Municipal Stormwater Codes: A Regional Review for Northeast Massachusetts

MassDEP MS4 Municipal Assistance Grant Report

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Merrimack Valley Planning Commission

MVPC

Municipal Stormwater Codes: A Regional Review for Northeast Massachusetts

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In partnership with: Greenscapes North Shore Coalition (including Salem Sound Coastwatch LLC & Ipswich River Watershed Association) and the Merrimack Valley Stormwater Collaborative

Serving the Communities of: Amesbury, Andover, Beverly, Boxford, Danvers, Essex, Georgetown, Gloucester, Groveland, Hamilton, Haverhill, Ipswich, Lawrence, Lynnfield, Manchester, Marblehead, Merrimac, Methuen, Middleton, Newbury, Newburyport, North Andover, North Reading, Peabody, Rowley, Salem, Salisbury, Topsfield, Wenham, & West Newbury

Table of Contents

Introduction

The Merrimack Valley Planning Commission (MVPC) is comprised of fifteen cities and towns in northeastern Massachusetts. Created through an act of the State Legislature in 1959, MVPC's mission is to promote the orderly growth and development of the region. As such, through its Environmental Program, MVPC operates under several regional collaboratives and coalitions to ensure regional coordination surrounding environmental efforts. Two of these groups, the Merrimack Valley Stormwater Collaborative and Greenscapes North Shore Coalition, work in partnership with MVPC communities and with other entities to coordinate efforts related to stormwater and MS4 compliance. The Merrimack Valley Stormwater Collaborative, founded by MVPC in 2014, specifically convenes municipal public works departments to discuss and work together on stormwater management and regulatory compliance for communities across the valley. The Greenscapes North Shore Coalition (Greenscapes) comprised of the Merrimack Valley Planning Commission (MVPC), the Ipswich River Watershed Association (IWRA), and Salem Sound Coastwatch LLC (SSC) oversees numerous stormwater-based initiatives in over thirty cities and towns in northern Massachusetts. Founded in 2007, Greenscapes is a collaborative of municipalities and partner organizations, focusing on stormwater and watershed-related issues. Greenscapes provides outreach and education to support municipal compliance with water-related regulatory requirements, including the MS4 Stormwater and the Water Management Act permits. For this project, Greenscapes and the Merrimack Valley Stormwater Collaborative are assisting 30 Northern Massachusetts communities with compliance requirements for the 2016 Massachusetts Small Municipal Separate Storm Sewer System (MS4) Permit issued by the U.S. Environmental Protection Agency (effective July 1, 2018). This permit is intended to regulate activities in MS4 systems in compliance with the Clean Water Act and Massachusetts Clean Water Act. In Year 4 of the permit, permittees are required to meet the following requirements:

> **"**Within four (4) years of the effective date of this permit, the permittee shall develop a report assessing current street design and parking lot guidelines and other local requirements that affect the creation of impervious cover. This assessment shall be used to provide information withto allow the permittee to determine if changes to design standards for streets and parking lots can be made to support low impact design options. If the assessment indicates that changes can be made, the assessment shall include recommendations and proposed schedules to incorporate policies and standards into relevant documents and procedures to minimize impervious cover attributable to parking areas and street designs. The permittee shall implement all recommendations, in accordance with the schedules, contained in the assessment. The local planning board and local transportation board should be involved in this assessment. This assessment shall be part of the SWMP. The permittee shall report in each annual report on the status of this assessment including any planned or completed changes to local regulations and guidelines. Within four (4) years from the effective date of the permit, the permittee shall develop a report assessing existing local regulations to determine the feasibility of making, at a minimum, the following practices allowable when appropriate site conditions exist:
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> i. Green roofs;
> ii. Infiltration practices such as rain gardens, curb extensions, planter gardens, porous

and pervious pavements, and other designs to manage stormwater using landscaping and structured or augmented soils; and
iii. Water harvesting devices such as rain barrels and cisterns, and the use of stormwater for non-potable uses.

The assessment should indicate if the practices are allowed in the MS4 jurisdiction and under what circumstances are they allowed. If the practices are not allowed, the permittee shall determine what hinders the use of these practices, what changes in local regulations may be made to make them allowable and provide a schedule for implementation of recommendations. The permittee shall implement all recommendations, in accordance with the schedules, contained in the assessment. The permittee shall report in each annual report on its findings and progress towards making the practices allowable (See Section 2.3.6.b and c of the MS4 Permit)"

Working in their capacity as Greenscapes and in collaboration with the Merrimack Valley Stormwater Collaborative, MVPC, IRWA, and SSC worked with 30 communities within the project's scope to review local codes and identify provisions where requirements impact the creation of impervious cover and the use of low impact development (LID)techniques. The following are the communities included within this scope of work as arranged by project partner:

Merrimack Valley Planning Commission

- Amesbury, Andover, Boxford, Georgetown, Groveland, Haverhill, Lawrence, Merrimac, Methuen, Newbury, Newburyport, North Andover, Rowley, Salisbury, West Newbury

Ipswich River Watershed Association

- Essex, Hamilton, Ipswich, Lynnfield, Middleton, North Reading, Topsfield, Wenham

Salem Sound Coastwatch LLC

- Beverly, Danvers, Gloucester, Manchester, Marblehead, Peabody, Salem

The Greenscapes partners reviewed all codes following the Mass Audubon Bylaw Review Tool framework and consolidated findings into community specific reports, as well as overarching regional findings. Greenscapes developed community-specific recommendations based off the optimal bylaw standards outlines in the Mass Audubon Bylaw Review Tool. These recommendations were communicated to each community, who then outlined next steps to implement these recommended changes, in many cases also identifying potential barriers to bylaw revision and working with Greenscapes to devise plans to overcome these challenges.

An additional task completed by MVPC during this project utilized Geographic Information Systems (GIS) and Esri technology to develop a mobile application for conducting construction site inspections more efficiently in the field. The goal of the app is to assist the construction site inspector in ensuring operations match the approved site plans and the Stormwater Pollution Prevention Plan (SWPPP) for the area.

Project Methodology

Liaison and Bylaw Identification

The review process for this project started with the identification of a project liaison for each community who would serve as the main point of contact for duration of the project. This task was completed leveraging Greenscapes' and the Merrimack Valley Stormwater Collaborative's already highly-developed municipal relationships to reach out to community Planners and Departments of Public Works and identify a best point of contact. In some instances, several project liaisons from an individual community were identified and involved throughout the project. Please see Appendix D for a list of identified municipal personal who served as project liaisons.

Following the identification of project liaisons, project partners worked to compile a list of relevant bylaws, ordinances, and regulations to review for each community. Overarchingly, this list consisted of:

- Zoning bylaws/ordinances
- Subdivision Rules and Regulations
- Wetland Bylaws/Ordinances
- Stormwater Bylaws/Ordinances
- Stormwater Rules and Regulations

Depending on where certain requirements resided for each community, the following documents were also reviewed:

- Planning Board Rules and Regulations
- IDDE Bylaws/Ordinances
- Board of Health Regulations

Following preliminary code identification, project partners corresponded with established community liaison(s) for each municipality to confirm the recency and relevancy of the selected codes and inquire about any missing information or documents that could not be located. After liaisons provided necessary information, a comprehensive list of each community's electronically available codes was developed (See appendix E). Please note that some codes did not exist on the internet, and in that instance a copy was received directly from the municipality.

Kickoff meeting

MVPC, with its Greenscapes partners then hosted a kickoff meeting to provide an overview of the project, its methodology, goals, and deliverables. Guest speakers from the Town of Natick and the Cape Cod Commission also presented material to provide municipal and regional insights on the bylaw review process and outcomes. This meeting received attendance from over 70 individual representatives of the participating communities. For a recording of this kickoff meeting please see attachment 1. To view this presentation, please click on the following link: https://experience.arcgis.com/experience/05c0d8f73c9f47b4b113d838f3215ad2

Bylaw Review

Project partners utilized the MassAudubon Bylaw Review Tool to conduct individual bylaw review with the intention of identifying provisions where requirements impact the creation of impervious cover and the use of low impact development techniques. This tool provides a framework to systematically evaluate various components of municipal codes and ranks them on their consistency with recommended best practices. Prior to project partners conducting the bylaw review, this tool was updated by MassAudubon and the Cape Cod Commission to include more language which is relevant to MS4 compliance. The bylaw review tool has five overarching goals: promoting natural resources and open space, promoting efficient compact development patterns, smart designs which reduce overall imperviousness, adopting green infrastructure to manage stormwater, and encouraging efficient parking. Within each goal there are multiple subgoals as well as three levels of implementation status which Greenscapes revised to read: Needs Improvement (coded orange), Improved (coded yellow), and Optimal (coded green).

For each of the goals and subgoals, the matrix has columns to be filled in with the language from each reviewed code. The reviewer then ranks this language according to Mass Audubon's criteria as "Needs Improvement", "Improved", or "Optimal." If a bylaw's contents are not applicable to a certain subgoal, then "not applicable" fills the space. The result is a color-coded matrix arranged by bylaw and subgoal which clearly delineates areas for potential improvement, as well as areas of success. To access Mass Audubon's full bylaw review template, please click the following link: https://www.massaudubon.org/our-conservation-work/policy-advocacy/shaping-climate-resilient-communities/publications-community-resources/bylaw-review.

Community Reports and Liaison Meetings

After the completion of each MassAudubon Bylaw Review matrix, Greenscapes worked to consolidate the matrix's findings into a report which highlighted the successes and areas for improvement within each community's bylaws related to low impact development implementation and impervious surface creation. Specific recommendations for improvement were provided and organized by the five main goals of the MassAudubon Bylaw Review Tool: promoting natural resources and open space, promoting efficient compact development patterns, smart designs which reduce overall imperviousness, adopting green infrastructure to manage stormwater, and encouraging efficient parking. This allowed for easy reference between the completed matrix and associated recommendations for improvement.

Following the completion of draft recommendations, project partners shared each draft report with the community liaison(s) and established a time to meet and review the findings in depth, as well as discuss priority actions and a timeline for implementation. After each community meeting, project partners revised the report as necessary and completed the "Timeline and Implementation Plan" section with priority actions and a general timeline for implementation. The final revisions were shared with community liaisons and approved for compilation into the MS4 Municipal Assistance final report.

As a concluding step, utilizing the completed set of bylaw reviews, project partners compiled best practice model language examples throughout the region and arranged them by Mass Audubon Bylaw Review Matrix goal (Appendix C) for communities to reference while revising codes based upon recommendations.

GIS Application Development

The development of the Constriction Site Inspection Application began without an existing construction site dataset. MVPC first created the baseline point feature layer that would represent the construction sites on a map and included basic identifying information for hypothetical test sites that we created to ensure functionality.

MVPC created a related table to accommodate multiple inspections at a single site. The table was based on the Central Massachusetts Regional Stormwater Collaborative's Standard Operating Procedures for Construction Site Inspections form. MVPC converted the form to Excel and imported it as the framework for our related table then related the locations to the inspections based on a unique ID that will allow for multiple inspections to be conducted at one site. Finally, MVPC published out the data on ArcGIS Online to ensure collaboration with our regional partners would be easy.

After finalizing the data development, MVPC created a web map and mobile app for inspectors using Esri's ArcGIS Online and Field Maps. MVPC utilized internal and external source data through partnerships like MassGIS to develop the web map for the project area. MVPC included relevant planning layers such as FEMA Floodplain layers, NHESP habitat information etc. to provide site context. The app leverages the web map within Field Maps to serve up a helpful map interface as well as the customized inspection form and can be accessed on any smart device to collect site and inspection information as inspections are conducted.

Following completion of mobile application development, MVPC held a virtual training through the Merrimack Valley Stormwater Collaborative to share the app's functionality and gains insights on areas of potential improvement. Please see attachment 2 for a recording of this training. In addition to the training sessions, MVPC also created a stand-alone training video that was shared following liaison meetings. A standard training video was essential as multiple municipalities communicated that they often have consultants conducting these inspections who may not have availability to attend a real-time training session. Please see attachment 3 for this training video.

Key Regional findings

Given the large geographic jurisdiction of this project, regional trends for Northern Massachusetts as they relate to MS4 compliance, LID, and impervious surface creation were able to be identified. The following key regional findings were identified:

1. The majority (24) of project municipalities have some mechanism in place through Open Space Residential Development (OSRD) or similar option, which encourages development designs that permit flexible, compact development and LID features including the preservation of open space, minimization of disturbance, and requirement for green

infrastructure. In Northern Massachusetts this form of development is typically allowed by special permit, and communities had various increments of encouragement, requirement, or optionality surrounding OSRD. Communities which required OSRD to be considered for a given parcel size or lot number and permitted OSRD in several districts were most successful at implementation.

2. Inconsistency regarding design standards/criteria was prevalent throughout all codes and communities. Often, design standards surrounding LID, stormwater management, and natural resource preservation were found within several different codes, and with varying design standards. For example, one code may require native species plantings, while others do not address it or require a counter-active standard. Language is also often shrouded in nuance, with terms like “due regard” and “whenever practicable” used in place of specific measurable design standards. Communities who had consistent and specific design standards were most successful at ensuring their implementation.
3. While almost all communities (29) had a stormwater permit in place, it often was only required for 1 or more acres. Though this is the MS4 permit’s current standard requirement, it may not be successful in encompassing all project types depending on the community’s average parcel size. Communities which lowered this standard to 20,000 square feet or developed a dual permit requirement for small and large parcels were most successful at capturing all projects.
4. While most communities tackled all MS4 requirements within their stormwater ordinance/bylaw or similar code, few communities took extra actions to develop comprehensive and measurable design standards as they relate to LID and erosion and stormwater control. Proactive stormwater control requirements which went above and beyond state legislative requirements were not often found, speaking to the necessity of proactive state requirements in ensuring municipal implementation.
5. While all communities regulated construction activities conducted by outside developers, few communities had similar standard operating procedures for activities conducted by the municipality, such as replacing sidewalks or curbing. Without regulations of this nature, municipalities are able to conduct these activities without considering proactive alternatives which reduce imperviousness and promote LID design standards.

Regional Priority Actions

Given the above regional findings and with MS4 requirements in mind, the following top priority actions were identified. These actions were chosen for either their ease of implementation, contribution to MS4 year 4 compliance, or exceptional ability to reduce stormwater runoff. Given the vast diversity of codes and community type this synthesis includes, several priority actions are listed for each item to accommodate all project members. Please see appendix C for model language for the implementation of these priority actions and appendix B for community specific reports.

1. Communities who do not currently have a functional OSRD or similar development option in place, either because the permitting process is too complex, the district in which the OSRD is permitted is too small, the OSRD is optional and not required to be considered, or OSRD is not permitted at all, should consider the following priority actions:

a. Require OSRD to be considered for parcels over a given size. For rural communities this may be 1-5 acres, while for more urbanized communities a minimum parcel size may not be necessary.
b. Streamline the permit progress for projects utilizing preferred site designs to both encourage LID and reduce time burdens on municipal staff, local boards, and developers.
c. Permit OSRD in several residential districts, or within a region of land which is likely to be developed to ensure its use.
d. Permit OSRD by-right in several applicable districts to encourage developers to choose this design standard as the preferred and easiest for permitting.
e. If OSRD is not always a feasible option, as it is not in some densely populated gateway cities with small parcel sizes and frequent redevelopment rather than new development, develop similar design standards, such as the inclusion of LID and preservation of open space, for other applicable districts or for redevelopment activities.

2. Communities who are not in compliance with the year 4 MS4 permit due to the following should immediately consider revising standards to move into compliance:
    a. Prohibiting illicit discharges.
    b. Requiring a Stormwater Management Operation and Maintenance Plan and Construction Erosion and Sedimentation Plan.
    c. Requiring a stormwater permit for lots over 1 acre or 43,560 square feet in size, or comparable based on individual community minimum lot size by zoning
    d. Requiring stormwater systems be designed to accommodate larger volume storms.
    e. Requiring specific post construction total suspended solids and total phosphorus removal standards.
3. Communities who require a stormwater permit for the standard 1 acre or 43,560 square feet of disturbance may consider revising this requirement to be more proactive in managing stormwater runoff during construction. This is especially applicable for communities who often see lots under 43,560 square feet developed. Depending on size, communities may consider:
    a. Reducing the square footage requirement to a more relevant standard which encompasses more development. Depending on the community, this may be 20,000 square feet, 10,000 square feet, or lower.
    b. Developing new permitting thresholds which include a minor permit for developments between 3,000-20,000 square feet of land disturbance (typical single family home construction), which requires administrative review and approval from a conservation agent, and a major permit for land disturbances over 20,000 square feet (multi-dwelling or large commercial project), which requires a public hearing and approval by the planning board/conservation commission. Minor and major permitting thresholds can also be revised to accommodate the community's average parcel size.
4. Communities who currently have inconsistent design requirements among codes, especially those surrounding LID and stormwater guidelines, should do the following depending on the current siting of their design standards:
    a. For communities which have a stormwater bylaw and regulations, it is recommended that either code's regulations are updated consistently to ensure they are in direct

alignment with the stormwater design standards, or preferably, that the stormwater regulations house all design requirements for LID and stormwater management, and all other design standard sections refer directly to the stormwater regulations for guidance in this realm. This will ensure requirements are consistent and will streamline future updates as they become necessary.

b. For communities without a specific stormwater bylaw and regulations, it is recommended that either all code's design standards are updated consistently to ensure they are in direct alignment with one another, or preferably, that one code is chosen to house stormwater and LID design standards, with other codes referring directly to it as necessary.

Conclusion

Given the vast diversity of municipalities reviewed through this effort, a similar assortment was found in the regulatory requirements surrounding LID implementation and impervious surface creation. Most communities have started taking proactive steps towards LID implementation and impervious surface reductions in some part of their local regulations in a manner that takes into consideration local land use, development activities, geography, and municipal capacity. The recommendations provided in this summary and within the community specific reports are intended to 1) ensure MS4 compliance, 2) present proactive recommendations and best practices for stormwater management, and 3) share out examples of best practices from fellow Northern Massachusetts communities of similar size and capacity.

This work will advance Northern Massachusetts communities towards improved stormwater management and climate resiliency by ensuring regulations are in line with best practices which minimize the alteration of natural green infrastructure, reduce impervious surfaces, and support the use of LID techniques as the preferred method for managing stormwater. Reviewing and revising regulations to encourage or require these best practices is a necessary step in guaranteeing their implementation and protecting Northern Massachusetts from stormwater related threats now and in the future. Moving forward, MVPC and its partnerships through Greenscapes North Shore Coalition and the Merrimack Valley Stormwater Collaborative will continue to work with municipalities to encourage implementation of stormwater management best practices.

Appendix A: Bylaw Review Matrices

Amesbury

Factors	Needs Improvement	Improved	Optimal	Community's Zoning and site plan review	Subdivision Rules & Regulations	Wetland Ordinance and Rules & regs	Stormwater Bylaw and Regulations (IDDE ordinance)
GOAL 1: PROTECT NATURAL RESOURCES AND OPEN SPACE							
Soils managed for revegetation	Not addressed	Limitations on removal from site, and/or requirements for stabilization and revegetation	Prohibit removal of topsoil from site. Require rototilling and other prep of soils compacted during construction	The removal of sand, gravel, quarry, or other earth materials for commercial purposes is prohibited in the City of Amesbury. (XI, B1) Exposed or disturbed areas due to stripping of vegetation, soil removal, and regarding shall be permanently stabilized within six months of occupancy of a structure. 2. During construction, temporary vegetation and/or mulching shall be used to protect exposed area from erosion. Until a disturbed area is permanently stabilized, sediment in run-off water shall be trapped by using staked hay bales or sedimentation straps. 3. Permanent erosion control and vegetative measures shall be in accordance with the erosion/ sedimentation/vegetative practices recommended by the Soil Conservation Service. (XI.C. 8[and XI.Q. 10.5. e)	he development and implementation of a sediment and erosion control plan shall comply with the requirements of Section 6 (Definitive Subdivision Plans) and Section 8 (Construction Standards) of the Amesbury Subdivision Rules and Regulations. The following criteria shall be used to evaluate plans and control mechanisms used to minimize erosion of soil and sedimentation of streams and water bodies shall be minimized using the following erosion practices: (7.F)Where necessary, as determined by Planning Board, temporary vegetation and/or mulching shall be used to protect areas exposed during development. At the toe of all cut and fill slopes in excess of ten (10) feet in height, staked baled hay or other erosion checks shall be installed. (8.08)	No person shall remove, fill, dredge, build upon, degrade, or otherwise alter resource areas protected by this chapter, or cause, suffer, or allow such activity, or leave in place unauthorized fill, or otherwise fail to restore illegally altered land to its original condition, or fail to comply with a permit or an enforcement order issued pursuant to this chapter. (460-10,B) - very comprehensive performance standards for each resource area, which detail that no proposed work shall cause adverse impact to wetland resources in any way (II, 17.0)	not addressed
Limit clearing, lawn size, require retention or planting of native vegetation/naturalized areas	Not addressed OR General qualitative statement not tied to other design standards	Encourage minimization of clearing/ grubbing	Require minimization of clearing/grubbing with specific standards	This regulation shall be deemed not to prohibit the removal of such sod, loam, soil, clay, sand, gravel, or stone as may be required to be excavated for the purposes of constructing ways in accordance with lines and grades approved by the Planning Board or a definitive plan approved by the Planning Board or for the purposes of constructing underground utilities. Where soil is to be removed in connection with the preparation of a specific site for building, removal may take place only after the issuance of a building permit by the Inspector of Buildings. Removal will be allowed only from the area of the building, driveways, parking area, and from areas where removal is	Design and construction shall reduce, to a maximum extent possible, the following features: 1. Volume of cut and fill; 2. Area over which existing vegetation will be disturbed, especially if within 200 feet of a river, wetland or waterbody or in areas having a slope of more then 15%. 3. Number of trees removed having a diameter over 12" at breast height (DBH); 4. Extent of waterways altered or relocated; 5. Dimensions of paved areas (including streets) except as necessary for safety and convenience, especially in aquifer recharge areas;	No person shall remove, fill, dredge, build upon, degrade, or otherwise alter resource areas protected by this chapter, or cause, suffer, or allow such activity, or leave in place unauthorized fill, or otherwise fail to restore illegally altered land to its original condition, or fail to comply with a permit or an enforcement order issued pursuant to this chapter. (460-10,B) - very comprehensive performance standards for each resource area, which detail that no proposed work shall cause adverse impact to wetland resources in any way (II,	not addressed
Require native vegetation and trees	Not addressed OR General qualitative statement	Mixture of required plantings of native and nonnative	Require at least 75% native plantings	Plantings (of landscape buffers)shall be of various approved evergreen species only and shall be planted at an initial height of six (6) feet (XI.c. 8, c2) High-quality, drought-resistant, native landscaping shall be provided within the project in SGOD (XI.Q. 10.5, c8) All new plantings within the site must be non-invasive species, and no exotic ornamental plantings shall be planted within the 100 foot buffer to a wetland resource area, as defined by the MA Wetlands Protection Act (XI.Q. f6)	Tree wells or retaining walls shall be of such design to meet the standards as set forth in the Tree Experts Manual or similar publication. (7.05) Street trees of nursery stock conforming to the Standards of the American Association of Nurserymen, of a species approved by the Planning Board, after consultation with the Amesbury Tree Board, shall be planted on each side of each street in a subdivision, except where the Definitive Plan shows trees along the ways which are healthy and adequate, shall be retained. (7.09. I)	No person shall remove, fill, dredge, build upon, degrade, or otherwise alter resource areas protected by this chapter, or cause, suffer, or allow such activity, or leave in place unauthorized fill, or otherwise fail to restore illegally altered land to its original condition, or fail to comply with a permit or an enforcement order issued pursuant to this chapter. (460-10,B) - very comprehensive performance standards for each resource area, which detail that no proposed work shall cause adverse impact to wetland resources in any way (II, 17.0)	not addressed
GOAL 2: PROMOTE EFFICIENT, COMPACT DEVELOPMENT PATTERNS AND INFILL							
Lot size (for stormwater bylaw, pertains to the size of a lot which requires a stormwater permit)	Not addressed OR Required minimum lot sizes	OSRD/NRPZ preferred. Special permit with incentives to utilize	Flexible with OSRD/NRPZ by right, preferred option	Minimum lot area for all districts, ranging from 5,000-80,000 sq ft and 2-100 acres (dimensional reg table) minimum open space requirements for each district ranging from 30-70%. No minimum lot size in the SGOD, with open space requirements ranging from 15-90% (XI.Q. 7.1.1)	*(Not applicable)*	*(Not applicable)*	Any construction activity, including clearing, grading, and excavation that will disturb equal to or greater than 43,560 square feet of land or will disturb less than 43,560 square feet of land but is part of a larger common plan of development or sale that will ultimately disturb equal to or greater than 43,560 square feet of land in the City of Amesbury. (398-4, B)
Housing density	Multi-family housing not allowed, or only in/adjacent to commercial and industrial uses	Multi-family and cluster developments allowed by special permit	Multi-family housing allowed by right in most residential areas; cluster developments encouraged with density bonuses for LID features and no maximum lot coverage	multi family allowed only by special permit in three districts, (CBD, C, and IC) cluster allowed in most residential districts with special permit, and RC1 without special permit. (table of regulations). In SGOD, multi family must be at a density of at least 20 units per acre (XI.Q. 7.1.1)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Setbacks	Not addressed OR Required minimum front, side, and rear setbacks	Minimize, allow flexibility	Clear standards that minimize and in some instances eliminate setbacks	minimum yard setbacks for front, rear, and side yard. Front ranges from 0 (in CBD) to 100 sq ft. Side yard ranges from 5-50 sq ft. Rear yard ranges from 15-100 sq ft (dimensional req table). In SGOD, frnot setbacks 10-20ft, side 5-15 ft, rear 20 ft (XI.Q. 7.1.1)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Frontage	Not addressed OR Required minimum frontage for each lot/unit	Minimize especially on curved streets and cul-de-sacs	No minimums in some instances, tied into other standards like OSRD design and shared driveways.	A corner lot shall have minimum street yards with depths which shall be the same as the required front yard depths for the adjoining lots. (VI, F3) Minimum lot frontage ranging from 80 to 200 sq ft depending on the district	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*

notes: stormwater control primarily referenced in zoning and subdivision. No stormwater ordinance or regulations exist, only IDDE ordinance

Common driveways	Not addressed OR Not allowed, strict limitations	Allow for 2-3 residential units	Allow for up to 4 residential units, preferrably constructed with permeable pavers or pavement	To the extent feasible, access to businesses shall be provided via one of the following: a. A common driveway serving adjacent lots or premises; b. An existing side street; or, c. A cul-de-sac or loop road shared by adjacent lots or premises. (XI.Q, 10.5, a) CAD allowed with special permit: The CAD shall: serve no more than three (3) dwelling units for single family detached structures, each with the approved frontage on either an existing or proposed public way or; within a CRSP where the Board may allow a CAD to be used to serve a multifamily structure containing up to four (4) dwelling units with no more than (14) fourteen bedrooms in total. The Board may also permit access to and from the CAD for up to two (2) abutting dwelling units located along the intersection of the CAD and the public way provided vital access to the public way is reasonably available. (XI.O, 2) The location and construction of a CAD shall minimize soil disturbance, vegetation	Common Access Driveways (CAD) may be permitted by the Board through a Special Permit provided the proposed CAD meets the requirements listed in Section XI.O of the Amesbury Zoning Bylaws and the CAD shall conform to the following Design Standards: (7.09. K)	*(Not applicable)*	*(Not applicable)*
GOAL 3: SMART DESIGNS THAT REDUCE OVERALL IMPERVIOUSNESS							
Impervious cover limits and infiltration rates	Not usually addressed in zoning and subdivision regs for rural/suburban residential	Require no net increase in site run-off from pre- to post-development	Impervious cover limits tailored to the commuity and district type (i.e. <10% total impervious cover in rural districts, but higher in urban and redevelopment districts); post-development infiltration should be equal to or greater than pre-development. Following best practice may also help communities comply with MS4 permit requirements	Various techniques may be required to maximize recharge, such as perforated drain pipes, reduction of paved areas, reduction of building coverage; or to improve water quality, such as installing grease traps, or gas/oil separators. (XI.C,8g) The rate of surface water run-off from the site shall not be increased after construction. If needed to meet this requirement and maximize	Design and construction shall reduce, to a maximum extent possible, the following features: Dimensions of paved areas (including streets) except as necessary for safety and convenience, especially in aquifer recharge areas; (7.02)	*(Not applicable)*	not addressed
Street location	No standards addressed OR Numeric and geometric standards based primarily on vehicular travel and safety, with basic pedestrian requirements e.g. sidewalks	Flexibility in applying standards, to reduce area of impact, grading, avoid key natural features	OSRD design preferred by-right. Require locating streets to minimize grading and road length, avoid important natural features	*(Not applicable)*	Residential street systems shall be designed to be compatible with existing streets, and to rationalize traffic patterns within new subdivisions. The street plan shall accommodate existing street alignments which enter or border the tract. (7.09) Streets shall be related appropriately to the topography. In particular, streets shall be designed to facilitate the drainage objectives set forth in	*(Not applicable)*	*(Not applicable)*
Road width	No categories addressed OR Major and minor categories, 24-30'	Wide, medium, narrow categories. 22-24' max, plus 2' shoulders	Wide, medium, narrow, and alley categories. 20-24' widest for 2 travel lanes, 18-20' low traffic residential neighborhood, plus 2' shoulders. Allow alleys and other low traffic or secondary emergency access and all shoulders to use alternative, permeable materials.	*(Not applicable)*	common access driveway: 18 feet, minor street: 24 feet, Major street: 30 feet (7.09, E)	*(Not applicable)*	*(Not applicable)*
Road ROW width	ROW Width not addressed OR 50-75', fully cleared and graded	40-50', some flexibility in extent of clearing	20-50'depending on road type	*(Not applicable)*	common access driveway: 40 feet, minor street: 50 feet, major street: 60 feet (7.09, G)	*(Not applicable)*	*(Not applicable)*
Access Options	Common drives not addressed, No common drives allowed, Dead end allowed with limit on length and # of units	Allow dead end with limit on length and # of units. Allow common drives up to 2-3 units	Allow one way loop streets. Allow common drives up to 4 units, and alleys and rear-loading garages where suitable.	Commno driveways allowed: The CAD shall: serve no more than three (3) dwelling units for single family detached structures, each with the approved frontage on either an existing or proposed public way or; within a CRSP where the Board may allow a CAD to be used to serve a multifamily structure containing up to four (4) dwelling units with no more than (14) fourteen bedrooms in total. The Board may also permit access to and from the CAD for up to two (2) abutting dwelling units located along the intersection of the CAD and the public way provided vital access to the public way is reasonably available (XI.O, 2c)	Common Access Driveways (CAD) may be permitted by the Board through a Special Permit provided the proposed CAD meets the requirements listed in Section XI.O of the Amesbury Zoning Bylaws and the CAD shall conform to the following Design Standards: (7.09. K)	*(Not applicable)*	*(Not applicable)*
Dead Ends/Cul-de-sacs	No standards addressed OR 120 ft or more minimum turnaround	Minimize end radii – 35 ft	Allow hammerhead turnaround	*(Not applicable)*	Dead-end streets shall be provided at the closed end with a turn-around having an outside roadway diameter of at least one hundred feet (100'), and a property line diameter of at least one hundred and twenty feet (120') unless otherwise specified by the Planning Board. The width of the paved surface in the cul-de-sac loop shall be thirty feet (30'). (7.09 d4)	*(Not applicable)*	*(Not applicable)*
Cul-de-sacs	No standards addressed OR Full pavement standard	Encourage center landscaping with bioretention	Require center landscaping with bioretention	*(Not applicable)*	The cul-de-sac shall include the placement of a circular landscaped island with a radius of twenty feet (20') at the center of the turn-around, if the dead-end street is not intended to connect with another street at some future point in time. The unpaved area of all cul-de-sacs must be landscaped with low maintenance trees and shrubbery. (7.09, D4)	*(Not applicable)*	*(Not applicable)*
Curbing	No standards addressed OR Curbing required full length both sides of road	Allow curb breaks or curb flush with pavement to enable water to flow to vegetated LID features	Open drainage with roadside swales and no curbs preferred	Vertical granite curbing is required along all entryway radii. Sloped granite is required along driveways, landscaped islands and the perimeter of the parking areas. However, in instances where drainage, and storm water management design proposed on the site use Low Impact Development (LID) strategies instead of a conventional storm drainage system throughout the project site, the Planning Board may waive/reduce any curbing requirements. 2009-060,The number of curb cuts on state and local roads shall be minimized. One access driveway per lot shall be permitted to a maximum of	Curbing shall be required to be installed on all streets. Curbing shall be constructed of granite. Slanted curbing shall be provided on sidewalks at pedestrian crosswalks and all crosswalks shall be wheelchair accessible. Curbing shall be sealed to the road pavement. (7.09 G)	*(Not applicable)*	*(Not applicable)*

Roadside Swales	Not addressed OR Allowed as an option	Preferred over closed drainage	Preferred, with criteria for proper design. Adoption of technical specifications and design templates for green infrastructure recommended	*(Not applicable)*	Where the water table is not too high and where the soil is reasonably permeable to adequate depths, drainage shall feature swales, detention/retention ponds and multi-use areas. Open drainage systems may be required for recharge of aquifers and recharge areas provided that runoff is not seriously polluted. Open drainage featuring grassed areas will be preferred as providing better filtration than pits and shafts. (7.10)	*(Not applicable)*	not addressed
Utilities	Off sets required contributing to wide road ROWs	Not specified - flexible	Allow under road, sidewalks or immediately adjacent to roads to enable placement of roadside swales.	*(Not applicable)*	Where utilities cross lots or are centered on rear or side lot lines, easements shall be provided of a width of at least twenty feet (20'). (7.03)	*(Not applicable)*	*(Not applicable)*
Sidewalks	Material not addressed OR Concrete or bituminous required	Some flexibility in material and design	Prefer permeable pavement or permeable pavers	*(Not applicable)*	Forms shall be set to grade, and one four inch (4") layer of Portland Cement Concrete (3000 p.s.i.) shall be placed on a minimum of eight inch (8") bank run gravel base. The surface shall be broom-finished. (8.05)	*(Not applicable)*	*(Not applicable)*
Sidewalk location	Required both sides of road	Allow on only 1 side of road especially in low density neighborhoods	Prefer siting with land contours and for best pedestrian utility (e.g. connect with common areas and shared open spaces) – not necessarily immediately parallel to road.	*(Not applicable)*	Sidewalks shall be placed parallel to roadways as follows: 1. On both sides of all streets 2. Around the perimeter of cul-de-sacs. (7.09 H)	*(Not applicable)*	*(Not applicable)*
Sidewalk drainage	Draining to road, closed drainage system required	Not addressed	Disconnect drainage from road system – e.g. adjacent green strips or within vegetated areas that can absorb sheet flow	*(Not applicable)*	To the maximum extent feasible, storm water must be recharged utilizing structures designed to prevent water quality degradation, rather than piped to surface water.(7.10)	*(Not applicable)*	*(Not applicable)*
GOAL 4: ADOPT GREEN INFRASTRUCTURE STORMWATER MANAGEMENT PROVISIONS							
Rooftop runoff	Not addressed OR Prohibit directing clean roof runoff into closed municipal drainage systems.	Allow clean roof runoff to be directed to landscaped or naturally vegetated areas capable of absorbing without erosion, or infiltration	Require directing clean roof runoff to landscaped or naturally vegetated areas capable of absorbing, or infiltration	*(Not applicable)*	not addressed	*(Not applicable)*	not addressed
Overall stormwater design; piping and surficial retention vs. LID	Conventional stormwater system design standards	Encourage LID features and BMPs; design standards often not specified	LID design standard encouraging infiltration, allowing surficial ponding of retained runoff for up to 72 hours; systems designed for larger volume storms, accounting for future precipitation predictions; credit for green roofs towards stormwater requirements. Following best practice may also help communities comply with MS4 permit requirements	When earth material is permitted to be removed for constructton purposes the following wil lbe required: a stormwater management plan, showing structural Best Management Practices (BMP) to be employed on the project site, and 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, The design and construction of stormwater management, erosion control plan, drainage, water and utilities shall comply with Section 7 (Design Standards) and Section 8 (Construction Standards) of the Amesbury Subdivision Rules and Regulations as amended. Low Impact Development strategies for managing stormwater shall be in accordance with standards promulgated by Massachusetts Department of Environmental Protection and any design manuals	Storm drains, culverts, and related facilities shall be designed to permit the unimpeded flow of all natural water courses, to ensure adequate drainage at all low points along streets, to control erosion, and to intercept storm water run-off along streets at intervals reasonably related to the extent and grade of the area being drained. To the maximum extent feasible, storm water must be recharged utilizing structures designed to prevent water quality degradation, rather than piped to surface water. In areas identified as high yielding, aquifer and aquifer recharge areas, recharge is especially critical. Peak stream and channel flows and overland runoff at the boundaries of the development in the twenty five (25) and one hundred (100) year frequency storm shall be no higher following development than prior to development. Storm sewers shall	*(Not applicable)*	not addressed
Site Plan/Design Requirements	LID not addressed	Encourage use of LID features in site design - such as reduced imperviousness, maintaining natural hydrology, preserving open space, and rainwater reuse	Include bioretention and other vegetated LID features in site landscaping/open space requirements. Following best practice may also help communities comply with MS4 permit requirements. See section 2.3.5 of the MS4 permit for more information	The Site Plan shows or includes adequate measures to prevent pollution of surface or groundwater, to minimize erosion and sediments, and to prevent changes in groundwater levels, increased run-off and potential for flooding (XI.C, 7.a.6)	*(Not applicable)*	*(Not applicable)*	not addressed
Allow easy siting of LID features (bioretention, swales, etc.)	Not addressed OR Require waivers from subdivision standards	Encouraged along road ROW	Allowed on lots, common open space, or road ROW, easement recorded. For commercial development, allow an increase in floor area ratio or other developmental incentives for green roofs	not addressed	not addressed	*(Not applicable)*	*(Not applicable)*
Permeable paving	Not addressed OR Require waivers from subdivision standards	Allowed on private residential lots for parking, patios, etc.	Allowed for residential drives, parking stalls, spillover parking spaces, emergency access ways (with proper engineering support for emergency vehicles) Two track design allowed for driveways and secondary emergency access ways (where required).	*(Not applicable)*	not addressed	*(Not applicable)*	not addressed
Stormwater management O&M plan	Typically only addressed if municipality has a stormwater or LID bylaw, or for areas subject to wetlands permitting	Required	Required, contents specified in alignment with current MassDEP Stormwater Handbook. Following best practice may also help communities comply with MS4 permit requirements	*(Not applicable)*	not addressed	*(Not applicable)*	not addressed
Construction Erosion and Sedimentation Plan, and stormwater control	Basic general requirements	Required, contents specified - the site design process should include soil erosion and sedimentation control measures	Goes beyond minimum NPDES requirements. Requires minimization of site disturbance, reduction of construction waste, control measures not removed until proof of soil stabilization or reestablishment of vegetation. Written procedures for site inspection and enforcement included.	When earth material is permitted to be removed for constructtion purposes the following wil lbe required: a stormwater management plan, showing structural Best Management Practices (BMP) to be employed on the project site, and runoff from impervious surface (XI. B1) a report on the potential dangers of erosion and	A plan for erosion and sedimentation control covering all proposed excavation, filling and grade work for improvements shall be required. Said plan shall be prepared and certified by a Registered Professional Engineer. Requirements for Erosion Control, Such plans shall show proper measures to control erosion and	*(Not applicable)*	not addressed

Stormwater discharge detection & elimination	Not addressed	Discharges and connections noted and/or limits set on quantity and quality	Illicit discharges and connections are prohibited and enforced. Following best practice may also help communities comply with MS4 permit requirements. Find more information in section 2.3.4.a of the MS4 permit	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	Illicit discharges. No person shall dump, discharge, cause or allow to be discharged any pollutant or nonstormwater discharge into the municipal separate storm sewer system (MS4), into a watercourse, or into the waters of the Commonwealth of Massachusetts Illicit connections. No person shall construct, use, allow, maintain or continue any illicit connection to the municipal storm drainage system, regardless of whether the connection was permissible under applicable law, regulation or custom at the time of connection; (398-5, C1&2);
Post- construction stormwater management and drainage patterns	Not addressed	Allow LID	Resemble pre-existing conditions of volume, velocity, quality and location, as nearly as possible, requiring LID to the max extent feasible. Retain vol of runoff >1in. per sq.ft. of impervious surface and/or remove 90% TSS post-construction & 50% TP generated on the site for new development, or >0.8in. per sq.ft and/or remove 80% TSS and 50% of TP load for redevelopment. Following best practice may also help communities comply with MS4 permit requirements.	he management and control of flow and pollutant loads from stormwater runoff discharges shall comply with the requirements of Section 7 (Design Standards) and Section 8 (Construction Standards) of the Amesbury Subdivision Rules and Regulations. (XI.C, 8E)	Storm drains, culverts, and related facilities shall be designed to permit the unimpeded flow of all natural water courses, to ensure adequate drainage at all low points along streets, to control erosion, and to intercept storm water run-off along streets at intervals reasonably related to the extent and grade of the area being drained. To the maximum extent feasible, storm water must be recharged utilizing structures designed to prevent water quality degradation, rather than piped to surface water. In areas identified as high yielding, aquifer and aquifer recharge areas, recharge is especially critical. Peak stream and channel flows and overland runoff at the boundaries of the development in the twenty five (25) and one hundred (100) year frequency storm shall be no higher following development than prior to development. (7.10)	*(Not applicable)*	not addressed
As-built surveys	Not addressed	Recommended	Required, with written instructions for process; electronic submittal allowed	*(Not applicable)*	Upon completion of construction, and before release of the performance guarantee, the sub-divider shall have prepared and submitted As-Built Plans at the same scale as the street plans, which shall indicate the actual locations of street line; traveled way edges; path locations; permanent monuments; inverts and location of required utilities and drainage; locations of all underground utilities. The accuracy of such As-Built Plans shall be certified by a Registered Land Surveyor and Registered Professional Engineer retained by the sub-divider. The Planning board shall be provided with one mylar copy and two blue-line copies of the As-Built Plan (6.12)	*(Not applicable)*	not addressed
Intra-departmental communication and coordination	Not addressed	Informally or loosely occurring	Required for plan review and/or permit approvals	At the discretion of the Special Permit Granting Authority such authority may within ten (10) days after receipt of an application for special permit transmit a copy thereof for review to the Board of Health, the Planning Board, the Municipal Council, the Conservation Commission, and another municipal board or agency designated in such Authority's rules and regulations. (X, J, 4)	Prior to approval of any Definitive Plan and Profile, the Planning Board will require a letter of review from the Department of Public Works, the Fire Department, and the Police Department. If any of the above officials fail to report, such failure shall be noted in the minutes of the Public Hearing. (6.08. C) The developer shall document prior to Planning Board approval of the Definitive Plan either that the Conservation Commission has determined that the Wetlands Protection Act is not applicable to the proposed development of that he has filed a Notice of Intent with the Commission. (6.08)	not addressed	not addressed
Enforcement	No	Yes	Yes with fines. Same entity should oversee permit approvals and enforcement	The duty of administering and enforcing the provisions of this Ordinance is hereby conferred upon the Inspector of Buildings who shall have such powers as are conferred upon him by this Ordinance and as reasonably may be implied. (X, A) Penalties may be affixed in an amount not to exceed three hundred dollars ($300.00) for each offense. Each day, or portion of a day, that any violation is allowed to continue shall constitute a separate offense. (X, F)	no enforcement with fines, the BOH oversees permit approvals: The Board of Health shall, within 45 days after the plan is filed, report to the Planning Board in writing, approval or disapproval of said plan, and, in the event of disapproval, shall make specific findings as to which, if any, areas shown on such plan cannot be used for building sites without injury to the public health, and include such specific Amesbury Subdivision Rules and Regulations (revised June 6, 2006) Page 25 findings and the reasons therefore in such report, and where possible, shall make recommendations for the adjustments thereof. (6.08)	The Commission shall have authority to enforce this chapter, its regulations, and permits issued thereunder by violation notices, administrative orders and civil and criminal court actions. Any person who violates provisions of this chapter may be ordered to restore the property to its original condition and take other action deemed necessary to remedy such violations or may be fined, or both. Upon request of the Commission, the Mayor and Municipal Attorney shall take legal action for enforcement under civil law.[1] Any person who violates any provision of this chapter, or regulations, permits, or administrative orders issued thereunder, shall be punished by a fine pursuant to MGL c. 40, § 21. Each day or portion thereof during which a violation continues, or unauthorized	he Planning Board, as the Authorized Enforcement Agency, shall administer, implement, and enforce this Ordinance. Any powers granted to or duties imposed upon the Planning Board in this Ordinance may be delegated to designated agent as defined in this Ordinance.(6.1) the Planning Board or its designated agent shall enforce this Ordinance and any regulations, orders, violation notices, enforcement orders and permit conditions on behalf of the City, and may pursue all civil and criminal remedies for such violations pursuant thereto.(10)
GOAL 5: ENCOURAGE EFFICIENT PARKING							
Parking	Specific minimums set based on projected maximum use times	Encourage minimum # needed to serve routine use (e.g. 2/residential unit with any additional/visitors parking behind in driveway or on street.	Establish Maximum Parking spaces allowed. Do not require more than 2/residence. Allow tenants separate, optional lease agreements for parking.	1.5 parking spaces per dwelling or apartment house (off-street parking regs) no max parking spaces or ptional leases. 1.75 spaces per residential unit in SGOD (XI.Q 10.5. b)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*

Commercial Parking	Specific minimums set based on projected maximum use times adding all on-site uses together.	Some flexibility to reduce minimums based on street or other available nearby parking or transit.	Allowed shared parking for uses with different peak demand times. Provide model agreements/deed restrictions. Reduce parking requirements near transit. Limit parking stall size (9ftx18ft max), with up to 30% smaller for compact cars	Parking required for two or more buildings or uses may be provided in combined facilities on the same or adjacent lots, subject to approval by the Zoning Compliance Officer and the Planning Board, where it is evident that such facilities will continue to be available for the several buildings or uses. (VII D) Joint use of parking areas is encouraged where use may be made by intermittent parking facilities such as churches, assembly halls, or theaters, whose peak parking demand does not conflict with that of the other use. An agreement shall be made in writing and acknowledged by the owner(s) of the uses involved concerning: the number of spaces involved; substantiation of the fact that such joint use is not overlapping or in conflict; and the duration of the agreement. The Agreement must be presented with the application to the Planning Board for approval. (VIII E) All off-street parking spaces must be at least nine (9) feet in width, eighteen (18) feet in length with an aisle twenty-four	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
LID in Parking Areas	LID not addressed OR Require waivers e.g. for planting islands to drain down rather than built up surrounded by curbs	Allow LID/bioretention within parking areas.	Require landscaping within parking areas, as LID/bioretention, at a minimum of 10% of the interior area landscaped and a minimum of 25 square feet for island planting areas.	Parking areas containing over 20 parking spaces shall have at least one shade tree per eight (8) parking spaces, such trees to be a minimum of 2 1/2" in diameter and located either in the parking area or within ten (10) feet of it. At least five (5) % of the interior of any parking area over 20 spaces shall be maintained with landscaping, including trees, in plots of at least nine (9) feet in width when located within a parking bay. Trees shall be so located to provide visual relief from sun and wind interruption within the parking area, and to assure safe patterns of internal circulation. Further, no more than twenty (20) spaces shall be provided in a row without separation by a landscaped area containing at least one (1) shade tree. In the case of double rows, this separation shall mean	not addressed	*(Not applicable)*	not addressed

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Factors	Needs Improvement	Improved	Optimal	Zoning Bylaw (Site plan review and special districts included)	Subdivision Rules & Regulations	Stormwater Management Bylaw and Stormwater and Erosion Control Regulaitons	Wetland Protection Bylaw
GOAL 1: PROTECT NATURAL RESOURCES AND OPEN SPACE							
Soils managed for revegetation	Not addressed	Limitations on removal from site, and/or requirements for stabilization and revegetation	Prohibit removal of topsoil from site. Require rototilling and other prep of soils compacted during construction	Revegetation plan required in watershed protection overlay district (8.1.7) WPOD Earth removal as defined in Sections 6.3.2, 6.3.3, and 6.3.4, where such removal will not endanger ground or surface water quality and where non-construction excavation or grading shall not come closer than four feet above maximum groundwater elevation. The angle of graded slopes shall be no greater than that which can be held by existing or planned vegetation (8.1.4, 7) WOPD Vegetation on the lot shall be planted and located in such a way as to maximize groundwater recharge, absorb and filter runoff and reduce erosion (8.1.7, 3), All construction and land disturbing activities within the GWPOD shall be designed or sites to minimize erosion and runoff, by such practices as minimizing the construction period, slope stabilization, ditch maintenance, filtering, sedimentation basins and revegetation. (8.6.7, 4)	soil erosion plan required which addresses stabilization and revegetation for plan Cs (3.E.5.e) Earth disturbed by construction activities associated with the subdivision roadway or easements, such as tree cutting, stump grubbing, cutting, filling and regrading, shall be appropriately stabilized by methods determined by the Board through the Planning Department within 60 days of such disturbance unless otherwise approved by the Board. (3.B.5.l Long-term (more than 60 days) stockpiles of earth materials shall be shaped and secured by butted haybales around the perimeter and shall be promptly stabilized by temporary seeding or nettin (3.B.5.o)	analysis on best use potential for soils required (VI.B.f), topsoil cannot be remove from sites, should instead be stockpiled and given temporary vegetative cover if left for over 30 days (IX.H.11)	Except as permitted by the Conservation Commission or as provided in § 3 of this by-law, no person shall remove, fill, dredge, build upon, degrade or otherwise alter the following resource areas: any bank, freshwater wetland, marsh, wet meadow, bog, swamp, vernal pool, reservoir, lake, pond, creek, river or stream, or any land under said waters, or any land within 100 feet of any of the aforesaid resource areas, or any land subject to flooding or inundation by groundwater or surface water, or within 200 feet of any river (2) Alter defined as (among other things) Removal, excavation or dredging of soil, sand, gravel or aggregate materials of any kind.(16)
Limit clearing, lawn size, require retention or planting of native vegetation/naturalized areas	Not addressed OR General qualitative statement not tied to other design standards	Encourage minimization of clearing/ grubbing	Require minimization of clearing/grubbing with specific standards	vegetation required to be planted in such a way that minimizes runoff in WPODs (8.1.7) WOPDs required to submit a planting and revegetation plan prior to construction (8.1.7, 4) WPOD and GWPOD Slopes which exceed an average of 15% over a distance of 10 feet or more shall remain undisturbed (8.1.7, 1) Preserve natural features, wetlands, scenic vistas and open spaces when possible HMD, SCROD(8.7.7, 4)	general qualitative statement not tied to other design standards (6) Earth materials associated with the construction of a subdivision may not be transported to or removed from the site without the applicant having first secured approval for such activities from the Board. (3.B.5.ee) Earth disturbed by construction activities associated with the subdivision roadway or easements, such as tree cutting, stump grubbing, cutting, filling and regrading, shall be appropriately stabilized by methods determined by the Board through the Planning Department within 60 days of such disturbance unless otherwise approved by the Board.(5.B.5.l). No minimization of grubbing encouraged in 7.C	Encourage minimization of clearing/grubbing (IX.H.1&14), Land disturbance activities exceeding two acres in size shall not be disturbed without a sequencing plan that requires stormwater controls to be installed and the soil stabilized, as disturbance beyond the two acres continues. Mass clearings and grading of the entire site should be avoided. (IX.H.9.)	Except as permitted by the Conservation Commission or as provided in § 3 of this by-law, no person shall remove, fill, dredge, build upon, degrade or otherwise alter the following resource areas: any bank, freshwater wetland, marsh, wet meadow, bog, swamp, vernal pool, reservoir, lake, pond, creek, river or stream, or any land under said waters, or any land within 100 feet of any of the aforesaid resource areas, or any land subject to flooding or inundation by groundwater or surface water, or within 200 feet of any river (2) Alter defined as (among other things) Destruction of plant life, including the cutting of trees (16)
Require native vegetation and trees	Not addressed OR General qualitative statement	Mixture of required plantings of native and nonnative	Require at least 75% native plantings	Not addressed	not addressed beyond - all street trees planted within the right-of-way shall be approved by the Forestry Superintendent. (7.5.5)	100% Native species required (IX.H.24)	not addressed
GOAL 2: PROMOTE EFFICIENT, COMPACT DEVELOPMENT PATTERNS AND INFILL							
Lot size	Not addressed OR Required minimum lot sizes	OSRD/NRPZ preferred. Special permit with incentives to utilize	Flexible with OSRD/NRPZ by right, preferred option	Required minimum lot sizes (Appendix A, Table 2) exceptions exist but not related to ORSD. Cluster development allowed in some instances by special permit which requires 30% or more open space (7.1) For multi family dwellings each lot shall be not less than 10 acres nor more than 25 acres (7.3.4, 1).	*(Not applicable)*	Land disturbances of 43,560 square feet or more, including multiple separate activities which in aggregate disturb 43,560 square feet or more (a bit less than 1 acre), whether on one parcel or adjacent parcels held in common ownership, shall require a stormwater management permit (4.A) should include a small permit requirement for smaller sq ft projects	*(Not applicable)*
Housing density	Multi-family housing not allowed, or only in/adjacent to commercial and industrial uses	Multi-family and cluster developments allowed by special permit	Multi-family housing allowed by right in most residential areas; cluster developments encouraged with density bonuses for LID features and no maximum lot coverage	cluster development allowed by special permit: The Planning Board shall approve a special permit for a cluster development only if it finds that the proposed disposition of lots and buildings under the particular circumstances involved will make more efficient the provision by the town of health, safety, protective and other services without causing substantial detriment to the character of the neighborhood. (7.1.5.). multi-family development allowed by special permit: The Planning Board may grant a special permit for Planned Development-Multifamily Dwelling (PD-MD) or Planned Development-Mixed Use (PD-MU) for the following types of structures and uses (7.2.1.) also mentioned in 7.3. - new multi-family dwelling construction	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Setbacks	Not addressed OR Required minimum front, side, and rear setbacks	Minimize, allow flexibility	Clear standards that minimize and in some instances eliminate setbacks	Required minimum setbacks for multi family dwelling construction (7.3.4), In the General Business District, the front setback shall be the average front setback of existing buildings on the block. (4.1.4, 2) The minimum frontage of any individual lot shall be 100 feet measured at the street line, Only lots fronting on a proposed "minor" street may have reduced lot area, conform to the frontage and area requirements of the zoning district in which the development lies, In consideration of a special permit for a cluster development under this section, the Planning Board may approve a reduction in the minimum side yard depth to 20 feet (7.1.2) In a Mixed Use District only, the lot shall have a minimum frontage of 50 feet on an existing public way (7.2.3, 4)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*

Frontage	Not addressed OR Required minimum frontage for each lot/unit	Minimize especially on curved streets and cul-de-sacs	No minimums in some instances, tied into other standards like OSRD design and shared driveways.	Required minimum frontage for each lot/unit (Appendix A, table 2) exceptions exist but not related to ORSD	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Common driveways	Not addressed OR Not allowed, strict limitations	Allow for 2-3 residential units	Allow for up to 4 residential units, preferrably constructed with permeable pavers or pavement	allowed in General Business District by special permit following provisions. Only allowed to serve 2 lots (5.1.12, 4) (5.1.5)	not addressed	*(Not applicable)*	*(Not applicable)*
GOAL 3: SMART DESIGNS THAT REDUCE OVERALL IMPERVIOUSNESS							
Impervious cover limits and infiltration rates	Not usually addressed in zoning and subdivision regs for rural/suburban residential	Require no net increase in site run-off from pre- to post-development	Impervious cover limits tailored to the commuity and district type (i.e. <10% total impervious cover in rural districts, but higher in urban and redevelopment districts); post-development infiltration should be equal to or greater than pre-development. Following best practice may also help communities comply with MS4 permit requirements	The number of dwelling units (Independent Living, Congregate Care or Assisted Living Units or Nursing/Restorative beds) proposed may be increased by fifteen (15%) percent (i.e. for every 10 dwelling units, 2 additional dwelling units may be built) if the proposed SRCOD provides fifty (50%) Protected Open Space instead of thirty (30%) percent. (8.8.8)	not addressed	Impervious area not specifically limtied, but fairly extensive requirements are in place via maintaining pre-construction recharge rates (IX.B) and pollutant removal (IX.D)	*(Not applicable)*
Street location	No standards addressed OR Numeric and geometric standards based primarily on vehicular travel and safety, with basic pedestrian requirements e.g. sidewalks	Flexibility in applying standards, to reduce area of impact, grading, avoid key natural features	OSRD design preferred by-right. Require locating streets to minimize grading and road length, avoid important natural features	*(Not applicable)*	numeric and geometric standards (6.C)	*(Not applicable)*	*(Not applicable)*
Road width	No categories addressed OR Major and minor categories, 24-30'	Wide, medium, narrow categories. 22-24' max, plus 2' shoulders	Wide, medium, narrow, and alley categories. 20-24' widest for 2 travel lanes, 18-20' low traffic residential neighborhood, plus 2' shoulders. Allow alleys and other low traffic or secondary emergency access and all shoulders to use alternative, permeable materials.	24 feet for 2 way traffic, 14 feet for one way, shall not exceed 30 feet (for driveways) (5.1.5).	Minimums set for each category: 18 local, 26 minor, 28 major (6.C.3.a)	*(Not applicable)*	*(Not applicable)*
Road ROW width	ROW Width not addressed OR 50-75', fully cleared and graded	40-50', some flexibility in extent of clearing	20-50'depending on road type	Not addressed	40-50' with some flexibility, ROW Is atleast 40 feet in width (3.B.e.i)	not addressed, but all areas beyond ROW are required to be covered in topsoil and planted with native species (IX.H.19)	*(Not applicable)*
Access Options	Common drives not addressed, No common drives allowed, Dead end allowed with limit on length and # of units	Allow dead end with limit on length and # of units. Allow common drives up to 2-3 units	Allow one way loop streets. Allow common drives up to 4 units, and alleys and rear-loading garages where suitable.	common driveways allowed in General Business District by special permit following provisions. Only allowed to serve 2 lots (5.1.12) (5.1.5)	not addressed	*(Not applicable)*	*(Not applicable)*
Dead Ends/Cul-de-sacs	No standards addressed OR 120 ft or more minimum turnaround	Minimize end radii – 35 ft	Allow hammerhead turnaround	*(Not applicable)*	120 ft of more minimum turnaround(6.C.5)	*(Not applicable)*	*(Not applicable)*
Cul-de-sacs	No standards addressed OR Full pavement standard	Encourage center landscaping with bioretention	Require center landscaping with bioretention	*(Not applicable)*	center islands allowed under some circumstances, but landscaping not allowed unless to preserve existing natural features (6.C.5) Any landscaped island must have a maintenance plan ans the local govt is not responsible for maintaining it (6.C.5)	*(Not applicable)*	*(Not applicable)*
Curbing	No standards addressed OR Curbing required full length both sides of road	Allow curb breaks or curb flush with pavement to enable water to flow to vegetated LID features	Open drainage with roadside swales and no curbs preferred	*(Not applicable)*	Vertical granite curbing (Type VB) shall be installed along all sidewalks. In the Single Residence A Zone, granite curb inlets shall be installed at each catch basin and curved granite curbing shall be installed at each intersection. Bituminous concrete birms may be constructued where deemed necessary by DPW, inor when grading is more than 4% in single residence zone A (7.P)	not addressed	*(Not applicable)*
Roadside Swales	Not addressed OR Allowed as an option	Preferred over closed drainage	Preferred, with criteria for proper design. Adoption of technical specifications and design templates for green infrastructure recommended	encouraging the maximum retention of natural topographic features, such as drainage swales, streams, slopes, ridge lines, rock outcroppings, vistas, natural plant formations and trees; to minimize the effects of grading to insure that the natural character of steep slopes is retained; to minimize water runoff and soil-erosion problems incurred in grading of steep slopes; and to encourage innovative architectural, landscaping, circulation and site design. (4.1.4, 5.a)	not directly addressed - Retaining walls, revetments, armored slopes and similar type structures are prohibited within the street right-of-way. Retaining walls and/or similar type structures located outside the right-of-way shall be designed to Massachusetts state standards. Retaining walls and/or similar type structures shall be prohibited as right-of-way support structures. (6.C.2.p)	allowed as an option and mentioned briefly, but not preferred (VI.B.1 & 2)	*(Not applicable)*
Utilities	Off sets required contributing to wide road ROWs	Not specified - flexible	Allow under road, sidewalks or immediately adjacent to roads to enable placement of roadside swales.	*(Not applicable)*	Not mentioned in depth - Utility easements for water shall be no less than 20 feet in width, and utility easements for sewer shall not be less than 30 feet in width. Where multiple utilities are to be contained within the same easement, an additional 10 feet in width shall be provided for each additional utility. (6.E.2)	*(Not applicable)*	*(Not applicable)*
Sidewalks	Material not addressed OR Concrete or bituminous required	Some flexibility in material and design	Prefer permeable pavement or permeable pavers	*(Not applicable)*	concrete or bituminous (7.O.2) For plan A, the traveled way is at least 18 feet in width, with at least eight inches of compacted gravel if serving not more than two residential dwellings, and/or paved with at least two inches of bituminous pavement if serving more than two residential dwellings. (3.B.e) idewalks shall be at least five feet in width and shall be constructed starting at the street line towards the pavement edge and shall consist of eight inches of compacted bank gravel (or equivalent) with a wearing surface of two inches of Type I bituminous concrete. The area between the sidewalk and the street pavement or curb shall be at least six inches of loam with appropriate seeding. (7.Q)	*(Not applicable)*	*(Not applicable)*

Sidewalk location	Required both sides of road	Allow on only 1 side of road especially in low density neighborhoods	Prefer siting with land contours and for best pedestrian utility (e.g. connect with common areas and shared open spaces) – not necessarily immediately parallel to road.	*(Not applicable)*	sidewalk construction may be waived at request (6.D.5), allow only 1 side in certain districts, siting for best pedestrian utility allowed especially in cluster subvisions(6.D.3/4). Sidewalks must be constructed on atleast one side of the street (6.D.2)	*(Not applicable)*	*(Not applicable)*
Sidewalk drainage	Draining to road, closed drainage system required	Not addressed	Disconnect drainage from road system – e.g.adjacent green strips or within vegetated areas that can absorb sheet flow	*(Not applicable)*	Side underdrains shall be installed on both sides of the street(s), except in fill sections, and shall be connected in an approved manner to the surface drainage system. (5.B.5.r) ,Catch basins shall be constructed on both sides of the roadway at intervals of not more than 400 feet (7.J.4)	*(Not applicable)*	*(Not applicable)*
GOAL 4: ADOPT GREEN INFRASTRUCTURE STORMWATER MANAGEMENT PROVISIONS							
Rooftop runoff	Not addressed OR Prohibit directing clean roof runoff into closed municipal drainage systems.	Allow clean roof runoff to be directed to landscaped or naturally vegetated areas capable of absorbing without erosion, or infiltration	Require directing clean roof runoff to landscaped or naturally vegetated areas capable of absorbing, or infiltration	*(Not applicable)*	No roof drainage permitted to enter sanitary sewer system (7.G.8)	not addressed	*(Not applicable)*
Overall stormwater design; piping and surficial retention vs. LID	Conventional stormwater system design standards	Encourage LID features and BMPs; design standards often not specified	LID design standard encouraging infiltration, allowing surficial ponding of retained runoff for up to 72 hours; systems designed for larger volume storms, accounting for future precipitation predictions; credit for green roofs towards stormwater requirements. Following best practice may also help communities comply with MS4 permit requirements	*(Not applicable)*	LID addressed very briefly, stating that local stormwater management systems shall be designed to use LID, but not specifying how (6)	LID design standard, BMPs as listed in the massachusetts stormwater handbook (IX.A) could specify which section for ease	*(Not applicable)*
Site Plan/Design Requirements	LID not addressed	Encourage use of LID features in site design - such as reduced imperviousness, maintaining natural hydrology, preserving open space, and rainwater reuse	Include bioretention and other vegetated LID features in site landscaping/open space requirements. Following best practice may also help communities comply with MS4 permit requirements. See section 2.3.5 of the MS4 permit for more information	*(Not applicable)*	*(Not applicable)*	encourage/require the use of LID as listed in the massachusetts stormwater handbook (IX.A), but does not specify LID counting torwards site landscaping/OS reqs	*(Not applicable)*
Allow easy siting of LID features (bioretention, swales, etc.)	Not addressed OR Require waivers from subdivision standards	Encouraged along road ROW	Allowed on lots, common open space, or road ROW, easement recorded. For commercial development, allow an increase in floor area ratio or other developmental incentives for green roofs	In HMD and SCROD: Incorporate low-impact development (LID) design techniques or Stormwater Best Management Practices (such as, but not limited to, pervious paving, landscape swales, vegetative filters or rain gardens, and landscape infiltration facilities) to lessen the environmental impact of development along the Shawsheen River. (8.7.8, 11)	not addressed	*(Not applicable)*	*(Not applicable)*
Permeable paving	Not addressed OR Require waivers from subdivision standards	Allowed on private residential lots for parking, patios, etc.	Allowed for residential drives, parking stalls, spillover parking spaces, emergency access ways (with proper engineering support for emergency vehicles) Two track design allowed for driveways and secondary emergency access ways (where required).	*(Not applicable)*	not addressed	not addressed	*(Not applicable)*
Stormwater management O&M plan	Typically only addressed if municipality has a stormwater or LID bylaw, or for areas subject to wetlands permitting	Required	Required, surficial bioretention and swales preferred. Closed/underground systems requiring specialized inspection and clean out discouraged.	*(Not applicable)*	not addressed	required but no mention of preferred practices (VI.C)	*(Not applicable)*
Construction Erosion and Sedimentation Plan, and stormwater control	Basic general requirements	Required, contents specified - the site design process should include soil erosion and sedimentation control measures	Goes beyond minimum NPDES requirements. Requires minimization of site disturbance, reduction of construction waste, control measures not removed until proof of soil stabilization or reestablishment of vegetation. Written procedures for site inspection and enforcement included. Following best practice may also help communities comply with MS4 permit requirements. See section 2.3.5 of the MS4 permit for more information	GWPOD construction required to be designed to minimize erosion/sedimentation, but no plan necessary (8.6.7) WOPD requires a sedimentation and control plan (8.1.7)	Detailed soil erosion and sedimentaiton control plan required in subdivision plan C (5.e) Soil erosion and sedimentation control plan. A soil erosion and sedimentation control plan shall be provided at the time of definitive plan submission. The plan shall be prepared and signed by a person or firm qualified by training and experience to have expert knowledge of erosion and sedimentation control methods. general minimum requirements	not mentioned by name (soil erosion and sedimentation control plan) in both the stormwater bylaw and rules/regs - The Planning Board shall refer to the criteria and information, including specifications and standards, of the latest edition of the Massachusetts Stormwater Management Policy or to the design criteria as described in the Town of Andover's Subdivision Rules and Regulations[1] or to the Town of Andover Stormwater Management and Erosion Control Regulations, whichever is more stringent in the protection of the Town's environmental and infrastructure resources, for execution of the provisions of this bylaw. (5.C)	*(Not applicable)*
Stormwater discharge detection & elimination	Not addressed	Discharges and connections noted and/or limits set on quantity and quality	Illicit discharges and connections are probibited and enforced. Following best practice may also help communities comply with MS4 permit requirements. Find more information in section 2.3.4.a of the MS4 permit	*(Not applicable)*	*(Not applicable)*	structural and non structural stormwater BMPs implemented to reduce discharge consistant with approved! TMDL, stormwater management system designed specifically for nitrogen reduction in nitrogen imparement situation (IX D2)	*(Not applicable)*
Post- construction stormwater management and drainage patterns	Not addressed	Allow LID	Resemble pre-existing conditions of volume, velocity, quality and location, as nearly as possible, requiring LID to the max extent feasible. Retain vol of runoff >1in. per sq.ft. of impervious surface and/or remove 90% TSS post-construction & 50% TP generated on the site for new development, or >0.8in. per sq.ft and/or remove 80% TSS and 50% of TP load for redevelopment. Following best practice may also help communities comply with MS4 permit requirements.	*(Not applicable)*	Local street stormwater management systems Shall be designed so that the post-development discharge rates do not exceed predevelopment peak discharge rates. (6.F.10) Shall be designed to remove 80% of the average annual post-construction load of Total Suspended Solids (TSS) (different from that mentioned in stormwater rules and regs) The post-development drainage peak flow rate of runoff shall not exceed the predevelopment drainage peak flow rate of runoff. (6.F.11)	maintain pre-existing ground water levels and stream baseflows by calculating the volume of water required ot be recharged using the mass stormwater handbook (IX B) If the site is on unsiutable soils, non structural LID prcatices will be implemented (IX B 2c) requires 90% TSS post construction, 80% redev, and 60% TP for new dev, 50% for revde. In compliance.	*(Not applicable)*

As-built surveys	Not addressed	Recommended	Required, with written instructions for process; electronic submittal allowed	*(Not applicable)*	Required, process detailed, no mention of electronic submission: Initial as-built plan. All utilities associated with the project shall be located by a registered land surveyor before each utility is backfilled and shall be shown on an initial as-built plan with the following certification: "I certify that the utilities as shown are as actually located in the field and have not been shown as a reproduction of contractor records."	not addressed	*(Not applicable)*
Intra-departmental communication and coordination	Not addressed	Informally or loosely occurring	Required for plan review and/or permit approvals	some combination of inspector of buildings, board of appeal, and planning board, but informal communication required between the three: administered by inspector of buildings:Buildings, structures or signs may not be erected, substantially altered, moved or changed in use and land may not be substantially altered or changed in principal use without certification by the Inspector of Buildings (9.1.2.) board of appeals acts as special permit granting authority, Unless otherwise specifically required under this by-law, the SPGA may require that an interdepartmental review be conducted on an application for a special permit (9.4.9.) There is established a Board of Appeals of five members and there shall be also appointed four associate members to the Zoning Board of Appeals. The members of the Board of Appeals and the associates shall be appointed by the Selectmen as provided in G.L. c. 40A. The Zoning Board of Appeals shall be organized and governed by the provisions of G.L. c. 40A. (9.2.1.)	Planning board: The powers of the Board shall be exercised in accordance with the General Laws of Massachusetts to regulate the laying out and construction of ways in subdivisions to insure the safety, convenience and welfare of the present and future inhabitants of Andover. (1.B) no interdepartmental coordination addressed	The Planning Board, as the permit granting authority, shall administer, implement, and enforce this bylaw. Any powers granted to or duties imposed upon the Planning Board in this bylaw may be delegated to designated agents upon a majority vote of the Planning Board. Should the Planning Board designate an agent, such agent shall be approved by the Town Manager. (5) no interdepartmental coordination addressed	The Commission shall have authority to enforce this by-law, its regulations and permits issued thereunder by violation notices, administrative orders and civil and criminal court actions. Any person who violates provisions of this by-law may be ordered to restore the property to its original condition and take other action deemed necessary to remedy such violations. Upon request of the Commission, the Town Manager and Town Counsel, with the approval of the Select Board, may take legal action for enforcement under civil law. Upon request of the Commission, the Chief of Police may take legal action for enforcement under criminal law. (12) could serve for inter-departmental cordination if necessary
Enforcement	No	Yes	Yes with fines. Same entity should oversee permit approvals and enforcement	If the violation is not stopped within an appropriate time following notification, the Inspector of Buildings shall notify the Town Manager for appropriate action. Any person violating any of the provisions of this by-law shall be fined not more than $300 for each offense. Each day that such violation continues shall constitute a separate offense (9.1.5.) different entities (board of appeals/planning board oversees permitting, enforcement is building inspector)	not addressed	The Planning Board or its designated agent shall enforce this bylaw, its regulations, orders, violation notices, and enforcement orders and may pursue all civil and criminal remedies for such violations., Criminal penalty. Any person who violates any provision of this bylaw, regulation, order or permit issued thereunder, shall be punished by a fine in an amount of $300. Each day or part thereunder that such violation occurs or continues shall constitute a separate offense. (11, A and E)	Any person who violates any provision of this by-law or regulations issued thereunder shall be punished by a fine of $200. Each day or portion thereof during which a violation continues, or unauthorized fill or other alteration remains in place, shall constitute a separate offense, and each provision of the by-law, regulations, permit or administrative order violated shall constitute a separate offense, Commission shall have authority to enforce this by-law, its regulations and permits issued thereunder by violation notices, administrative orders and civil and criminal court actions. (12)
GOAL 5: ENCOURAGE EFFICIENT PARKING							
Parking	Specific minimums set based on projected maximum use times	Encourage minimum # needed to serve routine use (e.g. 2/residential unit with any additional/visitors parking behind in driveway or on street.	Establish Maximum Parking spaces allowed. Do not require more than 2/residence. Allow tenants separate, optional lease agreements for parking.	Minimum # needed to serve routine use (Appendix A, table 3) There shall be two parking spaces per dwelling unit. Visitor parking shall be determined by the Planning Board with reference to the number of dwelling units proposed. (7.2.5, 2.a) No parking area may have more than 12 spaces for multi-family dwellings (7.3.6, 6) HMD Up to 50% of the parking spaces serving a building may be used jointly for other uses not normally open, used or operated during similar hours. The applicant must demonstrate to the Planning Board that the peak demand and principal operating hours for each use are suitable for a common parking facility. (8.7.10, 3a)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Commercial Parking	Specific minimums set based on projected maximum use times adding all on-site uses together.	Some flexibility to reduce minimums based on street or other available nearby parking or transit.	Allowed shared parking for uses with different peak demand times. Provide model agreements/deed restrictions. Reduce parking requirements near transit. Limit parking stall size (9ftx18ft max), with up to 30% smaller for compact cars	parking stall size limited to 9x18 and 30% compact car stalls allowed. (Appendix A table 4 and 5.1.7, 6); Shared parking allowed but special permit required to reduce required # of spaces (5.1.7, 3 and 5.1.12,1) Shared parking for uses with different peak demand times allowed under special permit (5.1.12) No reduced parking near transit mentioned. Any proposals submitted under this section which, in the opinion of the Planning Board, provide direct and vital pedestrian access to other abutting commercial properties and serve to improve pedestrian accessibility in the General Business District may reduce the number of parking spaces required by 15% (5.1.12, 3)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
LID in Parking Areas	LID not addressed OR Require waivers e.g. for planting islands to drain down rather than built up surrounded by curbs	Allow LID/bioretention within parking areas.	Require landscaping within parking areas, as LID/bioretention, at a minimum of 10% of the interior area landscaped and a minimum of 25 square feet for island planting areas.	Require landscaping within parking areas as minimum 5% interior if lot exceeds 50 spaces. Not required for bioretention purposes but would serve those purposes (7.2.5, 3)	not addressed	not addressed	*(Not applicable)*

Beverly

Factors	Needs Improvement	Improved	Optimal	City of Beverly Master Rules & Regulations	Zoning Ordinance	Chapter 375 - Subdivision of Land	Chapter 249 - Stormwater Management	Chapter 565 - Wetlands Protection Regulations	Chapter 350 - Open Space Residential Design Guidelines
GOAL 1: PROTECT NATURAL RESOURCES AND OPEN SPACE									
Soils managed for revegetation	Not addressed	Limitations on removal from site, and/or requirements for stabilization and revegetation	Prohibit removal of topsoil from site. Require rototilling and other prep of soils compacted during construction						
Limit clearing, lawn size, require retention or planting of native vegetation/naturalized areas	Not addressed OR General qualitative statement not tied to other design standards	Encourage minimization of clearing/ grubbing	Require minimization of clearing/grubbing with specific standards						
Require native vegetation and trees	Not addressed OR General qualitative statement	Mixture of required plantings of native and nonnative	Require at least 75% native plantings						
GOAL 2: PROMOTE EFFICIENT, COMPACT DEVELOPMENT PATTERNS AND INFILL									
Lot size	Not addressed OR Required minimum lot sizes	OSRD/NRPZ preferred. Special permit with incentives to utilize	Flexible with OSRD/NRPZ by right, preferred option						
Setbacks	Not addressed OR Required minimum front, side, and rear setbacks	Minimize, allow flexibility	Clear standards that minimize and in some instances eliminate setbacks						
Frontage	Not addressed OR Required minimum frontage for each lot/unit	Minimize especially on curved streets and cul-de-sacs	No minimums in some instances, tied into other standards like OSRD design and shared driveways.						
Common driveways	Not addressed OR Not allowed, strict limitations	Allow for 2-3 residential units	Allow for up to 4 residential units, preferrably constructed with permeable pavers or pavement						
Limit impervious area – Rural Districts In high density areas, require post-development infiltration to = or > predevelopment	Not addressed (Not usually addressed in zoning and subdivision regs for rural/suburban residential)	<15%	<10%						
GOAL 3: SMART DESIGNS THAT REDUCE OVERALL IMPERVIOUSNESS									
Street location	No standards addressed OR Numeric and geometric standards based primarily on vehicular travel and safety, with basic pedestrian requirements e.g. sidewalks	Flexibility in applying standards, to reduce area of impact, grading, avoid key natural features	OSRD design preferred by-right. Require locating streets to minimize grading and road length, avoid important natural features						
Road width	No categories addressed OR Major and minor categories, 24-30'	Wide, medium, narrow categories. 22-24' max, plus 2' shoulders	Wide, medium, narrow, and alley categories. 20-24' widest for 2 travel lanes, 18-20' low traffic residential neighborhood, plus 2' shoulders. Allow alleys and other low traffic or secondary emergency access and all shoulders to use alternative, permeable materials.						
Road ROW width	ROW Width not addressed OR 50-75', fully cleared and graded	40-50', some flexibility in extent of clearing	20-50'depending on road type						
Access Options	Common drives not addressed, No common drives allowed, Dead end allowed with limit on length and # of units	Allow dead end with limit on length and # of units. Allow common drives up to 2-3 units	Allow one way loop streets. Allow common drives up to 4 units, and alleys and rear-loading garages where suitable.						
Dead Ends/Cul-de-sacs	No standards addressed OR 120 ft or more minimum turnaround	Minimize end radii – 35 ft	Allow hammerhead turnaround						
Cul-de-sacs	No standards addressed OR Full pavement standard	Encourage center landscaping with bioretention	Require center landscaping with bioretention						
Curbing	No standards addressed OR Curbing required full length both sides of road	Allow curb breaks or curb flush with pavement to enable water to flow to vegetated LID features	Open drainage with roadside swales and no curbs preferred						
Roadside Swales	Not addressed OR Allowed as an option	Preferred over closed drainage	Preferred, with criteria for proper design. Adoption of technical specifications and design templates for green infrastructure recommended						
Utilities	Off sets required contributing to wide road ROWs	Not specified - flexible	Allow under road, sidewalks or immediately adjacent to roads to enable placement of roadside swales.						
Sidewalks	Material not addressed OR Concrete or bituminous required	Some flexibility in material and design	Prefer permeable pavement or permeable pavers						
Sidewalk location	Required both sides of road	Allow on only 1 side of road especially in low density neighborhoods	Prefer siting with land contours and for best pedestrian utility (e.g. connect with common areas and shared open spaces) – not necessarily immediately parallel to road.						
Sidewalk drainage	Draining to road, closed drainage system required	Not addressed	Disconnect drainage from road system – e.g.adjacent green strips or within vegetated areas that can absorb sheet flow						
GOAL 4: ADOPT GREEN INFRASTRUCTURE STORMWATER MANAGEMENT PROVISIONS									
Rooftop runoff	Not addressed OR Prohibit directing clean roof runoff into closed municipal drainage systems.	Allow clean roof runoff to be directed to landscaped or naturally vegetated areas capable of absorbing without erosion, or infiltration	Require directing clean roof runoff to landscaped or naturally vegetated areas capable of absorbing, or infiltration						
Overall stormwater design; piping and surficial retention vs. LID	Conventional stormwater system design standards		LID design standard. Allow surficial ponding of retained runoff for up to 72 hours and credit for green roofs towards stormwater requirements						
Site Plan Requirements	LID not addressed	Encourage use of LID features in site design	Count bioretention and other vegetated LID features toward site landscaping/open space requirements.						

The city of Beverly is finishing a year long bylaw review process with the assistance of Tetra Tech Consutling & Engineering. They have asked that we postpone use of the MA Audubon Review Tool until after their revisions are ready for public comment.

Please see the report attached for a preliminary review of some of Beverly's most recent drafts of existing regulations.

Allow easy siting of LID features (bioretention, swales, etc.)	Not addressed OR Require waivers from subdivision standards	Encouraged along road ROW	Allowed on lots, common open space, or road ROW, easement recorded. For commercial development, allow an increase in floor area ratio or other developmental incentives for green roofs						
Permeable paving	Not addressed OR Require waivers from subdivision standards	Allowed on private residential lots for parking, patios, etc.	Allowed for residential drives, parking stalls, spillover parking spaces, emergency access ways (with proper engineering support for emergency vehicles) Two track design allowed for driveways and secondary emergency access ways (where required).						
Stormwater management O&M plan	Typically only addressed if municipality has a stormwater or LID bylaw, or for areas subject to wetlands permitting	Required	Required, surficial bioretention and swales preferred. Closed/underground systems requiring specialized inspection and clean out discouraged.						
Construction Erosion and Sedimentation Plan required	Basic general requirements	Required, contents specified	Goes beyond minimum NPDES requirements, requires minimization of site disturbance						
GOAL 5: ENCOURAGE EFFICIENT PARKING									
Parking	Specific minimums set based on projected maximum use times	Encourage minimum # needed to serve routine use (e.g. 2/residential unit with any additional/visitors parking behind in driveway or on street.	Establish Maximum Parking spaces allowed. Do not require more than 2/residence. Allow tenants separate, optional lease agreements for parking.						
Commercial Parking	Specific minimums set based on projected maximum use times adding all on-site uses together.	Some flexibility to reduce minimums based on street or other available nearby parking or transit.	Allowed shared parking for uses with different peak demand times. Provide model agreements/deed restrictions. Reduce parking requirements near transit. Limit parking stall size (9ftx18ft max), with up to 30% smaller for compact cars						
LID in Parking Areas	LID not addressed OR Require waivers e.g. for planting islands to drain down rather than built up surrounded by curbs	Allow LID/bioretention within parking areas.	Require landscaping within parking areas, as LID/bioretention, at a minimum of 10% of the interior area landscaped and a minimum of 25 square feet for island planting areas.						

