



Metropolitan Area Planning Council

TOPSFIELD SMART GROWTH TECHNICAL ASSISTANCE GRANT

Task 1 - Review of Local Rules and Regulations

Task 3 - Revisions to Subdivision Regulations

RECOMMENDATIONS

19 June 2005

ZONING BYLAW

A review of the Zoning Bylaw for consistency with the new Stormwater and Erosion Control (SWEC) Bylaw and Regulations found two issues: the requirement in Section 4.07.J.7 for a stormwater plan for common driveways is redundant with the stormwater bylaw; and the site plan review requirements are superseded by the SWEC Bylaw and Regulations.

The review also identified numerous modifications to the Zoning Bylaw and Site Plan rules necessary to enable lower impact development in Topsfield. In particular, such modifications are designed to:

- Facilitate use of common driveways,
- Increase the use of open space development plans,
- Enable the use of permeable paving for pedestrian areas and low-traffic areas,
- Permit the use of shared parking where uses have different peak demand times, and
- Limit the extent of clearing on residential lots.

Reference	Topic	Existing Rules	Recommendations
3.09.C.1	Uses in Business Village District	"Buffer strip shall be...planted with grass, groundcover, or shrubbery."	Insert (after "shrubbery.") "Low impact stormwater management techniques such as bioretention cells, vegetated swales, and filter strips may be located within the buffer strip."
4.07.J.2	Common Driveways	"Each lot must meet all dimensional requirements for a lot in the district in which it is located."	Insert (after "located") "with the exception that this condition will not apply to lots within an open space residential development."
4.07.J.7	Common Driveways	"The applicant must demonstrate that construction of a common drive or access will not adversely affect abutting off-site property, roadways, or wetlands with regard to water runoff and drainage... topographic site plan... engineering calculations..."	Delete this clause. The objective and requirements of this clause are redundant with the Stormwater and Erosion Control Bylaw and Regulations.
4.09.A	Open Space Development Plan	"All applicants submitting a conventional Definitive Plan...shall simultaneously submit a Definitive Open Space Development Plan"	Revisit the entire Open Space Development section using the Massachusetts Open Space Residential Development Model Bylaw as guidance (www.greenneighborhoods.org)

4.12.A	Parking	"All off-street parking and loading areas...shall be treated with bituminous or other impervious surfacing material."	Delete "...bituminous or other impervious surfacing material; and shall be..." and insert "bituminous asphalt or other durable surface material including permeable paving materials such as porous asphalt, pervious concrete, interlocking block pavers, or block pavers. All such areas shall be" treated, etc.
4.12.B	Parking	"Off street parking must be provided to serve the net increase in parking demand...the Permit Granting Authority may grant a special permit reducing the number of spaces upon a finding that due to the proposed use, the number of spaces provided is adequate to service the use."	Insert (after "proposed use,)" "or the potential for shared parking with adjacent uses that have complementary peak parking demand periods," Insert (at end) "An applicant who wishes to receive credit for shared parking should demonstrate the availability of excess capacity at the appropriate times using standard parking formulas (demand and time) such as those published by the American Planning Association."
4.12	Parking		Insert new clause: "All parking spaces over 25 spaces shall have at least 20% of the required spaces designated for compact cars only. These spaces shall be located near primary entrance(s) as appropriate, shall be sized to accommodate small and mid-sized cars, and shall be clearly marked."
ZA:1-3.6	Pollution Control	"All stormwater control and drainage installations shall be installed in accordance with the relevant regulations of the Rules and Regulations Governing the Subdivision of Land. In any event calculations shall show that the off-site surface water runoff rate has not increased beyond that of the pre-development state except in those cases where that increase caused by the proposed runoff can be	This clause is superseded by the Stormwater Criteria in the SWEC bylaw. Delete and replace with the following "The applicant shall model the stormwater discharge from the site according to the regulations outlined in Section 7.0 of the Topsfield Stormwater and Erosion Control Regulations and shall adhere to the Stormwater Management Criteria defined therein."

