conducted in accordance with an approved Natural Resource Conservation Service Agricultural Plan or agricultural uses on parcels of land of more than five acres as specified in MGL c. 40A Section 3.

05.6 Construction of roadways and associated infrastructure for subdivisions approved in accordance with the Town Subdivision Rules and Regulations.

05.7 Construction of any state or town agency project approved by the town manager, town council, or town selectmen.

05.8 Construction or installation of public utilities.

05.9 Non-commercial cutting for fuel, provided that clear-cutting does not occur.

06.0 Application Requirements: Unless determined otherwise by the Planning Board the following submittals are required at the time of application:

06.1 Survey of existing vegetation conducted by an individual qualified through appropriate academic credentials and field experience. A statement of credentials should be submitted with the survey.

The survey of existing vegetation shall include the following information:

06.1.1 major upland vegetational communities located on the site, including trees, shrub layer, ground cover and herbaceous vegetation;

06.1.2 size and height of trees, noting specimen trees and/or forest communities;  
06.1.3 location of any rare and endangered species as mapped by the Massachusetts Natural Heritage Program or Association for the Preservation of Cape Cod;  
06.2 Submission of a locus map at a scale of 1" = 500' showing the proposed site in relation to the surrounding area.

06.3 Submission of a plan at a scale of 1" = 40' of the project site showing existing and proposed contour lines at intervals of not more than 2 feet prepared by a registered civil engineer or land surveyor.

06.4 Soil survey or soil logs indicating predominant soil types on the project site, including information on erosion potential from the Natural Resources Conservation Service.

06.5 Delineation of all bodies of water, including wetlands, vernal pools, streams, ponds, and coastal waters within 100 feet of the project site/limit of work and delineation of the 100-year floodplain.

06.6 Submission of a plan at a scale of 1" = 40' indicating the limit of work. The limit of work shall include all building, parking, and vehicular use areas, and any grading associated with the proposed development. The plan or accompanying narrative shall document the species and quantities of specimen trees and/or other vegetation to be removed or relocated within the project area.

06.7 Construction schedule which describes the timing of vegetation removal, transplanting or replacement in relation to other construction activities.

06.8 Plans and/or description of Best Management Practices to be employed in development of the project site.

06.9 Submission of an erosion and sedimentation control plan at a scale of 1" = 40'. This plan shall include BMPs for erosion and sediment control (vegetative and/or structural) to prevent surface water from eroding cut and fill side slopes, road shoulders and other areas and measures to avoid sedimentation of nearby wetlands and ponds. The following information shall be submitted on erosion control and sedimentation plans submitted with the project application:

06.9.1 Plans and details of any sediment and erosion control structure drawn at a scale of 1" = 40', details @ \_\_\_\_\_ scale

06.9.2 Spillway designs showing calculations and profiles

06.9.3 Notes and construction specifications

06.9.4 Type of sediment trap

06.9.5 Drainage area to any sediment trap

06.9.6 Volume of storage required

06.9.7 Outlet length or pipe sizes

06.9.8 A description of the sequence of construction activities which specifies the time frame for soil stabilization and completion and any necessary winter stabilization measures.

Commentary: Some of the application submittals may require the review of the town engineer or a landscape architect. The town may retain a technical expert to review the application at the expense of the applicant. The town must first adopt the provisions of Chapter 593 of the Acts and Resolves of 1989, which allows towns to establish special accounts to hire consultants. If the Planning Board

wishes to use developer funds for review of special permits, it must adopt regulations specifying a procedure for the submission and expenditure of such funds. Such rules and regulations must be adopted under G.L. c. 40A.

#### 07.0 Review Standards:

Commentary: The following section contains standards that could be added to existing Site Plan Review Bylaws, independent of this bylaw. However, and as previously discussed, towns may also wish to adopt these standards only for larger projects, as defined by a size threshold.

The applicant shall demonstrate that the following measures are employed in development of the site:

#### 07.1 Minimize site alteration/land clearing:

07.1.1 Site/building design shall preserve natural topography outside of the development footprint to reduce unnecessary land disturbance and to preserve natural drainage channels on the site.

07.1.2 Clearing of vegetation and alteration of topography shall be limited to \_\_\_\_\_% of the site with native vegetation planted in disturbed areas as needed to enhance or restore wildlife habitat.