Boxford

Factors	Needs Improvement	Improved	Optimal	Zoning (including site plan review)	Subdivision Rules & Regulations	Stormwater Bylaw & Regulations	Wetland Protection Bylaw
GOAL 1: PROTECT NATURAL RESOURCES AND OPEN SPACE							
Soils managed for revegetation	Not addressed	Limitations on removal from site, and/or requirements for stabilization and revegetation	Prohibit removal of topsoil from site. Require rototilling and other prep of soils compacted during construction	Stabilization or revegetation of the site as necessary to minimize erosion after removing solar structure. (196-22.2, A.9c1)	The Board may specify plantings in order to revegetate areas disturbed by grading or to create screening where inadequate natural vegetation exists (300-15)	not addressed beyond the statement "At a minimum all projects subject to a stormwater management permit shall comply with the performance standards of the most-recent version of the Massachusetts Stormwater Standards and accompanying Stormwater Management Handbook (Handbook), with the following differences from the Handbook" (295-5, 2A)	Except as permitted by the Commission or as provided by this bylaw, no person shall commence to remove, fill, dredge, build upon, degrade, discharge into or otherwise alter the following resource areas: any freshwater wetlands; marshes; wet meadows; bogs; swamps; lakes; ponds; rivers; streams; creeks; banks; beaches; vernal pools; large isolated wetlands; lands within 100 feet of any of the aforesaid resource areas; (192-2) Alter defined as (among other things) Removal, excavation or dredging of soil, sand, gravel or aggregate materials of any kind.(192-8)
Limit clearing, lawn size, require retention or planting of native vegetation/naturalized areas	Not addressed OR General qualitative statement not tied to other design standards	Encourage minimization of clearing/ grubbing	Require minimization of clearing/grubbing with specific standards	General qualitative statement: Clearing of natural vegetation shall be limited to what is necessary for the construction, operation and maintenance of the installation or otherwise prescribed by applicable laws, regulations, and bylaws. (196-22.2, A.6) The removal of sod, loam, sand, gravel or quarried stone forming a part of the real estate in the Town of Boxford, except when necessarily incidental to or in connection with the construction, at the site of removal, or a building for which a permit has been issued, or for grading or otherwise improving the premises of which such building is a part, shall not be permitted (196-33, A)	Any cutting, backfilling, clearing, thinning or other disturbance to trees 12 inches or over in diameter measured four feet above finished ground level or to other natural vegetation, located within the road dedication, shall be prohibited unless deemed both proper by the Board and not in conflict or contradiction to the intent of § 300-16 (300-15)	not addressed beyond the statement "At a minimum all projects subject to a stormwater management permit shall comply with the performance standards of the most-recent version of the Massachusetts Stormwater Standards and accompanying Stormwater Management Handbook (Handbook), with the following differences from the Handbook" (295-5, 2A)	Except as permitted by the Commission or as provided by this bylaw, no person shall commence to remove, fill, dredge, build upon, degrade, discharge into or otherwise alter the following resource areas: any freshwater wetlands; marshes; wet meadows; bogs; swamps; lakes; ponds; rivers; streams; creeks; banks; beaches; vernal pools; large isolated wetlands; lands within 100 feet of any of the aforesaid resource areas; (192-2) Alter defined as (among other things) Destruction of plant life, including the cutting of trees.(192-8)
Require native vegetation and trees	Not addressed OR General qualitative statement	Mixture of required plantings of native and nonnative	Require at least 75% native plantings	Not addressed	not addressed	not addressed beyond the statement "At a minimum all projects subject to a stormwater management permit shall comply with the performance standards of the most-recent version of the Massachusetts Stormwater Standards and accompanying Stormwater Management Handbook (Handbook), with the following differences from the Handbook" (295-5, 2A)	not addressed
GOAL 2: PROMOTE EFFICIENT, COMPACT DEVELOPMENT PATTERNS AND INFILL							
Lot size	Not addressed OR Required minimum lot sizes	OSRD/NRPZ preferred. Special permit with incentives to utilize	Flexible with OSRD/NRPZ by right, preferred option	Minimum sizes required: For each dwelling in any district, except for the Elderly Housing District, there shall be a lot area of not less than two acres, The minimum area of a lot within the Elderly Housing District shall be 24 acres (196-24, B, 1 &4)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Housing density	Multi-family housing not allowed, or only in/adjacent to commercial and industrial uses	Multi-family and cluster developments allowed by special permit	Multi-family housing allowed by right in most residential areas; cluster developments encouraged with density bonuses for LID features and no maximum lot coverage	not addressed or allowed	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Setbacks	Not addressed OR Required minimum front, side, and rear setbacks	Minimize, allow flexibility	Clear standards that minimize and in some instances eliminate setbacks	Required minimum setbacks; Front yard: 50 fet minimum, Side yards: 15 feet minimums unless in a recidential agricultural district then 50 ft minimums. Rear yard: 25 feet unless in res ag district then 50 ft minimums (196-22.2, A.5), Every main structure or part thereof in a residential district and every dwelling or part thereof in any district shall be so located as not to extend within 25 feet of a side or rear lot line or within 50 feet of any other building. (196-24, F)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Frontage	Not addressed OR Required minimum frontage for each lot/unit	Minimize especially on curved streets and cul-de-sacs	No minimums in some instances, tied into other standards like OSRD design and shared driveways.	minimum continuous lot frontage of 250 feet, except in the Elderly Housing District where the minimum continuous lot frontage shall be 100 feet. Each lot for residential use in an R-A Residence-Agricultural District shall contain a minimum diameter area of 200 feet (196-24, D) May not need a specific amount of frontage for larger lots (196-24, D)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Common driveways	Not addressed OR Not allowed, strict limitations	Allow for 2-3 residential units	Allow for up to 4 residential units, preferrably constructed with permeable pavers or pavement	Shared driveways allowed with special permit and with 3 unit resiriction and design standards(196-29, C)	common driveways allowed, specifications not mentioned (300-22)	*(Not applicable)*	*(Not applicable)*
GOAL 3: SMART DESIGNS THAT REDUCE OVERALL IMPERVIOUSNESS							
Impervious cover limits and infiltration rates	Not usually addressed in zoning and subdivision regs for rural/suburban residential	Require no net increase in site run-off from pre- to post-development	Impervious cover limits tailored to the commuity and district type (i.e. <10% total impervious cover in rural districts, but higher in urban and redevelopment districts); post-development infiltration should be equal to or greater than pre-development. Following best practice may also help communities comply with MS4 permit requirements	rate of runoff during construction and post-development shall not exceed the rate of pre-development runoff. (196-29, B4)	not addressed	not addressed	*(Not applicable)*

Street location	No standards addressed OR Numeric and geometric standards based primarily on vehicular travel and safety, with basic pedestrian requirements e.g. sidewalks	Flexibility in applying standards, to reduce area of impact, grading, avoid key natural features	OSRD design preferred by-right. Require locating streets to minimize grading and road length, avoid important natural features	*(Not applicable)*	layout shall be designed so that, in the opinion of the Board, they will provide safe vehicular and pedestrian travel and an attractive street pattern through curvilinear street layout with minimum environmental intrusion, they will obtain the maximum safety and amenity for future residents of a residential subdivision and of future employees or visitors to a nonresidential subdivision, and they shall be in accord with the rules and regulations of the Board. (300-12, A1)	*(Not applicable)*	*(Not applicable)*
Road width	No categories addressed OR Major and minor categories, 24-30'	Wide, medium, narrow categories. 22-24' max, plus 2' shoulders	Wide, medium, narrow, and alley categories. 20-24' widest for 2 travel lanes, 18-20' low traffic residential neighborhood, plus 2' shoulders. Allow alleys and other low traffic or secondary emergency access and all shoulders to use alternative, permeable materials.	*(Not applicable)*	No detailed road width requirements: No roadway pavement shall be less than 20 feet wide. (300-12, C4)	*(Not applicable)*	*(Not applicable)*
Road ROW width	ROW Width not addressed OR 50-75', fully cleared and graded	40-50', some flexibility in extent of clearing	20-50'depending on road type	*(Not applicable)*	Major and minor catagories, major = 60 ft, minor = 50 ft, Under certain circumstances, the Board may require an increase in the right-of-way widths by up to 10 feet to accommodate walkway construction and preserve natural features. (300-12, C) design standards regarding gading and clearing not mentioned	*(Not applicable)*	*(Not applicable)*
Access Options	Common drives not addressed, No common drives allowed, Dead end allowed with limit on length and # of units	Allow dead end with limit on length and # of units. Allow common drives up to 2-3 units	Allow one way loop streets. Allow common drives up to 4 units, and alleys and rear-loading garages where suitable.	*(Not applicable)*	common driveways allowed, specifications not mentioned (300-22) Dead ends allowed with limit on length and # of units: shall not be longer than 1,500 feet from their origin to the furthest point and serve no more than 15 lots. (300-12, E2)	*(Not applicable)*	*(Not applicable)*
Dead Ends/Cul-de-sacs	No standards addressed OR 120 ft or more minimum turnaround	Minimize end radii – 35 ft	Allow hammerhead turnaround	*(Not applicable)*	The radius of the inside of the paved circle shall be a minimum of 90 feet, and the radius of the outside line of the roadway dedication shall be a minimum of 125 feet. (300-12, E3)	*(Not applicable)*	*(Not applicable)*
Cul-de-sacs	No standards addressed OR Full pavement standard	Encourage center landscaping with bioretention	Require center landscaping with bioretention	*(Not applicable)*	The turnaround shall have a center island at least 90 feet in radius with the natural vegetation left in place, unless the Planning Board deems it advisable to establish a new landscape (300-12, E3), bioretention not mentioned	*(Not applicable)*	*(Not applicable)*
Curbing	No standards addressed OR Curbing required full length both sides of road	Allow curb breaks or curb flush with pavement to enable water to flow to vegetated LID features	Open drainage with roadside swales and no curbs preferred	*(Not applicable)*	The majority of the Town of Boxford roadways can be described as rural, country lanes. Typically, berms and/or curbs are nonexistent, allowing roadways to drain naturally. Rainfall runoff flows off the pavement to a gravel/wooded shoulder area and follows a natural course as dictated by the topography. (300-12, G)	not addressed	*(Not applicable)*
Roadside Swales	Not addressed OR Allowed as an option	Preferred over closed drainage	Preferred, with criteria for proper design. Adoption of technical specifications and design templates for green infrastructure recommended	*(Not applicable)*	prefered with proper design: For the majority of proposed subdivision roadways, the Board will require an open drainage system. The main feature of this design is an unpaved shoulder with a shallow six-inch ditch in cut conditions and flat slope in fill conditions. The open drainage system allows the roadway runoff to drain as a sheet flow without accumulation into erosive volumes or velocities. Bituminous concrete waterways which direct roadway runoff from the pavement or ditch down an embankment slope may be required to prevent erosion where a sufficient runoff is accumulated through the use of a berm or ditch. (300-12, Gc)	not addressed	*(Not applicable)*
Utilities	Off sets required contributing to wide road ROWs	Not specified - flexible	Allow under road, sidewalks or immediately adjacent to roads to enable placement of roadside swales.	*(Not applicable)*	All required utilities exclusive of transformers and telecommunications terminals shall be placed underground at the side of the roadway before the base course of bituminous concrete is laid. Required utilities may include water, sewer, storm drainage, telephone, electricity, gas, wiring for streetlights, fire alarm systems and cable television unless otherwise specified by the Board. (300-17, A)	*(Not applicable)*	*(Not applicable)*
Sidewalks	Material not addressed OR Concrete or bituminous required	Some flexibility in material and design	Prefer permeable pavement or permeable pavers	*(Not applicable)*	Where sidewalks are proposed or deemed necessary, their design shall be in conformance with the latest Massachusetts Architectural Access Board standards. (300-20 A) board standards do not mention pavement type guidelines	*(Not applicable)*	*(Not applicable)*
Sidewalk location	Required both sides of road	Allow on only 1 side of road especially in low density neighborhoods	Prefer siting with land contours and for best pedestrian utility (e.g. connect with common areas and shared open spaces) – not necessarily immediately parallel to road.	*(Not applicable)*	Sidewalks only required if the board deems it appropriate and necessary: Where the Board deems appropriate, it may require sidewalks, grass plots, ground cover and trees be provided as determined appropriate and necessary. Where sidewalks are proposed or deemed necessary, their design shall be in conformance with the latest Massachusetts Architectural Access Board standards. (300-20 A)	*(Not applicable)*	*(Not applicable)*

Sidewalk drainage	Draining to road, closed drainage system required	Not addressed	Disconnect drainage from road system – e.g.adjacent green strips or within vegetated areas that can absorb sheet flow	*(Not applicable)*	Town has primarily country roads without sidewalks, but open drainage system required for all roadway drainage unless under certain circumstances (300-12, G)	*(Not applicable)*	*(Not applicable)*
GOAL 4: ADOPT GREEN INFRASTRUCTURE STORMWATER MANAGEMENT PROVISIONS							
Rooftop runoff	Not addressed OR Prohibit directing clean roof runoff into closed municipal drainage systems.	Allow clean roof runoff to be directed to landscaped or naturally vegetated areas capable of absorbing without erosion, or infiltration	Require directing clean roof runoff to landscaped or naturally vegetated areas capable of absorbing, or infiltration	*(Not applicable)*	not addressed	not addressed	*(Not applicable)*
Overall stormwater design; piping and surficial retention vs. LID	Conventional stormwater system design standards	Encourage LID features and BMPs; design standards often not specified	LID design standard encouraging infiltration, allowing surficial ponding of retained runoff for up to 72 hours; systems designed for larger volume storms, accounting for future precipitation predictions; credit for green roofs towards stormwater requirements. Following best practice may also help communities comply with MS4 permit requirements	*(Not applicable)*	No LID design standards mentioned throughout the regulaiton	All projects must implement, unless infeasible (see definition), low-impact development (LID) site planning and design strategies in order to reduce the discharge of stormwater from development sites. (295-5, 2)	*(Not applicable)*
Site Plan/Design Requirements	LID not addressed	Encourage use of LID features in site design - such as reduced imperviousness, maintaining natural hydrology, preserving open space, and rainwater reuse	Include bioretention and other vegetated LID features in site landscaping/open space requirements. Following best practice may also help communities comply with MS4 permit requirements. See section 2.3.5 of the MS4 permit for more information	Not addressed	*(Not applicable)*	low impact development mentined very briefly "Encourage the use of nonstructural stormwater management practices or "low-impact development practices" but no details(160-2, A4)	*(Not applicable)*
Allow easy siting of LID features (bioretention, swales, etc.)	Not addressed OR Require waivers from subdivision standards	Encouraged along road ROW	Allowed on lots, common open space, or road ROW, easement recorded. For commercial development, allow an increase in floor area ratio or other developmental incentives for green roofs	After driveway completion, water runoff from the new driveway shall not be allowed to enter onto the public right-of-way and abutting property at any time (196-29, B)	not addressed	*(Not applicable)*	*(Not applicable)*
Permeable paving	Not addressed OR Require waivers from subdivision standards	Allowed on private residential lots for parking, patios, etc.	Allowed for residential drives, parking stalls, spillover parking spaces, emergency access ways (with proper engineering support for emergency vehicles) Two track design allowed for driveways and secondary emergency access ways (where required).	Not addressed, but the rate of runoff during construction and post-development shall not exceed the rate of pre-development runoff. (196-29, B4)	not addressed	not addressed	*(Not applicable)*
Stormwater management O&M plan	Typically only addressed if municipality has a stormwater or LID bylaw, or for areas subject to wetlands permitting	Required	Required, contents specified in alignment with current MassDEP Stormwater Handbook. Following best practice may also help communities comply with MS4 permit requirements	*(Not applicable)*	not addressed	required with minimum requirements addressed (295-5, C) but no preferred techniques	*(Not applicable)*
Construction Erosion and Sedimentation Plan, and stormwater control	Basic general requirements	Required, contents specified - the site design process should include soil erosion and sedimentation control measures	Goes beyond minimum NPDES requirements. Requires minimization of site disturbance, reduction of construction waste, control measures not removed until proof of soil stabilization or reestablishment of vegetation. Written procedures for site inspection and enforcement included. Following best practice may also help communities comply with MS4 permit requirements. See section 2.3.5 of the MS4 permit for more information	*(Not applicable)*	not addressed	Mentioned but requirements are not detailed (295-6, C)	*(Not applicable)*
Stormwater discharge detection & elimination	Not addressed	Discharges and connections noted and/or limits set on quantity and quality	Illicit discharges and connections are probibited and enforced. Following best practice may also help communities comply with MS4 permit requirements. Find more information in section 2.3.4.a of the MS4 permit	*(Not applicable)*	*(Not applicable)*	All projects must implement, unless infeasible (see definition), low-impact development (LID) site planning and design strategies in order to reduce the discharge of stormwater from development sites., not addressed beyond this statement (295-5, C2p)	*(Not applicable)*
Post- construction stormwater management and drainage patterns	Not addressed	Allow LID	Resemble pre-existing conditions of volume, velocity, quality and location, as nearly as possible, requiring LID to the max extent feasible. Retain vol of runoff >1in. per sq.ft. of impervious surface and/or remove 90% TSS post-construction & 50% TP generated on the site for new development, or >0.8in. per sq.ft and/or remove 80% TSS and 50% of TP load for redevelopment. Following best practice may also help communities comply with MS4 permit requirements.	*(Not applicable)*	Drainage calculations shall be submitted in a suitable form along with amplifying plans outlining drainage areas within and affecting the subdivision. A comparison of pre- and post-development stormwater runoff shall be contained in the calculations for peak rates of runoff. A plan shall also be submitted showing the route followed by all drainage discharging from the subdivision to the primary receiving watercourse or other large body of water. (300-11,16) should reference tss from stormwater regs)	All projects must implement, unless infeasible (see definition), low-impact development (LID) site planning and design strategies in order to reduce the discharge of stormwater from development sites., 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 phosphorus (TP) related to the total post-construction impervious surface area on the site. (295-5, C2o) 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	*(Not applicable)*

As-built surveys	Not addressed	Recommended	Required, with written instructions for process; electronic submittal allowed	*(Not applicable)*	The applicant shall submit recorded as-built plans which shall include the following: (required with written instructions, general process but not in depth) f the Board determines that said construction, installation or filing of as-built plans has been completed, it shall within 45 days release the interest of the town in such performance guaranty and return the same to the person or persons who furnished same, or, in the case of covenant, it shall issue a written release of the covenant on a properly executed release form. (300-11, 4)	not addressed	*(Not applicable)*
Intra-departmental communication and coordination	Not addressed	Informally or loosely occurring	Required for plan review and/or permit approvals	The Select Board shall appoint in June of each year an Inspector of Buildings, who shall hold office for the term of one year until such time as his successor is appointed. Intra-departmental communication is not addressed (196-36)	he Board will establish the order of the required inspections and will require satisfactory completion of each individual step before the developer proceeds to the next., building inspector issues permits for building errection - no discussion of enforcement or fines (300-44). no intra-departmental coordination addressed	The Commission shall have authority to enforce the bylaw, its regulations and permits issued thereunder by violation notices, enforcement orders, and civil and criminal court actions. C. Upon a request of a majority of the Commission, the Select Board and the Town Counsel may take legal action for enforcement under civil law. Upon the request of a majority of the Commission to the Select Board and the approval thereof, the Chief of Police shall take legal action for enforcement under criminal law. (295-9) opportunity for coordination but only loosely occuring	The Commission shall have authority to enforce this bylaw, its regulations and permits issued thereunder by violation notices, administrative orders and civil and criminal court actions., Municipal boards and officers, including any police officer or other officer having police powers, shall have authority to assist the Commission in the enforcement of this bylaw.
Enforcement	No	Yes	Yes with fines. Same entity should oversee permit approvals and enforcement	The provisions of this bylaw shall be administered and enforced by the Inspector of Buildings. (196-36) Whoever violates any provision of this bylaw shall be punished by a fine not exceeding $50 for each offense. Each day or portion thereof that such violation continues shall constitute a separate offense. (196-41) does not specifically mention who oversees enforcement but assumed it is building inspector	he Board will establish the order of the required inspections and will require satisfactory completion of each individual step before the developer proceeds to the next., building inspector issues permits for building errection - no discussion of enforcement or fines (300-44) Failure by the applicant or his contractors to comply with the inspection procedure may necessitate removal of improvements at the expense of the applicant or rescission of the approval of the plan in accord with MGL c. 41, § 81-W. (300-45F)	The Commission, its agents, officers, and employees shall have authority to enter upon privately owned land for the purpose of performing their duties under this regulation and may make or cause to be made such examinations, surveys, or sampling as the Commission deems necessary, subject to the constitutions and laws of the United States and the commonwealth., Any person who violates any provision of the bylaw or regulations thereunder, or any permits, enforcement order or violation notice of the Commission or of the Conservation Administrator issued thereunder, shall be punished by a fine of not more than $300 (295-9) more in depth fine chart attached	The Commission shall have authority to enforce this bylaw, its regulations and permits issued thereunder by violation notices, administrative orders and civil and criminal court actions., Any person who violates any provision of this bylaw or regulations thereunder, or any permits, enforcement order or violation notice of the Commission or of the Conservation Administrator issued thereunder, shall be punished by a fine of not more than $300., more depth in chart attached (192-10)
GOAL 5: ENCOURAGE EFFICIENT PARKING							
Parking	Specific minimums set based on projected maximum use times	Encourage minimum # needed to serve routine use (e.g. 2/residential unit with any additional/visitors parking behind in driveway or on street.	Establish Maximum Parking spaces allowed. Do not require more than 2/residence. Allow tenants separate, optional lease agreements for parking.	Dwellings: one parking space for each dwelling unit therein. (196-26, A1)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Commercial Parking	Specific minimums set based on projected maximum use times adding all on-site uses together.	Some flexibility to reduce minimums based on street or other available nearby parking or transit.	Allowed shared parking for uses with different peak demand times. Provide model agreements/deed restrictions. Reduce parking requirements near transit. Limit parking stall size (9ftx18ft max), with up to 30% smaller for compact cars	based off of square feet not maximum use times: businesses: the minimum required parking and loading spaces including driveways for these establishments shall be in proportion to at least one parking space of 300 square feet for each 100 square feet or fraction thereof of gross area, excluding basement storage area. (196-26, A5) Wholesale and industrial establishments: one parking space for each two persons employed on the largest shift, plus one space for each company-owned and -operated vehicle, plus spaces for customers' vehicles as appropriate, and loading spaces for all delivery or shipping trucks. (196-26, A6)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
LID in Parking Areas	LID not addressed OR Require waivers e.g. for planting islands to drain down rather than built up surrounded by curbs	Allow LID/bioretention within parking areas.	Require landscaping within parking areas, as LID/bioretention, at a minimum of 10% of the interior area landscaped and a minimum of 25 square feet for island planting areas.	not addressed	not addressed	not addressed	*(Not applicable)*

Danvers

Factors	Needs Improvement	Improved	Optimal	Zoning Regulations (updated 11-14-21) Zoning Bylaw (updated 12-14-21) Character Based Zoning Districts	Subdivision Rules & Regulations	Stormwater Regulations, Stormwater Management & Land Disturbance Bylaw (Chapter XXXIX)	Wetlands Regulations, Wetlands Protection Bylaw (Chapter XXVI)
GOAL 1: PROTECT NATURAL RESOURCES AND OPEN SPACE							
Soils managed for revegetation	Not addressed	Limitations on removal from site, and/or requirements for stabilization and revegetation	Prohibit removal of topsoil from site. Require rototilling and other prep of soils compacted during construction	From Sec 30.2.B Uses Requiring Special Permit: The disturbance of soil, sod, loam, clay, sand, gravel or quarried stone, of one acre or more, within Danvers, except for single and two-family dwelling units or when in connection with construction activities permitted under Section 4, Site Plan, of this Bylaw or under the Rules and Regulations Governing the Subdivision of Land, shall not be permitted unless a special permit is first obtained from the Planning Board.	From Sec V.A Design Standards, Soil Conservation: The Conservation Commission may require the Subdivider to file a soil conservation plan at any time prior to or during construction.	Not Applicable	From Wetlands Bylaw Sec. 6.4 Performance Standards for Minor Projects: Erosion and sediment controls must be installed and inspected prior to construction. All exposed soils and work areas must be stabilized following construction.
Limit clearing, lawn size, require retention or planting of native vegetation/ naturalized areas	Not addressed OR General qualitative statement not tied to other design standards	Encourage minimization of clearing/ grubbing	Require minimization of clearing/grubbing with specific standards	From 4.4.A Site Plan Review Procedure: Landscape: The landscape shall be preserved in its natural state, insofar as practicable, by minimizing tree and soil removal, and any grade changes shall be in keeping with the general appearance of neighboring developed areas. Adequate landscaping shall also be provided, including screening of adjacent residential uses, provision of street trees, landscape islands in the parking lot and a landscape buffer along the street frontage.	From Sec V.A Design Standards, Protection of Natural Features: Due regard shall be shown for all natural features, such as large trees, water courses, scenic points, historic spots, and similar community assets, which, in the opinion of the Board will add attractiveness and value to the subdivision and/or Town if such natural features are preserved.	Not Applicable	From Wetlands Regulations Section 3: Wetland Resource Areas Protected Under this Bylaw: Expect as otherwise provided in these regulations, no activity is permitted within or above the area within 35 feet of the delineated edge of the adjacent wetland resource area(s) defined in Section 2.1(a) of the Bylaw. Prohibited activities include, but are not limited to, grading, landscaping, shading, vegetation clearing, mowing, cutting, filling, depositing/dumping of yard waste, excavating, road construction, and driveway construction. The 35-foot no-disturbance zone shall remain unchanged from its predevelopment project state to the greatest extent practicable. Performance Standards: 1. Any proposal for alternation within the No-Disturb Zone shall be accompanied by a waiver request as defined in Section 5. 2. If permitted, the total allowable alteration in the No-Disturb Zone shall not exceed 10% of the total area of the No-Disturb Zone buffer setback for the lot. 3. To maintain the perpetual integrity of the No-Disturb Zone and to ensure that there will be no encroachments into this zone by the applicant or future owners of the subject property, the Commission will require, as they see practicable, the no-disturbance zone to be marked on the ground, at the applicant's expense, with permanent markers.
Require native vegetation and trees	Not addressed OR General qualitative statement	Mixture of required plantings of native and nonnative	Require at least 75% native plantings	From 7.6.5 Sustainable Landscaping and Open Space: Natural and context-sensitive landscaping with plants native to local climate and soil conditions are required in the CBZD. These plants thrive naturally, requiring less maintenance and irrigation than most hybrid or imported varieties.	From Sec VI.E Construction Requirements: Trees shall be Emerald Queen Norway Maple, Pin Oak, or Honey Locust with a diameter of two (2) to two and one-half (2~) inches measured four (4) feet from the ground level and shall be twelve (12) to fourteen (14) feet in height, unless otherwise approved in writing by the Department of Public Works. All trees shall be nursery grown and the root system shall be balled and bu~lapped.	From Stormwater Regulations Section 6 : Stormwater Management Performance Standards: Site plans and landscape plans for all proposed projects shall take appropriate steps to minimize water use for irrigation and to allow for natural recharge of groundwater. Native species and habitat creating species shall be used in all landscape plans to the maximum extent possible. Invasive species shall not be planted in the Town of Danvers	Not Addressed
GOAL 2: PROMOTE EFFICIENT, COMPACT DEVELOPMENT PATTERNS AND INFILL							
Lot size	Not addressed OR Required minimum lot sizes	OSRD/NRPZ preferred. Special permit with incentives to utilize	Flexible with OSRD/NRPZ by right, preferred option	Tables (2, 3, 4) of Dimensional Requirements in Zoning Bylaw lists minimum lot requirements.	"No plan of a subdivision shall be approved unless all of the lots shown on the plan comply with the applicable provisions of the Zoning By-Laws."	Not Applicable	Not Applicable
Setbacks	Not addressed OR Required minimum front, side, and rear setbacks	Minimize, allow flexibility	Clear standards that minimize and in some instances eliminate setbacks	Dimensional Requirements described in Sec 7 of Zoning Bylaw: Supplemental provisions list required setbacks.	"No plan of a subdivision shall be approved unless all of the lots shown on the plan comply with the applicable provisions of the Zoning By-Laws."	Not Applicable	Not Applicable
Frontage	Not addressed OR Required minimum frontage for each lot/unit	Minimize especially on curved streets and cul-de-sacs	No minimums in some instances, tied into other standards like OSRD design and shared driveways.	From Sec 7.7.1 Building Frontage Type and Façade Treatments: Building frontage types provide a gradual transition and strong interface between the private realm (yards and building interiors) and the public realm (sidewalks, thoroughfares, and civic spaces). Detailed standards described in Tables 7.2 of Zoning Regulations	"No plan of a subdivision shall be approved unless all of the lots shown on the plan comply with the applicable provisions of the Zoning By-Laws."	Not Applicable	Not Applicable
Common driveways	Not addressed OR Not allowed, strict limitations	Allow for 2-3 residential units	Allow for up to 4 residential units, preferrably constructed with permeable pavers or pavement	From Sec 30.2.I Uses Reequiring Special Permit: Lots served by a common/shared driveway must be for single family dwelling use only. For purposes of non-residential uses, common / shared driveways are allowed by right with Site Plan Review in accordance with Section 4 of this Zoning Bylaw. A common/shared driveway shall serve no more than two (2) lots.	Not Addressed From Sec V.D Other Requirements, Driveways: Each lot shall be provided with a driveway ramp not less than fourteen (14) feet in width at the sidewalk.	Not Applicable	Not Applicable
Limit impervious area – Rural Districts In high density areas, require post-development infiltration to = or > predevelopment	Not addressed *(Not usually addressed in zoning and subdivision regs for rural/suburban residential)*	<15%	<10%	From Sec 33.3 Development Standards for Residential Conservation Development: No more than 33% of the open space area shall be covered by impervious surfaces. Construction and use of tennis courts, vegetable or floral gardens, play surfaces, or other outdoor amenity on not more than 33% of the total open space is permissible. From Sec 18.5.E Sustainable Site Design Standards: Consistent with stormwater management best practices, new Development Projects in the CBZDs shall maintain or achieve pre-development hydrology through sustainable site design techniques that infiltrate, filter, store, evaporate and detain storm water close to its source. The post-construction peak runoff rate for the one-year, twenty-four (24) hour rain event shall not exceed the existing peak runoff rate for the same storm event from the site under existing conditions prior to submittal of an application. Low Impact Design (LID) practices, as identified in the Zoning Regulations, should be incorporated into the design as necessary to achieve the required runoff rate. If constraints prevent the use of these LID practices, other stormwater treatment best practices detailed in the Commonwealth of Massachusetts Stormwater Management Handbook may be used to achieve the required post construction runoff rate.	Not Addressed	Not Applicable	From Wetlands Regulations Section 4.2.3 Stormwater Standard Required Conditions: There shall be no increase in the post-development discharges from the storm drainage system or any other changes in post-development conditions that alter the post-development watershed boundaries, unless specifically approved in writing by the Commission.
GOAL 3: SMART DESIGNS THAT REDUCE OVERALL IMPERVIOUSNESS							
Street location	No standards addressed OR Numeric and geometric standards based primarily on vehicular travel and safety, with basic pedestrian requirements e.g. sidewalks	Flexibility in applying standards, to reduce area of impact, grading, avoid key natural features	OSRD design preferred by-right. Require locating streets to minimize grading and road length, avoid important natural features	Not Addressed	Standards based on vehicular travel. From Sec V.B Design Standards, Streets: All streets in the subdivision shall be designed so that in the opinion of the Board they will provide safe vehicular travel. Due consideration shall also be given by the subdivider to the attractiveness of the street layout in order to obtain the maximum liveability and amenity of the subdivision.	Not Applicable	Not Applicable
Road width	No categories addressed OR Major and minor categories, 24-30'	Wide, medium, narrow categories. 22-24' max, plus 2' shoulders	Wide, medium, narrow, and alley categories. 20-24' widest for 2 travel lanes, 18-20' low traffic residential neighborhood, plus 2' shoulders. Allow alleys and other low traffic or secondary emergency access and all shoulders to use alternative, permeable materials.	From Table 7.8 Public Realm Design Standards: Street Width (curb to curb) and ROW width 50'-60' and 24'-40', respectively.	Not Addressed	Not Applicable	Not Applicable
Road ROW width	ROW Width not addressed OR 50-75', fully cleared and graded	40-50', some flexibility in extent of clearing	20-50'depending on road type	From Table 7.8 Public Realm Design Standards: Street Width (curb to curb) and ROW width 50'-60' and 24'-40', respectively.	From Table I, Street Dimensions: Width of Layout 50' - 96' (depending on street type) From Sec V.B Design Standards, Streets: The entire area of each right-of-way or easement for future extension shall be cleared of all stumps, brush, roots, boulders and like material not intended for preservation.	Not Applicable	Not Applicable
Access Options	Common drives not addressed, No common drives allowed, Dead end allowed with limit on length and # of units	Allow dead end with limit on length and # of units. Allow common drives up to 2-3 units	Allow one way loop streets. Allow common drives up to 4 units, and alleys and rear-loading garages where suitable.	From Sec 18.5.10 Development Site Standards, Parking Access and Screening CBZD: Shared driveways are permitted and encouraged. From Sec 30.2.I Uses Reequiring Special Permit: Lots served by a common/shared driveway must be for single family dwelling use only. For purposes of non-residential uses, common / shared driveways are allowed by right with Site Plan Review in accordance with Section 4 of this Zoning Bylaw. A common/shared driveway shall serve no more than two (2) lots.	Common Drives Not Addressed From Sec V.D Other Requirements, Driveways: Each lot shall be provided with a driveway ramp not less than fourteen (14) feet in width at the sidewalk.	Not Applicable	Not Applicable
Dead Ends/Cul-de-sacs	No standards addressed OR 120 ft or more minimum turnaround	Minimize end radii – 35 ft	Allow hammerhead turnaround	Not Applicable	From Section V.B.4 Streets, Dead End Streets: Dead-end streets will be provided, at the closed end, with a circular turnaround at least one hundred twenty-two (122) feet in diameter at the property line and at least one hundred (100) feet in diameter at the gutter or curbline.	Not Applicable	Not Applicable

Cul-de-sacs	No standards addressed OR Full pavement standard	Encourage center landscaping with bioretention	Require center landscaping with bioretention	Not Applicable	"Typical Turning Circle Layout" included in Appendix B-9 includes a grassplot, but does not indicate if landscaping is required or if bioretention is included.	Not Applicable	Not Applicable
Curbing	No standards addressed OR Curbing required full length both sides of road	Allow curb breaks or curb flush with pavement to enable water to flow to vegetated LID features	Open drainage with roadside swales and no curbs preferred	Not Addressed	From Sec V.D Design Standards for Utilities: Bituminous concrete ~Cape Cod~ berm shall be used on streets as shown in Appendix E-5 and in accordance with Appendix B-1 to B-7 inclusive.	Not Applicable	Not Applicable
Roadside Swales	Not addressed OR Allowed as an option	Preferred over closed drainage	Preferred, with criteria for proper design. Adoption of technical specifications and design templates for green infrastructure recommended	From Sec 7.6.4.3 Stormwater Best Practices CBZD: Filter strips are bands of densely vegetated slopes, designed to reduce water runoff volume and improve water quality prior to entering storm water drainage basins. Filter strips are typically designed to break up impervious surfaces (such as parking lots) and provide initial storm water treatment by filtration. They also provide infiltration of water, reducing the overall amount of runoff. Filter strips shall be incorporated into roadway and parking lot designs in FBZ Districts.	No preference given for roadside swales or open channels From Sec V.D Design Standards for Utilities: Storm drainage open channels, culverts, and pipes shall be designed for a onehundred (100) year storm.	Not Applicable	Not Applicable
Utilities	Off sets required contributing to wide road ROWs	Not specified - flexible	Allow under road, sidewalks or immediately adjacent to roads to enable placement of roadside swales.	From Sec 7.6.5 Sustainable Landscaping and Open Space CBZD: All new utilities (except structures and other facilities that require above-grade access) shall be installed underground. Underground electric boxes and other utility covers located outside of streets shall be flush with surface grade and located within sidewalks wherever possible	Not Specified From Sec V.5 Design Standards for Utilities: The Definitive plan shall show all proposed and existing underground utilities, including but not limited to, storm drains, sanitary sewers, water mains, gas mains, electric conduits and/or cables and telephone conduits and/or cables. All utilities shall be underground.	Not Applicable	Not Applicable
Sidewalks	Material not addressed OR Concrete or bituminous required	Some flexibility in material and design	Prefer permeable pavement or permeable pavers	From Sec 7.6.4.3 Stormwater Best Practices CBZD: Green Streets and Stormwater Planters: Green streets are thoroughfares that capture, temporarily store, and treat road runoff at its source by incorporating vegetated water catchment and filtration devices in the form of small rain gardens and bioretention systems. Components such as flow-through planters and other sustainable storm water solutions allow stormwater from the street to enter planters through cuts in the curb where the plant material removes impurities and allows water to naturally infiltrate or be stored elsewhere. Water-loving plants and those that are able to remove the impurities while thriving so close to traffic and in more urban environments are used in green street design, adding beauty and function. Additional infiltration can be achieved using pervious paving materials for sidewalks and streets.	From Sec VI.C Construction Requirements: All sidewalks on Arterial, Commercial Collector, Local Commercial and Residential Collector streets shall be constructed of cement concrete, and shall be five (5') feet wide, four (~') inches thick over eight (8') inches of compacted gravel. All sidewalks on Local Residential and Minor Residential streets shall be constructed of bituminous concrete as shown on the appropriate typical cross sections.	Not Applicable	Not Applicable
Sidewalk location	Required both sides of road	Allow on only 1 side of road especially in low density neighborhoods	Prefer siting with land contours and for best pedestrian utility (e.g. connect with common areas and shared open spaces) – not necessarily immediately parallel to road.	From Sec 7.10.4 Sidewalk Design Standards CBZD: The pavement design of sidewalks must be continuous for the full length of each block face.	From Sec V.C Sidewalks: Sidewalks are required on the following types of streets; a) Arterial - both sides; b) Commercial Collector - both sides; c) Local Commercial - both sides; d) Residential Collector - both sides, with flexibility; e) Local Residential - one side; f) Minor Residential - one side	Not Applicable	Not Applicable
Sidewalk drainage	Draining to road, closed drainage system required	Not addressed	Disconnect drainage from road system – e.g.adjacent green strips or within vegetated areas that can absorb sheet flow	From Sec 7.6.4.3 Stormwater Best Practices CBZD: Green Streets and Stormwater Planters: Green streets are thoroughfares that capture, temporarily store, and treat road runoff at its source by incorporating vegetated water catchment and filtration devices in the form of small rain gardens and bioretention systems. Components such as flow-through planters and other sustainable storm water solutions allow stormwater from the street to enter planters through cuts in the curb where the plant material removes impurities and allows water to naturally infiltrate or be stored elsewhere. Water-loving plants and those that are able to remove the impurities while thriving so close to traffic and in more urban environments are used in green street design, adding beauty and function. Additional infiltration can be achieved using pervious paving materials for sidewalks and streets.	Not Addressed	Not Applicable	Not Applicable
GOAL 4: ADOPT GREEN INFRASTRUCTURE STORMWATER MANAGEMENT PROVISIONS							
Rooftop runoff	Not addressed OR Prohibit directing clean roof runoff into closed municipal drainage systems.	Allow clean roof runoff to be directed to landscaped or naturally vegetated areas capable of absorbing without erosion, or infiltration	Require directing clean roof runoff to landscaped or naturally vegetated areas capable of absorbing, or infiltration	Downspout redirection to pervious areas, the use of rain barrels and installation of green roofs is discussed in Sec 7.6.4.3, Stormwater BMP Standards in the CBZD	Not Addressed	Not Applicable	Not Applicable
Overall stormwater design; piping and surficial retention vs. LID	Conventional stormwater system design standards		LID design standard. Allow surficial ponding of retained runoff for up to 72 hours and credit for green roofs towards stormwater requirements	The Town of Danvers supports design and planning approaches that adhere to the principles of Smart Growth and Sustainability and offer measurable long term benefits. The Planning Board will highly favor projects that intend to seek certification under the Leadership in Energy and Environmental Design (LEED) Green Building Rating System and the LEED-Neighborhood Development Rating System™. Low Impact Development (LID) techniques should be used to reduce the concentration of stormwater runoff and maintain existing stormwater flows. Where feasible, bioswales, rain gardens and other bioretention techniques should be employed. Green roofs and rain storage systems are encouraged in order to reduce and reuse roof drainage. Pervious paving materials shall be used where feasible to reduce runoff from hardscaped areas and integrated into the design of the project.	No Standards Addressed	From Stormwater Bylaw Section 7: Administration: The latest edition of the Massachusetts Stormwater Management Handbook will be upheld by the Town of Danvers in order to keep in place specifications and standards for execution of the provisions of this by-law. This Handbook includes a list of acceptable stormwater treatment practices, including the specific design criteria for each stormwater practice. Unless specifically altered in this by-law and Regulations, stormwater management practices that are designed, constructed, and maintained in accordance with the Massachusetts Stormwater Management Standards and design and sizing criteria in the Stormwater Management Handbook will be presumed to be protective of Massachusetts Water Quality Standards. From Stormwater Regulations Section 6: Stormwater Management Performance Standards: For compliance with Performance Standards of the Danvers Stormwater Management and Land Disturbance Bylaw, the applicant must meet all the standards of the Massachusetts Department of Environmental Protection's Stormwater Management Standards and Handbook using current Best Management Practices (BMPs).	Not Applicable
Site Plan Requirements	LID not addressed	Encourage use of LID features in site design	Count bioretention and other vegetated LID features toward site landscaping/open space requirements.	From Sec 4, Site Plan Review: Stormwater/Drainage: Proper site surface drainage so that removal of surface waters will not adversely affect neighboring properties or the public storm drainage system. Proposed developments shall seek to retain storm water runoff on site to the maximum extent possible, incorporating best practices in stormwater management and Low Impact Design (LID) techniques.	LID Not Addressed	Not Applicable	Not Applicable
Allow easy siting of LID features (bioretention, swales, etc.)	Not addressed OR Require waivers from subdivision standards	Encouraged along road ROW	Allowed on lots, common open space, or road ROW, easement recorded. For commercial development, allow an increase in floor area ratio or other developmental incentives for green roofs	From 7.5.10 CBZD, Smart Growth and Sustainable Development: The Town of Danvers supports design and planning approaches that adhere to the principles of Smart Growth and Sustainability and offer measurable long term benefits. The Planning Board will highly favor projects that intend to seek certification under the Leadership in Energy and Environmental Design (LEED) Green Building Rating System and the LEED-Neighborhood Development Rating System™. Low Impact Development (LID) techniques should be used to reduce the concentration of stormwater runoff and maintain existing stormwater flows. Where feasible, bioswales, rain gardens and other bioretention techniques should be employed. Green roofs and rain storage systems are encouraged in order to reduce and reuse roof drainage. Pervious paving materials shall be used where feasible to reduce runoff from hardscaped areas and integrated into the design of the project.	Not Addressed	Not Applicable	Not Applicable
Permeable paving	Not addressed OR Require waivers from subdivision standards	Allowed on private residential lots for parking, patios, etc.	Allowed for residential drives, parking stalls, spillover parking spaces, emergency access ways (with proper engineering support for emergency vehicles) Two track design allowed for driveways and secondary emergency access ways (where required).	From 7.5.10 CBZD, Smart Growth and Sustainable Development: Pervious paving materials shall be used where feasible to reduce runoff from hardscaped areas and integrated into the design of the project. From Sec 7.6.4.3 Storwater Best Practices CBZD: Pervious Pavement: Permeable paving reduces stormwater runoff volume, velocity and pollutants by allowing water to infiltrate into the sub-surfaces below parking areas. They are generally appropriate for low-traffic parking lots. They can be incorporated as a hybrid parking lot, which uses conventional paving for driveways and aisles, and permeable paving for parking stalls. Permeable paving may also be appropriate for overflow parking areas, which are generally used only a few weeks out of the year. Maintenance of pervious pavements is critical to maintain the permeability.	Not Addressed	Not Applicable	Not Applicable

Stormwater management O&M plan	Typically only addressed if municipality has a stormwater or LID bylaw, or for areas subject to wetlands permitting	Required	Required, surficial bioretention and swales preferred. Closed/underground systems requiring specialized inspection and clean out discouraged.	From Sec 4.7 Maintenance following approved site plan: Inspections and maintenance of all stormwater management systems in accordance with any Operation and Maintenance (O&M) Plan or stormwater permit;	Not Addressed	Operation and Maintenance Plan (Drawings and Narrative) in addition to items listed in section above this plan should also contain: In addition to compliance with the Stormwater Management Handbook, the Operation and Maintenance Plan (the O & M Plan) shall be designed to ensure compliance the Massachusetts Surface Water Quality Standards (314 CMR 4.00) in all seasons and throughout the life of the system. When applicable, Stormwater Management easements will be required for all areas used for off-site stormwater control, unless the Stormwater Authority grants a waiver. *Additional text in Section 7: Stormwater Management Plan Contents of Stormwater Regulations*	From Wetlands Regulations Section 4.2 Stormwater Management: All projects subject to any applicable stormwater regulations or provisions must provide the following: a. Existing and proposed drainage conditions b. The measures planned to mitigate adverse impacts (if any) associated with the management of runoff from the proposed development. c. Measures for source-control and pollution prevention d. An operation and maintenance plan describing how the system will be maintained and by which authority.
Construction Erosion and Sedimentation Plan required	Basic general requirements	Required, contents specified	Goes beyond minimum NPDES requirements, requires minimization of site disturbance	Not Addressed	Not Addressed	The Erosion and Sediment Control Plan (Drawings and Narrative) should contain (in addition to the Stormwater Report) the following a. Direction(s) of stormwater flow and approximate slopes anticipated after major grading activities; b. Areas of soil disturbance and areas that will not be disturbed (limit of work line); c. Locations of site access/egress, including applicable sediment control measures; d. Locations where stabilization practices are expected to occur; e. Locations where stormwater discharges to a surface water (include all roads, drains and other structures that could carry stormwater to a wetland or other water body, on or offsite); and f. The on-site location(s) to be used for storage of materials, wastes, vehicles, equipment, soil, snow and other potential pollutants. If off-site, note location(s) of storage area(s) and detail applicable sediment control measures; g. Estimation of the total area (in square footage and percentage) and total volume (in cubic feet) expected to be disturbed by excavation, grading or other construction activities (include dedicated off-site borrow and fill areas). h. Description of appropriate erosion control measures, the general sequence during the construction process in which the measures will be implemented, and which operator is responsible for the control measure's implementation. i. Description of structural practices to divert flows from exposed soils, retain/detain flows or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. j. Description of construction and waste materials expected to be stored on-site and a description of controls, including	From Wetlands Regulations Section 4.3 Erosion and Sediment Control: In addition to any requirements required by these regulations or as so set forth in the Bylaw, all projects proposing to alter or disturb a sites vegetative cover within 100' of a resource area or within the 200' Riverfront Area, must provide the following: 1. A narrative and plan describing the location, methods, and details of all erosion control measures and devices (temporary and/or permanent) that will be used to control erosion and siltation on site. 2. The location of any fill material which will be stored/stockpiled on site. 3. A narrative detailing the anticipated sequencing of project construction including clearing, rough grading, construction of utilities, construction of infrastructure, final grading, and landscaping. Sequencing shall identify the estimated duration of exposure of cleared areas and the sequence of clearing, installation of temporary erosion and sedimentation measures, and establishment of permanent vegetation.
GOAL 5: ENCOURAGE EFFICIENT PARKING							
Parking	Specific minimums set based on projected maximum use times	Encourage minimum # needed to serve routine use (e.g. 2/residential unit with any additional/visitors parking behind in driveway or on street.	Establish Maximum Parking spaces allowed. Do not require more than 2/residence. Allow tenants separate, optional lease agreements for parking.	From Zoning Bylaw Sec 10 General Parking Provisions: Required minimum parking spaces based on use. From Sec 18.5.D Parking Standards in CBZD: Applicability. This section shall supersede the parking requirements in the Table of Off- Street Parking in Section 10 of the Danvers Zoning Bylaw and is applicable to all real property within the CBZDs. All spaces are both the minimum and maximum required for each use.	Not Addressed	Not Applicable	Not Applicable
Commercial Parking	Specific minimums set based on projected maximum use times adding all on-site uses together.	Some flexibility to reduce minimums based on street or other available nearby parking or transit.	Allowed shared parking for uses with different peak demand times. Provide model agreements/deed restrictions. Reduce parking requirements near transit. Limit parking stall size (9ftx18ft max), with up to 30% smaller for compact cars	From Sec 18.5.D Parking Standards in CBZD: A combination of uses on-site using shared parking lots with offset peak demand times where: a shared parking agreement with proximate properties where uses have offset peak demand times; uses have a high rate of parking turnover; or evidence of similar uses and location situations operating successfully with lower amounts of parking.	Not Addressed	Not Applicable	Not Applicable
LID in Parking Areas	LID not addressed OR Require waivers e.g. for planting islands to drain down rather than built up surrounded by curbs	Allow LID/bioretention within parking areas.	Require landscaping within parking areas, as LID/bioretention, at a minimum of 10% of the interior area landscaped and a minimum of 25 square feet for island planting areas.	From Sec 4.A.1 Site Plan Review Procedure, Landscape: The landscape shall be preserved in its natural state, insofar as practicable, by minimizing tree and soil removal, and any grade changes shall be in keeping with the general appearance of neighboring developed areas. Adequate landscaping shall also be provided, including screening of adjacent residential uses, provision of street trees, landscape islands in the parking lot and a landscape buffer along the street frontage. From Sec 15.6.E Health Care District Parking Requirements: At least ten percent (10%) of the area parking lots with forty (40) or more spaces shall be landscaped, either on the perimeter or the interior.	Not Addressed	Not Applicable	Not Applicable

Essex

Factors	Needs Improvement	Improved	Optimal	Chapter VI - Zoning	RULES AND REGULATIONS RELATIVE TO SUBDIVISION CONTROL TOWN OF ESSEX, MASSACHUSETTS	7.8.9 STORMWATER MANAGEMENT AND LAND DISTURBANCE
				https://www.essexma.org/sites/g/files/vyhlif4406/f/uploads/essex_bylaw_-_2022_v.1_0.pdf	https://www.essexma.org/planning-board/files/subdivision-control-rules-regulations	https://www.essexma.org/sites/g/files/vyhlif4406/f/uploads/essex_bylaw_-_2022_v.1_0.pdf
GOAL 1: PROTECT NATURAL RESOURCES AND OPEN SPACE						
Soils managed for revegetation	Not addressed	Limitations on removal from site, and/or requirements for stabilization and revegetation	Prohibit removal of topsoil from site. Require rototilling and other prep of soils compacted during construction	6-3.5 Site plan Review: Town Character: The (building setbacks) area and location of parking, architectural compatibility, signage, and landscaping of the development, and how these features harmonize with the surrounding townscape, neighborhood, and the natural landscape, as far as practicable by minimizing any grade changes and vegetation and soil removal.	2. Design and construction shall reduce, to the extent possible, the following features: a) volume of cut and fill; b) area over which existing vegetation will be disturbed, especially if within 100 feet of a river, wetland or waterbody or in areas having a slope of more than 15%; c) number of trees removed having a 12" (dbh) diameter breast height; d) extent of waterways altered or relocated; e) dimensions of paved areas (including streets) except as necessary for safety and convenience, especially in aquifer/recharge areas;	*Not applicable*
Limit clearing, lawn size, require retention or planting of native vegetation/naturalized areas	Not addressed OR General qualitative statement not tied to other design standards	Encourage minimization of clearing/ grubbing	Require minimization of clearing/grubbing with specific standards	OSRD: Existing Vegetation: Minimizing the area over which existing vegetation is to be removed. Where tree removal is required, special attention shall be given to	extent possible, the following features: a) volume of cut and fill; b) area over which existing vegetation will be disturbed, especially if within 100 feet of a	*Not applicable*
Require native vegetation and trees	Not addressed OR General qualitative statement	Mixture of required plantings of native and nonnative	Require at least 75% native plantings	Not addressed	Not addressed	*Not applicable*
GOAL 2: PROMOTE EFFICIENT, COMPACT DEVELOPMENT PATTERNS AND INFILL						
Lot size	Not addressed OR Required minimum lot sizes	OSRD/NRPZ preferred. Special permit with incentives to utilize	Flexible with OSRD/NRPZ by right, preferred option	Minimums specified by Building Type OSRD: Minimum lot size shall be ten thousand (10,000) square feet for lots in the OSRD; provided, however, that the Planning Board may reduce this minimum lot size to the extent it determines that such reduction(s) will substantially further the purposes and intent of Open Space Residential Development.	1. Lot dimensions and building set-back lines shall meet the requirements of the zoning bylaw for the district or districts in which the subdivision is located.	*Not applicable*
Setbacks	Not addressed OR Required minimum front, side, and rear setbacks	Minimize, allow flexibility	Clear standards that minimize and in some instances eliminate setbacks	Minimums specified by Building Type OSRD: At least 50% of the minimum front yard, side yard, and rear yard setbacks shown in Section 6-3.2.1, "Table of Dimensional Requirements," shall be maintained for lots in the OSRD except for lots bordering lands outside the development, in which case each required setback shall be the same as in Section 6-3.2.1.	1. Lot dimensions and building set-back lines shall meet the requirements of the zoning bylaw for the district or districts in which the subdivision is located.	*Not applicable*
Frontage	Not addressed OR Required minimum frontage for each lot/unit	Minimize especially on curved streets and cul-de-sacs	No minimums in some instances, tied into other standards like OSRD design and shared driveways.	Minimums specified by Building Type OSRD: Lots having reduced area or frontage shall not have frontage on a street other than a street created by the OSRD. However, the Planning	Not addressed	*Not applicable*
Common driveways	Not addressed OR Not allowed, strict limitations	Allow for 2-3 residential units	Allow for up to 4 residential units, preferrably constructed with permeable pavers or pavement	OSRD: Common Driveways. Access driveways may be shared by no more than three lots with approved frontage on a public way.	Not addressed	*Not applicable*
GOAL 3: SMART DESIGNS THAT REDUCE OVERALL IMPERVIOUSNESS						
Impervious cover limits and infiltration rates	Not usually addressed in zoning and subdivision regs for rural/suburban residential	Require no net increase in site run-off from pre- to post-development	Impervious cover limits tailored to the commuity and district type (i.e. <10% total impervious cover in rural districts, but higher in urban and redevelopment districts); post-development infiltration should be equal to or greater than pre-development. Following best practice may also help communities comply with MS4 permit requirements	Maximum between 25%-50% of lot OSRD: The requirement in Section 6-3.2.1 for maximum lot coverage shall not apply to lots in the OSRD. Instead, the percentage of the lot area covered by impervious surface ("impervious surface coverage") on each individual lot shall be no greater than 25%; provided, however, that the Planning Board may increase this maximum	Not addressed	Not addressed
Street location	No standards addressed OR Numeric and geometric standards based primarily on vehicular travel and safety, with basic pedestrian requirements e.g. sidewalks	Flexibility in applying standards, to reduce area of impact, grading, avoid key natural features	OSRD design preferred by-right. Require locating streets to minimize grading and road length, avoid important natural features	6-3.5 Site Plan Review Traffic: Convenience and safety of both vehicular and pedestrian movement within the site and in relationship to adjoining ways and properties.	a) All streets in the subdivision shall be so designated that, in the opinion of the Board, they will provide safe vehicular travel while discouraging movement of through traffic.	*Not applicable*
Road width	No categories addressed OR Major and minor categories, 24-30'	Wide, medium, narrow categories. 22-24' max, plus 2' shoulders	Wide, medium, narrow, and alley categories. 20-24' widest for 2 travel lanes, 18-20' low traffic residential neighborhood, plus 2' shoulders. Allow alleys and other low traffic or secondary emergency access and all shoulders to use alternative, permeable materials.	*(Not applicable)*	2) Minimum width of pavement: (a) Urban – 24 feet. (b) Rural – 20 feet. 6) Width of shoulders: (a) Urban – 10 feet. (b) Rural – 12 feet.	*Not applicable*
Road ROW width	ROW Width not addressed OR 50-75', fully cleared and graded	40-50', some flexibility in extent of clearing	20-50'depending on road type	Not addressed	a) Streets 1) Minimum width of right of way - 44 feet.	*Not applicable*

Access Options	Common drives not addressed, No common drives allowed, Dead end allowed with limit on length and # of units	Allow dead end with limit on length and # of units. Allow common drives up to 2-3 units	Allow one way loop streets. Allow common drives up to 4 units, and alleys and rear-loading garages where suitable.	OSRD: Common Driveways. Access driveways may be shared by no more than three lots with approved frontage on a public way. No building permits will be issued unless the following has been complied with: 1. Curb cut approval has been obtained in accordance with a. above. 2. A common driveway shall lie entirely within the lots to which it provides access, and shall comply with the minimum standards stated in c. below. 3. No building permit shall be issued for any lot with access by a common driveway until an easement running with the land in perpetuity providing for maintenance and snow removal is executed by the owner(s) of the lots sharing the driveway, recorded at the Registry of Deeds, and evidence thereof is submitted to the Building inspector. 4. Common driveways may never be used to satisfy zoning frontage requirements.	i) Every dead-end street (whether a cul-de-sac, teardrop or other variation) shall not exceed 1,200 feet in length.	*Not applicable*
Dead Ends/Cul-de-sacs	No standards addressed OR 120 ft or more minimum turnaround	Minimize end radii – 35 ft	Allow hammerhead turnaround	Not addressed	j) Every dead-end street shall have a turnaround designed to accommodate vehicles k) A circular turnaround shall have an outside roadway diameter of at least 100 feet.	*Not applicable*
Cul-de-sacs	No standards addressed OR Full pavement standard	Encourage center landscaping with bioretention	Require center landscaping with bioretention	Not addressed	*Not addressed*	*Not applicable*
Curbing	No standards addressed OR Curbing required full length both sides of road	Allow curb breaks or curb flush with pavement to enable water to flow to vegetated LID features	Open drainage with roadside swales and no curbs preferred	Not addressed	h) Street Curbs and Gutters, at Discretion of Planning Board. Where curb and gutter are not required, stabilized shoulders and proper drainage shall be the responsibility of the	*Not applicable*
Roadside Swales	Not addressed OR Allowed as an option	Preferred over closed drainage	Preferred, with criteria for proper design. Adoption of technical specifications and design templates for green infrastructure recommended	Not addressed	Street drainage utilizing curbs and gutters shall be designed to keep the velocity of the flow of water in the gutter below levels which are hazardous to pedestrian safety. Street drainage utilizing roadside swales shall be designed to be free- flowing but not to the extent that the flow would erode the swales…Open drainage featuring grassed areas will be preferred over piped conveyance. A retention pond in which there is always some water will be preferred as more attractive and useful than a detention basin.	*Not applicable*
Utilities	Off sets required contributing to wide road ROWs	Not specified - flexible	Allow under road, sidewalks or immediately adjacent to roads to enable placement of roadside swales.	Not specified	Not specified	*Not applicable*
Sidewalks	Material not addressed OR Concrete or bituminous required	Some flexibility in material and design	Prefer permeable pavement or permeable pavers	*(Not applicable)*	b) Sidewalks, where required: 1) Minimum width – five feet. 2) Base course, gravel – 8 inches. 3) Surface – 2 and one-half (2 ½) inches of bituminous hot-top.	*Not applicable*
Sidewalk location	Required both sides of road	Allow on only 1 side of road especially in low density neighborhoods	Prefer siting with land contours and for best pedestrian utility (e.g. connect with common areas and shared open spaces) – not necessarily immediately parallel to road.	*(Not applicable)*	Sidewalks shall be placed parallel to the roadway(s) providing direct access to: a) Commercial/retail facilities; b) Schools: c) Public recreational facilities; d) Other Roadways incorporating sidewalks; e) Subdivision over 10 lots; and f) Elsewhere in accordance with the pedestrian circulation system as necessary.	*Not applicable*
Sidewalk drainage	Draining to road, closed drainage system required	Not addressed	Disconnect drainage from road system – e.g. adjacent green strips or within vegetated areas that can absorb sheet flow	*(Not applicable)*	Not addressed	*Not applicable*
GOAL 4: ADOPT GREEN INFRASTRUCTURE STORMWATER MANAGEMENT PROVISIONS						
Rooftop runoff	Not addressed OR Prohibit directing clean roof runoff into closed municipal drainage systems.	Allow clean roof runoff to be directed to landscaped or naturally vegetated areas capable of absorbing without erosion, or infiltration	Require directing clean roof runoff to landscaped or naturally vegetated areas capable of absorbing, or infiltration	*(Not applicable)*	Not addressed	Not addressed
Overall stormwater design; piping and surficial retention vs. LID	Conventional stormwater system design standards	Encourage LID features and BMPs; design standards often not specified	LID design standard encouraging infiltration, allowing surficial ponding of retained runoff for up to 72 hours; systems designed for larger volume storms, accounting for future precipitation predictions; credit for green roofs towards stormwater requirements. Following best practice may also help communities comply with MS4 permit requirements	Water Resources Protection Overlay District: 7. Rendering impervious more than 2500 square feet or fifteen percent of lot area (whichever is greater) will require a plan for recharging storm water runoff such that it will not degrade ground water quality. For nonresidential uses, recharge shall be by storm water infiltration basins or similar system covered with natural vegetation, and dry wells shall be used only where other methods are infeasible. For all non-residential uses, all such basins and wells shall be preceded by oil, grease, and sediment traps to facilitate removal of contamination. Any and all recharge areas shall be permanently maintained in full working order by the owner.	Where the water table is not too high and where the soil is reasonably permeable, drainage shall feature swales, detention ponds and multi-use areas, in accordance with the Massachusetts Stormwater Handbook. Open drainage systems as described in this publication may be required for recharge of aquifers and recharge areas provided that run-off is not seriously polluted. Open drainage featuring grassed areas will be preferred over piped conveyance. A retention pond in which there is always some water will be preferred as more attractive and useful than a detention basin.	The purpose of this by-law is to regulate illicit connections and discharges to the storm drain system, which is necessary for the protection of Essex' water bodies and groundwater, to safeguard the public health, safety, welfare and the environment

Site Plan/Design Requirements	LID not addressed	Encourage use of LID features in site design - such as reduced imperviousness, maintaining natural hydrology, preserving open space, and rainwater reuse	Include bioretention and other vegetated LID features in site landscaping/open space requirements. Following best practice may also help communities comply with MS4 permit requirements. See section 2.3.5 of the MS4 permit for more information	6-3.5 Site Plan Review Drainage Control: Adequacy of methods for surface waters and ground water control. This includes minimizing soil erosion both during and after construction. The applicant shall prove that the proposed project meets the minimum standards for state storm water management as specified in the most current edition of the Storm water Management Policy Handbook.	Design shall emphasize, to the extent possible, the following: a) use of collector streets to minimize traffic on streets providing house frontages; b) visual prominence of natural features of the landscape; c) maintenance within the subdivision of runoff and vegetative cover equivalent to conditions before development…. Lots shall be prepared and graded consistent with drainage so that stormwater does not exit the site at a volume or velocity greater than the pre-existing condition in accordance with EPA National Pollution Discharge Elimination System (NPDES) standards and regulations. If provision is necessary to carry drainage to or across a lot, an easement or drainage right-of-way of a minimum width of twenty (20') and maximum 2:1 side slope shall be provided.	*Not applicable*
Allow easy siting of LID features (bioretention, swales, etc.)	Not addressed OR Require waivers from subdivision standards	Encouraged along road ROW	Allowed on lots, common open space, or road ROW, easement recorded. For commercial development, allow an increase in floor area ratio or other developmental incentives for green roofs	*(Not applicable)*	Not addressed	Not addressed
Permeable paving	Not addressed OR Require waivers from subdivision standards	Allowed on private residential lots for parking, patios, etc.	Allowed for residential drives, parking stalls, spillover parking spaces, emergency access ways (with proper engineering support for emergency vehicles) Two track design allowed for driveways and secondary emergency access ways (where required)	*(Not applicable)*	Not addressed	Not addressed
Stormwater management O&M plan	Typically only addressed if municipality has a stormwater or LID bylaw, or for areas subject to wetlands permitting	Required	Required, contents specified in alignment with current MassDEP Stormwater Handbook. Following best practice may also help communities comply with MS4 permit requirements	*(Not applicable)*	*(Not applicable)*	No person may undertake a Land Disturbance Activity, including clearing, grading, excavation, Alteration of Drainage Characteristics, Development or Redevelopment that will disturb equal to or greater than one (1) acre of land without first obtaining a Land Disturbance Permit approved the Board or its designee. Any person who performs a Land Disturbing Activity, or that fails to follow the requirements of a Land Disturbance Permit and the related Erosion and Sedimentation Control Plan, and/or Operations and Maintenance Plan, or any regulations issued by the Board shall be in violation of this Bylaw.
Construction Erosion and Sedimentation Plan, and stormwater control	Basic general requirements	Required, contents specified - the site design process should include soil erosion and sedimentation control measures	Goes beyond minimum NPDES requirements. Requires minimization of site disturbance, reduction of construction waste, control measures not removed	OSRD: Drainage Control: Adequacy of methods for surface waters and ground water control. This includes minimizing soil erosion both during and after construction. The applicant	In order to reduce erosion accompanying the installation of ways, utilities and drainage, and the resultant pollution of streams, wetlands and natural drainage areas, the applicant shall submit a sediment control plan, including	No person may undertake a Land Disturbance Activity, including clearing, grading, excavation, Alteration of Drainage Characteristics, Development or Redevelopment that will disturb equal to or
Stormwater discharge detection & elimination	Not addressed	Discharges and connections noted and/or limits set on quantity and quality	Illicit discharges and connections are probibited and enforced. Following best practice may also help communities comply with MS4 permit requirements. Find more information in section 2.3.4.a of the MS4 permit	*(Not applicable)*	*(Not applicable)*	Illicit Connection – No person shall construct, use, allow, maintain or continue any surface or subsurface drain or conveyance which allows an illicit discharge (defined below) into the municipal storm drain system, including without limitation sewage, process wastewater, or wash water, and any connections from indoor drains, sinks, or toilets, regardless of whether said connection was previously allowed, permitted, or approved before the effective date of this Bylaw.
Post- construction stormwater management and drainage patterns	Not addressed	Allow LID	Resemble pre-existing conditions of volume, velocity, quality and location, as nearly as possible, requiring LID to the max extent feasible. Retain vol of runoff >1in. per sq.ft. of impervious surface and/or remove 90% TSS post-construction & 50% TP generated on the site for new development, or >0.8in. per sq.ft and/or remove 80% TSS and 50% of TP load for redevelopment. Following best practice may also help communities comply with MS4 permit requirements.	*(Not applicable)*	Design shall emphasize, to the extent possible, the following: a) use of collector streets to minimize traffic on streets providing house frontages; b) visual prominence of natural features of the landscape; c) maintenance within the subdivision of runoff and vegetative cover equivalent to conditions before development…. Lots shall be prepared and graded consistent with drainage so that stormwater does not exit the site at a volume or velocity greater than the pre-existing condition in accordance with EPA National Pollution Discharge Elimination System (NPDES) standards and regulations. If provision is necessary to carry drainage to or across a lot, an easement or drainage right-of-way of a minimum width of twenty (20') and maximum 2:1 side slope shall be provided.	Not addressed
As-built surveys	Not addressed	Recommended	Required, with written instructions for process; electronic submittal allowed	*(Not applicable)*	Not addressed	*Not applicable*
Intra-departmental communication and coordination	Not addressed	Informally or loosely occurring	Required for plan review and/or permit approvals	Not addressed	Not addressed	*Not applicable*
Enforcement	No	Yes	Yes with fines. Same entity should oversee permit approvals and enforcement	??	The zoning bylaws shall be enforced by the Building Inspector.	The Department of Public Works shall administer, implement and enforce this by-law. Any powers granted to or duties imposed upon the Department of Public Works may be delegated by the Board of Public Works to employees or agents of the Department of Public Works.
GOAL 5: ENCOURAGE EFFICIENT PARKING						

Parking	Specific minimums set based on projected maximum use times	Encourage minimum # needed to serve routine use (e.g. 2/residential unit with any additional/visitors parking behind in driveway or on street.	Establish Maximum Parking spaces allowed. Do not require more than 2/residence. Allow tenants separate, optional lease agreements for parking.	6-6.1 Off-Street Parking Requirements Off-street parking by means of open air spaces each having an area not less than 200 square feet, plus necessary maneuvering space, or by garage space, shall be provided and maintained in accordance with the following table; Two parking spaces for each dwelling unit for single family homes, 1.5 parking spaces per bedroom for multi-family dwellings	Residential structures: Two parking spaces for each dwelling unit; Multi-family dwelling and or apartment use: 1.5 parking spaces for each bedroom.	*Not applicable*
Commercial Parking	Specific minimums set based on projected maximum use times adding all on-site uses together.	Some flexibility to reduce minimums based on street or other available nearby parking or transit.	Allowed shared parking for uses with different peak demand times. Provide model agreements/deed restrictions. Reduce parking requirements near transit. Limit parking stall size (9ftx18ft max), with up to 30% smaller for compact cars	6-6.1 Off-Street Parking Requirements Off-street parking by means of open air spaces each having an area not less than 200 square feet, plus necessary maneuvering space, or by garage space, shall be provided and maintained in accordance with the following table; Minimums based on establishment type.	Minimum spaces required by business type. When a required off-street parking space is in the form of a parking lot or other open air parking space, it shall not be located within five feet of any lot line or, if located within a front yard, within thirty feet of the street line. Any such parking shall be located not more than 200 feet from the building to which it is assigned.	*Not applicable*
LID in Parking Areas	LID not addressed OR Require waivers e.g. for planting islands to drain down rather than built up surrounded by curbs	Allow LID/bioretention within parking areas.	Require landscaping within parking areas, as LID/bioretention, at a minimum of 10% of the interior area landscaped and a minimum of 25 square feet for island planting areas.	*(Not applicable)*	Not addressed	*Not applicable*

Georgetown

Factors	Needs Improvement	Improved	Optimal	Zoning Bylaw (including site plan review)	Subdivision Rules & Regulations	Wetland Bylaw	Stormwater Bylaw and Rules and Regulations
GOAL 1: PROTECT NATURAL RESOURCES AND OPEN SPACE							
Soils managed for revegetation	Not addressed	Limitations on removal from site, and/or requirements for stabilization and revegetation	Prohibit removal of topsoil from site. Require rototilling and other prep of soils compacted during construction	In Floodplain Districts no earth products shall be removed or deposited except under the provisions of § 165-22A. (165-25) Earth removal consisting of the removal of soil, loam, sand, gravel or any other earth material (including mining activities) to within six feet of historical high groundwater as determined from monitoring wells and historical water table fluctuation data compiled by the United States Geological Survey, except for excavations for building foundations, roads or utility works not prmitted in GWPD (165-44, 8)	Removal, including severing and stripping of soil, loam, sand or gravel outside the fifty-foot right-of-way would constitute a violation of Chapter 49, Earth Removal, unless in compliance with the requirements of an approved subdivision plan. Such illegal removal may come into question in connection with §§ 365-58, 365-60 and 365-61. Accordingly, the subdivider should obtain a written earth removal release from the Planning Board to remove soil, loam, sand or gravel from specified lots in such cases. The release should be drafted by the subdivider and should specify what is to be done as to each such lot. This release relieves the subdivider of liability under Chapter 49, Earth Removal. The subdivider shall not excavate outside the row after being ordered to cease by the Planning Board. (365-42)	Except as permitted by the Conservation Commission or as provided in this chapter, no person shall remove, fill, dredge, build upon or alter the following resource areas: within 100 feet of any freshwater wetland, marsh, wet meadow, bog or swamp; within 100 feet of any bank or flat; any lake, river, pond, stream, or estuary; any land under said waters; or within 100 feet of any land subject to flooding or inundation by groundwater or surface water; and within 200 feet of any river, perennial stream, brook or creek. (161-2) The term "alter" shall include, without limitation, the following activities when undertaken to, upon, within or affecting resource areas protected by this chapter: (1) Removal, excavation or dredging of soil, sand, gravel or aggregate materials of any kind. (161-9, B)	Description of and implementation schedule for temporary and permanent seeding, vegetative controls, and other temporary and final stabilization measures for erosion control plan (VI-B2d) At a minimum all projects subject to a Major Stormwater Management Permit shall comply with the performance standards of the most recent version of Massachusetts Stormwater Standards and accompanying 2008 Stormwater Management Handbook (as updated) with the following differences from the Handbook: (IX-A)
Limit clearing, lawn size, require retention or planting of native vegetation/naturalized areas	Not addressed OR General qualitative statement not tied to other design standards	Encourage minimization of clearing/ grubbing	Require minimization of clearing/grubbing with specific standards	Be designed to avoid substantial disturbance of the soils, topographic drainage, vegetation and other water-related natural characteristics of the site to be developed in DWPD (165-45, C1) Insofar as practicable, the landscape of the tract shall be preserved in its natural state, i.e., by minimizing tree and soil removal. Any grade changes shall be in keeping with the general appearance of the neighboring developed areas. The orientation of individual building sites shall be such as to maintain maximum natural topography and take advantage of natural drainage patterns in OSRD (165-56, 1a)Removal of mature trees and shrubs shall be minimized and shall not take place in the setbacks. (165-83, Lc)	Due regard shall be shown for all natural features such as large trees, watercourses, scenic points, historic spots and other community assets which, if preserved, will add attractiveness to the neighborhood. (365-36, L) No larger area shall be developed than that on which construction can be completed rapidly so that large areas are not left bare and exposed for long periods. (2) Grading shall be kept at a minimum. Where possible, only undesirable trees shall be removed. (3) Runoff shall be controlled and conveyed into storm sewers or other outlets so it will not erode the land or cause off-site damage. (4) Critical areas shall be protected during construction with mulch or temporary crop covers and with mechanical measures such as diversions and prepared outlets. (5) Sediment basins shall be constructed where necessary to detain runoff and to trap sediment during construction. (6) Safe off-site disposal of runoff shall be provided, including the	Except as permitted by the Conservation Commission or as provided in this chapter, no person shall remove, fill, dredge, build upon or alter the following resource areas: within 100 feet of any freshwater wetland, marsh, wet meadow, bog or swamp; within 100 feet of any bank or flat; any lake, river, pond, stream, or estuary; any land under said waters; or within 100 feet of any land subject to flooding or inundation by groundwater or surface water; and within 200 feet of any river, perennial stream, brook or creek. (161-2) The term "alter" shall include, without limitation, the following activities when undertaken to, upon, within or affecting resource areas protected by this chapter: Destruction of plant life, including cutting of trees. (161-9, B)	At a minimum all projects subject to a Major Stormwater Management Permit shall comply with the performance standards of the most recent version of Massachusetts Stormwater Standards and accompanying 2008 Stormwater Management Handbook (as updated) with the following differences from the Handbook: (IX-A)
Require native vegetation and trees	Not addressed OR General qualitative statement	Mixture of required plantings of native and nonnative	Require at least 75% native plantings	not addressed	not addressed	not addressed	not addressed
GOAL 2: PROMOTE EFFICIENT, COMPACT DEVELOPMENT PATTERNS AND INFILL							
Lot size (for stormwater bylaw, pertains to the size of a lot which requires a stormwater permit)	Not addressed OR Required minimum lot sizes	OSRD/NRPZ preferred. Special permit with incentives to utilize	Flexible with OSRD/NRPZ by right, preferred option	Minimum lot requireents with some flexibilities in reduction (165 attachment 3) Any proposed development in the Town of Georgetown, which would create more than 10 lots or dwelling units or is a parcel of 10 acres or more shall be required to submit a special permit application to the Planning Board in accordance with the provisions of this bylaw. The applicant may also submit a conventional subdivision plan at the same time in accordance with the Rules and Regulations Governing the Subdivisions of Land in the Town of Georgetown. For subdvisions that would create nine or fewer lots or units or are on a parcel less than 10 acres an applicant may submit a special permit application for an OSRD in preference to filing a conventional subdivision plan(165-48, A) The Planning Board encourages applicants to modify lot size, shape, and other dimensional requirements for lots within an OSRD, subject to the following limitations: Minimum lot size shall be 10,000 square feet, which the Planning Board may waive	*(Not applicable)*	*(Not applicable)*	(a)The creation of new impervious area, or expansion of existing impervious area, greater than 200 square feet and less than 2,500 square feet. (b)Disturbance of land exceeding 1,000 square feet in area and not exceeding 5,000 square feet or 10% of a parcel, whichever is less. (c)Stockpiling of material. (2) Major permit: (a)Construction of any new dwelling or new dwelling replacing an existing dwelling in conformance with Article VIII, Section V.B.1 .a of the Georgetown Zoning Bylaws. (b)Any land disturbance exceeding an area of 5,000 square feet or more than 20% of a parcel or lot, whichever is less. (c)Any activity that will disturb land with a 10% or greater slope or where an area is proposed to have a 10% or greater finished slope, and where the land disturbance is greater than or equal to 2,500 square feet within the sloped area. (57-4B)
Housing density	Multi-family housing not allowed, or only in/adjacent to commercial and industrial uses	Multi-family and cluster developments allowed by special permit	Multi-family housing allowed by right in most residential areas; cluster developments encouraged with density bonuses for LID features and no maximum lot coverage	he OSRD may consist of any combination of single-family, two-family and multifamily residential structures. A multifamily structure shall not contain more than three dwelling units. Multifamily residential structures shall be in scale with surrounding residential structures. No further special permits are required from the Town of Georgetown for construction of multifamily residential structures. (165-56, C1) Multifamily permitted by special permit in all districts (165 attachmen 2:1)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*

Setbacks	Not addressed OR Required minimum front, side, and rear setbacks	Minimize, allow flexibility	Clear standards that minimize and in some instances eliminate setbacks	Minimum setbacks with some flexibility in reduction (165 attachment 3) The Planning Board encourages applicants to modify lot size, shape, and other dimensional requirements for lots within an OSRD, subject to the following limitations: Lots having reduced area or frontage shall not have frontage on a street other than a street created by the OSRD; the Planning Board may waive this requirement where it determines that such reduced dimensional requirements will further the goals of this bylaw. (165-54)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Frontage	Not addressed OR Required minimum frontage for each lot/unit	Minimize especially on curved streets and cul-de-sacs	No minimums in some instances, tied into other standards like OSRD design and shared driveways.	Minimum frontage requirements with some flexibility in reduction (165 attachment 3) The Planning Board encourages applicants to modify lot size, shape, and other dimensional requirements for lots within an OSRD, subject to the following limitations:At least 50% of the required setbacks for the district shall be maintained in the OSRD unless a reduction is otherwise authorized by the Planning Boar (165-54) Open space. A minimum of 60% of the tract shown on the development plan shall be open	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Common driveways	Not addressed OR Not allowed, strict limitations	Allow for 2-3 residential units	Allow for up to 4 residential units, preferrably constructed with permeable pavers or pavement	Common/shared driveways. A common or shared driveway may serve a maximum number of three dwelling units in OSRD (165-56, C6) Subject to the granting of a special permit by the Planning Board, a common drive may be constructed and shared by not more than three lots, so long as the common drive is located entirely within the lots being served. Every such common drive must be shown on an engineered plan and must be regulated by a recorded maintenance agreement which is satisfactory to the Planning Board and Town Counsel and which runs in perpetuity with the land. The Planning Board shall impose such conditions, to be made part of the special permit, as are necessary to provide access adequate to serve each lot, including conditions that assign responsibility for maintenance and snow removal. (165-73 E) Special paving material allowed by special permit (165-83, L3)	not addressed	*(Not applicable)*	*(Not applicable)*
GOAL 3: SMART DESIGNS THAT REDUCE OVERALL IMPERVIOUSNESS							
Impervious cover limits and infiltration rates	Not usually addressed in zoning and subdivision regs for rural/suburban residential	Require no net increase in site run-off from pre- to post-development	Impervious cover limits tailored to the commuity and district type (i.e. <10% total impervious cover in rural districts, but higher in urban and redevelopment districts); post-development infiltration should be equal to or greater than pre-development. Following best practice may also help communities comply with MS4 permit requirements	Any use involving the retention of less than 30% of lot area in its natural state with no more than minor removal of existing trees and ground vegetation, or rendering impervious more than 40% of lot area required special permit in WRPD (165-32) Any use that will render impervious more than 15% or 2,500 square feet of any lot, whichever is greater requires special permit in GWPD (165-44, C6) Low-impact development stormwater management techniques are encouraged and preferred to enhance infiltration and better	*(Not applicable)*	*(Not applicable)*	Stormwater management systems on new development and redevelopment sites shall be designed to: (a) Retain the volume of runoff equivalent to, or greater than, two (2) inches multiplied by the total post-construction impervious surface area on the site; (IX, A3)
Street location	No standards addressed OR Numeric and geometric standards based primarily on vehicular travel and safety, with basic pedestrian requirements e.g. sidewalks	Flexibility in applying standards, to reduce area of impact, grading, avoid key natural features	OSRD design preferred by-right. Require locating streets to minimize grading and road length, avoid important natural features	Streets shall be designed and located in such a manner as to maintain and preserve natural topography, significant landmarks, and trees; to minimize cut and fill; and to preserve and enhance views and vistas on or off the subject parcel in OSRD (165-56, 1b)	Streets shall be continuous and in alignment with existing streets as far as possibleStreets shall be oriented to meet existing streets suitable in the opinion of the Planning Board as to width and condition and running in both directions. This generally would be an accepted street with a fifty-foot right-of-way and a twenty-six-foot pavement. Street lines shall be laid out so as to intersect as nearly as possible at right angles. (365-36, A)	*(Not applicable)*	*(Not applicable)*
Road width	No categories addressed OR Major and minor categories, 24-30'	Wide, medium, narrow categories. 22-24' max, plus 2' shoulders	Wide, medium, narrow, and alley categories. 20-24' widest for 2 travel lanes, 18-20' low traffic residential neighborhood, plus 2' shoulders. Allow alleys and other low traffic or secondary emergency access and all shoulders to use alternative, permeable materials.	*(Not applicable)*	26 foot pavement deemed an acceptable street (365-36, A)	*(Not applicable)*	*(Not applicable)*
Road ROW width	ROW Width not addressed OR 50-75', fully cleared and graded	40-50', some flexibility in extent of clearing	20-50'depending on road type	*(Not applicable)*	The minimum width of street rights-of-way shall be 50 feet. They shall be designed as shown in Sketch B of § 365-51C(1). Greater width shall be required by the Board when deemed necessary for present and future vehicular travel. (365-36, E)	*(Not applicable)*	*(Not applicable)*
Access Options	Common drives not addressed, No common drives allowed, Dead end allowed with limit on length and # of units	Allow dead end with limit on length and # of units. Allow common drives up to 2-3 units	Allow one way loop streets. Allow common drives up to 4 units, and alleys and rear-loading garages where suitable.	*(Not applicable)*	Minimum outside diameter of roadway pavement area within turnarounds on dead-end streets, if allowed, shall be 108 feet. (365-49)	*(Not applicable)*	*(Not applicable)*

Dead Ends/Cul-de-sacs	No standards addressed OR 120 ft or more minimum turnaround	Minimize end radii – 35 ft	Allow hammerhead turnaround	*(Not applicable)*	Dead-end streets shall terminate in a turnaround with a diameter of at least 160 feet to the outside of the layout of the street. They shall have a four-foot wide sidewalk and a six-inch curb on the outside with a three-foot planting strip next to the sidewalk. If the center is larger and unpaved, the sidewalk may go through the center with the permission of the Board. A separate design plan shall show catch basins and drainage and erosion control program. (365-36, D)	*(Not applicable)*	*(Not applicable)*
Cul-de-sacs	No standards addressed OR Full pavement standard	Encourage center landscaping with bioretention	Require center landscaping with bioretention	*(Not applicable)*	not addressed	*(Not applicable)*	*(Not applicable)*
Curbing	No standards addressed OR Curbing required full length both sides of road	Allow curb breaks or curb flush with pavement to enable water to flow to vegetated LID features	Open drainage with roadside swales and no curbs preferred	*(Not applicable)*	Curved vertical granite curbing, having a width at the top of four inches V4X18, nominal depth 18 inches, cut to the curb radius with the face outside, meeting the specifications in Fletcher's 1970 Standardized Granite Highway Products, shall be installed on all intersections, unless waived by the Board in writing, on the curve and extending six feet beyond the tangent points and on all inside curves wherever the interior angle is less than 110° and on all finished grades over 5%. (365-34, C9) A curb of vertical granite to a height of six inches shall be placed on the	*(Not applicable)*	not addressed
Roadside Swales	Not addressed OR Allowed as an option	Preferred over closed drainage	Preferred, with criteria for proper design. Adoption of technical specifications and design templates for green infrastructure recommended	The Planning Board shall encourage the use of "soft" (i.e., non-structural and natural in appearance stormwater management techniques, such as rain gardens open grass swales and bio-retention swales) and other drainage techniques that reduce impervious surface and enable infiltration where appropriate. Stormwater should be treated at the source to limit nonpoint source pollution. In order to promote water conservation, rainwater retention systems such as rain barrels and cisterns are also strongly encouraged for irrigation purposes (165-56, 4)	Vegetated swales shall be a minimum of 100 feet in length and designed to carry the runoff volume at velocities not greater than 1.5 feet per second and at a depth of not more than four inches. The maximum design (bank full) velocity for any vegetated swale shall not exceed five feet per second. High groundwater levels or bedrock shall occur at least two feet below the bottom of the vegetated swale. (365-39, bv)	*(Not applicable)*	not addressed
Utilities	Off sets required contributing to wide road ROWs	Not specified - flexible	Allow under road, sidewalks or immediately adjacent to roads to enable placement of roadside swales.	*(Not applicable)*	Easements for water mains, storm drains, utilities and other purposes and their appurtenances shall be provided where such are located outside the street line and shall be at least twenty-feet wide. Where a subdivision is traversed by an open watercourse, drainageway, channel or stream, the Board shall require that there be provided a stormwater easement or drainage right-of-way of adequate width (minimum 30 feet) to conform substantially to the lines	*(Not applicable)*	*(Not applicable)*
Sidewalks	Material not addressed OR Concrete or bituminous required	Some flexibility in material and design	Prefer permeable pavement or permeable pavers	*(Not applicable)*	Surfacing forms shall be set to grade, filled with one inch of binder course compacted bituminous concrete. D. The second course of one inch finish course bituminous concrete shall be applied to the sidewalk except that two inches shall be applied at driveway entrances. Driveway aprons shall be paved within the right-of-way. Curb cuts shall not exceed 20 feet for driveways. However, if a granolithic surface is desired, specifications of the Massachusetts Department of Public Works shall be complied with as to both this subsection and Subsection D. Sidewalk pavement shall be applied by machine. (365-52, C,D)	*(Not applicable)*	*(Not applicable)*
Sidewalk location	Required both sides of road	Allow on only 1 side of road especially in low density neighborhoods	Prefer siting with land contours and for best pedestrian utility (e.g. connect with common areas and shared open spaces) – not necessarily immediately parallel to road.	*(Not applicable)*	A sidewalk shall be down on one side of each street, five feet in width. See § 365-52A, B and C. (365-34, C8)	*(Not applicable)*	*(Not applicable)*
Sidewalk drainage	Draining to road, closed drainage system required	Not addressed	Disconnect drainage from road system – e.g. adjacent green strips or within vegetated areas that can absorb sheet flow	*(Not applicable)*	not addressed	*(Not applicable)*	*(Not applicable)*
GOAL 4: ADOPT GREEN INFRASTRUCTURE STORMWATER MANAGEMENT PROVISIONS							
Rooftop runoff	Not addressed OR Prohibit directing clean roof runoff into closed municipal drainage systems.	Allow clean roof runoff to be directed to landscaped or naturally vegetated areas capable of absorbing without erosion, or infiltration	Require directing clean roof runoff to landscaped or naturally vegetated areas capable of absorbing, or infiltration	*(Not applicable)*	not addressed	*(Not applicable)*	not addressed

Overall stormwater design; piping and surficial retention vs. LID	Conventional stormwater system design standards	Encourage LID features and BMPs; design standards often not specified	LID design standard encouraging infiltration, allowing surficial ponding of retained runoff for up to 72 hours; systems designed for larger volume storms, accounting for future precipitation predictions; credit for green roofs towards stormwater requirements. Following best practice may also help communities comply with MS4 permit requirements	*(Not applicable)*	Catch basins shall be required on both sides of the roadway at intervals of not more than 350 feet or in the case of ways having a grade of less than 1.25%, intervals of not less than 300 to 325 feet (365-36, I) Where downstream analysis of the one-hundred-year storm event indicate existing or potential future problems from excess runoff generated by development of the watershed, the control of peak discharges for the one-hundred-year storm shall be required to mitigate the downstream impacts. (365-39, 4aii) Infiltration practices must be designed to exfiltrate the stormwater quantity volume within 72 hours. Appropriate sediment removal techniques must be applied prior to stormwater entering the infiltration facility. The minimum distance between the bottom of the infiltration facility and the seasonal high groundwater level shall be three feet. (365-39, biv) Storm drains, culverts and related installations, including catch basins, gutters and manholes shall be installed, kept clean continuously and in good	*(Not applicable)*	(6)Require unless infeasible, the use of nonstructural stormwater management, better site design practices or "low-impact development practices," such as reducing impervious cover, minimizing the area of disturbance, increasing site-wide infiltration, and preserving open space and other natural areas, to the maximum extent practicable. (57-1, A6) Drainage calculations shall be performed for existing site conditions (pre-development) and proposed site conditions (post-development) based on proposed site plans. Storms of 2, 10, 25, and 100-year frequency events shall be analyzed. (IX-A1)
Site Plan/Design Requirements	LID not addressed	Encourage use of LID features in site design - such as reduced imperviousness, maintaining natural hydrology, preserving open space, and rainwater reuse	Include bioretention and other vegetated LID features in site landscaping/open space requirements. Following best practice may also help communities comply with MS4 permit requirements. See section 2.3.5 of the MS4 permit for more information	The orientation of individual building sites shall be such as to maintain maximum natural topography and take advantage of natural drainage patterns in OSRD (165-56, 1a) The Planning Board shall encourage the use of "soft" (i.e., non-structural and natural in appearance stormwater management techniques, such as rain gardens open grass swales and bio-retention swales) and other drainage techniques that reduce impervious surface and enable infiltration where appropriate. Stormwater should be treated at the source to limit nonpoint source pollution. In order to promote water conservation, rainwater retention systems such as rain barrels and cisterns are also strongly encouraged for irrigation purposes. (165-56, 4)	*(Not applicable)*	*(Not applicable)*	All projects must consider and, unless infeasible (see Bylaw definition), propose and implement Low Impact Development (LID) Best Management Practices (BMPs). Applicants shall demonstrate compliance with design standards for LID BMPs through generally accepted methods.(IX-A5)
Allow easy siting of LID features (bioretention, swales, etc.)	Not addressed OR Require waivers from subdivision standards	Encouraged along road ROW	Allowed on lots, common open space, or road ROW, easement recorded. For commercial development, allow an increase in floor area ratio or other developmental incentives for green roofs	Planning Board shall encourage the use of "soft" (i.e., non-structural and natural in appearance stormwater management techniques, such as rain gardens open grass swales and bio-retention swales) and other drainage techniques that reduce impervious surface and enable infiltration where appropriate. Stormwater should be treated at the source to limit nonpoint source pollution. In order to promote water conservation, rainwater retention systems such as rain barrels and cisterns are also strongly encouraged for irrigation purposes. (165-56, 4) Stormwater retention is also strongly encouraged to capture and store rainwater for practical uses, including irrigation. Examples of stormwater retention facilities include rain barrels and cisterns. (165-83)	Easements for water mains, storm drains, utilities and other purposes and their appurtenances shall be provided where such are located outside the street line and shall be at least twenty-feet wide. Where a subdivision is traversed by an open watercourse, drainageway, channel or stream, the Board shall require that there be provided a stormwater easement or drainage right-of-way of adequate width (minimum 30 feet) to conform substantially to the lines of such watercourse, drainageway, channel or stream and to provide for the entrance of construction and maintenance equipment. Existing streams and watercourses, including adjacent existing natural waterways and proposed system of drainage, including off-site drainage system, shall be shown. (See also § 365-60.) Consideration shall be given and may be required by the Board to establish conservation and/or recreation easements (such as bridle paths or footpaths). Label easements shown on plan: easement to Town of Georgetown. (365-34, C10)	*(Not applicable)*	*(Not applicable)*
Permeable paving	Not addressed OR Require waivers from subdivision standards	Allowed on private residential lots for parking, patios, etc.	Allowed for residential drives, parking stalls, spillover parking spaces, emergency access ways (with proper engineering support for emergency vehicles) Two track design allowed for driveways and secondary emergency access ways (where required).	Special paving material allowed by special permit (165-83, L3)	not addressed	*(Not applicable)*	not addressed
Stormwater management O&M plan	Typically only addressed if municipality has a stormwater or LID bylaw, or for areas subject to wetlands permitting	Required	Required, contents specified in alignment with current MassDEP Stormwater Handbook. Following best practice may also help communities comply with MS4 permit requirements	*(Not applicable)*	Operation and maintenance plans. A plan which outlines how stormwater, sedimentation and erosion control facilities are to be maintained must be submitted with the final definitive subdivision plans. The plans must include operation and maintenance of both temporary and permanent practices and facilities implemented for the periods during construction and after project completion when accepted by the town. Unless otherwise waived, the following requirements apply to all projects under the jurisdiction of the Georgetown Planning Board, MGL c. 41. These requirements are based upon the minimum level of stormwater management needed to meet criteria established by Section 6217 of the Coastal Zone Management Act (1990). (365-39, 3b4)	*(Not applicable)*	An Operation and Maintenance Plan (O&M Plan) for the permanent Erosion and Stormwater Control system is required at the time of application for all projects. The maintenance plan shall be designed to ensure compliance with these regulations and the Massachusetts Surface Water Quality Standards contained in 314 CMR 4.00 in all seasons and throughout the life of the system. Once approved by the Planning Board, the Operation and Maintenance Plan shall be recorded at the Essex South Registry of Deeds by the applicant, at their expense, and shall remain on file with the Planning Board. The Operation and Maintenance Plan shall conform to the requirements listed below. (contents specified) (VI-C)

Construction Erosion and Sedimentation Plan, and stormwater control	Basic general requirements	Required, contents specified - the site design process should include soil erosion and sedimentation control measures	Goes beyond minimum NPDES requirements. Requires minimization of site disturbance, reduction of construction waste, control measures not removed until proof of soil stabilization or reestablishment of vegetation. Written procedures for site inspection and enforcement included. Following best practice may also help communities comply with MS4 permit requirements. See section 2.3.5 of the MS4 permit for more information	*(Not applicable)*	Sediment and erosion control plan. An engineering plan, stamped by a Massachusetts registered professional engineer, must be prepared for sediment and erosion control, including measures to control sediment and dust at all access points, stabilization practices which will be implemented to reduce erosion of soil from disturbed areas and to collect sediment-laden runoff water during construction and a plan showing final stabilization practices after construction is complete. Accompanying the submission shall be a schedule showing anticipated construction dates and the timing sequence of implementation of the proposed sediment and erosion control practices. (365-39, 3b3) Details in 65-39, 11)	*(Not applicable)*	Erosion and Stormwater Control Management Plan and Narrative: The Erosion and Stormwater Control Plan and Narrative shall contain sufficient information for the Planning Board to evaluate the environmental impact, effectiveness, and compliance of the measures proposed by the applicant to these regulations and the Massachusetts Department of Environmental Protection Stormwater Management Handbook. 7 The information provided shall describe the nature and purpose of the proposed development, pertinent conditions of the site and the
Stormwater discharge detection & elimination	Not addressed	Discharges and connections noted and/or limits set on quantity and quality	Illicit discharges and connections are probibited and enforced. Following best practice may also help communities comply with MS4 permit requirements. Find more information in section 2.3.4.a of the MS4 permit	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	Illicit Discharges. No person shall dump, discharge, cause or allow to be discharged any pollutant or non-stormwater discharge into the MS4, into a watercourse, or into the waters of the Commonwealth. B.Illicit Connections. No person shall construct, use, allow maintain or continue any illicit connection to the Municipal Storm Drain System, regardless of whether the connection was permissible under applicable law, regulation or custom at the time of connection. C.Obstruction of Municipal Storm Drain System. No person shall obstruct or interfere with the normal flow of stormwater into or out of the municipal storm drain system without prior written approval (57-6)
Post- construction stormwater management and drainage patterns	Not addressed	Allow LID	Resemble pre-existing conditions of volume, velocity, quality and location, as nearly as possible, requiring LID to the max extent feasible. Retain vol of runoff >1in. per sq.ft. of impervious surface and/or remove 90% TSS post-construction & 50% TP generated on the site for new development, or >0.8in. per sq.ft and/or remove 80% TSS and 50% of TP load for redevelopment. Following best practice may also help communities comply with MS4 permit requirements.	Drainage. All runoff from impervious surfaces shall be recharged on the site, diverted towards areas covered with vegetation for surface infiltration to the extent possible. Dry wells shall be used only where other methods are infeasible and shall be preceded by oil, grease and sediment traps to facilitate removal of contaminants in WRPD. (165-34)	Proposed projects must control postdevelopment peak discharge rates from the two-year and fifty-year storm events at predevelopment levels. (365-39, 4ai) Applicants must demonstrate that the above requirements are met by submitting pre- and postdevelopment composite hydrographs. An acceptable methodology for determining runoff volumes, peak discharge rates and storage requirements are the Soil Conservation Service's revised Technical Release 55 (TR-55). (365-39, 4av)	*(Not applicable)*	Stormwater management systems on new development and redevelopment sites shall be designed to: (a) Retain the volume of runoff equivalent to, or greater than, two (2) inches multiplied by the total post-construction impervious surface area on the site; and (b) Remove 90% of the average annual load of Total Suspended Solids generated from the total post-construction impervious area on the site; and (c) Remove 60% of the average annual load of Total Phosphorus (TP) generated from the total post-construction impervious surface area on the site. Pollutant removal shall be calculated consistent with EPA Region 1's BMP Performance Extrapolation Tool or other BMP performance evaluation tool provided by EPA Region 1, where available (IX-A3)
As-built surveys	Not addressed	Recommended	Required, with written instructions for process; electronic submittal allowed	*(Not applicable)*	not addressed	*(Not applicable)*	not addressed
Intra-departmental communication and coordination	Not addressed	Informally or loosely occurring	Required for plan review and/or permit approvals	not addressed	Applicant shall send a copy of the cover page as described in § 365-39A and a copy of the notice of public hearing as described in § 365-26 to each of the boards and officers described in Subsections B and C of this section. (265-24) Water quantity and water quality control are important components in stormwater management planning and implementation. Equally important are the overall plans for capture and disposal of drainage water. The Planning Board shall participate with other boards and the Highway Surveyor to ensure that systems approved for installation are consistent with health, safety and environmental concerns of the community. The approach to controlling and treating stormwater runoff and the kind, number and locations of facilities will be evaluated. Facilities which have short life expectancies, low effectiveness and high operation and maintenance costs will generally not be acceptable to the Planning Board. (365-39, 3a)	Any person filing a permit application or a request for determination with the Commission shall provide a copy thereof at the same time, by certified mail or hand delivery, to the Board of Selectmen, Planning Board, Board of Appeals, Board of Health and Building Inspector, the Highway Department, and a cover page of the application to the Board of Selectmen. The Commission shall not take final action until such boards and officials have had 14 days from receipt of notice to file written comments and recommendations with the Commission, which the Commission shall take into account but which shall not be binding on the Commission. The applicant shall have the right to receive any such comments and recommendations and to respond to them at a hearing of the Commission prior to final action. (161-6)	not addressed

Enforcement	No	Yes	Yes with fines. Same entity should oversee permit approvals and enforcement	This chapter shall be enforced by the Building Inspector appointed under § 29-10 of the Code of the Town of Georgetown. A petition to Superior Court to restrain by injunction violations of this chapter or of MGL c. 40A, as provided by law (in MGL c. 40A, § 7), shall be made in the name of the Town. (165-97) Any person violating any provision of this chapter, any of the conditions under which a special permit or variance is granted or any decision of the Board of Appeals may be fined not more than $300 for each offense. Each day that such violation continues shall constitute a separate offense. Such fine may be recovered by the Building Inspector on complaint before the District Court. (165-99)	not addressed	The Commission shall have authority to enforce this chapter, its regulations and permits issued thereunder by violation notices, administrative orders and civil and criminal court actions. (161-11, A2) Any person who violates any provision of this chapter, regulations thereunder or permits issued thereunder shall be punished by a fine of not more than $300. Each day or portion thereof during which a violation continues shall constitute a separate offense, and each provision of the chapter, regulations or permit violated shall constitute a separate offense. (161-11, B1)	The PGA, or an authorized agent of the PGA, shall enforce this chapter, and any regulations, permits orders, violation notices, and enforcement orders, and may pursue all civil and criminal remedies for violations. Criminal penalties. Any person who violates any provisions of this chapter, regulation, order or permit issued hereunder shall be punished by a fine of not more than $300. Each day a violation occurs or continues shall constitute a separate violation. (57-10, A & D) In accordance with Chapter 57 the Planning Board defines as its "designated agent" the Town Planner and hereby delegates to such agent the administration, implementation, and enforcement of these regulations as specified below. The Town Planner shall act as the designated agent in the administration, implementation, and enforcement of these regulations as
GOAL 5: ENCOURAGE EFFICIENT PARKING							
Parking	Specific minimums set based on projected maximum use times	Encourage minimum # needed to serve routine use (e.g. 2/residential unit with any additional/visitors parking behind in driveway or on street.	Establish Maximum Parking spaces allowed. Do not require more than 2/residence. Allow tenants separate, optional lease agreements for parking.	Each dwelling unit have a minimum of two off-street parking spaces. Parking spaces in front of garages may count in this computation. All parking areas with greater than four spaces shall be screened from public view. In OSRd (165-56, C4) Residential dwellings: Detached, attached and multi-family dwellings shall provide two spaces per dwelling unit. (165-61, G)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Commercial Parking	Specific minimums set based on projected maximum use times adding all on-site uses together.	Some flexibility to reduce minimums based on street or other available nearby parking or transit.	Allowed shared parking for uses with different peak demand times. Provide model agreements/deed restrictions. Reduce parking requirements near transit. Limit parking stall size (9ftx18ft max), with up to 30% smaller for compact cars	not addressed	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
LID in Parking Areas	LID not addressed OR Require waivers e.g. for planting islands to drain down rather than built up surrounded by curbs	Allow LID/bioretention within parking areas.	Require landscaping within parking areas, as LID/bioretention, at a minimum of 10% of the interior area landscaped and a minimum of 25 square feet for island planting areas.	Parking lots with 40 or more spaces, an area equivalent to at least 15% of the area of the parking lot, should be constructed and landscaped in the interior of the parking lot. The landscaped area should be evenly distributed within the parking lot and should be at least 25 feet in area with no dimension less than five feet. One tree, at least three inches in caliper should be installed in each landscaped area. There should be at least one tree for each 10 parking spaces. (165-83, L4a)	not addressed	*(Not applicable)*	not addressed