		disposed of in streams or waterways that have substantial excess capacity to absorb said runoff.”	
ZA:1-3.8	Existing Vegetation	Existing Vegetation. Wherever possible existing trees, shrubs, and other vegetation of note shall be preserved either by design or by transplantation to another locus on the site.	Delete existing clause and insert the following: “Vegetation and topsoil. The applicant shall, to the maximum extent practicable, minimize the disturbance associated with construction activity, including the removal of vegetation and the removal and/or compaction of topsoil. The site shall be designed to maximize the preservation of natural vegetation (especially mature trees and other vegetation of note); the work area shall be minimized and the limit of work shall be clearly delineated in the field. When construction is complete, the entire disturbed area shall be revegetated. Prior to seeding, all areas that have been subject to vehicle compaction shall be roto-tilled to a depth of at least 6” to facilitate infiltration of stormwater. The landscaping plan shall utilize native plant species as much as possible, and shall include areas that are allowed to revert to natural areas requiring minimal maintenance, such as meadows, scrub, and forest.”

RULES AND REGULATIONS GOVERNING THE SUBDIVISION OF LAND

The review found that Section 5.12.3 of Subdivision Rules and Regulations includes numerous standards and submittal requirements that overlap with those found in the Stormwater Bylaw and Regulations. This section might be replaced entirely or in part, in order to eliminate potential conflicts. Design standards included within this section might best be relocated to a Best Development Practice guidance document to accompany the Stormwater Regulations.

The Subdivision Rules and Regulations would also benefit from modifications designed to promote the use of lower impact site design and stormwater management techniques. In particular, the roadway design standards should provide an option to construct "open section" roadways flanked by roadside swales, rather than requiring curbs, gutters, and catch basins. If curbs are deemed necessary to maintain the roadway edge, then perforated curbs or "invisible curbs" (flush with the road surface) can be used to allow drainage into roadside swales. Current standards also require excessively large cul-de-sacs (110' in diameter) which create very large volumes of stormwater runoff. Smaller cul-de-sacs and turnaround alternatives (such as one way loop roads and cul-de-sac islands) are excellent low impact options that should be permitted. Additional modifications will allow narrower roadways, narrower sidewalks, and less clearing within the right-of-way.

Reference	Topic	Existing Language	Recommendations
1.1	Purpose and Authority	"Powers of the Planning Board...shall be exercised with due regard for provision of adequate access..." etc.	Insert (after "neighboring subdivisions."): "and for reducing the environmental and hydrologic impact of new development."
4.1.1	Conceptual Plan	"Conceptual or sketch plan may be submitted"	Replace "may" with "should" and insert (after "determined by the applicant.") "A sketch plan must be submitted for all projects involving Open Space Residential Development or Low Impact Local Streets."
5.1.1.a	Streets, Location	"All streets shall be designed [to]...provide safe vehicular travel...attractiveness... maximum livability"	Insert: "Consideration shall also be given to minimizing the extent of earth removal, placement of fill, and associated hydrologic alterations. Where possible, the design should seek to minimize street length and impervious area."
5.1.2	Streets, Cross Sections	"Cross sections shall be in accordance with the standards as shown on plates 1 and 2. The Board may permit a narrower paved roadway..."	Delete "The Board may permit a narrower paved roadway..." and insert: "Alternatively, the applicant may propose low impact roadways with open section drainage systems, such as the designs shown on Plates LID 1 and LID 2. The Planning Board will permit such alternative designs subject to