Land Use	% Clearing Allowed
Agriculture	50%
Residential	35%
Institutional, Commercial, Industrial	40%

Commentary: The percentages for land clearing within specific land use types, and even the types themselves may need to be adjusted according to the constraints and land use patterns of the town, and relative to lot size. An alternate method could employ the Significant Natural Resource Area Map of the 1996 Regional Policy Plan as a way of identifying clearing limits. For example, projects within a Significant Natural Resource Area (SNRA) may only clear 35% of the site; land outside of SNRAs may clear up to 50%, and areas both outside of SNRAs and in certified growth centers may clear up to 60%. These percentages could be further fine tuned within the Town's zoning bylaw/ordinance. For example, the town may wish to limit clearing within residential districts more strictly than within non-residential districts.

07.1.3 Clearing for utility trenching shall be limited to the minimum area necessary to maneuver a backhoe or other construction equipment. Roots should be cut cleanly rather than pulled or ripped out during utility trenching. Tunneling for utilities installation should be utilized wherever feasible to protect root systems of trees.

07.1.4 Protect hilltops and/or scenic views within the town of \_\_\_\_\_:

07.1.4.1 Placement of buildings, structures, or parking facilities shall not detract from the site's scenic qualities and shall blend with the natural landscape. Building sites shall be directed away from the crest of hills, and foundations shall be constructed to reflect the natural terrain.

07.1.5 Protect wildlife habitat:

07.1.5.1 Sites shall be designed in such a way as to avoid impacts to rare and endangered species and wildlife habitat on a site, and to maintain contiguous forested areas.

07.1.6 Avoid impacts to archaeological resources:

07.1.6.1 Applicants shall submit a response from the Massachusetts Historical Commission (MHC) regarding the potential for archaeological or historical resources on the site.

07.1.7 Preserve open space and specimen trees on the site:

07.1.7.1 In the design of a development, priority shall be given to retention of existing stands of trees, trees at site perimeter, contiguous vegetation with adjacent sites (particularly existing sites protected through conservation restrictions), and specimen trees.

07.1.8 Understory vegetation beneath the dripline of preserved trees shall also be retained in an undisturbed state. During clearing and/or construction activities, all vegetation to be retained shall be surrounded by temporary protective fencing or other measures before any clearing or grading occurs, and maintained until all construction work is completed and the site is cleaned up. Barriers shall be large enough to encompass the essential root zone of all vegetation to be protected. All vegetation within the protective fencing shall be retained in an undisturbed state.

07.1.9 Forested areas shall be preserved if they are associated with:

07.1.9.1 significant forest communities as defined herein;

07.1.9.2 wetlands, waterbodies and their buffers;

07.1.9.3 critical wildlife habitat areas;

07.1.9.4 slopes over 25 percent.

07.1.10 Minimize cut and fill in site development:

07.1.10.1 Development envelopes for structures, driveways, wastewater disposal, lawn areas and utility work shall be designated to limit clearing and grading.

07.1.10.2 Other efforts to minimize the clearing and grading on a site associated with construction activities shall be employed, such as parking of construction vehicles, offices/trailers, stockpiling of equipment/materials, etc. in areas already planned for permanent structures. Topsoil shall not be stockpiled in areas of protected trees, wetlands, and/or their vegetated buffers.

07.1.10.3 Finished grades should be limited to no greater than a 2:1 slope, while preserving, matching, or blending with the natural contours and undulations of the land to the greatest extent possible.

07.1.10.4 Employ proper site management techniques during construction:

(a) BMPs shall be employed to avoid detrimental impacts to existing vegetation, soil compaction, and damage to root systems.

(b) The extent of a site exposed at any one time shall be limited through phasing of construction operations. Effective sequencing shall occur within the boundaries of natural drainage areas.

07.1.10.5 Protect the site during construction through adequate erosion and sedimentation controls:

(a) Temporary or permanent diversions, berms, grassed waterways, special culverts, shoulder dikes or such other mechanical measures as are necessary may be required by the Board to intercept and divert surface water runoff. Runoff flow shall not be routed through areas of protected vegetation or revegetated slopes and other areas. Temporary runoff from erosion and sedimentation controls shall be directed to BMPs such as vegetated swales. Retaining walls may be required where side slopes are steeper than a ratio of 2:1.

(b) Erosion and sedimentation controls shall be constructed in accordance with the DEP Stormwater Guidance manual.