Gloucester

Factors	Needs Improvement	Improved	Optimal	Zoning Ordinance (Including Special Districts)	Open Space Residential Development (Section 5.15 of Zoning Ord.)	Subdivision Rules & Regulations	Drainage Ordinance	Misc.
GOAL 1: PROTECT NATURAL RESOURCES AND OPEN SPACE								
Soils managed for revegetation	Not addressed	Limitations on removal from site, and/or requirements for stabilization and revegetation	Prohibit removal of topsoil from site. Require rototilling and other prep of soils compacted during construction	From Section 5.2.1: Earth Fill Removal Regulations: The removal or filling of topsoil, borrow, rock, sod, loam, peat, humus, clay, sand or gravel shall be allowed only by special permit from the City Council in accordance with sections 5.2.2 through 5.2.8... All fill and removal operations shall conform to the national standards for the stabilization of slopes and materials (Soil & Water Conservation guidelines), a copy of which is available in the office of the Community Development Department and the Building Inspector's Office From Watershed Overlay District. Prohibitted activities include: Commercial removal or relocation of earth materials, including but not limited to sand, gravel, topsoil, metallic ores, or bedrock.	Not Applicable	From Pg 50, Sec 4.12 Cleaning Up: All areas within the street lines destroyed or altered in construction operations shall be restored to vegetation or other finish satisfactory to the Planning Board. See Sec 4.10 Natural Features and Amenities for maintenance of specific vegetation types (grass, trees, bank plantings)	Not Applicable	
Limit clearing, lawn size, require retention or planting of native vegetation/naturalized areas	Not addressed OR General qualitative statement not tied to other design standards	Encourage minimization of clearing/ grubbing	Require minimization of clearing/grubbing with specific standards	From Section 5.2.1: Earth Fill Removal Regulations: The removal or filling of topsoil, borrow, rock, sod, loam, peat, humus, clay, sand or gravel shall be allowed only by special permit from the City Council in accordance with sections 5.2.2 through 5.2.8... All fill and removal operations shall conform to the national standards for the stabilization of slopes and materials (Soil & Water Conservation guidelines), a copy of which is available in the office of the Community Development Department and the Building Inspector's Office From Sec 5.2.10 Watershed Protection Overlay District: The removal or filling of topsoil, borrow, rock, sod, loam, peat, humus, clay, sand or gravel shall be allowed only by special permit from the City Council...All fill and removal operations shall conform to the national standards for the stabilization of slopes and materials (Soil & Water Conservation guidelines)	From Sec 5.15.3.1 OSRD Design Overview: The landscape shall be preserved in its natural state. Tree and soil removal shall be minimized. Any grade changes shall be in keeping with the general appearance of neighboring developed areas. Individual building sites shall be oriented to maintain natural topography, soils and vegetation.	From Pg 48, Sec 4.10.1 Preservation: Due regard shall be shown for all natural features such as large trees, water courses, scenic points, historic spots, and similar community assets which, if preserved, will add attractiveness and value to the subdivision.	Not Applicable	
Require native vegetation and trees	Not addressed OR General qualitative statement	Mixture of required plantings of native and nonnative	Require at least 75% native plantings	From Sec 5.29 Mixed Use Overlay District: Design of landscaping elements that present a pleasant, well-designed appearance during all seasons, such as plantings of different types and sizes to create an attractive landscaping consistent with native New England character.	Not Applicable	From Appendix A-1, pg 66: The purpose and intent of Stormwater Management shall include: 1) for quantitative control of stormwater runoff, a system of native species vegetation and structural measures that control the increased volume and rate of surface runoff caused by human-made changes to the land and 2) for qualitative control of stormwater runoff, a system of native species vegetation, structural and other measures, that reduce or eliminate pollutants that might otherwise be carried off by surface runoff. From Sec 6.2 OSRD Detailed Design Standards: There should be attempts to specify non-invasive and drought-resistant species of plants within disturbed areas.	Not Applicable	Allowable Tree Species in Section 24-4 lists a mix of native and non-native.
GOAL 2: PROMOTE EFFICIENT, COMPACT DEVELOPMENT PATTERNS AND INFILL								
Lot size	Not addressed OR Required minimum lot sizes	OSRD/NRPZ preferred. Special permit with incentives to utilize	Flexible with OSRD/NRPZ by right, preferred option	Minimum Dimensional Requirements tabulated in Zoning Ordinance Section 3.2. Dimensional Requirements for Mixed Use Overlay District also included in Sec 5.29.4	From 5.15.5.1 OSRD Dimensional Requirements: Applicants for OSRD development are encouraged to modify lot size, shape and other dimensional requirements for lots within an OSRD development. Section 3.2 of the City of Gloucester Zoning Ordinance setting forth the minimum lot requirements shall not apply to lots within OSRD. The minimum requirements for such lots are: a) Minimum lot area shall be 5,000 sq. ft.	From Pg 38, Sec 4.2.2 Lot Dimensions: No subdivision shall be approved by the Planning Board unless the size, shape, width, and frontage of all lots within the subdivision comply with the applicable provisions of the Zoning Ordinance.	Not Applicable	
Setbacks	Not addressed OR Required minimum front, side, and rear setbacks	Minimize, allow flexibility	Clear standards that minimize and in some instances eliminate setbacks	Minimum Dimensional Requirements tabulated in Zoning Ordinance Section 3.2. Dimensional Requirements for Mixed Use Overlay District also included in Sec 5.29.4	From 5.15.4.1 Open Space Requirements: One third (1/3) of the twenty (20) foot site perimeter setback, as required in 5.15.5.1(c), may be used towards the required open space. From 5.15.5.1 Dimensional Requirements: Applicants for OSRD development are encouraged to modify lot size, shape and other dimensional requirements for lots within an OSRD development. Section 3.2 of the City of Gloucester Zoning Ordinance setting forth the minimum lot requirements shall not apply to lots within OSRD. The minimum requirements for such lots are: ... c) A site perimeter setback of at least twenty (20) feet shall be provided at the perimeter of the overall site subject to OSRD except that driveways necessary for access and egress to the site may be allowed within the site perimeter setback for the overall site subject to OSRD. No vegetation in this buffer shall be disturbed, destroyed or removed except for	From Pg 38, Sec 4.2.2 Lot Dimensions: No subdivision shall be approved by the Planning Board unless the size, shape, width, and frontage of all lots within the subdivision comply with the applicable provisions of the Zoning Ordinance.	Not Applicable	

Frontage	Not addressed OR Required minimum frontage for each lot/unit	Minimize especially on curved streets and cul-de-sacs	No minimums in some instances, tied into other standards like OSRD design and shared driveways.	Minimum Dimensional Requirements tabulated in Zoning Ordinance Section 3.2. Dimensional Requirements for Mixed Use Overlay District also included in Sec 5.29.4	From 5.15.5.1 OSRD Dimensional Requirements: Applicants for OSRD development are encouraged to modify lot size, shape and other dimensional requirements for lots within an OSRD development. Section 3.2 of the City of Gloucester Zoning Ordinance setting forth the minimum lot requirements shall not apply to lots within OSRD. The minimum requirements for such lots are: … b) Minimum frontage shall be 20 ft.	From Pg 38, Sec 4.2.2 Lot Dimensions: No subdivision shall be approved by the Planning Board unless the size, shape, width, and frontage of all lots within the subdivision comply with the applicable provisions of the Zoning Ordinance.	Not Applicable	
Common driveways	Not addressed OR Not allowed, strict limitations	Allow for 2-3 residential units	Allow for up to 4 residential units, preferrably constructed with permeable pavers or pavement	From Sec 5.21.2 Common Driveways: Vehicular access, extending from a street, serving as a common vehicular access to more than one (1) but not more than four (4) residential lots is a common driveway, built in accordance with standards established in "Rules and Regulations Governing the Subdivision of Land in Gloucester, Massachusetts" where allowed by Special Permit. No mention of permeable materials	Not Applicable/ Addressed Elsewhere	From Pg 15, Sec 2.5.3 General Requirements for Common Driveways: When appropriate, the applicant will be encouraged by the Planning Board and/or City Planner to use common driveways as a beneficial means of traffic and storm water drainage management for up to four abutting lots established through either the Approval Not Required or Subdivision process. No mention of permeable materials	Not Applicable	
Limit impervious area – Rural Districts In high density areas, require post-development infiltration to = or > predevelopment	Not addressed *(Not usually addressed in zoning and subdivision regs for rural/suburban residential)*	<15%	<10%	Not Addressed	Not Applicable/ Addressed Elsewhere	From Appendix A-1, pg 68: Stormwater Management Plans submitted bust demonstrate that the proposed development or activity has been planned and designed and will be constructed and maintained to meet each of the following standards: 1) Ensure that after development, runoff from the site or activity approximates the rate of flow, velocity, volume and timing of runoff that would have occured following the same rainfall conditions under pre-development conditions	Not Applicable	
GOAL 3: SMART DESIGNS THAT REDUCE OVERALL IMPERVIOUSNESS								
Street location	No standards addressed OR Numeric and geometric standards based primarily on vehicular travel and safety, with basic pedestrian requirements e.g. sidewalks	Flexibility in applying standards, to reduce area of impact, grading, avoid key natural features	OSRD design preferred by-right. Require locating streets to minimize grading and road length, avoid important natural features	From Sec 5.9 Cluster Development Design Criteria: The Planning Board, in order to grant a special permit for a Cluster Development, must find that the proposed design and layout of the development is superior to a conventional one in preserving open space for conservation and recreation; in preserving natural features of the land; and in allowing more efficient provision of streets, utilities and other public services. No preference stated for OSRD design	From Sec 5.15.3.2 OSRD Generic Design Standards: a) OSRD shall promote permanent preservation of open space, agricultural land, forestry and, natural resources, historical and archeological resources better than a grid subdivision. e) OSRD shall facilitate the layout, construction and maintenance of ways, utilities, and public services in a more economical, safe and efficient manner than a grid subdivision. f) The landscape shall be preserved in its natural state. Tree and soil removal shall be minimized. Any grade changes shall be in keeping with the general appearance of neighboring developed areas. Individual building sites shall be oriented to maintain natural topography, soils and vegetation. g) Ways shall be designed and located in such a manner as to maintain and preserve natural topography, significant landmarks, and trees; to minimize cut and fill; and to preserve and enhance views and vistas on or off the subject parcel	From Pg 38, Sec 4.10.1 Preservation: Roads and driveways shall follow the natural topography to the greatest extent possible to minimize the cutting and grading of steep slope areas. From Pg 24, Sec 3.2.1.i Definitive Plan . If several alternative methods of subdividing are possible, as regards street patterns, grading and drainage, the Evaluation shall compare their anticipated impact on the environment in order to show that the design selected minimizes the adverse and maximizes the beneficial environmental impacts.	Not Applicable	
Road width	No categories addressed OR Major and minor categories, 24-30'	Wide, medium, narrow categories. 22-24' max, plus 2' shoulders	Wide, medium, narrow, and alley categories. 20-24' widest for 2 travel lanes, 18-20' low traffic residential neighborhood, plus 2' shoulders. Allow alleys and other low traffic or secondary emergency access and all shoulders to use alternative, permeable materials.	From Sec 5.16.15 Village Development Overlay District Standards: Parking may be provided on a street with the consent of the Planning Board, however, the minimum pavement width on streets where on-street parking is allowed shall not be less than twenty four (24) feet.	Not Applicable/ Addressed Elsewhere	From Sec 6.2 Detailed Design Standards: Minimum pavement width for streets serving more than four (4) units should be twenty (20) feet or greater in width, unless the Board deems otherwise. Where parking is provided on a street with the consent of the Board, the minimum pavement width on such streets shall be twenty four (24) feet or greater.	Not Applicable	
Road ROW width	ROW Width not addressed OR 50-75', fully cleared and graded	40-50', some flexibility in extent of clearing	20-50'depending on road type	Not Addressed	Not Applicable/ Addressed Elsewhere	From Pg 40, Sec 4.3.2 Street Width: The width of street rights-of-way shall not be less than the following: • Courts - Twenty-five (25) feet, except for streets having a grade in excess of six percent, in which instance the minimum right-of-way shall be thirty (30) feet. • Lanes - Forty (40) feet • Minor Streets - Fifty (50) feet • Collector Street - Sixty (60) feet	Not Applicable	From Sec 21.42 Streets and Sidewalks - Minimum Street Width: No new street or way, except a footway, shall be laid out and accepted by the city council of a less width than 40 feet, provided the land through which it runs and the estates adjoining the street or way will admit of the width without material injury to the same.
Access Options	Common drives not addressed, No common drives allowed, Dead end allowed with limit on length and # of units	Allow dead end with limit on length and # of units. Allow common drives up to 2-3 units	Allow one way loop streets. Allow common drives up to 4 units, and alleys and rear-loading garages where suitable.	From Sec 5.21 Common Driveway Definition: Vehicular access, extending from a street, serving as a common vehicular access to more than one (1) but not more than four (4) residential lots is a common driveway, built in accordance with standards established in "Rules and Regulations Governing the Subdivision of Land in Gloucester, Massachusetts" where allowed by Special Permit. The driveway will lie entirely within the lots being served.	Not Applicable/ Addressed Elsewhere	From Pg 15, Sec 2.5.3 General Requirements for Common Driveways: When appropriate, the applicant will be encouraged by the Planning Board and/or City Planner to use common driveways as a beneficial means of traffic and storm water drainage management for up to four abutting lots established through either the Approval Not Required or Subdivision process.	Not Applicable	

Dead Ends/Cul-de-sacs	No standards addressed OR 120 ft or more minimum turnaround	Minimize end radii – 35 ft	Allow hammerhead turnaround	Not Addressed	Not Applicable/ Addressed Elsewhere	From Pg 41, Sec 4.3.4 Dead End Streets: Dead-end streets shall be provided at the closed end with a turn-around having a diameter at the curb-line of at least one hundred (100) feet and a property-line diameter of a least one hundred and twenty (120) feet, except for Courts, which shall provide a turnaround having a diameter at the curb-line of at least eighty (80) feet and a property line diameter of at least ninety (90) feet. Where appropriate, the Planning Board may also require the placement of a circular landscaped island, with a minimum radius of twenty (20) feet, at the center of the turn-around. As an alternative to a circular turn-around, under certain conditions, the Board may allow "T" or "Y" shaped turn-arounds of a design that would permit a vehicle with a 47 foot outside turning radius and a width of eight (8) feet to reverse its direction without backing more than once.	Not Applicable	
Cul-de-sacs	No standards addressed OR Full pavement standard	Encourage center landscaping with bioretention	Require center landscaping with bioretention	Not Addressed	Not Applicable/ Addressed Elsewhere	From Pg 41, Sec 4.3.4 Dead End Streets: Where appropriate, the Planning Board may also require the placement of a circular landscaped island, with a minimum radius of twenty (20) feet, at the center of the turn-around.	Not Applicable	
Curbing	No standards addressed OR Curbing required full length both sides of road	Allow curb breaks or curb flush with pavement to enable water to flow to vegetated LID features	Open drainage with roadside swales and no curbs preferred	Not Addressed	Not Applicable/ Addressed Elsewhere	From Pg 42, Sec 4.3.5 Construction: Straight face granite curbs with six (6) inches of reveal shall be installed for the full radius at all street intersections and behind all catch basins. Granite or Type I-1 bituminous concrete (machine installed) curbs shall be installed along: 1. both sides of all Collector and Minor streets. 2. all Lanes and Courts having curves with a radius of sixty (60) feet or less at the curbline and a central angle of forty-five (45) degrees or more. 3. all Lanes and Courts having grades in excess of three (3) percent.	Not Applicable	From Sec 21.6 Streets and Sidewalks City Council Authority: The city council may establish, grade and construct sidewalks, and complete partially constructed sidewalks, with or without edgestones or curbing, and may cover the same with brick, flat stones, concrete, gravel or other appropriate material, in such streets of the city as, in its judgment, the public convenience may require, and may assess the abutters on such sidewalks, as provided in M.G.L. c. 83, §§ 26 through 28. The council may also cause edgestones to be set and gravel sidewalks constructed in any public street in the city, whenever they deem it necessary for the better protection of the street or foot travelers, and the expense thereof shall be paid from the appropriate department; provided, however, that no such edgestones shall be set or sidewalk constructed, until the council has by vote authorized the same.
Roadside Swales	Not addressed OR Allowed as an option	Preferred over closed drainage	Preferred, with criteria for proper design. Adoption of technical specifications and design templates for green infrastructure recommended	From Sec 5.8.7 Site Plan Review Guidelines: All surface water runoff from structures and impervious surfaces shall be disposed of on site; but in no case shall surface water drainage be across sidewalks or public or private ways. In no case shall surface water runoff be drained directly into wetlands or water bodies. Drainage systems shall be designed to minimize the discharge of pollutants by providing appropriately designed vegetated drainage channels and sedimentation basins that allow for adequate settling of suspended solids and maximum infiltration. Dry wells, leaching pits and other similar drainage structures may be used only where other methods are not practicable. Oil, grease, and sediments traps to facilitate removal of contaminants shall precede all such drainage structures. All calculations shall be for a one hundred (100) year storm. Drainage design shall be in accordance with Department of Public Works regulations as amended.	Not Applicable/ Addressed Elsewhere	From Pg 55, Sec 6.2.D Drainage: 1. 'Soft', open (nonstructural) stormwater management techniques (such as swales) and other drainage techniques that slow the rate of runoff, reduce impervious surface and enable infiltration should be employed where appropriate consistent with local ordinances pertaining to drainage and grading and Rules and Regulations Governing the Subdivision of Land (including Appendix A-1 STORMWATER MANAGEMENT). 2. Landscaping treatment in the vicinity of buildings, ways, structures and utilities should be designed to impede rapid stormwater runoff. 3. A permanent operation and maintenance program for the stormwater system shall be provided.	From Pg 3: Drainage and groundwater recharge may be attained through site design that incorporates natural drainage patterns and vegetation. To the extent possible, storm water runoff from rooftops, driveways, roadways and other impervious surfaces shall be routed through areas of natural vegetation and /or devices such as infiltration basins, infiltration trenches, grass swales or similar situations.	
Utilities	Off sets required contributing to wide road ROWs	Not specified - flexible	Allow under road, sidewalks or immediately adjacent to roads to enable placement of roadside swales.	From Sec 5.8.7 Site Plan Review Guidelines: All utility service transmission systems, including but not limited to water, sewer, natural gas, electrical and telephone lines, shall, whenever practicable, be placed underground. From Sec 5.9.5 Design Criteria for Cluster Development: The Planning Board, in order to grant a special permit for a Cluster Development, must find that the proposed design and layout of the development is superior to a conventional one in preserving open space for conservation and recreation; in preserving natural features of the land; and in allowing more efficient provision of streets, utilities and other public services.	Not Applicable/ Addressed Elsewhere	From Pg 48, Sec 4.8.2 Utility Installation: All electrical, telephone and other utility wiring shall be placed underground in all residential subdivisions, unless the Planning Board determines that such placement is not feasible or is not in the best interests of the City of Gloucester. From Pg 34, Sec 3.9.1 Conveyance of Travel Easements: Convey to the City of Gloucester the right to use streets and any travel easements in the subdivision for the purposes of public travel, installation of utilities and all other purposes for which streets are or may be used in Gloucester.	Not Applicable	

Sidewalks	Material not addressed OR Concrete or bituminous required	Some flexibility in material and design	Prefer permeable pavement or permeable pavers	Not Addressed	Not Applicable/ Addressed Elsewhere	From Pg 47, Sec 4.7.2 Sidewalk Specifications: Bituminous concrete sidewalks having a minimum thickness of two and one-half (2 1/2) inches after compaction shall be constructed on a eight inch (8") gravel foundation to the required lines and grades. Sidewalks constructed of all-weather materials other than bituminous concrete may be approved if they are deemed appropriate by the Planning Board.	Not Applicable	From Sec 21.6 Streets and Sidewalks City Council Authority: The city council may establish, grade and construct sidewalks, and complete partially constructed sidewalks, with or without edgestones or curbing, and may cover the same with brick, flat stones, concrete, gravel or other appropriate material, in such streets of the city as, in its judgment, the public convenience may require, and may assess the abutters on such sidewalks, as provided in M.G.L. c. 83, §§ 26 through 28. The council may also cause edgestones to be set and gravel sidewalks constructed in any public street in the city, whenever they deem it necessary for the better protection of the street or foot travelers, and the expense thereof shall be paid from the appropriate department; provided, however, that no such edgestones shall be set or sidewalk constructed, until the council has by vote authorized the same.
Sidewalk location	Required both sides of road	Allow on only 1 side of road especially in low density neighborhoods	Prefer siting with land contours and for best pedestrian utility (e.g. connect with common areas and shared open spaces) – not necessarily immediately parallel to road.	Not Addressed	Not Applicable/ Addressed Elsewhere	From Pg 47, Sec 4.7.1 General Sidewalk: Sidewalks shall be installed on both sides of Collector and Minor streets. Sidewalks shall be installed on one or both sides of Lanes and Courts if in the opinion of the Planning Board pedestrian safety would be substantially served by their construction. Where sidewalks are not required, the Board may require that the grading of the right-of-way be so executed as to make possible later additions of sidewalks without major regrading. Sidewalks shall extend the full length of each side of the street.	Not Applicable	From Sec 21-6: The city council may establish, grade and construct sidewalks, and complete partially constructed sidewalks, with or without edgestones or curbing, and may cover the same with brick, flat stones, concrete, gravel or other appropriate material, in such streets of the city as, in its judgment, the public convenience may require, and may assess the abutters on such sidewalks, as provided in M.G.L. c. 83, §§ 26 through 28. No location preference addressed.
Sidewalk drainage	Draining to road, closed drainage system required	Not addressed	Disconnect drainage from road system – e.g.adjacent green strips or within vegetated areas that can absorb sheet flow	From Sec 5.8.7 Site Plan Review Guidelines: All surface water runoff from structures and impervious surfaces shall be disposed of on site; but in no case shall surface water drainage be across sidewalks or public or private ways. In no case shall surface water runoff be drained directly into wetlands or water bodies. Drainage systems shall be designed to minimize the discharge of pollutants by providing appropriately designed vegetated drainage channels and sedimentation basins that allow for adequate settling of suspended solids and maximum infiltration. Dry wells, leaching pits and other similar drainage structures may be used only where other methods are not practicable. Oil, grease, and sediments traps to facilitate removal of contaminants shall precede all such drainage structures. All calculations shall be for a one hundred (100) year storm. Drainage design shall be in accordance with Department of Public Works regulations as amended.	Not Applicable/ Addressed Elsewhere	From Pg 55, Sec 6.2.D Drainage: 1. 'Soft', open (nonstructural) stormwater management techniques (such as swales) and other drainage techniques that slow the rate of runoff, reduce impervious surface and enable infiltration should be employed where appropriate consistent with local ordinances pertaining to drainage and grading and Rules and Regulations Governing the Subdivision of Land (including Appendix A-1 STORMWATER MANAGEMENT). 2. Landscaping treatment in the vicinity of buildings, ways, structures and utilities should be designed to impede rapid stormwater runoff. 3. A permanent operation and maintenance program for the stormwater system shall be provided.	Not Applicable/ Addressed Elsewhere	
GOAL 4: ADOPT GREEN INFRASTRUCTURE STORMWATER MANAGEMENT PROVISIONS								
Rooftop runoff	Not addressed OR Prohibit directing clean roof runoff into closed municipal drainage systems.	Allow clean roof runoff to be directed to landscaped or naturally vegetated areas capable of absorbing without erosion, or infiltration	Require directing clean roof runoff to landscaped or naturally vegetated areas capable of absorbing, or infiltration	Not Addressed	Not Applicable	From Pg 46, Sec 4.6.2 Specifications: Connection of footing drain, roof drains or storm drains to a sanitary sewer is prohibited.	From Pg 3: To the extent possible, storm water runoff from rooftops, driveways, roadways and other impervious surfaces shall be routed through areas of natural vegetation and /or devices such as infiltration basins, infiltration trenches, grass swales or similar situations.	From Sec 23-27 Restrictions on Use of Public Sewers: Stormwater and other unpolluted waters. No person shall discharge or cause to be discharged any stormwater, surface water, groundwater, roof runoff, subsurface drainage, uncontaminated cooling water or unpolluted industrial process waters into any sanitary sewer. Stormwater and all other unpolluted drainage shall be discharged to such sewers as are specifically designated as combined sewers or storm sewers, or to a natural outlet approved by the director.
Overall stormwater design; piping and surficial retention vs. LID	Conventional stormwater system design standards		LID design standard. Allow surficial ponding of retained runoff for up to 72 hours and credit for green roofs towards stormwater requirements	Not Specified	Not Applicable	Not Specified	From Pg 3: Drainage and infiltration practices shall be utilized to meet, to the extent possible, the Performance and Design Standards of the Gloucester Subdivision Stormwater Management Regulations. A combination of successive practices may be used to achieve the desired control requirements. Specific standards not outlined in Subdivision Control Regs	
Site Plan Requirements	LID not addressed	Encourage use of LID features in site design	Count bioretention and other vegetated LID features toward site landscaping/open space requirements.	From Sec 5.4 Site Plan Review: The following types of activities and uses require site plan review by the Planning Board: A)Any new industrial or commercial construction or expansion over two thousand (2,000) gross square feet, or any new or expanded industrial or commercial use which requires more than five (5) additional parking spaces; B)In the MI district and new industrial or commercial projects or additions, change of use, or project requiring a special permit or variance. C)The construction or creation of any new parking lot or the expansion, or redesign of any existing parking lot.D)Driveways in residential districts, which propose more than one curb cut. The site plan shall be accompanied by drainage calculations by a registered professional engineer as well as wetland delineations, if applicable. Water utilities, sewer infrastructure and stormwater drainage shall be	Not Applicable	From Appendix A-1, pg 69: The design, construction and maintenance of stormwater systems will be consistent with the following: 1) Discharging runoff directly into rivers, streams, watercourses, or enlarging the volume, rate, or further degrading the quality of existing discharges/runoff is prohibited. Runoff shall be routed through vegetated swales, using native species and other structural and nonstructural systems designed to increase time of concentration, decrease velocity, increase infiltration, allow suspended solids to settle, and remove pollutants; such systems will utilize overland flow and reinfiltration as priority techniques for the treatment of runoff. From Appendix A-1 Pg. 70: 10) The use of drainage facilities and vegetated buffer zones as open space and conservation areas shall be encouraged;	Not Addressed	

Allow easy siting of LID features (bioretention, swales, etc.)	Not addressed OR Require waivers from subdivision standards	Encouraged along road ROW	Allowed on lots, common open space, or road ROW, easement recorded. For commercial development, allow an increase in floor area ratio or other developmental incentives for green roofs	Not Addressed	Not Applicable	'Soft', open (nonstructural) stormwater management techniques (such as swales) and other drainage techniques that slow the rate of runoff, reduce impervious surface and enable infiltration should be employed where appropriate consistent with local ordinances pertaining to drainage and grading and Rules and Regulations Governing the Subdivision of Land (including Appendix A-1 STORMWATER MANAGEMENT).	Not Addressed	
Permeable paving	Not addressed OR Require waivers from subdivision standards	Allowed on private residential lots for parking, patios, etc.	Allowed for residential drives, parking stalls, spillover parking spaces, emergency access ways (with proper engineering support for emergency vehicles) Two track design allowed for driveways and secondary emergency access ways (where required).	Not Addressed	Not Applicable	From Sec 6.2 Detailed Design Standards: Gravel (pervious) surface treatments on streets, roads and driveways may be preferred; however, specifications/ departures from standards presented in the Subdivision Review Regulations shall be specified in the site plan.	Not Applicable	From Sec 21.6 Streets and Sidewalks City Council Authority: The city council may establish, grade and construct sidewalks, and complete partially constructed sidewalks, with or without edgestones or curbing, and may cover the same with brick, flat stones, concrete, gravel or other appropriate material, in such streets of the city as, in its judgment, the public convenience may require, and may assess the abutters on such sidewalks, as provided in M.G.L. c. 83, §§ 26 through 28. The council may also cause edgestones to be set and gravel sidewalks constructed in any public street in the city, whenever they deem it necessary for the better protection of the street or foot travelers, and the expense thereof shall be paid from the appropriate department; provided, however, that no such edgestones shall be set or sidewalk constructed, until the council has by vote authorized the same.
Stormwater management O&M plan	Typically only addressed if municipality has a stormwater or LID bylaw, or for areas subject to wetlands permitting	Required	Required, surficial bioretention and swales preferred. Closed/underground systems requiring specialized inspection and clean out discouraged.	Not Addressed	Not Applicable	Required From Appendix A-1: All components of the drainage system and any measures for the detention, retention, or infiltration of water, or for the protection of water quality shall be described in detail, including: .... maintenance plans; including maintenance schedule, an outline of responsible parties and owners, and all pertinent agreements to be executed to insure proper maintenance;	Not Addressed	
Construction Erosion and Sedimentation Plan required	Basic general requirements	Required, contents specified	Goes beyond minimum NPDES requirements, requires minimization of site disturbance	From Sec 5.8.5.1 Site Plan Contents: Landscaping plan, showing the limits of work, existing tree lines as well as those tree lines to remain, and all proposed landscape features and improvements including screening, planting areas with size and type of stock for each shrub or tree, and including proposed erosion control measures during construction.	Not Applicable	From Pg 29, Sec 3.2.4.w Contents of Definitive Plan: A plan for the control of erosion and siltation both during and after construction phases. Such plan shall include the proposed construction sequencing, temporary and permanent erosion control plantings, special constructions, and swale and stream scour protection.	Not Addressed	
GOAL 5: ENCOURAGE EFFICIENT PARKING								
Parking	Specific minimums set based on projected maximum use times	Encourage minimum # needed to serve routine use (e.g. 2/residential unit with any additional/visitors parking behind in driveway or on street.	Establish Maximum Parking spaces allowed. Do not require more than 2/residence. Allow tenants separate, optional lease agreements for parking.	See Sec 4.1 Off Street Parking for detailed requirements. Minimum parking spaces depending on use, are required.	Not Applicable	From Pg 53-54, Sec 6.2.B Detailed Design Standards, Traffic & Circulation: 7) Each dwelling unit with two (2) or more bedrooms should be served by two (2) off street parking spaces; dwelling units with one (1) bedroom can be served by a minimum of one and a half (1.5) off street parking spaces, unless the Board deems otherwise. [Note: garages and areas in front of garages may count in this computation in cases when clear description is specified on the plan and approved by the Board to ensure when it finds that vehicles operating from the proposed parking area would not interfere with the circulation of adjacent sidewalk, driveway or road.]	Not Applicable	
Commercial Parking	Specific minimums set based on projected maximum use times adding all on-site uses together.	Some flexibility to reduce minimums based on street or other available nearby parking or transit.	Allowed shared parking for uses with different peak demand times. Provide model agreements/deed restrictions. Reduce parking requirements near transit. Limit parking stall size (9ftx18ft max), with up to 30% smaller for compact cars	From Sec 5.29 Mixed Use Overlay District: To facilitate development in the MUOD that will create a cohesive sense of place consistent with the MUOD Purposes, create connections among uses, and that accommodates pedestrian traffic yet remains sensitive to vehicular traffic needs by providing efficient parking, including shared parking, on and off site, when appropriate and for the purpose of reducing impervious surfaces;.... Shared parking is encouraged;	Not Applicable	Not Applicable	Not Applicable	
LID in Parking Areas	LID not addressed OR Require waivers e.g. for planting islands to drain down rather than built up surrounded by curbs	Allow LID/bioretention within parking areas.	Require landscaping within parking areas, as LID/bioretention, at a minimum of 10% of the interior area landscaped and a minimum of 25 square feet for island planting areas.	From Sec 5.7 Major Projects: Shopping Center parking areas shall contain or be bordered within five feet by a least one tree per eight cars, trees to be of two inch caliper or larger, and if within the parking area to be planted in curbed soil plots allowing not less than 36 square feet of unpaved soil area per tree. From 4.1.4 Design and Layout of Parking Facilities: If such facilities are open, they shall be graded, surfaced with bituminous concrete, cement concrete or other non-dusting all weather surface, drained and suitably maintained to the extent necessary to avoid the nuisance of dust, erosion or excessive water flow onto public ways or adjoining property. From Sec 5.12 Business Park District: To maintain the function, safety and aesthetics of parking areas and building development within the district, a minimum of ten (10) percent of each lot shall be maintained as open space. Such open space areas	Not Applicable	From Pg 54, Sec 6.2.C Detailed Design Standards: Parking areas with more than fifteen (15) spaces shall be divided into smaller sections, defined by landscaped strips or buffers consisting of vegetation and/or earthen berms.	Not Applicable	

Groveland

Factors	Needs Improvement	Improved	Optimal	Zoning Bylaw (including special districts and site plan	Subdivision Rules & Regulations	Stormwater Bylaw	Wetlands Protection Bylaw
GOAL 1: PROTECT NATURAL RESOURCES AND OPEN SPACE							
Soils managed for revegetation	Not addressed	Limitations on removal from site, and/or requirements for stabilization and revegetation	Prohibit removal of topsoil from site. Require rototilling and other prep of soils compacted during construction	*(Not applicable)*	Topsoil shall not be removed from residential lots or used as spoil, but shall be redistributed so as to provide at least six inches of cover on the lots and between the sidewalks and curbs, and shall be stabilized by seeding or planting.(70-4.2 D)	institute interim and permanent stabilization measures, which shall be instituted on a disturbed area as soon as practicable but no more than 14 days after construction activity has temporarily or permanently ceased on that portion of the site (14-10, B14) Minimize soil erosion and control sedimentation during construction, provided that prevention of erosion is preferred over sedimentation control; (14-10, B4)	requirements for stabilization and revegetaion: A minimum of 75% of the replacement area shall be reestablished with indigenous wetland plant species within two growing seasons, and prior to said vegetative establishment any exposed soil in the replacement area shall be temporarily stabilized to prevent erosion in accordance with the U.S. Natural Resources Conservation Service methods.(30-2.2, E6), All stabilization work must commence by October 15 and be in place and fully functional prior to November 1. This shall include any and all required planting (or temporary protection methods), slope protection and pavement as required by the Commission in its decision (30-2.1, D)
Limit clearing, lawn size, require retention or planting of native vegetation/naturalized areas	Not addressed OR General qualitative statement not tied to other design standards	Encourage minimization of clearing/ grubbing	Require minimization of clearing/grubbing with specific standards and retention or planting of vegetatio	Any person desiring to erect or place a building or structure or perform earth removal or filling activities within the Floodplain District shall submit an application for a special permit to the special permit granting authority. (50-6.1, F) Earth removal, consisting of the removal of soil, loam, sand, gravel, or any other earth material prohibited unless under special circumstances in Aquifer POD (50-6.2, G1G) Site plan review requires Minimization of the volume of cut and fill, the number of removed trees six-inch caliper or larger, the length of removed stone walls, the area of wetland vegetation displaced, the extent of stormwater flow increase from the site, soil erosion, and threat of air and water pollution (50-13.7, A)	No tree shall be removed from any subdivision nor any change of grade of the land effected until approval of the definitive plan has been granted. All trees on the land required to be retained shall be preserved; and all trees, where required, shall be welled and protected against change of grade. (70-4.14, A) all side slopes shall be planted with a low-growing shrub or vine, and wood chipped to a minimum depth of six inches or, at the Planning Board's option, seeded with a deep-rooted perennial grass to prevent erosion. (70-5.12, C) One tree shall be planted for every 50 feet of frontage along each road unless the Planning Board shall grant a waiver. (70-4.14, B1)	General qualitative statement which only addresses threatened habitats/species: 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 of rare species from the proposed activities (14-10, B13)	Only isolated wetlands greater than 5,000 square feet in area are subject to protection under these regulations (30-2.2, B2), A 200-foot no-work zone (measured horizontally from the mean annual high water mark) shall be established along the bank of the Merrimack River. No cutting of trees, undergrowth, brush, etc., shall be permitted in this area (30-2.6, C2) Merrimack river buffer zone is a no cut zone: There shall be a no-cut zone 25 feet in depth (measured horizontally from the mean annual high water mark) adjacent to the protected resource. Vegetation in this zone shall not be cut or trimmed in any manner. A single path to the resource area per lot may be created and maintained if limited to seven feet in width (30-2.6, I-3)
Require native vegetation and trees	Not addressed OR General qualitative statement	Mixture of required plantings of native and nonnative	Require at least 75% native plantings	not addressed	Street trees of nursery stock conforming to current standards of the American Association of Nurserymen, of the species approved by the Road Commissioner/Public Works Director and the Planning Board, shall be planted on each side of each street in a subdivision, except where the definitive plan shows trees to be retained which are healthy and adequate, which shall be retained (70-5.12) Lawn-grass seed shall be sown at not less than four pounds to each 1,000 square feet of land area. The seed shall consist of a maximum of 10% rye grass by weight and minimum of 90% of permanent bluegrass and/or fescue grass by weight. All disturbed areas of the lot not dedicated to building footprint; access walks and drives, ornamental shrub, flower, or vegetable gardens will be planted with grass. (70-4.2 D2)	not addressed beyond "Stormwater management system design shall be consistent with, or more stringent than, the requirements of the 2008 Massachusetts Stormwater Handbook."	the Commission may issue a permit allowing work which results in the loss of up to 5,000 square feet of freshwater wetlands when said area is replaced in accordance with the following general conditions: A minimum of 75% of the replacement area shall be reestablished with indigenous wetland plant species within two growing seasons, and prior to said vegetative establishment any exposed soil in the replacement area shall be temporarily stabilized to prevent erosion in accordance with the U.S. Natural Resources Conservation Service methods. (30-2.2, E6) No planting of other than indigenous species shall be permitted in the merrimack river buffer zone (30-2.6, C2)
GOAL 2: PROMOTE EFFICIENT, COMPACT DEVELOPMENT PATTERNS AND INFILL							
Lot size	Not addressed OR Required minimum lot sizes	OSRD/NRPZ preferred. Special permit with incentives to utilize	Flexible with OSRD/NRPZ by right, preferred option	required minimum lot sizes for all districts, however, maximum lot coverage (%) and maximum impervious area (%) allowed for each lot is also included (50-8.1) Reduction of dimensional requirements. The Planning Board may authorize modification of lot size, shape, and other bulk requirements for lots with a CSD (50-10.2, H)	Lot dimensions shall comply with the minimum standards of the Zoning Bylaw. Where lots are more than double the minimum required dimensions for the zoning district, the Planning Board may require that those lots be arranged so as to allow further subdivision and the opening of future streets where they would be necessary to serve potential lots, all in compliance with the Zoning Bylaw and these regulations (7-=4.2B)	No person may undertake a construction activity, including clearing, grading and excavation, that results in a land disturbance that will disturb equal to or greater than 20,000 square feet of land or will disturb less than 20,000 square feet of land but is part of a larger common plan of development or sale that will ultimately disturb equal to or greater than 20,000 square feet of land draining to the Town of Groveland without a stormwater management and land disturbance permit from the Board. (14-5)	*(Not applicable)*
Housing density	Multi-family housing not allowed, or only in/adjacent to commercial and industrial uses	Multi-family and cluster developments allowed by special permit	Multi-family housing allowed by right in most residential areas; cluster developments encouraged with density bonuses for LID features and no maximum lot coverage	multi-family housing is not permitted in any districts (50-4.5) The CSD may consist of any combination of single-family, two-family and multifamily residential structures. A multifamily structure shall not contain more than four dwelling units. Residential structures shall be oriented toward the street serving the premises and not the required parking area. (50-10.2, I3b)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Setbacks	Not addressed OR Required minimum front, side, and rear setbacks	Minimize, allow flexibility	Clear standards that minimize and in some instances eliminate setbacks	Required minimum setbacks for front (20-50 depending on the district), back (15-30 depending on the district) and side (10-25 depending on the district) (50-8.1) Reduction of dimensional requirements. The Planning Board may authorize modification of lot size, shape, and other bulk requirements for lots with a CSD (50-10.2, H)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Frontage	Not addressed OR Required minimum frontage for each lot/unit	Minimize especially on curved streets and cul-de-sacs	No minimums in some instances, tied into other standards like OSRD design and shared driveways.	required minimum frontae for each lot (100-150 depending on the district) (50-8.1) Reduction of dimensional requirements. The Planning Board may authorize modification of lot size, shape, and other bulk requirements for lots with a CSD (50-10.2, H)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Common driveways	Not addressed OR Not allowed, strict limitations	Allow for 2-3 residential units	Allow for up to 4 residential units, preferrably constructed with permeable pavers or pavement	allowed by special permit in all zoning districts pending the driveway meets bylaw standards with no limit on the number of units it may serve (Art 9) Common/Shared driveways. A common or shared driveway may serve a maximum number of three single-family units. in CSD (50-10.2. Ib)	not addressed but addressed in new zoning bylaw amendment 9	*(Not applicable)*	*(Not applicable)*
GOAL 3: SMART DESIGNS THAT REDUCE OVERALL IMPERVIOUSNESS							

Impervious cover limits and infiltration rates	Not usually addressed in zoning and subdivision regs for rural/suburban residential	Require no net increase in site run-off from pre- to post-development	Impervious cover limits tailored to the community and district type (i.e. <10% total impervious cover in rural districts, but higher in urban and redevelopment districts); post-development infiltration should be equal to or greater than pre-development. Following best practice may also help communities comply with MS4 permit requirements	Any use that will render impervious more than 15% or 2,500 square feet of any lot, whichever is greater requires a special permit in the Aquifer protection overlay district (50-6.2, H) maximum impervious area (%) allowed for each lot is also included (50-8.1)	not addressed	not addressed	*(Not applicable)*
Street location	No standards addressed OR Numeric and geometric standards based primarily on vehicular travel and safety, with basic pedestrian requirements e.g. sidewalks	Flexibility in applying standards, to reduce area of impact, grading, avoid key natural features	OSRD design preferred by-right. Require locating streets to minimize grading and road length, avoid important natural features	treets shall be designed and located in such a manner as to maintain and preserve natural topography, significant landmarks, and trees; to minimize cut and fill; and to preserve and enhance views and vistas on or off the subject parcel in CSD (50-10.2, I)	Streets shall be related appropriately to the topography. Streets shall be curved wherever possible to avoid conformity of lot appearance. All streets shall be arranged so as to obtain as many building sites as possible at, or above, the grades of the streets. Grades of streets shall conform as closely as possible to the original topography. A combination of steep grades and curves shall be avoided. (70-4.3, C)	*(Not applicable)*	*(Not applicable)*
Road width	No categories addressed OR Major and minor categories, 24-30'	Wide, medium, narrow categories. 22-24' max, plus 2' shoulders	Wide, medium, narrow, and alley categories. 20-24' widest for 2 travel lanes, 18-20' low traffic residential neighborhood, plus 2' shoulders. Allow alleys and other low traffic or secondary emergency access and all shoulders to use alternative, permeable materials.	*(Not applicable)*	30 feet for major streets and cul-de-sacs, 24 feet for minor streets (70-4.3, I3)	*(Not applicable)*	*(Not applicable)*
Road ROW width	ROW Width not addressed OR 50-75', fully cleared and graded	40-50', some flexibility in extent of clearing	20-50'depending on road type	*(Not applicable)*	60 feet for major roads, 50 feet for minor roads (70-4.3, I1) Under certain circumstances the Board may require an increase in the right-of-way widths by up to 10 feet to accommodate walkway construction and preserve natural features. (70-4.3, I3)	*(Not applicable)*	*(Not applicable)*
Access Options	Common drives not addressed, No common drives allowed, Dead end allowed with limit on length and # of units	Allow dead end with limit on length and # of units. Allow common drives up to 2-3 units	Allow one way loop streets. Allow common drives up to 4 units, and alleys and rear-loading garages where suitable.	comon driveways allowed by special permit in all zoning districts pending the driveway meets bylaw standards with no limit on the number of units it may serve (Art 9)	not addressed but addressed in new zoning bylaw amendment 9	*(Not applicable)*	*(Not applicable)*
Dead Ends/Cul-de-sacs	No standards addressed OR 120 ft or more minimum turnaround	Minimize end radii – 35 ft	Allow hammerhead turnaround	*(Not applicable)*	The minimum paved roadway diameter of turnarounds shall be 110 feet with an outside diameter roadway dedication of 130 feet (70-4.3, K2)	*(Not applicable)*	*(Not applicable)*
Cul-de-sacs	No standards addressed OR Full pavement standard	Encourage center landscaping with bioretention	Require center landscaping with bioretention	*(Not applicable)*	The Planning Board may require, at its option, because of topographic or other considerations, a larger turnaround with a natural traffic island. (70-4.3, K2) Culs-de-sac shall be constructed with a landscaped island and surface treatment as detailed in the "typical cul-de-sac" drawing, Detail A, as shown in the Appendix (70-4.3, K5)	*(Not applicable)*	*(Not applicable)*
Curbing	No standards addressed OR Curbing required full length both sides of road	Allow curb breaks or curb flush with pavement to enable water to flow to vegetated LID features	Open drainage with roadside swales and no curbs preferred	*(Not applicable)*	Vertical and slope granite curbing shall be installed along both edges of all roadways in the subdivision. Vertical granite curb shall be installed at all intersections and in locations where the road grade exceeds 5%. Slope granite curb shall be installed at all other locations.(70-4.8) also mentioned at 70-5.9	Not addressed	*(Not applicable)*
Roadside Swales	Not addressed OR Allowed as an option	Preferred over closed drainage	Preferred, with criteria for proper design. Adoption of technical specifications and design templates for green infrastructure recommended	*(Not applicable)*	not addressed	alllowed as an option but not preferred (14-10, A17)	*(Not applicable)*
Utilities	Off sets required contributing to wide road ROWs	Not specified - flexible	Allow under road, sidewalks or immediately adjacent to roads to enable placement of roadside swales.	*(Not applicable)*	No utility mains shall be installed under the pavement except at intersections, and stubs crossing the street shall be installed prior to paving. All underground utilities and other structures located within the right-of-way shall be installed in the right-of-way before completion of the street subgrade and before placing of the subbase, pavement and sidewalk. (70-5.5) Where topography or other conditions are such as to make impractical the inclusion of drainage facilities within road rights-of-way, perpetual and unobstructed easements at least 30 feet in width for drainage facilities shall be provided across property outside the road lines and with satisfactory access to the road. Easements shall be indicated on the plan. Drainage easements shall extend from the road to a natural watercourse or to other drainage facilities. (70-4.4, C1)	*(Not applicable)*	*(Not applicable)*
Sidewalks	Material not addressed OR Concrete or bituminous required	Some flexibility in material and design	Prefer permeable pavement or permeable pavers	*(Not applicable)*	Bituminous of Cement sidewalks required (70-4.9, DEF) Within a subdivision, sidewalks shall be separated from the road pavement by a seeded grass plot a minimum of five feet in width and may be made of either cement concrete or bituminous concrete. (70-5.7, C)	*(Not applicable)*	*(Not applicable)*
Sidewalk location	Required both sides of road	Allow on only 1 side of road especially in low density neighborhoods	Prefer siting with land contours and for best pedestrian utility (e.g. connect with common areas and shared open spaces) – not necessarily immediately parallel to road.	*(Not applicable)*	Sidewalks shall be constructed on one side of the roadway in a subdivision of 10 or less homes. Sidewalks shall be constructed on both sides of the roadway in a subdivision of 11 or more homes. The Board may waive the sidewalk requirement entirely, but grass strips shall be extended in their place. Sidewalks shall be constructed on both sides of the roadway in all planned unit developments. (70-4.9, C) Street pavement shall be constructed for the full length of all streets within the subdivision. The center line of all streets shall coincide with the center line of the street right-of-way unless a deviation is approved by the Planning Board. The widths of the street and pavement shall be in accordance with the approved plan. (70-5.2, G)	*(Not applicable)*	*(Not applicable)*
Sidewalk drainage	Draining to road, closed drainage system required	Not addressed	Disconnect drainage from road system – e.g.adjacent green strips or within vegetated areas that can absorb sheet flow	*(Not applicable)*	not addressed	*(Not applicable)*	*(Not applicable)*

GOAL 4: ADOPT GREEN INFRASTRUCTURE STORMWATER MANAGEMENT PROVISIONS							
Rooftop runoff	Not addressed OR Prohibit directing clean roof runoff into closed municipal drainage systems.	Allow clean roof runoff to be directed to landscaped or naturally vegetated areas capable of absorbing without erosion, or infiltration	Require directing clean roof runoff to landscaped or naturally vegetated areas capable of absorbing, or infiltration	*(Not applicable)*	not addressed	not addressed	*(Not applicable)*
Overall stormwater design; piping and surficial retention vs. LID	Conventional stormwater system design standards	Encourage LID features and BMPs; design standards often not specified	LID design standard encouraging infiltration, allowing surficial ponding of retained runoff for up to 72 hours; systems designed for larger volume storms, accounting for future precipitation predictions; credit for green roofs towards stormwater requirements. Following best practice may also help communities comply with MS4 permit requirements	*(Not applicable)*	conventional stormwater design standards throughout	LID site planning and design strategies must be implemented unless infeasible in order to reduce the discharge of stormwater from development sites. B. Stormwater management system design shall be consistent with, or more stringent than, the requirements of the 2008 Massachusetts Stormwater Handbook (14-11) Encourage the use of nonstructural stormwater management and low-impact development practices, such as reducing impervious cover, preserving green space, using bio-retention areas, rain gardens, and vegetated filter strips; (14-10, B)	*(Not applicable)*
Site Plan Requirements	LID not addressed	Encourage use of LID features in site design - such as reduced imperviousness, maintaining natural hydrology, preserving open space, and rainwater reuse	Include bioretention and other vegetated LID features in site landscaping/open space requirements. Following best practice may also help communities comply with MS4 permit requirements. See section 2.3.5 of the MS4 permit for more information	Drainage. The Planning Board shall encourage the use of "soft" (non-structural) stormwater management techniques (such as swales) and other drainage techniques that reduce impervious surface and enable infiltration where appropriate in CSD (50-10.2, b)	*(Not applicable)*	LID site planning and design strategies must be implemented unless infeasible in order to reduce the discharge of stormwater from development sites. (14-11, A) Encourage the use of nonstructural stormwater management and low-impact development practices, such as reducing impervious cover, preserving green space, using bio-retention areas, rain gardens, and vegetated filter strips; (14-10, B6) Evaluate opportunities for using low-impact design (LID) and green infrastructure (14-10, B5)	*(Not applicable)*
Allow easy siting of LID features (bioretention, swales, etc.)	Not addressed OR Require waivers from subdivision standards	Encouraged along road ROW	Allowed on lots, common open space, or road ROW, easement recorded. For commercial development, allow an increase in floor area ratio or other developmental incentives for green roofs	not addressed	not addressed	*(Not applicable)*	*(Not applicable)*
Permeable paving	Not addressed OR Require waivers from subdivision standards	Allowed on private residential lots for parking, patios, etc.	Allowed for residential drives, parking stalls, spillover parking spaces, emergency access ways (with proper engineering support for emergency vehicles) Two track design allowed for driveways and secondary emergency access ways (where required).	*(Not applicable)*	not addressed	not addressed	*(Not applicable)*
Stormwater management O&M plan	Typically only addressed if municipality has a stormwater or LID bylaw, or for areas subject to wetlands permitting	Required	Required, contents specified in alignment with current MassDEP Stormwater Handbook. Following best practice may also help communities comply with MS4 permit requirements	*(Not applicable)*	not addressed	An operation and maintenance plan (O&M plan) is required at the time of application for all projects. No preferred practices (14-10, D)	*(Not applicable)*
Construction Erosion and Sedimentation Plan, and stormwater control	Basic general requirements	Required, contents specified - the site design process should include soil erosion and sedimentation control measures	Goes beyond minimum NPDES requirements. Requires minimization of site disturbance, reduction of construction waste, control measures not removed until proof of soil stabilization or reestablishment of vegetation. Written procedures for site inspection and enforcement included. Following best practice may also help communities comply with MS4 permit requirements. See section 2.3.5 of the MS4 permit for more information	erosion control measures required in site plan review (site plan review required for any building over 2000 gfa) (Art 12 ammendment): Landscaping plan, showing the limits of work, existing tree lines, and all proposed landscape features and improvements, including screening, outdoor lighting, planting areas with size and type of stock for each shrub or tree, and including proposed erosion control measures (50-13.5, A5)	Before approval of a subdivision, the developer shall prepare and submit for approval of the Planning Board or its agent an erosion control plan covering all phases of construction for the area in which work is to be performed. (70-5.4)	Required for all construction activies greater than 20,000 sq ft: The stormwater management and erosion and sediment control plan shall contain sufficient information to describe the nature and purpose of the proposed development, pertinent conditions of the site and the adjacent areas, proposed erosion and sedimentation controls and proposed stormwater management controls. The applicant shall submit such material as is necessary to show that the proposed development will comply with the design requirements listed below. (14-10, A)	*(Not applicable)*
Stormwater discharge detection & elimination	Not addressed	Discharges and connections noted and/or limits set on quantity and quality	Illicit discharges and connections are prohibited and enforced. Following best practice may also help communities comply with MS4 permit requirements. Find more information in section 2.3.4.a of the MS4 permit	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Post- construction stormwater management and drainage patterns	Not addressed	Allow LID	Resemble pre-existing conditions of volume, velocity, quality and location, as nearly as possible, requiring LID to the max extent feasible. Retain vol of runoff >1in. per sq.ft. of impervious surface and/or remove 90% TSS post-construction & 50% TP generated on the site for new development, or >0.8in. per sq.ft and/or remove 80% TSS and 50% of TP load for redevelopment. Following best practice may also help communities comply with MS4 permit requirements.	*(Not applicable)*	The Planning Board requires that the drainage systems for all subdivisions meet all requirements of the Massachusetts Stormwater Policy Act and the Town Stormwater Management Bylaw and regulations. Therefore, the following technical publications, latest edition, are adopted as part of these regulations: (70-4.4, A1),	Stormwater management systems on new development 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 phosphorus (TP) related to the total post-construction impervious surface area on the site. Average annual pollutant removal requirements in Subsection C are achieved through one of the following methods:, 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 TSS related to the total post-construction impervious area on the site and 50% of the average annual load of TP related to the total post-construction impervious surface area on the	*(Not applicable)*

As-built surveys	Not addressed	Recommended	Required, with written instructions for process; electronic submittal allowed	*(Not applicable)*	The applicant shall submit as-built plans and street acceptance plans in accordance with the definitive plan and recordable in the Registry of Deeds, which shall include the following: (70-3.4, J2h) As-built drawings shall indicate all underground utility lines and surface components such as valves, shutoffs, transformers, poles, distribution and junction boxes as constructed. (70-4.7) required, no detailed instructions for process or electronic submittal allowed, If the Planning Board determines that said construction, installation, or filing of "as-built" and "street acceptance" plans has been completed, it shall within 45 days release the interest of the Town in such performance guarantee and return the same to the person or persons who furnished same, or, in the case of covenant it shall issue a written release of the covenant on a properly executed release form. (70-3.4, 6)	Upon completion of the work, the permittee shall submit a report (including certified as-built construction plans) from a professional engineer (PE) or a certified professional in erosion and sediment control (CPESC), certifying that all erosion and sediment control devices, and approved changes and modifications, have been completed in accordance with the conditions of the approved permit. As-built drawings should be submitted no later than one year after completion of construction projects. The as-built drawings must depict all on-site controls, both structural and non-structural, designed to manage the stormwater associated with the completed site (post-construction stormwater management). Any discrepancies should be noted in the cover letter. (14-14, A), does not detail instructions or process	*(Not applicable)*
Intra-departmental communication and coordination	Not addressed	Informally or loosely occurring	Required for plan review and/or permit approvals	This bylaw shall be administered and enforced by the Building Inspector/Zoning Enforcement Officer. (50-14.1), There is hereby established a Board of Appeals in the Town of Groveland consisting of five regular members to be appointed by the Board of Selectmen, as provided in MGL c. 40A. Three associate members shall be appointed in like manner to serve, upon designation by the Chairman of the Board, in case of vacancy, inability to act, or conflict of interest on the part of a member of said Board. (50-14.4), The Planning Board and the Board of Selectmen may jointly appoint an Associate Member to the Planning Board as provided in MGL c. 40A, § 9. (50-14.5) some level of collaboration between building inspector, board of appeals, and their associate members	The planning Board will establish the order of the required inspections and will require satisfactory completion of each individual step before the developer proceeds to the next., building inspector issues permits for building errection - no discussion of enforcement or fines (70-6.4). no intra-departmental coordination addressed	The Board or an authorized agent of the Board shall enforce this bylaw, regulations, orders, violation notices, and enforcement orders, and may pursue all noncriminal dispositions for such violations. (14-15, A) no statement of intra-departmental coordination	Upon request, the Commission, the Board of Selectmen and the Town Counsel shall take legal action for enforcement under civil law. Upon request of the Commission, the Chief of Police shall take legal action for enforcement under the criminal law. (30-3.4, A3) opportunity for intra-departmental coordination
Enforcement	No	Yes	Yes with fines. Same entity should oversee permit approvals and enforcement	The Building Inspector/Zoning Enforcement Officer shall institute and take any and all such action as shall be necessary to enforce full compliance with any and all of the provisions of this bylaw and of building and occupancy permits and variances issued thereunder, including notification of noncompliance and request for legal action through the Board of Selectmen to the Town Counsel. The penalty for a violation of any provision of this bylaw shall be $100 for the first offense, $200 for the second offense, and $300 for each subsequent offense. (50-14.3 and 50-14.2)	The Planning Board will establish the order of the required observations and will require satisfactory completion of each individual step before the developer proceeds to the next. In order to verify conformance with specifications, the Planning Board or its agent may require tests to be done by an independent testing lab at the developer's expense, as a condition for approval. (70-6.4) Failure by the developer or his contractors to comply with the observation procedure may necessitate removal of improvements at the expense of the applicant or rescission of the approval of the plan in accord with MGL c. 41, § 81W. (70-6.4 F)	The Board or an authorized agent of the Board shall enforce this bylaw, regulations, orders, violation notices, and enforcement orders, and may pursue all noncriminal dispositions for such violations. (14-15, A) The Planning Board or authorized agent shall be the enforcing person. The penalty for the first violation shall be $250. The penalty for the second violation shall be $300. The penalty for the third and subsequent violations shall be $300. Each day or part thereof that such violation occurs or continues shall constitute a separate offense. (14-15, F)	The Commission shall have authority to enforce this bylaw, its regulations and permits issued hereunder by violation notices, administrative orders and civil and criminal court actions, and by noncriminal disposition pursuant to MGL c. 40, § 21D. Any person who violates provisions of this bylaw may be ordered to restore the property to its original condition and take other action deemed necessary to remedy such violations, or may be fined, or both. (30-3.4, A2) Any person who violates any provision of this bylaw, or regulations, permit or administrative orders issued thereunder, shall be punished by a fine of not more than $300. Each day or portion thereof during which a violation continues, or unauthorized fill or other alteration remains in place, shall constitute a separate offense, and each provision of the bylaw, regulations, permits or administrative orders violated shall constitute a separate offense. (30-3.4, B)
GOAL 5: ENCOURAGE EFFICIENT PARKING							
Parking	Specific minimums set based on projected maximum use times	Encourage minimum # needed to serve routine use (e.g. 2/residential unit with any additional/visitors parking behind in driveway or on street.	Establish Maximum Parking spaces allowed. Do not require more than 2/residence. Allow tenants separate, optional lease agreements for parking.	1 space per dwelling unit with 1 or fewer bedrooms; 2 spaces per dwelling unit with 2 or more bedrooms for residences (50-9.1, B), no maximums or minimums, just required parking spaces for each type of establishment (50-9.1, B).	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Commercial Parking	Specific minimums set based on projected maximum use times adding all on-site uses together.	Some flexibility to reduce minimums based on street or other available nearby parking or transit.	Allowed shared parking for uses with different peak demand times. Provide model agreements/deed restrictions. Reduce parking requirements near transit. Limit parking stall size (9ftx18ft max), with up to 30% smaller for compact cars	Shared parking allowed for uses where it is evident that such facilities shall continue to be available for the several buildings or uses and where the parking provided meets all of the requirements of this article for each of the uses in the combination (50-9.2) Parking stall size limited to 9ftx20ft (50-9.3, A) No mention of parking reduction near transit, special permit allowed for use of a common parking lot for separate uses having peak demands occurring at different times (50-9.4, A) no mention of compact cars	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
LID in Parking Areas	LID not addressed OR Require waivers e.g. for planting islands to drain down rather than built up surrounded by curbs	Allow LID/bioretention within parking areas.	Require landscaping within parking areas, as LID/bioretention, at a minimum of 10% of the interior area landscaped and a minimum of 25 square feet for island planting areas.	No more than 20 spaces shall be provided in a row without separation by a landscaped area of at least eight feet. In the case of double rows, this separation shall mean 20 spaces on each side of the bay areas., Parking areas containing over 20 spaces shall have at least one shade tree per eight parking spaces. Where a sidewalk abuts a parking area, there shall be a minimum of a three-foot grass strip. Low-impact development techniques such as bio-retention areas and infiltration shall be used where feasible. (50-9.3, I, J)	not addressed	not addressed	*(Not applicable)*

Hamilton

Factors	Needs Improvement	Improved	Optimal	TOWN OF HAMILTON ZONING BYLA	Community's Subdivision Rules & Regulations	Stormwater Management P	CHAPTER XXIX STORMWATI	CHAPTER XXX ILLICIT DISCHARGE DETECTION AND ELIMINATION BY-LAW
				https://www.hamiltonma.gov/wp-content/uploads/2021/08/Zoning-Bylaw-Final-August-2021.pdf	https://www.hamiltonma.gov/government/planning-board/subdivision-regulations/	https://www.hamiltonma.gov/wp-content/uploads/2016/12/Stormwater-Management-Permit-Rules-Regulations-11-16-2021.pdf	https://www.hamiltonma.gov/government/board-of-selectmen/bylaws/	
GOAL 1: PROTECT NATURAL RESOURCES AND OPEN SPACE								
Soils managed for revegetation	Not addressed	Limitations on removal from site, and/or requirements for stabilization and revegetation	Prohibit removal of topsoil from site. Require rototilling and other prep of soils compacted during construction	Open Space and Farmland Preservation Development: The landscape shall be preserved in its natural state, insofar as practicable, by minimizing tree and soil removal. The grade changes shall be in keeping with the general appearance of the neighboring developed areas. The orientation of individual building sites shall be such as to maintain maximum natural topography and cover. Topography, tree cover, and natural drainage ways shall be treated as fixed determinants of road and lot configuration rather than as malleable elements that can be changed to follow a preferred development scheme;	Not addressed	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Limit clearing, lawn size, require retention or planting of native vegetation/naturalized areas	Not addressed OR General qualitative statement not tied to other design standards	Encourage minimization of clearing/ grubbing	Require minimization of clearing/grubbing with specific standards	Senior Housing: Minimizing Disturbance. The applicant is encouraged to maintain as much of the site as possible in its natural state. The applicant is urged to incorporate horticultural and landscape design that	Not addressed	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Require native vegetation and trees	Not addressed OR General qualitative statement	Mixture of required plantings of native and nonnative	Require at least 75% native plantings	Senior Housing: Low Impact Development. The use of low-impact development techniques is required, where applicable. The applicant shall employ meaningful low impact techniques which will result in less impervious area, direction of roof runoff toward rain gardens and swales, and plantings indigenous to the area. The use of recycled or recaptured rainwater is encouraged. A Low Impact Development Handbook and other references are available from the Planning Board Office.	Not addressed	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
GOAL 2: PROMOTE EFFICIENT, COMPACT DEVELOPMENT PATTERNS AND INFILL								
Lot size	Not addressed OR Required minimum lot sizes	OSRD/NRPZ preferred. Special permit with incentives to utilize	Flexible with OSRD/NRPZ by right preferred option	Minimums required by zone Open Space and Farmland Preservation Development: In the R-IA, R-IB, or R-A Districts, an applicant may obtain a Special Permit from the Planning Board for an OSFPD. An OSFPD is encouraged for developments which involve ten (10) or more acres or five (5) or more Dwelling units but also is available for smaller developments. An OSFPD special permit allows the applicant a greater number of Lots or Dwelling units on the site than allowed under a conventional subdivision in return for the applicant providing at least 50% of the total land area as permanently protected common open space as well as other benefits, all on terms and conditions further described in this Section 8.	All lots shall conform in area, dim	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Setbacks	Not addressed OR Required minimum front, side, and rear setbacks	Minimize, allow flexibility	Clear standards that minimize and in some instances eliminate setbacks	Minimums required by zone	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Frontage	Not addressed OR Required minimum frontage for each lot/unit	Minimize especially on curved streets and cul-de-sacs	No minimums in some instances, tied into other standards like OSRD design and shared driveways.	Minimums required by zone	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Common driveways	Not addressed OR Not allowed, strict limitations	Allow for 2-3 residential units	Allow for up to 4 residential units, preferrably constructed with permeable pavers or pavement	Common Driveway. Except by Special Permit granted by the Planning Board, no more than two lots may share an access driveway. The Town may require two (2) or more lots to share a common driveway when, in the opinion of the Police Department, it is deemed necessary for safety purposes. Open Space and Farmland Preservation Development: Common/Shared Driveway. A common or shared driveway may serve a maximum of three. Dwelling units unless otherwise approved by the Planning Board, with input from public safety officials;	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
GOAL 3: SMART DESIGNS THAT REDUCE OVERALL IMPERVIOUSNESS								
Impervious cover limits and infiltration rates	Not usually addressed in zoning and subdivision regs for rural/suburban residential	Require no net increase in site run-off from pre- to post-development	Impervious cover limits tailored to the commuity and district type (i.e. <10% total impervious cover in rural districts, but higher in urban and redevelopment districts); post-development infiltration should be equal to or greater than pre-development. Following best practice may also help communities comply with MS4 permit requirements	Not addressed	Not addressed	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Street location	No standards addressed OR Numeric and geometric standards based primarily on vehicular travel and safety, with basic pedestrian requirements e.g. sidewalks	Flexibility in applying standards, to reduce area of impact, grading, avoid key natural features	OSRD design preferred by-right. Require locating streets to minimize grading and road length, avoid important natural features	Open Space and Farmland Preservation Development: Streets shall be designed and located in such a manner as to maintain and preserve natural topography, significant landmarks and trees, to minimize cut and fill, and to preserve and enhance views and vistas on or off the subject property.	Location a. All streets in the subdivision shall be designed so that, in the opinion of the Board, they will provide safe vehicular travel and natural drainage with no drainage pockets and so	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Road width	No categories addressed OR Major and minor categories, 24-30'	Wide, medium, narrow categories. 22-24' max, plus 2' shoulders	Wide, medium, narrow, and alley categories. 20-24' widest for 2 travel lanes, 18-20' low traffic residential neighborhood, plus 2' shoulders. Allow alleys and other low traffic or secondary emergency access and all shoulders to use alternative, permeable materials.	*(Not applicable)*	Widths a. The minimum width of streets shall be as follows: Major streets: 70 feet right of way and pavement of 44 feet Secondary streets: 60 feet right of way and pavement of 32 feet Minor streets: 50 feet right of way and pavement of 32 feet	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Road ROW width	ROW Width not addressed OR 50-75', fully cleared and graded	40-50', some flexibility in extent of clearing	20-50'depending on road type	*(Not applicable)*	Widths a. The minimum width of streets shall be as follows: Major streets: 70 feet right of way and pavement of 44 feet Secondary streets: 60 feet right of way and pavement of 32 feet Minor streets: 50 feet right of way and pavement of 32 feet	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*

Access Options	Common drives not addressed, No common drives allowed, Dead end allowed with limit on length and # of units	Allow dead end with limit on length and # of units. Allow common drives up to 2-3 units	Allow one way loop streets. Allow common drives up to 4 units, and alleys and rear-loading garages where suitable.	Common Driveway. Except by Special Permit granted by the Planning Board, no more than two lots may share an access driveway. The Town may require two (2) or more lots to share a common driveway when, in the opinion of the Police Department, it is deemed necessary for safety purposes. Open Space and Farmland Preservation Development: Common/Shared Driveway. A common or shared driveway may serve a maximum of three. Dwelling units unless otherwise approved by the Planning Board, with input from public safety officials;	Dead-end Streets a. Dead-end streets, whether temporary or permanent, shall not be longer than five hundred (500) feet unless, in the opinion of the Board, a greater length is necessitated by topography or other local conditions.	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Dead Ends/Cul-de-sacs	No standards addressed OR 120 ft or more minimum turnaround	Minimize end radii – 35 ft	Allow hammerhead turnaround	*(Not applicable)*	b. Dead-end streets shall be provided at the closed end with a turnaround having an outside street line diameter of at least one hundred and twenty (120) feet, and the easement for such turn around shall terminate upon construction of an extension of such street.	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Cul-de-sacs	No standards addressed OR Full pavement standard	Encourage center landscaping with bioretention	Require center landscaping with bioretention	*(Not applicable)*	Not addressed	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Curbing	No standards addressed OR Curbing required full length both sides of road	Allow curb breaks or curb flush with pavement to enable water to flow to vegetated LID features	Open drainage with roadside swales and no curbs preferred	*(Not applicable)*	3. Granite Curbstones shall be set at both intersecting corners of all roadways and streets along the full length of each rounded corner and	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Roadside Swales	Not addressed OR Allowed as an option	Preferred over closed drainage	Preferred, with criteria for proper design. Adoption of technical specifications and design templates for green infrastructure recommended	*(Not applicable)*	Not addressed	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Utilities	Off sets required contributing to wide road ROWs	Not specified - flexible	Allow under road, sidewalks or immediately adjacent to roads to enable placement of roadside swales.	*(Not applicable)*	1. Easements for utilities across lots or centered on rear or side lot lines shall be provided where necessary and shall be at least twenty (20) feet wide. 1. All utilities	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Sidewalks	Material not addressed OR Concrete or bituminous required	Some flexibility in material and design	Prefer permeable pavement or permeable pavers	*(Not applicable)*	Sidewalks, when required, shall not be less than five (5) feet in width, shall be constructed of a good binding gravel, six (6) inches in depth, and paved with two courses of bituminous concrete totaling two and one half (2 1/2) inches minimum thickness after compression (1 1/4 inch per course, finished)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Sidewalk location	Required both sides of road	Allow on only 1 side of road especially in low density neighborhoods	Prefer siting with land contours and for best pedestrian utility (e.g. connect with common areas and shared open spaces) – not necessarily immediately parallel to road.	Open Space and Farmland Preservation Development: On-site Pedestrian and Bicycle Circulation. Walkways and bicycle paths shall be provided to link residences with parking areas, recreation facilities (including parkland and open space) and adjacent land uses where appropriate.	Not addressed	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Sidewalk drainage	Draining to road, closed drainage system required	Not addressed	Disconnect drainage from road system – e.g. adjacent green strips or within vegetated areas that can absorb sheet flow	*(Not applicable)*	Not addressed	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
GOAL 4: ADOPT GREEN INFRASTRUCTURE STORMWATER MANAGEMENT PROVISIONS								
Rooftop runoff	Not addressed OR Prohibit directing clean roof runoff into closed municipal drainage systems.	Allow clean roof runoff to be directed to landscaped or naturally vegetated areas capable of absorbing without erosion, or infiltration	Require directing clean roof runoff to landscaped or naturally vegetated areas capable of absorbing, or infiltration	Open Space and Farmland Preservation Development: The peak rate of stormwater runoff and drainage design shall comply with the DEP Stormwater Management Policy. All structural surface stormwater management facilities shall be accompanied by a conceptual screening and landscape plan. The Planning Board shall encourage low impact development practices such as the use of "soft" (nonstructural) natural stormwater management techniques (such as open swales) and other drainage techniques that do not create impervious surfaces and that enable infiltration where appropriate. Water conservation measures, including but not limited to the use of rainwater retention systems, such as rain barrels and cisterns for water irrigation purposes, are also strongly encouraged; Senior Housing Development: Low Impact Development. The use of low-impact development techniques is required, where applicable. The applicant shall employ meaningful low impact techniques which will result in less impervious area, direction of roof runoff toward rain gardens and swales, and plantings indigenous to the area. The use of recycled or recaptured	Not addressed	Low Impact Development Techniques: XVII. The use of low-impact development techniques is required, where applicable. The Applicant shall employ meaningful low impact techniques which will result in less impervious area, direction of roof runoff toward rain gardens and swales, and plantings indigenous to the area. The use of recycled or recaptured rainwater is encouraged. The Stormwater Management Plan shall contain an evaluation of all low-impact development techniques considered during the design for the proposed development. (A Low Impact Development Handbook and other references are available from the Planning Board Office.)	*(Not applicable)*	*(Not applicable)*
Overall stormwater design; piping and surficial retention vs. LID	Conventional stormwater system design standards	Encourage LID features and BMPs; design standards often not specified	LID design standard encouraging infiltration, allowing surficial ponding of retained runoff for up to 72 hours; systems designed for larger volume storms, accounting for future precipitation predictions; credit for green roofs towards stormwater requirements. Following best practice may also help communities comply with MS4 permit requirements	Open Space and Farmland Preservation Development: The peak rate of stormwater runoff and drainage design shall comply with the DEP Stormwater Management Policy. All structural surface stormwater management facilities shall be accompanied by a conceptual screening and landscape plan. The Planning Board shall encourage low impact development practices such as the use of "soft" (nonstructural) natural stormwater management techniques (such as open swales) and other drainage techniques that do not create impervious surfaces and that enable infiltration where appropriate. Water conservation measures, including but not limited to the use of rainwater retention systems, such as rain barrels and cisterns for water irrigation purposes, are also strongly encouraged; Senior Housing Development: Low Impact Development. The use of low-impact development techniques is required, where applicable. The applicant shall employ meaningful low impact techniques which will result in less impervious area, direction of roof runoff toward rain gardens and swales, and plantings indigenous to the area. The use of recycled or recaptured	2. Drainage to take care of surface and sub-surface water of the roadway and adjoining land shall be provided with drains, catch basins, and manholes constructed as determined by the Planning Board and sufficient drainage rights secured for the Town. Drains shall be placed on both sides of the street, with catch basins at the bottom of inclines, at all low points, low corners, and not over 300 feet apart. The size of the drains shall be at least twelve (12) inches and shall be of good quality reinforced concrete pipe or its equal, and shall be sufficient for the proper drainage of the land. At least 3 feet of cover will be required over drains. The catch basins shall be 7 feet deep and 4 feet in diameter inside measurements and furnished with grates of a proper casting. Granite curb inlets conforming with the "Standard Specifications", Section F-3, will be required at every catch basin.	accordance with the Department of Environmental Protection's Stormwater Management Policy Include Hydrologic and hydraulic design calculations for the predevelopment and post-development conditions for the design storms specified in this Regulation. Such calculations shall include: I. Description of the design storm frequency, intensity and duration; time of concentration; II. Soil Runoff Curve Number (RCN) based on land use and soil hydrologic group; III. Peak runoff rates and total runoff volumes for each watershed area; IV. Information on construction measures used to maintain the infiltration capacity of the soil where any kind of infiltration is proposed; V. Infiltration rates, where applicable; VI. Culvert capacities;	Stormwater Management Manual 1. The Permit Authority will utilize the policy, criteria and information including specifications and standards of the latest edition of the Massachusetts Stormwater Management Policy to execute the provisions of this Bylaw. This Policy includes a list of acceptable stormwater treatment practices, including the specific design criteria for each. The Policy may be updated and expanded periodically, based on improvements in engineering, science, monitoring, and local maintenance experience. Unless specifically altered in the Regulations, stormwater treatment practices that are designed, constructed, and maintained in accordance with these design and sizing criteria will be presumed to be protective of Massachusetts water quality standards. 2. Stormwater Credit System. The Permit Authority may adopt a Stormwater Credit System as	*(Not applicable)*

Site Plan/Design Requirements	LID not addressed	Encourage use of LID features in site design - such as reduced imperviousness, maintaining natural hydrology, preserving open space, and rainwater reuse	Include bioretention and other vegetated LID features in site landscaping/open space requirements. Following best practice may also help communities comply with MS4 permit requirements. See section 2.3.5 of the MS4 permit for more information	Not addressed	Not addressed	Low Impact Development Techniques: XVII. The use of low-impact development techniques is required, where applicable. The Applicant shall employ meaningful low impact techniques which will result in less impervious area, direction of roof runoff toward rain gardens and swales, and plantings indigenous to the area. The use of recycled or recaptured rainwater is encouraged. The Stormwater Management Plan shall contain an evaluation of all low-impact development techniques considered during the design for the proposed development. (A Low Impact Development Handbook and other references are available from the Planning Board Office.)	*(Not applicable)*	*(Not applicable)*
Allow easy siting of LID features (bioretention, swales, etc.)	Not addressed OR Require waivers from subdivision standards	Encouraged along road ROW	Allowed on lots, common open space, or road ROW, easement recorded. For commercial development, allow an increase in floor area ratio or other developmental incentives for green roofs	Not addressed	Not addressed	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Permeable paving	Not addressed OR Require waivers from subdivision standards	Allowed on private residential lots for parking, patios, etc.	Allowed for residential drives, parking stalls, spillover parking spaces, emergency access ways (with proper engineering support for emergency vehicles) Two track design allowed for driveways and secondary emergency access ways (where required)	*(Not applicable)*	Not addressed	Not addressed	*(Not applicable)*	*(Not applicable)*
Stormwater management O&M plan	Typically only addressed if municipality has a stormwater or LID bylaw, or for areas subject to wetlands permitting	Required	Required, contents specified in alignment with current MassDEP Stormwater Handbook. Following best practice may also help communities comply with MS4 permit requirements	*(Not applicable)*	Not addressed	Operation and Maintenance Plan. I. An Operation and Maintenance plan ("O&M Plan") is required at the time of application for all larger projects. The maintenance plan shall be designed to ensure compliance with the Permit, this Bylaw and that the Massachusetts Surface Water Quality Standards, 314, CMR 4.00 are met in all seasons and throughout the life of the system. The Permit Authority shall make the final decision of what maintenance option is appropriate in a given situation. The Permit Authority will consider natural features, proximity of site to water bodies and wetlands, extent of impervious surfaces, size of the site, the types of stormwater management structures, and potential need for ongoing maintenance activities when making this decision. The O&M Plan shall remain on file with the Permit Authority and shall be an ongoing requirement. I. The O&M Plan shall include:	*(Not applicable)*	*(Not applicable)*
Construction Erosion and Sedimentation Plan, and stormwater control	Basic general requirements	Required, contents specified - the site design process should include soil erosion and sedimentation control measures	Goes beyond minimum NPDES requirements. Requires minimization of site disturbance, reduction of construction waste, control measures not removed	*(Not applicable)*	Not addressed	The design requirements of the Stormwater Management Plan shall include at a minimum but not be limited to the following:	*(Not applicable)*	*(Not applicable)*
Stormwater discharge detection & elimination	Not addressed	Discharges and connections noted and/or limits set on quantity and quality	Illicit discharges and connections are prohibited and enforced. Following best practice may also help communities comply with MS4 permit requirements. Find more information in section 2.3.4.a of the MS4 permit	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	I. PURPOSE Regulation of illicit connections and discharges to the municipal storm drain system is necessary for the protection of the town's water bodies and groundwater, and to safeguard the public health, safety, welfare and the environment. The objectives of this By-Law are: 1. to prevent Pollutants from entering the town's municipal separate storm drain system (MS4); 2. to prohibit illicit connections and unauthorized discharges to the MS4; 3. to require the removal of all such illicit connections; 4. to comply with state and federal statutes and regulations relating to stormwater discharges; and 5. to establish the legal authority to ensure compliance with the provisions of this By-Law through inspection, monitoring, and enforcement... 7. PROHIBITED ACTIVITIES A. Illicit Discharges. No person shall dump, discharge, cause or
Post- construction stormwater management and drainage patterns	Not addressed	Allow LID	Resemble pre-existing conditions of volume, velocity, quality and location, as nearly as possible, requiring LID to the max extent feasible. Retain vol of runoff >1in. per sq.ft. of impervious surface and/or remove 90% TSS post-construction & 50% TP generated on the site for new development, or >0.8in. per sq.ft. and/or remove 80% TSS and 50% of TP load for redevelopment. Following best practice may also help communities comply with MS4 permit requirements.	*(Not applicable)*	Not addressed	Projects shall be consistent with, or more stringent than, the requirements of the most current version of the Massachusetts Stormwater Handbook. In addition, the following requirements shall also be met: 2. Stormwater management systems on new development 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 Phosphorus (TP) related to the total post-construction impervious surface area on the site. 3. Average annual pollutant removal requirements shall be achieved through one of the following methods: 4. Installing BMPs that meet the pollutant removal percentages based on calculations developed consistent with EPA Region 1's BMP Accounting and	*(Not applicable)*	*(Not applicable)*

As-built surveys	Not addressed	Recommended	Required, with written instructions for process; electronic submittal allowed	*(Not applicable)*	An accurate "as-built" plan and profile of the roadway(s) and associated site improvements, prepared by a registered professional engineer and registered professional land surveyor, shall be submitted to the Board after completion of the construction and prior to any partial release. Said plan shall indicate the record location of all municipal services as actually installed. Sufficient ties, including depths shown as profiles, for the proper and accurate identification and location, shall be provided. Additional information to be provided includes, but is not limited to, the location and size of sewer pun\.p/lift stations, location and total storage provided of detention ponds, and other similar facilities...The as-built plan and profile shall bear the certification from both a Registered Professional Civil Engineer and Land Surveyor that all utilities shown thereon are as-built as to location and grade, that all stone bound improvements have been properly	13. A. At completion of the project, and not more than two (2) years following, the permitee shall submit an as-built stamped by a registered engineer for all structural and non-structural stormwater controls and treatment best management practices required for the site. The as-built will indicate all deviations from the plan. A letter certifying the completion will be issued before an occupancy permit is issued by the Building Inspector.	Upon completion of the work, the Applicant shall submit a report (including certified as-built construction plans, as outlined in Subdivision Regulations, Section IV.B.8.a), from a Registered Professional Engineer (P.E.), certifying that all erosion and sediment control devices, and approved changes and modifications, have been completed in accordance with the conditions of the approved permit. Any discrepancies should be noted in the cover letter.	*(Not applicable)*
Intra-departmental communication and coordination	Not addressed	Informally or loosely occurring	Required for plan review and/or permit approvals	Not addressed	Not addressed	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Enforcement	No	Yes	Yes with fines. Same entity should oversee permit approvals and enforcement	Not addressed	Not addressed	*(Not applicable)*	ENFORCEMENT of VIOLATIONS Which do not Fall under a Stormwater Management Permit A. In any instance where a SWM Permit has not been applied for or granted, a disturbance of earth equal to or greater than one acre of land shall constitute a violation of this bylaw section. The Planning Board, or an authorized agent of the Planning Board, shall enforce this bylaw, regulations, orders, violation notices, and enforcement orders, and may pursue all civil and criminal remedies for such violations. B. Orders 1. The Planning Board or an authorized agent of the Planning Board may issue a written order to enforce the provisions of this by-law or the regulations thereunder, which may include: (a) a requirement to cease and desist from the land-disturbing activity until there is compliance with the bylaw and provisions of the land-disturbance permit;	A. The Town Manager shall enforce this By-Law, regulations, orders, violation notices, and enforcement orders, and may pursue all civil and criminal remedies for such violations. B. Civil Relief. If a person violates the provisions of this By-Law, regulations, permit, notice, or order issued thereunder, the Board of Selectmen may seek injunctive relief in a court of competent jurisdiction restraining the person from activities which would create further violations or compelling the person to perform abatement or remediation of the violation. C. Orders. The Town Manager may issue a written order to enforce the provisions of this By-Law or the regulations thereunder, which may include: (a) elimination of illicit connections or discharges to the MS4; (b) performance of monitoring, analyses, and reporting; (c) that unlawful discharges, practices, oroperations shall cease
GOAL 5: ENCOURAGE EFFICIENT PARKING								
Parking	Specific minimums set based on projected maximum use times	Encourage minimum # needed to serve routine use (e.g. 2/residential unit with any additional/visitors parking behind in driveway or on street.	Establish Maximum Parking spaces allowed. Do not require more than 2/residence. Allow tenants separate, optional lease agreements for parking.	One (1) for each Dwelling unit OSRD: Each Dwelling Unit shall be served by two (2) off-street parking spaces. Parking spaces in front of garages may count in the computation. All parking areas with greater than four spaces shall be screened from view from the road. Residential structures should be oriented toward the street serving the premises and not the required parking area;	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Commercial Parking	Specific minimums set based on projected maximum use times adding all on-site uses together.	Some flexibility to reduce minimums based on street or other available nearby parking or transit.	Allowed shared parking for uses with different peak demand times. Provide model agreements/deed restrictions. Reduce parking requirements near transit. Limit parking stall size (9ftx18ft max), with up to 30% smaller for compact cars	One (1) for each three hundred (300) square feet or fraction thereof of Business Gross Floor Area, excluding basement storage area	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
LID in Parking Areas	LID not addressed OR Require waivers e.g. for planting islands to drain down rather than built up surrounded by curbs	Allow LID/bioretention within parking areas.	Require landscaping within parking areas, as LID/bioretention, at a minimum of 10% of the interior area landscaped and a minimum of 25 square feet for island planting areas.	All off-street parking areas and loading areas, other than those provided for dwellings butincluding drives and other access ways, shall be treated with bituminous or other surfacing material, and shall be provided where necessary with appropriate bumper and wheel guards.	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*

Haverhill

Factors	Needs Improvement	Improved	Optimal	Zoning Ordinance	Subdivision Rules & Regulations	Wetland Ordinance	Stormwater Bylaw and regulations
GOAL 1: PROTECT NATURAL RESOURCES AND OPEN SPACE							
Soils managed for revegetation	Not addressed	Limitations on removal from site, and/or requirements for stabilization and revegetation	Prohibit removal of topsoil from site. Require rototilling and other prep of soils compacted during construction	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. (6.3.3., 4e1) During construction, 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. (6.3.3., 4e4) The removal of sand, gravel, minerals or other earth materials from any site in the City of Haverhill except that which is clearly incidental to the construction of a structure shall be allowed only after a special permit therefor has been granted by the Zoning Board of Appeals. (7.2.1) All topsoil and subsoil shall be	not addressed besides "the entire area must be cleaned up as to leave a neat and orderly appearance free from debris and other objectionable materials (VI, M)	Except as permitted by the Conservation Commission or as provided in this chapter, no person shall commence to remove, fill, dredge, build upon, degrade, discharge into or otherwise alter the following resource areas: any freshwater or coastal wetlands; marshes; wet meadows; bogs; swamps; vernal pools; banks; seeps; springs; replication areas; reservoirs; lakes; ponds of any size; rivers; streams; creeks; wetlands not bordering a body of water; lands under water bodies; lands subject to flooding or inundated by groundwater or surface water; lands subject to tidal action, coastal storm flowage or flooding; poorly drained and very poorly drained soils; the possible depletion	Stormwater management design criteria and performance standards shall be the same as those in the Massachusetts Storm Water Management Standards. (219-9) Plan to use sediment barriers along contour lines, with a focus on areas where short-circuiting(i.e., flow around the barrier) may occur, Use organic matting for temporary slope stabilization and synthetic matting for permanent stabilization, Construction should proceed progressively on the site in order to minimize exposed soil, and disturbed areas should be restored as soon as possible after work has been completed. 7. Stockpiles shall be stabilized by seeding or mulching if they are to remain for more than two weeks. Excessive soil compaction with heavy machinery shall be avoided, to the extent
Limit clearing, lawn size, require retention or planting of native vegetation/naturalized areas	Not addressed OR General qualitative statement not tied to other design standards	Encourage minimization of clearing/ grubbing	Require minimization of clearing/grubbing with specific standards	Non res and mixed use: The proposed development shall maximize and retain open space, and shall be integrated into the natural landscape, shall minimize adverse environmental impacts to such features as wetlands, floodplains, and water resource protection recharge areas and shall minimize tree, vegetation, and soil removal, and grade change. (6.3.1., 3) o the extent practicable, the proposed development shall be located to preserve and enhance the natural features of the site, to avoid disturbances of environmentally sensitive areas, to minimize adverse impacts of development on adjoining properties, to minimize the alteration of the natural features of the site and to preserve and enhance scenic points, historic buildings and	general qualitative statement: due regard shall be shown for all natural features which if preserved will add attractiveness, distinctiveness, and value to the subdivision or city (V, 5.4, J1)	Except as permitted by the Conservation Commission or as provided in this chapter, no person shall commence to remove, fill, dredge, build upon, degrade, discharge into or otherwise alter the following resource areas: any freshwater or coastal wetlands; marshes; wet meadows; bogs; swamps; vernal pools; banks; seeps; springs; replication areas; reservoirs; lakes; ponds of any size; rivers; streams; creeks; wetlands not bordering a body of water; lands under water bodies; lands subject to flooding or inundated by groundwater or surface water; lands subject to tidal	Existing vegetation should be maintained on site as long as possible (post-con doc)
Require native vegetation and trees	Not addressed OR General qualitative statement	Mixture of required plantings of native and nonnative	Require at least 75% native plantings	Non res and mixed use developments: Proposed landscaping shall require native and drought-tolerant species and prohibit invasive or nonn ative plants. (6.3.1., 3) Clearing of vegetation and alteration of topography shall be replicated with native vegetation planted in disturbed areas as needed to enhance or restore wildlife habitat. (6.3.3., 5b)	The species and variety of trees planted on grass strips shall be approved by highway superintendent/Tree warden (V, 5.1)	Except as permitted by the Conservation Commission or as provided in this chapter, no person shall commence to remove, fill, dredge, build upon, degrade, discharge into or otherwise alter the following resource areas: any freshwater or coastal wetlands; marshes; wet meadows; bogs; swamps; vernal pools; banks; seeps; springs; replication	Vegetated and wooded buffers shall be protected and left undisturbed to the extent possible. (post-con doc)
GOAL 2: PROMOTE EFFICIENT, COMPACT DEVELOPMENT PATTERNS AND INFILL							
Lot size	Not addressed OR Required minimum lot sizes	OSRD/NRPZ preferred. Special permit with incentives to utilize	Flexible with OSRD/NRPZ by right, preferred option	required minimumlot sizes in all districts ranging from 1,000 - 80,000 sq ft (appendix B, table 2) Flexible development (similar to ORSD) permitted by special permit from city council with special inscentives to utilize: In accordance with the following provisions, a flexible development project may be created, whether a subdivision or not, from any parcel or set of contiguous parcels held in common ownership with not less than three acres and located entirely within the following districts: RS, RR, RL, RM, and CN. (8.4.2.) (8.4.7.) Variable open space required throughout different districts (appendix B, table 2)	*(Not applicable)*	*(Not applicable)*	Land disturbance of one acre or more, associated with development or redevelopment of structures requires a stormwater permit (219-6)
Housing density	Multi-family housing not allowed, or only in/adjacent to commercial and industrial uses	Multi-family and cluster developments allowed by special permit	Multi-family housing allowed by right in most residential areas; cluster developments encouraged with density bonuses for LID features and no maximum lot coverage	Three family and multi family housing allowed by special permit from city council in RH, RU, CN (only multi), CG, CC (only multi) (Appendix A, table 1)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Setbacks	Not addressed OR Required minimum front, side, and rear setbacks	Minimize, allow flexibility	Clear standards that minimize and in some instances eliminate setbacks	minimum front, side, and rear setbacks required for almost all districts. Front setbacks range from 20-40 sq ft, sides range from 10-25 sq ft, rear ranges from 20-40 sq ft (appendix B, table 2)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Frontage	Not addressed OR Required minimum frontage for each lot/unit	Minimize especially on curved streets and cul-de-sacs	No minimums in some instances, tied into other standards like OSRD design and shared driveways.	minimum lot frontage required in all districts, ranging from 50-200 sq ft (appendix b, table 2)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Common driveways	Not addressed OR Not allowed, strict limitations	Allow for 2-3 residential units	Allow for up to 4 residential units, preferrably constructed with permeable pavers or pavement	No driveway shall be used to provide access to more than two residential dwellings. Any driveway used to provide access to more than one residential dwelling shall not exceed 200 feet in length. (6.1.14)	not addressed	*(Not applicable)*	*(Not applicable)*
GOAL 3: SMART DESIGNS THAT REDUCE OVERALL IMPERVIOUSNESS							
Impervious cover limits and infiltration rates	Not usually addressed in zoning and subdivision regs for rural/suburban residential	Require no net increase in site run-off from pre- to post-development	Impervious cover limits tailored to the commuity and district type (i.e. <10% total impervious cover in rural districts, but higher in urban and redevelopment districts); post-development infiltration should be equal to or greater than pre-development. Following best practice may also help communities comply with MS4 permit requirements	<10% of lot permitted to be impervious in WSPOD: One individual single-family dwelling unit which is within the WSPOD District but not within 500 feet of the water bodies outlined in Subsection D(3)(a)[5],[1] Places of worship, nonprofit educational development, trade schools, nursery schools, nonprofit schools, colleges or universities and City governmental buildings, provided that no more than 10% of a building lot, or 2,500 square feet, whichever is greater, is rendered impervious, (9.2.5.)	not addressed	*(Not applicable)*	not addressed

note: Haverhill does not have stormwater regulations, but they do have documents in their SWMP which detail stormwater prevention measures. Unclear if these documents are legally binding