			the determination that the proposed design will provide safe vehicular travel, and emergency response access, stormwater management, roadway durability, and pedestrian safety.”
5.1.3 (Table 1)	Dead Ends	“ <u>Alignment, Grade, Dead End, and Intersections.</u> These shall be in accordance with the standards shown in Table 1.”	Insert: “Applicants may propose alternative designs and narrower widths/smaller radii for roadways and cul-de-sacs, provided they demonstrate that the alternative designs will provide safe vehicular travel and adequate emergency response access.”
5.1.4.d	Site and Earthwork	“The entire area within the right-of-way lines shall be cleared and grubbed of all stumps, brush, roots, boulders, and like materials. All rock or masonry with a maximum dimensions over three inches and within six inches of the top of subgrade shall be removed. Trees intended to be preserved shall be protected by suitable boxes, fenders, or wells as appropriate.”	Delete “The entire area within the right of way lines” and insert “Clearing within the right of way shall be limited to that which is necessary for the construction of the roadway, drainage systems, sidewalks, and utilities, and to ensure adequate site lines. The developer should seek to retain existing vegetation, including brush and trees, to the extent possible, in order to reduce stormwater runoff. The construction area shall be cleared and grubbed of all stumps...” etc. At the end: “Grubbing and removal of roots and boulders is not necessary for those areas cleared only to ensure adequate site lines.”
5.1.6.b	Driveways	“Driveway aprons shall be...graded to provide positive drainage towards the streets by the developer and/or owner from the edge of the public roadway to the property line.”	Delete “...provide positive drainage toward the streets...property line.” Insert “provide positive drainage into roadside swales, lawn areas, grass strips, or onto other impervious surfaces.”
5.1.6	Driveways		Insert: “5.1.6.c Developers and/or owners are encouraged to use permeable paving and/or ‘two-track’ designs for residential driveways, provided the design can provide adequate access for residents and emergency response vehicles.”

5.2	Shoulders	"Shoulders shall not be allowed in place of sidewalks, curbs, and grass strips shown on Plates 1 and 2, unless permission is specifically granted by the Board."	Insert at the end: "This design requirement is not applicable to developers and owners proposing Low Impact Local Street Designs as shown in Plates LID 1 and LID 2."
5.3	Curbing	Curbing "shall be installed along both edges of all roadways in Type II subdivisions, except at driveways."	Insert (after "...driveways.") "Alternatively, the applicant may propose an open section roadway such as that shown on Plates LID 1 and LID 2. The Planning Board will approve alternative roadway edges subject to the determination that the proposed design provides for adequate safety, stormwater management, and roadway edge durability."
5.4.1	Sidewalks	"Bituminous concrete sidewalks..."	Insert (after "...Plates 1 and 2") "The applicant may also propose the use of permeable paving such as pervious concrete, porous asphalt, or stone, brick, or concrete pavers, subject to the determination that such permeable paving provides adequate access and durability."
5.5.1	Grass Strips	"Grass strips shall be provided as indicated on Plates 1 and 2...where sidewalks are required."	Insert "Requirements for grass strips, with the exception of 5.5.3 (Tree Planting), will not apply to developers and/or owners proposing to construct a Low Impact Local Street as shown on Plates LID and LID 2."
5.12.1.b	Utilities	"All utility lines shall be installed in the location indicated...as shown on Plates 1 and 2."	Insert "Alternative locations for underground utilities alongside Low Impact Local Streets will be approved by the Board subject to the determination that the proposed locations will provide for adequate access, safety, and other concerns."
5.12.3	Drainage		It is recommended that this section be deleted and replaced with a reference to the Stormwater and Erosion Control Bylaw.