(c) 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.

(d) 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 2:1 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.

(e) Runoff from impervious surfaces shall be recharged on the site by stormwater infiltration basins, vegetated swales, constructed wetlands or similar systems covered with natural vegetation. Runoff shall not be discharged directly to rivers, streams, or other surface water bodies. Dry wells shall be used only where other methods are not feasible. All such basins and wells shall be preceded by oil, grease, and sediment traps. 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.

(f) The applicant shall be required to conduct weekly inspections of all erosion and sedimentation control measures on the site to ensure that they are properly functioning as well as to conduct inspections after severe storm events.

07.1.10.6 Revegetate the site immediately after grading:

(a) Proper revegetation techniques shall be employed using native plant species, proper seed bed preparation, fertilizer and mulching to protect germinating plants. Revegetation shall occur on cleared sites within 7 (seven) calendar days of final grading and shall occur during the planting season appropriate to the selected plant species.

(b) A minimum of 4" of topsoil shall be placed on all disturbed surfaces which are proposed to be planted.



(c) Finished grade shall be no higher than the trunk flare(s) of trees to be retained. If a grade change of 6" or more at the base of the tree is proposed, a retaining wall or tree well may be required.

08.0 Required Security: The Planning Board may require a performance guarantee in a form acceptable to the town to cover the costs associated with compliance with this bylaw under a Site Alteration Special Permit.

08.1 The required performance guarantee in the amount of 150% of the cost of site restoration shall be posted prior to the issuance of a Site Alteration Special Permit for the proposed project.

08.2 The performance guarantee shall be held for the duration of any prescribed maintenance period required by the Site Plan Review Committee/Planning Board to ensure establishment and rooting of all new plantings, and may be reduced from time to time to reflect completed work. Plantings which die within the prescribed maintenance period shall be replaced. Securities shall not be fully released without a final inspection and approval of vegetation replacement by the town.

09.0 Monitoring and Inspections:

09.1 Prior to commencement of construction, the applicant, land owner, contractor and construction crew, town engineer or zoning enforcement officer, and site engineer shall conduct a meeting to review the proposed construction phasing and number and timing of site inspections. Commentary: Towns should decide what official is appropriate to review clearing and grading proposals, and require that official to report to the Planning Board.

09.2 Initial site inspection of erosion and sedimentation controls and placement of tree protection measures shall occur after installation of barriers around preserved areas and construction of all structural erosion and sedimentation controls, but before any clearing or grading has begun.

09.3 Routine inspections of preserved areas and erosion and sedimentation controls shall be made at varying intervals depending on the extent of site alteration and the frequency and intensity of rainfall.

09.4 Effective stabilization of revegetated areas must be approved by the town before erosion and sedimentation controls are removed. The town shall complete an inspection prior to removal of temporary erosion and sedimentation controls.

10.0 Enforcement: The town of \_\_\_\_\_ may take any or all of the enforcement actions prescribed in this bylaw to ensure compliance with, and/or remedy a violation of this bylaw; and/or when immediate danger exists to the public or adjacent property, as determined by the \_\_\_\_\_ Building Inspector. Securities described in Section 07.0 above may be used by the town in carrying out any necessary enforcement actions.

10.1 The \_\_\_\_\_ Building Inspector may post the site with a Stop Work order directing that all vegetation clearing not authorized under a Site Alteration Permit cease immediately. The issuance of a Stop Work order may include remediation or other requirements which must be met before clearing activities may resume.

10.2 The Town may, after written notice is provided to the applicant, or after the site has been posted with a Stop Work order, suspend or revoke any Site Alteration Special Permit issued by the Town.

10.3 No person shall continue clearing in an area covered by a Stop Work order, or during the suspension or revocation of a Site Alteration Special Permit except work required to correct an imminent safety hazard as prescribed by the Town.

0.11 Severability:

0.11.1 If any provision of this bylaw is held invalid by a court of competent jurisdiction, the remainder of the bylaw shall not be affected thereby. The invalidity of any section or sections or parts of any section or sections of this bylaw shall not affect the validity of the remainder of the [town]'s zoning bylaw.

Commentary: This Section is a generic severability clause. Severability clauses are intended to allow a court to strike or delete portions of a regulation that it determines to violate state or federal law. In addition, the severability clause provides limited insurance that a court will not strike down the entire bylaw should it find one or two offending sections.

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