Street location	No standards addressed OR Numeric and geometric standards based primarily on vehicular travel and safety, with basic pedestrian requirements e.g. sidewalks	Flexibility in applying standards, to reduce area of impact, grading, avoid key natural features	OSRD design preferred by-right. Require locating streets to minimize grading and road length, avoid important natural features	*(Not applicable)*	numeric and geometric standards (intersections at right angles, vegetation removed if needed) (V, 5.1) *all design standards may be altered if an open space cluster project is proposed*	*(Not applicable)*	*(Not applicable)*
Road width	No categories addressed OR Major and minor categories, 24-30'	Wide, medium, narrow categories 22-24' max, plus 2' shoulders	Wide, medium, narrow, and alley categories. 20-24' widest for 2 travel lanes, 18-20' low traffic residential neighborhood, plus 2' shoulders. Allow alleys and other low traffic or secondary emergency access and all shoulders to use alternative, permeable materials.	*(Not applicable)*	32 feet for collector roads in residential zones, 28 feet for local access roads in res zones, 40 feet in bus and ind districts (V, 5.1). *all design standards may be altered if an open space cluster project is proposed*	*(Not applicable)*	*(Not applicable)*
Road ROW width	ROW Width not addressed OR 50-75', fully cleared and graded	40-50', some flexibility in extent of clearing	20-50'depending on road type	*(Not applicable)*	residential: 50 feet, business and industrial: 60 feet (V, 5.1) the board may change width as deemed necessary *all design standards may be altered if an open space cluster	*(Not applicable)*	*(Not applicable)*
Access Options	Common drives not addressed, No common drives allowed, Dead end allowed with limit on length and # of units	Allow dead end with limit on length and # of units. Allow common drives up to 2-3 units	Allow one way loop streets. Allow common drives up to 4 units, and alleys and rear-loading garages where suitable.	No driveway shall be used to provide access to more than two residential dwellings. Any driveway used to provide access to more than one residential dwelling shall not exceed 200 feet in length. (6.1.14)	dead end street allowed with limits on length (800 feet with cul-de-sac and 200 feet without) (V, 5.1) common driveways not addressed	*(Not applicable)*	*(Not applicable)*
Dead Ends/Cul-de-sacs	No standards addressed OR 120 ft or more minimum turnaround	Minimize end radii – 35 ft	Allow hammerhead turnaround	*(Not applicable)*	120 ft turn around minimum (V, 5.1)	*(Not applicable)*	*(Not applicable)*
Cul-de-sacs	No standards addressed OR Full pavement standard	Encourage center landscaping with bioretention	Require center landscaping with bioretention	*(Not applicable)*	not addressed	*(Not applicable)*	*(Not applicable)*
Curbing	No standards addressed OR Curbing required full length both sides of road	Allow curb breaks or curb flush with pavement to enable water to flow to vegetated LID features	Open drainage with roadside swales and no curbs preferred	*(Not applicable)*	curbing must be installed in all subdivisions on both sides of the roads - verticle granite curb, no other type permitted (V, 5.1)	*(Not applicable)*	not addressed
Roadside Swales	Not addressed OR Allowed as an option	Preferred over closed drainage	Preferred, with criteria for proper design. Adoption of technical specifications and design templates for green infrastructure recommended	*(Not applicable)*	not addressed	*(Not applicable)*	not addressed
Utilities	Off sets required contributing to wide road ROWs	Not specified - flexible	Allow under road, sidewalks or immediately adjacent to roads to enable placement of roadside swales.	*(Not applicable)*	must be installed underground within the limits of the subdivison - utilities installed so that they can be extended to other lots without thr need to penetrate the paved roadway surface (V, 5.2) easements	*(Not applicable)*	*(Not applicable)*
Sidewalks	Material not addressed OR Concrete or bituminous required	Some flexibility in material and design	Prefer permeable pavement or permeable pavers	*(Not applicable)*	bituminous concrete required (V, 5.1)	*(Not applicable)*	*(Not applicable)*
Sidewalk location	Required both sides of road	Allow on only 1 side of road especially in low density neighborhoods	Prefer siting with land contours and for best pedestrian utility (e.g. connect with common areas and shared open spaces) – not necessarily immediately parallel to road.	*(Not applicable)*	required on each side of the road unless a waiver is granted by the board (V, 5.1)	*(Not applicable)*	*(Not applicable)*
Sidewalk drainage	Draining to road, closed drainage system required	Not addressed	Disconnect drainage from road system – e.g. adjacent green strips or within vegetated areas that can absorb sheet flow	*(Not applicable)*	not addressed	*(Not applicable)*	*(Not applicable)*
GOAL 4: ADOPT GREEN INFRASTRUCTURE STORMWATER MANAGEMENT PROVISIONS							
Rooftop runoff	Not addressed OR Prohibit directing clean roof runoff into closed municipal drainage systems.	Allow clean roof runoff to be directed to landscaped or naturally vegetated areas capable of absorbing without erosion, or infiltration	Require directing clean roof runoff to landscaped or naturally vegetated areas capable of absorbing, or infiltration	*(Not applicable)*	not addressed	*(Not applicable)*	not addressed
Overall stormwater design; piping and surficial retention vs. LID	Conventional stormwater system design standards	Encourage LID features and BMPs; design standards often not specified	LID design standard encouraging infiltration, allowing surficial ponding of retained runoff for up to 72 hours; systems designed for larger volume storms, accounting for future precipitation predictions; credit for green roofs towards stormwater requirements. Following best practice may also help communities comply with MS4 permit requirements	The proposed development shall include adequate provisions or measures to prevent pollution of surface or groundwater, minimize erosion and sedimentation, prevent changes in groundwater levels, increased runoff, and potential for flooding, and minimize adverse impacts to neighboring properties by flooding from excessive runoff. (6.3.1., 4)	overall conventional stormwater system design standards - no mention of LID throughout	*(Not applicable)*	conventional, no LID addressed, design standards not addressed
Site Plan/Design Requirements	LID not addressed	Encourage use of LID features in site design - such as reduced imperviousness, maintaining natural hydrology, preserving open space, and rainwater reuse	Include bioretention and other vegetated LID features in site landscaping/open space requirements. Following best practice may also help communities comply with MS4 permit requirements. See section 2.3.5 of the MS4 permit for more information	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	not addressed
Allow easy siting of LID features (bioretention, swales, etc.)	Not addressed OR Require waivers from subdivision standards	Encouraged along road ROW	Allowed on lots, common open space, or road ROW, easement recorded. For commercial development, allow an increase in floor area ratio or other developmental incentives for green roofs	*(Not applicable)*	not addressed	*(Not applicable)*	*(Not applicable)*
Permeable paving	Not addressed OR Require waivers from subdivision standards	Allowed on private residential lots for parking, patios, etc.	Allowed for residential drives, parking stalls, spillover parking spaces, emergency access ways (with proper engineering support for emergency vehicles) Two track design allowed for driveways and secondary emergency access ways (where required).	*(Not applicable)*	not addressed	*(Not applicable)*	not addressed
Stormwater management O&M plan	Typically only addressed if municipality has a stormwater or LID bylaw, or for areas subject to wetlands permitting	Required	Required, contents specified in alignment with current MassDEP Stormwater Handbook. Following best practice may also help communities comply with MS4 permit requirements	*(Not applicable)*	not addressed beyond "drainage facilities must meet current stormwater rules and regulations (V, 5.2)"	*(Not applicable)*	An operation, maintenance and inspection agreement between the responsible party and the Director shall be executed for privately owned stormwater management systems and shall be binding on all subsequent owners or responsible parties of land served by the stormwater management system. (219-13) contents not specified in depth
Construction Erosion and Sedimentation Plan, and stormwater control	Basic general requirements	Required, contents specified - the site design process should include soil erosion and sedimentation control measures	Goes beyond minimum NPDES requirements. Requires minimization of site disturbance, reduction of construction waste, control measures not removed	*(Not applicable)*	not addressed beyond "drainage facilities must meet current stormwater rules and regulations (V, 5.2)"	*(Not applicable)*	required, no contents specified (219-8)
Stormwater discharge detection & elimination	Not addressed	Discharges and connections noted and/or limits set on quantity and quality	Illicit discharges and connections are probibited and enforced. Following best practice may also help communities comply with MS4 permit requirements. Find more information in section 2.3.4.a of the MS4 permit	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	not addressed

Post- construction stormwater management and drainage patterns	Not addressed	Allow LID	Resemble pre-existing conditions of volume, velocity, quality and location, as nearly as possible, requiring LID to the max extent feasible. Retain vol of runoff >1in. per sq.ft. of impervious surface and/or remove 90% TSS post-construction & 50% TP generated on the site for new development, or >0.8in. per sq.ft and/or remove 80% TSS and 50% of TP load for redevelopment. Following best practice may also help communities comply with MS4 permit requirements.	Consistency with the Massachusetts Stormwater Management Policy. All development shall comply with the DEP's Stormwater Management Policy (including Phase III Stormwater requirements), to ensure that the rate of surface water run-off from the site shall not be increased after construction. (6.3.3., 4a)	drainage facilities must meet current stormwater rules and regulations (V, 5.2)	*(Not applicable)*	not addressed
As-built surveys	Not addressed	Recommended	Required, with written instructions for process; electronic submittal allowed	*(Not applicable)*	as built plans of water and wastewater system and services submitted to water division (V, 5.2, 9) as built plan must eb submitted to city engineer and dpw after completion of construction (VI, N)	*(Not applicable)*	not addressed
Intra-departmental communication and coordination	Not addressed	Informally or loosely occurring	Required for plan review and/or permit approvals	some potential for informal coordination between board of appeals, building comissioner, and planning board, and clerk of the works	not addressed	Municipal boards and officers, including any police officer or other officer having police powers, shall have authority to assist the Commission in enforcement (253, 10, D).	not addressed
Enforcement	No	Yes	Yes with fines. Same entity should oversee permit approvals and enforcement	The Building Commissioner (same entity that provides permits) (10.1.1) shall serve a notice of violation and order to any owner or person responsible for the erection, construction, reconstruction, conversion or alteration of a structure or change in use, or extension of use of any building, sign or other structure or lot in violation of any approved plan, information or drawing pertinent thereto; or in violation of a permit or certificate issued under the provisions of this chapter, and such order shall direct the immediate discontinuance of the unlawful action, use or condition and the abatement of the violation. (10.1.7) Any owner or person who violates or refuses to comply with any of the provisions of this chapter may, upon conviction, be fined a sum of up to $300 per day, for each offense. Each day, or portion of a day, that any violation is allowed to continue shall constitute a separate offense. (10.1.8)	not addressed	The Commission shall have authority to enforce this chapter, its regulations and permits issued thereunder by violation notices, administrative orders and civil and criminal court actions. Any person who violates provisions of this chapter may be ordered to restore the property to its original condition and take other action deemed necessary to remedy such violations or may be fined, or both. (253.10, C) Any person who violates any provision of this chapter or any conditions of a permit or order issued pursuant to it shall be punished by a fine as listed herein below. Each day or portion thereof during which a violation continues shall constitute a separate offense. (253, 10, E)	The Director or Deputy Director of the Department of Public Works of the City of Haverhill (Director) or his/her authorized deputy or representative shall administer, implement and enforce the provisions of this chapter. Any powers granted to or duties imposed on the Director may be delegated by the Director to other City personnel. (219-3) The Director shall enforce this chapter and resulting regulations, orders, violation notices, and enforcement orders and may pursue all civil and criminal remedies for such violations. (219-14) The penalty for the first violation shall be a written warning. The penalty for the second violation shall be $50. The penalty for the third violation shall be $100. The penalty for the fourth and subsequent offenses shall be $150. Each day or part thereof that such violation occurs or continues shall constitute a separate offense. (219-19)
GOAL 5: ENCOURAGE EFFICIENT PARKING							
Parking	Specific minimums set based on projected maximum use times	Encourage minimum # needed to serve routine use (e.g. 2/residential unit with any additional/visitors parking behind in driveway or on street.	Establish Maximum Parking spaces allowed. Do not require more than 2/residence. Allow tenants separate, optional lease agreements for parking.	1 space/ dwelling unit with one bedroom, 1.5 space/ dwelling unit with 2 bedroom, 2 space/ dwelling unit with 3 bedrooms or more (6.1.3.) no maximum parking spaces established nor mention of optional lease agreements for parking. Parking may be reduced under special permit	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Commercial Parking	Specific minimums set based on projected maximum use times adding all on-site uses together.	Some flexibility to reduce minimums based on street or other available nearby parking or transit.	Allowed shared parking for uses with different peak demand times. Provide model agreements/deed restrictions. Reduce parking requirements near transit. Limit parking stall size (9ftx18ft max), with up to 30% smaller for compact cars	The use of shared parking to fulfill parking demands noted above that occur at different times of day may be considered by the PAA. Minimum parking requirements above may be reduced at the discretion of the PAA for a mixed-use development that is a Priority project or, in the case of other projects, if the applicant can demonstrate that shared spaces will meet parking demands by using accepted methodologies in MSGROD, DSGOD (9.5.10. 3)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
LID in Parking Areas	LID not addressed OR Require waivers e.g. for planting islands to drain down rather than built up surrounded by curbs	Allow LID/bioretention within parking areas.	Require landscaping within parking areas, as LID/bioretention, at a minimum of 10% of the interior area landscaped and a minimum of 25 square feet for island planting areas.	The parking area and access driveways thereto shall be surfaced with bituminous or cement concrete material and shall be graded and drained so as to dispose of all surface water accumulation. (6.1.12, 1) Multifam, non res, mixed use: except for a required sidewalk, a landscaped buffer strip at least 20 feet wide, continuous except for approved driveways, shall be established adjacent to any public road to visually separate parking and other uses from the road. The buffer strip shall be planted with grass, medium height shrubs, evergreens and shade trees having a minimum four inches in caliper measured four feet from ground level planted at least every 30 feet along the road frontage. Evergreens and shade trees shall be at least eight feet in height at time of planting. (6.3.3., 3a) Parking areas containing over 20 spaces shall have at least one shade tree per 10 parking spaces, such tree to be a minimum of 2 1/2 inches in diameter and located either in the parking area or within 10 feet of it. At least 5% of	not addressed	*(Not applicable)*	not addressed

Ipswich

Factors	Needs Improvement	Improved	Optimal	VI. Protective Zoning Bylaw	Rules and Regulations Governing the Subdivision of Land in Ipswich, MA	Ipswich, MA Design Review Board: Steps for the Design Review Process	Chapter 193: Stormwater Management	Stormwater Management Regulation	IPSWICH WETLANDS PROTECTION BY-LAW RULES AND REGULATIONS	
Source link:				https://www.ipswichma.gov/DocumentCenter/View/1015/Zoning-Bylaw	https://ipswichma.gov/DocumentCenter/View/1014/Subdivision-Rules--Regulations	https://www.ipswichma.gov/DocumentCenter/View/1037/Design-Review-Board-Guidelines--Application	https://ecode360.com/30685913	https://www.ipswichma.gov/DocumentCenter/View/13293/Draft_Ipswich_Stormwater_Regulations	https://www.ipswichma.gov/DocumentCenter/View/10209/Ipswich-Wetland-Protection-Rules-and-Regulations-1-17-18?bidId=	https://www.ipswichma.gov/DocumentCenter/View/13293/Draft_Ipswich_Stormwater_Regulations
GOAL 1: PROTECT NATURAL RESOURCES AND OPEN SPACE										
Soils managed for revegetation	Not addressed	Limitations on removal from site, and/or requirements for stabilization and revegetation	Prohibit removal of topsoil from site. Require rototilling and other prep of soils compacted during construction	*(Not applicable)*	6.3.4 Soil Preservation, Sedimentation and Erosion Control: The Applicant shall comply with the Rules and Regulations Governing Soil Erosion and Sedimentation Control as provided for in Appendix IX. of these Rules and Regulations…. 6. Detention/Retention Basins: a. Performance Standards: The performance standards shall include the following: 1) Development shall be oriented to the site so that cutting and stripping of vegetation and grading are minimized; 2) Temporary seeding, mulching or other suitable stabilization methods shall be used to protect exposed areas during construction; as feasible, natural vegetation shall be retained and protected; during the months of October through March, when seeding and sodding my be impractical, an anchored mulch shall be applied as approved by the Board or by the Board's Subdivision Inspector; diversions and/or prepared outlets may be required in critical areas during	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*		
Limit clearing, lawn size, require retention or planting of native vegetation/naturalized areas	Not addressed OR General qualitative statement not tied to other design standards	Encourage minimization of clearing/ grubbing	Require minimization of clearing/grubbing with specific standards	*(Not applicable)*	6.2.1 Protection of Natural Features: In laying out a subdivision, the Applicant shall comply with these rules and regulations with due regard to all natural features such as	B. Landscape and Site Treatment I. Preservation A. Preserve existing site patterns,	*(Not applicable)*	*(Not applicable)*		
Require native vegetation and trees	Not addressed OR General qualitative statement	Mixture of required plantings of native and nonnative	Require at least 75% native plantings	*(Not applicable)*	6. Detention/Retention Basins: a. Performance Standards: The performance standards shall include the following: 1) Development shall be oriented to the site so that cutting and stripping of vegetation and grading are minimized; 2) Temporary seeding, mulching or other suitable stabilization methods shall be used to protect exposed areas during construction; as feasible, natural vegetation shall be retained and protected; during the months of October through March, when seeding and sodding my be impractical, an anchored mulch shall be applied as approved by the Board or by the Board's Subdivision Inspector; diversions and/or prepared outlets may be required in critical areas during construction; 3) Soil and other materials shall not be stockpiled or redistributed, either temporarily or permanently, in locations or in such a manner as would cause suffocation of tree root systems; 4) Erosion and sediment controls	2. Ecological Aspects A. Choose plants that will survive in Zone 6 B. Choose plants that will provide four season interest C. Choose low maintenance drought resistant plants D. When possible choose native species and habitat creating species E. Assure that landscape beds, and mulched areas are designed for water infiltration. Use dark mulch whenever possible. F. Select ground cover to provide erosion control, soil moisture retention, and maintenance reduction G. If irrigation is proposed insure system is water efficient with automatic sensors. H. Protect plants from potential damage wherever possible I. Check the sun, wind, shade, water and soil needs of all proposed plants and place accordingly on site	*(Not applicable)*	*(Not applicable)*		
GOAL 2: PROMOTE EFFICIENT, COMPACT DEVELOPMENT PATTERNS AND INFILL										
Lot size	Not addressed OR Required minimum lot sizes	OSRD/NRPZ preferred. Special permit with incentives to utilize	Flexible with OSRD/NRPZ by right, preferred option	Minimum specified by district in the "Table of Dimensional and Density Regulations"... For Open Space Preservation (Cluster) Zoning For the purposes of determining the total number of allowable dwelling units on an entire tract, the total number of proposed dwelling units in the development shall not exceed the number of dwelling units which would be developed under normal application of zoning requirements for detached single-family dwelling units under the "Town of Ipswich Rules and Regulations Governing the Subdivision of Land" and in accordance with Section VI. DIMENSIONAL AND DENSITY REGULATIONS of the "Protective Zoning Bylaw of the Town of Ipswich". The developer shall submit a "Yield Plan" which indicates the maximum number of lots achievable under a conventional layout which generally complies with the Town of Ipswich Rules and Regulations Governing the Subdivision of Land, without placing	6.3.2 Lot Dimensions: Lot dimensions shall comply with the minimum standards of the Town of Ipswich Protective Zoning Bylaw. Dimensions of corner lots should be large enough to allow for erection of buildings and fulfilling the minimum front yard setback and lot width from both streets. Depth and width of properties laid out for business or industrial use shall be adequate to provide for the offstreet parking and loading facilities required by the Protective Zoning Bylaw.	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*		
Setbacks	Not addressed OR Required minimum front, side, and rear setbacks	Minimize, allow flexibility	Clear standards that minimize and in some instances eliminate setbacks	Minimum specified by district in the "Table of Dimensional and Density Regulations" For Open Space Residential Zoning Dimensional Regulations: There shall be no lot area, frontage or setback requirements within a tract, except as follows: i. The area developed for residential use, including buildings, parking and other areas paved for vehicular use, shall not exceed twenty-five percent (25%) of the total area of the OSPZ tract. Foot and bicycle paths and recreational facilities, including buildings wholly devoted to recreation, shall not be counted in the calculation of the twenty-five percent (25%) limitation. ii. For each lot located within any minimum tract, the minimum lot width shall be seventyfive (75) feet, the minimum lot frontage shall be fifty (50) feet, the minimum front, side and rear setbacks shall be twenty (20) feet, ten (10) feet (per side) and twenty-five (25) feet, respectively, and the maximum building coverage shall be thirty	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*		

Frontage	Not addressed OR Required minimum frontage for each lot/unit	Minimize especially on curved streets and cul-de-sacs	No minimums in some instances, tied into other standards like OSRD design and shared driveways.	Minimum specified by district in the "Table of Dimensional and Density Regulations" For Open Space Residential Zoning Dimensional Regulations: There shall be no lot area, frontage	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Common driveways	Not addressed OR Not allowed, strict limitations	Allow for 2-3 residential units	Allow for up to 4 residential units, preferrably constructed with permeable pavers or pavement	For Open Space Residential Zoning Common Driveways. Common driveways serving no more than eight (8) residential lots are allowed in Open Space Preservation Zoning Developments, provided that they meet the following requirements: a. The common driveway complies with Section IX.E.2., paragraphs a. through d., of this zoning bylaw. b. The common driveway shall access the property over the frontage of at least one of the lots being served by the driveway. c. The owners of the properties to be served by the common driveway must provide evidence to the Building Inspector that they have rights, either by deed or perpetual easement, to the common driveway. In the Floodplain District: Common driveways serving no more than two (2) lots, each with approved frontage on a street, are allowed as-of-right provided they meet the following requirements: a. The common driveway shall not be in excess of five hundred (500)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
GOAL 3: SMART DESIGNS THAT REDUCE OVERALL IMPERVIOUSNESS								*(Not applicable)*
Impervious cover limits and infiltration rates	Not usually addressed in zoning and subdivision regs for rural/suburban residential	Require no net increase in site run-off from pre- to post-development	Impervious cover limits tailored to the community and district type (i.e. <10% total impervious cover in rural districts, but higher in urban and redevelopment districts); post-development infiltration should be equal to or greater than pre-development. Following best practice may also help communities comply with MS4 permit requirements	Not addressed	Not addressed	Not addressed	*(Not applicable)*	*(Not applicable)*
Street location	No standards addressed OR Numeric and geometric standards based primarily on vehicular travel and safety, with basic pedestrian requirements e.g. sidewalks	Flexibility in applying standards, to reduce area of impact, grading, avoid key natural features	OSRD design preferred by-right. Require locating streets to minimize grading and road length, avoid important natural features	*(Not applicable)*	Not addressed	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Road width	No categories addressed OR Major and minor categories, 24-30'	Wide, medium, narrow categories. 22-24' max, plus 2' shoulders	Wide, medium, narrow, and alley categories. 20-24' widest for 2 travel lanes, 18-20' low traffic residential neighborhood, plus 2' shoulders. Allow alleys and other low traffic or secondary emergency access and all shoulders to use alternative, permeable materials.	*(Not applicable)*	6.8 Streets - Design Standards Minimum R.O.W Width: 30' - 60' Minimum Pavement Width: 18' - 32' (*A pavement width of 16 feet is acceptable for courts serving only one residential lot, unless the grade of the road is 10 percent or greater, in which case the minimum width shall remain 18 feet.)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Road ROW width	ROW Width not addressed OR 50-75', fully cleared and graded	40-50', some flexibility in extent of clearing	20-50'depending on road type	*(Not applicable)*	6.8 Streets - Design Standards Minimum R.O.W Width: 30'	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Access Options	Common drives not addressed, No common drives allowed, Dead end allowed with limit on length and # of units	Allow dead end with limit on length and # of units. Allow common drives up to 2-3 units	Allow one way loop streets. Allow common drives up to 4 units, and alleys and rear-loading garages where suitable.	For Open Space Residential Zoning Common Driveways. Common driveways serving no more than eight (8) residential lots are allowed in Open Space Preservation Zoning Developments, provided that they meet the following requirements: a. The common driveway complies with Section IX.E.2., paragraphs a. through d., of this zoning bylaw. b. The common driveway shall access the property over the frontage of at least one of the lots being served by the driveway. c. The owners of the properties to be served by the common driveway must provide evidence to the Building Inspector that they have rights, either by deed or perpetual easement, to the common driveway. In the Floodplain District: Common driveways serving no more than two (2) lots, each with approved frontage on a street, are allowed as-of-right provided they meet the following requirements: a. The common driveway shall not be in excess of five hundred (500)	6.8 Streets - Design Standards Cul-de-Sacs R.O.W Diamter: 120' Outside Paving Dimeter: 100' Max Length of Cul-de-sac: 300' - 600' ** The Planning Board may allow a cul-de-sac street with a greater length than six hundred feet (600'), provided that the following two conditions are met: (1) The Board determines that a greater length would serve to minimize disruption of the site or to protect other local conditions; and (2) the cul-de-sac street is created as part of an Open Space Preservation Zoning Development approved under Section IX.A of the Ipswich Protective Zoning Bylaw (in which instance the 600 foot cul-de-sac maximum length requirement may not apply to a conceptual plan drawn for the purpose of determining the maximum number of building lots as required in Section IX.4.a of the Ipswich Protective Zoning Bylaw).	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Dead Ends/Cul-de-sacs	No standards addressed OR 120 ft or more minimum turnaround	Minimize end radii – 35 ft	Allow hammerhead tumaround	For OSRZ: Turnaround: Cul-de-sac having an outside paving diameter of at least ninety (90) feet. As an alternative, the Planning Board may allow a "T" or "Y" shaped turnaround.	6.8 Streets - Design Standards Cul-de-Sacs R.O.W Diamter: 120' Outside Paving Dimeter: 100' Max Length of Cul-de-sac: 300' ** As an alternative to a circular turnaround, the Board will allow a T or Y-shaped turn-around of a design that would permit a vehicle with a 47 foot outside turning radius and a width of eight feet to reverse its direction without backing more than once.	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Cul-de-sacs	No standards addressed OR Full pavement standard	Encourage center landscaping with bioretention	Require center landscaping with bioretention	*(Not applicable)*	6.8.12 Landscape Island: A landscape island is required at all circular turnarounds. Unless otherwise allowed by the Board, landscaped areas shall be densely planted with hardy species that are noninvasive as defined by "The Evaluation of Non-Native Plant Species for Invasiveness in Massachusetts", as amended from time to time.	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Curbing	No standards addressed OR Curbing required full length both sides of road	Allow curb breaks or curb flush with pavement to enable water to flow to vegetated LID features	Open drainage with roadside swales and no curbs preferred	*(Not applicable)*	6.9 CURBING Sloped granite curbing shall be provided as an integral part of all new streets, except for courts.	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Roadside Swales	Not addressed OR Allowed as an option	Preferred over closed drainage	Preferred, with criteria for proper design. Adoption of technical specifications and design templates for green infrastructure recommended	*(Not applicable)*	Preferred over closed drainage	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Utilities	Off sets required contributing to wide road ROWs	Not specified - flexible	Allow under road, sidewalks or immediately adjacent to roads to enable placement of roadside swales.	*(Not applicable)*	6.13 UTILITIES – BASIC REQUIREMENTS 6.13.1 Installation: All utility lines, and/or other subsurface facilities within the street rights-of-way shall	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Sidewalks	Material not addressed OR Concrete or bituminous required	Some flexibility in material and design	Prefer permeable pavement or permeable pavers	*(Not applicable)*	Concrete or bituminous required	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Sidewalk location	Required both sides of road	Allow on only 1 side of road especially in low density neighborhoods	Prefer siting with land contours and for best pedestrian utility (e.g. connect with common areas and shared open spaces) – not necessarily immediately parallel to road.	*(Not applicable)*	6.11 SIDEWALKS 6.11.1 Requirement: Sidewalks shall be required on one side of the street along all lanes, local and collector streets unless the Board determines pedestrian movement is otherwise accommodated.	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Sidewalk drainage	Draining to road, closed drainage system required	Not addressed	Disconnect drainage from road system – e.g. adjacent green strips or within vegetated areas that can absorb sheet flow	*(Not applicable)*	Not addressed	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*

GOAL 4: ADOPT GREEN INFRASTRUCTURE STORMWATER MANAGEMENT PROVISIONS								
Rooftop runoff	Not addressed OR Prohibit directing clean roof runoff into closed municipal drainage systems.	Allow clean roof runoff to be directed to landscaped or naturally vegetated areas capable of absorbing without erosion, or infiltration	Require directing clean roof runoff to landscaped or naturally vegetated areas capable of absorbing, or infiltration	*(Not applicable)*	6.14.12 Roof Runoff: All primary dwelling structures within a residential subdivision and all buildings within a non-residential subdivision shall have a rainwater harvesting system designed to collect preferably 100% of roof run-off for a two inch (2") rainfall, but at minimum, the system shall collect 75% of the run-off. When practicable, collected roof run-off should be used for landscape irrigation purposes. Excess stormwater may be recharged. Prior to the Board's sign-off for the issuance of a Certificate of Occupancy, the Board shall assure that these systems have been installed as designed and approved. The Board may use its Technical Review Consultant/Subdivision Inspector to provide the Board with this assurance.	*(Not applicable)*	*(Not applicable)*	Not addressed
Overall stormwater design; piping and surficial retention vs. LID	Conventional stormwater system design standards	Encourage LID features and BMPs; design standards often not specified	LID design standard encouraging infiltration, allowing surficial ponding of retained runoff for up to 72 hours; systems designed for larger volume storms, accounting for future precipitation predictions; credit for green roofs towards stormwater requirements. Following best practice may also help communities comply with MS4 permit requirements	*(Not applicable)*	6.14.13 Soft Structure Drainage: When feasible and appropriate, applicants shall use natural-looking, open drainage instead of closed, hard engineering structures as otherwise required in these regulations. Examples of these Low-Impact Development design techniques include: a. Bio-retention facilities; b. Filter/buffer strips and other multifunctional landscape areas; c. Grassed swales, bio-retention swales, and wet swales; and d. Infiltration techniques Information on these practices can be obtained from the documents referenced in Section 6.14.	*(Not applicable)*	Low impact development and better site design. The use of non-structural LID Management practices and Better Site Design are encouraged to minimize reliance on structural management measures. The use of Better Site Design and/or LID Management Practices may, if approved by the Permitting Authority, also allow for a reduction in the treatment volume, a reduction of applicable fees associated with the project, or other incentive approved by the Permitting Authority.	Stormwater Management Design Standards (1) Projects must be designed to collect and dispose of stormwater runoff from the project site in accordance with Massachusetts Stormwater Management Standards, Ipswich Department of Public Works requirements, including those for subdivisions, recognized engineering methodologies and these regulations with an emphasis to include Low Impact Development techniques in the design. (2) Projects must manage surface runoff so that no flow is conducted over public ways, nor over land not owned or controlled by the Applicant unless an easement in proper form is obtained permitting such discharge. (3) Projects must use Low Impact Development techniques where adequate soil, groundwater and topographic conditions allow. These may include but not be limited to
Site Plan/Design Requirements	LID not addressed	Encourage use of LID features in site design - such as reduced imperviousness, maintaining natural hydrology, preserving open space, and rainwater reuse	Include bioretention and other vegetated LID features in site landscaping/open space requirements. Following best practice may also help communities comply with MS4 permit requirements. See section 2.3.5 of the MS4 permit for more information	*(Not applicable)*	The design, construction and maintenance of stormwater systems shall be consistent with the following: a. Discharging runoff directly into rivers, streams, watercourses, or enlarging the volume, rate or further degrading the quality of existing discharges/runoff is prohibited. Runoff shall be routed through vegetated swales, using native species and other structural and nonstructural systems Rules and Regulations Governing the Subdivision of Land in Ipswich, Massachusetts designed to increase time of concentration, decrease velocity, increase infiltration, allow suspended solids to settle and remove pollutants. Such systems will utilize overland flow and re-infiltration as priority techniques for the treatment of run-off; b. Retention and detention ponds, and methods of overland flow may be used to retain, detain and treat the increased and accelerated runoff which the development generates; c. There shall be a minimum of two	*(Not applicable)*	*(Not applicable)*	General Performance Standards for All Sites. (1) Low Impact Development and Green Infrastructure site design strategies shall be utilized to preserve existing natural features of the site, minimize the creation of impervious surfaces and manage stormwater in a decentralized fashion, to the maximum extent feasible.
Allow easy siting of LID features (bioretention, swales, etc.)	Not addressed OR Require waivers from subdivision standards	Encouraged along road ROW	Allowed on lots, common open space, or road ROW, easement recorded. For commercial development, allow an increase in floor area ratio or other developmental incentives for green roofs	*(Not applicable)*	Not addressed	*(Not applicable)*	*(Not applicable)*	Not addressed
Permeable paving	Not addressed OR Require waivers from subdivision standards	Allowed on private residential lots for parking, patios, etc.	Allowed for residential drives, parking stalls, spillover parking spaces, emergency access ways (with proper engineering support for emergency vehicles) Two track design allowed for driveways and secondary emergency access ways (where required)	For OSRD Driveways: Class I, Type I-1 plant-mixed bituminous concrete, in accordance with Appendix 1(A)(5 and 6) of the Rules and Regulations Governing the Subdivision of Land in Ipswich, Massachusetts.	Not addressed	Paved areas such as pedestrian walkways should be thoughtfully integrated into the landscape. Choose durable and attractive materials such as brick, slate, stone and textured concrete. Avoid asphalt. Try to connect walkways and	*(Not applicable)*	*(Not applicable)*
Stormwater management O&M plan	Typically only addressed if municipality has a stormwater or LID bylaw, or for areas subject to wetlands permitting	Required	Required, contents specified in alignment with current MassDEP Stormwater Handbook. Following best practice may also help communities comply with MS4 permit requirements	*(Not applicable)*	All components of the drainage system and any measures for the detention, retention or infiltration of water and/or for the protection of water quality shall be described in detail, including the following: 1) the channel, direction, volume and rate of flow and the quality of stormwater that will be conveyed from the site, with a comparison to existing conditions and to the extent practicable, pre-development conditions; 2) detention and retention areas and devices, including: a) plans for discharge of contained waters, including the time to draw down from full condition, and description of outlet structures; b) maintenance plans: including maintenance schedule, an outline of responsible parties and owners, and all pertinent information and/or agreements to be executed to insure proper maintenance;	*(Not applicable)*	*(Not applicable)*	Section 10. Operation and Maintenance Plan for Permit Applications A. A stand-alone Operation and Maintenance Plan is required at the time of application for all projects that include structural and non-structural stormwater BMPs. The Operation and Maintenance Plan shall be designed to ensure compliance with the Permit and these regulations for the life of the system. The Operation and Maintenance Plan shall remain on file with the Stormwater Authority and shall be an ongoing requirement. The Applicant shall provide copies of the Operation and Maintenance Plan to all persons responsible for maintenance and repairs. B. The Operation and Maintenance Plan shall include: (1) The name(s) of the owner(s) for all components of the system; (2) A map showing the location of the systems and facilities including all structural and
Construction Erosion and Sedimentation Plan, and stormwater control	Basic general requirements	Required, contents specified - the site design process should include soil erosion and sedimentation control measures	Goes beyond minimum NPDES requirements. Requires minimization of site disturbance, reduction of construction waste, control measures not removed	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	Sedimentation Control Plan of Permit Applications A. The Erosion and Sediment Control Plan shall be designed to
Stormwater discharge detection & elimination	Not addressed	Discharges and connections noted and/or limits set on quantity and quality	Illicit discharges and connections are prohibited and enforced. Following best practice may also help communities comply with MS4 permit requirements. Find more information in section 2.3.4.a of the MS4 permit	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	This Bylaw establishes minimum requirements and procedures to control the adverse effects of increased stormwater runoff and nonpoint source pollution associated with new development and redevelopment. This Bylaw also prohibits non-storm-water discharges into the municipal storm drain system and waters of the Commonwealth in Ipswich, except as exempted under § 193-6 of this Bylaw.	*(Not applicable)*

Post- construction stormwater management and drainage patterns	Not addressed	Allow LID	Resemble pre-existing conditions of volume, velocity, quality and location, as nearly as possible, requiring LID to the max extent feasible. Retain vol of runoff > 1in. per sq.ft. of impervious surface and/or remove 90% TSS post-construction & 50% TP generated on the site for new development, or >0.8in. per sq.ft. and/or remove 80% TSS and 50% of TP load for redevelopment. Following best practice may also help communities comply with MS4 permit requirements.	*(Not applicable)*	4. Performance Standards: The Stormwater Management Report submitted must demonstrate that the proposed development or activity has been planned and designed and will be constructed and maintained to meet each of the following standards: a. ensure that after development that no detrimental effects shall be created or caused by the proposed development. b. maintain the natural hydrodynamic characteristics of the watershed. c. protect or improve the quality of surface and ground waters. d. protect, maintain, or improve water quality or existing water quality standards for all receiving waters, water courses and water bodies. e. protect and maintain groundwater levels. f. protect the beneficial functioning of wetlands as areas for natural storage of flood waters, the chemical reduction and assimilation of pollutants and wildlife and fisheries habitat.	*(Not applicable)*	*(Not applicable)*	The first 1.0 inch of runoff from all post-construction impervious surfaces shall be retained on-site through a combination of infiltration, reuse and/or evaporation, to the maximum extent practicable. When determining whether the requirements have been met, the Stormwater Authority shall consider all stormwater management practices available and capable of being implemented after taking into consideration costs, existing technology, proposed use, and logistics in light of overall project purposes. Project purposes shall be defined generally (e.g., single family home or expansion of a commercial development). (4) Where it is not technically feasible to retain the first 1.0 inch of runoff from all impervious areas, the Applicant will describe in writing why it is technically infeasible to do so due to physical site constraints, and indicate the volume of runoff to be retained. If different volumes
As-built surveys	Not addressed	Recommended	Required, with written instructions for process; electronic submittal allowed	*(Not applicable)*	5.15 AS-BUILT/RECORD PLAN: Two (2) copies of an accurate "as-built" or record plan and profile of the roadway(s) and associated site improvements, prepared by a registered professional engineer and registered professional land surveyor, shall be submitted to the Board after completion of the construction and prior to any partial release. Said plan shall indicate the record location of all municipal services as actually installed. Sufficient ties, including depths shown as profiles, for the proper and accurate identification and location, shall be provided. Additional information to be provided includes, but is not limited to, the location of each stump dump and/or spoil disposal area within the subdivision, location and size of sewer pump/lift stations, location and total storage provided of detention ponds, and other similar facilities. The Applicant shall also provide two (2) copies of the "as-built" plan submitted in DXF (drawing exchange file) format, in the same datum as the original	*(Not applicable)*	*(Not applicable)*	Permittess shall submit as-built drawings no later than one year after completion of construction projects. The as-built drawings must depict all on-site controls, both structural and non-structural, designed to manage stormwater associated with the completed site.
Intra-departmental communication and coordination	Not addressed	Informally or loosely occurring	Required for plan review and/or permit approvals	Not addressed	Not addressed	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Enforcement	No	Yes	Yes with fines. Same entity should oversee permit approvals and enforcement	Enforcement Officer This bylaw shall be enforced by the enforcing officer, who shall be the Building Inspector. The Building Inspector may institute appropriate legal proceedings to enforce the provisions of this bylaw or to restrain by injunction any violation thereof, or both, and shall do all further acts, revoke the certificate of use and occupancy, institute and take any and all such action as may be necessary to enforce the provisions of this bylaw. If the Building Inspector is requested in writing to enforce this bylaw against any person allegedly in violation of same, and he declines to act, he shall notify in writing the party requesting such enforcement of any action or refusal to act, and the reasons therefore, within fourteen (14) days of receipt of such request. The Building Inspector shall make written biweekly reports to the Planning Board of any determination made by him under the provisions of this bylaw, with copies to the Conservation Commission...	*(Not applicable)*	*(Not applicable)*	Enforcement. A. The Permitting Authority or its designee(s) shall enforce this Bylaw and the regulations, orders, violation notices, and enforcement orders issued pursuant thereto, and may pursue all civil and criminal remedies for such violations. This Section shall take effect on July 1, 2009. (1) Civil Relief. If a person violates the provisions of this Bylaw, regulations, permit, notice, or order issued there under, the Permitting Authority may seek injunctive relief in a court of competent jurisdiction restraining the person from activities which would create further violations or compelling the person to perform abatement and/or remediation of the violation. (2) Orders. The Permitting Authority may issue a written order to enforce provisions of this Bylaw or regulations there under, and any permits issued under this Bylaw, which may include, where appropriate:	*(Not applicable)*
GOAL 5: ENCOURAGE EFFICIENT PARKING								
Parking	Specific minimums set based on projected maximum use times	Encourage minimum # needed to serve routine use (e.g. 2/residential unit with any additional/visitors parking behind in driveway or on street.	Establish Maximum Parking spaces allowed. Do not require more than 2/residence. Allow tenants separate, optional lease agreements for parking.	Minimums outlined in the "table of minimum parking requirements": One and a half (1½) spaces per dwelling unit with fewer thantwo (2) bedrooms and two (2) spaces per dwelling unit with two (2) or more bedrooms.*	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Commercial Parking	Specific minimums set based on projected maximum use times adding all on-site uses together.	Some flexibility to reduce minimums based on street or other available nearby parking or transit.	Allowed shared parking for uses with different peak demand times. Provide model agreements/deed restrictions. Reduce parking requirements near transit. Limit parking stall size (9ftx18ft max), with up to 30% smaller for compact cars	Minimums outlined in the "table of minimum parking requirements": One (1) space per three hundred (300) feet of gross floor area on the ground floor area plus one (1) space per five hundred (500) square feet of gross floor area on all other floors...Joint Use of Parking Areas By special permit of the Zoning Board of Appeals, joint use may be made of required parking spaces by intermittent use establishments such as churches, assembly halls, or theaters, whose peak parking demand does not conflict with that of the other use. An agreement shall be made in writing and acknowledged by the owner(s) of the uses involved concerning: the number of spaces involved; substantiation of the fact that such joint use is not overlapping or in conflict; and the duration of the agreement. The agreement must be presented with the petition for special permit...All required parking or loading spaces shall be provided on the same lot as the use or building for which they are required. provided, however, that if sufficient	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*

LID in Parking Areas	LID not addressed OR Require waivers e.g. for planting islands to drain down rather than built up surrounded by curbs	Allow LID/bioretention within parking areas.	Require landscaping within parking areas, as LID/bioretention, at a minimum of 10% of the interior area landscaped and a minimum of 25 square feet for island planting areas.	Surfacing, Drainage and Curbing All parking facilities shall be graded, surfaced with non-erosive material, and drained in an adequate manner to prevent nuisance of erosion or excessive water flow across public ways or abutting properties. To reduce stormwater discharge and improve the attenuation of pollutants, low impact development integrated stormwater management practices, to the extent feasible, shall be incorporated into parking facilities of twenty (20) or more spaces. Techniques that limit the overall Ipswich Zoning Bylaw, updated STM 10/16/21 impervious coverage of the parking facility, such as replacement of bituminous concrete with pervious pavers or porous asphalt, are strongly encouraged where appropriate. For additional guidance on possible techniques, applicants should refer to the Ipswich General Bylaw entitled "Ipswich Stormwater Management Bylaw."	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*

Lawrence

Factors	Needs Improvement	Improved	Optimal	Zoning Bylaw and Site Plan review	Subdivision Rules & Regulations	Wetlands Bylaw	Stormwater Bylaw and Rules and Regulations
GOAL 1: PROTECT NATURAL RESOURCES AND OPEN SPACE							
Soils managed for revegetation	Not addressed	Limitations on removal from site, and/or requirements for stabilization and revegetation	Prohibit removal of topsoil from site. Require rototilling and other prep of soils compacted during construction	not addressed	not addressed	Except as permitted by the commission or as provided by this chapter, no person shall commence to remove fill, fill, dredge, build upon, degrade, discharge into, or otherwise alter the following resource areas: any freshwater wetlands; marshes; wet meadows; bogs; swamps; lakes; ponds; rivers; streams; creeks; banks; beaches; vernal pools; large isolated wetlands; lands within 100 feet of any of the aforesaid resource areas; lands under water bodies; lands subject to flooding or inundation by groundwater or surface waters; land within 100 feet of said land subject to flooding or inundation; riverfront area as stated in Wetlands Protection Act regulations 310 CMR 10.58(2), as they may be amended; (collectively, the "resource areas protected by this chapter"). Said resource	l.Soil stockpiles must be stabilized or covered at the end of each workday. Stockpile side slopes shall not be greater than 2:1. All stockpiles shall be surrounded by sediment controls.(7.c.6.l) q.Interim and permanent stabilization measures shall be instituted on a disturbed area immediately after construction activity has temporarily or permanently ceased on that portion of the site. Two methods are available for stabilizing disturbed areas: mechanical (or structural) methods and vegetative methods. In some cases, both are combined in order to retard erosion.(7.c.6.q) s.All temporary erosion and sediment control measures shall be removed after final site stabilization. Disturbed soil areas resulting from the removal of temporary measures shall be permanently stabilized within thirty (30) days of removal.(7.c.6.s)
Limit clearing, lawn size, require retention or planting of native vegetation/naturalized areas	Not addressed OR General qualitative statement not tied to other design standards	Encourage minimization of clearing/ grubbing	Require minimization of clearing/grubbing with specific standards	existing trees must be preserved whenever possible; when selecting which trees to preserve the following shall be considered: existing and proposed grading, age, condition, type of tree, and location of site improvements and utility connections (29-47) methods and detils for protecting existing plant materials during construcion and the approved erosion control plan required in site plan (29-48)	Due regard shall be shown for all beneficial natural features such as large trees, watercourses and scenic views, or historic spots and similar community assets, the preservation of which will add to the attractiveness and value of the subdivision. (16.16.050)	Except as permitted by the commission or as provided by this chapter, no person shall commence to remove fill, fill, dredge, build upon, degrade, discharge into, or otherwise alter the following resource areas: any freshwater wetlands; marshes; wet meadows; bogs; swamps; lakes; ponds; rivers; streams; creeks;	a.Minimize the total area of disturbance and minimize unnecessary clearing and grading from all construction sites. Clearing and grading shall only be performed within areas needed to build the project, including structures, utilities, roads, recreational amenities, post-construction stormwater management facilities, and related infrastructure. (7.c.6.a) b.Prior to
Require native vegetation and trees	Not addressed OR General qualitative statement	Mixture of required plantings of native and nonnative	Require at least 75% native plantings	plant materials shall conform to the requirements described in the latest edition of american standard for nursery stock. Selected plant materials must be approved by the department of planning and development and/or the land use planner for the department of planning and development (29-49)	not addressed	Except as permitted by the commission or as provided by this chapter, no person shall commence to remove fill, fill, dredge, build upon, degrade, discharge into, or otherwise alter the following resource areas: any freshwater wetlands; marshes; wet meadows; bogs; swamps; lakes; ponds; rivers; streams; creeks; banks; beaches; vernal pools; large isolated wetlands; lands within 100 feet of any of the aforesaid resource areas; lands under water bodies; lands subject to flooding or inundation by groundwater or surface waters; land within 100 feet of said land subject to flooding or inundation; riverfront area as stated in Wetlands Protection Act regulations 310 CMR 10.58(2), as they may be amended; (collectively, the "resource areas protected by this chapter"). Said resource	not addressed
GOAL 2: PROMOTE EFFICIENT, COMPACT DEVELOPMENT PATTERNS AND INFILL							
Lot size (for stormwater bylaw, pertains to the size of a lot which requires a stormwater permit)	Not addressed OR Required minimum lot sizes	OSRD/NRPZ preferred. Special permit with incentives to utilize	Flexible with OSRD/NRPZ by right, preferred option	minimum lot area required for each residential district: R-1 = 7,000 sq ft, R-1A = 6,500 sq ft, R-2 = 6,000 sq ft, R-2A = 5,500 sq ft, R-6 and R-7 = 5,000 sq ft (29-15, 2) No minimum or small minimum (1750 sqft) required in non-res districts (29-16, 3) Open space % requirements in res districts *edit* new minimums established in 1999: 10,000 sq ft in all res districts (ammendment #33, 2) minimum open space requirements for all res (29-16, 2)	*(Not applicable)*	*(Not applicable)*	Any subdivision as defined in the Subdivision Control Law (Massachusetts General Laws, Chapter 41, Sections 81K—81GG) and Title 16 of the Municipal Code, requiring a Definitive Plan; 2. Any activity that results in a land disturbance greater than one acre within the City of Lawrence; 3. Any activity that results in a land disturbance of less than one acre if the project is part of a larger common plan of development that eventually will disturb more than one acre within the City of Lawrence; 4. Any activity that results in a land disturbance greater than 5,000 square feet and is for the development or redevelopment of a land use with "higher potential pollutant loads" as described in Standard 5 of the Massachusetts Stormwater
Housing density	Multi-family housing not allowed, or only in/adjacent to commercial and industrial uses	Multi-family and cluster developments allowed by special permit	Multi-family housing allowed by right in most residential areas; cluster developments encouraged with density bonuses for LID features and no maximum lot coverage	multi family residence allowed with special permit and site plan approval in all districts except OSR, R-1, an R-2. (29-11, 1.E)	not addressed	*(Not applicable)*	*(Not applicable)*
Setbacks	Not addressed OR Required minimum front, side, and rear setbacks	Minimize, allow flexibility	Clear standards that minimize and in some instances eliminate setbacks	front, side, and rear setbacks required in all districts besides B-3. Front = 15-25 ft depending on district, side = 12 ft, rear = 20 ft (29-15, 2)(29-16, 3) (ammendment #33, 2)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Frontage	Not addressed OR Required minimum frontage for each lot/unit	Minimize especially on curved streets and cul-de-sacs	No minimums in some instances, tied into other standards like OSRD design and shared driveways.	required minimum frontage: 50-75 feet in res depending on district (29-15, 2) no required frontage in non-res districts except I-3 (29-16, 3) may be minimized on corner lots (29-17, j) *edit* required frontage 70 feet for all res districts	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*

Common driveways	Not addressed OR Not allowed, strict limitations	Allow for 2-3 residential units	Allow for up to 4 residential units, preferrably constructed with permeable pavers or pavement	not addressed	not addressed	*(Not applicable)*	*(Not applicable)*
GOAL 3: SMART DESIGNS THAT REDUCE OVERALL IMPERVIOUSNESS							
Impervious cover limits and infiltration rates	Not usually addressed in zoning and subdivision regs for rural/suburban residential	Require no net increase in site run-off from pre- to post-development	Impervious cover limits tailored to the commuity and district type (i.e. <10% total impervious cover in rural districts, but higher in urban and redevelopment districts); post-development infiltration should be equal to or greater than pre-development. Following best practice may also help communities comply with MS4 permit requirements	not addressed	not addressed	*(Not applicable)*	The goals of Better Site Design are to reduce impervious cover, preserve natural lands, and capture stormwater onsite. To meet these goals, designers employ a variety of methods. To reduce impervious cover, they narrow streets and sidewalks, minimize cul-de-sacs, tighten parking spaces, and reduce the size of driveways and housing lots. (app D) LT Hydrologic and
Street location	No standards addressed OR Numeric and geometric standards based primarily on vehicular travel and safety, with basic pedestrian requirements e.g. sidewalks	Flexibility in applying standards, to reduce area of impact, grading, avoid key natural features	OSRD design preferred by-right. Require locating streets to minimize grading and road length, avoid important natural features	*(Not applicable)*	All streets shall be designed so that, in the opinion of the planning board, they will provide safe vehicular travel. Consideration will also be given to the attractiveness of the layout so that the maximum livability and amenity can be	*(Not applicable)*	*(Not applicable)*
Road width	No categories addressed OR Major and minor categories, 24-30'	Wide, medium, narrow categories. 22-24' max, plus 2' shoulders	Wide, medium, narrow, and alley categories. 20-24' widest for 2 travel lanes, 18-20' low traffic residential neighborhood, plus 2' shoulders. Allow alleys and other low traffic or secondary emergency access and all shoulders to use alternative, permeable materials.	*(Not applicable)*	The construction of pavement and other roadway appurtenances shall conform to the specifications of the director of engineering and the city engineer of the city of Lawrence in effect at the time of review of the subdivision. (16.20.010)	*(Not applicable)*	*(Not applicable)*
Road ROW width	ROW Width not addressed OR 50-75', fully cleared and graded	40-50', some flexibility in extent of clearing	20-50'depending on road type	*(Not applicable)*	The minimum width of street rights-of-way shall be 50 feet. A greater width shall be required by the planning board when a proposed street is shown as a secondary street on the master plan, or when the street will be required to carry excessive traffic loads in the future due to some foreseeable land use condition.(16.16.030)	*(Not applicable)*	*(Not applicable)*
Access Options	Common drives not addressed, No common drives allowed, Dead end allowed with limit on length and # of units	Allow dead end with limit on length and # of units. Allow common drives up to 2-3 units	Allow one way loop streets. Allow common drives up to 4 units, and alleys and rear-loading garages where suitable.	*(Not applicable)*	not addressed	*(Not applicable)*	*(Not applicable)*
Dead Ends/Cul-de-sacs	No standards addressed OR 120 ft or more minimum turnaround	Minimize end radii – 35 ft	Allow hammerhead turnaround	*(Not applicable)*	Dead-end streets other than cul-de-sacs shall not be acceptable except by specific approval of the city engineer. . Turnarounds at the end of cul-de-sacs shall have an outside property line diameter of not less than 115 feet (16-16-020)	*(Not applicable)*	*(Not applicable)*
Cul-de-sacs	No standards addressed OR Full pavement standard	Encourage center landscaping with bioretention	Require center landscaping with bioretention	*(Not applicable)*	not addressed	*(Not applicable)*	*(Not applicable)*
Curbing	No standards addressed OR Curbing required full length both sides of road	Allow curb breaks or curb flush with pavement to enable water to flow to vegetated LID features	Open drainage with roadside swales and no curbs preferred	*(Not applicable)*	The construction of pavement and other roadway appurtenances shall conform to the specifications of the director of engineering and the city engineer of the city of Lawrence in effect at the time of review of the subdivision. (16.20.010)	*(Not applicable)*	not addressed
Roadside Swales	Not addressed OR Allowed as an option	Preferred over closed drainage	Preferred, with criteria for proper design. Adoption of technical specifications and design templates for green infrastructure recommended	*(Not applicable)*	not addressed	*(Not applicable)*	encouraged with reasoning : create open channels and vegetated swales - to increase stormwater infiltration, helping to protect streams, lakes, and wetlands. (app D)
Utilities	Off sets required contributing to wide road ROWs	Not specified - flexible	Allow under road, sidewalks or immediately adjacent to roads to enable placement of roadside swales.	*(Not applicable)*	Easements for utilities across lots or centered on rear or side lot lines shall be provided where necessary and shall be at least 20 feet wide. B. Where a subdivision is traversed by a watercourse, drainageway, channel or stream, the planning board may require a stormwater easement or drainage right-of-way of adequate width to conform substantially to the lines of such water-carrying facility and to provide space for present or future construction or maintenance purposes.(16.16.040)	*(Not applicable)*	*(Not applicable)*
Sidewalks	Material not addressed OR Concrete or bituminous required	Some flexibility in material and design	Prefer permeable pavement or permeable pavers	*(Not applicable)*	Unless otherwise required by the planning board, sidewalks shall be planned and constructed in conjunction with the roadway or streets and shall be built in conformity with the requirements of the director of engineering and the city engineer.(16.20.030)	*(Not applicable)*	*(Not applicable)*
Sidewalk location	Required both sides of road	Allow on only 1 side of road especially in low density neighborhoods	Prefer siting with land contours and for best pedestrian utility (e.g. connect with common areas and shared open spaces) – not necessarily immediately parallel to road.	*(Not applicable)*	Unless otherwise required by the planning board, sidewalks shall be planned and constructed in conjunction with the roadway or streets and shall be built in conformity with the requirements of the director of engineering and the city engineer.(16.20.030)	*(Not applicable)*	*(Not applicable)*
Sidewalk drainage	Draining to road, closed drainage system required	Not addressed	Disconnect drainage from road system – e.g. adjacent green strips or within vegetated areas that can absorb sheet flow	*(Not applicable)*	not addressed	*(Not applicable)*	not addressed
GOAL 4: ADOPT GREEN INFRASTRUCTURE STORMWATER MANAGEMENT PROVISIONS							

Rooftop runoff	Not addressed OR Prohibit directing clean roof runoff into closed municipal drainage systems.	Allow clean roof runoff to be directed to landscaped or naturally vegetated areas capable of absorbing without erosion, or infiltration	Require directing clean roof runoff to landscaped or naturally vegetated areas capable of absorbing, or infiltration	*(Not applicable)*	not addressed	*(Not applicable)*	d.The project incorporates appropriate measures to disconnect roof runoff and other paved areas from direct discharge to the drainage system. (7.b.2.d) Cisterns and rain barrels can be used to harvest and store rainwater runoff from roofs, which can help reduce flooding and erosion caused by stormwater runoff; an added benefit is that the rainwater contains no salts or sediment, providing "soft" chemical- free water for garden or lawn irrigation, reducing water bills, and conserving municipal water supplies.(App D)
Overall stormwater design; piping and surficial retention vs. LID	Conventional stormwater system design standards	Encourage LID features and BMPs; design standards often not specified	LID design standard encouraging infiltration, allowing surficial ponding of retained runoff for up to 72 hours; systems designed for larger volume storms, accounting for future precipitation predictions; credit for green roofs towards stormwater requirements. Following best practice may also help communities comply with MS4 permit requirements	*(Not applicable)*	LID not mentioned, Stormwater drainage facilities shall be constructed in conformity with the requirements of the director of engineering and the city engineer.(16.20.020)	*(Not applicable)*	a.Evaluation and implementation of Low Impact Development (LID) practices is required unless infeasible. Guidance on these practices is provided in Appendix D and the Massachusetts Stormwater Handbook. (7.a.2.a) criteria: b.The Applicant has evaluated and incorporated LID practices into the project. Measures such as, but not limited to, porous pavement, green roofs, rain gardens, bioretention areas, and rainwater harvesting and reuse have been considered. (7.b.2.b) app D of regulations details and encourages LID practices extensively
Site Plan/Design Requirements	LID not addressed	Encourage use of LID features in site design - such as reduced imperviousness, maintaining natural hydrology, preserving open space, and rainwater reuse	Include bioretention and other vegetated LID features in site landscaping/open space requirements. Following best practice may also help communities comply with MS4 permit requirements. See section 2.3.5 of the MS4 permit for more information	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	a.Evaluation and implementation of Low Impact Development (LID) practices is required unless infeasible. Guidance on these practices is provided in Appendix D and the Massachusetts Stormwater Handbook. (7.a.2.a) criteria: b.The Applicant has evaluated and incorporated LID practices into the project. Measures such as, but not limited to, porous pavement, green roofs, rain gardens, bioretention areas, and rainwater harvesting and reuse have been considered. (7.b.2.b) app D of regulations details and encourages LID practices extensively
Allow easy siting of LID features (bioretention, swales, etc.)	Not addressed OR Require waivers from subdivision standards	Encouraged along road ROW	Allowed on lots, common open space, or road ROW, easement recorded. For commercial development, allow an increase in floor area ratio or other developmental incentives for green roofs	LID not addressed	not addressed	*(Not applicable)*	*(Not applicable)*
Permeable paving	Not addressed OR Require waivers from subdivision standards	Allowed on private residential lots for parking, patios, etc.	Allowed for residential drives, parking stalls, spillover parking spaces, emergency access ways (with proper engineering support for emergency vehicles) Two track design allowed for driveways and secondary emergency access ways (where required).	*(Not applicable)*	not addressed	*(Not applicable)*	not addressed
Stormwater management O&M plan	Typically only addressed if municipality has a stormwater or LID bylaw, or for areas subject to wetlands permitting	Required	Required, contents specified in alignment with current MassDEP Stormwater Handbook. Following best practice may also help communities comply with MS4 permit requirements	*(Not applicable)*	not addressed	*(Not applicable)*	A requirement for applicants to submit a stormwater operation and maintenance plan for the stormwater management system and to maintain and report on the performance of that system over time. (20.03.070) Criteria for erosion and sediment control and post-construction stormwater management, including stormwater performance standards, shall be in accordance with the Massachusetts Stormwater Handbook, the NPDES Phase II General Permit for Municipal Small Separate Storm Sewer Systems in Massachusetts, and any supplemental requirements as may be contained in the stormwater regulations under Section 20.03.070 of this chapter. (20.03.090) 1.An Operation and Maintenance Plan (O&M Plan) is required at the time of application for all projects with onsite stormwater management facilities. The O&M Plan shall be designed to ensure compliance with the Permit, the Stormwater

Construction Erosion and Sedimentation Plan, and stormwater control	Basic general requirements	Required, contents specified - the site design process should include soil erosion and sedimentation control measures	Goes beyond minimum NPDES requirements. Requires minimization of site disturbance, reduction of construction waste, control measures not removed until proof of soil stabilization or reestablishment of vegetation. Written procedures for site inspection and enforcement included. Following best practice may also help communities comply with MS4 permit requirements. See section 2.3.5 of the MS4 permit for more information	*(Not applicable)*	not addressed	*(Not applicable)*	Criteria for erosion and sediment control and post-construction stormwater management, including stormwater performance standards, shall be in accordance with the Massachusetts Stormwater Handbook, the NPDES Phase II General Permit for Municipal Small Separate Storm Sewer Systems in Massachusetts, and any supplemental requirements as may be contained in the stormwater regulations under Section 20.03.070 of this chapter. (20.03.090) 1.An Erosion and Sediment Control Plan is
Stormwater discharge detection & elimination	Not addressed	Discharges and connections noted and/or limits set on quantity and quality	Illicit discharges and connections are probibited and enforced. Following best practice may also help communities comply with MS4 permit requirements. Find more information in section 2.3.4.a of the MS4 permit	The proposed method of sewage disposal, refuse disposal, or solid waste disposal will provide a clean, healthy, and safe environment, and is of adequate size and design to meet the needs of the proposed use. (29-28, e.8)	*(Not applicable)*	*(Not applicable)*	Illicit discharges. No person shall dump, discharge, cause or allow to be discharged any pollutant or non-stormwater discharge into the municipal separate storm sewer system (MS4), into a stormwater treatment facility on public or private property, into a watercourse, or into the waters of the commonwealth or the United States. B. Illicit connections. No person shall construct, use, allow, maintain or continue any illicit connection to the municipal storm sewer system, regardless of whether the connection was permissible under applicable law, regulation or custom at the time of c60)onnection. (20.02.0
Post- construction stormwater management and drainage patterns	Not addressed	Allow LID	Resemble pre-existing conditions of volume, velocity, quality and location, as nearly as possible, requiring LID to the max extent feasible. Retain vol of runoff >1in. per sq.ft. of impervious surface and/or remove 90% TSS post-construction & 50% TP generated on the site for new development, or >0.8in. per sq.ft and/or remove 80% TSS and 50% of TP load for redevelopment. Following best practice may also help communities comply with MS4 permit requirements.	Proposed storm water drainage is based upon a 10-year storm intensity occurrence, utilizing on site absorption wherever practical, and taking into account the contour of the land., The proposed method of sewage disposal, refuse disposal, or solid waste disposal will provide a clean, healthy, and safe environment, and is of adequate size and design to meet the needs of the proposed use. (29-28, e8 and 11)	not addressed	If development is permitted then "Stormwater is managed according to standards established by the department of environmental protection."(18.01.054, A2)	Criteria for erosion and sediment control and post-construction stormwater management, including stormwater performance standards, shall be in accordance with the Massachusetts Stormwater Handbook, the NPDES Phase II General Permit for Municipal Small Separate Storm Sewer Systems in Massachusetts, and any supplemental requirements as may be contained in the stormwater regulations under Section 20.03.070 of this chapter. (20.03.090) h.New development projects shall provide for removal of 90% of the average annual load of total suspended solids (TSS) and 60% of the average annual load of total phosphorus (TP) generated from the total post-construction impervious surface area on the site. Calculations of the proposed annual average load reductions of TSS and TP shall be completed using the Environmental Protection Agency (EPA) Region
As-built surveys	Not addressed	Recommended	Required, with written instructions for process; electronic submittal allowed	*(Not applicable)*	not addressed	*(Not applicable)*	2.As-built plan, stamped by a Massachusetts Registered Professional Engineer or Land Surveyor, and electronic copy, submitted no later than one (1) year after completion of construction, to include the following information: (10.2)
Intra-departmental communication and coordination	Not addressed	Informally or loosely occurring	Required for plan review and/or permit approvals	no explicit intradepartmental coordination mentioned, likely informal coordination between board of appeals, planning board, and building commissioner	no intradepartmental communication mentioned	Any municipal board, any agent of any such municipal board, any police officer, or any officer or official granted police powers maintaining lawful jurisdiction to exercise such police powers, shall have authority to assist the commission in the enforcement of this chapter or any regulation, action, decision, condition, or requirement lawfully approved or adopted by the commission. (18.01.130)	no intra-departmental coordination mentioned in bylaw or regulations.

Enforcement	No	Yes	Yes with fines. Same entity should oversee permit approvals and enforcement	duties of administering and enforcing this bylaw hereby conferred upon the building commissioner(29-35) penalty of 300 dollars a day for any violation (29-39)	no enforcement listed. Authority stands with director of engineering/city engineer as well as planning board	The commission is authorized to enforce or take all lawful measures available to enforce any regulation, action, decision, condition, or requirement approved or adopted by the commission. The commission is further authorized to enforce or take all lawful measures available to enforce any provision of this chapter. Said lawful measures taken by the commission may include, without limitation, the use of criminal process, civil process, or any other means permitted by law. Any person who violates any provision of this chapter or regulations thereunder, or any permits, enforcement order or violation notice of the commission or the conservation administrator issued thereunder, shall be punished by a fine of not more than $300.00 each day per violation. Each day or	The Board of Health or its employees or authorized agent shall enforce this chapter and associated regulations, orders, violation notices, and enforcement orders, and may pursue all criminal and civil remedies, including injunctive relief and monetary damages and costs of litigation and attorney fees, for such violations and for abatement and mitigation and compliance actions taken by the Board of Health . Enforcement shall be further defined and included as part of the regulations promulgated under Section 20.03.070 of this chapter. (20.03.120) A.The Reviewing Agent or an authorized agent of the Board of Health shall enforce the Stormwater Management Ordinance, Regulations, orders, violation notices, and enforcement orders, and may pursue all civil, criminal and non-criminal remedies for such violations. (12.A) C.Any person who violates any provision of the City of Lawrence Stormwater
GOAL 5: ENCOURAGE EFFICIENT PARKING							
Parking	Specific minimums set based on projected maximum use times	Encourage minimum # needed to serve routine use (e.g. 2/residential unit with any additional/visitors parking behind in driveway or on street.	Establish Maximum Parking spaces allowed. Do not require more than 2/residence. Allow tenants separate, optional lease agreements for parking.	minimum required parking for residential and non-res uses. For res 1-2 parking spaces minimum. Minimums not required in situations of parking management programs, which encourage carpooling or subsidized public transport (29-18, b&c)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Commercial Parking	Specific minimums set based on projected maximum use times adding all on-site uses together.	Some flexibility to reduce minimums based on street or other available nearby parking or transit.	Allowed shared parking for uses with different peak demand times. Provide model agreements/deed restrictions. Reduce parking requirements near transit. Limit parking stall size (9ftx18ft max), with up to 30% smaller for compact cars	minimum parking spaces required for commercial parking with some exceptions and decreases permitted if locations follow parking management plans (29-18, b&c) parking stall size is 8x16 feet in garages. 1/3 parking over 20 spaces may be used for compact cars(29-18. d) use of shared parking is strongly encouraged in AMSGO district, and parking requirements may be reduced under several circumstances (20-19C9)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
LID in Parking Areas	LID not addressed OR Require waivers e.g. for planting islands to drain down rather than built up surrounded by curbs	Allow LID/bioretention within parking areas.	Require landscaping within parking areas, as LID/bioretention, at a minimum of 10% of the interior area landscaped and a minimum of 25 square feet for island planting areas.	trees shall be planted at a rate of 2 shade trees and 3 ornamental trees for every 10 spaces, required trees shalll be located within or adjacent to parking lots as tree islands, medians, and at the end of parking bays, traffic delineators, or between rows of parking spaces in a manner such that no parking space is located more than 60 feet from a parking lot tree. planting areas within the parking lots shall provide a minimum of 81 sq ft per tree, with min inside dimentions of 9 feet and min prepared depth of 18 inches (29-46)	not addressed	*(Not applicable)*	c.The project incorporates appropriate measures to reduce stormwater runoff from the site through better site design practices, such as removing extraneous parking, reconfiguring required parking, minimizing the use of impervious materials, and providing enhanced vegetation. (3.b.c)

Lynnfield

Factors	Needs Improvement	Improved	Optimal	Chapter 260: Zoning	Chapter 375: Subdivision Regulations	Chapter 320: Conservation Commission Regulations: Stormwater Rules and Regulations	Chapter 213: Stormwater Management
				https://ecode360.com/30738580	https://ecode360.com/28618080#28618080	https://ecode360.com/37964050#37964050	https://ecode360.com/28618585; https://www.town.lynnfield.ma.us/sites/g/files/vyhlif3391/f/uploads/stormwater_management.pdf
GOAL 1: PROTECT NATURAL RESOURCES AND OPEN SPACE							
Soils managed for revegetation	Not addressed	Limitations on removal from site, and/or requirements for stabilization and revegetation	Prohibit removal of topsoil from site. Require rototilling and other prep of soils compacted during construction	*Not applicable*	Not addressed	*(Not applicable)*	*(Not applicable)*
Limit clearing, lawn size, require retention or planting of native vegetation/naturalized areas	Not addressed OR General qualitative statement not tied to other design standards	Encourage minimization of clearing/ grubbing	Require minimization of clearing/grubbing with specific standards	*Not applicable*	Due regard shall be shown for all natural features, such as large trees, stonewalls, watercourses, scenic points, historic spots, and similar community assets which if	*(Not applicable)*	*(Not applicable)*
Require native vegetation and trees	Not addressed OR General qualitative statement	Mixture of required plantings of native and nonnative	Require at least 75% native plantings	*Not applicable*	Not addressed	*(Not applicable)*	*(Not applicable)*
GOAL 2: PROMOTE EFFICIENT, COMPACT DEVELOPMENT PATTERNS AND INFILL							
Lot size	Not addressed OR Required minimum lot sizes	OSRD/NRPZ preferred. Special permit with incentives to utilize	Flexible with OSRD/NRPZ by right, preferred option	Required minimum lot sizes by district. Planned Village Development District: Density. Subject to the limit on maximum residential development in Section 9.5.7.8 below, residential uses shall be permitted as-of-right at the following densities: a. Multi-family residential uses shall be permitted as-of-right at a density of at least 25 dwelling units per acre of developable land. Minimum area and setbacks. There shall be no minimum lot area or setback requirements within the PVDD except for the residential buffer described herein. 8.1 Green Belt Residential Development. 8.1.1. Purpose. For the purpose of promoting the more efficient use of land in harmony with its natural features and with the general intent of the bylaw, and to protect and promote the health, safety, convenience and general welfare of the inhabitants of the Town, an owner or owners of a	*Not applicable*	*Not applicable*	*Not applicable*
Setbacks	Not addressed OR Required minimum front, side, and rear setbacks	Minimize, allow flexibility	Clear standards that minimize and in some instances eliminate setbacks	Required minimum front side and rear yard setbacks by district PVDD: There shall be no minimum lot area or setback requirements within the PVDD except for the residential buffer described herein.	*Not applicable*	*Not applicable*	*Not applicable*
Frontage	Not addressed OR Required minimum frontage for each lot/unit	Minimize especially on curved streets and cul-de-sacs	No minimums in some instances, tied into other standards like OSRD design and shared driveways.	PVDD. Nonfrontage Development. In the PVDD and on parcels that are contiguous to the PVDD, a lot lacking frontage may be developed and used without regard to the lack of frontage, provided that the nonfrontage	Not addessed	*Not applicable*	*Not applicable*
Common driveways	Not addressed OR Not allowed, strict limitations	Allow for 2-3 residential units	Allow for up to 4 residential units, preferrably constructed with permeable pavers or pavement	General. All vehicular access to and from any lot on which a business or commercial building or use is located (including accessory off-street parking spaces) shall be through designated driveway openings. 6.4.2. Dimensions. Driveway openings shall have a width of not more than 20 feet at the exterior line of the public or private way, and not more than one opening for entrance and one opening for exit (which may be contiguous with a total width of 40 feet) shall be permitted along any way for each 200 feet of lot frontage on said way, if in a Limited Business District, or for each 300 feet of lot frontage on said way, if in a General Business, Commercial, Office Park of Limited Industrial District. 6.4.3. Lots with Deficient Frontage. In the case of a lot having less than the specified frontage along the exterior line of a way, a total of not more than two designated driveway openings shall be permitted (one of which shall	*Not applicable*	*Not applicable*	*Not applicable*
GOAL 3: SMART DESIGNS THAT REDUCE OVERALL IMPERVIOUSNESS							
Impervious cover limits and infiltration rates	Not usually addressed in zoning and subdivision regs for rural/suburban residential	Require no net increase in site run-off from pre- to post-development	Impervious cover limits tailored to the commuity and district type (i.e. <10% total impervious cover in rural districts, but higher in urban and redevelopment districts); post-development infiltration should be equal to or greater than pre-development. Following best practice may also help communities comply with MS4 permit requirements	Not addressed	Not addressed	Not addressed	Not addressed
Street location	No standards addressed OR Numeric and geometric standards based primarily on vehicular travel and safety, with basic pedestrian requirements e.g. sidewalks	Flexibility in applying standards, to reduce area of impact, grading, avoid key natural features	OSRD design preferred by-right. Require locating streets to minimize grading and road length, avoid important natural features	PVDD. Design and location. The overall site design shall include a cohesive transportation network providing for vehicular and pedestrian circulation to and within the PVDD. Design and construction shall	designed so that, in the opinion of the Board, they will provide safe vehicular travel. Due consideration shall also be given to the attractiveness of the street layout in order to obtain the maximum	*Not applicable*	*Not applicable*

Road width	No categories addressed OR Major and minor categories, 24-30'	Wide, medium, narrow categories. 22-24' max, plus 2' shoulders	Wide, medium, narrow, and alley categories. 20-24' widest for 2 travel lanes, 18-20' low traffic residential neighborhood, plus 2' shoulders. Allow alleys and other low traffic or secondary emergency access and all shoulders to use alternative, permeable materials.	*(Not applicable)*	Roadways shall be constructed for the full length of all streets in the subdivision. The center line of such roadways shall coincide with the center line of the street rights-of-way unless a variance is specifically authorized by the Director of Public Works. The minimum width of roadways between curblines shall be as follows: (a) All principal streets: 32 feet. (b) All other: 26 feet.	*Not applicable*	*Not applicable*
Road ROW width	ROW Width not addressed OR 50-75', fully cleared and graded	40-50', some flexibility in extent of clearing	20-50'depending on road type	*(Not applicable)*	The minimum width of street rights-of-way shall be 50 feet for principal	*Not applicable*	*Not applicable*
Access Options	Common drives not addressed, No common drives allowed, Dead end allowed with limit on length and # of units	Allow dead end with limit on length and # of units. Allow common drives up to 2-3 units	Allow one way loop streets. Allow common drives up to 4 units, and alleys and rear-loading garages where suitable.	*(Not applicable)*	Not addressed	*Not applicable*	*Not applicable*
Dead Ends/Cul-de-sacs	No standards addressed OR 120 ft or more minimum turnaround	Minimize end radii – 35 ft	Allow hammerhead turnaround	*(Not applicable)*	Dead-end streets, if approved by the Planning Board, permanently designed as such, shall not be longer than 500 feet unless, in the opinion of the Board, a greater length is necessitated by compelling evidence that the greater length is (a) necessary due to topography or other objective local conditions and (b) so designed as to achieve the public safety benefits of a street that is 500 feet or less in length. (2) Dead-end streets, if approved by the Planning Board, permanently designed as such, shall be provided at the closed end with a turnaround having an outside property line diameter of at least 120 feet. Construction of an island within the turnaround is prohibited.	*Not applicable*	*Not applicable*
Cul-de-sacs	No standards addressed OR Full pavement standard	Encourage center landscaping with bioretention	Require center landscaping with bioretention	*(Not applicable)*	Dead-end streets, if approved by the Planning Board, permanently designed as such, shall be provided at the closed end with a turnaround having an outside property line diameter of at least 120 feet. Construction of an island within the turnaround is prohibited.	*Not applicable*	*Not applicable*
Curbing	No standards addressed OR Curbing required full length both sides of road	Allow curb breaks or curb flush with pavement to enable water to flow to vegetated LID features	Open drainage with roadside swales and no curbs preferred	*(Not applicable)*	Cape Cod bituminous concrete curbs shall be provided on all streets except where sloped granite curbs shall be provided on the radius of curves at all	*Not applicable*	*Not applicable*
Roadside Swales	Not addressed OR Allowed as an option	Preferred over closed drainage	Preferred, with criteria for proper design. Adoption of technical specifications and design templates for green infrastructure recommended	*(Not applicable)*	Not addressed	*Not applicable*	*Not applicable*
Utilities	Off sets required contributing to wide road ROWs	Not specified - flexible	Allow under road, sidewalks or immediately adjacent to roads to enable placement of roadside swales.	*(Not applicable)*	The relative location of underground utilities shall be proposed by the developer, subject to the approval of the Planning Board in consultation with the various agencies responsible	*Not applicable*	*Not applicable*
Sidewalks	Material not addressed OR Concrete or bituminous required	Some flexibility in material and design	Prefer permeable pavement or permeable pavers	*(Not applicable)*	Sidewalks, having a width of not less than five feet if on a principal street, or four feet if on any other street, shall be constructed along both sides of all streets. The sidewalks shall be constructed of three inches of hot top.	*Not applicable*	*Not applicable*
Sidewalk location	Required both sides of road	Allow on only 1 side of road especially in low density neighborhoods	Prefer siting with land contours and for best pedestrian utility (e.g. connect with common areas and shared open spaces) – not necessarily immediately parallel to road.	Planned Village Development District: Design and Location. The overall site design shall include a cohesive transportation network providing for vehicular and pedestrian circulation to and within the PVDD. Design and construction shall incorporate sound engineering and construction standards including adequate provisions for drainage.	Sidewalks, having a width of not less than five feet if on a principal street, or four feet if on any other street, shall be constructed along both sides of all streets. The sidewalks shall be constructed of three inches of hot top.	*Not applicable*	*Not applicable*
Sidewalk drainage	Draining to road, closed drainage system required	Not addressed	Disconnect drainage from road system – e.g.adjacent green strips or within vegetated areas that can absorb sheet flow	*(Not applicable)*	Not addressed	*Not applicable*	*Not applicable*
GOAL 4: ADOPT GREEN INFRASTRUCTURE STORMWATER MANAGEMENT PROVISIONS							
Rooftop runoff	Not addressed OR Prohibit directing clean roof runoff into closed municipal drainage systems.	Allow clean roof runoff to be directed to landscaped or naturally vegetated areas capable of absorbing without erosion, or infiltration	Require directing clean roof runoff to landscaped or naturally vegetated areas capable of absorbing, or infiltration	*(Not applicable)*	Not addressed	Not addressed	*Not applicable*

Overall stormwater design; piping and surficial retention vs. LID	Conventional stormwater system design standards	Encourage LID features and BMPs; design standards often not specified	LID design standard encouraging infiltration, allowing surficial ponding of retained runoff for up to 72 hours; systems designed for larger volume storms, accounting for future precipitation predictions; credit for green roofs towards stormwater requirements. Following best practice may also help communities comply with MS4 permit requirements	*(Not applicable)*	Storm drains, culverts and related installations, including catch basins, gutters, and manholes, shall be installed as necessary to provide adequate disposal of surface water from all streets within the subdivision and adjacent land. (2) Each subdivision, regardless of its size, shall have a stormwater management system compliant with the latest edition of the Massachusetts Department of Environmental Protection's (DEP) Stormwater Management Handbook and the requirement of these regulations. (3) For projects that result in a land disturbance that will disturb equal to or greater than one acre of land or will disturb less than one acre of land but is part of a larger common plan of development or sale that will ultimately disturb equal to or greater than one acre of land, the stormwater management system shall also be compliant with the following design criteria: (a) Low impact development (LID)	Performance standards. Projects shall meet the following 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. (2) Stormwater management systems design shall be consistent with, or more stringent than, the requirements of the latest edition of the Massachusetts Stormwater Handbook. (3) Capacity of drainage systems shall be designed to handle all stormwater runoff from the site, including runoff generated from the 100-year storm event using the following methods: (a) All piping and grate inlets shall be designed to handle flow up to a twenty-five-year twenty-four-hour storm	*Not applicable*
Site Plan/Design Requirements	LID not addressed	Encourage use of LID features in site design - such as reduced imperviousness, maintaining natural hydrology, preserving open space, and rainwater reuse	Include bioretention and other vegetated LID features in site landscaping/open space requirements. Following best practice may also help communities comply with MS4 permit requirements. See section 2.3.5 of the MS4 permit for more information	Not addressed	Not addressed	Not addressed	*Not applicable*
Allow easy siting of LID features (bioretention, swales, etc.)	Not addressed OR Require waivers from subdivision standards	Encouraged along road ROW	Allowed on lots, common open space, or road ROW, easement recorded. For commercial development, allow an increase in floor area ratio or other developmental incentives for green roofs	Not addressed	Not addressed	Not addressed	*Not applicable*
Permeable paving	Not addressed OR Require waivers from subdivision standards	Allowed on private residential lots for parking, patios, etc.	Allowed for residential drives, parking stalls, spillover parking spaces, emergency access ways (with proper engineering support for emergency vehicles) Two track design allowed for driveways and secondary emergency access ways (where required)	Not addressed	Not addressed	Not addressed	*Not applicable*
Stormwater management O&M plan	Typically only addressed if municipality has a stormwater or LID bylaw, or for areas subject to wetlands permitting	Required	Required, contents specified in alignment with current MassDEP Stormwater Handbook. Following best practice may also help communities comply with MS4 permit requirements	*(Not applicable)*	A stormwater management system operations and maintenance plan shall be submitted to and compliant with the Department of Environmental Protection's Technical Guide for Compliance with the Massachusetts Stormwater Management Standards. The subdivision's homeowners' association trust shall be made responsible for maintaining the stormwater management system in perpetuity and, if necessary, replacing the system if the system fails. The owner is required to obtain an annual certification from a Professional Engineer (P.E.) registered in Massachusetts that maintenance is being performed on structural best management practices (BMPs). The annual certification must be submitted to the Town with required administrative forms and an operations and maintenance fee.	A stand-alone operation and maintenance plan (O&M plan) is required at the time of application for all projects. The maintenance plan shall be designed to ensure compliance with the permit and these regulations. The authorized enforcement authority shall make the final decision of what maintenance option is appropriate in a given situation. The authority will consider natural features, proximity of site to water bodies and wetlands, extent of impervious surfaces, size of the site, the types of stormwater management structures, and potential need for ongoing maintenance activities when making this decision. The operation and maintenance plan shall remain on file with the authority and shall be an ongoing requirement. The	*Not applicable*
Construction Erosion and Sedimentation Plan, and stormwater control	Basic general requirements	Required, contents specified - the site design process should include soil erosion and sedimentation control measures	Goes beyond minimum NPDES requirements. Requires minimization of site disturbance, reduction of construction waste, control measures not removed	*(Not applicable)*	General erosion and sediment control practices shall be implemented during construction to meet the following design requirements: (1) Minimize total area of	Design requirements. (1) Minimize total area of disturbance; (2) Sequence activities to minimize simultaneous areas	*Not applicable*

Stormwater discharge detection & elimination	Not addressed	Discharges and connections noted and/or limits set on quantity and quality	Illicit discharges and connections are probibited and enforced. Following best practice may also help communities comply with MS4 permit requirements. Find more information in section 2.3.4.a of the MS4 permit	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	§ 213-7 Prohibited activities. A. Illicit discharges. No person shall dump, discharge, or cause or allow to be discharged any pollutant or non-stormwater discharge into the municipal storm drainage system (MS4), into a watercourse, or into the waters of the commonwealth or the Town of Lynnfield. B. Illicit connections. No person shall construct, use, allow, maintain or continue any illicit connection to the municipal storm drainage system, regardless of whether the connection was permissible under applicable law, regulation or custom at the time of connection. C. Obstruction of municipal storm drainage system. No person shall obstruct or interfere with the normal flow of stormwater into or out of the municipal storm drainage system without prior written approval from the authorized enforcement authority.
Post- construction stormwater management and drainage patterns	Not addressed	Allow LID	Resemble pre-existing conditions of volume, velocity, quality and location, as nearly as possible, requiring LID to the max extent feasible. Retain vol of runoff >1in. per sq.ft. of impervious surface and/or remove 90% TSS post-construction & 50% TP generated on the site for new development, or >0.8in. per sq.ft and/or remove 80% TSS and 50% of TP load for redevelopment. Following best practice may also help communities comply with MS4 permit requirements.	The addition of 600 square feet or more of impervious area shall require the applicant to specify a means to prevent an increase in the rate of rainfall runoff for the site resulting from the proposed alteration. Computations prepared by a registered professional engineer in support of the design of these preventive means shall be provided with the application. No increase of the peak rate of runoff for the two-, ten-, and one-hundred-year storms based upon the methodologies set forth in the United States Soil Conservation Service Technical Release No. 55 as amended shall be allowed. Said means, such as holding ponds, dry wells, or other equivalent permanent methods shall be shown including the location of all structures and piping with their invert elevations.	For projects that result in a land disturbance that will disturb equal to or greater than one acre of land or will disturb less than one acre of land but is part of a larger common plan of development or sale that will ultimately disturb equal to or greater than one acre of land, the stormwater management system shall also be compliant with the following design criteria: (a) 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. (b) Stormwater management systems shall be designed to meet an average annual pollutant removal equivalent to 90% of the average annual load of TSS and 60% of the average annual load of total phosphorus (TP) related to the total post-construction impervious area on the site as achieved through one of the following methods: (1)	Not addressed	*Not applicable*
As-built surveys	Not addressed	Recommended	Required, with written instructions for process; electronic submittal allowed	*(Not applicable)*	Not addressed	Not addressed	*Not applicable*
Intra-departmental communication and coordination	Not addressed	Informally or loosely occurring	Required for plan review and/or permit approvals	*(Not applicable)*	Not addressed	Not addressed	*Not applicable*
Enforcement	No	Yes	Yes with fines. Same entity should oversee permit approvals and enforcement	10.2 Enforcement and Penalties. 10.2.1. Building Commissioner. The bylaw shall be enforced by the Building Commissioner. The Building Commissioner, upon being informed in writing of a possible violation of the bylaw or on his own initiative, shall make or cause to be made an investigation of facts and an inspection of the premises where such violation may exist. The Building Commissioner, on evidence of any violation, after investigation and inspection shall give written notice of such violation to the owner and to the occupant of such premises. The Building Commissioner shall demand in such notice that such violation be abated and within a reasonable time, designated therein by the Building Commissioner. Such notice and demand may be given by mail addressed to the owner at the address appearing for him on the most recent real estate tax records of the Town of	Not addressed	The Conservation Commission or an authorized agent shall enforce these rules and regulations, the Stormwater Management Bylaw, orders, violation notices, and enforcement orders, and may pursue all civil and criminal remedies for such violations. The provisions are detailed in Chapter 213, Article II, Stormwater Management Bylaw, of the Town's Charter and Bylaws.	The Director of the Department of Public Works or his or her appointed designee shall enforce this Article I and all regulations, orders, violation notices, and enforcement orders issued thereunder and may pursue all civil and criminal remedies for such violations. compliance with the requirements of the permit, waiver, or order and applicable laws and regulations; and Discharge for which advanced written approval is received from the authorized enforcement authority as necessary to protect the public health, safety or welfare or the environment. (15) Civil relief. If a person violates the provisions of this Article I, or any regulation, permit, notice, or order issued thereunder, the authorized enforcement authority may seek injunctive relief in a court of A. competent jurisdiction restraining the person from
GOAL 5: ENCOURAGE EFFICIENT PARKING							
Parking	Specific minimums set based on projected maximum use times	Encourage minimum # needed to serve routine use (e.g. 2/residential unit with any additional/visitors parking behind in driveway or on street.	Establish Maximum Parking spaces allowed. Do not require more than 2/residence. Allow tenants separate, optional lease agreements for parking.	Not addressed	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*

Commercial Parking	Specific minimums set based on projected maximum use times adding all on-site uses together.	Some flexibility to reduce minimums based on street or other available nearby parking or transit.	Allowed shared parking for uses with different peak demand times. Provide model agreements/deed restrictions. Reduce parking requirements near transit. Limit parking stall size (9ftx18ft max), with up to 30% smaller for compact cars	Retail stores: At least one off-street parking space for each 180 square feet of ground floor area of the building plus one additional space for each 360 square feet of floor area in all stories above the first story. Restaurants: At least one off-street parking space for each 180 square feet of ground floor area of the building plus one additional space for each 360 square feet of floor area in all stories above the first story, or at least one off-street parking space for each three seats provided for patron use, whichever requires the greater number of parking spaces. Shops of building trades, printing and publishing establishments: At least one off-street parking space for each two persons employed or anticipated being employed, on the largest shift. Planned Village Development District: Retail: 1 space per 250 square feet of gross leasable floor area. Office: 1 space per 333 square feet of gross leasable floor area. Medical or Dental Office or Clinic: 3 spaces for each	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
LID in Parking Areas	LID not addressed OR Require waivers e.g. for planting islands to drain down rather than built up surrounded by curbs	Allow LID/bioretention within parking areas.	Require landscaping within parking areas, as LID/bioretention, at a minimum of 10% of the interior area landscaped and a minimum of 25 square feet for island planting areas.	Not addressed	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*

Manchester

Factors	Needs Improvement	Improved	Optimal	Zoning Bylaw	Subdivision Regulations	Stormwater Control Bylaw (Draft shared by municipal liason)	Wetlands Protection Bylaw	Misc.
GOAL 1: PROTECT NATURAL RESOURCES AND OPEN SPACE								
Soils managed for revegetation	Not addressed	Limitations on removal from site, and/or requirements for stabilization and revegetation	Prohibit removal of topsoil from site. Require rototilling and other prep of soils compacted during construction	Not Addressed	From Appendix A Roadway Construction Specification Standards 4.0: All areas disturbed by construction and grading operations adjacent to the pavement and sidewalk, within the limits of the Right-of-Way shall be seeded. A minimum of six (6) inches of loam (depth after compaction) shall be applied and the areas shall be seeded with grass seed. Composition of seed mixture must be indicated on the Definitive Landscape Plan. A dense robust vegetated area must be established and maintained until the development is certified as complete by the Board. These areas shall be periodically mowed and watered as required to maintain a neat appearance during construction of houses in the development.	Not Applicable	Not Addressed	From Article XII Section 3 Earth Removal Proceudre: Permit Required - The removal of more than 250 cubic yards of earth from any parcel of land within the Town of Manchester, not in public use, shall, except as hereinafter provided, be allowed only in accordance with a written permit therefor issued by the Planning Board. From Article XII Section 4 General Limitations: In granting a permit hereunder, the Planning Board shall impose reasonable conditions especially designated to safeguard the neighborhood and the Town. These conditions shall be written upon and shall constitute part of the written permit, including, but not limited to:...grading of slopes and replacement of loam over the area of removal; planting of the area to suitable cover, including trees, necessary to restore the area to usable condition..."
Limit clearing, lawn size, require retention or planting of native vegetation/naturalized areas	Not addressed OR General qualitative statement not tied to other design standards	Encourage minimization of clearing/ grubbing	Require minimization of clearing/grubbing with specific standards	From Section 6.16 Topographical Land Changes and Land Clearing Special Permit: It is intended to encourage the conservation of open space, and the general topographical layout of the land, promote less land clearing, grading and excavation especially in rocky, hilly terrain, preserve existing wetlands, recharge areas, rivers, streams, marshes, historic sites, unique geological and botanical areas or features, trails, paths and open-space links, specimen trees, wildlife habitat and contiguous forested areas, and preserve natural vegetative buffer zones abutting neighboring parcels.	From Section 12 Preservation of Natural Vegetation: Every effort shall be made to preserve the existing trees or other rare or unique flora within the R.O.W. and on the lots being created. Cuts and fill for roadway construction shall be done in a manner that preserves natural vegetation whenever possible. Stock-piles of fill shall be located in areas that do not bury existing trees above the natural grade. Machine operators shall exercise due caution during construction and avoid unnecessary damage to root systems or scraping bark from trees to be preserved.	Not Applicable	From Article XVII Section 3 Regulations: The ConCom may establish in its rules and regulations design specifications, performance standards, and other measures and safeguards, including setbacks, no-disturb areas, no-build areas, maintenance of strips of continuous undisturbed vegetative cover, landscaping and other features, and other work limits for protection of Resource Area Buffer Zones [as hereinafter defined]. ...No person shall commence to alter the following areas ("Resource Areas"): 4.1.1 any freshwater or coastal wetland; salt marsh; wet meadow; bog; swamp; vernal pool; spring; bank; reservoir; lake; pond; river or stream; beach; dune; estuary; coastal bank; lands under any water body; land subject to flooding or inundation by groundwater or surface water; land subject to tidal action; coastal storm flowage or flooding; and 4.1.2 lands within 200 feet of any river or perennial stream, brook or creek ("Riverfront Area"). 4.2 Except as permitted by the ConCom pursuant to this By-Law or as otherwise allowed by this By-Law, no person shall commence to alter lands within 100 feet of any: freshwater or coastal wetland; salt marsh; wet meadow; bog; swamp; vernal	
Require native vegetation and trees	Not addressed OR General qualitative statement	Mixture of required plantings of native and nonnative	Require at least 75% native plantings	Not Addressed	Not Addressed	Not Applicable	Not Addressed	
GOAL 2: PROMOTE EFFICIENT, COMPACT DEVELOPMENT PATTERNS AND INFILL								
Lot size	Not addressed OR Required minimum lot sizes	OSRD/NRPZ preferred. Special permit with incentives to utilize	Flexible with OSRD/NRPZ by right, preferred option	From Section 5.4 Minimum Area and Dimensional Requirements: No lot shall be changed as to size or shape so as to result in the violation of the requirements set forth in the table below. See Table in Sec 5.4. From Section 6.7 Special Provision for Open Space Planning: The Planning Board may, subject to this Section 6.7, and after notice and hearing in accordance with the law, grant a Special Permit authorizing exceptions from a lot area and lot frontage requirements specified in Section 5.4. in Single Residence A, C, or E Districts	Not Addressed	Not Applicable	Not Applicable	
Setbacks	Not addressed OR Required minimum front, side, and rear setbacks	Minimize, allow flexibility	Clear standards that minimize and in some instances eliminate setbacks	From Section 5.4 Minimum Area and Dimensional Requirements: No lot shall be changed as to size or shape so as to result in the violation of the requirements set forth in the table below. See Table in Sec 5.4.	Not Addressed	Not Applicable	Not Applicable	
Frontage	Not addressed OR Required minimum frontage for each lot/unit	Minimize especially on curved streets and cul-de-sacs	No minimums in some instances, tied into other standards like OSRD design and shared driveways.	From Section 5.4 Minimum Area and Dimensional Requirements: No lot shall be changed as to size or shape so as to result in the violation of the requirements set forth in the table below. See Table in Sec 5.4.	Not Addressed	Not Applicable	Not Applicable	
Common driveways	Not addressed OR Not allowed, strict limitations	Allow for 2-3 residential units	Allow for up to 4 residential units, preferrably constructed with permeable pavers or pavement	From Section 8.5 Common Driveways: Furthermore, no common driveway shall be accepted as a public road; nor shall the Town under any circumstances be held liable for construction, reconstruction, maintenance, or snow removal on any common driveway, unless by contract duly entered into by the Town and all landowners served by the common driveway. Common driveways shall be built in accordance with the following standards: 1. Minimum driveway width: 16'(18' if over 100' in length) residential use; 24' all other uses. 2. Maximum driveway grade of 10%. 3. Maximum driveway length of 500'. 4. The common driveway, at its intersection with the street, must provide a leveling off area with a slope no greater than 1% for the first 20' and a slope no greater than 5% for the next 30'.	Not Addressed	Not Applicable	Not Applicable	
Limit impervious area – Rural Districts In high density areas, require post-development infiltration to = or > predevelopment	Not addressed (Not usually addressed in zoning and subdivision regs for rural/suburban residential)	<15%	<10%	From Section 5.4 Minimum Area and Dimensional Requirements: Maximum % coverage of lot by structures and impervious surfaces ranges from 25% - 40% From Section 6.15.7.C Stormwater Management Plan, Standards: Stormwater management systems must be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates. Loss of annual recharge to groundwater should be minimized through the use of infiltration measures to the maximum extent practicable. The annual recharge from the post-development site should approximate the annual recharge rate from the pre-development or existing site conditions, based on soil types.	From Setion 8.4.1 Design Requirements: There shall be no increase in the peak rate of storm water runoff leaving the site for pre- and post- development.	From Section 6.15.7 Standards (also from MA Stormwater Handbook): 3.Loss of annual recharge to groundwater shall be eliminated or minimized with infiltration measures including environmentally sensitive site design, low impact development techniques, stormwater best management practices, and good operation and maintenance. The annual recharge from the post-development site should approximate the annual recharge rate from the pre-development or existing site conditions based on soil types. This Standard is met when the stormwater management system is designed to infiltrate the required recharge volume as determined in accordance with the Massachusetts Stormwater Handbook.	Not Applicable	
GOAL 3: SMART DESIGNS THAT REDUCE OVERALL IMPERVIOUSNESS								