5.12.3.b	Drainage	"Engineer shall design the drainage system in accordance with the zoning regulations..."	Delete and replace with "The applicant shall model the stormwater discharge from the site according to the regulations outlined in Section 7.0 of the Topsfield Stormwater and Erosion Control Regulations."
5.12.3.c	Drainage	"Drainage system within the subdivision shall be adequate...etc."	Delete and replace with "The applicant shall model the stormwater discharge from the site according to the regulations outlined in Section 7.0 of the Topsfield Stormwater and Erosion Control Regulations."
5.12.3.d	Drainage	"Drainage system shall not wrongfully overburden continuous existing drainage systems...etc."	Delete and replace with "The applicant shall model the stormwater discharge from the site according to the regulations outlined in Section 7.0 of the Topsfield Stormwater and Erosion Control Regulations."
5.12.3.e	Drainage	"Drainage pipe beneath the roadway shall be reinforced concrete..."	Retain as-is.
5.12.3.f	Drainage	"artificial recharge operations should be employed, e.g., holding basins, modified streambed, etc."	Delete "etc." and insert "bioretention areas, infiltration trenches, dry wells, and constructed wetlands, with appropriate pretreatment where necessary to prevent clogging or groundwater contamination."
5.12.3.f	Drainage	"Catchbasins shall be located on both sides of the roadway on continuous grades at intervals of not more than 300 feet..."	Insert (after "Plates 3, 4, 5, and 6"): "Catch basins are not required for Low Impact Local Roads drained by open channel systems."
5.12.3.g	Drainage	"applicant shall submit estimates of peak flow..."	Delete and replace with "The applicant shall model the stormwater discharge from the site according to the regulations outlined in Section 7.0 of the Topsfield Stormwater and Erosion Control Regulations."

5.13.2	Easements	"The board shall require that there be provided a stormwater easement or drainage right of way of adequate width (minimum 30') to conform substantially to the lines of such watercourse."	Replace "shall" with "may" and delete "(minimum 30')".
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BOARD OF HEALTH RULES AND REGULATIONS

Currently the Board of Health issues permits for construction of storm drains, an authority that clearly overlaps with the authority created by the Stormwater Bylaw. Section R:1-3 of the rules details the submittal requirements, design standards, and performance standards of the Board of Health. This section will require significant modification to bring it into agreement with the new Stormwater Bylaw and Regulations, not the least of which is to clarify the authority of the Board of Health in context of the Planning Board as Stormwater Authority.

The regulatory review also found that the Board of Health rules for "leaching systems" included many requirements for infiltration structures that appear to be excessive and which are likely to discourage low impact techniques such as decentralized infiltration in rain gardens, bioretention areas, and dry wells. In particular, the rules require such infiltration techniques to meet the same setback requirements as Title 5 systems for disposal of sanitary sewage. The rules also require infiltration structures (which put stormwater back into the ground) to meet the same distance setbacks from Title 5 structures as french drains and other subsurface drains (which are designed to collect groundwater and discharge it elsewhere.)

Reference	Topic	Existing Rules	Recommendations
R:1-3.2	Storm Drains	"Every person who proposes to install or construct a storm drain...shall first obtain a permit for such storm drain from the Board of Health"	Superseded by Stormwater Bylaw and establishment of Planning Board as permit-issuing Stormwater Authority. Recommend deleting this clause.
R:1-3.3	Site Plan	"Every applicant...shall submit to the Board a plan for the orderly disposal of stormwater runoff..."	Superseded by submittal requirements detailed on Stormwater Regulations. Should be deleted. Recommend deleting this clause.
R:1-3.3.a	Site Plan	"A plan showing the location of all stormwater control installations"	Superseded by Stormwater regulations section 6.0. Should be deleted. Recommend deleting this clause.
R:1-3.3.c	Site Plan	"Calculations that compare the stormwater runoff from that lot in a 10-year, 25-year, and 100-year design storm."	Stormwater Management Criteria (Sec 7.B) and MA Stormwater Policy require calculation of peak discharge rate for 2-, 10-, and 100-year storm. Recommend deleting this clause. Recommend deleting this clause.
R:1-3.3.e	Site Plan	"Calculations shall show that said runoff does not have any adverse effects...post-development peak flows will be no greater than pre-development peak flows at return periods up to and including 25 years."	Superseded by Sec 7.B in Stormwater Regulations. MA Stormwater Policy requires control of peak discharge rate for 2- and 10-year storms only.