Street location	No standards addressed OR Numeric and geometric standards based primarily on vehicular travel and safety, with basic pedestrian requirements e.g. sidewalks	Flexibility in applying standards, to reduce area of impact, grading, avoid key natural features	OSRD design preferred by-right. Require locating streets to minimize grading and road length, avoid important natural features	Not Applicable	Not Addressed	Not Applicable	Not Applicable	
Road width	No categories addressed OR Major and minor categories, 24-30'	Wide, medium, narrow categories. 22-24' max, plus 2' shoulders	Wide, medium, narrow, and alley categories. 20-24' widest for 2 travel lanes, 18-20' low traffic residential neighborhood, plus 2' shoulders. Allow alleys and other low traffic or secondary emergency access and all shoulders to use alternative, permeable materials.	Not Applicable	From Section 8.3.2 Pavement Widths: 20'-34' with curbing in addition to travelled way width.	Not Applicable	Not Applicable	
Road ROW width	ROW Width not addressed OR 50-75', fully cleared and graded	40-50', some flexibility in extent of clearing	20-50'depending on road type	Not Applicable	From Section 8.3.1 Classification of Streets: Subdivision streets shall be divided into the following classifications for the purpose of establishing the applicable design and construction standards: Arterial Streets shall have a R.O.W. layout width of seventy-five (75) feet. Collector Streets shall have a R.O.W. layout width of sixty (60) feet. Minor Streets shall have a R.O.W. layout width of fifty (50) feet. Second means of access/egress required. Lanes including cul-de-sacs shall have a R.O.W. layout width of forty (40) feet. No second means of access required.	Not Applicable	Not Applicable	
Access Options	Common drives not addressed, No common drives allowed, Dead end allowed with limit on length and # of units	Allow dead end with limit on length and # of units. Allow common drives up to 2-3 units	Allow one way loop streets. Allow common drives up to 4 units, and alleys and rear-loading garages where suitable.	Not Applicable	Not Addressed	Not Applicable	Not Applicable	
Dead Ends/Cul-de-sacs	No standards addressed OR 120 ft or more minimum turnaround	Minimize end radii – 35 ft	Allow hammerhead turnaround	Not Applicable	From Section 8.3.7 Cul-De-Sacs: A circular turnaround having an outside roadway diameter of at least one hundred (100) feet, and a property line diameter of at least one hundred and twenty (120) feet unless otherwise specified by the Board. The Board may, at its option, allow an outside roadway diameter of up to two hundred (200) feet with the placement of a circular landscaped island with a minimum radius of twenty (20) feet a the center of the turnaround, if the dead-end street is not intended to connect with another street at some future point in time... Modified turnarounds such as hammerhead turnarounds may not be used.	Not Applicable	Not Applicable	
Cul-de-sacs	No standards addressed OR Full pavement standard	Encourage center landscaping with bioretention	Require center landscaping with bioretention	Not Applicable	From Section 8.3.7 Cul-De-Sacs: The unpaved area of all cul-de-sac turnarounds must be landscaped with low maintenance trees and shrubbery.	Not Applicable	Not Applicable	
Curbing	No standards addressed OR Curbing required full length both sides of road	Allow curb breaks or curb flush with pavement to enable water to flow to vegetated LID features	Open drainage with roadside swales and no curbs preferred	From Section 6.2.7 Driveway/Curb Cuts: No person shall construct a driveway or entrance from the traveled portion or from the curb of any street or way open to public use in the Town of Manchester-by-the-Sea for the purpose of passing to or from abutting property nor cut any curbing for any purpose without applying for and receiving a permit from the Planning Board, under such conditions and restrictions as the Board shall determine to be necessary to protect public safety, to prevent erosion and sedimentation, to assure proper drainage and for related purposes.	From Appendix A Roadway Construction Specification Standards 3.1: Curb or berm shall be placed along both shoulders of traveled ways.... Curbing shall be omitted along roadways segments or along entire roadways to allow stormwater runoff to flow into dry swales.	Not Applicable	Not Applicable	
Roadside Swales	Not addressed OR Allowed as an option	Preferred over closed drainage	Preferred, with criteria for proper design. Adoption of technical specifications and design templates for green infrastructure recommended	Not Applicable	Not allowed. From Section 8.4.1 Design Requirements: Swales - Wherever practical, except alongside roadways, stormwater shall be channeled via open swales to facilitate the removal of contaminants.	Not Applicable	Not Applicable	
Utilities	Off sets required contributing to wide road ROWs	Not specified - flexible	Allow under road, sidewalks or immediately adjacent to roads to enable placement of roadside swales.	Not Applicable	From Section 8.3.3 Cross Section: Except by approval of the Board, all wires for electricity, cable television, telephones or similar utility distribution systems shall be installed in conduit underground with all such distribution systems spaced not less than thirty six (36) inches (horizontally) from any water main, detector tape should be placed above the conduits.	Not Applicable	Not Applicable	
Sidewalks	Material not addressed OR Concrete or bituminous required	Some flexibility in material and design	Prefer permeable pavement or permeable pavers	Not Applicable	From Appendix A Roadway Construction Specification Standards 2.1 Location, section and dimensions of concrete sidewalks shall be as shown in Figure 2. Sidewalks shall be at least six (6) inches higher than the adjacent roadway and at least 4'-6" wide. Sidewalks shall be constructed of four (4) inches of cement concrete on a minimum eight (8) inch gravel borrow sub-base conforming to the requirements of Section 701 of the Standard Specifications.	Not Applicable	Not Applicable	
Sidewalk location	Required both sides of road	Allow on only 1 side of road especially in low density neighborhoods	Prefer siting with land contours and for best pedestrian utility (e.g. connect with common areas and shared open spaces) – not necessarily immediately parallel to road.	Not Applicable	Not Addressed	Not Applicable	Not Applicable	
Sidewalk drainage	Draining to road, closed drainage system required	Not addressed	Disconnect drainage from road system – e.g.adjacent green strips or within vegetated areas that can absorb sheet flow	Not Applicable	From Section 8.4.1 Design Requirements: Swales - Wherever practical, except alongside roadways, stormwater shall be channeled via open swales to facilitate the removal of contaminants.	Not Applicable	Not Applicable	
GOAL 4: ADOPT GREEN INFRASTRUCTURE STORMWATER MANAGEMENT PROVISIONS								
Rooftop runoff	Not addressed OR Prohibit directing clean roof runoff into closed municipal drainage systems.	Allow clean roof runoff to be directed to landscaped or naturally vegetated areas capable of absorbing without erosion, or infiltration	Require directing clean roof runoff to landscaped or naturally vegetated areas capable of absorbing, or infiltration	Not Addressed	Not Applicable	Not Applicable	Not Applicable	

Overall stormwater design; piping and surficial retention vs. LID	Conventional stormwater system design standards		LID design standard. Allow surficial ponding of retained runoff for up to 72 hours and credit for green roofs towards stormwater requirements	Not Addressed	From Section 8.4 Stormwater - Drainage: Design - Storm water drainage systems shall implement "Best Management Practices" and conform to the guidelines described in the Performance Standards and Guidelines for Storm Water Management in Massachusetts published by the Massachusetts Department of Environmental Protection. Under certain circumstances, the Planning Board may also consider, after demonstration by a registered engineer, other designs and practices common to Low Impact Development (LID) to mitigate the effects of storm water runoff when reviewing storm water drainage systems.	Not Applicable	Not Applicable	
Site Plan Requirements	LID not addressed	Encourage use of LID features in site design	Count bioretention and other vegetated LID features toward site landscaping/open space requirements.	From Section 6.5.4 Site Plan Review, Application Requirements LID Not Addressed	LID Not Addressed	Not Applicable	Not Applicable	
Allow easy siting of LID features (bioretention, swales, etc.)	Not addressed OR Require waivers from subdivision standards	Encouraged along road ROW	Allowed on lots, common open space, or road ROW, easement recorded. For commercial development, allow an increase in floor area ratio or other developmental incentives for green roofs	Not Addressed	Bioretention and Swales are addressed, but not preferred.	Not Applicable	Not Applicable	
Permeable paving	Not addressed OR Require waivers from subdivision standards	Allowed on private residential lots for parking, patios, etc.	Allowed for residential drives, parking stalls, spillover parking spaces, emergency access ways (with proper engineering support for emergency vehicles) Two track design allowed for driveways and secondary emergency access ways (where required).	Not Addressed	Not Addressed	Not Applicable	Not Applicable	
Stormwater management O&M plan	Typically only addressed if municipality has a stormwater or LID bylaw, or for areas subject to wetlands permitting	Required	Required, surficial bioretention and swales preferred. Closed/underground systems requiring specialized inspection and clean out discouraged.	From Section 6.15.8 Stormwater Management, Operation and Maintenance Plans: An Operation and Maintenance Plan (O&M Plan) is required at the time of application for all projects. The O&M Plan shall be designed to ensure that compliance with the Permit, this By-Law and the Massachusetts Surface Water Quality Standards, 314 CMR 4.00 are met in all seasons and throughout the life of the system. The Planning Board shall make the final decision of what maintenance option is appropriate in a given situation. The Planning Board will consider natural features, proximity of site to water bodies and wetlands, extent of impervious surfaces, size of the site, the types of stormwater management structures, and potential need for ongoing maintenance activities when making this decision. The O&M Plan shall remain on file with the Planning Board and shall be an ongoing requirement. The O&M Plan shall include: *see text for more details.*	From Section 8.4.1 Design Requirements: An Operation and Maintenance Plan shall be submitted to set up the functional, financial and organizational mechanisms for the ongoing operation and maintenance of the stormwater management system, based on Section 6.15.8 of the Zoning By-Law of Manchester-by-the-Sea.	From Section 6.15.7 Stormwater Management Plan: A.The Stormwater Management Plan shall contain sufficient information for the Planning Board to evaluate the environmental impact, effectiveness, and acceptability of the measures proposed by the applicant for reducing adverse impacts from stormwater. The Plan shall be designed to meet the Massachusetts Stormwater Management Standards as set forth in Part 8 of this section and DEP Stormwater Management Handbook Volumes I and II. The Stormwater Management Plan shall fully describe the project in drawings, and narrative. *See text for more detail and plan contents.* FRom 6.15.7 Standards (also from MA Stormwater Handbook): 9.All stormwater management systems must have a long term Operation and Maintenance Plan to ensure that systems function as designed.	Not Applicable	
Construction Erosion and Sedimentation Plan required	Basic general requirements	Required, contents specified	Goes beyond minimum NPDES requirements, requires minimization of site disturbance	Not Addressed	From Section 6.11 Erosion and Sediment Control Plan: In order to reduce erosion occurring from the construction of roadways, utilities, drainage structures and regrading of house lots, and to prevent siltation/ sedimentation of water bodies, water courses and wetlands resource areas, the Board shall require the submission of an Erosion/ Sediment control plan. This plan shall explain in detail the specific mitigating measures that will be implemented by the developer, and any subsequent lot owners, both for short term and long term construction of the subdivision, including house lots. *See text for contents required.*	From Section 6.15.7 Standards (also from MA Stomrwater Handbook): 8.A plan to control construction-related impacts including erosion, sedimentation and other pollutant sources during construction and land disturbance activities (construction period erosion, sedimentation, and pollution prevention plan) shall be developed and implemented.	Not Applicable	
GOAL 5: ENCOURAGE EFFICIENT PARKING								
Parking	Specific minimums set based on projected maximum use times	Encourage minimum # needed to serve routine use (e.g. 2/residential unit with any additional/visitors parking behind in driveway or on street.	Establish Maximum Parking spaces allowed. Do not require more than 2/residence. Allow tenants separate, optional lease agreements for parking.	From Section 6.2 Off-Street Parking and Driveway/Curb Cut Regulations: The following shall apply to all premises in all districts: 6.2.1 Performance Requirement: Off-street parking must be provided to service the net increase in parking demand created by new construction, additions or change of use. 6.2.2 Number of Spaces: The standards below must be met without counting any existing parking necessary for existing activities to meet these requirements. Off-street parking spaces shall be designed with minimum dimensions of 9 feet by 20 feet.	Not Applicable	Not Applicable	Not Applicable	
Commercial Parking	Specific minimums set based on projected maximum use times adding all on-site uses together.	Some flexibility to reduce minimums based on street or other available nearby parking or transit.	Allowed shared parking for uses with different peak demand times. Provide model agreements/deed restrictions. Reduce parking requirements near transit. Limit parking stall size (9ftx18ft max), with up to 30% smaller for compact cars	From Section 6.2 Off-Street Parking and Driveway/Curb Cut Regulations: The following shall apply to all premises in all districts: 6.2.1 Performance Requirement: Off-street parking must be provided to service the net increase in parking demand created by new construction, additions or change of use. 6.2.2 Number of Spaces: The standards below must be met without counting any existing parking necessary for existing activities to meet these requirements. Off-street parking spaces shall be designed with minimum dimensions of 9 feet by 20 feet.	Not Applicable	Not Applicable	Not Applicable	
LID in Parking Areas	LID not addressed OR Require waivers e.g. for planting islands to drain down rather than built up surrounded by curbs	Allow LID/bioretention within parking areas.	Require landscaping within parking areas, as LID/bioretention, at a minimum of 10% of the interior area landscaped and a minimum of 25 square feet for island planting areas.	From Sec 6.2.6 Parking Lot Plantings: Parking lots containing (5) or more parking spaces shall have at least one (1) tree per five (5) parking spaces, such trees to be located either within the lot or within (5') feet of it. Such trees shall be at least two (2") inches trunk diameter, with not less than forty (40) square feet of unpaved soil or other permeable surface area per tree. At least five (5%) percent of the interior of any parking lot having twenty (20) or more spaces shall be maintained with landscaping, including trees, in plots of at least four (4') feet in width. Trees in soil plots shall be so located as to provide visual relief and sun and wind interruption within the parking area and to assure safe patterns of internal circulation.	Not Applicable	Not Applicable	Not Applicable	

Marblehead

Factors	Needs Improvement	Improved	Optimal	Zoning Bylaw	Subdivision Bylaw	Stormwater Management Bylaw	Wetlands Protection Bylaw	Misc.
GOAL 1: PROTECT NATURAL RESOURCES AND OPEN SPACE								
Soils managed for revegetation	Not addressed	Limitations on removal from site, and/or requirements for stabilization and revegetation	Prohibit removal of topsoil from site. Require rototilling and other prep of soils compacted during construction	From Sec 200-26 Earth Removal: "The removal of any soil, loam, and/or gravel from any land in the Town not in public use is expressly prohibited unless such removal is authorized by a special permit for use and dimension from the Board of Appeals or except as required for the construction of a building or an approved way." From Sec 200-45: Design Review for B-1 District: "The character of the site is preserved (such as but not limited to: protection of historical and natural resources and existing terrain, minimization of grade changes, tree and soil removal)."	From Sec 258-16 Genral Requirements: "Earth removal. The approval of a definitive plan by the Board shall not be construed as authorizing the removal of earth material from the premises, even though the approval is in connection with the construction of streets shown on the definitive plan. All earth removal within subdivisions shall be in accordance with the Town's Zoning Bylaw for earth removal."	Not Applicable	Not Addressed	From Chapter 57 - Excavations and Grading: "No person shall remove any soil, loam, sand or gravel from any land in the Town not in public use unless such removal is authorized by a permit issued by the Board of Selectmen, except in conjunction with construction of a building on the parcel or the construction of a way, the plan and profile of which has been approved by the Board of Survey, and except for the continued operation on the same parcel of an existing sand and gravel pit."
Limit clearing, lawn size, require retention or planting of native vegetation/ naturalized areas	Not addressed OR General qualitative statement not tied to other design standards	Encourage minimization of clearing/ grubbing	Require minimization of clearing/grubbing with specific standards	From Sec 200-38 Special Permit for Site Plan Approval: The character of the site is preserved (such as but not limited to: protection of historical and natural resources and existing terrain, minimization of grade changes, tree and soil removal). From Sec 200-40-E: Design Guidelines for Wireless Communication Facilities: "Existing on-site vegetation shall be preserved to the maximum extent possible."	From Sec 258-20 Standards of Construction: "Clearing and grubbing. (1) Prior to clearing and grubbing, all erosion control measures shall be in place per the plans and the Conservation Commission order of conditions. (2) The entire area of each street or way within its exterior lines and its adjoining sloped areas shall be cleared of all stumps, brush, roots, boulders, like material, and all trees not intended for preservation. If any large boulders or trees remain within the street lines which may, in the opinion of the Planning Board, constitute a future hazard, the Board may require that they be removed to a depth of not less than 12 inches below the bottom of the street foundation."	Not Applicable	From Sec 194-2 Jurisdiction: "Except as permitted by the Conservation Commission or as provided for in this By-Law, no person shall remove, fill, dredge, build upon or alter the following resource areas, or land within 100 feet thereof: freshwater wetland, coastal wetland, marsh, wet meadow, bog, swamp, vernal pool, bank, beach, dune, flat, river, pond, stream, estuary, ocean, land under water, or land subject to flooding or inundation by groundwater, surface water, tidal action or coastal storm flowage.	
Require native vegetation and trees	Not addressed OR General qualitative statement	Mixture of required plantings of native and nonnative	Require at least 75% native plantings	Not Addressed	Not Addressed	Not Applicable	Not Addressed	
GOAL 2: PROMOTE EFFICIENT, COMPACT DEVELOPMENT PATTERNS AND INFILL								
Lot size	Not addressed OR Required minimum lot sizes	OSRD/NRPZ preferred. Special permit with incentives to utilize	Flexible with OSRD/NRPZ by right, preferred option	Minimum Dimensional Requirements found in Sec 200 - Attachment 2	From Sec 258-16 Genral Requirements: "All proposed lots shall comply with those dimensional requirements set forth in the same Zoning Bylaws."	Not Applicable	Not Applicable	
Setbacks	Not addressed OR Required minimum front, side, and rear setbacks	Minimize, allow flexibility	Clear standards that minimize and in some instances eliminate setbacks	Minimum Dimensional Requirements found in Sec 200 - Attachment 2	From Sec 258-16 Genral Requirements: "All proposed lots shall comply with those dimensional requirements set forth in the same Zoning Bylaws."	Not Applicable	Not Applicable	
Frontage	Not addressed OR Required minimum frontage for each lot/unit	Minimize especially on curved streets and cul-de-sacs	No minimums in some instances, tied into other standards like OSRD design and shared driveways.	Minimum Dimensional Requirements found in Sec 200 - Attachment 2	From Sec 258-16 Genral Requirements: "All proposed lots shall comply with those dimensional requirements set forth in the same Zoning Bylaws."	Not Applicable	Not Applicable	
Common driveways	Not addressed OR Not allowed, strict limitations	Allow for 2-3 residential units	Allow for up to 4 residential units, preferrably constructed with permeable pavers or pavement	Not Addressed	Not Addressed	Not Applicable	Not Applicable	
Limit impervious area – Rural Districts in high density areas, require post-development infiltration to = or > predevelopment	Not addressed *(Not usually addressed in zoning and subdivision regs for rural/suburban residential)*	<15%	<10%	Not Addressed	From Sec 258-17 Street Utility Design: "A watershed analysis shall be performed by a registered civil engineer (and submitted with the definitive plan) for pre- and post-development conditions to show flooding impacts for the one-, ten-, and one-hundredyear storm events using SCS TR-55 and/or TR-20 stormwater modeling methods. The design of the stormwater management system for the subdivision shall not increase the volumes or rates of discharge off site. Note that if the stormwater discharge point is within 100 feet of wetlands, the Conservation Commission must also approve the design per the Massachusetts Wetlands Protection Act."	Not Addressed	Not Applicable	
GOAL 3: SMART DESIGNS THAT REDUCE OVERALL IMPERVIOUSNESS								
Street location	No standards addressed OR Numeric and geometric standards based primarily on vehicular travel and safety, with basic pedestrian requirements e.g. sidewalks	Flexibility in applying standards, to reduce area of impact, grading, avoid key natural features	OSRD design preferred by-right. Require locating streets to minimize grading and road length, avoid important natural features	Not Applicable	From Sec 258-17 Streets - All guidelines are related to access to adjoining properties and sight distance.	Not Applicable	Not Applicable	
Road width	No categories addressed OR Major and minor categories, 24-30'	Wide, medium, narrow categories. 22-24' max, plus 2' shoulders	Wide, medium, narrow, and alley categories. 20-24' widest for 2 travel lanes, 18-20' low traffic residential neighborhood, plus 2' shoulders. Allow alleys and other low traffic or secondary emergency access and all shoulders to use alternative, permeable materials.	Not Applicable	From Sec 258-17 Streets: "Width. The minimum width of pavements and rights-of-way shall be as follows: (a) Major street: 70 feet right-of-way and 34 feet pavement. (b) Secondary street: 60 feet right-of-way and 28 feet pavement. (c) Minor street: 50 feet right-of-way and 24 feet pavement. (d) Lane: 40 feet right-of-way and 24 feet pavement."	Not Applicable	Not Applicable	
Road ROW width	ROW Width not addressed OR 50-75', fully cleared and graded	40-50', some flexibility in extent of clearing	20-50'depending on road type	Not Applicable	From Sec 258-17 Streets: "Width. The minimum width of pavements and rights-of-way shall be as follows: (a) Major street: 70 feet right-of-way and 34 feet pavement. (b) Secondary street: 60 feet right-of-way and 28 feet pavement. (c) Minor street: 50 feet right-of-way and 24 feet pavement. (d) Lane: 40 feet right-of-way and 24 feet pavement."	Not Applicable	Not Applicable	
Access Options	Common drives not addressed, No common drives allowed, Dead end allowed with limit on length and # of units	Allow dead end with limit on length and # of units. Allow common drives up to 2-3 units	Allow one way loop streets. Allow common drives up to 4 units, and alleys and rear-loading garages where suitable.	Not Applicable	Not Addressed	Not Applicable	Not Applicable	
Dead Ends/Cul-de-sacs	No standards addressed OR 120 ft or more minimum turnaround	Minimize end radii – 35 ft	Allow hammerhead turnaround	Not Applicable	From Sec 258-17 Streets: "Dead End Streets (Cul-de-sac) - Dead-end streets shall provide (at the closed end) a turnaround having an outside roadway diameter of at least 100 feet and a property line diameter of at least 130 feet."	Not Applicable	Not Applicable	
Cul-de-sacs	No standards addressed OR Full pavement standard	Encourage center landscaping with bioretention	Require center landscaping with bioretention	Not Applicable	From Sec 258-17 Streets: "Dead End Streets (Cul-de-sac) - The unpaved portion of a cul-de-sac shall have a minimum radius of 50 feet and shall be landscaped except where trees or shrubs exist or where desirable natural features exist to be preserved. This cul-de-sac island shall be curbed as per § 258-20F(7)(a)."	Not Applicable	Not Applicable	
Curbing	No standards addressed OR Curbing required full length both sides of road	Allow curb breaks or curb flush with pavement to enable water to flow to vegetated LID features	Open drainage with roadside swales and no curbs preferred	Not Applicable	From Sec 258-20 Standards of Construction: "Curbing - Curbing is required on both sides of major, secondary and minor streets and shall be as follows:.. Lanes do not require curbs, however the gravel subbase on lanes shall extend a minimum of 12 inches beyond the edge of the pavement for a firm road shoulder"	Not Applicable	Not Applicable	
Roadside Swales	Not addressed OR Allowed as an option	Preferred over closed drainage	Preferred, with criteria for proper design. Adoption of technical specifications and design templates for green infrastructure recommended	Not Applicable	From Sec 258-17 Streets: "Grassed swales within the road right-of-way may be designed. The swales shall be able to carry the ten-year storm without spillage on abutting property. The minimum longitudinal slope shall be 0.5% and the maximum shall be designed so that velocities do not exceed three feet per second. The use of grassed swales should be designed to retain the "first flush" where possible, thus reducing the size of the required detention and retention basins.	Not Addressed	Not Applicable	
Utilities	Off sets required contributing to wide road ROWs	Not specified - flexible	Allow under road, sidewalks or immediately adjacent to roads to enable placement of roadside swales.	Not Applicable	From Sec 258-17 Streets: "Utility easements. Easements for utilities carrying underground wires (where required) running across lots or on rear or side lot lines shall be provided where necessary and shall be at least 20 feet wide."	Not Applicable	Not Applicable	
Sidewalks	Material not addressed OR Concrete or bituminous required	Some flexibility in material and design	Prefer permeable pavement or permeable pavers	Not Applicable	From Sec 258-20 Standards of Construction: "Sidewalks - Bituminous sidewalk. Surfacing forms shall be set to grade and filled with two inches of compacted bituminous concrete to be applied in two courses (binder and finish courses)."	Not Applicable	Not Applicable	
Sidewalk location	Required both sides of road	Allow on only 1 side of road especially in low density neighborhoods	Prefer siting with land contours and for best pedestrian utility (e.g. connect with common areas and shared open spaces) – not necessarily immediately parallel to road.	Not Applicable	From Sec 258-20 Standards of Construction: "Sidewalks - Widths and locations. There shall be a sidewalk having a width of four feet on each side of each street for major and secondary streets. Minor streets shall have a sidewalk on one side of the street, and lanes do not require sidewalks. Where applicable, the sidewalk may end at the beginning of the cul-de-sac and does not have to go all the way around the cul-de-sac. Handicap ramps and extensions of the sidewalks shall be provided at all street intersections per MDPW standards."	Not Applicable	Not Applicable	

Sidewalk drainage	Draining to road, closed drainage system required	Not addressed	Disconnect drainage from road system – e.g.adjacent green strips or within vegetated areas that can absorb sheet flow	Not Applicable	From Sec 258-20 Standards of Construction: "A grass plot (or shoulder) five feet wide (minimum) shall be provided between the curing and sidewalk areas for streets which require sidewalks or along each side of the road. The grass plot shall have a slope 3/8 inch per foot draining towards the road (unless topographic conditions warrant otherwise)."	Not Addressed	Not Applicable	
GOAL 4: ADOPT GREEN INFRASTRUCTURE STORMWATER MANAGEMENT PROVISIONS								
Rooftop runoff	Not addressed OR Prohibit directing clean roof runoff into closed municipal drainage systems.	Allow clean roof runoff to be directed to landscaped or naturally vegetated areas capable of absorbing without erosion, or infiltration	Require directing clean roof runoff to landscaped or naturally vegetated areas capable of absorbing, or infiltration	Not Addressed	Not Addressed	Not Applicable	Not Applicable	
Overall stormwater design; piping and surficial retention vs. LID	Conventional stormwater system design standards		LID design standard. Allow surficial ponding of retained runoff for up to 72 hours and credit for green roofs towards stormwater requirements	No Stormwater Standards Addressed, except in Smart Growth Overlay District. "The purpose of the Smart Growth Overlay District is to (1) Promote low-imapct, green and sustainable development that is pedestrian friendly."	No Stormwater Standards Addressed	From Sec 195-7 Design Requirements: "Design requirements and information requests. Stormwater management systems shall be designed to be at least as stringent as the latest Massachusetts Stormwater Handbook design requirements."	Not Applicable	
Site Plan Requirements	LID not addressed	Encourage use of LID features in site design	Count bioretention and other vegetated LID features toward site landscaping/open space requirements.	LID Not Addressed	From Sec 258-14 Contents of Definitive Plan: "Impact analysis. The Board may request environmental and/or financial impact studies which demonstrate that available alternatives have been explored and provide evidence that the plans submitted represent the best environmental and/or financial interests of the Town. For projects over 10 house lots and for all nonresidential subdivisions, an impact analysis is required. The impact analysis shall be prepared by a bona fide land planner and/or registered civil engineer. Refer to Appendix for the outline of impact analysis."	Not Addressed	Not Applicable	
Allow easy siting of LID features (bioretention, swales, etc.)	Not addressed OR Require waivers from subdivision standards	Encouraged along road ROW	Allowed on lots, common open space, or road ROW, easement recorded. For commercial development, allow an increase in floor area ratio or other developmental incentives for green roofs	Not Addressed	From Sec 258-17 Streets: "Grassed swales within the road right-of-way may be designed. The swales shall be able to carry the ten-year storm without spillage on abutting property. The minimum longitudinal slope shall be 0.5% and the maximum shall be designed so that velocities do not exceed three feet per second. The use of grassed swales should be designed to retain the "first flush" where possible, thus reducing the size of the required detention and retention basins.	Not Applicable	Not Applicable	
Permeable paving	Not addressed OR Require waivers from subdivision standards	Allowed on private residential lots for parking, patios, etc.	Allowed for residential drives, parking stalls, spillover parking spaces, emergency access ways (with proper engineering support for emergency vehicles) Two track design allowed for driveways and secondary emergency access ways (where required).	Not Addressed	Not Addressed	Not Addressed	Not Applicable	
Stormwater management O&M plan	Typically only addressed if municipality has a stormwater or LID bylaw, or for areas subject to wetlands permitting	Required	Required, surficial bioretention and swales preferred. Closed/underground systems requiring specialized inspection and clean out discouraged.	From Sec 200-38 Special Permit for Site Plan Approval: The Planning Board may require the applicant to submit the following additional materials no later than 40 days prior to the final date that a decision must be rendered on the application: (a) Surface and water pollution. A report on the impact of stormwater runoff on adjacent and downstream surface water bodies, subsurface groundwater and the water table. (b) Soils. The potential dangers of erosion and sedimentation caused by the operation and maintenance of the proposed development. (c) General environmental impact. A report on the relationship of the proposed development to the major botanical, zoological, geological and hydrological resources of the site, and compatibility of the proposed development with adjacent or surrounding land uses and neighborhoods.	Not Addressed	From Sec 195-9 Stormwater Management Plan: "The Stormwater Management Plan shall contain sufficient information to describe the nature and purpose of the proposed development, pre and post construction conditions of the site and the adjacent areas and proposed best management practices for the permanent management and treatment of stormwater. The stormwater management plan shall contain sufficient information for the authorized enforcement authority to evaluate the environmental impact, effectiveness and acceptability of the measures proposed by the applicant for reducing adverse impacts from stormwater. The plan shall be designed to meet the Massachusetts Stormwater Management Standards, as set forth in the Massachusetts Stormwater Management Policy and the United States Department of Environmental Protection's Stormwater Management Handbook: Volumes I and II. The stormwater management plan shall fully describe the project in drawings and narrative. The applicant shall submit such material as is required by the rules and regulations adopted by the authorized enforcement authority for the administration of this by-law, if any." From Sec 195-10 Operation and Maintenance Plan: "Requirements. An operation and maintenance plan (O&M plan) for the	Not Applicable	
Construction Erosion and Sedimentation Plan required	Basic general requirements	Required, contents specified	Goes beyond minimum NPDES requirements, requires minimization of site disturbance	From Sec 200-38 Special Permit for Site Plan Approval: The Planning Board may require the applicant to submit the following additional materials no later than 40 days prior to the final date that a decision must be rendered on the application: (a) Surface and water pollution. A report on the impact of stormwater runoff on adjacent and downstream surface water bodies, subsurface groundwater and the water table. (b) Soils. The potential dangers of erosion and sedimentation caused by the operation and maintenance of the proposed development. (c) General environmental impact. A report on the relationship of the proposed development to the major botanical, zoological, geological and hydrological resources of the site, and compatibility of the proposed development with adjacent or surrounding land uses and neighborhoods.	Not Addressed	From Sec 195-8 Erosion and Sedimentation Control Plan: "The erosion and sedimentation control plan shall contain sufficient information to describe the nature and purpose of the proposed development, pre and post construction conditions of the site and the adjacent areas and proposed erosion and sedimentation 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 in the rules and regulations adopted by the authorized enforcement authority for administration of this by-law, if any."	Not Applicable	
GOAL 5: ENCOURAGE EFFICIENT PARKING								
Parking	Specific minimums set based on projected maximum use times	Encourage minimum # needed to serve routine use (e.g. 2/residential unit with any additional/visitors parking behind in driveway or on street.	Establish Maximum Parking spaces allowed. Do not require more than 2/residence. Allow tenants separate, optional lease agreements for parking.	From Sec 200-17 Parking Requirements: Residential uses: For residential uses other than in Subsection B below, there shall be two exterior parking spaces for each dwelling unit. Garage, carport or tandem spaces shall not be used to satisfy this requirement. (Parking requirements for other zones based on square footage of space). From Sec 200-44 Smart Growth Overlay District: Shared use of required parking. At the discretion of the approving authority, shared use may be made of required parking spaces by intermittent use establishments such as churches, assembly halls, or theaters whose peak parking demand is only at night or on Sundays and by other uses whose peak demand is only during the day. In order for such shared parking to be eligible to satisfy required off-street parking standards in whole or in part, prior to plan approval a formal agreement shall be made in writing by the owners of the uses involved concerning the number of spaces involved, substantiation of the fact that such shared use is not overlapping or in conflict, and the duration of the agreement. Required spaces shall be within 300 feet of the main entrance to the principal buildings served by the shared parking.	Not Addressed	Not Applicable	Not Applicable	
Commercial Parking	Specific minimums set based on projected maximum use times adding all on-site uses together.	Some flexibility to reduce minimums based on street or other available nearby parking or transit.	Allowed shared parking for uses with different peak demand times. Provide model agreements/deed restrictions. Reduce parking requirements near transit. Limit parking stall size (9ftx18ft max), with up to 30% smaller for compact cars	Not Addressed (Other than instance stated above)	Not Addressed	Not Applicable	Not Applicable	
LID in Parking Areas	LID not addressed OR Require waivers e.g. for planting islands to drain down rather than built up surrounded by curbs	Allow LID/bioretention within parking areas.	Require landscaping within parking areas, as LID/bioretention, at a minimum of 10% of the interior area landscaped and a minimum of 25 square feet for island planting areas.	Not Addressed	Not Addressed	Not Applicable	Not Applicable	

Merrimac

Factors	Needs Improvement	Improved	Optimal	Zoning Bylaw	Subdivision Rules & Regulations	Wetland Protection Bylaw	Stormwater Bylaw and IDDE Bylaw
GOAL 1: PROTECT NATURAL RESOURCES AND OPEN SPACE							
Soils managed for revegetation	Not addressed	Limitations on removal from site, and/or requirements for stabilization and revegetation	Prohibit removal of topsoil from site. Require rototilling and other prep of soils compacted during construction	EARTH REMOVAL, consisting of the removal of soil, loam, sand, gravel, or any other earth material to within 4 feet of historical high groundwater as determined from monitoring wells and historical water table fluctuation data compiled by the United States Geological Survey, except for excavations for building foundations, roads, or utility works prohibited in WRPD (14.7.10) Protect slopes in excess of ten (10%) percent against erosion, runoff, and unstable soil, trees and rocks. Appropriate measures shall be taken to stabilize the land surface from unnecessary disruption. Stabilization measures shall be the responsibility of the property owner.(19.9.3) I Stripping of Topsoil The stripping of topsoil or sod shall be permitted only in the Agricultural Residential (AR) and Office-Light Industrial (OI) zoning districts provided first a SPECIAL PERMIT has been issued by the Planning Board expect under special circumstances (23.7) Topsoil and subsoil obtained from the area of excavation for use in connection	topsoil shall not be removed from residential lots of used as spoil, but shall be redistributed so as to provide at least six inches of cover on the lots and between the sidewalks and curbs, and shall be stabalized by seeding or planting (4.2.4) no earth shall be removed from the area shown on a definitive plan except in accordance with the approved plan, and the soil removal bylaw of the town of merrimac (5.1.8) all cut bankings shall be planted with a low growing shrub or vine and wood chips or bark mulch to a minimum depth of 6 inches or seeded with a deep rooted perennial gradd to prevent erosion, or other accepted low maintainance slope stabilization methods (4.14.2.4) critical areas, including embankments and slopes, exposed for periods in excess of one month, shall be protected during consutruction with mulch or temporary crop covers (5.4.1.4) Permanent vegetation and erosion control structures where necessary shall be insalled as soon as possible. In all cases where riprap is utilized	Except as permitted by the Conservation Commission or as provided in this Bylaw, no person shall remove, fill, dredge, build upon, degrade, discharge into, or otherwise alter the following resource areas: any bank, fresh water wetland, isolated wetland, beach, dune, flat, marsh, wet meadow, bog, swamp, vernal pool, creek, river, stream, pond or lake, land under water body, land subject to coastal storm flowage or flooding, land subject to flooding or inundation by ground water or surface water, land within a minimum distance of 100 feet from any of the aforesaid resource areas (buffer zone), and land within 200 feet of a perennially flowing stream or river (collectively the "resource areas protected by this bylaw"). Said resource areas shall be	Minimize soil erosion and control sedimentation during construction, provided that prevention of erosion is preferred over sedimentation control. (20.8.2.4) Install and maintain all Erosion and Sediment Control measures in accordance with the manufacturer's specifications and good engineering practices. (20.8.2.8) Prevent off site transport of sediment. (20.8.2.9)
Limit clearing, lawn size, require retention or planting of native vegetation/naturalized areas	Not addressed OR General qualitative statement not tied to other design standards	Encourage minimization of clearing/ grubbing	Require minimization of clearing/grubbing with specific standards	Protect established vegetation. (4.10.4,) Protect mature vegetation, particularly within the front setback area (5.10.2) Protect the natural environment by reducing the number of mature trees removed, reducing the volume of earth materials cut or filled, reducing soil erosion during and after construction and reducing the extent of alteration in the amount, timing and location of stormwater runoff from the site. The Town encourages the use of Low Impact Development Best Management Practices for Stormwater Management, where applicable in RH (9.9.4, 10.9.4) . For WRPD A 200-foot wide buffer strip shall be maintained along the edge of all	to preserve the natural beauty and topography of the town of merrimac and to ensure appropriate deveopment with regard to these natural features (1.3.12) the developer shall enter a separate subdivision improvement agreement secured by a cash escrow to gaurantee completion of all lot improvement requirements including, but not limited to soil preservation, final grading, lot drainage, lawn grass seeding, removal of debris and waste, fencing, and all other lot improvements (4.2.7) no cut or fill in excess of 10 feet of the natural topography shall be allowed within the limits of the ROW unless approved by the planning board	Except as permitted by the Conservation Commission or as provided in this Bylaw, no person shall remove, fill, dredge, build upon, degrade, discharge into, or otherwise alter the following resource areas: any bank, fresh water wetland, isolated wetland, beach, dune, flat, marsh, wet meadow, bog, swamp, vernal pool, creek, river, stream, pond or lake, land under water body, land subject to coastal storm flowage or flooding, land subject to flooding or inundation by ground water or surface water, land within a	Minimize total area of disturbance. (20.8.2.1) Sequence activities to minimize simultaneous areas of disturbance. (20.8.2.2)
Require native vegetation and trees	Not addressed OR General qualitative statement	Mixture of required plantings of native and nonnative	Require at least 75% native plantings	All landscaping shall consist only of native species in OSRD (15.8.8)	The seed shall consist of a maximum of ten percent rye grass by weight and minimum of nintey percent of permanent bluegrass and/or fescue grass by weight. Shade tree of a species aproved by the planning board shall be planted along the sidelines of the streets, at the location and intervals to be determined by the planning board (4.10.3) new trees to be provided pursuant to these regulatinos shall be approved by the planning baord and tree warden (4.14.2.2) street trees of nursery stock concofming to current standsrds of the american association of nurserymen of the species approved by the merrimac tree warden and the planning board, shall be planted on each side of each street in a subdivision (5.12.1)	not addressed	not addressed
GOAL 2: PROMOTE EFFICIENT, COMPACT DEVELOPMENT PATTERNS AND INFILL							
Lot size (for stormwater bylaw, pertains to the size of a lot which requires a stormwater permit)	Not addressed OR Required minimum lot sizes	OSRD/NRPZ preferred. Special permit with incentives to utilize	Flexible with OSRD/NRPZ by right, preferred option	Required minmum lot sizes dependent on district, No LOT, yard, court or other open space already having less than the minimum requirements in this Bylaw shall be further divided or reduced with respect to such minimum requirement and requirements except as provided herein (3.10) Open space % of lot area 20% in RH, HS, and OI district (9.5.11, 10.5.10, 11.6.11)) At least 40% of the land in an SACD shall be permanently protected as common open space. The open space shall be protected by a conservation restriction held by the Merrimac Conservation Commission or a non-profit conservation land trust, and the restriction shall meet the requirements of G.L. c.184. (12.7.3) Irregular lot shapes are permitted in an SACD when, in the opinion of the Planning Board, they further the purposes of the bylaw. (12.7.10) OSRD permitted by SP	The dimentions shall comply with the minimum standards of the zoning bylaw (4.2.2) lots shall be laid out so as to provide positive drainage away from all buildings, and individual lot drainage shall be cordinated with the general storm drainage pattern for the area (4.2.4.1)	*(Not applicable)*	No person may undertake a construction activity, including clearing, grading and excavation that results in a land disturbance that will disturb equal to or greater than 20,000 square feet of land or will disturb less than 20,000 square feet of land but is part of a larger common plan of development or sale that will ultimately disturb equal to or greater than 20,000 square feet of land draining to the Town of Merrimac without a Stormwater Management and Land Disturbance Permit from the Board. (20.4.1)

Housing density	Multi-family housing not allowed, or only in/adjacent to commercial and industrial uses	Multi-family and cluster developments allowed by special permit	Multi-family housing allowed by right in most residential areas; cluster developments encouraged with density bonuses for LID features and no maximum lot coverage	permitted by special permit in VR, RH, and VC districts, small area cluster developments also permitted by special permit: The conversion of a single-family dwelling in existence prior to 1950 to a MULTI-FAMILY dwelling, subject to the "Accessory Dwelling Units and Conversion of Existing Single-Family Dwellings" regulations in Article 17 of this Bylaw. (4.4.4) Multi-family dwellings shall not exceed eight units per acre unless the applicant proposes and the Planning Board approves a higher percentage of affordable housing units than the percentage achieved under Section the 20% minimum set forth in Section 4.13.1. In no event shall the Planning Board issue a SPECIAL PERMIT for more than ten units per acre. (4.13.3.1) A MULTI-FAMILY building shall contain no more than eight units, and shall not exceed a building height of 35 feet and two and one half stories (4.13.3.3) New Construction o f Multi-family dwellings restricted for occupancy by persons over 55 and persons with disabilities	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Setbacks	Not addressed OR Required minimum front, side, and rear setbacks	Minimize, allow flexibility	Clear standards that minimize and in some instances eliminate setbacks	Required setbacks dependent on district, No LOT, yard, court or other open space already having less than the minimum requirements in this Bylaw shall be further divided or reduced with respect to such minimum requirement and requirements except as provided herein (3.10) The Planning Board may also reduce the setback for MULTIFAMILY development of five or fewer units if the building is architecturally similar to single-family residences in the same general area. (4.13.6.2) no minimum setbacks in VC district (8.5) No building need provide a greater setback or front yard than the average provided by the nearest principal buildings on the adjoining side LOTS. In determining such an average, a vacant LOT shall be considered as though it had a building meeting the minimum setback requirements from the street line (23.4.1) Required side yard and rear yard areas may be varied in the case of an irregular, narrow or shallow LOT, or a LOT unusual in	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Frontage	Not addressed OR Required minimum frontage for each lot/unit	Minimize especially on curved streets and cul-de-sacs	No minimums in some instances, tied into other standards like OSRD design and shared driveways.	Required frontage dependant on district, No LOT, yard, court or other open space already having less than the minimum requirements in this Bylaw shall be further divided or reduced with respect to such minimum requirement and requirements except as provided herein (3.10) Not more than two reduced frontage lots shall abut each other (4.12.2.4) A reduction in lot frontage may be permitted in order to encourage flexible development, preserve rural character and reduce overall density in ag res district (6.11.1) Reduced Frontage Lots. An SACD may consist of not less than three nor more than five lots with reduced FRONTAGE on a designated rural corridor, provided that all other requirements for an SACD Special Permit are met. The Planning Board may authorize a reduction in lot frontage for lots in an SACD provided that (12.7.9)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Common driveways	Not addressed OR Not allowed, strict limitations	Allow for 2-3 residential units	Allow for up to 4 residential units, preferrably constructed with permeable pavers or pavement	Minimize new driveway openings and curb cuts on existing public WAYS. Common driveways permitted by special permit (23.2) Wherever possible, the Town strongly prefers shared driveway access with an adjoining property. (4.10.2. 5.10.2, 6.10.2) Two abutting reduced frontage lots shall be served by a Common Driveway (4.12.2.5) Minimize new curb cuts on existing public WAYS. Wherever feasible, access to businesses should be provided through one of the following methods: (a) through a common driveway serving adjacent LOTS or premises; (b) through an existing side or rear street, thus avoiding Route 110 or (c) through a cul-de-sac or loop road shared by adjacent LOTS or premises in RH (9.9.2) An SAC with a cluster or grouping of three dwelling units shall be served by a common driveway. An SACD of four or five dwelling units may consist of two clusters or groupings of dwelling units, with each cluster or grouping served by a common driveway. No dwelling unit in an SACD shall be served by an	not addressed - see zoning bylaw	*(Not applicable)*	*(Not applicable)*
GOAL 3: SMART DESIGNS THAT REDUCE OVERALL IMPERVIOUSNESS							

Impervious cover limits and infiltration rates	Not usually addressed in zoning and subdivision regs for rural/suburban residential	Require no net increase in site run-off from pre- to post-development		In WRPD special permit required for Any use that will render impervious any LOT or parcel more than 15% or 2,500 square feet, whichever is greater. A system for groundwater recharge must be provided which does not degrade groundwater quality. For non-residential uses, recharge shall be by storm water infiltration basins or similar system covered with natural vegetation, and dry wells shall be used only where other methods are infeasible. For all non-residential uses, all such basins and wells shall be preceded by oil, grease, and sediment traps to	the planning board shall require the use of control methods such as retention or detention, and/or the construction of offsite drainage improvements to mitigate the impacts of the proposed development in accordance with the MA stormwater policy act BMPs (4.1.2.6) total peak runoff figures for pre and post development conditions, at each discharge point, shall be obtained by combining hydrographs (4.4.2.1)	*(Not applicable)*	not addressed
Street location	No standards addressed OR Numeric and geometric standards based primarily on vehicular travel and safety, with basic pedestrian requirements e.g. sidewalks	Flexibility in applying standards, to reduce area of impact, grading, avoid key natural features	OSRD design preferred by-right. Require locating streets to minimize grading and road length, avoid important natural features	Streets shall be designed and located in such a manner as to preserve natural topography, cover, significant landmarks and trees, and to minimize cut and fill in OSRD (15.8.9)	proposed roads shall provide safe, convenient, and functional system for vehicular, pedestrian, and bicycle circulation (4.1.2.7) sheests shall be related to appropriately to the topography. Streets shall be curved whereever possible to avoid conformity of lot appearances. all streets shall be arranged so as to obtain as many building sites as possible, or above, the grades of the streets. grades of streets shall conform as closely as possible to oroginal topography. (4.3.3)	*(Not applicable)*	*(Not applicable)*
Road width	No categories addressed OR Major and minor categories, 24-30'	Wide, medium, narrow categories. 22-24' max, plus 2' shoulders	Wide, medium, narrow, and alley categories. 20-24' widest for 2 travel lanes, 18-20' low traffic residential neighborhood, plus 2' shoulders. Allow alleys and other low traffic or secondary emergency access and all shoulders to use alternative, permeable materials.	*(Not applicable)*	24 feet for minor streets and 30 feet for major streets (4.3.9.3)	*(Not applicable)*	*(Not applicable)*
Road ROW width	ROW Width not addressed OR 50-75', fully cleared and graded	40-50', some flexibility in extent of clearing	20-50'depending on road type	*(Not applicable)*	50 feet for minor streets and 60 feet for major streets (4.3.9)	*(Not applicable)*	*(Not applicable)*
Access Options	Common drives not addressed, No common drives allowed, Dead end allowed with limit on length and # of units	Allow dead end with limit on length and # of units. Allow common drives up to 2-3 units	Allow one way loop streets. Allow common drives up to 4 units, and alleys and rear-loading garages where suitable.	*(Not applicable)*	not addressed	*(Not applicable)*	*(Not applicable)*
Dead Ends/Cul-de-sacs	No standards addressed OR 120 ft or more minimum turnaround	Minimize end radii – 35 ft	Allow hammerhead turnaround	n OSRD may contain cul-de-sac streets as defined in and regulated by the Planning Board's Subdivision Regulations. However, an OSRD may have cul-de-sac streets up to a linear distance of 1,000 feet. (25.5)	a cul-de-sac shall be provided at the end of the street in accordance with these construction standards and specifications. (4.3.7.1) minimum paved roadway diameter of turnarouns shall be 110 feet with an outside diameter of 130 feet (4.3.11.2)	*(Not applicable)*	*(Not applicable)*
Cul-de-sacs	No standards addressed OR Full pavement standard	Encourage center landscaping with bioretention	Require center landscaping with bioretention	*(Not applicable)*	not addressed	*(Not applicable)*	*(Not applicable)*
Curbing	No standards addressed OR Curbing required full length both sides of road	Allow curb breaks or curb flush with pavement to enable water to flow to vegetated LID features	Open drainage with roadside swales and no curbs preferred	*(Not applicable)*	minor streets shall be laid out to conform as much as possible to to the topography to discourage use by through traffic, permit efficient drainage and utility systems (4.3.3.2) vertical granite curb shall be installed at all intersections and in locations where thr road grade exceeds 5%. Slope granite curb shall be installed at all other locations (4.8.3) also mentioned in 5.9.1	*(Not applicable)*	*(Not applicable)*
Roadside Swales	Not addressed OR Allowed as an option	Preferred over closed drainage	Preferred, with criteria for proper design. Adoption of technical specifications and design templates for green infrastructure recommended	*(Not applicable)*	not addressed	*(Not applicable)*	Encourage the use of nonstructural stormwater management and low- impact development practices, such as reducing impervious cover, preserving green space, using bio-retention areas, rain gardens and vegetated filter strips. (20.8.2.5)
Utilities	Off sets required contributing to wide road ROWs	Not specified - flexible	Allow under road, sidewalks or immediately adjacent to roads to enable placement of roadside swales.	All utility service transmission systems, including but not limited to water, sewer, natural gas, electrical and telephone lines, shall, whenever practicable, be placed underground. (19.9.9)	all public facilies, including but not limited to gas, electric power, telephone and cable, shall be located underground throughout the dubdivision (4.7.1) no utility mains shall be installed under the pavement except at intersections and stubs crossing the street shall be installed prior to paving (5.5.1)	*(Not applicable)*	*(Not applicable)*
Sidewalks	Material not addressed OR Concrete or bituminous required	Some flexibility in material and design	Prefer permeable pavement or permeable pavers	*(Not applicable)*	bituminous concrete or cement concrete sidewalks required (4.9.4-4.9.5)	*(Not applicable)*	*(Not applicable)*
Sidewalk location	Required both sides of road	Allow on only 1 side of road especially in low density neighborhoods	Prefer siting with land contours and for best pedestrian utility (e.g. connect with common areas and shared open spaces) – not necessarily immediately parallel to road.	*(Not applicable)*	sidewalks shall be varied in horizontal layout and location to enhance aesthetic valye. The area between the sidewalk and roadway shall be appropriately landscapes as approved by the planning board (4.9.1) sidewalks shall be constructed on both sides of the roadway. the board may waive the sidewalk requirement entirely, or require that they be constructed on only one side of the roadway. When sidewalks are deleted, grass strips shall be extended in their place (4.9.3). also mentioned in 5.7.1	*(Not applicable)*	*(Not applicable)*
Sidewalk drainage	Draining to road, closed drainage system required	Not addressed	Disconnect drainage from road system – e.g.adjacent green strips or within vegetated areas that can absorb sheet flow	*(Not applicable)*	drainage shall be towards the roadway when possible (4.11.2)	*(Not applicable)*	*(Not applicable)*
GOAL 4: ADOPT GREEN INFRASTRUCTURE STORMWATER MANAGEMENT PROVISIONS							
Rooftop runoff	Not addressed OR Prohibit directing clean roof runoff into closed municipal drainage systems.	Allow clean roof runoff to be directed to landscaped or naturally vegetated areas capable of absorbing without erosion, or infiltration	Require directing clean roof runoff to landscaped or naturally vegetated areas capable of absorbing, or infiltration	Prevent stormwater runoff to nearby properties using Low Impact Development Best Management Practices and rooftop infiltration or disconnection methods where applicable (4.10.5, 5.10.3)	*(Not applicable)*	*(Not applicable)*	not addressed

Overall stormwater design; piping and surficial retention vs. LID	Conventional stormwater system design standards	Encourage LID features and BMPs; design standards often not specified	LID design standard encouraging infiltration, allowing surficial ponding of retained runoff for up to 72 hours; systems designed for larger volume storms, accounting for future precipitation predictions; credit for green roofs towards stormwater requirements. Following best practice may also help communities comply with MS4 permit requirements	Prevent stormwater runoff to nearby properties using Low Impact Development Best Management Practices and rooftop infiltration or disconnection methods where applicable (4.10.5, 5.10.3) The Town encourages the use of Low Impact Development Best Management Practices for Stormwater Management, where applicable (9.9.4, 10.9.4) Stormwater management. Adequate provision shall be made for the proper management of stormwater runoff from the LOT. Evidence of same shall be included with the above application. (17.4.3) All surface water runoff from STRUCTURES and impervious surfaces shall be collected on site, but in no case shall surface water drainage be directed across sidewalks or public or private WAYS. In no case shall surface water runoff be drained directly into wetlands or water bodies. Drainage systems shall be designed using Best Management Practices and Low Impact Development Best	the planning board requires that the drainage systems for all subdivisions meet all requirements of the MA stormwater policy act. The following technical publications, latest editions, are adopted as part of these regulations: stormwater management volume 1 and 2 (4.4.1) the design for the drainage stormwater system shall be based upon the SCS type 111 24 hour storm. Closed drainage shall be designed for 25 year storms, culverts for 50 year storms, and bridges for 100 year storms (4.4.2.3) a culvert or other drainage system shall, in each case, be large enough to accomodate potential runoff from its entire upstream drainage area (4.4.2.6) design standsrds for all conventional stormwater practices but none for soft/LID drainage ssystems (5.6.1)	*(Not applicable)*	Encourage the use of nonstructural stormwater management and low- impact development practices, such as reducing impervious cover, preserving green space, using bio-retention areas, rain gardens and vegetated filter strips. (20.8.2.5)
Site Plan/Design Requirements	LID not addressed	Encourage use of LID features in site design - such as reduced imperviousness, maintaining natural hydrology, preserving open space, and rainwater reuse	Include bioretention and other vegetated LID features in site landscaping/open space requirements. Following best practice may also help communities comply with MS4 permit requirements. See section 2.3.5 of the MS4 permit for more information	*(Not applicable)*	description of BMPs intended to be use for stormwater controls to meet the requirements of these regulations and the MA stormwater policy act (3.3.2.7) drainage improvements shall accommodate potential runoff from the entire upstream area…the planning board shall require the use of control methods such as retention or detention, and/or the construction of offsite drainage improvements to mitigate the impacts of the proposed development in accordance with the MA stormwater policy act BMPs (4.1.2.6) the planning board requires that the drainage systems for all subdivisions meet all requirements of the MA stormwater policy act. The following technical publications, latest editions, are adopted as part of these regulations: stormwater management volume 1 and 2 (4.4.1) the applicant shall submit an assessment of environmental impact, the purpose of which is to enable the officials of the town to determine what methods are used by the applicant to promote the	*(Not applicable)*	Encourage the use of nonstructural stormwater management and low- impact development practices, such as reducing impervious cover, preserving green space, using bio-retention areas, rain gardens and vegetated filter strips. (20.8.2.5)
Allow easy siting of LID features (bioretention, swales, etc.)	Not addressed OR Require waivers from subdivision standards	Encouraged along road ROW	Allowed on lots, common open space, or road ROW, easement recorded. For commercial development, allow an increase in floor area ratio or other developmental incentives for green roofs	If detention or retention ponds are necessary for the construction of the buildings on the development site, such ponds shall not be located within the required setback areas, unless specifically permitted by the site plan approval. Such detention or retention areas shall be designed to appear as natural landforms. The Town encourages the use of Low Impact Development Best Management Practices for Stormwater Management, where applicable in OI (11.10.1.4)	where topography or other conditions are such as to make impractical the inclusion of drainage facilities within ROW, perpetual and unobstructed easements at least 30 feet in width for drainage facilities shall be provided across property outside the road lines and with satisfactory access to the road. (4.4.3.1)	*(Not applicable)*	*(Not applicable)*
Permeable paving	Not addressed OR Require waivers from subdivision standards	Allowed on private residential lots for parking, patios, etc.	Allowed for residential drives, parking stalls, spillover parking spaces, emergency access ways (with proper engineering support for emergency vehicles) Two track design allowed for driveways and secondary emergency access ways (where required).	*(Not applicable)*	not addressed	*(Not applicable)*	Encourage the use of nonstructural stormwater management and low- impact development practices, such as reducing impervious cover, preserving green space, using bio-retention areas, rain gardens and vegetated filter strips. (20.8.2.5)
Stormwater management O&M plan	Typically only addressed if municipality has a stormwater or LID bylaw, or for areas subject to wetlands permitting	Required	Required, contents specified in alignment with current MassDEP Stormwater Handbook. Following best practice may also help communities comply with MS4 permit requirements	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	An Operation and Maintenance Plan (O&M Plan) is required at the time of application for all projects. The Board will consider natural features, proximity of site to water bodies and wetlands, extent of impervious surfaces, size of the site, the types of stormwater management structures, and potential need for ongoing maintenance activities when making this decision. The Operation and Maintenance Plan shall remain on file with the Board and shall be an ongoing requirement. The maintenance plan shall contain the following: (20.8.3.30) contents specified in depth

Construction Erosion and Sedimentation Plan, and stormwater control	Basic general requirements	Required, contents specified - the site design process should include soil erosion and sedimentation control measures	Goes beyond minimum NPDES requirements. Requires minimization of site disturbance, reduction of construction waste, control measures not removed until proof of soil stabilization or reestablishment of vegetation. Written procedures for site inspection and enforcement included. Following best practice may also help communities comply with MS4 permit requirements. See section 2.3.5 of the MS4 permit for more information	*(Not applicable)*	before approval of a subdivision, the developer shall prepare and submit for approval of the planning board or its agent an erosion control plan covering all phases of construction for the area in which work is to be performed. The following factors shall be considered in such a program: (5.4.1)	*(Not applicable)*	The Stormwater Management & Erosion and Sediment Control Plan shall contain sufficient information to describe the nature and purpose of the proposed development, pertinent conditions of the site and the adjacent areas, proposed erosion and sedimentation controls and proposed stormwater management controls. The applicant shall submit such material as is necessary to show that the proposed development will comply with the design requirements listed in Section 20.8.2 below. (20.8.1) Contents
Stormwater discharge detection & elimination	Not addressed	Discharges and connections noted and/or limits set on quantity and quality	Illicit discharges and connections are probibited and enforced. Following best practice may also help communities comply with MS4 permit requirements. Find more information in section 2.3.4.a of the MS4 permit	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	No person shall dump, discharge, cause or allow to be discharged any pollutants or non-stormwater discharge into the municipal separate storm sewer system (MS4), into a watercourse, or into the waters of the Commonwealth. 21. 8.2 Illicit Connections. No person shall construct, use, allow, maintain or continue any illicit connection to the municipal storm drain system, regardless of whether the connection was permissible under applicable law, regulation or custom at the time of connection (21.8)
Post- construction stormwater management and drainage patterns	Not addressed	Allow LID	Resemble pre-existing conditions of volume, velocity, quality and location, as nearly as possible, requiring LID to the max extent feasible. Retain vol of runoff >1in. per sq.ft. of impervious surface and/or remove 90% TSS post-construction & 50% TP generated on the site for new development, or >0.8in. per sq.ft and/or remove 80% TSS and 50% of TP load for redevelopment. Following best practice may also help communities comply with MS4 permit requirements.	Upon completion of the operation, the land shall be left so that natural storm drainage leave the property as the original natural storm drainage points and so that the area of drainage to any one point is not increased, and water quality standards, including TSS is not increased above the background, or baseline conditions as measured prior to construction (23.7.5.5)	*(Not applicable)*	*(Not applicable)*	Minimize peak rate of runoff in accordance with the Massachusetts Department of Environmental Protection's Stormwater Management Policy dated March 1997 as amended. (20.8.2.3)
As-built surveys	Not addressed	Recommended	Required, with written instructions for process; electronic submittal allowed	Upon completion of all work, an As-Built plan and a letter of certification shall be submitted to Building Inspector by a Registered Engineer, Registered Architect, Registered Landscape Architect or Registered Land Surveyor, as appropriate to the work involved, that all work has been done substantially in compliance with the approved Site Plan. (19.11)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Intra-departmental communication and coordination	Not addressed	Informally or loosely occurring	Required for plan review and/or permit approvals	implied communication between building commissioner, board of appeals, and planning board (24)	the board will transmit copies of the definitve plan to town officials as follows: (extensive list of town officials). Before a definitive plan is approved, the board will request written statements from the above officials with regard to the proposed improvements in the following respect (3.4.5.1)	Upon request of the Conservation Commission to the Board of Selectmen, the Town Counsel may take legal action for enforcement under civil law. Upon request of the Conservation Commission, the Chief of Police may take legal action for enforcement under criminal law. (17.10)	not addressed
Enforcement	No	Yes	Yes with fines. Same entity should oversee permit approvals and enforcement	This Bylaw shall be enforced by the BUILDING COMMISSIONER. The fine for any violation disposed of through this procedure shall be one hundred dollars ($100.00) for each offense. Each day such violation continues shall be deemed a separate offense (24.2.6) Whoever violates any provision of this Bylaw or any of the conditions under which a permit is issued by the BUILDING COMMISSIONER or any decision rendered by the Planning Board or BOARD OF APPEALS under the provisions of this Bylaw shall be liable to a fine of not more than $100 per day for each violation (24.3)	no building shall be erected on any lot within a subdivison without written permission for each lot from the planning board (6.3.1)	In addition to the procedure of enforcement as described above, the provision of this Bylaw may also be enforced by the Conservation Commission or its agent, by non-criminal complaint pursuant to the provisions of G.L., c. 40, § 21D. The penalty for violation of any provision of this Bylaw shall be $100.00 for the first offense; $200.00 for the second offense; $300.00 for the third offense and $300.00 for each subsequent offense. Each provision of the chapter, regulations or permit violation that is violated shall constitute a separate offense. (17.10.1) The Conservation Commission shall have the authority to enforce this Bylaw, its regulations, and permits issued thereunder by violation notices, administrative orders, and civil and criminal	The Board or an authorized agent of the Board shall enforce this by-law, regulations, orders, violations notices and enforcement orders, and may pursue all non-criminal dispositions for such violations. (20.12.1) Any violation of this by-law, any regulation promulgated hereunder, or any Stormwater Management and Land Disturbance Permit, will be punishable by non- criminal disposition under G.L. Chapter 40, Section 21Dand the Town of Merrimac General By-Laws, in which case, the Planning Board or authorized agent shall be the enforcing person. The penalty for the 1st violation shall be $250. The penalty for the 2nd violation shall be $300. The penalty for the 3rd and subsequent violations shall be $300. Each day or part thereof that such violation occurs or continues shall constitute a separate offense. (20.12.5)
GOAL 5: ENCOURAGE EFFICIENT PARKING							
Parking	Specific minimums set based on projected maximum use times	Encourage minimum # needed to serve routine use (e.g. 2/residential unit with any additional/visitors parking behind in driveway or on street.	Establish Maximum Parking spaces allowed. Do not require more than 2/residence. Allow tenants separate, optional lease agreements for parking.	all dwelling units shall be required to provide two off street parking spaces per unit (4.12, 15.15) Applicants shall provide 1.5 parking spaces per one-bedroom unit and 2 parking spaces per two- or three-bedroom unit. (4.13.5, 9.10.3) Also addressed in 20.2	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*

Commercial Parking	Specific minimums set based on projected maximum use times adding all on-site uses together.	Some flexibility to reduce minimums based on street or other available nearby parking or transit.	Allowed shared parking for uses with different peak demand times. Provide model agreements/deed restrictions. Reduce parking requirements near transit. Limit parking stall size (9ftx18ft max), with up to 30% smaller for compact cars	Each parking space shall consist of a rectangle of not less than nine feet by 18 feet, except that in parking lotS containing more than 50 parking spaces, 20% of such parking spaces may be for small car use. Small-car parking spaces shall consist of a rectangle not less than nine feet by 16 feet. Said small-car spaces shall be grouped in one or more contiguous areas and shall be identified by SIGNS. (20.3)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
LID in Parking Areas	LID not addressed OR Require waivers e.g. for planting islands to drain down rather than built up surrounded by curbs	Allow LID/bioretention within parking areas.	Require landscaping within parking areas, as LID/bioretention, at a minimum of 10% of the interior area landscaped and a minimum of 25 square feet for island planting areas.	Parking lots shall contain around the perimeter and in the interior at least one tree per eight parking spaces, except where the literal application of this requirement would interfere with shared or common parking arrangements by adjoining property owners. 20.6.3. Trees to be planted shall be a minimum of 2 1/2 inches in caliper six feet above grade, be of a species common in Merrimac, tolerant of future site conditions and reach an ultimate height of at least 30 feet.20.6.4. At least 5% of the interior of any parking lot having 25 or more spaces shall be maintained with landscaping, including trees, in planting areas of at least four feet in width. (20.6)	not addressed	*(Not applicable)*	not addressed

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Factors	Needs Improvement	Improved	Optimal	Zoning	Subdivision Rules & Regulations	Wetland Protection Ordinance	Stormwater Ordinance and Rules & Regulations	Conservation Commission Rules & Regulations
GOAL 1: PROTECT NATURAL RESOURCES AND OPEN SPACE								
Soils managed for revegetation	Not addressed	Limitations on removal from site, and/or requirements for stabilization and revegetation	Prohibit removal of topsoil from site. Require rototilling and other prep of soils compacted during construction	not addressed	Excavation materials, which are unsuitable for embankment, or surplus material remaining after completing the site work, will be known as waste and shall be disposed of by the contractor outside the Right of Way at his expense, unless otherwise directed. If excavated material is to be removed from the site, a determination of applicability must be made by the Soil Removal Board. (5.3.3)	No person shall remove, fill, dredge, alter or build upon or within one hundred feet of any bank, fresh water wetland, coastal wetland, beach, dune, flat, marsh, meadow, bog, swamp, or on any estuary, creek, river, stream, pond or lake, or any land under said water or any land subject to tidal action, coastal storm flowage, flooding or inundation, or within one hundred feet of the one hundred year storm line, other than in the course of maintaining, repairing or replacing but not substantially changing or enlarging an existing and lawfully located structure or facility used in the service of the public (12.1)	Erosion and sediment control measures will include, but not be limited to, provisions for: ☐ Minimizing erosion and avoiding disturbance of areas susceptible to erosion and sediment loss. ☐ Protecting all storm drain inlets. ☐ Inspecting and maintaining erosion & sediment control BMPs. ☐ Pollution prevention controls including but not limited to: prevent spilled or leaked materials from polluting stormwater runoff; provide for proper construction and solid waste storage & disposal; and provide portable toilets securely located away from the drainage system and waters of the U.S. ☐ Stabilizing construction site entrances and exits to prevent off-site tracking. ☐ Final site stabilization.	Methods to control erosion required in site plan but noo extra design standards stated (5.A.8)
Limit clearing, lawn size, require retention or planting of native vegetation/naturalized areas	Not addressed OR General qualitative statement not tied to other design standards	Encourage minimization of clearing/ grubbing	Require minimization of clearing/grubbing with specific standards	Clearing of natural vegetation shall be limited to what is necessary for the construction, operation and maintenance of the large-scale ground-mounted solar photovoltaic installation or otherwise prescribed by applicable laws, regulations and ordinances for solar installations (5.21. J.2 and 11.9, G4) The landscape shall be preserved in it natural state, insofar as practicable, by minimizing tree and soil removal in ORSD (11.21, J) Not more than 5% of the open space shall be disturbed areas. A disturbed area is any land not left in its natural vegetated state in ORSD (11.21, J.2.g) site plan requires Minimize the volume of cut and fill, the number of removed trees six inches caliper or larger, the length of removed stone walls, the area of wetland vegetation displaced, the extent of stormwater flow increase from the site, soil erosion and threat of air and water pollution (12.3, C)	The sub-divider shall make every effort consistent with sound planning to preserve natural features such as large trees marked to be preserved, water courses, scenic points, historic spots, and similar community assets, which, if preserved, will add attractiveness and value to the subdivision. (4.7) The Community Development Board requires that trees will be planted along all new streets at intervals of no greater than seventy-five (75') feet. Applicant is required to guarantee the survival of these trees for one year from the date of acceptance of the ways by the Town. The type of tree should be of the shade variety but shall not include any locust, willow, or popular trees; nor shall it include any coniferous trees.(4.7.1)	No person shall remove, fill, dredge, alter or build upon or within one hundred feet of any bank, fresh water wetland, coastal wetland, beach, dune, flat, marsh, meadow, bog, swamp, or on any estuary, creek, river, stream, pond or lake, or any land under said water or any land subject to tidal action, coastal storm flowage, flooding or inundation, or within one hundred feet of the one hundred year storm line, other than in the course of maintaining, repairing or replacing but not substantially changing or enlarging an existing and lawfully located structure or facility used in the service of the public and used to provide electric, gas, water, sanitary sewers, public roadways, storm drainage	Existing trees with a Diameter at Breast Height of 10 inches or greater should be protected and preserved to the maximum extent feasible. See also Section 9.B.4 of these Regulations. (6.C.6). At the discretion of the Stormwater Authority, existing trees on private property with a diameter at breast height of 10 inches or greater and existing trees within the right-of-way or on City property may be considered protected trees to be retained on the property.(9.B.4) Where possible, establish and protect a naturally vegetated buffer system along all perennial streams and other water features that encompass critical environmental features such as the 100-year floodplain, steep slopes (in excess of 15%), lake shorelands, and wetlands. Riparian stream buffers should be preserved or restored with	Plans shall describe the proposed activity and its effect on the environment. Due regard shall be shown for all natural features such as large trees, water courses and bodies, wetlands, wildlife habitat, and similar community assets. (5)
Require native vegetation and trees	Not addressed OR General qualitative statement	Mixture of required plantings of native and nonnative	Require at least 75% native plantings	screening and space buffers in industrial and business districts: At least 50% of the plantings shall consist of evergreens, The buffered strip shall contain a vertical screen of plantings not less than four feet in width and five feet in height at the time of planting and shall be evenly spaced, planted no less than 10 feet on center. The owner or occupants shall maintained said buffered strip so as to maintain a dense screen year-round. (6.2, L.2) Appropriate trees, understory plantings and lawn areas must be designed by a registered landscape architect. The landscape plan must be approved by the SPGA for golf courses (11.4, D, 5. 8, g)	not addressed	No person shall remove, fill, dredge, alter or build upon or within one hundred feet of any bank, fresh water wetland, coastal wetland, beach, dune, flat, marsh, meadow, bog, swamp, or on any estuary, creek, river, stream, pond or lake, or any land under said water or any land subject to tidal action, coastal storm flowage, flooding or inundation, or within one hundred feet of the one hundred year storm line, other than in the course of maintaining, repairing or replacing but not substantially changing or enlarging an existing and lawfully located structure or facility used in the service of the public (12.1)	Where possible, establish and protect a naturally vegetated buffer system along all perennial streams and other water features that encompass critical environmental features such as the 100-year floodplain, steep slopes (in excess of 15%), lake shorelands, and wetlands. Riparian stream buffers should be preserved or restored with native vegetation. Buffers are most effective when maintained in an undisturbed condition, mowing and brush hogging should not take place within a buffer. (9.B.5) no native vegetation requirements beyond that	Site landscaping with vegetative species to be used and in what amounts required in site plan but no design standards addressed (5.B.13)
GOAL 2: PROMOTE EFFICIENT, COMPACT DEVELOPMENT PATTERNS AND INFILL								
Lot size	Not addressed OR Required minimum lot sizes	OSRD/NRPZ preferred. Special permit with incentives to utilize	Flexible with OSRD/NRPZ by right, preferred option	no minimum lot area in MCSGOD district, 30% open space required (5.22, G) ORSD allowed by special permit in CN, R/R, RA, RB, RC, RD, and RG districts (attachment 1:2) minimum lot areas for all other residential districts ranging from 8,000 sqft in RG to 130,680 sqft in MA (appendix B) 0-40% Open space required depending on the district, with 30% in planned unit development (11.5, D, 5)	*(Not applicable)*	*(Not applicable)*	Administrative Land Disturbance Approval must be obtained prior to the commencement of land disturbing activity disturbing between 5,000 square feet and one acre of land in accordance with Section 30-4 of the Stormwater Ordinance. (6.A)	*(Not applicable)*
Housing density	Multi-family housing not allowed, or only in/adjacent to commercial and industrial uses	Multi-family and cluster developments allowed by special permit	Multi-family housing allowed by right in most residential areas; cluster developments encouraged with density bonuses for LID features and no maximum lot coverage	Residential uses. Multifamily Dwellings shall be permitted As-of-Right in the MCSGOD, subject to Plan Approval by the PAA (5.22.E) multifamily housing allowed with special permit in MA, MB, CBD, and BI districts (attachment 1:2) An application for multifamily and/or attached dwellings development special permit shall be allowed in the MA, MB, CBD and BL Zoning Districts. (11.6, B)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Setbacks	Not addressed OR Required minimum front, side, and rear setbacks	Minimize, allow flexibility	Clear standards that minimize and in some instances eliminate setbacks	no minimum front setback in MCSGOD district, 10 foot side and rear setbacks (5.22, G) setbacks in CBD may be 0, all other front setbacks range from 10-60ft depending on use, side and rear setbacks range from 10-30ft depending on use (appendix b)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Frontage	Not addressed OR Required minimum frontage for each lot/unit	Minimize especially on curved streets and cul-de-sacs	No minimums in some instances, tied into other standards like OSRD design and shared driveways.	minimum frontage ranges from 80-200 ft depending on the district (appendix B) Frontage exception lots shall be allowed by special permit in the RR, CN, RA, RB, RC, RD and RG Zoning Districts (11.15, B)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Common driveways	Not addressed OR Not allowed, strict limitations	Allow for 2-3 residential units	Allow for up to 4 residential units, preferrably constructed with permeable pavers or pavement	Shared driveways shall not be allowed in any Residential District. (8.7)	Driveways shall be constructed as per typical driveway section in the Construction Standards. (4.2.4.4.)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
GOAL 3: SMART DESIGNS THAT REDUCE OVERALL IMPERVIOUSNESS								

Impervious cover limits and infiltration rates	Not usually addressed in zoning and subdivision regs for rural/suburban residential	Require no net increase in site run-off from pre- to post-development	Impervious cover limits tailored to the community and district type (i.e. <10% total impervious cover in rural districts, but higher in urban and redevelopment districts); post-development infiltration should be equal to or greater than pre-development. Following best practice may also help communities comply with MS4 permit requirements	not addressed	not addressed	*(Not applicable)*	Site planning and drainage design shall ensure that the proposed work will not result in an increase in the rate of runoff leaving the site at any point on the property line. All post-development runoff must continue to flow into and recharge the same watershed as it did under pre-development conditions. (4.C.1)	*(Not applicable)*
Street location	No standards addressed OR Numeric and geometric standards based primarily on vehicular travel and safety, with basic pedestrian requirements e.g. sidewalks	Flexibility in applying standards, to reduce area of impact, grading, avoid key natural features	OSRD design preferred by-right. Require locating streets to minimize grading and road length, avoid important natural features	Streets shall be designed and located in such a manner as to maintain and preserve natural topography, significant landmarks and trees; to minimize cut and fill; and to preserve and enhance views and vistas on or off the subject parcel in ORSD (11.21, Jb) most residential sites can be ORSD by special permit	All streets in the subdivision shall be so designed so that, in the opinion of the Board, they will provide safe vehicular travel. Due consideration shall also be given by the sub-divider to the attractiveness of the street layout in order to obtain the maximum livability and amenity of the subdivision. (4.2)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Road width	No categories addressed OR Major and minor categories, 24-30'	Wide, medium, narrow categories. 22-24' max, plus 2' shoulders	Wide, medium, narrow, and alley categories. 20-24' widest for 2 travel lanes, 18-20' low traffic residential neighborhood, plus 2' shoulders. Allow alleys and other low traffic or secondary emergency access and all shoulders to use alternative, permeable materials.	*(Not applicable)*	34 feet for principal (major roads), 26 for secondary (minor roads) (6.1, 6.2)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Road ROW width	ROW Width not addressed OR 50-75', fully cleared and graded	40-50', some flexibility in extent of clearing	20-50'depending on road type	*(Not applicable)*	The minimum width of street rights of way shall be fifty (50') feet for principal streets and forty (40') feet for secondary streets. Greater width shall be required by the Board where deemed necessary for present and future vehicular movement. (4.2.3) Clearing and grubbing of the roadway and sidewalk locations shall be done according to the width of the typical roadway section proposed, and shall include the removal of all stumps, brush, roots, boulders and similar materials as well as trees which have not been marked for reservation. (4.2.3)	*(Not applicable)*	not addressed	*(Not applicable)*
Access Options	Common drives not addressed, No common drives allowed, Dead end allowed with limit on length and # of units	Allow dead end with limit on length and # of units. Allow common drives up to 2-3 units	Allow one way loop streets. Allow common drives up to 4 units, and alleys and rear-loading garages where suitable.	Shared driveways shall not be allowed in any Residential District. (8.7)	Driveways shall be constructed as per typical driveway section in the Construction Standards. (4.2.4.4.)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Dead Ends/Cul-de-sacs	No standards addressed OR 120 ft or more minimum turnaround	Minimize end radii – 35 ft	Allow hammerhead turnaround	*(Not applicable)*	Dead ends, defined as a street or way with only one access/egress point, shall not be permitted, except where, in the opinion of the Board, such dead ends are deemed necessary and in the pubic interest. (4.2.3.) Where the Board has waived the dead end restriction, the following criteria shall be followed: Dead end streets shall not be longer than five hundred (500') feet, unless, in the opinion of the Board, a greater length is necessitated by topography or other local conditions, and in that case, shall be cul-de-sacs. (4.2.3.2.) Dead ends, defined as a street or way with only one access/egress point, shall not be permitted, except where, in the opinion of the Board, such dead ends are deemed necessary and in the pubic interest. (4.2.2.8)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Cul-de-sacs	No standards addressed OR Full pavement standard	Encourage center landscaping with bioretention	Require center landscaping with bioretention	*(Not applicable)*	Where the Board has waived the dead end restriction, the following criteria shall be followed: Dead end streets shall not be longer than five hundred (500') feet, unless, in the opinion of the Board, a greater length is necessitated by topography or other local conditions, and in that case, shall be cul-de-sacs. (4.2.3.2.)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Curbing	No standards addressed OR Curbing required full length both sides of road	Allow curb breaks or curb flush with pavement to enable water to flow to vegetated LID features	Open drainage with roadside swales and no curbs preferred	*(Not applicable)*	(1) Vertical faced granite curb, type VA-4 shall be installed on all principal roads. (2) Sloped granite edging shall be installed on all secondary roads. (5.3.7)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Roadside Swales	Not addressed OR Allowed as an option	Preferred over closed drainage	Preferred, with criteria for proper design. Adoption of technical specifications and design templates for green infrastructure recommended	Drainage. The Community Development Board shall encourage the use of "soft" (nonstructural) stormwater management techniques (such as swales) and other drainage techniques that reduce impervious surface and enable infiltration where appropriate in ORSD developments (11.21, J.2.d)	not addressed	*(Not applicable)*	allowed but not mentioned to be preferred	*(Not applicable)*
Utilities	Off sets required contributing to wide road ROWs	Not specified - flexible	Allow under road, sidewalks or immediately adjacent to roads to enable placement of roadside swales.	*(Not applicable)*	Easements for utilities across lots or parallel to rear or side lot lines shall be provided where necessary and shall be at least twenty (20') feet wide. (4.5.1)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Sidewalks	Material not addressed OR Concrete or bituminous required	Some flexibility in material and design	Prefer permeable pavement or permeable pavers	*(Not applicable)*	The sidewalk pavement shall consist of Bituminous Concrete Type 1-1, laid in one course two (2") inches thick after rolling or four (4") inch Portland Cement Concrete. (5.7.4)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Sidewalk location	Required both sides of road	Allow on only 1 side of road especially in low density neighborhoods	Prefer siting with land contours and for best pedestrian utility (e.g. connect with common areas and shared open spaces) – not necessarily immediately parallel to road.	*(Not applicable)*	Sidewalks five (5') feet in width, unless otherwise specified by the Board, shall be constructed along all roadways as shown on the approved Definitive Plan. (5.7.1)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Sidewalk drainage	Draining to road, closed drainage system required	Not addressed	Disconnect drainage from road system – e.g. adjacent green strips or within vegetated areas that can absorb sheet flow	*(Not applicable)*	Areas included between the outside line of the sidewalk and the outside line of the paved roadway shall be graded and filled where necessary to insure adequate drainage. (5.7.2)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
GOAL 4: ADOPT GREEN INFRASTRUCTURE STORMWATER MANAGEMENT PROVISIONS								
Rooftop runoff	Not addressed OR Prohibit directing clean roof runoff into closed municipal drainage systems.	Allow clean roof runoff to be directed to landscaped or naturally vegetated areas capable of absorbing without erosion, or infiltration	Require directing clean roof runoff to landscaped or naturally vegetated areas capable of absorbing, or infiltration	*(Not applicable)*	not addressed	*(Not applicable)*	not addressed	*(Not applicable)*

Overall stormwater design; piping and surficial retention vs. LID	Conventional stormwater system design standards	Encourage LID features and BMPs; design standards often not specified	LID design standard encouraging infiltration, allowing surficial ponding of retained runoff for up to 72 hours; systems designed for larger volume storms, accounting for future precipitation predictions; credit for green roofs towards stormwater requirements. Following best practice may also help communities comply with MS4 permit requirements	*(Not applicable)*	Culverts designed to carry existing drainage, ditches, brooks, streams or other water courses shall be based on a 100 year design storm. Culverts shall be designed with proper inlet and outlet control in accordance with standard engineering practice. (4.3.3) The drainage design of a subdivision shall be such that post development peak flows do not increase from predevelopment peak flows up to and including the 100 year storm. (4.3.3., 10)	*(Not applicable)*	Use Low Impact Development (LID) techniques where adequate soil, groundwater and topographic conditions allow. These may include but not be limited to reduction in impervious surfaces, disconnection of impervious surfaces, bioretention (rain gardens), and infiltration systems. Where site conditions allow, stormwater should be infiltrated onsite. (6.C.5) LID site planning and design strategies must be utilized to the maximum extent feasible. Projects must use LID techniques where adequate soil, groundwater, and topographic conditions allow. These may include but not be limited to reduction in impervious surfaces, disconnection of impervious surfaces, bioretention, and infiltration systems.(9.B.1)	Proposed pollution control devices on-site, such as: hooded catch basins, oil absorption pillows, detention/retention basins, flow dissipaters, or vegetative buffers required in site plan, but design standards not addressed (5.B.9)
Site Plan/Design Requirements	LID not addressed	Encourage use of LID features in site design - such as reduced imperviousness, maintaining natural hydrology, preserving open space, and rainwater reuse	Include bioretention and other vegetated LID features in site landscaping/open space requirements. Following best practice may also help communities comply with MS4 permit requirements. See section 2.3.5 of the MS4 permit for more information	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	Stormwater management plans and site design should to avoid disturbance of areas susceptible to erosion and sediment loss, avoiding, to the greatest extent practicable: the damaging of large forest stands; building on steep slopes (15% or greater); and disturbing land in wetland buffer zones and floodplains. (9.B.2) LID site planning and design strategies must be utilized to the maximum extent feasible. Projects must use LID techniques where adequate soil, groundwater, and topographic conditions allow. These may include but not be limited to reduction in impervious surfaces, disconnection of impervious surfaces, bioretention, and infiltration systems. (9.B.1) Projects must be designed to collect and dispose of stormwater runoff from the project site in accordance with Massachusetts Stormwater Management Standards, the Small MS4 General Permit, Department of Public Works requirements	LID not mentioned in site design nor throughout rules and regulations.
Allow easy siting of LID features (bioretention, swales, etc.)	Not addressed OR Require waivers from subdivision standards	Encouraged along road ROW	Allowed on lots, common open space, or road ROW, easement recorded. For commercial development, allow an increase in floor area ratio or other developmental incentives for green roofs	*(Not applicable)*	not addressed	*(Not applicable)*	*(Not applicable)*	Not addressed - no design standards stated
Permeable paving	Not addressed OR Require waivers from subdivision standards	Allowed on private residential lots for parking, patios, etc.	Allowed for residential drives, parking stalls, spillover parking spaces, emergency access ways (with proper engineering support for emergency vehicles) Two track design allowed for driveways and secondary emergency access ways (where required).	*(Not applicable)*	not addressed	*(Not applicable)*	not addressed	not addressed - no design standards stated
Stormwater management O&M plan	Typically only addressed if municipality has a stormwater or LID bylaw, or for areas subject to wetlands permitting	Required	Required, contents specified in alignment with current MassDEP Stormwater Handbook. Following best practice may also help communities comply with MS4 permit requirements	*(Not applicable)*	not addressed	*(Not applicable)*	A stand-alone Operation and Maintenance Plan (O&M Plan) is required at the time of application for all projects that include structural and non-structural stormwater BMPs. The Operation and Maintenance Plan shall be designed to ensure compliance with the Permit and these regulations for the life of the system. The Operation and Maintenance Plan shall remain on file with the Stormwater Authority and shall be an ongoing requirement. The Applicant shall provide copies of the Operation and Maintenance Plan to all persons responsible for maintenance and repairs.(11.A)	*(Not applicable)*
Construction Erosion and Sedimentation Plan, and stormwater control	Basic general requirements	Required, contents specified - the site design process should include soil erosion and sedimentation control measures	Goes beyond minimum NPDES requirements. Requires minimization of site disturbance, reduction of construction waste, control measures not removed until proof of soil stabilization or reestablishment of vegetation. Written procedures for site inspection and enforcement included. Following best practice may also help communities comply with MS4 permit requirements. See section 2.3.5 of the MS4 permit for more information	*(Not applicable)*	not addressed	*(Not applicable)*	required, contents specified, design process to include soil erosion and sedimentation control measures: . Minimize total area of disturbance; 2. Sequence activities to minimize simultaneous areas of disturbance; 3. Minimize peak rate of runoff in accordance with the Massachusetts Department of Environmental Protection Stormwater Standards; 4. Minimize soil erosion and control sedimentation during construction; 5. Divert uncontaminated water around disturbed areas; 6. Maximize groundwater recharge; 7. Install and maintain all Erosion and Sediment Control measures in accordance with the Massachusetts Erosion and Sedimentation Control Guidelines for Urban and Suburban Areas, manufacturers specifications and good engineering practices; 8. Prevent off-site transport of	*(Not applicable)*
Stormwater discharge detection & elimination	Not addressed	Discharges and connections noted and/or limits set on quantity and quality	Illicit discharges and connections are probibited and enforced. Following best practice may also help communities comply with MS4 permit requirements. Find more information in section 2.3.4.a of the MS4 permit	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	Site planning and drainage design shall ensure that the proposed work will not result in an increase in the rate of runoff leaving the site at any point on the property line. All post-development runoff must continue to flow into and recharge the same watershed as it did under pre-development conditions. (4.C.1) Ensure that there will be no illicit discharges to the MS4 or waters of the Commonwealth. (4.C.2)	*(Not applicable)*

Post- construction stormwater management and drainage patterns	Not addressed	Allow LID	Resemble pre-existing conditions of volume, velocity, quality and location, as nearly as possible, requiring LID to the max extent feasible. Retain vol of runoff >1in. per sq.ft. of impervious surface and/or remove 90% TSS post-construction & 50% TP generated on the site for new development, or >0.8in. per sq.ft and/or remove 80% TSS and 50% of TP load for redevelopment. Following best practice may also help communities comply with MS4 permit requirements.	*(Not applicable)*	Addressed but no mention of LID: The drainage design of a subdivision shall be such that post development peak flows do not increase from predevelopment peak flows up to and including the 100 year storm.	*(Not applicable)*	LID generally required: Explanation of how LID site planning and design strategies are being utilized to the maximum extent feasible and an explanation as to why LID techniques were included or excluded from the project (9.2.d.ii) Summary of pre- and post-development peak rates and volumes of stormwater runoff demonstrating no adverse impacts to down-gradient properties, stormwater management systems and wetland resources (9.2.e) The selection, design and construction of all pre-treatment, treatment and infiltration BMPs shall be in accordance with Massachusetts Stormwater Handbook and shall be consistent with all elements of the Massachusetts Stormwater Standards (9.B.3) Stormwater management systems on new development 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	*(Not applicable)*
As-built surveys	Not addressed	Recommended	Required, with written instructions for process; electronic submittal allowed	*(Not applicable)*	not addressed	as built plan required if you wish to build on wetland area: that such person shall file with the Conservation Commission within forty-eight hours, a notice or as-built plan of such repair or replacement and listing individuals involved, work undertaken, location and date without filing written application for a permit so to remove, fill, dredge, alter or build upon, including such plans as may be necessary to describe such proposed activity and its effect on the environment, and receiving and complying with a permit issued pursuant to this ordinance. (12.1)	As-built record drawings shall be full size plans at a scale approved by the Stormwater Authority that reflect "as-built" conditions, including surveyed positions of all structural stormwater BMPs, drainage structures, conveyances, outfalls, catch basins, post-construction topography, curbing and headwalls and shall be stamped and signed by a Registered Professional Engineer or Land Surveyor stating that all work has been completed in accordance with the Stormwater Management Permit and plans submitted. All changes to project design shall be recorded in red ink on plans to define changes made or otherwise noted as changes. All work deleted, corrections in elevations, and changes in materials, shall be shown on the as-built drawings.(13)	A certificate of Compliance shall be requested by the applicant/owner in writing and may be issued by the Commission following a site inspection, provided that the request for the Certificate of Compliance must contain with it an affidavit signed and stamped by a Massachusetts Registered Professional Engineer, Land Surveyor, Architect or Landscape Architect, stating that all work has been completed in accordance with this Order of Conditions and plans submitted. Such request for certificate shall include with it an as-built plan signed and stamped by said individual. (7)
Intra-departmental communication and coordination	Not addressed	Informally or loosely occurring	Required for plan review and/or permit approvals	combination of building comissioner and board of appeals, but little mention of intradepartmental collaboration: This ordinance shall be administered by the Building Commissioner (10.2, A) here is hereby established a Board of Appeals of five members to be appointed by the Mayor and confirmed by the City Council, as provided in Chapter 40A of the General Laws. Three associate members shall be appointed in like manner to serve, upon designation by the Chairman of the Board, in case of vacancy, inability to act or conflict of interest on the part of a member of said Board. All members of the Zoning Board shall be residents of the City of Methuen. The Zoning Board shall annually elect a Chairman and a Clerk from its membership.(10.3, A)	Before approving the definitive plan, the Board will refer it to the following departments or boards for their review, and will obtain written statements from each as to the adequacy of the proposed improvements. (1) Town Engineer, as to the design of the street system, the drainage system, the sewer system, if any, and the water distribution system, the location of easements, and the provisions for the safety of the future inhabitants and the public; (2) The Conservation Commission, as to the impact of the subdivision on any wetland areas or floodplains on the Town's open space program, and any other pertinent matters; (3) The Fire Chief, as to impact on fire protection and other matters of public safety; (4) The Police Chief, as to impact on police protection and other matters of public safety. (3.2.4.1)	not addressed	Collaboration between DPW and Con Com: The Department of Public Works (DPW) is considered an authorized agent of the Commission for the purposes of administering the Administrative Land Disturbance Reviews. DPW may also act as the agent of the Stormwater Authority for the purposes of reviewing stormwater submittals, conducting inspections, and advising the Stormwater Authority regarding enforcement. (3.A)	not addressed
Enforcement	No	Yes	Yes with fines. Same entity should oversee permit approvals and enforcement	The Building Commissioner shall institute and take any and all such action as may be necessary to enforce full compliance with any and all of the provisions of this ordinance and of permits and variances issued thereunder, including notification of noncompliance and request for legal action through the City Council to the City Solicitor. The penalty for violation of any provision of this ordinance, of any of the conditions under which a permit is issued or of any decision rendered by the Board of Appeals shall be $300 for each offense. Each day that each violation continues shall constitute a separate offense. (10.2, B, E)	no person shall subdivide land or layout a way for eventual acceptance as a public way in the Town of Methuen after such effective date without first obtaining from the Community Development Board approval of the plan of the proposed subdivision or endorsement upon such plan "Approval Under the Subdivision Control Law Not Required". No fines addressed	enfored by police officer, but commission oversees permitting: Any person who violates any provision of this Ordinance or of any condition of a permit issued pursuant to it, shall be punished by a fine of not more than One Hundred Dollars ($100.00). Each day or portion thereof during which a violation continues shall constitute a separate offense; if more than one, each condition violated shall constitute a separate offense. This ordinance may be enforced by a City Police Officer or other officer having Police powers. Upon request of the Commission, the Mayor and City Solicitor shall take such legal action as may be necessary to enforce this Ordinance and permits issued pursuant to it (12.9)	The Methuen Conservation Commission shall administer, implement and enforce these Regulations. Any powers granted to or duties imposed upon the Stormwater Authority may be delegated in writing by the Stormwater Authority to its employees or agents. The Department of Public Works (DPW) is considered an authorized agent of the Commission for the purposes of administering the Administrative Land Disturbance Reviews. DPW may also act as the agent of the Stormwater Authority for the purposes of reviewing stormwater submittals, conducting inspections, and advising the Stormwater Authority regarding enforcement.(3.A)	Any person who violates any provision of this ordinance, the rules and regulations promulgated under said Ordinance, or any condition of the permit granted hereunder, shall be punished by a fine of not more than One hundred Dollars ($100.00) each day, or portion thereof, during which a violation continues. If more than one violation, each condition violated shall constitute a separate offense. This Ordinance, the rules and regulations, and the Order of Conditions may be enforced by a police officer of the City or by any other officer having police powers. Upon request of the Commission, the Mayor and the City Solicitor shall take such legal action, as may be necessary, to enforce this ordinance, the rules and regulations, and permits issued pursuant to it. (9) When the Conservation Commission determines that an activity is in violation of the ordinance, these rules and regulations, or a final order, the Commission may
GOAL 5: ENCOURAGE EFFICIENT PARKING								
Parking	Specific minimums set based on projected maximum use times	Encourage minimum # needed to serve routine use (e.g. 2/residential unit with any additional/visitors parking behind in driveway or on street.	Establish Maximum Parking spaces allowed. Do not require more than 2/residence. Allow tenants separate, optional lease agreements for parking.	1 space per dwelling unit in multifamily residences (5.22, J), The aggregate number of spaces required for each of several uses separately may be provided on a common parking lot serving all of these uses and, where it can be demonstrated that the combined peak parking needs of all the uses sharing the lot will, because of differences in peak hours or days, be less than the aggregate normally required for each use separately, the number of parking spaces to be provided may be reduced accordingly. (8.3, A2) 2 spaces per residence in one or two family homes (8.7)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*

Commercial Parking	Specific minimums set based on projected maximum use times adding all on-site uses together.	Some flexibility to reduce minimums based on street or other available nearby parking or transit.	Allowed shared parking for uses with different peak demand times. Provide model agreements/deed restrictions. Reduce parking requirements near transit. Limit parking stall size (9ftx18ft max), with up to 30% smaller for compact cars	The use of shared parking to fulfill parking demands noted above that occur at different times of day may be considered by the PAA. Minimum parking requirements may be reduced at the discretion of the PAA if an applicant can demonstrate that shared spaces will meet parking demands by using accepted methodologies; e.g., the Urban Land Institute's Shared Parking publication, the Institute of Transportation Engineers' Shared Parking Planning Guidelines. (5.22, J.3) Each required off-street parking space shall be marked and shall not be less than nine feet in width and 18 feet in length for angle parking or 22 feet in length for parallel parking, exclusive of drives, walks and maneuvering space. (8.2, C)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
LID in Parking Areas	LID not addressed OR Require waivers e.g. for planting islands to drain down rather than built up surrounded by curbs	Allow LID/bioretention within parking areas.	Require landscaping within parking areas, as LID/bioretention, at a minimum of 10% of the interior area landscaped and a minimum of 25 square feet for island planting areas.	At least 5% of the interior of any parking lot with 40 or more parking spaces shall be landscaped (i.e., off-street parking areas, with the exception of parking structures, shall be planted with shade trees of a species and size approved by the Methuen Building Commissioner. There shall be a minimum of one tree for each 2,000 square feet of parking area and located as approved by the Building Commissioner. Any trees surrounded on three or more sides by pavement shall be planted with a raised island, bound by a curb a minimum of six inches high, covered with a porous material for water drainage to the tree roots, and have a surface drainage area immediately around the tree a minimum of 30 square feet in area.), but planting or screening along the perimeter shall not be counted as part of this 5%. (8.2, E)	not addressed	*(Not applicable)*	Trees can be an important tool for retention and detention of stormwater runoff. Trees provide additional benefits, including cleaner air, reduction of heat island effects, carbon sequestration, reduced noise pollution, reduced pavement maintenance needs, and cooler cars in shaded parking lots. The City therefore deems that the preservation and protection of certain trees on public and private property, and the requirement to replant trees to replace those removed, are public purposes that protect the public health, welfare, environment and aesthetics. At the discretion of the Stormwater Authority, existing trees on private property with a diameter at breast height of 10 inches or greater and existing trees within the right-of-way or on City property may be considered protected trees to be retained on the property. (9.8.4)	*(Not applicable)*

Middleton

Factors	Needs Improvement	Improved	Optimal	Chapter 235: Zoning	Chapter 250: Subdivision of Land	Subdivision Rules & Regulations	Chapter 204: Stormwater Management	Chapter 248: Stormwater Management Rules and Regulations
				https://ecode360.com/10440524#10440524	https://ecode360.com/30328471#30341560	https://docs.google.com/document/d/1_2KthNeUoGSzKeZ_SPDgIjb5Lkx8fR_H/edit?usp=sharing&ouid=113353923203393468594&rtpof=true&sd=true	https://ecode360.com/30316132	https://ecode360.com/30328471#30341560
GOAL 1: PROTECT NATURAL RESOURCES AND OPEN SPACE								
Soils managed for revegetation	Not addressed	Limitations on removal from site, and/or requirements for stabilization and revegetation	Prohibit removal of topsoil from site. Require rototilling and other prep of soils compacted during construction	*(Not applicable)*	Not addressed	Not addressed	*Not applicable*	Not addressed
Limit clearing, lawn size, require retention or planting of native vegetation/naturalized areas	Not addressed OR General qualitative statement not tied to other design standards	Encourage minimization of clearing/ grubbing	Require minimization of clearing/grubbing with specific standards	*(Not applicable)*	Not addressed	Not addressed	*Not applicable*	Interim and permanent stabilization practices for the site, including a schedule of when the practices will be implemented. Site plans should ensure that existing vegetation is
Require native vegetation and trees	Not addressed OR General qualitative statement	Mixture of required plantings of native and nonnative	Require at least 75% native plantings	Planted area requirements. Planted areas shall contain an appropriate mix of plant species appropriate to proposed use, siting, soils, and other environmental conditions. Where the Board of Appeals determines that the planting of trees is impractical, the permit applicant may substitute shrubbery for trees.	Addressed in Subdivision Rules and Regulations	All cut or fill bankings that tend to wash or erode shall be planted with suitable, well-rooted, and low-growing plantings. All plants shall be the equivalent of nursery grown stock in good health, free from injury, harmful insects, and diseases. Use of invasive species is prohibited. Please refer to the "Massachusetts Prohibited Plant List" maintained by the Massachusetts Department of Agricultural Resources for the latest list of invasive species. Acceptable planting include very low-growing (4" to 12"), low growing (12" to 30"), and herbaceous plantings. Perennial grass turf installed as sod is an acceptable alternative for the planting of banks.	*Not applicable*	Not addressed
GOAL 2: PROMOTE EFFICIENT, COMPACT DEVELOPMENT PATTERNS AND INFILL								
Lot size	Not addressed OR Required minimum lot sizes	OSRD/NRPZ preferred. Special permit with incentives to utilize	Flexible with OSRD/NRPZ by right, preferred option	Minimums based on type of establishment. Flexible development may be authorized upon the issuance of a special permit by the Planning Board..Modification of lot requirements. The Planning Board encourages applicants for flexible development to modify lot size, shape, and other dimensional requirements for lots within a flexible development, subject to the following limitations: 1. Lots having reduced area or frontage shall not have frontage on a street other than a street created by the flexible development; provided, however, that the Planning Board may waive this requirement where it is determined that such reduced lots are consistent with existing development patterns in the neighborhood. 2. At least 50% of the required side and rear yards in the district shall be maintained in the flexible development. Density bonus. The Planning Board may award a density bonus to increase the number of dwelling units beyond the basic maximum number. The density bonus for the flexible development shall	Compliance with zoning. The proposed plan shall be in compliance with the existing Zoning Bylaws, as amended, particularly relating to shape, area, width and frontage within a subdivision, before the Board will grant approval.	*Not applicable*	*Not applicable*	*Not applicable*
Setbacks	Not addressed OR Required minimum front, side, and rear setbacks	Minimize, allow flexibility	Clear standards that minimize and in some instances eliminate setbacks	Minimums based on type of establishment. Flexible development may be authorized upon the issuance of a special permit by the Planning Board..Modification of lot requirements. The Planning Board encourages applicants for flexible development to modify lot size, shape, and other dimensional requirements for lots within a flexible development, subject to the following limitations: 1. Lots having reduced area or frontage shall not have frontage on a street other than a street created by the flexible development; provided, however, that the Planning Board may waive this requirement where it is determined that such reduced lots are consistent with existing development patterns in the neighborhood. 2. At least 50% of the required side and rear yards in the district shall be maintained in the flexible development. Density bonus. The Planning Board may award a density bonus to increase the number of dwelling units beyond the basic maximum number. The density bonus for the flexible development shall	Compliance with zoning. The proposed plan shall be in compliance with the existing Zoning Bylaws, as amended, particularly relating to shape, area, width and frontage within a subdivision, before the Board will grant approval.	*Not applicable*	*Not applicable*	*(Not applicable)*
Frontage	Not addressed OR Required minimum frontage for each lot/unit	Minimize especially on curved streets and cul-de-sacs	No minimums in some instances, tied into other standards like OSRD design and shared driveways.	Minimums based on type of establishment. Flexible development may be authorized upon the issuance of a special permit by the Planning Board..Modification of lot requirements. The Planning Board	Compliance with zoning. The proposed plan shall be in compliance with the existing Zoning Bylaws, as amended, particularly relating to shape, area, width and frontage within a subdivision, before the Board will grant approval.	*Not applicable*	*Not applicable*	*(Not applicable)*
Common driveways	Not addressed OR Not allowed, strict limitations	Allow for 2-3 residential units	Allow for up to 4 residential units, preferrably constructed with permeable pavers or pavement	Common driveways. Common driveways serving not more than two lots may be allowed on special permit by the Board of Appeals. A common driveway must satisfy all of the conditions in this section, as well as all of the following conditions: 1. The center line intersection with the street center line shall not be less than 45 degrees; 2. A minimum cleared width of 12 feet shall be maintained over its entire length; 3. A roadway surface of a minimum of four inches of graded gravel, placed over a properly prepared base, graded and compacted to drain from the crown shall be installed; 4. The driveway shall be located entirely within the boundaries of the lots being served by the driveway; 5. Proposed documents shall be submitted to the Planning Board demonstrating that, through easements, restrictive covenants, or other appropriate legal devices, the maintenance, repair, snow removal, and liability for the common driveway shall remain perpetually the responsibility of the private parties, or their successors-in-interest.	Each lot shall be served by its own driveway and shall not be shared with any other lot. The driveway cut for each lot must be on the frontage of that lot.	*Not applicable*	*Not applicable*	*Not applicable*
GOAL 3: SMART DESIGNS THAT REDUCE OVERALL IMPERVIOUSNESS								

Impervious cover limits and infiltration rates	Not usually addressed in zoning and subdivision regs for rural/suburban residential	Require no net increase in site run-off from pre- to post-development	Impervious cover limits tailored to the community and district type (i.e. <10% total impervious cover in rural districts, but higher in urban and redevelopment districts); post-development infiltration should be equal to or greater than pre-development. Following best practice may also help communities comply with MS4 permit requirements	Open area, Business and Light Industrial Districts. At least 25% of the lot area shall be free of structures, paving, storage areas or other elements which preclude vegetation. Multifamily or attached dwelling Coverage. The maximum coverage of all buildings shall not exceed 20% of the development parcel. Open space. At least 30% of the	Not addressed	Not addressed	*Not applicable*	*Not applicable*
Street location	No standards addressed OR Numeric and geometric standards based primarily on vehicular travel and safety, with basic pedestrian requirements e.g. sidewalks	Flexibility in applying standards, to reduce area of impact, grading, avoid key natural features	OSRD design preferred by-right. Require locating streets to minimize grading and road length, avoid important natural features	*(Not applicable)*	All streets in the subdivision shall be designed to provide safe vehicular travel. Consideration shall be given to the attractiveness of the layout in order to obtain the maximum livability and amenity of the subdivision.	All streets in the subdivision shall be designed so that, in the opinion of the Board, they will provide safe and convenient access for all users of all ages and abilities, by all modes of transportation including pedestrians, bicyclists, motorists	*Not applicable*	*Not applicable*
Road width	No categories addressed OR Major and minor categories, 24-30'	Wide, medium, narrow categories. 22-24' max, plus 2' shoulders	Wide, medium, narrow, and alley categories. 20-24' widest for 2 travel lanes, 18-20' low traffic residential neighborhood, plus 2' shoulders. Allow alleys and other low traffic or secondary emergency access and all shoulders to use alternative, permeable materials.	*(Not applicable)*	The minimum width of the traveled way shall be no less than 16 feet.	The minimum width of the traveled way shall be no less than 16 feet.	*Not applicable*	*Not applicable*
Road ROW width	ROW Width not addressed OR 50-75', fully cleared and graded	40-50', some flexibility in extent of clearing	20-50'depending on road type	*(Not applicable)*	width. (a) Major streets shall have a	The width of the street right-of-way shall be no less than 20 feet.	*Not applicable*	*Not applicable*
Access Options	Common drives not addressed, No common drives allowed, Dead end allowed with limit on length and # of units	Allow dead end with limit on length and # of units. Allow common drives up to 2-3 units	Allow one way loop streets. Allow common drives up to 4 units, and alleys and rear-loading garages where suitable.	Each development shall be served by an adequate driveway. The Board of Appeals may, in certain circumstances, allow additional driveways as a condition of approval where the access is shared or the project has frontage on two separate streets...Common driveways. Common driveways serving not more than two lots may be allowed on special permit by the Board of Appeals. Flexible Development: There shall be a paved driveway or paved walk adequate to accommodate emergency vehicles within 50 feet of the outside entrance of each dwelling unit.	Cul-de-sac streets shall not exceed 500 feet in length and shall be provided with a turnaround which shall have a property line diameter of 120 feet.	Dead-end streets (cul-de-sac) are discouraged and shall be permitted as private ways only. Developers should make every effort to avoid the creation of dead-end streets and should connect proposed subdivisions to existing dead end streets wherever reasonable and practicable. A developer may demonstrate that a dead end streets is appropriate when they can demonstrate that a future connection to an existing street is not possible or practicable, or when the surrounding property will never need a street connection because of extremely sensitive or permanently protected natural resources. In this situation the project must provide a viable pedestrian and bicycle connection to the surrounding property as appropriate.	*Not applicable*	*Not applicable*
Dead Ends/Cul-de-sacs	No standards addressed OR 120 ft or more minimum turnaround	Minimize end radii – 35 ft	Allow hammerhead turnaround	*(Not applicable)*	For a dead-end street, a "T" or "Y" shaped turnaround, of a design satisfactory to the Planning Board. Cul-de-sac streets shall not exceed 500 feet in length and shall be provided with a turnaround which shall have a property line diameter of 120 feet.	For a dead-end street, a "T" or "Y" shaped turnaround, of a design satisfactory to the Planning Board.	*Not applicable*	*Not applicable*
Cul-de-sacs	No standards addressed OR Full pavement standard	Encourage center landscaping with bioretention	Require center landscaping with bioretention	*(Not applicable)*	*(Not applicable)*	Where the Board has approved a proposed development of a dead end street that ends in a cul-de-sac, the cul-de-sac shall have a circular turning radius of not less than 60 feet or a maximum of 100 feet (measured at the center-line), and a property line radius of at least 85 feet. They shall in all additional ways conform to the same requirements as any other street. The length of a dead-end street allowed by right is a maximum of one thousand feet (1000') as measured along the centerline of construction of the street from the edge of the development's property line nearest the connecting existing public street which is not itself a dead-end street to the middle of the cul-de-sac. All cul-de-sac streets shall have turnaround islands that are planted with trees and/or other vegetation or left with natural tree growth in lieu of paving the entire area of the cul-de-sac (see Section _____). The maintenance of the inner circle shall be the responsibility of the developer, his successors and assigns, or a homeowners'	*Not applicable*	*Not applicable*
Curbing	No standards addressed OR Curbing required full length both sides of road	Allow curb breaks or curb flush with pavement to enable water to flow to vegetated LID features	Open drainage with roadside swales and no curbs preferred	Curb cuts shall be limited to the minimum width for safe entering and exiting, and shall in no case exceed 24 feet in width unless waived by the Board	*(Not applicable)*	Berms shall be per Massachusetts Department of Transportation Standards Class I bituminous Type A (sloped Cape Cod style) placed	*Not applicable*	*Not applicable*
Roadside Swales	Not addressed OR Allowed as an option	Preferred over closed drainage	Preferred, with criteria for proper design. Adoption of technical specifications and design templates for green infrastructure recommended	*(Not applicable)*	Not addressed	Not addressed	*Not applicable*	Not addressed
Utilities	Off sets required contributing to wide road ROWs	Not specified - flexible	Allow under road, sidewalks or immediately adjacent to roads to enable placement of roadside swales.	*(Not applicable)*	*(Not applicable)*	All electrical, telephone, fire alarm and other wires and cables shall be installed underground, unless in the opinion of the Board and the appropriate utility company, such	*Not applicable*	*Not applicable*
Sidewalks	Material not addressed OR Concrete or bituminous required	Some flexibility in material and design	Prefer permeable pavement or permeable pavers	*(Not applicable)*	Sidewalks. A bituminous sidewalk shall be constructed on both sides of all streets within a subdivision in accordance with the standards in the Appendix. At each intersection a wheelchair ramp shall be constructed which must be approved by the Building Commissioner.	Sidewalks. A bituminous sidewalk shall be constructed on both sides of all streets within a subdivision in accordance with the standards in the Appendix. At each intersection a wheelchair ramp shall be constructed which must be approved by the Building Commissioner.	*Not applicable*	*Not applicable*

Sidewalk location	Required both sides of road	Allow on only 1 side of road especially in low density neighborhoods	Prefer siting with land contours and for best pedestrian utility (e.g. connect with common areas and shared open spaces) – not necessarily immediately parallel to road.	*(Not applicable)*	Sidewalks. A bituminous sidewalk shall be constructed on both sides of all streets within a subdivision in accordance with the standards in the Appendix. At each intersection a wheelchair ramp shall be constructed which must be approved by the Building Commissioner.	Sidewalks must meet ADA standards and must be at least five (5) feet in width and shall be constructed on both sides of the street starting at the property line, when in the opinion of the Board such sidewalks are necessary. Their construction shall be of bituminous concrete with a 1" top coat, 2" binder course and 10" of gravel base...The Planning Board may waive the requirement and permit sidewalks on only one side where an in-lieu of payment, in an amount approved by the Planning Board, is made. Such payments shall be deposited into a dedicated Pedestrian & Bicycle Parking Reserve Account to be used solely for expenses (land acquisition, design engineering services and construction costs, but not maintenance costs) related to adding sidewalks and bicycle parking spaces, improving the utilization of existing parking spaces. Requests to appropriate funds out of this reserve account shall be filed with the City Council/Select Board and referred to the Planning Board	*Not applicable*	*Not applicable*
Sidewalk drainage	Draining to road, closed drainage system required	Not addressed	Disconnect drainage from road system – e.g. adjacent green strips or within vegetated areas that can absorb sheet flow	*(Not applicable)*	Not addressed	Not addressed	*Not applicable*	*Not applicable*
GOAL 4: ADOPT GREEN INFRASTRUCTURE STORMWATER MANAGEMENT PROVISIONS								
Rooftop runoff	Not addressed OR Prohibit directing clean roof runoff into closed municipal drainage systems.	Allow clean roof runoff to be directed to landscaped or naturally vegetated areas capable of absorbing without erosion, or infiltration	Require directing clean roof runoff to landscaped or naturally vegetated areas capable of absorbing, or infiltration	*(Not applicable)*	Not addressed	Not addressed	*Not applicable*	Not addressed
Overall stormwater design; piping and surficial retention vs. LID	Conventional stormwater system design standards	Encourage LID features and BMPs; design standards often not specified	LID design standard encouraging infiltration, allowing surficial ponding of retained runoff for up to 72 hours; systems designed for larger volume storms, accounting for future precipitation predictions; credit for green roofs towards stormwater requirements. Following best practice may also help communities comply with MS4 permit requirements	*(Not applicable)*	Suitability of design of surface water drainage system. A definitive plan of a subdivision shall include a detailed system designed to adequately dispose of surface water and to provide for minimum of subsequent maintenance. The design shall be governed by the following requirements and shall be constructed in accordance with the standards in the Appendix.[3] The basis for design of drainage systems shall be by the rational method. The hypothetical rainfall for the design and analysis of storm drainage structures shall be as follows: ten-year storm for roadway structures; twenty-five-year storm for all culverts and open channel flow; and one-hundred-year storm for drainage systems for which ponding or storage basins are designed or encountered. The above rainfall frequency curves will be in accordance with the United States Technical Paper 40 or most recent publication from the United States Weather Bureau...Water Resources Mitigation Fund. The SWPA may allow the applicant to contribute to	The storm water management system shall be designed to incorporate and address the stormwater management for the entire proposed development, including anticipated buildout of individual lots. All subdivision designs must comply with the Town of Middleton Stormwater Management Bylaw, Section _____ of the Middleton Town Code and Appendix _____ of these regulations. Apart from the area for roads and the storm water system, there shall be no exposed and unstable soil, unless specifically authorized by the Board upon recommendation from the Conservation Commission and Department of Public Works Superintendent (or his designee). Storm water shall not be permitted to sheet flow across the surface of the roadway. It must be piped underneath. All permanent storm water control structures (including but not limited	*Not applicable*	Massachusetts DEP stormwater management standards. At a minimum, all projects subject to a SMP or SSMP shall comply with the performance standards of the most recent version of Massachusetts Department of Environmental Protection (DEP) stormwater management standards and accompanying Stormwater Management Handbook, as well as the criteria contained in this section.
Site Plan/Design Requirements	LID not addressed	Encourage use of LID features in site design - such as reduced imperviousness, maintaining natural hydrology, preserving open space, and rainwater reuse	Include bioretention and other vegetated LID features in site landscaping/open space requirements. Following best practice may also help communities comply with MS4 permit requirements. See section 2.3.5 of the MS4 permit for more information	Five separate plans prepared at a scale of one inch equals 20 feet or such other scale as may be approved by the Board. The plans are as follows: a. Site layout, which shall contain the boundaries of the lot(s) in the proposed development, proposed structures, drives, parking, fences, walls, walks, outdoor lighting, loading facilities, and areas for snow storage after plowing. The first sheet in this plan shall be a locus plan, at a scale of one inch equals 100 feet, showing the entire project and its relation to existing areas, buildings and roads for a distance of 1,000 feet from the project boundaries or such other distance as may be approved or required by the Board. b. Topography and drainage plan, which shall contain the existing and proposed final topography at two-foot intervals and plans for handling stormwater drainage. c. Utility and landscaping plan, which shall include all facilities for refuse and sewage disposal or storage of all wastes, the location of all hydrants, fire alarm and firefighting facilities on and adjacent to the site, all proposed recreational facilities and open space areas, and all	LID not addressed	*(Not applicable)*	*Not applicable*	LID not addressed
Allow easy siting of LID features (bioretention, swales, etc.)	Not addressed OR Require waivers from subdivision standards	Encouraged along road ROW	Allowed on lots, common open space, or road ROW, easement recorded. For commercial development, allow an increase in floor area ratio or other developmental incentives for green roofs	Not addressed	Not addressed	Not addressed	Not addressed	Not addressed
Permeable paving	Not addressed OR Require waivers from subdivision standards	Allowed on private residential lots for parking, patios, etc.	Allowed for residential drives, parking stalls, spillover parking spaces, emergency access ways (with proper engineering support for emergency vehicles) Two track design allowed for driveways and secondary emergency access ways (where required).	*(Not applicable)*	*Not applicable*	For a way to be of "adequate construction," it must be paved with bituminous concrete (asphalt) or macadam, and be in good condition. However, in certain situations the Board may allow a road surface such as lynn-pak, man-pak, processed gravel, porous bituminous concrete, or other all	Not addressed	Not addressed

Stormwater management O&M plan	Typically only addressed if municipality has a stormwater or LID bylaw, or for areas subject to wetlands permitting	Required	Required, contents specified in alignment with current MassDEP Stormwater Handbook. Following best practice may also help communities comply with MS4 permit requirements	*(Not applicable)*	*Not applicable*	*Not applicable*	Ensure that soil erosion and sedimentation control measures and stormwater runoff control practices are incorporated into the site planning and design process and are implemented and maintained; (f) Ensure adequate long-term operation and maintenance of structural stormwater best management practices so that they work as designed;	Operation and maintenance plan. (1) An operation and maintenance plan (O&M plan) is required at the time of application for all projects. The plan shall be designed to ensure compliance with the permit, the Bylaw, these regulations and the Massachusetts surface water quality standards, 314 CMR 4.00, in all seasons and throughout the life of the system. The SWPA shall make the final decision as to what maintenance option is appropriate in a given situation by considering natural features, proximity of site to water bodies and wetlands, extent of impervious surfaces, size of the site, types of stormwater management structures, and potential need for ongoing maintenance. The O&M plan shall be recorded on the deed at the Southern Essex District Registry of Deeds [See § 248-6G(1)] with a copy on file with the SWPA and the Building Inspector, and shall be an ongoing requirement.
Construction Erosion and Sedimentation Plan, and stormwater control	Basic general requirements	Required, contents specified - the site design process should include soil erosion and sedimentation control measures	Goes beyond minimum NPDES requirements. Requires minimization of site disturbance, reduction of construction waste, control measures not removed [illegible]	*(Not applicable)*	*Not applicable*	*Not applicable*	Require practices that eliminate soil erosion and sedimentation and control the volume and rate of stormwater runoff resulting from land disturbance activities;	An erosion and sediment control plan is required at the time of application for all projects. Plan approval by the SWPA is required prior to any site altering activity. [illegible]
Stormwater discharge detection & elimination	Not addressed	Discharges and connections noted and/or limits set on quantity and quality	Illicit discharges and connections are prohibited and enforced. Following best practice may also help communities comply with MS4 permit requirements. Find more information in section 2.3.4.a of the MS4 permit	*Not applicable*	*Not applicable*	*(Not applicable)*	The purpose of this bylaw is to regulate discharges to the municipal separate storm sewer system (MS4) to protect the Town of Middleton's water bodies and groundwater and to safeguard the public health, safety, welfare and the environment. Increased and contaminated stormwater runoff associated with construction sites, developed land uses, and the accompanying increase in impervious surface are major causes of impairment of water quality and flow in lakes, ponds, streams, rivers, wetlands and groundwater. This is accomplished through the following: (a) Protect groundwater and surface water from degradation; (b) Promote groundwater recharge; (c) Require practices to control the flow of stormwater from new and redeveloped sites into the Town storm drainage system in order to prevent flooding and erosion; (d) Require practices that eliminate soil erosion and sedimentation and control the volume and rate of stormwater runoff resulting from land disturbance activities;	*Not applicable*
Post- construction stormwater management and drainage patterns	Not addressed	Allow LID	Resemble pre-existing conditions of volume, velocity, quality and location, as nearly as possible, requiring LID to the max extent feasible. Retain vol of runoff >1in. per sq.ft. of impervious surface and/or remove 90% TSS post-construction & 50% TP generated on the site for new development, or >0.8in. per sq.ft and/or remove 80% TSS and 50% of TP load for redevelopment. Following best practice may also help communities comply with MS4 permit requirements.	*(Not applicable)*	*Not applicable*			Post-development additional criteria. All projects subject to a SMP or SSMP shall comply with the performance criteria provided in the Appendices section of the Regulations, unless otherwise provided for in the Regulations.[1] The annual recharge volume from the post-development site shall approximate 100% of the annual recharge volume from pre-development conditions based on soil type for the following types of developments: i. New residential development. ii. New commercial or new industrial development. iii. Commercial or industrial redevelopment. b. To the maximum extent practicable, the annual recharge volume from the postdevelopment site shall approximate 100% of the annual recharge volume from predevelopment conditions based on soil type for existing single lot residential redevelopment. c. The above criteria are met when [illegible]
As-built surveys	Not addressed	Recommended	Required, with written instructions for process; electronic submittal allowed	*(Not applicable)*	*Not applicable*		*Not applicable*	Project completion. At completion of the project the permittee shall submit two printed copies and one portable document file (PDF) as-built record drawings of all stormwater controls and treatment best management practices required for the site as required in § 248-8 of these regulations. The DPW shall receive one copy of the final as-built drawings. The as-built drawing shall show deviations from the approved plans, if any, and be certified by a registered professional engineer (PE) licensed in the Commonwealth of Massachusetts.
Intra-departmental communication and coordination	Not addressed	Informally or loosely occurring	Required for plan review and/or permit approvals	Not addressed	Not addressed	The Board shall, upon submission of a Definitive Plan, schedule review of the plan by all town land use departments (the Development Review Group). A copy of the application shall be transmitted to any consultants that may be selected by the Board for their review. Comments and recommendations shall be made to the Board within forty-five days following receipt of a copy of the plan.	*Not applicable*	A. The SWPA shall administer, implement and enforce these regulations. B. The SWPA may designate by mutual agreement another Town board, commission, or department, including but not limited to the Planning Department, Building Department, Planning Board, Conservation Commission, Board of Health, or Department of Public Works, as its authorized agent or designee for the purposes of permit approval, site inspections of the stormwater management system, erosion and sediment controls, or long-term site inspections in accordance with §§ 248-11 and 248-13 of these regulations. C. Town boards or departments, including, but not limited to the Conservation Commission, Planning Board, Zoning Board of Appeals, Department of Public Works, Building Department, Board of Health, and any other applicable Town board or department may formally adopt these regulations, or specific

Enforcement	No	Yes	Yes with fines. Same entity should oversee permit approvals and enforcement	Building Commissioner. The Building Commissioner shall institute proceedings to enforce these bylaws and to enjoin the construction, alteration, enlargement, reconstruction or use of any building or the use of any premises in violation of these bylaws. The Chief of Police upon application of the Building Commissioner, shall cause a complaint to be made before the proper court for any violation of these bylaws. The use of one remedy shall not predude a resort to another remedy for the same violation. 9.2.2. Criminal complaint. Whoever violates any provision of these Zoning bylaws may be penalized by complaint brought in a District Court of competent jurisdiction. Except as may be provided by law and as the District Court may see fit to impose, the maximum penalty for each violation, or offense, brought in such manner shall be $300. Each day, or portion of a day, that any violation is allowed to continue shall constitute a separate offense, beginning with the date of the receipt of the notice and order issued pursuant to these Zoning bylaws. 9.2.3. Noncriminal disposition. In	*(Not applicable)*	*(Not applicable)*	Any person who violates any provision of this bylaw shall be punished by a fine of $300. Each day or part thereof that such violation occurs or continues shall constitute a separate offense. B. The SWPA or an authorized agent of the SWPA shall enforce this bylaw and regulations promulgated hereunder by means including, without limitation, orders, violation notices, and enforcement orders, and may pursue all civil and criminal remedies for such violations. Enforcement shall be further defined and included as part of any stormwater regulations promulgated as permitted under § 204-3B of this bylaw. C. As an alternative to criminal prosecution or civil action, the SWPA may elect to use the noncriminal disposition procedure set forth in MGL c. 40, § 21D, in which case the authorized agent of the SWPA shall be the enforcing person. The penalty for violation shall be $300. Each day or part	The SWPA or an authorized agent of the SWPA shall enforce the Bylaw regulations, orders, violation notices, and enforcement orders, and may pursue all civil, criminal and noncriminal remedies for such violations. B. Notices and orders. (1) The SWPA or an authorized agent of the SWPA may issue a written notice of violation or enforcement order to enforce the provisions of the Bylaw or regulations thereunder, which may include requirements to: (a) Cease and desist from construction or land-disturbing activity until there is compliance with the Bylaw and the stormwater management permit (SMP) or simple stormwater management permit (SSMP). (b) Repair, maintain, or replace the stormwater management system or portions thereof in accordance with the operation and maintenance plan. (c) Perform monitoring, analyses, and reporting
GOAL 5: ENCOURAGE EFFICIENT PARKING								
Parking	Specific minimums set based on projected maximum use times	Encourage minimum # needed to serve routine use (e.g. 2/residential unit with any additional/visitors parking behind in driveway or on street.	Establish Maximum Parking spaces allowed. Do not require more than 2/residence. Allow tenants separate, optional lease agreements for parking.	Dwelling unit: 2 spaces Flexible Development: Parking. Each dwelling unit shall be served by two off-street parking spaces. Parking spaces in front of garages may count in this computation.	*Not applicable*	*Not applicable*	*Not applicable*	*Not applicable*
Commercial Parking	Specific minimums set based on projected maximum use times adding all on-site uses together.	Some flexibility to reduce minimums based on street or other available nearby parking or transit.	Allowed shared parking for uses with different peak demand times. Provide model agreements/deed restrictions. Reduce parking requirements near transit. Limit parking stall size (9ftx18ft max), with up to 30% smaller for compact cars	Minimums based on type of commercial establishment.	*Not applicable*	*Not applicable*	*Not applicable*	*Not applicable*
LID in Parking Areas	LID not addressed OR Require waivers e.g. for planting islands to drain down rather than built up surrounded by curbs	Allow LID/bioretention within parking areas.	Require landscaping within parking areas, as LID/bioretention, at a minimum of 10% of the interior area landscaped and a minimum of 25 square feet for island planting areas.	Parking lot plantings. On properties located along the North Main Street frontage, parking lots containing 10 or more parking spaces shall have at least one tree per eight parking spaces, such trees to be located either within the lot or within five feet of it. At least 5% of the interior of any parking lot having 25 or more spaces shall be maintained with landscaping, including trees, in plots of at least eight feet in width; trees shall be so located as to provide visual relief and sun and wind interruption within the parking area and to assure safe patterns of internal circulation.	*Not applicable*	*Not applicable*	*Not applicable*	Not addressed

Newbury

Factors	Needs Improvement	Improved	Optimal	Zoning Bylaw (including site plan review)	Subdivision Rules & Regulations	Wetland Bylaw	Stormwater/IDDE Bylaw and Rules and Regulations
GOAL 1: PROTECT NATURAL RESOURCES AND OPEN SPACE							
Soils managed for revegetation	Not addressed	Limitations on removal from site, and/or requirements for stabilization and revegetation	Prohibit removal of topsoil from site. Require rototilling and other prep of soils compacted during construction	earth removal permitted by special permit in water supply protection: Earth removal, consisting of the removal of soil, loam, sand, gravel, or any other earth material (including mining activities) to within 6 feet of historical high groundwater as determined from monitoring wells and historical water table fluctuation data compiled by the United States Geological Survey, except for excavations for building foundations, roads, utility works, freshwater ponds, and individual sewage disposal systems; (97-4, B3-f) for wind energy facilities: tabilization or re-vegetation of the site as necessary to minimize erosion. The SPGA may allow the owner to leave landscaping or designated below-grade foundations in order to minimize erosion and disruption to vegetation. (97-5.E8) for developments requireing level 2 site plan review, minimize the volume of cut and fill, number of removed 6 inch caliper trees, and soil erosion (97-9, A6)	All topsoil and other yielding material shall be removed for the full length and width of the paved roadway and from under the sidewalk location when sidewalks are required regardless of whether or not the finished grade is above the existing grade. (117-33, B)	Except as permitted in writing by the Commission or as provided in this Bylaw, no person shall engage in the following activities ("activities"): removal, filling, dredging, discharging into, building upon, discharging into or otherwise altering or degrading any barrier beach as defined in 310 CMR 10.00 et seq., as the same may be amended, and lands subject to tidal action and coastal storm flowage or flooding.(95-2)	On and off-site stockpile areas shall be managed to provide protection from erosion and sediment transport (overburden and stockpiles of dirt, borrow areas, or other areas used solely by the permitted project are considered a part of the project); All erosion and sedimentation control measures shall be installed prior to any disturbance and installed and maintained in conformance with the documents referenced above. 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 (Part III, 1)
Limit clearing, lawn size, require retention or planting of native vegetation/naturalized areas	Not addressed OR General qualitative statement not tied to other design standards	Encourage minimization of clearing/ grubbing	Require minimization of clearing/grubbing with specific standards	Environmental features of the site and surrounding areas shall be protected (97-3.J-d) Existing on-site vegetation shall be preserved to the maximum extent practicable in wireless comm district (97-4, C-b09) In OSRD he landscape shall be preserved in its natural state, insofar as practicable, by minimizing tree and soil removal. Any grade changes shall be in keeping with the general appearance of the neighboring developed areas. The orientation of individual building sites shall be such as to maintain maximum natural topography and cover. Topography, tree cover, and natural drainage ways shall be treated as fixed determinants of road and lot configuration rather than as malleable elements that can be changed to follow a preferred development scheme; (97-5, C9-01) Every effort shall be made to minimize the area of disturbed areas on the tract. A disturbed area is any	Design shall emphasize, to the extent possible: he natural features of the landscape; (2) Landscaping that is consistent with the existing features found in (1) above; Design and Construction shall minimize, to the extent possible, the following: (1) Volume of cut and fill;Area over which existing vegetation will be disturbed, especially if within 100 feet of a watercourse, wetland, or water body, including, but not limited to, lakes, ponds, and vernal pools or in areas having a slope of more than 15%; (3) Number of trees removed having a diameter over six (6) inches as measured at 4' 0" above the ground, both within the right-of-way and on the proposed lots; (117-20) Clearing and grubbing: Existing trees within the area of the right-of-way may be selected for preservation of aesthetic or other values by the	Except as permitted in writing by the Commission or as provided in this Bylaw, no person shall engage in the following activities ("activities"): removal, filling, dredging, discharging into, building upon, discharging into or otherwise altering or degrading any barrier beach as defined in 310 CMR 10.00 et seq., as the same may be amended, and lands subject to tidal action and coastal storm flowage or flooding.(95-2)	Construction activities shall be sequenced to minimize simultaneous areas of disturbance; No areas shall be disturbed before it is necessary to accomplish the work causing the disturbance; (Part III, 1)
Require native vegetation and trees	Not addressed OR General qualitative statement	Mixture of required plantings of native and nonnative	Require at least 75% native plantings	not addressed	not addressed	Except as permitted in writing by the Commission or as provided in this Bylaw, no person shall engage in the following activities ("activities"): removal, filling, dredging, discharging into, building upon, discharging into or otherwise altering or degrading any barrier beach as defined in 310 CMR 10.00 et seq., as the same may be amended, and lands subject to tidal action and coastal storm flowage or flooding.(95-2)	not addressed
GOAL 2: PROMOTE EFFICIENT, COMPACT DEVELOPMENT PATTERNS AND INFILL							
Lot size (for stormwater bylaw, pertains to the size of a lot which requires a stormwater permit)	Not addressed OR Required minimum lot sizes	OSRD/NRPZ preferred. Special permit with incentives to utilize	Flexible with OSRD/NRPZ by right, preferred option	General lot area requirements but flexibility in OSRD (97-6, B)Any subdivision of land or development that will create more than four lots or units shall submit an application for OSRD to the Planning Board. The applicant shall have the option of development under the subdivision process as found in Chapter 117, Planning Board's Rules and Regulations for the Subdivision of Land, or under the OSRD. (97-5, C4) special permit required for OSRD The Planning Board encourages applicants to modify lot size, unit placement, shape, and other dimensional requirements for lots within an OSRD, subject to the following limitations: (97.5.C.10)	*(Not applicable)*	*(Not applicable)*	No person may alter or disturb any land equal to or greater than one acre, or less than one acre that is part of a larger common plan of development or sale, that will ultimately alter or disturb any land equal to or greater than one acre that drains into the Town of Newbury MS4 without a Stormwater Management Permit from the Conservation Commission. (87-4, c)
Housing density	Multi-family housing not allowed, or only in/adjacent to commercial and industrial uses	Multi-family and cluster developments allowed by special permit	Multi-family housing allowed by right in most residential areas; cluster developments encouraged with density bonuses for LID features and no maximum lot coverage	not permitted at all in any district (attachment 4) Mix of Housing Types. The OSRD may consist of any combination of single-family and two-family structures. Multifamily structures of not more than four (4) units may also be permitted by the Planning Board if they serve the purpose and intent of the Open Space Residential Development By-Law, as stated in section § 97-5C.(1).; (97-5, C.9.b.01)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Setbacks	Not addressed OR Required minimum front, side, and rear setbacks	Minimize, allow flexibility	Clear standards that minimize and in some instances eliminate setbacks	General setback requirements but flexibility in OSRD (97-6, B)The Planning Board encourages applicants to modify lot size, unit placement, shape, and other dimensional requirements for lots within an OSRD, subject to the following limitations: (97.5.C.10) Every dwelling fronting on the proposed roadways shall be set back a minimum of 20 feet from the roadway right-of-way, and 10 feet from any rear or side lot line. In the event that dwellings are located on exclusive use areas or contain no interior lot lines, a minimum distance of 20 feet between single and two-family dwellings shall be required. At least 50% of the required setbacks for the district shall be maintained in the OSRD unless a reduction is otherwise authorized by the Planning Board. Where structures containing three to four dwelling units are being proposed, the side lot lines between units may be 0 feet, however the distance between structures shall be a minimum of 20 feet; (97-5. C. 10)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*

Frontage	Not addressed OR Required minimum frontage for each lot/unit	Minimize especially on curved streets and cul-de-sacs	No minimums in some instances, tied into other standards like OSRD design and shared driveways.	General frontage requirements but flexibility in OSRD (97-6, B)The orientation of individual building sites shall be such as to maintain maximum natural topography and cover in OSRD. (97-5, C9-01) The Planning Board encourages applicants	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Common driveways	Not addressed OR Not allowed, strict limitations	Allow for 2-3 residential units	Allow for up to 4 residential units, preferrably constructed with permeable pavers or pavement	Up to three single-family lots or two duplex lots or one duplex lot and on single-family lot are eligible under the provisions of this by- law. All lots are required to have adequate and viable frontage, which complies with the Newbury Protective Zoning By-law, and shall be located on a public way. - special permit required(95.7-D2)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
GOAL 3: SMART DESIGNS THAT REDUCE OVERALL IMPERVIOUSNESS							
Impervious cover limits and infiltration rates	Not usually addressed in zoning and subdivision regs for rural/suburban residential	Require no net increase in site run-off from pre- to post-development	Impervious cover limits tailored to the community and district type (i.e. <10% total impervious cover in rural districts, but higher in urban and redevelopment districts); post-development infiltration should be equal to or greater than pre-development. Following best practice may also help communities comply with MS4 permit requirements	Any use that will render impervious more than 15% or 2,500 square feet of any lot, whichever is greater. A system for groundwater recharge must be provided which does not degrade groundwater quality requires special permit in water supply protection (B4-b03)	Design and Construction shall minimize, to the extent possible, the following: Size of paved areas (including streets) except as necessary for safety and convenience, especially in aquifer and recharge areas; (117-20)	*(Not applicable)*	Calculations of stormwater runoff flows for pre-construction and postconstruction conditions, showing routings to BMPs required (IV)
Street location	No standards addressed OR Numeric and geometric standards based primarily on vehicular travel and safety, with basic pedestrian requirements e.g. sidewalks	Flexibility in applying standards, to reduce area of impact, grading, avoid key natural features	OSRD design preferred by-right. Require locating streets to minimize grading and road length, avoid important natural features	Streets shall be designed and located in such a manner as to maintain and preserve natural topography, significant landmarks, and trees; to minimize cut and fill; and to preserve and enhance views and vistas on or off the subject parcel in OSRD. (97-	All streets shall be designed so they will connect in a logical fashion with existing streets, provide for the convenient and safe movement of pedestrian, bicycle, and vehicular traffic and allow for the proper projection of streets for access to	*(Not applicable)*	*(Not applicable)*
Road width	No categories addressed OR Major and minor categories, 24-30'	Wide, medium, narrow categories. 22-24' max, plus 2' shoulders	Wide, medium, narrow, and alley categories. 20-24' widest for 2 travel lanes, 18-20' low traffic residential neighborhood, plus 2' shoulders. Allow alleys and other low traffic or secondary emergency access and all shoulders to use alternative, permeable materials.	*(Not applicable)*	The Board may in the case of residential streets authorize a reduction of the minimum roadway width and/or an increase in roadway length. Such reduction or extension shall only be authorized if the Board finds it is in the public interest and that the design of the overall subdivision will significantly enhance the character of the neighborhood and preserve to a greater extent the historical and natural features of the site. Approval of such reductions or exceptions if based in part on limiting the number of lots upon which buildings can be constructed shall be endorsed on the plan to which they relate or set forth in a separate instrument attached thereto and recorded therewith. (117-23, A) Otherwise minimum road width 22-24 feet depending on type (117-23)	*(Not applicable)*	*(Not applicable)*
Road ROW width	ROW Width not addressed OR 50-75', fully cleared and graded	40-50', some flexibility in extent of clearing	20-50'depending on road type	*(Not applicable)*	Is the right-of-way adequate (at least 40 feet wide) and of reasonable vertical and horizontal alignment; (117-14, A) All ROWs 53 feet (117-23)	*(Not applicable)*	*(Not applicable)*
Access Options	Common drives not addressed, No common drives allowed, Dead end allowed with limit on length and # of units	Allow dead end with limit on length and # of units. Allow common drives up to 2-3 units	Allow one way loop streets. Allow common drives up to 4 units, and alleys and rear-loading garages where suitable.	Up to three single-family lots or two duplex lots or one duplex lot and on single-family lot are eligible under the provisions of this by- law. All lots are required to have adequate and viable frontage, which complies with the Newbury Protective Zoning By-law, and shall be located on a public way. - special permit required(95.7-D2)	no deadends permitted (117-23), common drives not addressed, pne way loop streets not addressed	*(Not applicable)*	*(Not applicable)*
Dead Ends/Cul-de-sacs	No standards addressed OR 120 ft or more minimum turnaround	Minimize end radii – 35 ft	Allow hammerhead turnaround	*(Not applicable)*	Cul-de-sac streets shall be provided with a turnaround having an outside sideline diameter of at least 165 feet, an outside roadway diameter of at least 140 feet, a pavement width of 25 feet and a center island. Streets with a center island of less than one acre shall be classified as cul-de-sacs. Streets with a center island of one or more acres shall be classified as non-through streets. (1217-23, B)	*(Not applicable)*	*(Not applicable)*
Cul-de-sacs	No standards addressed OR Full pavement standard	Encourage center landscaping with bioretention	Require center landscaping with bioretention	*(Not applicable)*	center island required, no mention of landscaping/bioretention (117-23, B)	*(Not applicable)*	*(Not applicable)*
Curbing	No standards addressed OR Curbing required full length both sides of road	Allow curb breaks or curb flush with pavement to enable water to flow to vegetated LID features	Open drainage with roadside swales and no curbs preferred	*(Not applicable)*	Curb and gutter drainage will be allowed only where country drainage is not feasible. Where required, sloped granite curbing	*(Not applicable)*	not addressed
Roadside Swales	Not addressed OR Allowed as an option	Preferred over closed drainage	Preferred, with criteria for proper design. Adoption of technical specifications and design templates for green infrastructure recommended	*(Not applicable)*	All grass swales, grass strips and other unpaved areas within the street right-of-way shall be covered with at least six inches of loam (depth after compaction) before seeding. (117-41)	*(Not applicable)*	An Inspection and Maintenance Schedule for all stormwater management and other facilities, including swales and ponds, and including routine and non-routine maintenance tasks to be performed; (V, 2b)
Utilities	Off sets required contributing to wide road ROWs	Not specified - flexible	Allow under road, sidewalks or immediately adjacent to roads to enable placement of roadside swales.	*(Not applicable)*	All required utilities exclusive of transformers shall be placed underground at the time of initial construction. Required utilities may include water, sewer, storm drainage (where allowed), electricity, gas, wiring for street lights, fire alarm systems, and telephone, cable, fiber optic and other communications lines. All construction will be in accordance with the latest edition of the Massachusetts Department of Transportation "Standard Specifications for Highways and Bridges" or the specifications of the applicable utility company, unless otherwise specified by the Board. All utilities which are placed above ground, i.e. transformers, shall be placed outside the right of way so as not to interfere with the placement of the streets, roadways and/or sidewalks and the Applicant shall provide easements on lots within the subdivision for this purpose. (117-34)	*(Not applicable)*	*(Not applicable)*

Sidewalks	Material not addressed OR Concrete or bituminous required	Some flexibility in material and design	Prefer permeable pavement or permeable pavers	*(Not applicable)*	Unless the Planning Board determines that pedestrian movement is otherwise provided for, sidewalks will be required along the street. Sidewalks shall have a width of not less than five feet, a gravel base of eight inches, and a two inch thick bituminous pavement. (117-35)	*(Not applicable)*	*(Not applicable)*
Sidewalk location	Required both sides of road	Allow on only 1 side of road especially in low density neighborhoods	Prefer siting with land contours and for best pedestrian utility (e.g. connect with common areas and shared open spaces) – not necessarily immediately parallel to road.	*(Not applicable)*	Unless the Planning Board determines that pedestrian movement is otherwise provided for, sidewalks will be required along the street. Sidewalks shall have a width of not less than five feet, a gravel base of eight inches, and a two inch thick bituminous pavement. (117-35) Minor streets shall be provided with sidewalks on one side; secondary and principal streets shall be provided with sidewalks on both sides. The inclusion of bicycle paths is encouraged. Pedestrian access other than by routes parallel to roadways may be permitted, with proper easements. (117-35)	*(Not applicable)*	*(Not applicable)*
Sidewalk drainage	Draining to road, closed drainage system required	Not addressed	Disconnect drainage from road system – e.g. adjacent green strips or within vegetated areas that can absorb sheet flow	*(Not applicable)*	not addressed	*(Not applicable)*	*(Not applicable)*
GOAL 4: ADOPT GREEN INFRASTRUCTURE STORMWATER MANAGEMENT PROVISIONS							
Rooftop runoff	Not addressed OR Prohibit directing clean roof runoff into closed municipal drainage systems.	Allow clean roof runoff to be directed to landscaped or naturally vegetated areas capable of absorbing without erosion, or infiltration	Require directing clean roof runoff to landscaped or naturally vegetated areas capable of absorbing, or infiltration	*(Not applicable)*	not addressed	*(Not applicable)*	not addressed
Overall stormwater design; piping and surficial retention vs. LID	Conventional stormwater system design standards	Encourage LID features and BMPs; design standards often not specified	LID design standard encouraging infiltration, allowing surficial ponding of retained runoff for up to 72 hours; systems designed for larger volume storms, accounting for future precipitation predictions; credit for green roofs towards stormwater requirements. Following best practice may also help communities comply with MS4 permit requirements	*(Not applicable)*	Existing and proposed stormwater drainage systems and easements pertinent thereto, including drainage areas inside the subdivision, areas outside the subdivision which drain into it, and the route for all existing and proposed drainage discharging from the subdivision to the primary receiving water course or other body of water. Design and calculations shall be in accordance with the Town of Newbury Stormwater Management, Illicit Discharge, and Erosion Control Rules and Regulations. Cross sections of each drainage ditch or pond shall be included. (117-18. B.15) Hydrological/Drainage calculations as required by the Rules and Regulations, Town of Newbury Stormwater Management, Illicit Discharge and Erosion Control. (117-18. C3) Design shall emphasize, to the extent possible: Stormwater runoff and collection in conformance with current Low Impact Development standards, as promulgated by the Massachusetts Department of Environmental Protection and the Federal	*(Not applicable)*	Low Impact Development (LID) measures are to be used. Where applicable the Conservation Commission's consideration of waiver requests may be influenced by the amount of Low Impact Development measures included in the project. (3) Standards: All aspects of the SWMP shall be prepared in accordance with the Massachusetts Department of Environmental Protection Stormwater Handbook (IV) Runoff calculations shall be performed for the 2-year, 10-year and 100-year 24-hour storms. Detention must be provided for the 2 and 10- year storms. Calculations shall be provided that show that the 100 year storm will not contribute to flooding (IV, 2h) Applicants are encouraged to meet water quality standards through the use of low impact techniques such as bio-retention cells and vegetated filter strips, rather than [illegible] mechanical BMPs (IV,
Site Plan/Design Requirements	LID not addressed	Encourage use of LID features in site design - such as reduced imperviousness, maintaining natural hydrology, preserving open space, and rainwater reuse	Include bioretention and other vegetated LID features in site landscaping/open space requirements. Following best practice may also help communities comply with MS4 permit requirements. See section 2.3.5 of the MS4 permit for more information	For non-residential uses, recharge shall be by stormwater infiltration basins or similar systems covered with natural vegetation, and dry wells shall be used only where other methods are infeasible. For all non-residential uses, all such basins and wells shall be preceded by oil, grease, and sediment traps to facilitate removal of contamination. Any and all recharge areas shall be permanently maintained in full working order by the owner. (B4-b03) Drainage. Stormwater management shall be in compliance with Chapter 87, "Stormwater Management and Illicit Discharge and Erosion Control" of the Code of the Town of Newbury where applicable. The Planning Board shall encourage the use of low impact design (nonstructural) stormwater management techniques (such as swales, filter strips, constructed wetlands and bioretention cells) and other drainage techniques that reduce impervious surface and enable infiltration to the greatest degree permitted by soil types and conditions at the site in OSRD- (97-	*(Not applicable)*	*(Not applicable)*	Low Impact Development (LID) measures are to be used. Where applicable the Conservation Commission's consideration of waiver requests may be influenced by the amount of Low Impact Development measures included in the project. (4) These regulations supplement the Massachusetts DEP "Stormwater Handbook" and apply to all projects except those that are specifically excluded by the provisions of the "Stormwater Handbook". Application of these rules and regulations are not limited to the MS4 areas delineated in the Town of Newbury Stormwater Bylaw, nor to projects under the jurisdiction of the Conservation Commission; (3, 4) Applicants are encouraged to meet water quality standards through the use of low impact techniques such as bio-retention cells and vegetated filter strips, rather than [illegible] mechanical BMPs (IV,

Allow easy siting of LID features (bioretention, swales, etc.)	Not addressed OR Require waivers from subdivision standards	Encouraged along road ROW	Allowed on lots, common open space, or road ROW, easement recorded. For commercial development, allow an increase in floor area ratio or other developmental incentives for green roofs	For non-residential uses, recharge shall be by stormwater infiltration basins or similar systems covered with natural vegetation, and dry wells shall be used only where other methods are infeasible. For all non-residential uses, all such basins and wells shall be preceded by oil, grease, and sediment traps to facilitate removal of contamination. Any and all recharge areas shall be permanently maintained in full working order by the owner. (B4-b03) Drainage. Stormwater management shall be in compliance with Chapter 87, "Stormwater Management and Illicit Discharge and Erosion Control" of the Code of the Town of Newbury where applicable. The Planning Board shall encourage the use of low impact design (nonstructural) stormwater management techniques (such as swales, filter strips, constructed wetlands and bioretention cells) and other drainage techniques that reduce impervious surface and enable infiltration to the greatest degree permitted by soil types and conditions at the site in OSRD. (97-	Surface water drainage. Design and construction shall be in conformance with "Rules and Regulations, Town of Newbury Stormwater Management, Illicit Discharge and Erosion Control." Drainage systems relying on gutters, catch basins, and underground piping will be allowed only where country drainage is not feasible. The "Rules and Regulations, Town of Newbury Stormwater Management, Illicit Discharge and Erosion Control" shall apply to all subdivisions, whether or not they are in the MS4 area, and whether or not the subdivision is subject to G.L. c. 131. (117-34, A) Easements across lots or centered on rear or side lot lines for utilities or for pedestrian access shall be provided where necessary and shall be at least twenty feet wide. Size of easements for stormwater BMPs, fire protection, water tanks, and other Town facilities shall be as required. B. Where a subdivision is traversed by a watercourse, drainage way, channel or stream, the Board may	*(Not applicable)*	*(Not applicable)*
Permeable paving	Not addressed OR Require waivers from subdivision standards	Allowed on private residential lots for parking, patios, etc.	Allowed for residential drives, parking stalls, spillover parking spaces, emergency access ways (with proper engineering support for emergency vehicles) Two track design allowed for driveways and secondary emergency access ways (where required).	*(Not applicable)*	not addressed	*(Not applicable)*	not addressed
Stormwater management O&M plan	Typically only addressed if municipality has a stormwater or LID bylaw, or for areas subject to wetlands permitting	Required	Required, contents specified in alignment with current MassDEP Stormwater Handbook. Following best practice may also help communities comply with MS4 permit requirements	*(Not applicable)*	not addressed	*(Not applicable)*	Operation and Maintenance Plan Requirements: An Operation and Maintenance Plan (OMP) is required at the time of application for all projects. The maintenance plan shall be designed to ensure that the work complies with the Permit and the Stormwater and Erosion Control By-Law and that the Massachusetts Surface Water Quality Standards, 314, CMR 4.00 (as amended) are met in all seasons and throughout the life of the system. Once approved by the Conservation Commission, the Operation and Maintenance Plan shall be recorded at the Registry of Deeds. The OMP shall remain on file with the Conservation Commission and adherence to the O&M Plan shall be an ongoing requirement (contents specified) (V, 1)
Construction Erosion and Sedimentation Plan, and stormwater control	Basic general requirements	Required, contents specified - the site design process should include soil erosion and sedimentation control measures	Goes beyond minimum NPDES requirements. Requires minimization of site disturbance, reduction of construction waste, control measures not removed until proof of soil stabilization or reestablishment of vegetation. Written procedures for site inspection and enforcement included. Following best practice may also help communities comply with MS4 permit requirements. See section 2.3.5 of the MS4 permit for more information	*(Not applicable)*	not addressed	*(Not applicable)*	Standards: The Erosion and Sedimentation Control Plan (ESCP) 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 and sedimentation controls. The Plan must be prepared in accordance with the following (buleted list detailing plan design standards) (Part III, 1)
Stormwater discharge detection & elimination	Not addressed	Discharges and connections noted and/or limits set on quantity and quality	Illicit discharges and connections are probibited and enforced. Following best practice may also help communities comply with MS4 permit requirements. Find more information in section 2.3.4.a of the MS4 permit	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	All Illicit Connections and Illicit Discharges shall be prohibited. In the event any Illicit Discharge or Illicit Connection exists prior to the adoption of this bylaw it shall immediately cease and be removed (87-5) No Illicit Discharges or Connections: Regulation of illicit connections or discharges to the Town of Newbury stormwater system or any receiving waters is necessary for the protection of the Town of Newbury's water bodies and groundwater, and to safeguard the public health, safety, welfare and the environment. No stormwater runoff generated from land development and land use conversion activities shall be discharged untreated directly to a wetland, local water body, municipal drainage system, or abutting property, without provisions being made to (IV, 3)
Post- construction stormwater management and drainage patterns	Not addressed	Allow LID	Resemble pre-existing conditions of volume, velocity, quality and location, as nearly as possible, requiring LID to the max extent feasible. Retain vol of runoff >1in. per sq.ft. of impervious surface and/or remove 90% TSS post-construction & 50% TP generated on the site for new development, or >0.8in. per sq.ft and/or remove 80% TSS and 50% of TP load for redevelopment. Following best practice may also help communities comply with MS4 permit requirements.	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	Structural BMPs must be designed to remove 80% of the average annual post development total suspended solids (TSS) (IV, 2d)
As-built surveys	Not addressed	Recommended	Required, with written instructions for process; electronic submittal allowed	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	not addressed

Intra-departmental communication and coordination	Not addressed	Informally or loosely occurring	Required for plan review and/or permit approvals	some implied communication between planning board, board of selectmen to an extent (97-11)	not addressed	Upon request of the Commission, the Selectmen and Town Counsel may take such legal action as may be necessary to enforce this Bylaw or promulgated regulations and permits issued pursuant to it. E. Upon recommendation of the Commission, the Selectmen may employ Special Counsel to assist the Commission in carrying out the legal aspects, duties, and requirements of this Bylaw and promulgated regulations. (95-12, D.E)	not addressed
Enforcement	No	Yes	Yes with fines. Same entity should oversee permit approvals and enforcement	This By-Law shall be enforced by the Selectmen or a Building Inspector appointed by them. No building shall be built or altered and the use of a building shall not be changed without a permit having been issued by the Selectmen or the Building Inspector. Any person violating any of the provisions of the By-Law may be fined not more than $100.00 dollars for each offense. Each day that such violation continues shall constitute a separate offense. (97-11 A1)	The Board shall be the agency responsible for administration and enforcement for all matters arising hereunder. (117-63)	the Town may enforce the provisions of this Bylaw, restrain violations thereof, and seek injunctions and judgments to secure compliance with its Orders of Conditions. Without limiting the generality of the foregoing: Any person who violates any provision of this Bylaw or of any condition or a permit issued pursuant to it may be ordered to restore the property to its original condition after holding a hearing, and take other action deemed necessary to remedy such violations, or may be fined, or both. Any person may be fined or issued a stop work order or an order to restore for an unauthorized alteration of an area subject to protection under the Bylaw or for failing to restore illegally altered land to its original condition or failing to comply with an order issued pursuant to the	The Conservation Commission shall administer, implement and enforce this By-Law. Any powers granted to, or duties imposed upon, the Conservation Commission may be delegated in writing by the Conservation Commission or its authorized agent to such individual or individuals as the Board or its agent may, from time to time, deem appropriate. (87-6, a) Any person violating any provision of this By-Law may be fined $300.00 for each offense. Each day such violation continues shall constitute a separate offense. Fines may be levied pursuant to G.L. c. 40, § 21, or, in the alternative, the Conservation Commission, its authorized agents, police officers, or any other person having police powers, may impose such specified penalties pursuant to the non-criminal disposition provisions set forth in G.L. c. 40, § 21D. (87-9, b)
GOAL 5: ENCOURAGE EFFICIENT PARKING							
Parking	Specific minimums set based on projected maximum use times	Encourage minimum # needed to serve routine use (e.g. 2/residential unit with any additional/visitors parking behind in driveway or on street.	Establish Maximum Parking spaces allowed. Do not require more than 2/residence. Allow tenants separate, optional lease agreements for parking.	Each dwelling unit shall be served by two (2) off-street parking spaces. Parking spaces in front of garages may count in this computation; in OSRD (97-5.C.9.b.02) one and two family residences: 2 parking spaces per unit. Accessory apprt: 1 per unit (97-7. D) For parking associated with developments requiring a special permit, the Planning Board by special permit may reduce the minimum required number of parking spaces by a maximum of twenty-five (25%) percent, based on a determination that the specific style of development requires fewer spaces than otherwise required by the general standards set out above. (97-7. D)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Commercial Parking	Specific minimums set based on projected maximum use times adding all on-site uses together.	Some flexibility to reduce minimums based on street or other available nearby parking or transit.	Allowed shared parking for uses with different peak demand times. Provide model agreements/deed restrictions. Reduce parking requirements near transit. Limit parking stall size (9ftx18ft max), with up to 30% smaller for compact cars	Maximum numbers of parking spaces No maximum limits have been included in the table in § D.(2).(a); above; however development plans which actively seek to keep both parking spaces and associated impervious surfaces to a functional and sufficient minimum will be strongly encouraged in order to reduce run off and heat retention. See § 97-7.A.(1) and –A.(4) above. (97-7. D2.b) Standard parking spaces shall be a minimum of 9 feet wide by 18 feet long. (97-7.D2) Multiple uses: When a lot includes more than one principle[3] use, parking shall be provided in an amount equal to the sum of the requirements of the individual uses, except where shared spaces may be possible in the case of distributive use times. (97-7.D.2c)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
LID in Parking Areas	LID not addressed OR Require waivers e.g. for planting islands to drain down rather than built up surrounded by curbs	Allow LID/bioretention within parking areas.	Require landscaping within parking areas, as LID/bioretention, at a minimum of 10% of the interior area landscaped and a minimum of 25 square feet for island planting areas.	Maximum numbers of parking spaces No maximum limits have been included in the table in § D.(2).(a); above; however development plans which actively seek to keep both parking spaces and associated impervious surfaces to a functional and sufficient minimum will be strongly encouraged in order to reduce run off and heat retention. See § 97-7.A.(1) and –A.(4) above. (97-7. D2.b)	not addressed	*(Not applicable)*	not addressed

Newburyport

Factors	Needs Improvement	Improved	Optimal	Zoning Ordinance (including site plan review)	Subdivision Rules & Regulations	Wetland Ordinance	Stormwater Ordinance and Rules and Regulations/ Soil erosion/sedimentation control regulations (appendix H and I of subdivision regs)
GOAL 1: PROTECT NATURAL RESOURCES AND OPEN SPACE							
Soils managed for revegetation	Not addressed	Limitations on removal from site, and/or requirements for stabilization and revegetation	Prohibit removal of topsoil from site. Require rototilling and other prep of soils compacted during construction	Exposed or disturbed areas due to stripping of vegetation, soil removal, and regrading shall be permanently stabilized within six months of occupancy of a structure. 2. During construction, temporary vegetation and/or mulching shall be used to protect exposed area from erosion. Until a disturbed area is permanently stabilized, sediment in run-off water shall be trapped by using staked hay bales or sedimentation straps. 3. Permanent erosion control and vegetative measures shall be in accordance with the erosion/sedimentation/vegetative practices recommended by the soil conservation service. (XV-H, h)	The location and methods of all proposed erosion/sedimentation control within the subdivision shall be identified required in definitive subdivision plan (5.4., 3.p) If excess "earth" materials are proposed to be disposed of off-site, then a notation stating the volume of earth to be removed, as defined in the Code of Ordinances Article VII Earth Removal Section 5-226 Soil Removal Board regarding Sand, Gravel, or Loam, shall be provided on the plan(s). This volume shall include all amounts of "earth" as proposed to be removed for the construction of streets, sidewalks, driveways, structures, and all other improvements related to the subdivision. If no "earth" is to be removed, a statement to such effect shall be included on the plan(s); (5.4, 3, p) All cut-and-fill slopes within or contiguous to the street right of way shall be planted with suitable, well rooted, low growing plant materials or grass as determined by the Board. A wood chip or comparable mulch shall be used	Except as permitted by the conservation commission pursuant to this article and regulations (not inconsistent with this article) promulgated pursuant to section 6.5-35., no person shall commence to remove, fill, dredge, build upon, degrade, discharge into, or otherwise alter (as further defined in section 6.5-27(c)) the resource areas, buffer zones or riverfront areas described in section 6.5-27(b). (6.5-27)	Temporary seeding, mulching or other suitable stabilization methods shall be used to protect exposed areas during construction; as feasible, natural vegetation shall be retained and protected; during the months of October through March, when seeding and sodding may be impractical, an anchored mulch shall be applied as approved by the Board or by the Board's outside consultant; diversions and/or prepared outlets may be required in critical areas during construction (app H, F) Soil and other materials shall not be stockpiled or redistributed, either temporarily or permanently, in locations or in such a manner as would cause suffocation of tree root systems (app H, F) Permanent vegetation and erosion control structures, as necessary, shall be installed preferably immediately after construction is completed but
Limit clearing, lawn size, require retention or planting of native vegetation/naturalized areas	Not addressed OR General qualitative statement not tied to other design standards	Encourage minimization of clearing/ grubbing	Require minimization of clearing/grubbing with specific standards	In no case shall any building or structure be permitted within fifty (50) feet of the embankment of any open stream. (VI-N) No building or structure shall be permitted within fifty (50) feet of the high water mark of the Merrimack River unless said structure is a water dependent/related use as defined in section XVIII-B of this ordinance.(VI-M) IN OSRD: The landscape should be preserved in its natural state. Tree and soil removal shall be minimized and saved trees shall be protected during construction. Native and noninvasive trees with a caliper greater than twenty (20) inches (measured at four (4) feet) shall not be removed unless such removal is consistent with the purposes and intent of this section. (XIV-J) Not more than fifty (50) percent of the total tract shall be disturbed areas. A disturbed area is any land not left in its natural vegetated state in OSRD. (XIV-J)	In laying out of a subdivision, the applicant shall comply with these rules and regulations with due regard to all natural features such as trees with at least a six (6) inch caliper, watercourses, scenic or historic elements, aquifers, flood plains, and habitats of rare or endangered species. These features shall be left undisturbed wherever practical and the Board may waive design requirements in order to protect important natural features (6.2, 1) The area between property lines within the right-of-way shall be cleared and grubbed except for those trees that are intended to be preserved as street trees (6.6, 1) Street trees shall be required to be planted, at the expense of the developer/contractor, on all streets within the tract being subdivided. Trees shall be planted within the street right-of-way, and shall be spaced at intervals of approximately fifty (50) feet on center, but no closer than thirty-five	Except as permitted by the conservation commission pursuant to this article and regulations (not inconsistent with this article) promulgated pursuant to section 6.5-35., no person shall commence to remove, fill, dredge, build upon, degrade, discharge into, or otherwise alter (as further defined in section 6.5-27(c)) the resource areas, buffer zones or riverfront areas described in section 6.5-27(b). (6.5-27)	Minimize alteration to flora and fauna and adverse impacts to fish and wildlife habitat; (app H, D, 10) Development shall be oriented to the site so that cutting and stripping of vegetation and grading are minimized; (app H, F) No area shall be cleared larger than that portion on which construction can be completed rapidly; large areas shall not be left bare and exposed for long periods of time; vi. Grading shall be kept to a minimum; tree removal shall be minimized (app H, F)
Require native vegetation and trees	Not addressed OR General qualitative statement	Mixture of required plantings of native and nonnative	Require at least 75% native plantings	The strip shall contain a screen of plantings of vertical habit not less than three (3) feet in width and six (6) feet in height at the time of occupancy of such lot. Individual shrubs or trees shall be planted not more than twenty (20) feet on center, and shall thereafter be maintained by the owner or occupants so as to maintain a dense screen year round. (VI-L) The landscape plan shall not include invasive plant species and shall include species that are drought tolerant and provide habitat value. Native plant species are strongly encouraged. In ground sprinkler systems are strongly discouraged. in OSRD (XIV-J) site plan proposes a landscape design that favors native and drought-tolerant species and avoids invasive plants.(XV-G)	The species of street trees selected shall be of Zone 6 hardiness and shall be of licensed nursery stock with good root development and branching characteristics, and with one-year warranty. Existing trees may be preserved as street trees if inspected and approved by the Tree Commission (6.19, 2) All cleared areas of the street right-of-way not to be planted with ground cover, and all disturbed area within public easements, shall be loamed with not less than six (6) inches compacted depth of good quality loam and shall be seeded with turf grass seed or such mixture as may be approved by the Board or its designee. (6.19. 6) The specie and variety of the trees to be planted shall be selected and approved by the Planning Board upon consultation with the Tree Warden.5. No evergreen trees such as pine, fir, spruce, or hemlock shall be planted as public shade trees along a way (app G, 4&5)	Except as permitted by the conservation commission pursuant to this article and regulations (not inconsistent with this article) promulgated pursuant to section 6.5-35., no person shall commence to remove, fill, dredge, build upon, degrade, discharge into, or otherwise alter (as further defined in section 6.5-27(c)) the resource areas, buffer zones or riverfront areas described in section 6.5-27(b). (6.5-27)	xi. Native species shall be used for re-vegetation; (app H, F xi) All graded areas beyond the Street Right-of-Way shall be covered with four (4) inches of topsoil and planted with a native species of vegetative cover, sufficient to prevent erosion (app H, F, xii)
GOAL 2: PROMOTE EFFICIENT, COMPACT DEVELOPMENT PATTERNS AND INFILL							

Lot size (for stormwater bylaw, pertains to the size of a lot which requires a stormwater permit)	Not addressed OR Required minimum lot sizes	OSRD/NRPZ preferred. Special permit with incentives to utilize	Flexible with OSRD/NRPZ by right, preferred option	specific lot ares requirements for all establishments with no mention of special permit to reduce lot size (VI-B) Land area: Any proposed residential development in the City of Newburyport that is on a parcel of three (3) acres or more or on contiguous parcels totaling three (3) acres or more shall submit a special permit application to the planning board for an OSRD in accordance with the provisions of this section, which shall include an OSRD special permit (OSRD-SP) plan as described below. (XIV-B)	Lot dimensions shall comply with the minimum standards of the City of Newburyport Zoning Ordinance. Dimensions of corner lots should be large enough to allow for erection of buildings and fulfilling the minimum front yard setback and lot width from both streets. Depth and width of properties laid out for business or industrial use shall be adequate to provide for the off-street parking and loading facilities required by the Zoning Ordinance. (6.3, 2)	*(Not applicable)*	No person may undertake any construction activity (as defined in Section … item 2 "Applicability"), including clearing, grading, and excavation that will disturb equal to or greater than 10,000 square feet of land or will disturb less than 10,000 square feet of land but is part of a larger common plan of development or sale that will ultimately disturb equal to or greater than 10,000 square feet of land in the City of Newburyport without a Stormwater Management Permit from the Department of Public Services pursuant to this Ordinance and regulations promulgated hereunder. (17-12). Permit issuance is required prior to any site altering activity that results in the land disturbance of 10,000 square feet or more. (5, A)
Housing density	Multi-family housing not allowed, or only in/adjacent to commercial and industrial uses	Multi-family and cluster developments allowed by special permit	Multi-family housing allowed by right in most residential areas; cluster developments encouraged with density bonuses for LID features and no maximum lot coverage	multi family housing is allowed by special permit in some residential districts R-3, B-1, B-2, B-3, WMD and WMU (V-D, 1) Required lot areas of 20,000 sq ft for the first 4 units and 4,000 sq ft for each additional unit with total maximum units allowed being 6 and required openspace of 40% (VI-A, 1) density bonuses allowed for low income housing but not LID (XVI-C) The OSRD may consist of a combination of single-family, two-family and multifamily residential structures without filing for a special permit under subsection V.D. In the R1, R2, R3 and any residential overlay districts, a multifamily structure shall not contain more than four (4) dwelling units. (XIV-H) In the AC district the planning board may award a density bonus of one (1) dwelling unit if eighty-five (85) percent of the original tract is set aside as open space or if the planning board determines that the project provides significant public benefits in OSRD (XIV-L)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Setbacks	Not addressed OR Required minimum front, side, and rear setbacks	Minimize, allow flexibility	Clear standards that minimize and in some instances eliminate setbacks	require specific minimum front, side, and rear setbacks with no mention of special permit to reduce lot sizes (VI-A, 1) The planning board may modify lot size, shape, frontage, setbacks and other dimensional requirements for lots within an OSRD, subject to the following limitations: (XIV-H)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Frontage	Not addressed OR Required minimum frontage for each lot/unit	Minimize especially on curved streets and cul-de-sacs	No minimums in some instances, tied into other standards like OSRD design and shared driveways.	require specific minimum frontage with no mention of special permit to reduce frontage (VI-A, 1) The planning board may modify lot size, shape, frontage, setbacks and other dimensional requirements for lots within an OSRD, subject to the	No subdivision shall be approved unless the land to be subdivided shall have frontage on an existing or proposed public street or, if the area to be subdivided is to use a private way to access the	*(Not applicable)*	*(Not applicable)*
Common driveways	Not addressed OR Not allowed, strict limitations	Allow for 2-3 residential units	Allow for up to 4 residential units, preferrably constructed with permeable pavers or pavement	A common or shared driveway may serve a maximum number of four (4) dwelling units. The planning board may increase this number if it determines that a larger number will substantially further the purposes and intent of this section and otherwise be in the best interests of the community. in OSRD (XIV-J) common driveways permitted by special permit in all districts up to 4 units pending the circumstance meets requirements in XXIII	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
GOAL 3: SMART DESIGNS THAT REDUCE OVERALL IMPERVIOUSNESS							
Impervious cover limits and infiltration rates	Not usually addressed in zoning and subdivision regs for rural/suburban residential	Require no net increase in site run-off from pre- to post-development	Impervious cover limits tailored to the commuity and district type (i.e. <10% total impervious cover in rural districts, but higher in urban and redevelopment districts); post-development infiltration should be equal to or greater than pre-development. Following best practice may also help communities comply with MS4 permit requirements	A plan consistent with the Massachusetts Storm-Water Management Policy (SWMP), where the rate of surface water run-off from the site shall not be increased after construction (XV-H, e-1) Any use that will render impervious more than five thousand (5,000) square feet of a residential lot or ten thousand (10,000) square feet of a nonresidential lot requre special	Property shall be developed in such a manner as to maximize on-site storm water recharge and to minimize direct overland run-off into adjoining streets and watercourses. Peak flows and run-off at the boundaries of the subdivision shall be no higher following development than before development, for the 10- and 100-year storm events	*(Not applicable)*	No numeric standards: Minimize impervious surfaces and break up or disconnect the flow of runoff over impervious surfaces (D-2,b)
Street location	No standards addressed OR Numeric and geometric standards based primarily on vehicular travel and safety, with basic pedestrian requirements e.g. sidewalks	Flexibility in applying standards, to reduce area of impact, grading, avoid key natural features	OSRD design preferred by-right. Require locating streets to minimize grading and road length, avoid important natural features	Streets shall be designed and located in such a manner as to: Maintain and preserve natural topography, significant landmarks, and trees; to minimize cut and fill; and to preserve and enhance views and vistas on or off the subject parcel. Particular attention shall be paid to seamlessly integrating new streets into the existing street pattern as appropriate. in OSRD (XIV-J)	Streets shall be designed and located to conform as closely as possible to the original topography of the site. There shall be a minimum amount of cut and fill in the design and construction of the streets. The overriding concern is public safety; therefore, the overall topography of the site shall be taken into consideration, resulting in an avoidance of steep grades and curves.(6.7, 3)	*(Not applicable)*	*(Not applicable)*
Road width	No categories addressed OR Major and minor categories, 24-30'	Wide, medium, narrow categories. 22-24' max, plus 2' shoulders	Wide, medium, narrow, and alley categories. 20-24' widest for 2 travel lanes, 18-20' low traffic residential neighborhood, plus 2' shoulders. Allow alleys and other low traffic or secondary emergency access and all shoulders to use alternative, permeable materials.	*(Not applicable)*	Minimum road width in courts and lanes is 20 feet with no maximum (6.8 table a&b) 24 feet for local streets with no max (6.8 table c) 28 feet for collector with no max (6.8 table d)26 feet for arterial with no max (6.8 table e)	*(Not applicable)*	*(Not applicable)*

Road ROW width	ROW Width not addressed OR 50-75', fully cleared and graded	40-50', some flexibility in extent of clearing	20-50'depending on road type	*(Not applicable)*	minimum ROW width is 30 feet in residential courts with no maximums (6.8, table A) 40 feet for residential lanes with no maximum (6.8 table b) 50 feet for local/collector streets with no max (6.8 table c&d) 60 geet for arterial streets with no max (6.8 table e) Right-of-way widths in excess of the standards designated in the tables may be required whenever, due to anticipated future traffic/loading conditions, additional width is necessary to provide improved alignment (6.8 E, 3)	*(Not applicable)*	*(Not applicable)*
Access Options	Common drives not addressed, No common drives allowed, Dead end allowed with limit on length and # of units	Allow dead end with limit on length and # of units. Allow common drives up to 2-3 units	Allow one way loop streets. Allow common drives up to 4 units, and alleys and rear-loading garages where suitable.	One access driveway per lot shall be permitted as a matter of right, except, the planning board may, in certain circumstances, require additional driveways as part of the site plan approval process where the access is shared or the project has frontage on two separate streets. To the extent feasible, access to businesses shall be provided via one of the following: i. Access via a common driveway serving adjacent lots or premises; ii. Access via an existing side street; iii. Access via a cul-de-sac or loop road shared by adjacent lots or premises. (XV-H) common driveways permitted by special permit in all districts up to 4 units pending the circumstance meets requirements in XXIII	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Dead Ends/Cul-de-sacs	No standards addressed OR 120 ft or more minimum turnaround	Minimize end radii – 35 ft	Allow hammerhead turnaround	*(Not applicable)*	If a street will not extend beyond the subdivision boundaries and its continuation is not required for access to an adjoining property, the terminus shall not be nearer the subdivision boundary than fifty (50) feet. A permanent deadend street shall be provided with a cul-de-sac turnaround in accordance with 6.8.1 Table C (6.8, e5) 120 feet turn around (6.8 C) As an alternative to a cul-de-sac, the Board may allow a T or Y shaped turn-around of a design that would permit a vehicle with a 47 foot outside turning radius and a width of eight feet to reverse its direction without backing more than once (footnote 6.8, A)	*(Not applicable)*	*(Not applicable)*
Cul-de-sacs	No standards addressed OR Full pavement standard	Encourage center landscaping with bioretention	Require center landscaping with bioretention	*(Not applicable)*	not addressed	*(Not applicable)*	*(Not applicable)*
Curbing	No standards addressed OR Curbing required full length both sides of road	Allow curb breaks or curb flush with pavement to enable water to flow to vegetated LID features	Open drainage with roadside swales and no curbs preferred	*(Not applicable)*	Granite curbing shall be provided for the entire length of all new streets. On cul-de-sac turnarounds and at intersections with lanes, collector, or local streets, sloped granite curbing shall be required. Sloped granite curbing shall be required where road grades are over 2% but less than 6% (6.9)	*(Not applicable)*	not addressed
Roadside Swales	Not addressed OR Allowed as an option	Preferred over closed drainage	Preferred, with criteria for proper design. Adoption of technical specifications and design templates for green infrastructure recommended	*(Not applicable)*	addressed via reference to stormwater regulations	*(Not applicable)*	Intermittent water courses such as swales shall be vegetated (app H, E, 5) Runoff shall be routed through vegetated swales, using native species and other structural and nonstructural systems designed to increase time of concentration, decrease velocity, increase infiltration, and allow suspended solids to settle and remove pollutants. (app H, e 1)
Utilities	Off sets required contributing to wide road ROWs	Not specified - flexible	Allow under road, sidewalks or immediately adjacent to roads to enable placement of roadside swales.	Except for preexisting overhead connections, all electric, telephone, cable TV and other such utilities shall be underground from the roadway utilities. (XV-H, j-1)	All utility lines, and/or other subsurface facilities within the street rights-of-way shall be installed prior to the preparation of the street base material (6.13)	*(Not applicable)*	*(Not applicable)*
Sidewalks	Material not addressed OR Concrete or bituminous required	Some flexibility in material and design	Prefer permeable pavement or permeable pavers	*(Not applicable)*	Where new sidewalks are to be constructed in short sections to connect existing sidewalks, the new sections shall be constructed in accordance with the Department of Public Services' standards. (6.11, 2) : Concrete sidewalks: the wearing surface shall be three-thousand (3,000)pound strength concrete, four (4) inches in thickness, reinforced with No. 10, six (6)inch by six (6) inch mesh and broom finished. An expansion joint (3/4" open) shall be provided at least every twenty (20) feet; dividing joints shall be scored into the sidewalk every four (4) feet. (app A, C)	*(Not applicable)*	*(Not applicable)*

Sidewalk location	Required both sides of road	Allow on only 1 side of road especially in low density neighborhoods	Prefer siting with land contours and for best pedestrian utility (e.g. connect with common areas and shared open spaces) – not necessarily immediately parallel to road.	*(Not applicable)*	Sidewalks shall be required on both side of the street along all arterials. Sidewalks shall be required on one side of the street along all lanes, courts, local, and collector streets. meandering sidewalks permitted in residenial (6.11)	*(Not applicable)*	*(Not applicable)*
Sidewalk drainage	Draining to road, closed drainage system required	Not addressed	Disconnect drainage from road system – e.g. adjacent green strips or within vegetated areas that can absorb sheet flow	*(Not applicable)*	not addressed	*(Not applicable)*	*(Not applicable)*
GOAL 4: ADOPT GREEN INFRASTRUCTURE STORMWATER MANAGEMENT PROVISIONS							
Rooftop runoff	Not addressed OR Prohibit directing clean roof runoff into closed municipal drainage systems.	Allow clean roof runoff to be directed to landscaped or naturally vegetated areas capable of absorbing without erosion, or infiltration	Require directing clean roof runoff to landscaped or naturally vegetated areas capable of absorbing, or infiltration	*(Not applicable)*	not addressed	*(Not applicable)*	not addressed
Overall stormwater design; piping and surficial retention vs. LID	Conventional stormwater system design standards	Encourage LID features and BMPs; design standards often not specified	LID design standard encouraging infiltration, allowing surficial ponding of retained runoff for up to 72 hours; systems designed for larger volume storms, accounting for future precipitation predictions; credit for green roofs towards stormwater requirements. Following best practice may also help communities comply with MS4 permit requirements	The planning board shall encourage the use of "soft" (non-structural) natural stormwater management techniques (such as rain gardens and open grass and bio-retention swales) and other drainage techniques that do not create impervious surface and that enable infiltration where appropriate. Stormwater should be treated at the source to limit non-point source pollution. Water conservation measures, including but not limited to the use of rainwater retention systems, such as rain barrels and cisterns for water irrigation purposes, are also strongly encouraged in OSRD (XIV-J) Any new stormwater runoff shall be set back from the receiving water a minimum of one hundred (100) feet, and shall include best management practices appropriate to the site. Existing and replacement discharges shall be set back from the receiving water when either the site stormwater drainage system is changed or the discharge is increased. The best management practices shall be designed so as to maximize infiltration and minimize	Development Alternatives: Alternatives to the proposed development. The report shall develop, describe, and objectively weigh alternatives to the proposed development which are allowed by the Zoning Ordinance; and d. Measures to Minimize Adverse Impacts: Measures to be used to minimize adverse environmental and community impacts. Corrective and protective measures, which will be taken, as part of the project, to minimize adverse impacts shall be described in detail (5.6. 3,c&d) Storm drainage shall comply with DEP Stormwater Management Practices and Best Management Practices (See Appendix H). Drainage systems shall be designed according to the following principles and criteria (6.14) : The combination of storage and design release rate shall not result in the duration of storage of greater than seventy-two (72) hours. Maximum depth of storm water detention/retention areas shall be four (4) feet. (6.14	*(Not applicable)*	Discharging runoff directly into rivers, streams, watercourses, or enlarging the volume, rate, or further degrading the quality of existing discharges/runoff is prohibited. Runoff shall be routed through vegetated swales, using native species and other structural and nonstructural systems designed to increase time of concentration, decrease velocity, increase infiltration, and allow suspended solids to settle and remove pollutants. Such systems will utilize overland flow and reinfiltration as priority techniques for the treatment of run-off (app H, E, 1)Retention and detention ponds, and methods of overland flow may be used to retain, detain, and treat the increased and accelerated runoff that the development generates (app H, 2) . The use of drainage facilities and vegetated buffer zones as open space and conservation areas shall be
Site Plan/Design Requirements	LID not addressed	Encourage use of LID features in site design - such as reduced imperviousness, maintaining natural hydrology, preserving open space, and rainwater reuse	Include bioretention and other vegetated LID features in site landscaping/open space requirements. Following best practice may also help communities comply with MS4 permit requirements. See section 2.3.5 of the MS4 permit for more information	At the discretion of the planning board subsurface wastewater and stormwater management systems serving the OSRD may be located within the open space. Surface systems, such as retention and detention ponds, shall not qualify towards the minimum open space required unless these systems are determined by the planning board to be "soft" (non-structural), natural-like stormwater management systems that do not create impervious surfaces, enable infiltration, and that are otherwise compatible with the contemplated uses of the adjacent open space. (XIV-H, vi)	*(Not applicable)*	*(Not applicable)*	Discharging runoff directly into rivers, streams, watercourses, or enlarging the volume, rate, or further degrading the quality of existing discharges/runoff is prohibited. Runoff shall be routed through vegetated swales, using native species and other structural and nonstructural systems designed to increase time of concentration, decrease velocity, increase infiltration, and allow suspended solids to settle and remove pollutants. Such systems will utilize overland flow and reinfiltration as priority techniques for the treatment of run-off (app H, E, 1)Retention and detention ponds, and methods of overland flow may be used to retain, detain, and treat the increased and accelerated runoff that the development generates (app H, 2) . The use of drainage facilities and vegetated buffer zones as open space and conservation areas shall be
Allow easy siting of LID features (bioretention, swales, etc.)	Not addressed OR Require waivers from subdivision standards	Encouraged along road ROW	Allowed on lots, common open space, or road ROW, easement recorded. For commercial development, allow an increase in floor area ratio or other developmental incentives for green roofs	*(Not applicable)*	not addressed	*(Not applicable)*	not addressed
Permeable paving	Not addressed OR Require waivers from subdivision standards	Allowed on private residential lots for parking, patios, etc.	Allowed for residential drives, parking stalls, spillover parking spaces, emergency access ways (with proper engineering support for emergency vehicles) Two track design allowed for driveways and secondary emergency access ways (where required).	*(Not applicable)*	not addressed	*(Not applicable)*	not addressed

Stormwater management O&M plan	Typically only addressed if municipality has a stormwater or LID bylaw, or for areas subject to wetlands permitting	Required	Required, contents specified in alignment with current MassDEP Stormwater Handbook. Following best practice may also help communities comply with MS4 permit requirements	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	All components of the drainage system and any measures for the detention, retention, or infiltration of water and/or for the protection of water quality shall be described in detail, including the following: Maintenance plans: including maintenance schedule, an outline of responsible parties and owners, and all pertinent information and/or agreements to be executed to insure proper maintenance (app H, 6) The application for a Stormwater Management Permit shall include an Operation and Maintenance Plan to ensure compliance with the Stormwater Management Permit and these Regulations throughout the life of the constructed stormwater management system(s). The requirements stated herein are supplemental to DEP Standard 9 and shall be included in the O&M Plan. The Enforcement Officer shall make the final decision of what maintenance option is
Construction Erosion and Sedimentation Plan, and stormwater control	Basic general requirements	Required, contents specified - the site design process should include soil erosion and sedimentation control measures	Goes beyond minimum NPDES requirements. Requires minimization of site disturbance, reduction of construction waste, control measures not removed until proof of soil stabilization or reestablishment of vegetation. Written procedures for site inspection and enforcement included. Following best practice may also help communities comply with MS4 permit requirements. See section 2.3.5 of the MS4 permit for more information	*(Not applicable)*	A separate storm water management report shall be submitted together with the Definitive Subdivision Plans. The report shall be prepared in accordance with the applicable provisions of Section 6.14 and Appendix H of these Regulations (5.5) The applicant shall comply with the rules and regulations governing Soil Erosion and Sedimentation Control as provided for in Appendix I of these rules and regulations (6.3. 3)	*(Not applicable)*	If the applicant's proposed development creates six (6) or more house lots or otherwise requires submission of an Environmental and Community Impact Analysis pursuant to §5.6 of these Rules and Regulations, the applicant shall submit a separate plan therewith, which shall contain the elements as listed in said section and which complies with all other provisions of this appendix. All subdivision applications must comply with the Performance, Design, and Maintenance Standards and be subject to final inspection before acceptance, as specified herein. 1. The applicant shall submit an erosion/sedimentation control plan, which shall include the following (design
Stormwater discharge detection & elimination	Not addressed	Discharges and connections noted and/or limits set on quantity and quality	Illicit discharges and connections are probibited and enforced. Following best practice may also help communities comply with MS4 permit requirements. Find more information in section 2.3.4.a of the MS4 permit	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	Illicit Discharges. No person shall dump, discharge, cause or allow to be discharged any pollutant or non-stormwater discharge into the municipal separate storm sewer system (MS4), into a watercourse, or into the waters of the Commonwealth of Massachusetts. (b) Illicit Connections. No person shall construct, use, allow, maintain or continue any illicit connection to the municipal storm drainage system, regardless of whether the connection was permissible under applicable law, regulation or custom at the time of connection. (17-8)
Post- construction stormwater management and drainage patterns	Not addressed	Allow LID	Resemble pre-existing conditions of volume, velocity, quality and location, as nearly as possible, requiring LID to the max extent feasible. Retain vol of runoff >1in. per sq.ft. of impervious surface and/or remove 90% TSS post-construction & 50% TP generated on the site for new development, or >0.8in. per sq.ft and/or remove 80% TSS and 50% of TP load for redevelopment. Following best practice may also help communities comply with MS4 permit requirements.	*(Not applicable)*	The impact of stormwater run-off on adjacent and downstream surface water bodies and sub-surface ground water shall be evaluated; dangers of flooding as a result of increased downstream runoff, especially peak runoff; and the impact of the proposed project on water table levels shall also be analyzed; (5.6, 4.a.2)	*(Not applicable)*	For review of water quality impact, an applicant shall submit calculations of anticipated nitrogen and/or phosphorus contribution from roads, lawns, and septic systems. The applicant must determine the "carrying load" or ability to absorb nitrogen and phosphorus loading of all receiving water systems on site (app H, 7)
As-built surveys	Not addressed	Recommended	Required, with written instructions for process; electronic submittal allowed	*(Not applicable)*	The Board's outside consultant shall review the "as-built" plans, prepared and submitted by the applicant's registered professional engineer and registered professional land surveyor and reports of completion and deficiencies as inspections are completed to the Board for review and prior to any partial release.2. Said "as-built" plans shall indicate the record location of all municipal services as actually installed. Sufficient ties, including depths shown as profiles, for the proper and accurate identification and location, shall be provided. Additional information to be provided includes, but is not limited to, the location and size of sewer pump/lift stations, location, and total storage provided of detention ponds, and other similar facilities (5.18)	*(Not applicable)*	As-Built Plans. The Applicant shall submit a stamped record plan signed by a Registered Professional Engineer (P.E.) detailing the actual stormwater management system as installed. The record plan shall include a statement box on the plan certifying that the site review was conducted in accordance with the Regulations and that all items were constructed according to the approved Stormwater Management Permit. (9,D,3-a)