R:1-3.4	Permit Conditions	"The Board shall issue a permit..."	Stormwater Bylaw establishes Planning Board as Stormwater Authority. Recommend deleting this clause.
R:1-3.8	Leaching Systems	"Leaching Trenches, leaching catch basins, and other means of subsurface attenuation or disposal of stormwater runoff may be proposed and must be submitted to the Board of Health for approval."	Superseded by Stormwater Bylaw and establishment of Planning Board as permit-issuing Stormwater Authority. Recommend deleting this clause.
R:1-3.8.a	Leaching Systems	"Subsurface leaching facilities shall satisfy the same minimum distance requirements of on-site wastewater disposal systems...all other requirements for subsurface stormwater leaching facilities shall be the same...as those for septic tank leaching facilities."	MA SWP Handbook Volume II establishes setback distances for infiltration techniques. Design standards of sec R:1-3.8.a are excessive and will discourage the use of decentralized infiltration techniques such as rain gardens, bioretention areas, infiltration trenches, etc. Title 5 standards are designed to prevent introduction of sewage into subsurface drains that discharge elsewhere. Recommend deleting this clause.
R:1-3.8.c	Leaching Systems	"Subsurface leaching facilities shall be regarded as subsurface drains in establishing distance requirements from on-site wastewater disposal system components."	Title 5 has required setbacks from on-site wastewater components to leaching catch basins and dry wells. Additional setbacks are excessive and will discourage use of decentralized infiltration techniques. Recommend deleting this clause.
R:1-3.d	Leaching Systems	"Mounding analyses may be required."	Mounding analyses should not be required for stormwater infiltration. Recommend deleting this clause.
R:1-3.8.g	Leaching Systems	"Soil with a percolation rate of greater than 20 minutes per inch [3"/hour] is considered unsuitable for subsurface disposal of stormwater."	No reason to prohibit infiltration of clean stormwater such as rooftop runoff in rapidly permeable soils. Recommend deleting this clause.
R:1-3.8.h	Leaching Systems	"minimize entry of sediment into the leaching facility...provision of dead storage space for long-term sedimentation...preclude construction sediments from entering the storm water leaching facility... maintenance schedule"	Superseded by stormwater and erosion control plan requirements of stormwater regulations as well as maintenance requirements. Recommend deleting this clause.

WETLAND RULES AND REGULATIONS

The Wetland Rules and Regulations address Stormwater Management in Section R:10-25, which includes seven standards for stormwater. Some of these standards are design requirements, while others are performance standards. It is advised that this section be replaced with the new Stormwater Regulations and the important design requirements be relocated to a Best Development Practices guidance document to accompany the regulations.

Reference	Topic	Existing Rules	Recommendations
R:10-25.a	Stormwater Management	No increase in lot runoff from a driveway or construction area	Superseded by Stormwater Regulations Sec. 7.B.2,3,4,5 (Peak discharge rate and recharge volume standards)
R:10-25.b	Stormwater Management	Building Structures shall have drip trenches or other means of infiltration	Best Development Practice — not a performance criteria. Can be recommended in guidance document.
R:10-25.c	Stormwater Management	Driveways shall be pitched so that water does not flow onto the roadway	Best Development Practice— not a performance criteria. Also conflicts with Subdivision rules and regs that require driveway to be pitched toward roadway between property line and roadway edge.
R:10-25.d	Stormwater Management	Porous walls or other means of infiltration are acceptable for catch basins.	Best Development Practice— not a performance criteria. Can be recommended in guidance document. May conflict with SWP standards regarding treatment of runoff prior to infiltration.
R:10-25.e	Stormwater Management	Lots greater than 10,000 sf shall not add stormwater to storm drains.	Not included in Stormwater Management Criteria
R:10-25.f	Stormwater Management	First 1/2" of stormwater shall be pretreated with BMPs.	Redundant with Stormwater Regulations Sec. 7.B.7 (Management Criteria.)
R:10-25.g	Stormwater Management	Post construction runoff shall not be greater than pre-construction runoff	Superseded by Stormwater Regulations Sec. 7.B.2,3,4,5 (Peak discharge rate and recharge volume standards)