Intra-departmental communication and coordination	Not addressed	Informally or loosely occurring	Required for plan review and/or permit approvals	It shall be the duty of the inspector of buildings, or their duly authorized agents, to cause any plans, buildings, or premises to be examined or inspected to determine that they are not in violation of provisions of this ordinance. The zoning administrator shall have the independent authority and duty to cause any plans, buildings, or premises to be examined and determine compliance with any and all provisions of this ordinance. In the case of any disagreement between the inspector of buildings and the zoning administrator regarding an interpretation of this ordinance, the zoning administrator's decision shall control. (X-C)	Prior to approval of any DSP, the Board shall give due regard to the reports of the Office of Planning and Development, the Department of Public Services, the Police Department, the Fire Department, the Health Department, , the Conservation Commission, ADA Coordinator, Tree Commission, and any technical expert hired by the Board. Where any deviations from the design requirements specified by these Rules and Regulations or the City of Newburyport roadway design and construction standards are indicated on the plan, the Board designee shall so notify the Board and shall provide a written statement approving or disapproving said deviation. (5.2, 4)	Upon request of the commission, the mayor and city solicitor shall take legal action for enforcement under civil law. Upon request of the commission, the city marshal shall take legal action for enforcement under criminal law. Municipal boards and officers, including any police officer or other officer having police powers, shall have authority to assist the commission in enforcement. 6-5, 38)	Said regulations shall be adopted within ninety (90) days of the effective date of this Ordinance in consultation with the Stormwater Advisory Committee appointed by the Mayor which must include a representative from the Department of Public Services, the Office of Planning and Development and the Health Department. (17-6)
Enforcement	No	Yes	Yes with fines. Same entity should oversee permit approvals and enforcement	If the inspector of buildings or the zoning administrator shall be informed, or have reason to believe, that any provision of this ordinance has been, is being or may be violated, the zoning administrator shall make or cause to be made an investigation of the facts and inspect the property where the violation may exist. (X-F) Penalties for violations may, upon conviction, be affixed in an amount not to exceed three hundred dollars ($300.00) for each offense. Each day, or portion of a day, that any violation is allowed to continue shall constitute a separate offense.(X-G)	not addressed	The commission and its agents shall have the responsibility, duty, and authority to enforce this article, its regulations, and permits issued thereunder by violation notices, and administrative (enforcement) orders. Any person who violates the provisions of this article may be ordered to restore the property to its original condition and take other action deemed necessary to remedy such violations, or may be fined, or both. (6.5-38) Any person who violates any provision of the ordinance, or regulations, permits, or administrative orders issued thereunder, shall be punished by a fine of not more than three hundred dollars ($300.00). Each day or portion thereof during which a violation continues, or unauthorized fill or other alteration remains in place, shall constitute a separate	The Department of Public Services shall enforce this Ordinance and any regulations, orders, violation notices, enforcement orders and permit conditions on behalf of the City, and may pursue all civil and criminal remedies for such violations pursuant thereto. Any person who violates any provision of this Ordinance and/or any regulations, orders, violation notices, enforcement orders and permit conditions issued hereunder, shall be punished by a fine of $300. Each day or part thereof that such violation occurs or continues to occur by failure to comply with an order or notice from the Department of Public Services shall constitute a separate violation. (17-7)
GOAL 5: ENCOURAGE EFFICIENT PARKING							
Parking	Specific minimums set based on projected maximum use times	Encourage minimum # needed to serve routine use (e.g. 2/residential unit with any additional/visitors parking behind in driveway or on street.	Establish Maximum Parking spaces allowed. Do not require more than 2/residence. Allow tenants separate, optional lease agreements for parking.	2 per dwellling unit for one and two family. 2 per dwellning unit for the first 2 multifamily units and 1.5 for all subsequent units (VII-B)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Commercial Parking	Specific minimums set based on projected maximum use times adding all on-site uses together.	Some flexibility to reduce minimums based on street or other available nearby parking or transit.	Allowed shared parking for uses with different peak demand times. Provide model agreements/deed restrictions. Reduce parking requirements near transit. Limit parking stall size (9ftx18ft max), with up to 30% smaller for compact cars	Notwithstanding the requirements of this section, "shared" parking areas may be allowed to meet the requirements of this section (for a reduction in total parking spaces) by a special permit granted by the planning board, pursuant to this section, for uses having different peak times of parking demand. Exclusive of driveways or aisles, an area consisting of eighteen (18) feet by nine (9) feet shall be considered as one off-street parking space. (VII-A)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
LID in Parking Areas	LID not addressed OR Require waivers e.g. for planting islands to drain down rather than built up surrounded by curbs	Allow LID/bioretention within parking areas.	Require landscaping within parking areas, as LID/bioretention, at a minimum of 10% of the interior area landscaped and a minimum of 25 square feet for island planting areas.	Parking. Each dwelling unit shall be served by two (2) off-street parking spaces. Parking spaces in front of garages may count in this computation. All parking areas with greater than four (4) spaces shall be screened from public view. Nonimpervious surfaces are encouraged. In OSRD (XIV-J) Surface parking lots containing over 20 spaces shall have at least one shade tree per ten (10) parking spaces, such trees to be a minimum of 2½ inches in diameter and located either in the parking area or within 10 feet of it. At least 5% of the interior of the parking area shall be maintained with landscaping, including trees, in landscape islands or plots of at least nine (9) feet in width with no more than 20 parking spaces between each island or plot. Trees shall be located to provide visual relief from sun and wind interruption within the parking area and assure safe patterns of internal pedestrian and vehicular traffic (XV-H, d-4)	addressed via reference to stormwater regulations	*(Not applicable)*	Runoff from parking lots and streets shall be treated to remove oil and sediments. Catch basins shall be provided with hoods; in the alternative, drainage outfalls shall discharge to low velocity "vegetated treatment" swales (app H. E, 7)

North Andover

Factors	Needs Improvement	Improved	Optimal	ZoningBylaw (including site plan review)	Subdivision Rules & Regulations	Stormwater Management and Erosion Control Bylaw & Rules and Regulations	Wetlands Protection Bylaw
GOAL 1: PROTECT NATURAL RESOURCES AND OPEN SPACE							
Soils managed for revegetation	Not addressed	Limitations on removal from site, and/or requirements for stabilization and revegetation	Prohibit removal of topsoil from site. Require rototilling and other prep of soils compacted during construction	Earth removal incidental to development, construction or improvements. A. This regulation shall be deemed not to prohibit the removal of such sod, loam, soil, clay, sand, gravel, or stone as may be required to be excavated for the purpose of constructing ways in accordance with lines and grades approved by the Planning Board, or for the purpose of constructing underground utilities. B. Where soil is to be removed in connection with the preparation of a specific site for building, removal may take place only after the issuance of a building permit by the Building Inspector. Removal will be allowed only from the area for the building, driveways, parking areas, and from areas where removal is specifically required by the Board of Health in connection with disposal systems. Where special circumstances exist requiring general	Soil preservation, sedimentation and erosion control. The applicant shall comply with the Rules and Regulations Governing Soil Erosion and Sedimentation Control as provided for in Appendix VI of these rules and regulations. [Appendix VI requires a re-vegetation plan specifying the native species to be planted]	Appropriate erosion and sediment control measures shall be installed prior to disturbance and maintained in accordance with the manufacturer's specifications and good engineering practices to ensure they perform as intended. Sediment in runoff water shall be trapped and retained within the project area. Wetland areas and surface waters shall be protected from sediment. (8) Erosion and sediment control measures used shall be chosen based on the goal of minimizing site disturbance from installation of such measures. On- and off-site material storage areas, including construction and waste materials, shall be properly protected and managed. (14) Erosion and sediment controls	§ 190-2 Jurisdiction. A. Except as permitted in writing by the Commission, or as provided in this bylaw, no person shall engage in the following activities ("activities"): removal, filling, dredging, discharging into, building upon, or otherwise altering or degrading the wetland resource areas described in the following sentence. The Town's wetland resource areas consist of: (1) Any isolated vegetated wetland; (2) Any ephemeral pool; (3) Any vegetated wetland bordering on any creek, river, stream, pond or lake; (4) Any bank, beach, marsh, wet meadow, bog, or swamp; (5) Any land under any creek, river, stream, pond or lake; (6) Any one-hundred-foot buffer
Limit clearing, lawn size, require retention or planting of native vegetation/naturalized areas	Not addressed OR General qualitative statement not tied to other design standards	Encourage minimization of clearing/ grubbing	Require minimization of clearing/grubbing with specific standards	Mature street trees have a high value to the Development; minimize departures from Development standards that would impair the health of a mature trees in OSGOD, Preservation of existing vegetation or tree-lined areas shall be maintained in OSGOD (195-17,37, H)	New subdivisions shall in all cases be designed to achieve the least amount of earth disturbance (cutting, filling, regrading)…. 255-6.6 Construction methods. A. Clearing and grubbing. The area within the proposed street rights-of-way shall be cleared and grubbed except for those trees which are intended to be preserved as street trees and to be retained in side slope areas. In the laying out of a subdivision, the applicant shall comply with these rules and regulations with due regard to all natural features such as large trees, watercourses, scenic or historic elements, aquifers, floodplains, habitats of rare or endangered species, and any state-listed plant species as defined by the Massachusetts Natural Heritage and Endangered Species Program. These features shall be left undisturbed	Minimize total area of disturbance and minimize unnecessary clearing and grading from all construction sites. Clearing and grading shall only be performed within areas needed to build the project, including structures, utilities, roads, recreational amenities, post-construction stormwater management facilities, and related infrastructure. Site plans should ensure that existing vegetation is preserved where possible and that disturbed portions of the site are stabilized. Use of impervious surfaces for stabilization should be avoided. (250-30)	§ 190-2 Jurisdiction. A. Except as permitted in writing by the Commission, or as provided in this bylaw, no person shall engage in the following activities ("activities"): removal, filling, dredging, discharging into, building upon, or otherwise altering or degrading the wetland resource areas described in the following sentence. The Town's wetland resource areas consist of: (1) Any isolated vegetated wetland; (2) Any ephemeral pool; (3) Any vegetated wetland bordering on any creek, river, stream, pond or lake; (4) Any bank, beach, marsh, wet meadow, bog, or swamp; (5) Any land under any creek, river, stream, pond or lake; (6) Any one-hundred-foot buffer
Require native vegetation and trees	Not addressed OR General qualitative statement	Mixture of required plantings of native and nonnative	Require at least 75% native plantings	Landscape design. (1) Landscape designs shall be developed based on soil, light and other site-specific conditions. Plant species shall be chosen for their ability to thrive in the post-development soil, water and use conditions of the site without significant supplemental water or fertilizer, once established. (2) Plant species shall be native to inland Essex County or shall be cultivars of these native species. ( ) Use landscape materials that are native, sustainable, requiring minimal irrigation or fertilizer in OSGOD (195-17.33) Provide street trees with tree grates or in planter strips, using appropriate species to provide summer shade and winter light. Species should be native, resistant to salt and drought, and be tolerant of urban conditions (195-17.32, D) Native trees and shrubs shall be planted wherever possible, such as lilac, viburnum, day lilies, ferns, red twig, dogwood, oak, maple, sycamore, linden, hawthorne, birch, shadbush, etc.) in OSGOD (195-17.37, A)	Soil preservation, sedimentation and erosion control. The applicant shall comply with the Rules and Regulations Governing Soil Erosion and Sedimentation Control as provided for in Appendix VI of these rules and regulations. [Appendix VI requires a re-vegetation plan specifying the native species to be planted]	Landscape design. (1) Landscape designs shall be developed based on soil, light and other site-specific conditions. Plant species shall be chosen for their ability to thrive in the post-development soil, water and use conditions of the site without significant supplemental water or fertilizer, once established. (2) Plant species shall be native to inland Essex County or shall be cultivars of these native species. (3) Wildflower meadows and shrubs are advisable to reduce the amount of lawn or turf on a site. (4) For landscape areas adjacent to roadways, salt-tolerant plans shall be used. (5) Irrigation shall be provided by the use of a rainwater harvesting system to the extent feasible. All graded areas beyond the street right-of-way shall be covered with four inches of topsoil and planted with a native species of vegetative cover, sufficient to prevent erosion.; Native species shall be used for	§ 190-2 Jurisdiction. A. Except as permitted in writing by the Commission, or as provided in this bylaw, no person shall engage in the following activities ("activities"): removal, filling, dredging, discharging into, building upon, or otherwise altering or degrading the wetland resource areas described in the following sentence. The Town's wetland resource areas consist of: (1) Any isolated vegetated wetland; (2) Any ephemeral pool; (3) Any vegetated wetland bordering on any creek, river, stream, pond or lake; (4) Any bank, beach, marsh, wet meadow, bog, or swamp; (5) Any land under any creek, river, stream, pond or lake; (6) Any one-hundred-foot buffer zone of wetland areas (1) through (5) listed above; (7) Any land subject to storm flowage, or flooding by groundwater or surface water;
GOAL 2: PROMOTE EFFICIENT, COMPACT DEVELOPMENT PATTERNS AND INFILL							
Lot size	Not addressed OR Required minimum lot sizes	OSRD/NRPZ preferred. Special permit with incentives to utilize	Flexible with OSRD/NRPZ by right, preferred option	Minimum lot areas for such uses in each district shall be as set forth in Table 2, Summary of Dimensional Requirements, which is hereby made part of this bylaw.[1] no minimum in OSGOD (195.17.27)	Lot dimensions. Lot dimensions shall comply with the minimum standards of the Town of North Andover Zoning Bylaw. Dimensions of corner lots should be large enough to allow for erection of buildings and fulfilling the minimum front yard setback and lot width from both streets. Depth and width of properties laid out for business or industrial use shall be adequate to provide for the off-street parking and loading facilities required by the Zoning Bylaw.	If the area of disturbance is less than 43,560 square feet, but either the project site or the area of land draining to it (based on existing topography and surface hydrology) are greater than or equal to 43,560 square feet, and if any alteration in the direction, rate, timing, quantity or quality of runoff from the site is proposed, a land disturbance permit is also required. For example, if a property owner wants to relocate an existing drainage swale on his property and the upgradient area that flows to the swale is at least 43,560 square feet, a permit will be required. (250-10, A)	*Not applicable*

Housing density	Multi-family housing not allowed, or only in/adjacent to commercial and industrial uses	Multi-family and cluster developments allowed by special permit	Multi-family housing allowed by right in most residential areas; cluster developments encouraged with density bonuses for LID features and no maximum lot coverage	As-of-Right Uses. The following Uses shall be permitted in the Residential Mixed-Use Zone As-of-Right upon Plan Approval pursuant to the provisions of this Article 17: (1) Two-family, three-family, townhouse, and/or Multifamily residential Use(s), provided that the minimum allowable As-of-Right density requirements for residential Use specified in Part 7 of this article shall apply to the residential portion of a mixed-use Development in OSRD(195-17.9) Multifaily also permitted by right or special permit in several other districts (195-4.1)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Setbacks	Not addressed OR Required minimum front, side, and rear setbacks	Minimize, allow flexibility	Clear standards that minimize and in some instances eliminate setbacks	Minimum front, side and rear setbacks shall be as set forth in Table 2,[1] except for eaves and uncovered steps, and projections, as noted in Subsections A, B and C. Buildings on corner lots shall have the required front setback from both streets, except in Residence 4 (R-4) District, where the setback from the side street shall be 20 feet	Lot dimensions. Lot dimensions shall comply with the minimum standards of the Town of North Andover Zoning Bylaw. Dimensions of corner lots should be large enough to allow for erection of buildings and fulfilling the minimum front yard setback and lot width from both streets. Depth and width of properties laid out for busines	*(Not applicable)*	*Not applicable*
Frontage	Not addressed OR Required minimum frontage for each lot/unit	Minimize especially on curved streets and cul-de-sacs	No minimums in some instances, tied into other standards like OSRD design and shared driveways.	Street frontage. A. Minimum street frontage shall be as set forth in Summary of Dimensional Requirements (Table 2),[1] and the lot line meeting these requirements shall constitute the "street frontage" for the lot. In no case shall actual street frontage at the street line be less than 75 feet; except as allowed by Subsection B. Corner lots shall be required to have the required frontage only on one street. In determining the fulfillment of the minimum area and minimum street frontage of a lot required in any zoning district, there	Evidence that each lot on the plans, and/or any lot altered by the plan: (1) Has frontage on a way which in the judgment of the Board has sufficient width, suitable grades and adequate construction to provide for the needs of the vehicular traffic and public safety access in relation to the existing and proposed use of land abutting thereon or served thereby and for the installation of municipal services to such land(s) and/or buildings erected or to be erected thereon; (2) Complies with one of the following four criteria: (a) Has all the frontage required	*(Not applicable)*	*Not applicable*
Common driveways	Not addressed OR Not allowed, strict limitations	Allow for 2-3 residential units	Allow for up to 4 residential units, preferrably constructed with permeable pavers or pavement	Joint -access driveways between adjoining properties shall be encouraged. (195-8.15, D4)	Not addressed	*(Not applicable)*	*Not applicable*
GOAL 3: SMART DESIGNS THAT REDUCE OVERALL IMPERVIOUSNESS							
Impervious cover limits and infiltration rates	Not usually addressed in zoning and subdivision regs for rural/suburban residential	Require no net increase in site run-off from pre- to post-development	Impervious cover limits tailored to the commuity and district type (i.e. <10% total impervious cover in rural districts, but higher in urban and redevelopment districts); post-development infiltration should be equal to or greater than pre-development. Following best practice may also help communities comply with MS4 permit requirements	Landscaped, required Open Space and green areas, in addition to serving as visual amenities, shall be employed to reduce the rate and volume of stormwater runoff compared to pre-development conditions; for that reason, Department of Environmental (DEP) Stormwater best management practices and other measures to minimize runoff and improve water quality shall be implemented in	Not addressed	Annual groundwater recharge rates shall be maintained by promoting infiltration through the use of structural and nonstructural methods. At a minimum, annual recharge from the post-development site shall mimic the annual recharge from the pre-development site condition. (250-27, C) Summary of pre- and post-development peak rates and volumes of	§ 190-2 Jurisdiction. A. Except as permitted in writing by the Commission, or as provided in this bylaw, no person shall engage in the following activities ("activities"): removal, filling, dredging, discharging into, building upon, or otherwise altering or degrading the wetland resource areas described in the following sentence. The Town's
Street location	No standards addressed OR Numeric and geometric standards based primarily on vehicular travel and safety, with basic pedestrian requirements e.g. sidewalks	Flexibility in applying standards, to reduce area of impact, grading, avoid key natural features	OSRD design preferred by-right. Require locating streets to minimize grading and road length, avoid important natural features	*(Not applicable)*	255-2.4: Continuation of principal streets. Streets in each subdivision shall be laid out to provide for continuation of the principal streets adjoining or entering the subdivision, especially in regard to safe intersections with such streets, and so arranged and of such widths as to provide an adequate and convenient system for present and potential traffic needs, and for the proper projection of streets as laid out in the proposed subdivision into adjoining land, on which there are no existing streets. Street names shall be assigned to proposed streets in a manner to avoid confusion with the Town's	*(Not applicable)*	*(Not applicable)*
Road width	No categories addressed OR Major and minor categories, 24-30'	Wide, medium, narrow categories. 22-24' max, plus 2' shoulders	Wide, medium, narrow, and alley categories. 20-24' widest for 2 travel lanes, 18-20' low traffic residential neighborhood, plus 2' shoulders. Allow alleys and other low traffic or secondary emergency access and all shoulders to use alternative, permeable materials.	Minimum and maximum in OSGOD: 18-26 ft; The PAA shall encourage narrow pavement widths for traveled ways when appropriate. (195-17.44, A)	§ 255-6.8 Streets: design standards. Minimum pavement width: 26 feet for Residential; 30 feet for non-residential; 36 feet for arterial	*(Not applicable)*	*(Not applicable)*
Road ROW width	ROW Width not addressed OR 50-75', fully cleared and graded	40-50', some flexibility in extent of clearing	20-50'depending on road type	Minimum and maximum in OSGOD: 50-60 ft (195-17.44, A)	§ 255-6.8 Streets: design standards. A. Table 1A. Minimum ROW width: 50 feet for Residential; 60 feet for non-residential, 60 feet for arterial	*(Not applicable)*	*(Not applicable)*
Access Options	Common drives not addressed, No common drives allowed, Dead end allowed with limit on length and # of units	Allow dead end with limit on length and # of units. Allow common drives up to 2-3 units	Allow one way loop streets. Allow common drives up to 4 units, and alleys and rear-loading garages where suitable.	*(Not applicable)*	§ 255-6.8 Streets: design standards. A. Table 1A. Cul-de-sac: Maximum length: 600 feet Minimum turnaround ROW radius: 120-170 feet Minimum turnaround pavement diameter: 100-120 feet	*(Not applicable)*	*(Not applicable)*

Dead Ends/Cul-de-sacs	No standards addressed OR 120 ft or more minimum turnaround	Minimize end radii – 35 ft	Allow hammerhead turnaround	*(Not applicable)*	§ 255-6.8 Streets: design standards. A. Table IA. Cul-de-sac: Maximum length: 600 feet Minimum turnaround ROW radius: 120-170 feet. Minimum turnaround pavement diameter: 100-120 feet, If a street will not extend beyond the subdivision boundaries and its continuation is not required for access to an adjoining property, the terminus shall not be nearer the subdivision boundary than 50 feet. A permanent dead-end street shall be provided with a cul-de-sac turnaround in accordance with Subsection A of this section, Table IA. (255-6.8, G)	*(Not applicable)*	*(Not applicable)*
Cul-de-sacs	No standards addressed OR Full pavement standard	Encourage center landscaping with bioretention	Require center landscaping with bioretention	*(Not applicable)*	§ 255-6.8 Streets: design standards. A. Table IA. Cul-de-sac: Maximum length: 600 feet Minimum turnaround ROW radius: 120-170 feet. Minimum turnaround pavement diameter: 100-120 feet, no mention of center landscaped island	*(Not applicable)*	*(Not applicable)*
Curbing	No standards addressed OR Curbing required full length both sides of road	Allow curb breaks or curb flush with pavement to enable water to flow to vegetated LID features	Open drainage with roadside swales and no curbs preferred	The location and number of curb cuts shall be minimized to reduce turning movements, and hazardous exits and entrances (195-8.15, D1)	§ 255-6.9 Curbing. At a minimum, a continuous low-profile, granite edging shall be provided as an integral part of all new streets. On cul-de-sac turnarounds and at intersections	*(Not applicable)*	*(Not applicable)*
Roadside Swales	Not addressed OR Allowed as an option	Preferred over closed drainage	Preferred, with criteria for proper design. Adoption of technical specifications and design templates for green infrastructure recommended	*(Not applicable)*	Not addressed	Evaluation of low-impact development practices is required and implementation of such practices to the maximum extent practicable is encouraged. Guidance on these practices is provided in the Massachusetts Stormwater Management Handbook. (250-30) Projects must use LID where adequate soil, groundwater and topographic conditions allow. These may include but not be limited to reduction in impervious surfaces, disconnection of impervious surfaces, bioretention (rain gardens), and infiltration systems. (250-23, E)	*(Not applicable)*
Utilities	Off sets required contributing to wide road ROWs	Not specified - flexible	Allow under road, sidewalks or immediately adjacent to roads to enable placement of roadside swales.	All utility lines, and/or other subsurface facilities within the street rights-of-way shall be installed prior to the placement of the Roadway subbase materials. All electrical and communications lines shall be installed underground. Communications lines shall include, but not be limited to, telephone, internet and cable;Wherever necessary, the Board shall require perpetual, unobstructed easements for sewers, storm drains, power lines, water mains and other utilities. Such easements shall be a minimum width of 20 feet, centered on the utility, and shall be indicated on the site plan approved pursuant to the Plan Approval decision by metes and bounds. The width of an easement may be changed if determined to be acceptable by the PAA or Department of Public Works: (195-17.41)	§ 255-6.13 Utilities in general. A. Installation. All utility lines and/or other subsurface facilities within the street rights-of-way shall be installed prior to the placement of the roadway subbase materials. Easements for water, sewer, electric, telephone lines and drainage piping or channels shall be provided at locations determined by the Board and the Department of Public Works for the provision or extension of utilities within the development or to adjacent properties. Such easements shall be no less than 20 feet in width. (255-6.13, C1)	*(Not applicable)*	*(Not applicable)*
Sidewalks	Material not addressed OR Concrete or bituminous required	Some flexibility in material and design	Prefer permeable pavement or permeable pavers	Encourage alternative and green paving materials to minimize stormwater run-off in OSGOD open space areas (195-17.32, D) All sidewalks shall be of standard concrete or brick set in concrete and are encouraged where applicable in OSGOD (195-17.44, D)	255-6.11 Sidewalks. B. Concrete or bituminous required. Standard width of 5 feet.	*(Not applicable)*	*(Not applicable)*
Sidewalk location	Required both sides of road	Allow on only 1 side of road especially in low density neighborhoods	Prefer siting with land contours and for best pedestrian utility (e.g. connect with common areas and shared open spaces) – not necessarily immediately parallel to road.	All two-way traveled ways shall provide a pedestrian sidewalk of a minimum six-foot width on both sides of the Roadway. All sidewalks shall be of standard concrete or brick set in concrete and are encouraged where applicable. Minor ways may provide a pedestrian sidewalk on a minimum of one side of the Roadway in OSGOD (195-17.44, D)	255-6.11 Sidewalks. A. Requirement. (1) Sidewalks shall be required on both sides of the street along all arterials. (2) Sidewalks shall be required on one side of the street along all local and collector streets unless the Board determines pedestrian movement is otherwise accommodated. (3) Sidewalks shall be constructed at the same time as, and in conjunction with, the roadway.	*(Not applicable)*	*(Not applicable)*
Sidewalk drainage	Draining to road, closed drainage system required	Not addressed	Disconnect drainage from road system – e.g. adjacent green strips or within vegetated areas that can absorb sheet flow	*(Not applicable)*	Not addressed	*(Not applicable)*	*(Not applicable)*
GOAL 4: ADOPT GREEN INFRASTRUCTURE STORMWATER MANAGEMENT PROVISIONS							

Rooftop runoff	Not addressed OR Prohibit directing clean roof runoff into closed municipal drainage systems.	Allow clean roof runoff to be directed to landscaped or naturally vegetated areas capable of absorbing without erosion, or infiltration	Require directing clean roof runoff to landscaped or naturally vegetated areas capable of absorbing, or infiltration	*(Not applicable)*	Not addressed	In order to conserve potable water supplies and maximize recharge, it may be appropriate on some sites to store and reuse clean runoff (e.g., from roofs) for reuse on the site for irrigation or other graywater purposes. This can be accomplished through the use of cisterns and rain barrels. Where appropriate, a water budget may be required to be prepared to determine applicability. (250-27)	*(Not applicable)*
Overall stormwater design; piping and surficial retention vs. LID	Conventional stormwater system design standards	Encourage LID features and BMPs; design standards often not specified	LID design standard encouraging infiltration, allowing surficial ponding of retained runoff for up to 72 hours; systems designed for larger volume storms, accounting for future precipitation predictions; credit for green roofs towards stormwater requirements. Following best practice may also help communities comply with MS4 permit requirements	All applications for site plan review shall include the submittal of a stormwater management plan prepared in accordance with the latest version of the Massachusetts Stormwater Handbook and additional criteria established herein and demonstrating full compliance with the Massachusetts Stormwater Standards and the North Andover Stormwater Management and Erosion Control Regulations promulgated under Chapter 165 of the Town Bylaws (Stormwater Management and Erosion Control Bylaw) (195-8.14, E8) Discharging runoff directly into rivers, streams, watercourses, or enlarging the volume, rate or further degrading the quality of existing discharges/runoff is prohibited. Runoff shall be routed through vegetated swales, using native species and other structural and nonstructural systems designed to increase time of concentration, decrease velocity, increase infiltration, allow suspended solids to settle and remove pollutants. Such systems will utilize overland flow and	255-5.3 Stormwater management report. A separate stormwater management report shall be submitted together with the definitive subdivision plans. The report shall be prepared in accordance with the applicable provisions of § 255-6.14 and Appendix V of these Regulations. § 255-6.14 Storm drainage. Stormwater run-off shall be disposed of through a combination of storage and controlled release, as indicated in the Rules and Regulations Governing Stormwater Management. (See Appendix V.[1]) Drainage systems shall be designed according to the following principles and criteria: A. Peak flows. Property shall be developed in such a manner as to maximize stormwater recharge on the site and to minimize direct overland run-off into adjoining streets and watercourses. Peak flows and run-off at the boundaries of the subdivision shall be no higher	he design of the project shall, to the maximum extent feasible, employ environmentally sensitive site design as outlined in the most recent version of the Massachusetts Stormwater Management Handbook and shall attempt to reproduce natural hydrologic conditions with respect to groundwater and surface waters. (2) Evaluation of low-impact development practices is required and implementation of such practices to the maximum extent practicable is encouraged. Guidance on these practices is provided in the Massachusetts Stormwater Management Handbook. (3) In order to conserve potable water supplies and maximize recharge, it may be appropriate on some sites to store and reuse clean runoff (e.g., from roofs) for reuse on the site for irrigation or other graywater purposes. This can be	*(Not applicable)*
Site Plan/Design Requirements	LID not addressed	Encourage use of LID features in site design - such as reduced imperviousness, maintaining natural hydrology, preserving open space, and rainwater reuse	Include bioretention and other vegetated LID features in site landscaping/open space requirements. Following best practice may also help communities comply with MS4 permit requirements. See section 2.3.5 of the MS4 permit for more information	Stormwater management. (1) At a minimum, all projects subject to site plan review shall comply with the criteria, specifications, and performance standards of the most recent version of Massachusetts Stormwater Management Standards and accompanying Stormwater Management Handbook. The Lake Cochichewick Watershed Area shall be considered a critical area in terms of applicability of the standards. (2) Projects subject to the bylaw shall also comply with the requirements and criteria outlined in Articles VII through X of the North Andover Stormwater Management and Erosion Control Regulations (Chapter 250) promulgated under Chapter 165 of the Town Bylaws (Stormwater Management and Erosion Control Bylaw) (195-8.15, E) Adequacy of the proposed drainage system to mitigate runoff increases and protect water quality assessed in site plan195-8.15, B4)	*(Not applicable)*	§ 250-27 Design and performance criteria. At a minimum, all projects subject to a land disturbance permit shall comply with the criteria, specifications, and performance standards of the most recent version of the Massachusetts Stormwater Management Standards and accompanying Stormwater Management Handbook, as well the criteria contained herein. The following general performance criteria shall be applicable to all stormwater management plans, unless otherwise provided for in these regulations: A. Low-impact design (LID). (1) The design of the project shall, to the maximum extent feasible, employ environmentally sensitive site design as outlined in the most recent version of the Massachusetts Stormwater Management Handbook and shall attempt to reproduce natural hydrologic conditions with respect to groundwater and	*(Not applicable)*
Allow easy siting of LID features (bioretention, swales, etc.)	Not addressed OR Require waivers from subdivision standards	Encouraged along road ROW	Allowed on lots, common open space, or road ROW, easement recorded. For commercial development, allow an increase in floor area ratio or other developmental incentives for green roofs	Drainage easements. If it is necessary to carry drainage across lots within the Development, storm drainage easements shall be provided, of such width and construction as will be adequate to accommodate the volume and velocity of the run-off. However, no such easement shall be less than 30 feet in width. If a proposed drainage system would carry water across land outside the Development boundaries to an approved outfall, appropriate drainage rights shall be secured by the Applicant at the Applicant's expense, and shall be referenced on the 40R Plan in OSGOD (195-17.45)	Not addressed	The design of the project shall, to the maximum extent feasible, employ environmentally sensitive site design as outlined in the most recent version of the Massachusetts Stormwater Management Handbook and shall attempt to reproduce natural hydrologic conditions with respect to groundwater and surface waters. (2) Evaluation of low-impact development practices is required and implementation of such practices to the maximum extent practicable is encouraged. Guidance on these practices is provided in the Massachusetts Stormwater Management Handbook. (3) In order to conserve potable water supplies and maximize recharge, it may be appropriate on some sites to store and reuse clean runoff (e.g., from roofs) for reuse on the site for irrigation or other graywater purposes. This can be	*(Not applicable)*
Permeable paving	Not addressed OR Require waivers from subdivision standards	Allowed on private residential lots for parking, patios, etc.	Allowed for residential drives, parking stalls, spillover parking spaces, emergency access ways (with proper engineering support for emergency vehicles) Two track design allowed for driveways and secondary emergency access ways (where required).	Encourage alternative and green paving materials to minimize stormwater run-off in OSGOD (195-17-33	Not addressed	Low Impact Development (LID), as defined in § 165-2 of the Stormwater Management and Erosion Control Bylaw, site planning and design strategies must be implemented to the maximum extent feasible. LID employs principles such as preserving and recreating natural	*(Not applicable)*

Stormwater management O&M plan	Typically only addressed if municipality has a stormwater or LID bylaw, or for areas subject to wetlands permitting	Required	Required, contents specified in alignment with current MassDEP Stormwater Handbook. Following best practice may also help communities comply with MS4 permit requirements	*(Not applicable)*	*(Not applicable)*	§ 250-31 Plan required; filing. A. An operation and maintenance plan (O&M plan) for the permanent stormwater management system is required at the time of application for all projects. The O&M plan shall be designed to ensure compliance with these regulations, the Massachusetts Stormwater Management Standards, and the Massachusetts Surface Water Quality Standards contained in 314 CMR 4.00 in all seasons and throughout the life of the system. B. Once approved by the Planning Board, the operation and maintenance plan shall remain on file with the Planning Board and shall be an ongoing requirement. Depending on the complexity of the systems installed, the Planning Board may require that the O&M plan be recorded at the Essex North Registry of Deeds by the Planning Board or its agent at the expense of the current owner(s).	*(Not applicable)*
Construction Erosion and Sedimentation Plan, and stormwater control	Basic general requirements	Required, contents specified - the site design process should include soil erosion and sedimentation control measures	Goes beyond minimum NPDES requirements. Requires minimization of site disturbance, reduction of construction waste, control measures not removed until proof of soil stabilization or reestablishment of vegetation. Written procedures for site inspection and enforcement included. Following best practice may also help communities comply with MS4 permit requirements. See section 2.3.5 of the MS4 permit	*(Not applicable)*	9) Soil erosion and sedimentation control plan. A soil erosion and sedimentation control plan shall be provided at the time of definitive plan submission. The plan shall be prepared and signed by a person or firm qualified by training and experience to have expert knowledge of erosion and sedimentation control methods. (a) The plan shall consist of three parts: [1] A narrative intended to summarize for the plan reviewer	Plan required and contents specified far beyond NPDES requirements (see 250-24, 25, 26)	*(Not applicable)*
Stormwater discharge detection & elimination	Not addressed	Discharges and connections noted and/or limits set on quantity and quality	Illicit discharges and connections are probibited and enforced. Following best practice may also help communities comply with MS4 permit requirements. Find more information in section 2.3.4.a of the MS4 permit	Discharging runoff directly into rivers, streams, watercourses, or enlarging the volume, rate or further degrading the quality of existing discharges/runoff is prohibited. Runoff shall be routed through vegetated swales, using native species and other structural and nonstructural systems designed to increase time of concentration, decrease velocity, increase infiltration, allow suspended solids to settle and remove pollutants. Such systems will utilize overland flow and re-infiltration as priority techniques for the treatment of run-off in OSGOD; (195-17.44, B3)	*(Not applicable)*	No person may create or maintain a direct connection or discharge to the MS4 without a connection and discharge permit from the Department of Public Works… Prohibited activities. The following activities are prohibited under this bylaw: (1) Illicit discharges. No person shall dump, discharge, cause or allow to be discharged any pollutant or non-stormwater discharge into the MS4, into a watercourse, or into the waters of the commonwealth. (2) Illicit connections. No person shall construct, use, allow, maintain or continue any illicit connection to the municipal storm drain system, regardless of whether the connection was permissible under applicable law, regulation or custom at the time of connection. (3) Obstruction of municipal storm drain system. No person shall obstruct or interfere with	*(Not applicable)*
Post- construction stormwater management and drainage patterns	Not addressed	Allow LID	Resemble pre-existing conditions of volume, velocity, quality and location, as nearly as possible, requiring LID to the max extent feasible. Retain vol of runoff >1in. per sq.ft. of impervious surface and/or remove 90% TSS post-construction & 50% TP generated on the site for new development, or >0.8in. per sq.ft and/or remove 80% TSS and 50% of TP load for redevelopment. Following best practice may also help communities comply with MS4 permit requirements.	*(Not applicable)*	*(Not applicable)*	§ 250-25 Plan required; standards. A. An application for a land disturbance permit shall include the submittal of a stormwater management plan (SMP) to the Planning Board. The stormwater management plan shall contain sufficient information for the Planning Board to evaluate the environmental impact, effectiveness and acceptability of the measures proposed by the applicant for reducing adverse impacts from stormwater runoff, and to assess compliance with these regulations. B. The stormwater management plan shall be designed to meet the most recent version of the Massachusetts Stormwater Standards and additional criteria established in § 250-26 of these regulations, and must be submitted with the stamp and signature of a professional engineer (PE) licensed to conduct such work in the Commonwealth of Massachusetts. The engineer shall	*(Not applicable)*

As-built surveys	Not addressed	Recommended	Required, with written instructions for process; electronic submittal allowed	*(Not applicable)*	An accurate "as-built" plan and profile of the roadway(s) and associated site improvements, prepared by a registered professional engineer and registered professional land surveyor, shall be submitted to the Board after completion of the construction and prior to any partial release. Said plan shall indicate the record location of all municipal services as actually installed. Sufficient ties, including depths shown as profiles, for the proper and accurate identification and location, shall be provided. Additional information to be provided includes, but is not limited to, the location and size of sewer pump/lift stations, location and total storage provided of detention ponds, and other similar facilities. (255-5.14, A)	§ 250-41 Proof of project completion. Upon completion of the project, the applicant shall submit the following material to the Planning Board demonstrating that the completed project is in accordance with the approved plans and specifications: A. Certification by a registered professional engineer that the systems have been installed and are functioning according to the approved plan. B. An as-built plan, stamped by a registered professional engineer or land surveyor, to include the following information: (1) Limit of work. (2) Post-construction topography. (3) Finished grades of all structures. (4) Invert elevations of all stormwater structures. (5) All structures, pavement, utilities. (6) Off-site alterations. (7) Deviations from the approved plan shall be noted and explanation for the deviation	*(Not applicable)*
Intra-departmental communication and coordination	Not addressed	Informally or loosely occurring	Required for plan review and/or permit approvals	some implied communcation between planning boardm board of appeals, and building inspector (195-10.6)	§ 255-4.4 Review by other bodies. One set of prints and supporting documentation of the preliminary plan shall be forwarded forthwith by the applicant to the Fire Chief, Conservation Commission, Board of Health, Department of Public Works, Open Space Committee, Police Department and Building/Zoning Department and any other applicable Town board and/or commission for their information and review. Proof of receipt of these plans by a signature of the appropriate staff of each of the above-named departments must be provided to the Planning Department in order for a submittal to be reviewed.	Not addressed	Not addressed
Enforcement	No	Yes	Yes with fines. Same entity should oversee permit approvals and enforcement	The North Andover Zoning Bylaw shall be enforced by the North Andover Building Inspector. (195-10.1) Whoever continues to violate the provisions of this bylaw after written notice from the Building Inspector demanding an abatement of a zoning violation within a reasonable time shall be subject to a fine of $300. Each day that such violation continues shall be considered a separate offense. (195-10.4)	Not addressed	Chevron icon § 250-44 Enforcement powers and authority. A. Enforcement powers of the Planning Board are granted in the Stormwater Management and Erosion Control Bylaw, § 165-10. B. The Planning Board or its designated agent shall enforce the bylaw, regulations, orders, violation notices, and enforcement orders, and may pursue all civil, criminal and noncriminal remedies for such violations. § 250-45 Notices and orders. A. The Planning Board or an authorized agent of the Planning Board may issue a written notice of violation or enforcement order to enforce the provisions of the bylaw or the regulations thereunder, which may include requirements to: (1) Cease and desist from construction or land-disturbing activity until there is compliance with the bylaw and the	§ 190-10 Enforcement; violations and penalties. In accord with the provisions of MGL c. 40, §§ 21D and 31, as well as every other authority and power that may have been or may hereafter be conferred upon it, the Town may enforce the provisions of this bylaw, restrain violations thereof and seek injunctions and judgments to secure compliance with its orders of conditions. Without limiting the generality of the foregoing: A. Any person who violates any provision of this bylaw or of any condition or a permit issued pursuant to it may be punished by a fine pursuant to MGL c. 40, § 21. Each day or portion thereof during which a violation continues shall constitute a separate offense; if more than one, each condition violated shall constitute a separate offense. This bylaw may be enforced pursuant to MGL c. 40, § 21D, by a Town police officer, other persons
GOAL 5: ENCOURAGE EFFICIENT PARKING							
Parking	Specific minimums set based on projected maximum use times	Encourage minimum # needed to serve routine use (e.g. 2/residential unit with any additional/visitors parking behind in driveway or on street.	Establish Maximum Parking spaces allowed. Do not require more than 2/residence. Allow tenants separate, optional lease agreements for parking.	§ 195-8.4 Off-street parking requirements. A. Number of spaces required. In all districts, unless otherwise stated herein, off-street parking spaces shall be provided and maintained in connection with the construction, conversion, or increase in units or dimensions of buildings, structures or use; such spaces to be provided in at least the following minimum amounts provided in the following Table of Off-Street Parking Regulations and accompanying notes below. Residential: Between 1 and 2 per dwelling unit. Minimum and maximums in OSGOD (195-17.29)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*

Commercial Parking	Specific minimums set based on projected maximum use times adding all on-site uses together.	Some flexibility to reduce minimums based on street or other available nearby parking or transit.	Allowed shared parking for uses with different peak demand times. Provide model agreements/deed restrictions. Reduce parking requirements near transit. Limit parking stall size (9ftx18ft max), with up to 30% smaller for compact cars	§ 195-8.4 Off-street parking requirements. A. Number of spaces required. In all districts, unless otherwise stated herein, off-street parking spaces shall be provided and maintained in connection with the construction, conversion, or increase in units or dimensions of buildings, structures or use; such spaces to be provided in at least the following minimum amounts provided in the following Table of Off-Street Parking Regulations and accompanying notes below. Commcercial: Minimums based on types of facility... Common parking areas and multiple-use facilities. (a) Notwithstanding the normal provisions of § 195-8.4, where two or more activities or uses provide the required parking or loading in a common parking facility or loading area, the number of parking spaces or loading bays ordinarily required may be reduced below the sum of the spaces or bays required for separate activities or uses, if it can be	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
LID in Parking Areas	LID not addressed OR Require waivers e.g. for planting islands to drain down rather than built up surrounded by curbs	Allow LID/bioretention within parking areas.	Require landscaping within parking areas, as LID/bioretention, at a minimum of 10% of the interior area landscaped and a minimum of 25 square feet for island planting areas.	On at least three sides of the perimeter of an outdoor parking lot, there shall be planted at least one tree for every 30 linear feet. In the interior part of an outdoor parking lot where two rows of parking spaces containing a total of nine or more parking spaces face each other, a landscaped Open Space not less than six feet in width shall be provided. The landscaped strip may be provided either in OSGOD; Trees required by this section shall be at least 2.5 inches in diameter at a height four feet above the ground at time of planting and shall be of a species characterized by suitability and hardiness for location in a parking lot. To the extent practicable, existing trees shall be retained and used to satisfy this section. Native trees and shrubs shall be planted wherever possible, including species such as lilac, viburnum, day lilies, ferns, red twig, dogwood, oak, maple, sycamore, linden, hawthorne, birch, shadbush, etc. (195-17.39) (1) At a minimum, all projects	§ 195-8.4 Off-street parking requirements. A. Number of spaces required. In all districts, unless otherwise stated herein, off-street parking spaces shall be provided and maintained in connection with the construction, conversion, or increase in units or dimensions of buildings, structures or use; such spaces to be provided in at least the following minimum amounts provided in the following Table of Off-Street Parking Regulations and accompanying notes below. Commcercial: Minimums based on types of facility... Common parking areas and multiple-use facilities. (a) Notwithstanding the normal provisions of § 195-8.4, where two or more activities or uses provide the required parking or loading in a common parking facility or loading area, the number of parking spaces or loading bays ordinarily required may be reduced below the sum of the spaces or bays required for separate activities or uses, if it can	The Planning Board may alter or eliminate the recharge volume requirement if the site is situated on unsuitable soils (i.e., marine clays), karst or in an urban redevelopment area. In this situation, nonstructural practices (filter strips that treat rooftop or parking lot runoff, sheet flow discharge to stream buffers, and grass channels that treat roadway runoff) should be implemented to the maximum extent practicable and the remaining or untreated volume included in the water quality volume. (250-23, E) Specific BMPs utilized for land uses of higher potential pollutant loads (LUHPPL) required in plan (250-22, D)	*(Not applicable)*

North Reading

Factors	Needs Improvement	Improved	Optimal	Chapter 200: Zoning	Chapter 350: Subdivision of Land	Chapter 340: Site Plan Review	Chapter 156, Article II: Storm Water Management	Storm Water Management Rules and Regulations
Source:				https://ecode360.com/10384134#10384134	https://ecode360.com/10384134#10384134	https://www.northreadingma.gov/sites/g/files/vyhlif3591/f/uploads/site_plan_review_regulation.pdf	https://www.northreadingma.gov/sites/g/files/vyhlif3591/f/uploads/stormwater_bylaw.pdf	https://www.northreadingma.gov/sites/g/files/vyhlif3591/f/uploads/stormwater_rules_and_regs.pdf; https://www.northreadingma.gov/sites/g/files/vyhlif3591/f/uploads/stormwater_appendices.pdf
GOAL 1: PROTECT NATURAL RESOURCES AND OPEN SPACE								
Soils managed for revegetation	Not addressed	Limitations on removal from site, and/or requirements for stabilization and revegetation	Prohibit removal of topsoil from site. Require rototilling and other prep of soils compacted during construction	For Open Space Residential Development: The landscape shall be preserved in its natural state, insofar as practicable, by minimizing tree and soil removal. Any grade changes shall be in keeping with the general appearance of the neighboring developed areas. The orientation of individual building sites shall be such as to maintain maximum natural topography and cover. Topography, tree cover, and natural drainageways shall be treated as fixed determinants of road and lot configuration rather than as malleable elements that can be changed to follow a preferred development scheme.	*Not applicable*	not addressed	*Not applicable*	*Not addressed*
Limit clearing, lawn size, require retention or planting of native vegetation/naturalized areas	Not addressed OR General qualitative statement not tied to other design standards	Encourage minimization of clearing/ grubbing	Require minimization of clearing/grubbing with specific standards	Maximize retention of vegetative cover. For any use, other than a single-family dwelling and structures and uses accessory thereto, retaining less than twenty (20) percent of the total lot area impervious,	*Not applicable*	(4) Retain undisturbed habitat or restore native plants on at least 10% of all sites. This will facilitate retention of songbirds, butterflies, and other wildlife as well as native plants which are considered part of the amenity of living in a rural area.[a]	*Not applicable*	Nonstructural stormwater managmenet strategies incorporated into site design shall: minimize land disturbance including clearing and grading
Require native vegetation and trees	Not addressed OR General qualitative statement	Mixture of required plantings of native and nonnative	Require at least 75% native plantings	In Barry Center Residential Smart Growth Overlay District: All open areas, exclusive of areas to remain in an existing natural state shall be landscaped utilizing both natural and man-made materials such as grasses, trees, shrubs, paving materials and outdoor furniture that are appropriate to the local climate and anticipated uses of the project. For OSRD: The landscape plan shall not include invasive plant species and shall include species that are drought tolerant and provide habitat value. Native plant species are strongly encouraged.	*Not applicable*	(4) Retain undisturbed habitat or restore native plants on at least 10% of all sites. This will facilitate retention of songbirds, butterflies, and other wildlife as well as native plants which are considered part of the amenity of living in a rural area.[a]	*Not applicable*	Nonstructural stormwater managmenet strategies incorporated into site design shall: Provide low-maintenance landscaping that encourages retention and planting of native vegetation and minimizes the use of lawns, fertilizers and pesticides.
GOAL 2: PROMOTE EFFICIENT,								
Lot size	Not addressed OR Required minimum lot sizes	OSRD/NRPZ preferred. Special permit with incentives to utilize	Flexible with OSRD/NRPZ by right, preferred option	Minimum Lot Sizes based on district type For OSRD: Dimensional standards. To maximize the amount of open space, reduce site disturbance and protect significant farmland or scenic landscapes, the Community Planning Commission may waive the minimum requirements for lot area, frontage, front yard setback, maximum building area, or minimum open space as a percentage of lot area that would normally apply in the zoning district, except as provided below. (1) Any open space residential development lot that relies on an existing public way for frontage shall conform to the dimensional requirements of the applicable zoning district. (2) Any open space residential development lot that abuts an existing single-family dwelling shall comply with the minimum yard setback(s) of the applicable zoning district along the boundary of the abutting lot. (3) The minimum distance between adjacent dwellings in an open space residential development shall be at least	*Addressed in Zoning Bylaw*	*Not applicable*	*Not applicable*	*Not applicable*
Setbacks	Not addressed OR Required minimum front, side, and rear setbacks	Minimize, allow flexibility	Clear standards that minimize and in some instances eliminate setbacks	Minimums specified by district. For OSRD: Dimensional standards. To maximize the amount of open space, reduce site disturbance and protect significant farmland or scenic landscapes, the Community Planning Commission may waive the minimum requirements for lot area, frontage, front yard setback, maximum building area, or minimum open space as a percentage of lot area that would normally apply in the zoning district.	*Addressed in Zoning Bylaw*	*not applicable*	*not applicable*	*not applicable*
Frontage	Not addressed OR Required minimum frontage for each lot/unit	Minimize especially on curved streets and cul-de-sacs	No minimums in some instances, tied into other standards like OSRD design and shared driveways.	Minimums specified by district For OSRD: Dimensional standards. To maximize the amount of open space, reduce site disturbance and protect significant farmland or scenic landscapes,	*Addressed in Zoning Bylaw*	*not applicable*	*not applicable*	*not applicable*
Common driveways	Not addressed OR Not allowed, strict limitations	Allow for 2-3 residential units	Allow for up to 4 residential units, preferrably constructed with permeable pavers or pavement	Not addressed	Every lot in the subdivision shall be served by its own driveway. No common driveways will be allowed. Access to the lot must be provided from the frontage on the proposed way shown on the endorsed plan unless subsequently waived by the Community Planning Commission. This condition shall be contained in the supplementary restrictive covenant and a note shall be placed on a recordable plan sheet.	*not applicable*	*not applicable*	*not applicable*
GOAL 3: SMART DESIGNS THAT REDUCE OVERALL IMPERVIOUSNESS								
Impervious cover limits and infiltration rates	Not usually addressed in zoning and subdivision regs for rural/suburban residential	Require no net increase in site run-off from pre- to post-development	Impervious cover limits tailored to the community and district type (i.e. <10% total impervious cover in rural districts, but higher in urban and redevelopment districts); post-development infiltration should be equal to or greater than pre-development. Following best practice may also help communities comply with MS4 permit requirements	For any proposed activity on a lot, other than a single-family dwelling and structures and uses accessory thereto, which will render more than fifteen (15) percent of the total lot area impervious, the application or site plan shall contain the items specified in this Subsection G(2) and also an addenda prepared by a registered professional engineer containing drainage calculations, utilizing U.S. Soil Conservation Service	Refer to Zoning Bylaw	*Not applicable*	*not applicable*	*not applicable*
Street location	No standards addressed OR Numeric and geometric standards based primarily on vehicular travel and safety, with basic pedestrian requirements e.g. sidewalks	Flexibility in applying standards, to reduce area of impact, grading, avoid key natural features	OSRD design preferred by-right. Require locating streets to minimize grading and road length, avoid important natural features	Streets shall be designed and located in such a manner as to maintain and preserve natural topography, significant landmarks, and trees; to minimize cut and fill; and to preserve and enhance views and vistas on or off the subject parcel.	All streets in the subdivision shall be designed so that, in the opinion of the Community Planning Commission, they will provide safe vehicular travel; natural drainage with no drainage pockets; and an attractive street layout in order to obtain the	*Not applicable*	*not applicable*	*not applicable*

Road width	No categories addressed OR Major and minor categories, 24-30'	Wide, medium, narrow categories. 22-24' max, plus 2' shoulders	Wide, medium, narrow, and alley categories. 20-24' widest for 2 travel lanes, 18-20' low traffic residential neighborhood, plus 2' shoulders. Allow alleys and other low traffic or secondary emergency access and all shoulders to use alternative, permeable materials.	*Not applicable*	Dimensions. Roadways shall be constructed for the full length of all streets within the subdivision and shall have the same curb radius required in § 350-14B above. The center line of all roadways shall coincide with the center line of the street right-of-way unless a deviation is approved by the Community Planning Commission. The minimum and maximum widths of roadway pavements shall be 30 feet for a principal street and 28 feet for a secondary street on a fifty-foot right-of-way. Should the CPC deem the street to have the potential of being a major connecting artery, it may require a width of 32 feet on a principal street.	*Not applicable*	*not applicable*	*not applicable*
Road ROW width	ROW Width not addressed OR 50-75', fully cleared and graded	40-50', some flexibility in extent of clearing	20-50'depending on road type	No standards addressed except in OSRD: Roadways. Developers shall balance the:	Width. (1) The minimum width of right-of-	*Not applicable*	*Not applicable*	*not applicable*
Access Options	Common drives not addressed, No common drives allowed, Dead end allowed with limit on length and # of units	Allow dead end with limit on length and # of units. Allow common drives up to 2-3 units	Allow one way loop streets. Allow common drives up to 4 units, and alleys and rear-loading garages where suitable.	No standards addressed	Dead-end streets and their extensions, if any, shall not be longer than 500 feet unless the water is looped, in which case the maximum shall be 1,000 feet unless, in the opinion of the Commission, a greater length is necessitated by topography or other local conditions. An extension of a water line to the boundary of the land within a subdivision for the purpose of providing a physical loop at a later date shall not be considered "water looping" for the purpose of this section.Dead-end streets shall be classified as one of two types. They shall be either a cul-de-sac or a looped road. (a) Culs-de-sac shall be provided at the closed end with a vehicular turnaround having an outside roadway diameter of at least 100 feet and a property line diameter of at least 120 feet unless otherwise specified by the Community Planning Commission. The Community Planning Commission may, when	*Not applicable*	*not applicable*	*not applicable*
Dead Ends/Cul-de-sacs	No standards addressed OR 120 ft or more minimum turnaround	Minimize end radii – 35 ft	Allow hammerhead turnaround	No standards addressed	Culs-de-sac shall be provided at the closed end with a vehicular turnaround having an outside roadway diameter of at least 100 feet and a property line diameter of at least 120 feet unless otherwise specified by the Community Planning Commission. The Community Planning Commission may, when potential volume warrants, require a minimum outside roadway diameter of 140 feet, a property line diameter of 160 feet and the placement of a circular landscaped island with minimum radius of 20 feet at the center of the turnaround, if the dead-end street is not intended to connect with another street at some future point in time. The Commission may require a roadway easement from the end of the turnaround to adjacent property. Under no circumstances shall a cul-de-sac have a property line diameter greater than 200 feet.	*Not applicable*	*Not applicable*	*not applicable*
Cul-de-sacs	No standards addressed OR Full pavement standard	Encourage center landscaping with bioretention	Require center landscaping with bioretention	Not addressed	Culs-de-sac shall be provided at the closed end with a vehicular turnaround having an outside roadway diameter of at least 100 feet and a property line diameter of at least 120 feet unless otherwise specified by the Community Planning Commission. The Community Planning Commission may, when potential volume warrants, require a minimum outside roadway diameter of 140 feet, a property line diameter of 160 feet and the placement of a circular landscaped island with minimum radius of 20 feet at the center of the turnaround, if the dead-end street is not intended to connect with another street at some future point in time. The Commission may require a roadway easement from the end of the turnaround to adjacent property. Under no circumstances shall a cul-de-sac have a property line diameter greater than 200 feet.	*Not applicable*	*Not applicable*	*not applicable*
Curbing	No standards addressed OR Curbing required full length both sides of road	Allow curb breaks or curb flush with pavement to enable water to flow to vegetated LID features	Open drainage with roadside swales and no curbs preferred	A substantial bumper of masonry, steel or heavy timber, or a concrete curb or berm curb which is backed shall be placed at the edge of surfaced areas except driveways	Vertical granite curbs shall be provided (six inches in height) throughout each subdivision. A six-foot granite catch basin curb inlet	*Not applicable*	*Not applicable*	*not applicable*
Roadside Swales	Not addressed OR Allowed as an option	Preferred over closed drainage	Preferred, with criteria for proper design. Adoption of technical specifications and design templates for green infrastructure recommended	Not addressed	Not addressed	*Not applicable*	*Not applicable*	*not applicable*
Utilities	Off sets required contributing to wide road ROWs	Not specified - flexible	Allow under road, sidewalks or immediately adjacent to roads to enable placement of roadside swales.	Berry Center Residential Smart Growth Overlay District: Utilities - basic requirements. (1) Utilities shall include potable water	All drain, sewer, gas and water pipes, underground utilities and other structures shall be installed upon the completion of the rough grading of	*Not applicable*	*Not applicable*	*not applicable*

Sidewalks	Material not addressed OR Concrete or bituminous required	Some flexibility in material and design	Prefer permeable pavement or permeable pavers	Berry Center Residential Smart Growth Overlay District:Pedestrian amenities and recreation. (1) All buildings and on-site open spaces shall be connected by pedestrian routes. Pedestrian routes may include, but are not limited to, paved sidewalks, paved parking lots and unpaved paths.	700. Bituminous concrete sidewalks, having a minimum thickness of 2 1/2 inches after compression, shall be constructed on an eight-inch gravel foundation (M1.03.0, type c) to the required lines and grades in accordance with these specifications. [Amended 7-8-1986] D. 700. If concrete sidewalks are desired, they shall be constructed as directed by the Community Planning Commission in conformity with this section of the Standard Specifications. [Amended 7-8-1986]	*Not applicable*	*Not applicable*	*not applicable*
Sidewalk location	Required both sides of road	Allow on only 1 side of road especially in low density neighborhoods	Prefer siting with land contours and for best pedestrian utility (e.g. connect with common areas and shared open spaces) – not necessarily immediately parallel to road.	Berry Center Residential Smart Growth Overlay District: Pedestrian routes shall connect to existing public pedestrian walkways and existing public sidewalks abutting the Project site. (3) Where practicable and desired by the PAA, pedestrian routes shall connect the project site to existing abutting public recreational areas, provided that (a) no wetlands crossings, and (b) no paths or pedestrian routes in other locations subject to other regulatory approval beyond Plan Approval under this article, shall ever be required by the PAA to be provided by or as part of the Project. (4) Passive and/or active private recreational areas shall be provided at a size, type and scale appropriate for the number of units proposed. Nearby existing public recreational facilities connected to the site via a pedestrian path may accommodate all or part of this requirement.	The sidewalk shall extend the full length of each side of the street and shall be a minimum width of five feet. Streets which are considered and will remain dead-end streets shall require only one sidewalk.	*Not applicable*	*Not applicable*	*not applicable*
Sidewalk drainage	Draining to road, closed drainage system required	Not addressed	Disconnect drainage from road system – e.g. adjacent green strips or within vegetated areas that can absorb sheet flow	Not addressed	Not addressed	*Not applicable*	*Not applicable*	*not applicable*
GOAL 4: ADOPT GREEN INFRASTRUCTURE STORMWATER MANAGEMENT PROVISIONS								
Rooftop runoff	Not addressed OR Prohibit directing clean roof runoff into closed municipal drainage systems.	Allow clean roof runoff to be directed to landscaped or naturally vegetated areas capable of absorbing without erosion, or infiltration	Require directing clean roof runoff to landscaped or naturally vegetated areas capable of absorbing, or infiltration	*Not applicable*	*Not applicable*	*Not applicable*	*Not applicable*	Recommend 100% roof runoff recharge and/or on site reuse if site conditions permit
Overall stormwater design; piping and surficial retention vs. LID	Conventional stormwater system design standards	Encourage LID features and BMPs; design standards often not specified	LID design standard encouraging infiltration, allowing surficial ponding of retained runoff for up to 72 hours; systems designed for larger volume storms, accounting for future precipitation predictions; credit for green roofs towards stormwater requirements. Following best practice may also help communities comply with MS4 permit requirements	Berry Center Residential Smart Growth Overlay District: "Storm drainage. (1) Storm water runoff shall comply with the Massachusetts DEP (Department of Environmental Protection) Stormwater Management Policy. (2) Peak flows and run-off at the boundaries of the Project shall be no higher following development than before development, for the 10 and 25 year storm events using either the SCS TR-55 or TR-20 methods. Stormwater recharge to groundwater is encouraged where practicable. (3) Capacity of drainage systems shall be adequate to carry all storm water run-off presently flowing through the proposed Project area, as well as to dispose of any additional run-off generated by the proposed Project up to and including the run-off from a one hundred year storm using the following methods: (a) The flow from storms of up to a twenty-five year frequency and a twenty-four hour duration shall be conveyed through the storm drain system on the developed site. Storm drain piping and grate inlets shall be designed for a 25 year storm	Drainage. Adequate disposal of surface and subsurface water shall be provided and pipes, manholes and catch basins shall be provided according to the sizes and depths as indicated on the plans and in conformity with the requirements of Sections 200, 220, 230 of the Standard Specifications, and shall be built on both sides of the roadway at intervals not to exceed 300 feet unless otherwise approved by the Community Planning Commission, and at such other places as deemed necessary by the Community Planning Commission to assure the unimpeded flow of all natural watercourses, to assure adequate drainage of all low points and to provide proper runoff of stormwater. In no instances shall catch basins be located along a driveway cut.	*Not applicable*	*Not applicable*	Nonstructural Storm Water Management Strategies: To the maximum extent practicable, nonstructural storm water management strategies shall be incorporated into the design. The Applicant shall identify the nonstructural measures incorporated into the design of the project. If the Applicant contends that it is not feasible for engineering, environmental, or safety reasons to incorporate any nonstructural storm water management measures into the design of a particular project, the Applicant shall identify the strategy considered and provide a basis for the contention.
Site Plan/Design Requirements	LID not addressed	Encourage use of LID features in site design - such as reduced imperviousness, maintaining natural hydrology, preserving open space, and rainwater reuse	Include bioretention and other vegetated LID features in site landscaping/open space requirements. Following best practice may also help communities comply with MS4 permit requirements. See section 2.3.5 of the MS4 permit for more information	OSRD. Design process. At the time of the application for a special permit for open space residential development, the applicant must demonstrate to the Community Planning Commission that the layout of open space, roads and dwelling units in the concept plan is based on a design analysis performed by a team that includes a registered landscape architect according to the following sequence of steps: (1) Identification of conservation areas. The first step in the design process requires identification of conservation areas on the site, including wetlands, riverfront areas, and floodplains regulated by state or federal law; unprotected natural landscape features such as steep slopes, mature woodlands, prime farmland, meadows, wildlife habitats for rare or endangered species and wildlife corridors or connections thereto; cultural features such as historic and archeological sites and scenic views; and recreational features such as established trails used for horseback riding, walking and cross-country skiing. Wherever possible, conservation areas shall include areas	*Not applicable*	*Not applicable*	*Not applicable*	Nonstructural Storm Water Management Strategies: To the maximum extent practicable, nonstructural storm water management strategies shall be incorporated into the design. The Applicant shall identify the nonstructural measures incorporated into the design of the project. If the Applicant contends that it is not feasible for engineering, environmental, or safety reasons to incorporate any nonstructural storm water management measures into the design of a particular project, the Applicant shall identify the strategy considered and provide a basis for the contention.
Allow easy siting of LID features (bioretention, swales, etc.)	Not addressed OR Require waivers from subdivision standards	Encouraged along road ROW	Allowed on lots, common open space, or road ROW, easement recorded. For commercial development, allow an increase in floor area ratio or other developmental incentives for green roofs	*Not applicable*	*Not applicable*	*Not applicable*	*Not applicable*	*Not applicable*
Permeable paving	Not addressed OR Require waivers from subdivision standards	Allowed on private residential lots for parking, patios, etc.	Allowed for residential drives, parking stalls, spillover parking spaces, emergency access ways (with proper engineering support for emergency vehicles) Two track design allowed for driveways and secondary emergency access ways (where required)	The area and access driveways thereto shall be surfaced with bituminous or cement concrete material and shall be graded and drained so as to dispose of all surface water accumulation in accordance with acceptable engineering practices;	*Not applicable*	*Not applicable*	*Not applicable*	*Not applicable*
Stormwater management O&M plan	Typically only addressed if municipality has a stormwater or LID bylaw, or for areas subject to wetlands permitting	Required	Required, contents specified in alignment with current MassDEP Stormwater Handbook. Following best practice may also help communities comply with MS4 permit requirements	*Not applicable*	*Not applicable*	*Not applicable*	*Not applicable*	Appendix E: Operation and Maintenacne Plan is required for submittal with the Stormwater Management Plan

Construction Erosion and Sedimentation Plan, and stormwater control	Basic general requirements	Required, contents specified - the site design process should include soil erosion and sedimentation control measures	Goes beyond minimum NPDES requirements. Requires minimization of site disturbance, reduction of construction waste, control measures not removed	*Not applicable*	Addressed in Zoning Bylaw	*Not applicable*	*Not applicable*	Appendix D: The Erosion and Sedimentation Control Plan shall describe the nature and purpose of the proposed development, pertinent conditions of the site and
Stormwater discharge detection & elimination	Not addressed	Discharges and connections noted and/or limits set on quantity and quality	Illicit discharges and connections are probibited and enforced. Following best practice may also help communities comply with MS4 permit requirements. Find more information in section 2.3.4.a of the MS4 permit	*Not applicable*	*Not applicable*	*Not applicable*	*Not applicable*	An Illicit Discharge Compliance Statement shall be submitted to verify that no illicit discharges exist on the site. For redevelopment projects, the Illicit Discharge Compliance Statement shall also document all actions taken to identify and remove illicit discharges, including, without limitation, visual screening, dye or smoke testing, and the removal of any sources of illicit discharges to the stormwater management system.
Post- construction stormwater management and drainage patterns	Not addressed	Allow LID	Resemble pre-existing conditions of volume, velocity, quality and location, as nearly as possible, requiring LID to the max extent feasible. Retain vol of runoff >1in. per sq.ft. of impervious surface and/or remove 90% TSS post-construction & 50% TP generated on the site for new development, or >0.8in. per sq.ft and/or remove 80% TSS and 50% of TP load for redevelopment. Following best practice may also help communities comply with MS4 permit requirements.	*Not applicable*	*Not applicable*	*Not applicable*	*Not applicable*	Post-peak flow must be < that pre peak flow; 80% TSS removal
As-built surveys	Not addressed	Recommended	Required, with written instructions for process; electronic submittal allowed	*Not applicable*	*Not applicable*	Not addressed	Not addressed	Upon completion of the stormwater management system, and following the Final Inspection, the permittee shall submit a Final Report from a registered Professional Engineer certifying that all stormwater control devices have been completed in accordance with the conditions of the approved Permit, subject to any approved changes and modifications. Any discrepancies must be noted in the cover letter. As part of the Final Report, the permittee shall also include the following: A. Certified as-built construction plans. The as-built / record plans shall be drawn to scale and identify the location of any systems for conveying stormwater on the site. The as-built / record plans shall identify the location of any systems for conveying wastewater on the site and show that there are no connections between the stormwater and wastewater management system
Intra-departmental communication and coordination	Not addressed	Informally or loosely occurring	Required for plan review and/or permit approvals	*Not applicable*	*Not applicable*	*Not applicable*	*Not applicable*	*Not applicable*
Enforcement	No	Yes	Yes with fines. Same entity should oversee permit approvals and enforcement	*Not applicable*	*Not applicable*	*Not applicable*	The Enforcement Officer or an authorized agent of the Enforcement Officer shall enforce Chapter 156, Article II, regulations, orders, violation notices, and enforcement orders, and may pursue all civil and criminal remedies for such violation. B. Orders. (1) The Enforcement Officer or an authorized agent of the Enforcement Officer may issue a written order to enforce the provisions of Chapter 156, Article II or the regulations there under, which may include requirements to: (a) Cease and desist from construction or land disturbance until there is compliance with Chapter 156, Article II, and an approved Storm Water Management Permit, including the storm water management plan and the erosion and sediment control plan; (b) Repair, maintain; or replace the storm water management system	The Building Inspector or an authorized agent of the Building Inspector shall enforce the Regulations, the Bylaw, orders, violation notices, and enforcement orders, and may pursue all civil and criminal remedies for such violations. The provisions for enforcement are detailed in Chapter 156, Storm Water Management Bylaw of the Town's General Bylaws, § 156-22.
GOAL 5: ENCOURAGE EFFICIENT PARKING								
Parking	Specific minimums set based on projected maximum use times	Encourage minimum # needed to serve routine use (e.g. 2/residential unit with any additional/visitors parking behind in driveway or on street.	Establish Maximum Parking spaces allowed. Do not require more than 2/residence. Allow tenants separate, optional lease agreements for parking.	Minimum Number of Off-Street Parking Spaces Per Unit 1.Dwelling, single Two (2) per unit 2.Dwelling, multi-family Two (2) per dwelling unit Affordable Housing Overlay District: The minimum required off-street parking shall be two spaces per dwelling unit, except that for a studio or one-bedroom unit, one parking space per unit shall be required; and for age-restricted units, an average of 1.5 spaces per unit. Berry Center Residential Smart Growth Overlay Disctrict: Notwithstanding anything to the contrary in this Zoning Bylaw, the parking requirements applicable to each entire Project in the SGA are as follows: Residential Use (minimum) 1.5 spaces per unit Residential Use (maximum) 2.0 spaces per unit OSRD: Parking. Each dwelling unit shall be served by two (2) off-street parking	*Not applicable*	*Not applicable*	*Not applicable*	*Not applicable*

Commercial Parking	Specific minimums set based on projected maximum use times adding all on-site uses together.	Some flexibility to reduce minimums based on street or other available nearby parking or transit.	Allowed shared parking for uses with different peak demand times. Provide model agreements/deed restrictions. Reduce parking requirements near transit. Limit parking stall size (9ftx18ft max), with up to 30% smaller for compact cars	Minimum Number of On-Street Parking Spaces Per Unit: 3. Theater, restaurant, gymnasium, stadium, auditorium, church or similar place of public assembly with seating facilities One (1) for each four (4) seats of seating capacity 4. Automotive retail and service establishment and other retail and service establishments utilizing extensive display areas, either indoor or outdoor, which are unusually extensive in relation to customer traffic One (1) per one thousand (1,000) square feet of gross floor space. In the case of outdoor display areas, one for each one thousand (1,000) square feet of lot area in such use. 5. Hotel, motel, tourist court or lodging house One (1) for each sleeping room 6. Medical office Four (4) for each one thousand (1,000) gross square feet of floor space 7. Other retail, service, finance, insurance or real estate establishments One (1) per each three hundred (300) square feet of gross floor space 8. Wholesale establishment, warehouse or storage establishment One (1) per each one thousand (1,000) square feet of gross floor space 9. Manufacturing or industrial establishment One (1) per each six	*Not applicable*	*Not applicable*	*Not applicable*	*Not applicable*
LID in Parking Areas	LID not addressed OR Require waivers e.g. for planting islands to drain down rather than built up surrounded by curbs	Allow LID/bioretention within parking areas.	Require landscaping within parking areas, as LID/bioretention, at a minimum of 10% of the interior area landscaped and a minimum of 25 square feet for island planting areas.	*Not applicable*	*Not applicable*	All areas designated as parking areas shall be paved. Material composition and profiles must be approved by the North Reading Town Engineer.	Not applicable	*Not applicable*

Peabody

Factors	Needs Improvement	Improved	Optimal	Zoning Ordinance (Including Special Regulations)	Subdivision Rules & Regulations	Chapter 28 - Utilities, Article V - Stormwater Systems	Chapter 32 - Wetlands & River Protection	Chapter 27 - Streets & Sidewalks
GOAL 1: PROTECT NATURAL RESOURCES AND OPEN SPACE								
Soils managed for revegetation	Not addressed	Limitations on removal from site, and/or requirements for stabilization and revegetation	Prohibit removal of topsoil from site. Require rototilling and other prep of soils compacted during construction	From Sec 14 Removal of Earth Products: "In all districts, the removal of sod, loam, clay, sand, gravel or quarried stone, and the disposition thereof, except when incidental to and in connection with the construction of a building for which a building permit has been issued, shall be subject to the issuance of an earth removal permit by the City Council and a building permit from the Building Inspector. Where the removal is incidental to and in connection with the construction of a building for which a building permit has been issued, the material shall be stockpiled on the site until the building is 50% complete."	From Sec IV.J.1 Slope Protection: For the purpose of mitigating sediment-laden storm run-off within subdivisions or onto adjacent or downstream properties, all slopes in excess of eighteen percent (18%) off the horizontal plane or grade which are cuts, fills, or devegetated slopes, shall be stabilized with plantings, geotextile fabric, mulch, or other method suitable to the Planning Board, within three (3) months after rough grading is complete or at the end of each construction season that the subdivision is under construction, whichever is sooner, and again at final grading. From Sec V.G.4 Trees: All cut bankings must be planted with a low growing shrub and wood chipped to a minimum depth of six inches (6"), or seeded with a deep rooted perennial grass to prevent erosion.	Not Applicable	From Sec 32-28 Generally: The applicant shall demonstrate a plan to preserve existing drainage and vegetative cover to the maximum extent possible. Temporary vegetative cover and mulching shall be used on all disturbed and exposed slopes during construction. Permanent vegetative cover shall be planted within the first growing season. Plans shall demonstrate protection and preservation of all healthy trees to the maximum extent possible on the site when this is not possible, revegetation plans shall include replacement with suitable plantings. Wherever possible, brooks and streams shall remain as open waterways. From Sec 32-48 Enforcement, Generally: No person shall remove, fill, dredge, build upon, degrade, or otherwise alter resource areas or buffer zones protected by this chapter, or cause, suffer, or allow such activity, or leave in place unauthorized fill, or otherwisefail to restore illegally altered land to its original condition, except as authorized by the conservation commission,or fail to comply with a permit (order of conditions) or enforcement order issued pursuant to this chapter	Not Applicable
Limit clearing, lawn size, require retention or planting of native vegetation/naturalized areas	Not addressed OR General qualitative statement not tied to other design standards	Encourage minimization of clearing/ grubbing	Require minimization of clearing/grubbing with specific standards	From Sec 6.3 Cluster Development Requirements: "A. To promote efficient subdivision of land, in harmony with its natural features and with minimal excavation and earth removal activities. B. To preserve in their unaltered state unique or unusual natural features of the land to be developed especially where such features are not afforded protection under some other local, state or federal regulation or private deed restriction. Such natural features include but are not limited to: Scenic vistas and scenic road views; woodlands and site vegetation, especially where such natural vegetative cover serves to buffer new developments from established neighborhoods; slopes over 15% and rock outcroppings; natural drainageways, stream banks, wetlands, and floodplains; aquifer recharge areas for public or private water supplies; wildlife habitat and vegetation, especially of rare or endangered species." From Sec 6.9 Surface and Groundwater Protection Districts, prohibited activities: "Earth removal, consisting of the removal of soil, loam, sand, gravel, or any other earth material (including mining activities to within 4 feet of historical high groundwater as determined from monitoring wells and historical water table fluctuation data complied by the U.S.G.S., unless the substances removed are redeposited within 45 days of removal on site to achieve a final grading greater [illegible]	From Sec IV.E.1 Protection of Natural Features: Due regard shall be shown for all natural features, such as trees, wooded areas, water courses, scenic points, historic spots, and similar community assets, which, if preserved, will add attractiveness and value to the subdivision. From Sec IV.J.2 Slope Protection. Any lot on which a building has not been constructed shall be loamed and seeded to the Board's satisfaction prior to the final release of performance bond monies (or the conversion of said bond monies or portion thereof into a maintenance bond). The Board may advance the timing of this requirement if, in the opinion of the Board, the loaming and seeding is reasonably required to minimize run-off, sedimentation or other adverse conditions, or if the lot, in the opinion of the Board, in its then current state presents a potential health or safety hazard or is otherwise detrimental to or not harmonious with the surrounding neighborhood. From Sec V.B.1 Street and Roadway: Clearing and grubbing of the entire area of such street or way shall be perfonned to remove all stumps, brush, roots, boulders and like material which may exist upon the surface.	Not Applicable	From Sec 32-28 Generally: The applicant shall demonstrate a plan to preserve existing drainage and vegetative cover to the maximum extent possible. Temporary vegetative cover and mulching shall be used on all disturbed and exposed slopes during construction. Permanent vegetative cover shall be planted within the first growing season. Plans shall demonstrate protection and preservation of all healthy trees to the maximum extent possible on the site when this is not possible, revegetation plans shall include replacement with suitable plantings. Wherever possible, brooks and streams shall remain as open waterways.	Not Applicable
Require native vegetation and trees	Not addressed OR General qualitative statement	Mixture of required plantings of native and nonnative	Require at least 75% native plantings	From Sec 10.6 Plant Specifications: "Street trees, ornamental trees, shrubs, and other plantings shall be selected from the list held and updated by the Community Planning Department of the City, or as otherwise acceptable to the tree warden. The Community Planning Department shall update the list to ensure invasive, non-native, and otherwise unfavorable species are prohibited from being planted."	Species Not Addressed	Not Applicable	From Sec 32-33 No Disturb Zone: No activity which will result in the alteration of land within the presumptive "no disturb zone" shall be permitted bythe conservation commission with the following exceptions: Planting of native vegetation or habitat management techniques designed to enhance the wetland valuesprotected by the bylaw;	Not Applicable
GOAL 2: PROMOTE EFFICIENT, COMPACT DEVELOPMENT PATTERNS AND INFILL								
Lot size	Not addressed OR Required minimum lot sizes	OSRD/NRPZ preferred. Special permit with incentives to utilize	Flexible with OSRD/NRPZ by right, preferred option	Dimensional Controls listed on Page 158	Not Addressed	Not Applicable	Not Applicable	Not Applicable
Setbacks	Not addressed OR Required minimum front, side, and rear setbacks	Minimize, allow flexibility	Clear standards that minimize and in some instances eliminate setbacks	Dimensional Controls listed on Page 158	Not Addressed	Not Applicable	Not Applicable	Not Applicable
Frontage	Not addressed OR Required minimum frontage for each lot/unit	Minimize especially on curved streets and cul-de-sacs	No minimums in some instances, tied into other standards like OSRD design and shared driveways.	Dimensional Controls listed on Page 158	Not Addressed	Not Applicable	Not Applicable	Not Applicable
Common driveways	Not addressed OR Not allowed, strict limitations	Allow for 2-3 residential units	Allow for up to 4 residential units, preferrably constructed with permeable pavers or pavement	From Sec 9.3 Driveways: "A permit from the Building Inspector shall be required for driveways and curbcuts. Driveways located on lots with up to three (3) dwelling units shall cover no more than fifteen (15) percent of the lot, with a minimum landscape buffer of two (2) feet from the property line."	Not Addressed	Not Applicable	Not Applicable	Not Applicable
Limit impervious area – Rural Districts In high density areas, require post-development infiltration to = or > predevelopment	Not addressed *(Not usually addressed in zoning and subdivision regs for rural/suburban residential)*	<15%	<10%	From Sec 6.9 Surface and Groundwater Protection Districts, prohibited activities: "Any use that will render impervious more than 15% or 2,500 sq. ft. of any lot, whichever is greater, unless a system for groundwater recharge is provided that will not degrade groundwater quality. For nonresidential uses, recharge shall be by stormwater infiltration basins or similar system covered with natural vegetation, and dry wells shall be used only where other methods are not feasible. For all nonresidential uses, all such basins and wells shall be preceded by oil, grease, and sediment traps to facilitate removal of contamination. Any and all recharge areas shall be permanently maintained in full working order by the owner." From Sec 6.9.8 Design and Operation Requirements: "Within the surface and groundwater protection districts all streets, sidewalks, parking areas, loading docks and exterior service areas shall be paved or surfaced with impervious materials and construction with curbing, slopes and similar design features so the water falling on such areas and on buildings on the same premises and spilled liquid substances on such areas and in adjacent buildings will be contained, controlled and directed into an approved system of drainage structures and pipes."	No mention of impervious % From Sec IV.F.4 Drainage: No net increase in runoff, due to development of the subdivision, shall be allowed. Retention/detention basins shall be included in the design as necessary, using the twenty five (25) year design storm event.	No mention of impervious % From 28-51 Stormwater Management Plan Standards (derived from MA Stormwater Handbook): "Loss of annual recharge to groundwater should be minimized through the use of infiltration measures to the maximum extent practicable. The annual recharge from the post-development site shouldapproximate the annual recharge rate from the predevelopment or existing site conditions, based on soiltypes."	Not Applicable	Not Applicable
GOAL 3: SMART DESIGNS THAT REDUCE OVERALL IMPERVIOUSNESS								
Street location	No standards addressed OR Numeric and geometric standards based primarily on vehicular travel and safety, with basic pedestrian requirements e.g. sidewalks	Flexibility in applying standards, to reduce area of impact, grading, avoid key natural features	OSRD design preferred by-right. Require locating streets to minimize grading and road length, avoid important natural features	From Sec 6.3.4 Site Plan Review Criteria: "Individual lots, buildings, and streets are designed and situated to minimize alteration of the natural site features and the need for excavation, cut and fill, or other types of earth moving operations."	From Sec IV.A.1 Streets: Standards based on vehicular travel.	Not Applicable	Not Applicable	Not Addressed
Road width	No categories addressed OR Major and minor categories, 24-30'	Wide, medium, narrow categories. 22-24' max, plus 2' shoulders	Wide, medium, narrow, and alley categories. 20-24' widest for 2 travel lanes, 18-20' low traffic residential neighborhood, plus 2' shoulders. Allow alleys and other low traffic or secondary emergency access and all shoulders to use alternative, permeable materials.	Not Addressed	Not Addressed (other than R-O-W width)	Not Applicable	Not Applicable	Not Addressed

Road ROW width	ROW Width not addressed OR 50-75', fully cleared and graded	40-50', some flexibility in extent of clearing	20-50'depending on road type	Not Addressed	From Sec IV.A.3 Streets: The minimum width ofright-of-way shall be fifty feet (50'). Alleys will not be approved in subdivisions of land in districts designated as residential under the Zoning Ordinance. Alleys with a minimum width of forty feet (40') may be required by the Board at the rear of any lots designated or zoned for non-residential use. From Sec V.B.2 Street and Roadway: The minimum and maximum widths of roadway pavements shall be thirty two feet (32') on a fifty foot (50') right--of-way.	Not Applicable	Not Applicable	Not Addressed
Access Options	Common drives not addressed, No common drives allowed, Dead end allowed with limit on length and # of units	Allow dead end with limit on length and # of units. Allow common drives up to 2-3 units	Allow one way loop streets. Allow common drives up to 4 units, and alleys and rear-loading garages where suitable.	From Sec 5.2.4 Access: "To the extent feasible, access to businesses shall be provided through one of the following methods: (a) from an existing side or rear street or public alley thus avoiding the principal thoroughfare or (b) from a common driveway serving one or more adjacent properties. Applicable projects should seek an ingress/egress easement for shared driveway use wherever feasible." From Sec 9.3 Driveways: "A permit from the Building Inspector shall be required for driveways and curbcuts. Driveways located on lots with up to three (3) dwelling units shall cover no more than fifteen (15) percent of the lot, with a minimum landscape buffer of two (2) feet from the property line."	Not Addressed	Not Applicable	Not Applicable	Not Applicable
Dead Ends/Cul-de-sacs	No standards addressed OR 120 ft or more minimum turnaround	Minimize end radii – 35 ft	Allow hammerhead turnaround	Not Addressed	From Sec IV.A.6 Streets: Dead-end streets shall be provided at the closed end with a tum-around having an outside roadway diameter of at least eighty feet (80') and a property line diameter of at least one hundred feet (100'). The Board may, when potential volume warrants, require a minimum outside roadway diameter of one hundred forty feet (140'), a property line diameter of one hundred sixty feet (160'), and the placement of a circular landscaped island with minimum radius of twenty feet (20') at the center of the tum-around, if the dead-end street is not intended to connect with another street at some future point.	Not Applicable	Not Applicable	Not Applicable
Cul-de-sacs	No standards addressed OR Full pavement standard	Encourage center landscaping with bioretention	Require center landscaping with bioretention	Not Addressed	From Sec IV.A.6 Streets: Landscaped islands allowed, but all maintenance is to be done by surrounding homeowners.	Not Applicable	Not Applicable	Not Applicable
Curbing	No standards addressed OR Curbing required full length both sides of road	Allow curb breaks or curb flush with pavement to enable water to flow to vegetated LID features	Open drainage with roadside swales and no curbs preferred	From Sec 5.2.4 Access: "New curb cuts on existing public ways should be minimized" From Sec 5.2.6 Curb Cuts: "Developments shall be designed in a manner that minimizes the number of curb cuts on primary streets."	From Sec V.E.1 Curbs: Straight face granite curbing of five inches (5") in height shall be installed in all subdivisions. Granite curb shall be type V A.4 or VB (Subsection M 9.04). In no case shall curb sections be less than six feet (6') in length.	Not Applicable	Not Applicable	Not Addressed
Roadside Swales	Not addressed OR Allowed as an option	Preferred over closed drainage	Preferred, with criteria for proper design. Adoption of technical specifications and design templates for green infrastructure recommended	From Sec 6.9.8 Design and Operation Requirements: "Within the surface and groundwater protection districts all streets, sidewalks, parking areas, loading docks and exterior service areas shall be paved or surfaced with impervious materials and construction with curbing, slopes and similar design features so the water falling on such areas and on buildings on the same premises and spilled liquid substances on such areas and in adjacent buildings will be contained, controlled and directed into an approved system of drainage structures and pipes." From Sec 10.4 General Regulations Applicable in all Zoning Districts: "The use of low impact development strategies (i.e. rain gardens, bioretention cells) is strongly encouraged."	From Sec IV.H.3 Sidewalks, Paths, Grass Plots & Trees: Grass plots shall be constructed within the street right-of-way, separating the pavement and the sidewalk. The grass plot shall extend the full length of each side of the street, and shall be a minimum width of four feet (4'), including granite curbing. *Without indication of grade, this does not constitute as a roadside swale.*	Not Applicable	Not Applicable	Not Addressed
Utilities	Off sets required contributing to wide road ROWs	Not specified - flexible	Allow under road, sidewalks or immediately adjacent to roads to enable placement of roadside swales.	From Sec 5.4.7 Utilities: "Underground utilities for new and redeveloped building are required unless physically restricted or blocked by existing underground obstructions."	From Sec IV.C.1 Easements: Where utilities cross lots or are centered on rear or side lot lines, easements shall be provided with a width of at least thirty feet (30'). A ten foot square (IO' x IO') utility easement, centered on the side lot lines, shall be provided at the intersection of side lot lines with the right-of-way boundary line, for the purpose of locating utility service structures and accessing utilities.	Not Applicable	Not Applicable	Not Addressed
Sidewalks	Material not addressed OR Concrete or bituminous required	Some flexibility in material and design	Prefer permeable pavement or permeable pavers	From Sec 6.9.8 Design and Operation Requirements: "Within the surface and groundwater protection districts all streets, sidewalks, parking areas, loading docks and exterior service areas shall be paved or surfaced with impervious materials and construction with curbing, slopes and similar design features so the water falling on such areas and on buildings on the same premises and spilled liquid substances on such areas and in adjacent buildings will be contained, controlled and directed into an approved system of drainage structures and pipes."	From Sec V.D.3 Sidewalks: Bituminous concrete sidewalks having a minimum thickness of three inch (3") binder after compression, and one and one half (l½") finish course after compression, shall be constructed on a twelve inch (12 ") gravel foundation to the required lines and grades in accordance with these specifications. If concrete sidewalks are desired, they shall be constructed as directed by the Director of Public Services in conformity with this section of the Standard Specifications.	Not Applicable	Not Applicable	From Sec 27-36 Sidewalks: The building inspector shall require the applicant for a building permit for the construction of a building or structure upon a lot where there is no acceptable sidewalk and/or curbing along itsfrontage, to construct a sidewalk and/or install curbing along said frontage. The sidewalk and/or curbing shall be constructed in conformance with nearest existing sidewalks and/or curbing inthe immediate area, as determined by the director of public services.
Sidewalk location	Required both sides of road	Allow on only 1 side of road especially in low density neighborhoods	Prefer siting with land contours and for best pedestrian utility (e.g. connect with common areas and shared open spaces) – not necessarily immediately parallel to road.	From Sec 5.2.7 Pedestrian and Bicycle Access: "Provision for safe and convenient pedestrian access shall be incorporated into plans for new construction of buildings and parking areas and should be designed in concert with landscaping plans noted below. New construction should improve pedestrian access to buildings, sidewalks and parking areas and should be completed with consideration of pedestrian safety, handicapped access and visual quality. Where appropriate, applicants are encouraged to provide pedestrian and/or bicycle paths connecting their site with abutting areas in order to promote pedestrian and bicycle circulation and safety in the village. When parking is located in the rear, pedestrian access via a pedestrian-oriented alley or walkway through to the primary street is encouraged."	From Sec IV.H.1 Sidewalks, Paths, Grass Plots & Trees: Sidewalks shall be constructed within the street right-of-way, separated from the pavement area by a grass plot. The sidewalk shall extend the full length of each side of the street, and shall be a minimum width of five feet (5').	Not Applicable	Not Applicable	From Sec 27-36 Sidewalks: The building inspector shall require the applicant for a building permit for the construction of a building or structure upon a lot where there is no acceptable sidewalk and/or curbing along itsfrontage, to construct a sidewalk and/or install curbing along said frontage. The sidewalk and/or curbing shall be constructed in conformance with nearest existing sidewalks and/or curbing inthe immediate area, as determined by the director of public services.
Sidewalk drainage	Draining to road, closed drainage system required	Not addressed	Disconnect drainage from road system – e.g.adjacent green strips or within vegetated areas that can absorb sheet flow	From Sec 6.9.8 Design and Operation Requirements: "Within the surface and groundwater protection districts all streets, sidewalks, parking areas, loading docks and exterior service areas shall be paved or surfaced with impervious materials and construction with curbing, slopes and similar design features so the water falling on such areas and on buildings on the same premises and spilled liquid substances on such areas and in adjacent buildings will be contained, controlled and directed into an approved system of drainage structures and pipes." From Sec 10.4 General Regulations Applicable in all Zoning Districts: "The use of low impact development strategies (i.e. rain gardens, bioretention cells) is strongly encouraged."	Not Addressed	Not Applicable	Not Applicable	Not Addressed
GOAL 4: ADOPT GREEN INFRASTRUCTURE STORMWATER MANAGEMENT PROVISIONS								
Rooftop runoff	Not addressed OR Prohibit directing clean roof runoff into closed municipal drainage systems.	Allow clean roof runoff to be directed to landscaped or naturally vegetated areas capable of absorbing without erosion, or infiltration	Require directing clean roof runoff to landscaped or naturally vegetated areas capable of absorbing, or infiltration	Not Addressed	Not Addressed	Not Applicable	Not Applicable	Not Applicable

Overall stormwater design; piping and surficial retention vs. LID	Conventional stormwater system design standards		LID design standard. Allow surficial ponding of retained runoff for up to 72 hours and credit for green roofs towards stormwater requirements	From Sec 6.9.8 Design and Operation Requirements: "Within the surface and groundwater protection districts all streets, sidewalks, parking areas, loading docks and exterior service areas shall be paved or surfaced with impervious materials and construction with curbing, slopes and similar design features so the water falling on such areas and on buildings on the same premises and spilled liquid substances on such areas and in adjacent buildings will be contained, controlled and directed into an approved system of drainage structures and pipes." From Sec 10.4 General Regulations Applicable in all Zoning Districts: "The use of low impact development strategies (i.e. rain gardens, bioretention cells) is strongly encouraged." From Sec 13.5.2 Environmental Impact Standards: "The proposed development shall not increase the potential for erosion, flooding or sedimentation, either on-site or on neighboring properties; and shall not increase rates of runoff from the site to the satisfaction of the Department of Public Services. Provisions for attenuation of runoff pollutants and for ground water recharge shall be included in the proposal. The proposed development shall comply with the latest accepted state and federal Best Management Practices for water quality mitigation and management."	From Sec IV.F.3 Drainage: Storm drainage systems shall be designed in accordance with the criteria of the Department of Public Services and in accordance with the Peabody Planning Board.	From Sec 28-51 Stormwater Management Plan: "The plan shall be designed to meet the Massachusetts Stormwater Management Standardsas set forth in [subsection] (b) of this section and DEP Stormwater Management Handbook Volumes I and II." From MA Stormwater Handbook Vol 1 Chpater 1: "Proponents of projects subject to the Stormwater Management Standards must consider environmentally sensitive site design and low impact development techniques to manage stormwater. Proponents shall consider decentralized systems that involve the placement of a number of small treatment and infiltration devices located close to the various impervious surfaces that generate stormwater runoff in place of a centralized system comprised of closed pipes that direct all the drainage from the entire site into one large dry detention basin."	Not Applicable	Not Applicable
Site Plan Requirements	LID not addressed	Encourage use of LID features in site design	Count bioretention and other vegetated LID features toward site landscaping/open space requirements.	Site Plan Requirements detailed in Sec 6.2. LID Not Addressed From Sec 7.3.3 Modifications of Dimesional Regulations: "Portions of a lot, developed for multi-family dwellings which are not occupied by buildings or structures, and not used for off-street vehicular parking, walks or interior access roads, shall be landscaped. All landscaped areas, including lawns, trees, shrubs and other plantings shall be properly maintained in a sightly and well-kept condition." From Sec Application for Site Plan Review: "Drainage calculations, stormwater management and water/sewer impact analysis prepared by a registered professional engineer. Storm drainage calculations and design shall conform to the City's subdivision regulations, drainage criteria of the Department of Public Services, and applicable Federal, state and local regulations/stormwater management policy. Water and sewer impact analysis shall conform to the criteria of the Department of Public Services."	LID Not Addressed	LID not specifically preferred, other than reference to MA Stormwater Handbook	Not Applicable	Not Applicable
Allow easy siting of LID features (bioretention, swales, etc.)	Not addressed OR Require waivers from subdivision standards	Encouraged along road ROW	Allowed on lots, common open space, or road ROW, easement recorded. For commercial development, allow an increase in floor area ratio or other developmental incentives for green roofs	From Sec 10.4 General Regulations Applicable in all Zoning Districts: "The use of low impact development strategies (i.e. rain gardens, bioretention cells) is strongly encouraged."	LID Not Addressed	LID not specifically preferred, other than reference to MA Stormwater Handbook	Not Applicable	Not Applicable
Permeable paving	Not addressed OR Require waivers from subdivision standards	Allowed on private residential lots for parking, patios, etc.	Allowed for residential drives, parking stalls, spillover parking spaces, emergency access ways (with proper engineering support for emergency vehicles) Two track design allowed for driveways and secondary emergency access ways (where required).	From Sec 9.4 Construction Requirements: "Parking areas serving all structures shall be paved, unless an alternative surface is approved by the Board of Appeals. This provision does not apply in the R-1, R-1A, R-1B and R-2 zoning districts."	Not Addressed	Not Applicable	Not Applicable	Not Applicable
Stormwater management O&M plan	Typically only addressed if municipality has a stormwater or LID bylaw, or for areas subject to wetlands permitting	Required	Required, surficial bioretention and swales preferred. Closed/underground systems requiring specialized inspection and clean out discouraged.	Not Addressed	Not Addressed	Application for Stormwater Permit required for all projects that will disturb 1+ acre of land. From Sec 28-52 Operation and Maintenance Plans: "An operation and maintenance plan (O&M plan) is required at the time of application for all projects. The maintenance plan shall be designed to ensure compliance with the permit, this article and that theMassachusetts Surface Water Quality Standards, 314, CMR 4.00 are met in all seasons and throughout the lifeof the system. The stormwater committee shall make the final decision of what maintenance option isappropriate in a given situation. The stormwater committee will consider natural features, proximity of site towater bodies and wetlands, extent of impervious surfaces, size of the site, the types of stormwatermanagement structures, and potential need for ongoing maintenance activities when making this decision."	Not Applicable	Not Applicable
Construction Erosion and Sedimentation Plan required	Basic general requirements	Required, contents specified	Goes beyond minimum NPDES requirements, requires minimization of site disturbance	Not Addressed	Not Addressed	Not Addressed in municipal ordinance. From MA Stormwater Handbook (Standard 7): "A pollution prevention plan, an erosion and sedimentation control plan and a long-term operation and maintenance plan must be prepared for the entire site in accordance with the applicable provisions of Standards 4 through 6, 8, and 9."	Not Applicable	Not Applicable
GOAL 5: ENCOURAGE EFFICIENT PARKING								
Parking	Specific minimums set based on projected maximum use times	Encourage minimum # needed to serve routine use (e.g. 2/residential unit with any additional/visitors parking behind in driveway or on street.	Establish Maximum Parking spaces allowed. Do not require more than 2/residence. Allow tenants separate, optional lease agreements for parking.	From Sec 9.2 Schedule of Parking Regulations: Minimum AND Maximum spaces outlined, depending on use.	Not Addressed	Not Applicable	Not Applicable	Not Applicable
Commercial Parking	Specific minimums set based on projected maximum use times adding all on-site uses together.	Some flexibility to reduce minimums based on street or other available nearby parking or transit.	Allowed shared parking for uses with different peak demand times. Provide model agreements/deed restrictions. Reduce parking requirements near transit. Limit parking stall size (9ftx18ft max), with up to 30% smaller for compact cars	From Sec 9.2 Schedule of Parking Regulations: Minimum AND Maximum spaces outlined, depending on use. "With respect to the following uses, the off-street parking shall be provided as detailed below. If more than one use is included in a single development (excluding shopping centers), then the minimum off-street parking space requirements shall be cumulative (e.g. the parking space standards for each use should be added together)."	Not Addressed	Not Applicable	Not Applicable	Not Applicable

LID in Parking Areas	LID not addressed OR Require waivers e.g. for planting islands to drain down rather than built up surrounded by curbs	Allow LID/bioretention within parking areas.	Require landscaping within parking areas, as LID/bioretention, at a minimum of 10% of the interior area landscaped and a minimum of 25 square feet for island planting areas.	From Sec 9.4 Construction Requirements: "The construction of three or more parking spaces shall meet the following standards, subject to the approved plans therefore by the Building Inspector… Parking areas shall include adequate provisions for on-site retention and treatment of stormwater in accordance with the applicable state and federal regulations, as they may be amended. From Sec 9.5 Landscaping: "Commercial or multi-family parking lots with twelve (12) spaces or more shall meet the landscaping requirements found in Section 10.7 of this ordinance." From Sec 10.7 Landscaping for Parking Areas: "For parking lots with more than twelve (12) parking spaces, a minimum of one (1) street tree or ornamental tree shall be required per four (4) off-street parking spaces, except in the B-C and I-L Districts where one street tree shall be required per six (6) off-street parking spaces. Large surface parking lots (greater than 50 parking spaces) should be visually and functionally segmented into several small lots with raised landscaping strips and pedestrian paths, to reduce the apparent mass of paved surfaces. A minimum area equal to 10% of the gross interior parking area shall be landscaped. Parking lot design should incorporate methods of storm water management utilizing low impact development techniques."	Not Addressed	Not Applicable	Not Applicable	Not Applicable

Rowley

Factors	Needs Improvement	Improved	Optimal	Zoning Bylaw	Planning Board and subdivision Rules and Regulations	Wetland Bylaw and Regulations	Stormwater Bylaw and Regulations
GOAL 1: PROTECT NATURAL RESOURCES AND OPEN SPACE							
Soils managed for revegetation	Not addressed	Limitations on removal from site, and/or requirements for stabilization and revegetation	Prohibit removal of topsoil from site. Require rototilling and other prep of soils compacted during construction	removal of soil or other earth material prohibited wihtin six feet of historical high groundwater , unless substances removed are redeposited within 45 days of removal from the site (4.11.3.1, n) extraction of earth material is prohibited in all districts except as permitted by the earth removal bylaw. which permits small uses without a permit and requires permitting process for all other uses(8.3.1) note: contents may be repealed	grading plan required which indicates the disposition of topsoil on the site, which shall include how topsoil will be handled in areas of cut and fill, how soil will be stockpiled, if applicable, the minimum amount of topsoil to be redistributed to the site, and that no topsoil will leave the site exept in accordance with regulations (3.3.2.11)finished site contours shall approximate the character of the natural site, very effort shall be made to reduce the folume of cut and fill, the areas of distirbance to the natural landscape, wetland alteration, and impervious surfaces (2.3)	Except as permitted in writing by the Commission, or as provided in this Bylaw, no person shall engage in the following activities ("activities"): removal of vegetation and soils, filling, dumping, dredging, discharging into, building upon, or otherwise altering or degrading any of the above resource areas specified in Section III (A) of this Bylaw. (IIIB)	interim and permanet stabilization measures shall be instituted on a disturbed area no more than 14 days after construction activity has ceased (II, A, 11) measures also taken before commencement of land distirbuing activities (II, C, 1) Many requirements controll erosion at site (II, C)
Limit clearing, lawn size, require retention or planting of native vegetation/naturalized areas	Not addressed OR General qualitative statement not tied to other design standards	Encourage minimization of clearing/ grubbing	Require minimization of clearing/grubbing with specific standards	not addressed	any clearance, backfilling, cutting, thinning or other disturbance to trewes twelve inches in siameter measured 4 feet above finished ground level located within the minimum front setback ditance or other natural vegetation shall be prohobited unless deemd both prroper by the board and not in conflict with intent in section 4.6 (4.5.1) grading shal be kept at a minimum. whre possible only undesirable trees shall be removed (5.2.5.2. 2) permanent vegetation	Except as permitted in writing by the Commission, or as provided in this Bylaw, no person shall engage in the following activities ("activities"): removal of vegetation and soils, filling, dumping, dredging, discharging into, building upon, or otherwise altering or degrading any of the above resource areas specified in Section III (A) of this Bylaw. (IIIB)	erosion control measures shall remain in place until the site has become stabalized with adequate vegetative cover, details on stabilizationm measures listed in section C (II, C,6) the total area of distirbance shall be minmized (II, A1)
Require native vegetation and trees	Not addressed OR General qualitative statement	Mixture of required plantings of native and nonnative	Require at least 75% native plantings	not addressed	a grass plot shall be provided on each side of theach roadway between the pavement and the sidewalk areas, and shalll occupy all the remaining area not paved. Grass shall be used unless other ground cover is approved by the planning board (5.9) street trees of nursery stock conforming to the standard of the american association of nurserymen of the species approved by the tree warden/planning board shall be planted on each side of each street in a subdivision, except where trees to be retained are healthy and adequate. Indigenous species are preferred the invasive plant species listed in a guide to invasive plants in massachusetts shall not be used. as a general rule evergreen threes should be included in the plantings (2.8)	Except as permitted in writing by the Commission, or as provided in this Bylaw, no person shall engage in the following activities ("activities"): removal of vegetation and soils, filling, dumping, dredging, discharging into, building upon, or otherwise altering or degrading any of the above resource areas specified in Section III (A) of this Bylaw. (IIIB)	general qualitative statement: erosion control measures shall remain in place until the site has become stabalized with adequate vegetative cover (II, C,6)
GOAL 2: PROMOTE EFFICIENT, COMPACT DEVELOPMENT PATTERNS AND INFILL							
Lot size	Not addressed OR Required minimum lot sizes	OSRD/NRPZ preferred. Special permit with incentives to utilize	Flexible with OSRD/NRPZ by right, preferred option	any proposed development that would be located in the floodplain district hall require a special permit for open space residential development (4.10.4.1, i) In Central district lot size is required to be 30,000 sq ft, in all other districts lot size is required to be 60,000 sq ft (6.1.1.1, a, b) ORSD permitted by special permit with clear eligibility definitions and submittal requirements (6.4.3) required OSRD for development of 5 or more lots/acres and permitted for any proposed development over 2 single family homes	before approval of plan the board may require plan to show parks and other open space locations with the following requirements: 1 acre of land for each 20 single family dwelling units equal to 3 times the floor area of all other dwelling units, and 10% of land for all non-res subdivisions. (4.4.1)	*(Not applicable)*	Regulated activities: Land disturbance of greater than 20,000 (half an acre) square feet or a land disturbance that will alter an area of 10,000 square feet or more on existing or proposed slopes steeper than 15 %, unless exempt pursuant toSubsection 3 C. Exempt Activities. (3.A.1) A project which includes land disturbance of less than 20,000 square feet or a land disturbance that will alter an area of less than 10,000 square feet on existing or proposed slopes steeper than 15 % shall be considered to be in conformance with this Bylaw if soils or other eroded matter have been and will be prevented from being deposited onto adjacent properties, rights-of-ways, public storm drainage systems, or wetlands or watercourses. These projects do not need to apply as long as appropriate sedimentation and erosion control measures are implemented. The design, installation, and maintenance of erosion and sediment control
Housing density	Multi-family housing not allowed, or only in/adjacent to commercial and industrial uses	Multi-family and cluster developments allowed by special permit	Multi-family housing allowed by right in most residential areas; cluster developments encouraged with density bonuses for LID features and no maximum lot coverage	multi family dwellings are authorized in the central district and residential district as follows: a development of fewer than 5 multi-family dwelling units is authorized without special permit, more than 5 requires a special permit. Requirements do not apply to townhome dwellings approved as part of ORSD or multi family approved as part of new england village development (6.2.1.2) density bonuses peemitted in ORSD (6.4.6)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Setbacks	Not addressed OR Required minimum front, side, and rear setbacks	Minimize, allow flexibility	Clear standards that minimize and in some instances eliminate setbacks	minimim setback line is 100 feet except in lots which qualify for reduced frontage (6.1.2.1)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Frontage	Not addressed OR Required minimum frontage for each lot/unit	Minimize especially on curved streets and cul-de-sacs	No minimums in some instances, tied into other standards like OSRD design and shared driveways.	in Central district 125 feet of frontage is required. In Res, Outlying, and Coastal Con district 150 feet of frontage is required (6.1.1.1, a,b) single family home may be on reduced frontage if approved by the board and meets requirements (6.1.1.2)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*

Common driveways	Not addressed OR Not allowed, strict limitations	Allow for 2-3 residential units	Allow for up to 4 residential units, preferrably constructed with permeable pavers or pavement	the planning board may issue a special permit authorizing the construction of a common drive way that serves up to two lots for non residential uses anduo to three lots for single family dwellings, pending requirements surrounding safety, reduction of impervious surface, etc are met (8.7.3.)	common driveways shall be at minimum 18 feet for residential use and 24 feet for all other uses (4.12)	*(Not applicable)*	*(Not applicable)*
GOAL 3: SMART DESIGNS THAT REDUCE OVERALL IMPERVIOUSNESS							
Impervious cover limits and infiltration rates	Not usually addressed in zoning and subdivision regs for rural/suburban residential	Require no net increase in site run-off from pre- to post-development	Impervious cover limits tailored to the commuity and district type (i.e. <10% total impervious cover in rural districts, but higher in urban and redevelopment districts); post-development infiltration should be equal to or greater than pre-development. Following best practice may also help communities comply with MS4 permit requirements	any use that will render impervious more than 15% or 2500 feet of any lot, whichever is greater will require a special permit in the MWSPD district (4.11.3.2) for multi family housing, no more than 50% of the lot in res districts and 70% of any lot in central district may be covered by impervious surfaces (6.2.2.6.) 50% of ORSD minimum must be permanent open space (6.4.8.1)	finished site contous shall approximate the character of the natural site, very effort shall be made to reduce the folume of cut and fill, the areas of distirbance to the natural landscape, wetland alteration, and impervious surfaces (2.3)	*(Not applicable)*	Low impact development and green infrastcutrure site design strategies shall be utalized to preserve existing natural features of the site, minimize the creation of impervious surfaces, and manage stormwater in a decentralized fashion, unless infeasible (III, D, 1)
Street location	No standards addressed OR Numeric and geometric standards based primarily on vehicular travel and safety, with basic pedestrian requirements e.g. sidewalks	Flexibility in applying standards, to reduce area of impact, grading, avoid key natural features	OSRD design preferred by-right. Require locating streets to minimize grading and road length, avoid important natural features	*(Not applicable)*	proposed streets shall be designed to minimize the amount of cut and fill required (4.1.1.3) all streets shall be designed so that they willl provide safe vehicular and pedestrian travel and an attractive street pattern through curvlinear street layout whenever possible (4.1.1.1.)	*(Not applicable)*	*(Not applicable)*
Road width	No categories addressed OR Major and minor categories, 24-30'	Wide, medium, narrow categories. 22-24' max, plus 2' shoulders	Wide, medium, narrow, and alley categories. 20-24' widest for 2 travel lanes, 18-20' low traffic residential neighborhood, plus 2' shoulders. Allow alleys and other low traffic or secondary emergency access and all shoulders to use alternative, permeable materials.	*(Not applicable)*	major street pavement width willl be 40-48 feet deending on intensity of use. Secondary street will be 30-40 feet depending on use. Minor street will be 26 feet.	*(Not applicable)*	*(Not applicable)*
Road ROW width	ROW Width not addressed OR 50-75', fully cleared and graded	40-50', some flexibility in extent of clearing	20-50'depending on road type	*(Not applicable)*	major street: 65 feet in low intentisy area and 80 in high intensity area as detrmined by planning board. Secondary streets: 55 in low intensity an d65 in high intensity (4.1.4.1) board may require a ROW increase of up to 10 feet to accommodate walkway construction and preserve natural features (4.1.4.2)	*(Not applicable)*	*(Not applicable)*
Access Options	Common drives not addressed, No common drives allowed, Dead end allowed with limit on length and # of units	Allow dead end with limit on length and # of units. Allow common drives up to 2-3 units	Allow one way loop streets. Allow common drives up to 4 units, and alleys and rear-loading garages where suitable.	the planning board may issue a special permit authorizing the construction of a common drive way that serves up to two lots for non residential uses anduo to three lots for single family dwellings, pending requirements surrounding safety, reduction of impervious surface, etc are met (8.7.3.)	common driveways shall be at minimum 18 feet for residential use and 24 feet for all other uses (4.12)	*(Not applicable)*	*(Not applicable)*
Dead Ends/Cul-de-sacs	No standards addressed OR 120 ft or more minimum turnaround	Minimize end radii – 35 ft	Allow hammerhead turnaround	*(Not applicable)*	dead end turnaround diameter of at least 100 feet and a property line diameter of atleast 120 feet, a RWO diameter of 140 feet and a paved roadway diameter of 120 feet. Planning board may require a divded roadway with center island separating traffic flow for dead end, or an easement (4.1.6.4, 4.1.6.5)	*(Not applicable)*	*(Not applicable)*
Cul-de-sacs	No standards addressed OR Full pavement standard	Encourage center landscaping with bioretention	Require center landscaping with bioretention	*(Not applicable)*	the board may require the construction of a divided roadway ?with center island separating traffic flow) as a condition of approval of a deadend street (4.1.6.4)	*(Not applicable)*	*(Not applicable)*
Curbing	No standards addressed OR Curbing required full length both sides of road	Allow curb breaks or curb flush with pavement to enable water to flow to vegetated LID features	Open drainage with roadside swales and no curbs preferred	*(Not applicable)*	unless otherwise specificed by the board, sloped granite curbs of the dimensions given for granite edgestone type SA shall be proviided along each edge of the roadway for the full length of the street (5.7)	*(Not applicable)*	*(Not applicable)*
Roadside Swales	Not addressed OR Allowed as an option	Preferred over closed drainage	Preferred, with criteria for proper design. Adoption of technical specifications and design templates for green infrastructure recommended	*(Not applicable)*	not addressed - see stormwater bylaw	*(Not applicable)*	size drainage swales to accommodate a 25 year storm event and velocities elow 4 feet per second (III, F, 12)
Utilities	Off sets required contributing to wide road ROWs	Not specified - flexible	Allow under road, sidewalks or immediately adjacent to roads to enable placement of roadside swales.	*(Not applicable)*	not specified	*(Not applicable)*	*(Not applicable)*
Sidewalks	Material not addressed OR Concrete or bituminous required	Some flexibility in material and design	Prefer permeable pavement or permeable pavers	*(Not applicable)*	all sidealks shall be in accordance with the requiremnts or sidewalks and bituminous concrete driveways (section 701) (5.5.3.2)	*(Not applicable)*	*(Not applicable)*
Sidewalk location	Required both sides of road	Allow on only 1 side of road especially in low density neighborhoods	Prefer siting with land contours and for best pedestrian utility (e.g. connect with common areas and shared open spaces) – not necessarily immediately parallel to road.	*(Not applicable)*	sidealks, grass plots, and trees shall be provided on both sides of each street for the full length of the street except where the proposed housing densityy/expected traffic intensity is such that a sidewalk on one side is sufficient, as decided by the board (4.10.1) (5.5)	*(Not applicable)*	*(Not applicable)*
Sidewalk drainage	Draining to road, closed drainage system required	Not addressed	Disconnect drainage from road system – e.g. adjacent green strips or within vegetated areas that can absorb sheet flow	*(Not applicable)*	not addressed	*(Not applicable)*	*(Not applicable)*
GOAL 4: ADOPT GREEN INFRASTRUCTURE STORMWATER MANAGEMENT PROVISIONS							

Rooftop runoff	Not addressed OR Prohibit directing clean roof runoff into closed municipal drainage systems.	Allow clean roof runoff to be directed to landscaped or naturally vegetated areas capable of absorbing without erosion, or infiltration	Require directing clean roof runoff to landscaped or naturally vegetated areas capable of absorbing, or infiltration	*(Not applicable)*	not addressed	*(Not applicable)*	not addressed
Overall stormwater design; piping and surficial retention vs. LID	Conventional stormwater system design standards	Encourage LID features and BMPs; design standards often not specified	LID design standard encouraging infiltration, allowing surficial ponding of retained runoff for up to 72 hours; systems designed for larger volume storms, accounting for future precipitation predictions; credit for green roofs towards stormwater requirements. Following best practice may also help communities comply with MS4 permit requirements	*(Not applicable)*	adequate disposal of surface and sub-surface water shall be provided with design standards for basins, ma standardnholes, inlets, culverts, stormdrains, sewer pipes, and subddrains 95.4.1)	*(Not applicable)*	The Plan shall be designed to meet the Massachusetts Stormwater Management Standards set forth in the Massachusetts Stormwater Management Policy and DEP Stormwater Management Handbook Volumes I and II. (8) low impact development and green infrastcutrure site design strategies shall be utalized to preserve existing natural features of the site, minimize the creation of impervious surfaces, and manage stormwater in a decentralized fashion, unless infeasible (III, D, 1)
Site Plan/Design Requirements	LID not addressed	Encourage use of LID features in site design - such as reduced imperviousness, maintaining natural hydrology, preserving open space, and rainwater reuse	Include bioretention and other vegetated LID features in site landscaping/open space requirements. Following best practice may also help communities comply with MS4 permit requirements. See section 2.3.5 of the MS4 permit for more information	LID not addressed in site plan review contents (7.6)	*(Not applicable)*	*(Not applicable)*	low impact development and green infrastcutrure site design strategies shall be utalized to preserve existing natural features of the site, minimize the creation of impervious surfaces, and manage stormwater in a decentralized fashion, unless infeasible (III, D, 1) Projects must use LID where adequate soil, groundwater, and topographic conditions allow. these may include but not be limited to reduction in impervious surfaces, disconnection of impervious surfaces, bioretention (rain gardens) and infiltration systems - the site design practices hat qualify are identified in Mass stormwater handbook (III, F, 4)
Allow easy siting of LID features (bioretention, swales, etc.)	Not addressed OR Require waivers from subdivision standards	Encouraged along road ROW	Allowed on lots, common open space, or road ROW, easement recorded. For commercial development, allow an increase in floor area ratio or other developmental incentives for green roofs	not addressed	LID features are not addressed within the rules and regulations	*(Not applicable)*	*(Not applicable)*
Permeable paving	Not addressed OR Require waivers from subdivision standards	Allowed on private residential lots for parking, patios, etc.	Allowed for residential drives, parking stalls, spillover parking spaces, emergency access ways (with proper engineering support for emergency vehicles) Two track design allowed for driveways and secondary emergency access ways (where required).	*(Not applicable)*	not addressed	*(Not applicable)*	not addressed
Stormwater management O&M plan	Typically only addressed if municipality has a stormwater or LID bylaw, or for areas subject to wetlands permitting	Required	Required, contents specified in alignment with current MassDEP Stormwater Handbook. Following best practice may also help communities comply with MS4 permit requirements	*(Not applicable)*	not addressed. But required in stormwater bylaw	*(Not applicable)*	The maintenance plan shall be designed to ensurecompliance with this Bylaw and that the Massachusetts Surface Water Quality Standards contained in 314CMR 4.00 are met in all seasons and throughout the life of the system. The Operation and Maintenance plan shall include any requirements deemed necessary by the Conservation Commission to insure compliance with said plan, including without limitation, a covenant. The Conservation Commission shallmake the final decision of what maintenance option is appropriate in a given situation. The Conservation Commission will consider natural features, proximity of site to water bodies and wetlands, extent of Stormwater Management and Erosion Control Bylaw 12 of 14 impervious surfaces, size of the site, the types of stormwater management structures, and potential need for ongoing maintenance activities when
Construction Erosion and Sedimentation Plan, and stormwater control	Basic general requirements	Required, contents specified - the site design process should include soil erosion and sedimentation control measures	Goes beyond minimum NPDES requirements. Requires minimization of site disturbance, reduction of construction waste, control measures not removed until proof of soil stabilization or reestablishment of vegetation. Written procedures for site inspection and enforcement included. Following best practice may also help communities comply with MS4 permit requirements. See section 2.3.5 of the MS4 permit for more information	*(Not applicable)*	erosion/sedimentation control plan shall be prepaered with details on inclusions (3.3.2.10) before approval of a definitive plan, the developer shall obtain approval of an erosion/sedimentation control plan during all phases of construction for the area he intends to work, with factors for consideration iinclded (5.2.5.2)	*(Not applicable)*	The Erosion and Sedimentation Control Plan shall contain sufficient information to describe the natureand purpose of the proposed development, pertinent conditions of the site and the adjacent areas, and proposed erosion and sedimentation 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 in the Regulations adopted by the Conservation Commission for
Stormwater discharge detection & elimination	Not addressed	Discharges and connections noted and/or limits set on quantity and quality	Illicit discharges and connections are probibited and enforced. Following best practice may also help communities comply with MS4 permit requirements. Find more information in section 2.3.4.a of the MS4 permit	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	the selection, design, and constrution of all BMPs shall be in accordance with Mass stormwater handbook and consistant with its standards including but not limited to…illicit discharges (II.D.2)

Post- construction stormwater management and drainage patterns	Not addressed	Allow LID	Resemble pre-existing conditions of volume, velocity, quality and location, as nearly as possible, requiring LID to the max extent feasible. Retain vol of runoff >1in. per sq.ft. of impervious surface and/or remove 90% TSS post-construction & 50% TP generated on the site for new development, or >0.8in. per sq.ft and/or remove 80% TSS and 50% of TP load for redevelopment. Following best practice may also help communities comply with MS4 permit requirements.	*(Not applicable)*	the stormwater runoff measure proposed for the site shall conform to the best management practices descrived in the commonwealth's stormwater managemnt handbook, volumes 1 and 2. in general projects should be designed to maximize ground recharge and water quality protection (2.4)	*(Not applicable)*	the portion of the required volume which is not retained on site shall be treated using BMPs that are optimized for the removal of TSS, total phosphorus, bacteria and pollutants of concern (II.D.4) Proposed BMP will remove 90% of more of the annual average TSS and 60% or more of the annual TP for all post contruction impervious areas on site (II.D.5) Redevelopment standards not mentioned (80% TSS and 50% TP)
As-built surveys	Not addressed	Recommended	Required, with written instructions for process; electronic submittal allowed	*(Not applicable)*	as built plans required to be filed with the board prior to final release with plan details specified (3.3.11)	*(Not applicable)*	as built drawings must be submitted no later than one year after competion of construction projects (III. F)
Intra-departmental communication and coordination	Not addressed	Informally or loosely occurring	Required for plan review and/or permit approvals	some collaboraton implied between board of appeals/planning boardm board of health, and building inspector (7.0)	the planning board will transmit copies of the deifnitive plan to town officials other than the board of health as follows: conservation comission, highway surveyor, board of fire engineers, and police department. Water comissioners, building inspector, electric light department, board of assessors, and other if applicable (3.3.5.2) the board will recieve written statements regarding proposed improvements of definitive plan before its approval (3.3.5.2)	Coordination with enforcement: the Commission, its administrators, officers and employees and any officer with police powers may issue enforcement orders directing compliance with this Bylaw and may undertake any other enforcement action authorized by law. Any Enforcement Order issued by any individual must be ratified by the Commission at a public meeting. Enforcement Orders issued or ratified by the Commission may be recorded in the Registry of Deeds, at the property owner's expense. Upon request of the Commission, the Board of Selectmen and the Town Counsel may take legal action for enforcement under civil law, seek to restrain violations thereof and seek injunction and judgments to secure	Coordination with Other Boards: On receipt of a complete application for a Stormwater Management Permit the Conservation Commission shall distribute one copy each to the Planning Board, Highway Department, and other appropriate Board(s) for review and comment. Said agencies shall, in their discretion, investigate the case and report their recommendations to the Conservation Commission. (7.E)
Enforcement	No	Yes	Yes with fines. Same entity should oversee permit approvals and enforcement	bylaw enforced by the building inspector (7.3.1) any person who violates the bylaw shall be fined 100 dollars. Each 24 hour of continued violation shall be considered a separate offense (7.7.1)	no permits for building shall be issued by the building inspector until all outstanding bill are paid in full and written permission is given (6.3) no enforcement with fines	Fines may be imposed beginning on the day of the issuance of an Enforcement Order following a Violation Notice or on the eleventh business day after the issuance of an Enforcement Order without a preceding Violation Notice. Fines may accrue until such time that the property owner submits an application to remediate the violation. Each day, or portion thereof, during which a violation continues or unauthorized fill or other alteration remains in place, shall constitute a separate offense., thurough fine chart included, Conservation Comission oversees permit approvala and enforcement (XII. C)	The Conservation Commission shall administer, implement and enforce this Bylaw. Any powers granted to or duties imposed upon the Conservation Commission through this Bylaw may be delegated in writing by the Conservation Commission to its employees or agents. (5.A) A. The Conservation Commission or an authorized agent of the Conservation Commission shall enforce this Bylaw, regulations, orders, violation notices, and enforcement orders, and may pursue all civil and criminal remedies for such violations(12.A) The penalty for the first violation shall be $75.00, the second violation shall be $150.00, and for the third and all subsequent violations shall be $300.00 per violation. Each day or part thereof that such violation occurs or continues shall constitute a separate offense. (12.C) O&M plan enforced by the stormwater authority (IV, C)
GOAL 5: ENCOURAGE EFFICIENT PARKING							
Parking	Specific minimums set based on projected maximum use times	Encourage minimum # needed to serve routine use (e.g. 2/residential unit with any additional/visitors parking behind in driveway or on street.	Establish Maximum Parking spaces allowed. Do not require more than 2/residence. Allow tenants separate, optional lease agreements for parking.	not addressed - see planning board regs	two parking spaces per dwelling unit plus 1/2 additional space for each bedroom in excess of 2. (attachment A)	*(Not applicable)*	*(Not applicable)*
Commercial Parking	Specific minimums set based on projected maximum use times adding all on-site uses together.	Some flexibility to reduce minimums based on street or other available nearby parking or transit.	Allowed shared parking for uses with different peak demand times. Provide model agreements/deed restrictions. Reduce parking requirements near transit. Limit parking stall size (9ftx18ft max), with up to 30% smaller for compact cars	not addressed - see planning board regs	specific minimums set, the board recognizes the fact that some uses require less parking, the final number of parking spaces could be reduced (attachment A)	*(Not applicable)*	*(Not applicable)*
LID in Parking Areas	LID not addressed OR Require waivers e.g. for planting islands to drain down rather than built up surrounded by curbs	Allow LID/bioretention within parking areas.	Require landscaping within parking areas, as LID/bioretention, at a minimum of 10% of the interior area landscaped and a minimum of 25 square feet for island planting areas.	not addressed - see planning board regs	in parking areas exeeding 1/4 acre trees greater than 6 feet shall be provided at a rate of 1 tree per 12 parking spaces. Trees shall be placed on vegetated is;amds at least 8 feet wide, and spaced reasonably throughout the parking lot. (2.9)	*(Not applicable)*	not addressed

Salem

Factors	Needs Improvement	Improved	Optimal	Zoning Ordinance (Including Special District Regulations)	Stormwater Management Ordinance (Including MA Stormwater Handbook)	Wetland Protection & Conservation Ordinance	Subdivision Regulations	Streets & Sidewalks Ordinance
GOAL 1: PROTECT NATURAL RESOURCES AND OPEN SPACE								
Soils managed for revegetation	Not addressed	Limitations on removal from site, and/or requirements for stabilization and revegetation	Prohibit removal of topsoil from site. Require rototilling and other prep of soils compacted during construction	From Section 6.1 of Zoning Ordinance: Removal of Earth Products "Allowed w/ Special Permit.... In case of topsoil removal, the area shall be seeded and maintained until plant cover is well established." "Regulations shall not apply.... if excavation or grading is connected to a permanent change in the use of land"	From MA Stormwater Handbook: The plan shall include a schedule for sequencing construction and stormwater management activities that minimizes land disturbance by ensuring that vegetation is preserved to the extent practicable, and disturbed portions of the site are stabilized as quickly as possible.	Not Applicable	Not Applicable	From Sec. 38-204 "This responsibility shall continue until a satisfactory crop has been grown to the satisfaction of the director of public services."
Limit clearing, lawn size, require retention or planting of native vegetation/naturalized areas	Not addressed OR General qualitative statement not tied to other design standards	Encourage minimization of clearing/ grubbing	Require minimization of clearing/grubbing with specific standards	Not addressed other than Section 6.1, referenced above	Not Addressed	Not Applicable	From Subdivision Regulations (pg50): In laying out of a subdivision, the applicant shall comply with these rules and regulations with due regard to all natural features such as trees with at least a six (6) inch caliper, watercourses, scenic or historic elements, aquifers, flood plains, and habitats of rare or endangered species. These features shall be left undisturbed wherever practical and the Board may waive design requirements in order to protect important natural features.	Not Applicable
Require native vegetation and trees	Not addressed OR General qualitative statement	Mixture of required plantings of native and nonnative	Require at least 75% native plantings	From "Chapter 12, Green Building Ordinance": land management practices shall maximize or increase sustainable vegetation to mitigate urban heat island effects and reduce flooding and encourage stormwater infiltration.	Not Addressed	Not Applicable	Not Applicable	Not Applicable
GOAL 2: PROMOTE EFFICIENT, COMPACT DEVELOPMENT PATTERNS AND INFILL								
Lot size	Not addressed OR Required minimum lot sizes	OSRD/NRPZ preferred. Special permit with incentives to utilize	Flexible with OSRD/NRPZ by right, preferred option	From Section 4.0 of Zoning Ordinance: Dimensional Requirements: From Sec. 7.1.2 Standards: There shall be a lot area of at least one thousand (1,000) square feet for each dwelling unit within each building.	Not Applicable	Not Applicable	See Zoning Ordinance: Lot dimensions shall comply with the minimum standards of the City of Salem Zoning Ordinance.	Not Applicable
Setbacks	Not addressed OR Required minimum front, side, and rear setbacks	Minimize, allow flexibility	Clear standards that minimize and in some instances eliminate setbacks	From Section 4.0 of Zoning Ordinance: Dimensional Requirements	Not Applicable	From Sec 50-8 Buffer Zone/Setbacks: Notwithstanding the above, the Conservation Commission may, without requiring a formal waiver request, reduce the setbacks	See Zoning Ordinance: All lots within the Subdivision shall comply with all requirements of the Zoning Code of Ordinances in effect at the time of application.	Not Applicable
Frontage	Not addressed OR Required minimum frontage for each lot/unit	Minimize especially on curved streets and cul-de-sacs	No minimums in some instances, tied into other standards like OSRD design and shared driveways.	From Section 4.0 of Zoning Ordinance: Dimensional Requirements	Not Applicable	Not Applicable	See Zoning Ordinance: All lots within the Subdivision shall comply with all requirements of the Zoning Code of Ordinances in effect at the time of application.	Not Applicable
Common driveways	Not addressed OR Not allowed, strict limitations	Allow for 2-3 residential units	Allow for up to 4 residential units, preferrably constructed with permeable pavers or pavement	Not Addressed	Not Applicable	Not Applicable	From Subdivision Regulations (pg9): A shared private driveway serving three or fewer residential units shall be provided within an access easement recorded in the deeds of all parcels that have access to the driveway. The minimum finish surface width of the shared private driveway shall be 18 feet.	From Sec. 38-62: Before any lot or area may be used as a parking lot for the accommodation of more than two vehicles, plans therefor shall be submitted to the department of public works and the building inspector to determine compliance with prevailing standards for entry and exit provisions, curbing and drainage. No permit shall be given by the department until such plans have been found to comply with the standards.
Limit impervious area – Rural Districts In high density areas, require post-development infiltration to = or > predevelopment	Not addressed (Not usually addressed in zoning and subdivision regs for rural/suburban residential)	<15%	<10%	Not Addressed	Percentages Not Addressed. Approaches to limiting impervious surfaces are listed in Volume 2 Chapter 1 of the MA Stormwater Handbook. From Volume 1 Chapter 1: At a minimum, the annual recharge from the post-development site shall approximate the annual recharge from pre-development conditions based on soil type.	Not Addressed	Not Addressed	Not Addressed
GOAL 3: SMART DESIGNS THAT REDUCE OVERALL IMPERVIOUSNESS								
Street location	No standards addressed OR Numeric and geometric standards based primarily on vehicular travel and safety, with basic pedestrian requirements e.g. sidewalks	Flexibility in applying standards, to reduce area of impact, grading, avoid key natural features	OSRD design preferred by-right. Require locating streets to minimize grading and road length, avoid important natural features	Not Addressed	Not Applicable	Not Applicable	Not addressed	From Sec 38-52: The city council may lay out any new street or way or widen or otherwise alter or discontinue any street or way and estimate the damages any individual may sustain thereby, all in the manner and form prescribed by law. However, no order laying out a street or way shall be adopted by the council unless it has been approved by the city solicitor.
Road width	No categories addressed OR Major and minor categories, 24-30'	Wide, medium, narrow categories. 22-24' max, plus 2' shoulders	Wide, medium, narrow, and alley categories. 20-24' widest for 2 travel lanes, 18-20' low traffic residential neighborhood, plus 2' shoulders. Allow alleys and other low traffic or secondary emergency access and all shoulders to use alternative, permeable materials.	Not Addressed	Not Applicable	Not Applicable	Not Addressed	From Sec 38-93: No new street or way, except a footway, shall be laid out and accepted by the city council of a less width than 40 feet.
Road ROW width	ROW Width not addressed OR 50-75', fully cleared and graded	40-50', some flexibility in extent of clearing	20-50'depending on road type	Not Addressed	Not Applicable	Not Applicable	From Subdivision Regulations (see street classification table on pg 57). Local streets, collector streets, and arterials have an 8-foot flexible lane on each side of the pavement. The Board will determine how the lane will be used to best match the context. The following three alternatives are non-exclusive options for how the lane could be used. Note that a segment of street may have more than one use, for example a mix of green infrastructure and on-street parking.	From Sec 38-94: The entire right-of-way of every new street shall first be cleared of all stumps, roots, brush and like material and all trees not intended for preservation.
Access Options	Common drives not addressed, No common drives allowed, Dead end allowed with limit on length and # of units	Allow dead end with limit on length and # of units. Allow common drives up to 2-3 units	Allow one way loop streets. Allow common drives up to 4 units, and alleys and rear-loading garages where suitable.	From Sec 7.1.2 Standards: Multifamily Development having more than twenty (20) dwelling units shall have a minimum of two (2) access roadways, and traffic of access and egress roads shall be shown.	Not Applicable	Not Applicable	From Subdivison Regulations (pg9): A cul-de-sac turnaround may not be required if the length of the shared private driveway is 300 feet or less. For longer shared private driveways, a circular or hammerhead "T" turnaround shall be required depending on the length of the private driveway and the recommendation of the Fire Department. A proposed shared private driveway exceeding 1,000 feet in length or serving more than three residential units shall not be considered a shared private driveway and must be reviewed as a private road meeting village's Standard Specifications for Street Construction.	Not Addressed
Dead Ends/Cul-de-sacs	No standards addressed OR 120 ft or more minimum turnaround	Minimize end radii – 35 ft	Allow hammerhead turnaround	Not Addressed	Not Applicable	Not Applicable	From Subdivison Regulations (pg9): A cul-de-sac turnaround may not be required if the length of the shared private driveway is 300 feet or less. For longer shared private driveways, a circular or hammerhead "T" turnaround shall be required depending on the length of the private driveway and the recommendation of the Fire Department. A proposed shared private driveway exceeding 1,000 feet in length or serving more than three residential units shall not be considered a shared private driveway and must be reviewed as a private road meeting village's Standard Specifications for Street Construction.	Not Addressed
Cul-de-sacs	No standards addressed OR Full pavement standard	Encourage center landscaping with bioretention	Require center landscaping with bioretention	Not Addressed	Not Applicable	Not Applicable	Not Addressed	Not Addressed

Curbing	No standards addressed OR Curbing required full length both sides of road	Allow curb breaks or curb flush with pavement to enable water to flow to vegetated LID features	Open drainage with roadside swales and no curbs preferred	From Sec. 6.7.6, Standards: The width of any curb cut shall not exceed twenty-five (25) feet, unless the traffic impact study identifies the need for a larger curb cut... From Sec 8.2.3 Requirements: Curb cuts. Only one (1) curb cut of no greater than twenty-four (24) feet shall be permitted for all residential uses. A maximum of two (2) curb cuts no greater than twenty-four (24) feet each shall be permitted for all commercial uses.	Not Applicable	Not Applicable	From Subdivision Regulations (pg 61-62): Curbing is required to offer for safety, storm water management, and delineation and protection of the pavement edge and to prevent erosion. Vertical granite curbing will be required for all new streets, regardless of classification, except as noted in Sa below where sloped granite edging may be allowed..... Vertical Granite curbing shall be provided for the entire length of all new streets. On cul-de-sac islands and roadway medians, sloped granite curbing may be allowed.	Not Addressed
Roadside Swales	Not addressed OR Allowed as an option	Preferred over closed drainage	Preferred, with criteria for proper design. Adoption of technical specifications and design templates for green infrastructure recommended	Not Addressed	Listed as BMP option for TSS Removal in Volume 1 Chapter 1 of MA Stormwater Handbook. Also listed as BMP option for land uses with higher pollutant load potential (defined in Standard 5 of Handbook). Also listed as potential retrofit option for re-development projects in Stormwater Handbook Volume 2, Chap 3. No preference indicated.	Not Applicable	From Subdivision Regulations (to be included in Landscape Plan): Profiles of all cross-country utilities, drainage swales, or ditches with typical cross sections of each. (Priority not specified)	Not Addressed
Utilities	Off sets required contributing to wide road ROWs	Not specified - flexible	Allow under road, sidewalks or immediately adjacent to roads to enable placement of roadside swales.	Not Specified	Not Applicable	Not Applicable	From Subdivision Regulations (pg 65): Installation: All utility lines, and/or other subsurface facilities within the street rights-of-way shall be installed prior to the preparation of the street base material.	Not Addressed
Sidewalks	Material not addressed OR Concrete or bituminous required	Some flexibility in material and design	Prefer permeable pavement or permeable pavers	Not Addressed	Permeable pavers are discussed throughout the MA Stormwater Handbook. No preference stated in the municipal stormwater ordinance.	Not Applicable	From Subdivision Regulations (pg 64): Permeable pavements may be used in sidewalks, plazas, cafés, parking areas, alleys, and other low-traffic areas.	From Sec 38-126: The city council may establish and determine the grade and construction of sidewalks and complete partially constructed sidewalks, with or without edgestones, and may cover the sidewalks with brick, flat stones, concrete, gravel or other appropriate material
Sidewalk location	Required both sides of road	Allow on only 1 side of road especially in low density neighborhoods	Prefer siting with land contours and for best pedestrian utility (e.g. connect with common areas and shared open spaces) – not necessarily immediately parallel to road.	Not Addressed	Flexible sidewalk location is listed as a way to reduce impervious area during redevelopment projects in Volume 2 Chapter 3 of MA Stormwater Handbook. No further preference is stated in the municipal stormwater ordinance.	Not Applicable	From Subdivision Regulations (pg 38): Linkage to commercial centers, recreational facilities, and/or schools. Such information will be used to determine as to whether sidewalks will be required on one-side or two-sides of the road or way, if bicycle accommodations will be required, and applicable width of the roadway.	Not Addressed
Sidewalk drainage	Draining to road, closed drainage system required	Not addressed	Disconnect drainage from road system – e.g. adjacent green strips or within vegetated areas that can absorb sheet flow	No Preference Addressed	No Preference Addressed. Alternative drainage options are listed throughout the MA Stormwater Handbook.	Not Applicable	No Preference Addressed	Not Addressed
GOAL 4: ADOPT GREEN INFRASTRUCTURE STORMWATER MANAGEMENT PROVISIONS								
Rooftop runoff	Not addressed OR Prohibit directing clean roof runoff into closed municipal drainage systems.	Allow clean roof runoff to be directed to landscaped or naturally vegetated areas capable of absorbing without erosion, or infiltration	Require directing clean roof runoff to landscaped or naturally vegetated areas capable of absorbing, or infiltration	From Sec 42-192: Stormwater and all other unpolluted drainage shall be discharged to such sewers as are specifically designated as storm sewers or to a natural outlet approved by the director of public services.	Roof runoff discharging to a dry well is listed as a strategy to reduce runoff for redevelopment projects in MA Stormwater Handbook Volume 2 Chapter 3. Also listed as an "environmentally sensitive site design technique" in Volume 1 Chapter 1 of Handbook.	Not Addressed	Not Addressed	Not Applicable
Overall stormwater design; piping and surficial retention vs. LID	Conventional stormwater system design standards		LID design standard. Allow surficial ponding of retained runoff for up to 72 hours and credit for green roofs towards stormwater requirements	Not Addressed	Not Addressed	Not Addressed	Not Addressed	Not Applicable
Site Plan Requirements	LID not addressed	Encourage use of LID features in site design	Count bioretention and other vegetated LID features toward site landscaping/open space requirements.	Not directly addressed. From Sec 7.2.4, Standards: As far as possible, the plan follows the natural contours of the terrain and respects the natural features of the site.	LID BMPs are thoroughly covered in the MA Stormwater Handbook, but no preference is stated in the municipal code.	From Sec. 50-9 Climate Resiliency: Green infrastructure/nature-based solutions are preferred to demonstrate compliance with the climate change adaptation and mitigation resource area value.	Not directly addressed. LID is defined in the regulations, but no preference is mentioned in the plan requirements.	Not Applicable
Allow easy siting of LID features (bioretention, swales, etc.)	Not addressed OR Require waivers from subdivision standards	Encouraged along road ROW	Allowed on lots, common open space, or road ROW, easement recorded. For commercial development, allow an increase in floor area ratio or other developmental incentives for green roofs	From Chapter 12, Article 5 - Green Building Ordinance: City-owned properties shall employ best management practices and low impact development (LID) to minimize stormwater runoff, thereby keeping water sources cleaner and reducing flooding. Additionally, land management practices shall maximize or increase sustainable vegetation to mitigate urban heat island effects and reduce flooding and encourage stormwater infiltration.	LID BMPs are thoroughly covered in the MA Stormwater Handbook, but no preference is stated in the municipal code.	Not Addressed	From Subdivision Regulations (pg 60): Green infrastructure within Flex Lanes shall augment the amenity zones by providing additional stormwater management capacity and planting area. (On-street parking and bike lanes are two other options for flex lanes along ROW)	Not Applicable
Permeable paving	Not addressed OR Require waivers from subdivision standards	Allowed on private residential lots for parking, patios, etc.	Allowed for residential drives, parking stalls, spillover parking spaces, emergency access ways (with proper engineering support for emergency vehicles) Two track design allowed for driveways and secondary emergency access ways (where required).	Not Addressed	Permeable pavers are discussed in the MA Stormwater Handbook. No preference stated in the municipal stormwater ordinance.	Not Addressed	From Subdivision Regulations (pg 64): Permeable pavements may be used in sidewalks, plazas, cafés, parking areas, alleys, and other low-traffic areas.	Not Applicable
Stormwater management O&M plan	Typically only addressed if municipality has a stormwater or LID bylaw, or for areas subject to wetlands permitting	Required	Required, surficial bioretention and swales preferred. Closed/underground systems requiring specialized inspection and clean out discouraged.	From Sec 8.4.15 Site Plan Review: Any proposed building or additions of any size, excluding the construction of a two-family or single-family home, shall be subject to site plan review. The site plan shall include the following in addition to the requirements of section 9.5. 1. Information on subsurface contamination/toxic material and adequate plans for remediation so that the public health will not be adversely affected; 2. Floodplain information and plans for adequate management of any anticipated problems; 3. Adequate stormwater management plans; 4. Information on the water distribution and sanitary sewer system and plans for any modification necessary to adequately serve the proposed development. From Chapter 12, Article 5 - Green Building Ordinance: All new and major renovations projects must include an operation and maintenance plan which includes training. Ongoing training related to the provisions of this ordinance shall be considered by departments in their annual budget submissions.	From MA Stormwater Handbook (Standard 7): A pollution prevention plan, an erosion and sedimentation control plan and a long-term operation and maintenance plan must be prepared for the entire site in accordance with the applicable provisions of Standards 4 through 6, 8, and 9. All illicit discharges to the stormwater system must be eliminated in accordance with Standard 10. Because there is an additional acre of impervious surface, stormwater runoff from at least one acre of impervious surface must be directed to stormwater best management practices that are designed and constructed in accordance with all the Stormwater Management Standards From MA Stormwater Handbook (Standard 8): Projects that disturb one acre of land or more are required to obtain coverage under the NPDES Construction General Permit issued by EPA and prepare a Stormwater Pollution Plan....The plan shall include a schedule for sequencing construction and stormwater management activities that minimizes land disturbance by ensuring that vegetation is preserved to the extent practicable, and disturbed portions of the site	From Sec 50-6 Conservations Commission Filing: No person shall remove, fill, dredge, alter or build upon, over, or within areas subject to the Conservation Commission's jurisdiction without filing a written application for a permit including such plans as may be necessary to describe such proposed activity and its effect on the environment, and receiving and complying with a permit issued pursuant to this chapter.	From Subdivision Regulations (pg44): An Environmental Impact Report, including a Stormwater Report and a Stormwater Management System Maintenance Report shall be submitted in accordance with the Salem Zoning Code of Ordinances for projects with ten or more residential lots or for all non-residential subdivisions..... An Operation and Maintenance Plan shall be submitted or review and approval by the City Engineer, to ensure proper maintenance of the stormwater drainage system and to ensure that systems function as designed, in accordance with MassDEP Best Management Practices.	Not Applicable
Construction Erosion and Sedimentation Plan required	Basic general requirements	Required, contents specified	Goes beyond minimum NPDES requirements, requires minimization of site disturbance	Not Addressed	From MA Stormwater Handbook (Standard 7): A pollution prevention plan, an erosion and sedimentation control plan and a long-term operation and maintenance plan must be prepared for the entire site in accordance with the applicable provisions of Standards 4 through 6, 8, and 9. All illicit discharges to the stormwater system must be eliminated in accordance with Standard 10. Because there is an additional acre of impervious surface, stormwater runoff from at least one acre of impervious surface must be directed to stormwater best management practices that are designed and constructed in accordance with all the Stormwater Management Standards From MA Stormwater Handbook (Standard 8): Projects that disturb one acre of land or more are required to obtain coverage under the NPDES Construction General Permit issued by EPA and prepare a Stormwater Pollution Plan....The plan shall include a schedule for sequencing construction and stormwater management activities that minimizes land disturbance by ensuring that vegetation is preserved to the extent practicable, and disturbed portions of the site	From Sec 50-8 Buffer Zone: Adverse impacts to wetland resource areas from construction and use within their related buffer zone can include, without limitation, erosion, siltation, loss of groundwater recharge, poor water quality, loss of trees and other vegetation, and degradation of wildlife habitat. Therefore, this Ordinance gives the Commission broad discretion to permit, condition, and prohibit work within the buffer zone as the specific situation warrants.	From Subdivision Regualtions (pg 26-27): The Definitive Subdivision Plan shall be prepared by a registered professional engineer and land surveyor in the Commonwealth of Massachusetts, shall be clearly and legibly drawn and include one (1) 27 foot contours. The plan shall be at a scale of one inch equals 40 feet or such other scale as the Board may accept to show details clearly and adequately. A plan set shall contain the following sheets, unless otherwise approved by the Board: 1. Cover Sheet 2. Drawing Index Sheet* 3. Existing Conditions Plan 4. Lot Layout Plan 5. Grading, Drainage and Utilities Plan 6. Street Plan and Profile 7. Sediment and Erosion Control Plan 8. Landscape Plan 9. Typical Sections, Details and Notes	Not Applicable
GOAL 5: ENCOURAGE EFFICIENT PARKING								

Parking	Specific minimums set based on projected maximum use times	Encourage minimum # needed to serve routine use (e.g. 2/residential unit with any additional/visitors parking behind in driveway or on street.	Establish Maximum Parking spaces allowed. Do not require more than 2/residence. Allow tenants separate, optional lease agreements for parking.	From Sec. 5.1.8 Required Parking Spaces: One and one-half (1½) spaces per dwelling unit, with a minimum of two (2) spaces, plus one (1) space for each home occupation	Not Applicable	Not Applicable	From Subdivision Regulations (pg 50): Depth and width of properties laid out for business or industrial use shall be adequate to provide for the off-street parking and loading facilities required by the Zoning Ordinance. (See Zoning Ordinance)	Not Applicable
Commercial Parking	Specific minimums set based on projected maximum use times adding all on-site uses together.	Some flexibility to reduce minimums based on street or other available nearby parking or transit.	Allowed shared parking for uses with different peak demand times. Provide model agreements/deed restrictions. Reduce parking requirements near transit. Limit parking stall size (9ftx18ft max), with up to 30% smaller for compact cars	From Sec 5.1.5 Design: Stall depth shall be at least nineteen (19) feet for all angle parking and twenty-two (22) feet for parallel parking, Such dimensions may include no more than two (2) feet of any landscaped setback area adjacent to the front or rear of a stall and used for bumper overhang. From Sec 5.1.7 Shared Parking: No part of an off-street parking area required by this Ordinance for any building or use shall be included as part of an off-street parking area similarly required for another building or use unless the type of buildings or uses indicates that the usage of such parking area would not occur simultaneously, as determined by the Board of Appeals via the grant of a special permit.	Not Applicable	Not Applicable	From Subdivision Regulations (pg 50): Depth and width of properties laid out for business or industrial use shall be adequate to provide for the off-street parking and loading facilities required by the Zoning Ordinance. (See Zoning Ordinance)	Not Applicable
LID in Parking Areas	LID not addressed OR Require waivers e.g. for planting islands to drain down rather than built up surrounded by curbs	Allow LID/bioretention within parking areas.	Require landscaping within parking areas, as LID/bioretention, at a minimum of 10% of the interior area landscaped and a minimum of 25 square feet for island planting areas.	Landscaping shall include one (1) tree of three and one-half-inch to four-inch caliper for each three (3) parking spaces. Trees shall be planted in plant beds bounded by six-inch granite curbing. No plant bed shall be less than fifteen (15) square feet, and no dimension of such plant bed shall be less than three (3) feet.A planting strip of no less than three (3) feet wide shall separate vehicles parked face to face in a parking area. Such planting strip shall include one (1) three and one-half-inch to four-inch caliper tree every twenty-seven (27) feet, in line with striping and other appropriate landscaping	Not Applicable	Not Applicable	From Subdivision Regualtions (pg 64): Permeable pavements may be used in sidewalks, plazas, cafés, parking areas, alleys, and other low-traffic areas. No mention of plantings in parking lots.	Not Applicable

Salisbury

Factors	Needs Improvement	Improved	xxx	Zoning Bylaw (including site plan review)	Planning Board Rules & Regulations	Planning Board Subdivision of Land	Draft Storm Sewer Bylaw and Low Impact Development Regulation
GOAL 1: PROTECT NATURAL RESOURCES AND OPEN SPACE							
Soils managed for revegetation	Not addressed	Limitations on removal from site, and/or requirements for stabilization and revegetation	Prohibit removal of topsoil from site. Require rototilling and other prep of soils compacted during construction	Earth removal, consisting of the removal of soil, loam, sand, gravel, or any other earth material to within four feet of historical high groundwater as determined from monitoring wells and historical water table fluctuation data compiled by the United States Geological Survey, except for excavations for building foundations, roads, or utility works; or unless the substances which are removed are redeposited within 45 days on site to achieve a final grade greater than four feet above the historical high water mark permitted by special permit in WRD (300-40.2, J)	The removal of soil, loam, sand and/or gravel from land not in public use within the Town of Salisbury, except as hereinafter provided, is prohibited.(300-99)	Due regard shall be shown for all natural features, such as large trees, watercourses, scenic points, historic spots, and similar community assets, which, if preserved, will add attractiveness and value to the subdivision. (465-41) The top four inches of side slopes shall consist of good quality loam, screened, raked, and rolled with a hand roller to grade. The loam shall be seeded with lawn grass seed applied in sufficient quantity to assure adequate coverage, rolled when the loam is moist. (465-33, C&D)	Not addressed
Limit clearing, lawn size, require retention or planting of native vegetation/naturalized areas	Not addressed OR General qualitative statement not tied to other design standards	Encourage minimization of clearing/ grubbing	Require minimization of clearing/grubbing with specific standards	For FRD: Design standards. The Town of Salisbury Planning Board may, after proper notice and public hearing, adopt rules and regulations that govern generic and site-specific design standards relative to the development and design process. These design standards shall include but not be limited to tree and soil removal, streets, landscaping, mix of housing types, architectural style, parking, buffer areas, drainage, screening, common driveways and trails.	The applicant shall demonstrate to the satisfaction of the Planning Board that the project is designed to have no measurable or significant impact as to existing vegetation, topography, wetlands, and other natural or man-made features. (465-13, E1) The landscape should be preserved in its natural state in so far as practical. Tree and soil removal shall be minimized. Native and noninvasive trees with a caliper greater than 20 inches (measured at four feet) shall not be removed unless such removal is consistent with the purposes and intent of this section. Any work changes shall be in	the entire area within the right-of-way lines shall be cleared and grubbed. All topsoil shall be removed and all rock shall be removed to the depth indicated for the appropriate street type in Table 71.[4] (465-29, E2) Due regard shall be shown for all natural features, such as large trees, watercourses, scenic points, historic spots, and similar community assets, which, if preserved, will add attractiveness and value to the subdivision. (465-41)	Minimuze site alteration/land clearing: (1) Site/buidling design shall preserve natural topography outside of the development footprint to reduce unnecessary land disturbance and to preserve natural drainage challes on the site. (2) Clearing of vegetation and alteration of topography shall be limited to 50% o the site with native vegetation planted in disturbed areas as needed to enhance or restore wildlife habitat. Land Use, % Clearig Allowed: Agriculture, 50%: Residential,
Require native vegetation and trees	Not addressed OR General qualitative statement	Mixture of required plantings of native and nonnative	Require at least 75% native plantings	For Residential Districts: 300-82.19 Open space. Open space includes the portion of a lot that is not covered with structures, access roads or driveways, sidewalks, patios, off-street parking or any other material placed on or above the earth which substantially reduces or prevents the natural percolation of water. The open space shall be suitably landscaped with noninvasive, drought-resistant plantings, which may include trees, flowers, shrubs, succulents or ornamental or other grasses, except that where the open space includes wetlands as defined in MGL c. 131, § 40, the requirements of the Salisbury Conservation Commission shall supersede these landscaping requirements.	No native or noninvasive vegetation in this buffer area shall be disturbed, destroyed, or removed, except for normal maintenance of structures or in connection with landscaping approved by the Planning Board as part of the project. (465-19, C) All structural surface stormwater management facilities shall be accompanied by a landscape plan. The landscape plan shall not include invasive plant species and shall include species that are drought tolerant and provide habitat value. Native plant species are strongly encouraged. In-ground sprinkler systems are strongly discouraged. (465-19, E)	No trees or other obstruction shall be placed or retained within the planting strip so as to be closer than two feet to the edge of the roadway. D. The top four inches of side slopes shall consist of good quality loam, screened, raked, and rolled with a hand roller to grade. The loam shall be seeded with lawn grass seed applied in sufficient quantity to assure adequate coverage, rolled when the loam is moist. (465-33, C&D) Due regard shall be shown for all natural features, such as large trees, watercourses, scenic points, historic spots, and similar community assets, which, if preserved, will add attractiveness and value to the subdivision.(465-41)	Minimize site alteration/land clearing: (1) Site/buidling design shall preserve natural topography outside of the development footprint to reduce unnecessary land disturbance and to preserve natural drainage challes on the site. (2) Clearing of vegetation and alteration of topography shall be limited to 50% o the site with native vegetation planted in disturbed areas as needed to enhance or restore wildlife habitat. Land Use, % Clearig Allowed: Agriculture, 50%: Residential, 35%; Institutional/Commercial/Industria l, 40%. Tree and soil removal shall be minimixed. Native and noninvasive trees with a caliper greater than 20 inches shall not be removed unless such removal is consistent with the purposes and intent of this section (465-xx) streets shall be designed and located in such a manner to maintain and preserve natural topography, significant landmarks
GOAL 2: PROMOTE EFFICIENT, COMPACT DEVELOPMENT PATTERNS AND INFILL							
Lot size	Not addressed OR Required minimum lot sizes	OSRD/NRPZ preferred. Special permit with incentives to utilize	Flexible with OSRD/NRPZ by right, preferred option	Minimums based on Zoning District (300 attachment 2) Reduction of dimensional requirements for Flexible Residential Development (FRD): Reduction of dimensional requirements. The Planning Board encourages applicants to modify lot size, shape, and other dimensional requirements for lots within an FRD, subject to the following limitations: A. Lots having reduced area or frontage shall not have frontage on a street other than a street created by the FRD; provided, however, that the Planning Board may waive this limitation to the extent it determines that such waivers will substantially further the purposes and intent of this bylaw. B. At least 50% of each required setback for the applicable zoning district shall be maintained in the FRD; provided, however, that the Planning Board may further reduce the applicable setbacks to the extent it determines that such reduction(s) will substantially further the	*(Not applicable)*	*(Not applicable)*	the proponent of any proposed commercial or industrial project in the town of salisbury that will disturb an area greater than 5000 sq ft or greater than 25% of contiguous property, whichever is greater, may apply for an LID permit (300-xx) individual building sites shall be oriented so as to maintain maximum natural topography and to take advantage of natural drainage patterms (465-xx)
Housing density	Multi-family housing not allowed, or only in/adjacent to commercial and industrial uses	Multi-family and cluster developments allowed by special permit	Multi-family housing allowed by right in most residential areas; cluster developments encouraged with density bonuses for LID features and no maximum lot coverage	Multifamily housing permited by right in several districts and by special permit in others (300 attachment 1)	The FRD may consist of a combination of single-family and multifamily residential structures. Except for those FRD's composed of the housing type specified in § 300-55C of Salisbury's Zoning Bylaw, multifamily structures shall not contain more than two dwelling units and shall be of the townhouse style and be designed to appear to be single-family homes by limiting each elevation to a maximum of one main entrance and two garage doors. (465-19, A)	*(Not applicable)*	*(Not applicable)*

Setbacks	Not addressed OR Required minimum front, side, and rear setbacks	Minimize, allow flexibility	Clear standards that minimize and in some instances eliminate setbacks	Reduction of dimensional requirements for Flexible Residential Development (FRD): Reduction of dimensional requirements. The Planning Board encourages applicants to modify lot size, shape, and other dimensional requirements for lots within an FRD, subject to the following limitations: A. Lots having reduced area or frontage shall not have frontage on a street other than a street created by the FRD; provided, however, that the Planning Board may waive this limitation to the extent it determines that such waivers will substantially further the purposes and intent of this bylaw. B. At least 50% of each required setback for the applicable zoning district shall be maintained in the FRD; provided, however, that the Planning Board may further reduce the applicable setbacks to the extent it determines that such reduction(s) will substantially further the purposes and intent of this bylaw. C. Minimum lot size shall be 10,000	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Frontage	Not addressed OR Required minimum frontage for each lot/unit	Minimize especially on curved streets and cul-de-sacs	No minimums in some instances, tied into other standards like OSRD design and shared driveways.	Reduction of dimensional requirements for Flexible Residential Development (FRD): Reduction of dimensional requirements. The Planning Board encourages	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Common driveways	Not addressed OR Not allowed, strict limitations	Allow for 2-3 residential units	Allow for up to 4 residential units, preferrably constructed with permeable pavers or pavement	Reference planning baord rules and regulations (300-118)	Shared driveways. A system of joint-use driveways and cross-access easements shall be established wherever feasible and the proposed development shall incorporate the following: (1) A service driveway or cross-access corridor extending the width of the parcel. (2) A design speed of 10 miles per hour and sufficient width to accommodate two-way travel aisles. (3) Stub-outs and other design features to make it visually obvious that the abutting properties may be tied in to provide cross access via a service drive. (A leveling area shall be provided having a grade of minus 1% for a distance of 30 feet, measured from the nearest exterior line of the intersecting street to the point of vertical curvature.) (465-13, J) A common or shared driveway may serve a maximum number of 4 dwelling units. The Planning Board may increase this number if it determines that a larger number will substantially further the purposes and intent of the FRD of the Zoning Bylaw and otherwise be in the best	*(Not applicable)*	*(Not applicable)*
GOAL 3: SMART DESIGNS THAT REDUCE OVERALL IMPERVIOUSNESS							
Impervious cover limits and infiltration rates	Not usually addressed in zoning and subdivision regs for rural/suburban residential	Require no net increase in site run-off from pre- to post-development	Impervious cover limits tailored to the commuity and district type (i.e. <10% total impervious cover in rural districts, but higher in urban and redevelopment districts); post-development infiltration should be equal to or greater than pre-development. Following best practice may also help communities comply with MS4 permit requirements	For FRD: Open Space Requirements. A. A minimum of 50% of the tract shown on the development plan shall be open space and must be preserved as such in perpetuity in accordance with this article. For Planned Office Development: Unless reduced by the Planning Board to minimum of 30%, at least 40% of the total tract area shall be	The drainage system shall be designed so that there is no net increase in the pre vs. post peak rates of stormwater discharge for the two-, ten- and one-hundred-year storm events and rates. (465-13, E1)	*(Not applicable)*	the post-development peak discharge rate from 2-year 24 hour storm events shall be equal to the pre-development rate in order to prevent stream bank erosion and channel degredation (300-xx, 4) post development recharge rates shall be equal to pre-development conditions (300-x, 6) encourage LID practices which reduce impervious cover
Street location	No standards addressed OR Numeric and geometric standards based primarily on vehicular travel and safety, with basic pedestrian requirements e.g. sidewalks	Flexibility in applying standards, to reduce area of impact, grading, avoid key natural features	OSRD design preferred by-right. Require locating streets to minimize grading and road length, avoid important natural features	*(Not applicable)*	*(Not applicable)*	Streets and underground utilities. A. Location. (1) All streets in the subdivision shall be designed so that, in the opinion of the Board, they will	streets shall be designed and located in such a manner to maintain and preserve natural topography, significant landmarks, and trees, to minimize cut anf fill, and to preserve and enhance
Road width	No categories addressed OR Major and minor categories, 24-30'	Wide, medium, narrow categories. 22-24' max, plus 2' shoulders	Wide, medium, narrow, and alley categories. 20-24' widest for 2 travel lanes, 18-20' low traffic residential neighborhood, plus 2' shoulders. Allow alleys and other low traffic or secondary emergency access and all shoulders to use alternative, permeable materials.	*(Not applicable)*	*(Not applicable)*	PLANNING BOARD 465 Attachment 1:Table 68. Street Cross-Sectional Design Standards for Subdivisions each lane of road 11-12 feet in width, each road has 2 lanes	*(Not applicable)*
Road ROW width	ROW Width not addressed OR 50-75', fully cleared and graded	40-50', some flexibility in extent of clearing	20-50'depending on road type	*(Not applicable)*	*(Not applicable)*	PLANNING BOARD 465 Attachment 1:Table 68. Street Cross-Sectional Design Standards for Subdivisions 50-58 feet	*(Not applicable)*
Access Options	Common drives not addressed, No common drives allowed, Dead end allowed with limit on length and # of units	Allow dead end with limit on length and # of units. Allow common drives up to 2-3 units	Allow one way loop streets. Allow common drives up to 4 units, and alleys and rear-loading garages where suitable.	*(Not applicable)*	A common or shared driveway may serve a maximum number of 4 dwelling units. The Planning Board may increase this number if it determines that a larger number will substantially further the purposes and intent of the FRD of the Zoning Bylaw and otherwise be in the best interests of the community in FRD (465-19, F) "Shared driveways. A system of joint-use driveways and cross-access easements shall be established wherever feasible and the proposed development shall incorporate the following: (1) A service driveway or cross-access corridor extending the width of the parcel. (2) A design speed of 10 miles per hour and sufficient width to accommodate two-way travel aisles. (3) Stub-outs and other design features to make it visually obvious that the abutting properties may be tied in to provide cross access via a	*(Not applicable)*	*(Not applicable)*

Dead Ends/Cul-de-sacs	No standards addressed OR 120 ft or more minimum turnaround	Minimize end radii – 35 ft	Allow hammerhead turnaround	*(Not applicable)*	*(Not applicable)*	Not addressed	*(Not applicable)*
Cul-de-sacs	No standards addressed OR Full pavement standard	Encourage center landscaping with bioretention	Require center landscaping with bioretention	*(Not applicable)*	*(Not applicable)*	Not addressed	*(Not applicable)*
Curbing	No standards addressed OR Curbing required full length both sides of road	Allow curb breaks or curb flush with pavement to enable water to flow to vegetated LID features	Open drainage with roadside swales and no curbs preferred	*(Not applicable)*	Curbing shall be vertical granite at the access drive radii. Each site shall have only one curb cut per street frontage, except where is it deemed that more than one curb cut is necessary for emergency access purposes or to enhance the site. (465-13, F6)	Curbing. Curbing required in § 465-42C shall be either standard granite or precast concrete, at the election of the subdivider, except in Type III subdivisions where standard granite curbing shall be required. Curbing.	Not addressed
Roadside Swales	Not addressed OR Allowed as an option	Preferred over closed drainage	Preferred, with criteria for proper design. Adoption of technical specifications and design templates for green infrastructure recommended	*(Not applicable)*	The Planning Board shall encourage the use of "soft" (nonstructural) natural stormwater management techniques (such as rain gardens and open grass and bioretention swales) and other drainage techniques that do not create impervious surface and that enable infiltration where appropriate. Stormwater should be treated at the source to limit nonsource pollution. Water conservation measures, including but not limited to the use of rainwater retention systems, such as rain barrels and cisterns for water irrigation purposes, are also strongly encouraged in FRD. (465-19, D)	Not addressed	Not addressed
Utilities	Off sets required contributing to wide road ROWs	Not specified - flexible	Allow under road, sidewalks or immediately adjacent to roads to enable placement of roadside swales.	*(Not applicable)*	All utility connections shall be underground and constructed in accordance with the requirements of the Town and other utility companies. (465-13, H3)	Utility installation, grading and surfacing. The construction of streets and the installation of public utilities shall conform to the standards in the following subsections: (1) Underground utilities. (a) All water mains shall have a minimum of four feet of cover, laid to line and grade in a workmanlike manner and all necessary fittings, valves, low-point drains, hydrants and other necessary features installed. (b) Sanitary sewers shall have a minimum of four feet of cover. However, depth will be as required to adequately sewer the subdivision. Sewers shall be laid to true line and grade. (c) Unsuitable material below normal pipe inverts shall be removed and replaced by material approved by the appropriate public officials. Unsuitable material shall not be used for trench backfill. (d) Width of trench shall be equal to 4/3 diameter of the pipe plus 18 inches. (e) Sheeting, if used, shall be cut off	*(Not applicable)*
Sidewalks	Material not addressed OR Concrete or bituminous required	Some flexibility in material and design	Prefer permeable pavement or permeable pavers	*(Not applicable)*	*(Not applicable)*	Sidewalks. A. Sidewalks shall have a finished grade of 2.0% sloping toward the roadway. When unusual physical land characteristics or topographic conditions require, the Board may approve the placement of a sidewalk at a greater distance from the roadway or at a higher or lower elevation in relation thereto, provided such variation is indicated on the definitive plan. B. In constructing all sidewalks, the material shall be removed for the full width of the sidewalk to a subgrade at least 10 inches below the approved finished grade, and also all soft spots and other undesirable material below such subgrade shall be replaced with a good binding material and rolled with a two-ton roller or equivalent. Unless the applicant elects to install cement concrete sidewalks (built according to specifications of Massachusetts Department of Public Works), the excavated area shall be filled with at least eight inches of select gravel containing some binding material and compressed	*(Not applicable)*
Sidewalk location	Required both sides of road	Allow on only 1 side of road especially in low density neighborhoods	Prefer siting with land contours and for best pedestrian utility (e.g. connect with common areas and shared open spaces) – not necessarily immediately parallel to road.	*(Not applicable)*	*(Not applicable)*	Sidewalks. A. Sidewalks shall have a finished grade of 2.0% sloping toward the roadway. When unusual physical land characteristics or topographic conditions require, the Board may approve the placement of a sidewalk at a greater distance from the roadway or at a higher or lower elevation in relation thereto, provided such variation is indicated on the definitive plan. B. In constructing all sidewalks, the material shall be removed for the full width of the sidewalk to a subgrade at least 10 inches below the approved finished grade, and also all soft spots and other undesirable material below such subgrade shall be replaced with a good binding material and rolled with a two-ton roller or equivalent. Unless the applicant elects to install cement concrete sidewalks (built according to specifications of Massachusetts Department of Public Works), the excavated area shall be filled with at least eight inches of select gravel containing some binding material and compressed	*(Not applicable)*

Sidewalk drainage	Draining to road, closed drainage system required	Not addressed	Disconnect drainage from road system – e.g. adjacent green strips or within vegetated areas that can absorb sheet flow	*(Not applicable)*	*(Not applicable)*	Planting strips. A. Planting strips shall be of a width required by § 465-29B. B. The finished grade of such planting strips shall be 2.0%, sloping toward the roadway. Where unusual physical land characteristics or topographic conditions exist, the Board may approve the construction of a planting strip at a slope greater than 2%, provided the finished slope will not project above or below a plane sloped two horizontal to one vertical upward or downward from the edge of the roadway. C. No trees or other obstruction shall be placed or retained within the planting strip so as to be closer than two feet to the edge of the roadway. D. The top four inches of side slopes shall consist of good quality loam, screened, raked, and rolled with a hand roller to grade. The loam shall be seeded with lawn grass seed applied in sufficient quantity to assure adequate coverage, rolled when the loam is moist.	*(Not applicable)*
GOAL 4: ADOPT GREEN INFRASTRUCTURE STORMWATER MANAGEMENT PROVISIONS							
Rooftop runoff	Not addressed OR Prohibit directing clean roof runoff into closed municipal drainage systems.	Allow clean roof runoff to be directed to landscaped or naturally vegetated areas capable of absorbing without erosion, or infiltration	Require directing clean roof runoff to landscaped or naturally vegetated areas capable of absorbing, or infiltration	*(Not applicable)*	The Planning Board shall encourage the use of "soft" (nonstructural) natural stormwater management techniques (such as rain gardens and open grass and bioretention swales) and other drainage techniques that do not create impervious surface and that enable infiltration where appropriate. Stormwater should be treated at the source to limit nonsource pollution. Water conservation measures, including but not limited to the use of rainwater retention systems, such as rain barrels and cisterns for water irrigation purposes, are also strongly encouraged in FRD. (465-19, D)	Not addressed	Not addressed
Overall stormwater design; piping and surficial retention vs. LID	Conventional stormwater system design standards	Encourage LID features and BMPs; design standards often not specified	LID design standard encouraging infiltration, allowing surficial ponding of retained runoff for up to 72 hours; systems designed for larger volume storms, accounting for future precipitation predictions; credit for green roofs towards stormwater requirements. Following best practice may also help communities comply with MS4 permit requirements	*(Not applicable)*	Low impact development (LID) practices shall be utilized to the maximum extent possible as determined by the Planning Board. LID practices include: (a) Preservation of natural areas; (b) Tree protection; (c) Vegetation and landscaping; (d) Riparian buffer protection; (e) Limit land disturbance during construction; (f) Limit new impervious surfaces; (g) Promote the use of vegetative (green infrastructure) stormwater controls; (h) Disconnect flow paths; (i) Promote infiltration; (j) Capture and reuse stormwater. (2) Projects not proposing LID shall include an explanation as to why LID is not feasible at the site. (465-13, E) The Planning Board shall encourage the use of "soft" (nonstructural) natural stormwater management techniques (such as rain gardens and open grass and bioretention swales) and other drainage techniques that do not create impervious surface and that enable infiltration where appropriate. Stormwater should be	Design standards. All stormwater management systems for newly developed or redeveloped subdivision projects that disturb one acre or more or are part of a larger plan of development disturbing one acre or more shall conform to the design standards outlined in Article III, §465-13, [Site Plan Review] of these regulations. ( ). No LID standard addressed in recommended storm drainage standards (table E-5)	the 100 year, 24hour return frequency storm event shall be controlled and conveyed to prevent extreme flooding and protect public safety (300-xx, 5)
Site Plan/Design Requirements	LID not addressed	Encourage use of LID features in site design - such as reduced imperviousness, maintaining natural hydrology, preserving open space, and rainwater reuse	Include bioretention and other vegetated LID features in site landscaping/open space requirements. Following best practice may also help communities comply with MS4 permit requirements. See section 2.3.5 of the MS4 permit for more information	The Town of Salisbury Planning Board may, after proper notice and public hearing, adopt rules and regulations that govern generic and site-specific design standards relative to the development and design process. These design standards shall include but not be limited to tree and soil removal, streets, landscaping, mix of housing types, architectural style, parking, buffer areas, drainage, screening, common driveways and trails in FRD (300-53)	Low impact development (LID) practices shall be utilized to the maximum extent possible as determined by the Planning Board. LID practices include: (a) Preservation of natural areas; (b) Tree protection; (c) Vegetation and landscaping; (d) Riparian buffer protection; (e) Limit land disturbance during construction; (f) Limit new impervious surfaces; (g) Promote the use of vegetative (green infrastructure) stormwater controls; (h) Disconnect flow paths; (i) Promote infiltration; (j) Capture and reuse stormwater. (2) Projects not proposing LID shall include an explanation as to why LID is not feasible at the site. (465-13, E) The system design shall promote on-site infiltration and minimize the discharge of pollutants to the ground and surface water. Drainage systems shall have an emergency overflow for events above and beyond the one-hundred-year storm event. Additionally, the drainage system will be designed in accordance with	Design standards. All stormwater management systems for newly developed or redeveloped subdivision projects that disturb one acre or more or are part of a larger plan of development disturbing one acre or more shall conform to the design standards outlined in Article III, §465-13, [Site Plan Review] of these regulations. ( ). No LID standard addressed in recommended storm drainage standards (table E-5)	all proposed LID projects shall comply with the most recent version of the MassDEP stormwater management standards and handbook. Also lists town specific standards (300-xx)
Allow easy siting of LID features (bioretention, swales, etc.)	Not addressed OR Require waivers from subdivision standards	Encouraged along road ROW	Allowed on lots, common open space, or road ROW, easement recorded. For commercial development, allow an increase in floor area ratio or other developmental incentives for green roofs	*(Not applicable)*	Not addressed	Not addressed	the planning board encourages applicants to modify lot size, shape, and other dimentional requirements for lots within an LID project (300-xx)
Permeable paving	Not addressed OR Require waivers from subdivision standards	Allowed on private residential lots for parking, patios, etc.	Allowed for residential drives, parking stalls, spillover parking spaces, emergency access ways (with proper engineering support for emergency vehicles) Two track design allowed for driveways and secondary emergency access ways (where required).	*(Not applicable)*	The installation of alternative surfaces in low traffic areas may be allowed, provided that a determination is made that the alternative surface will not lead to dust or erosion, having an adverse impact on adjacent properties or users of the site. (465-13, F)	*(Not applicable)*	Not addressed

Stormwater management O&M plan	Typically only addressed if municipality has a stormwater or LID bylaw, or for areas subject to wetlands permitting	Required	Required, contents specified in alignment with current MassDEP Stormwater Handbook. Following best practice may also help communities comply with MS4 permit requirements	*(Not applicable)*	Long-term operation and maintenance. Applicants shall submit an operation and maintenance plan for the stormwater management system. At a minimum, this plan shall include the name(s) of the owner(s) for all components of the system and a maintenance agreement which specifies the person(s) responsible for the system, the person(s) responsible for financing maintenance and emergency repairs, an inspection and maintenance schedule for all stormwater management facilities, a list of easements with the purpose and location of each, and provisions for the Planning Board or its designee to enter the property at reasonable times and in a reasonable manner for the purpose of inspection. This plan shall be signed by the owner of the stormwater management system (465-13, M5)	*(Not applicable)*	an operation and maintenance plan is required at the time of application for a LID permit and shall remain on file with the LID authority. The plan shall include (contents specified) (465-xx)
Construction Erosion and Sedimentation Plan, and stormwater control	Basic general requirements	Required, contents specified - the site design process should include soil erosion and sedimentation control measures	Goes beyond minimum NPDES requirements. Requires minimization of site disturbance, reduction of construction waste, control measures not removed until proof of soil stabilization or reestablishment of vegetation. Written procedures for site inspection and enforcement included. Following best practice may also help communities comply with MS4 permit requirements. See	*(Not applicable)*	Erosion control. Erosion and sedimentation control measures presented in the plan shall be adequate to retain all sediment within the site and away from wetlands, watercourses, and water bodies, and the municipal storm drain system, both during and after construction. Design of erosion and sedimentation control measures shall be consistent with design standards of the Massachusetts Stormwater Management Handbook.	*(Not applicable)*	*(Not applicable)*
Stormwater discharge detection & elimination	Not addressed	Discharges and connections noted and/or limits set on quantity and quality	Illicit discharges and connections are probibited and enforced. Following best practice may also help communities comply with MS4 permit requirements. Find more information in section 2.3.4.a of the MS4 permit	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	it shall be unlawful to discharge to any storm sewer, appurtenance, or natura outlet within the town of salisbury, or in any area under the jurisdiction of said town (xxx-2)
Post- construction stormwater management and drainage patterns	Not addressed	Allow LID	Resemble pre-existing conditions of volume, velocity, quality and location, as nearly as possible, requiring LID to the max extent feasible. Retain vol of runoff >1in. per sq.ft. of impervious surface and/or remove 90% TSS post-construction & 50% TP generated on the site for new development, or >0.8in. per sq.ft and/or remove 80% TSS and 50% of TP load for redevelopment. Following best practice may also help communities comply with MS4 permit requirements.	*(Not applicable)*	A separate, detailed stormwater management plan is required. Stormwater management systems' design shall be consistent with, or more stringent than, the most recent version of the Massachusetts Stormwater Handbook. (365-13, M) Stormwater systems on new development 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 phosphorus (TP) related to the total post-construction impervious area on the site.[1] Stormwater systems on redevelopment sites shall be designed to meet an average annual pollutant removal equivalent to 80% of the average annual 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 phosphorus (TP) related to the total post-construction impervious area on the site.[4 (465-13, M 283)	*(Not applicable)*	all structural stormwater management devices shall be based on design criteria from the most recent version of MassDEP stormwater management standards and handbook and shall remove at least 80% of TSS (300-xx, 7) applicants are required to use LID design criteria to assess the effectiveness of the use of LID better site design pactices to decrease stormwater runoff at the site. Improved site design and nonstructural controls may minimize the use of structural stormwater controls. LID design criteria can be found in appendix a of these regulations (300-xx, 12)
As-built surveys	Not addressed	Recommended	Required, with written instructions for process; electronic submittal allowed	*(Not applicable)*	As-built plans. As-built plans showing the location, grades, and other significant information regarding utilities, including all stormwater conveyance and treatment structures, shall be prepared by the owner and turned over to the Town Clerk within two years of project completion. (465-12, D)	As-built plans. As-built plans showing the location, grades, and other significant information regarding utilities, including all stormwater conveyance and treatment structures, shall be prepared by the subdivider and turned over to the Town Clerk following the final approval of the improvements as hereinafter provided. As-built plans shall be submitted no later than two years following the completion of construction.	Not addressed
Intra-departmental communication and coordination	Not addressed	Informally or loosely occurring	Required for plan review and/or permit approvals	Not addressed	Not addressed	Review by Board of Health as to suitability of the land. At the time of filing of the definitive plan, the subdivider shall also file with the Board of Health two contact prints of the definitive plan, dark line on white background. The Board of Health shall, within 45 days after filing of the plan, report to the Planning Board in writing its approval or disapproval of said plan. If the Board of Health disapproves said plan, it shall make specific findings as to which, if any, of the lots shown on such plan cannot be used for building sites without injury to public health, and include such specific findings and the reasons therefor in such report, and, where possible, shall make recommendations for the adjustment thereof. Any approval of the plan by the Planning Board shall then only be given on condition that the lots or land about which such doubt exists shall not be built upon or served with any utilities (including cesspools, septic tanks, and drainage) without prior consent of the Board of Health. The Planning	Not addressed

Enforcement	No	Yes	Yes with fines. Same entity should oversee permit approvals and enforcement	Not addressed	Not addressed	Not addressed	The DPW may suspend the storm sewer service when such suspension is necessary, in the opinion of the commission, in order to stop an actual ot threatened discharge which presents or may present imminent or substantial endangerment (xxx-7) any person found to be violating any provision of this bylaw shall be served by the town..civil penalty of up to $5,000 per day (xxx-8) The Town 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. A. The Building may post the site with a Stop Work order directing that all vegetation clearing not authorized under a land clearing permit cease immediately. The issuance of a Stop Work order may include remediation or other requirements which must be met
GOAL 5: ENCOURAGE EFFICIENT PARKING							
Parking	Specific minimums set based on projected maximum use times	Encourage minimum # needed to serve routine use (e.g. 2/residential unit with any additional/visitors parking behind in driveway or on street.	Establish Maximum Parking spaces allowed. Do not require more than 2/residence. Allow tenants separate, optional lease agreements for parking.	300-82.17 The minimum required off-street parking shall be two spaces per dwelling unit, except that for a studio or one-bedroom dwelling unit, one parking space per unit shall be required.	Each dwelling unit shall be served by two off-street parking spaces. Parking spaces in front of garages may count in this computation. All parking areas with greater than four spaces shall be screened from public view in FRD (465-19, B)	*(Not applicable)*	*(Not applicable)*
Commercial Parking	Specific minimums set based on projected maximum use times adding all on-site uses together.	Some flexibility to reduce minimums based on street or other available nearby parking or transit.	Allowed shared parking for uses with different peak demand times. Provide model agreements/deed restrictions. Reduce parking requirements near transit. Limit parking stall size (9ftx18ft max), with up to 30% smaller for compact cars	Table C-4. Off-Street Parking Standards Mandated minimum number of parking spaces per unit by use. For shared parking that is subject to a legally enforceable agreement or restriction, the Planning Board may authorize, as part of site plan review, a reduction in parking of up to 25% of the total required spaces for the uses served by said parking in VCD (300-82.6)	Not addressed	*(Not applicable)*	*(Not applicable)*
LID in Parking Areas	LID not addressed OR Require waivers e.g. for planting islands to drain down rather than built up surrounded by curbs	Allow LID/bioretention within parking areas.	Require landscaping within parking areas, as LID/bioretention, at a minimum of 10% of the interior area landscaped and a minimum of 25 square feet for island planting areas.	, Landscaping. Off-street parking areas shall be landscaped in accordance with Planning Board rules and regulations. (300-82.6)	Parking lots shall be designed to include median strips and landscape islands to improve internal circulation. Additionally, landscaped or naturally vegetated islands should interrupt rows of parking (465-13, F6)	Not addressed	Not addressed

Topsfield

Factors	Needs Improvement	Improved	Optimal	Zoning By-Laws:	Chapter 368: Subdivision Regulations	Chapter 220: Stormwater Management and Erosion Control	Chapter 364: Stormwater and Erosion Control Regulations	Chapter 384: Wetland Regulations
				https://www.topsfield-ma.gov/zoning-board-appeals/pages/zoning-laws	https://ecode360.com/30265936#30265936		https://ecode360.com/30265630	https://ecode360.com/30266437
GOAL 1: PROTECT NATURAL RESOURCES AND OPEN SPACE								
Soils managed for revegetation	Not addressed	Limitations on removal from site, and/or requirements for stabilization and revegetation	Prohibit removal of topsoil from site. Require rototilling and other prep of soils compacted during construction	No building permit shall be issued for any structure that requires the excavation of sod, soil, sand, gravel, stone, or any other like materials in an amount in excess of one hundred twenty (120) percent of the foundation of said structure. Where a variance from the above has been granted by the Permit Granting Authority, the excavation and removal of said material shall be subject to the provisions of the Topsfield Soil Removal By-Law. (Art. 46, 5/9/78; Art. 23, 5/5/81)	All topsoil, defined as fertile, friable, natural material which has demonstrated vegetative growth, shall be removed from within the roadway area and used within the subdivision.	Not addressed	Not addressed	*(Not applicable)*
Limit clearing, lawn size, require retention or planting of native vegetation/naturalized areas	Not addressed OR General qualitative statement not tied to other design standards	Encourage minimization of clearing/ grubbing	Require minimization of clearing/grubbing with specific standards	Existing Vegetation. Minimizing the area over which existing vegetation is to be removed. Where tree removal is required, special attention shall be given to planting of replacement trees	Not addressed	Not addressed	Not addressed	*(Not applicable)*
Require native vegetation and trees	Not addressed OR General qualitative statement	Mixture of required plantings of native and nonnative	Require at least 75% native plantings	Not addressed	Not addressed	Not addressed	Not addressed	*(Not applicable)*
GOAL 2: PROMOTE EFFICIENT, COMPACT DEVELOPMENT PATTERNS AND INFILL								
Lot size	Not addressed OR Required minimum lot sizes	OSRD/NRPZ preferred. Special permit with incentives to utilize	Flexible with OSRD/NRPZ by right, preferred option	Minimums based on district Open Space Development Plan: The Planning Board may approve according to the Subdivision Control Procedures authorized in Section 81L of Chapter 41 of the General Laws a Preliminary or Definitive Plan of a tract of land meeting the applicability requirements set forth in Subsection B., above in which some or all of the individual lots do not conform to the lot area or frontage requirement of Sections 4.01 and 4.02 of this by-law provided that the Planning Board finds that the proposed plan is in harmony with the purpose and intent of this Open Space Development By-law, provides for the public interest, will provide permanent open space, will lead to efficient land use and to economy in the provision of town and public utility services, and will increase the amenities, attractiveness and recreation potential of the neighborhood and provided further that the following requirements are satisfied: 1. The total area, excluding roadways, in such proposed subdivision is not less than the product of the total	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Setbacks	Not addressed OR Required minimum front, side, and rear setbacks	Minimize, allow flexibility	Clear standards that minimize and in some instances eliminate setbacks	Minimums based on district Open Space Development Plan: The Planning Board may approve according to the Subdivision Control Procedures authorized in Section 81L of Chapter 41 of the General Laws a Preliminary or Definitive Plan of a tract of land meeting the applicability requirements set forth in Subsection B., above in which some or all of the individual lots do not conform to the lot area or frontage requirement of Sections 4.01 and 4.02 of this by-law provided that the Planning Board finds that the proposed plan is in harmony with the purpose and intent of this Open Space Development By-law, provides for the public interest, will provide permanent open space, will lead to efficient land use and to economy in the provision of town and public utility services, and will increase the amenities, attractiveness and recreation potential of the neighborhood and provided further that the following requirements are satisfied: 1. The total area, excluding roadways, in such proposed subdivision is not less than the product of the total	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Frontage	Not addressed OR Required minimum frontage for each lot/unit	Minimize especially on curved streets and cul-de-sacs	No minimums in some instances, tied into other standards like OSRD design and shared driveways.	Minimums based on district Open Space Development Plan: The Planning Board may approve according to the Subdivision Control Procedures authorized in Section 81L of Chapter 41 of the General Laws a Preliminary	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Common driveways	Not addressed OR Not allowed, strict limitations	Allow for 2-3 residential units	Allow for up to 4 residential units, preferrably constructed with permeable pavers or pavement	Every land use for which a building permit or other permit is required shall be on a lot having the required frontage and vehicular access over the required frontage to a portion of the said lot to within fifty feet of the structure for which the permit is required. (Art. 36. 5/4/99) No private street or driveway to residential dwellings or to commercial or industrial districts shall be permitted through residentially zoned or developed property, provided however that the Planning Board, acting as Special Permit Granting Authority, may grant a Special Permit to allow for a common drive or access upon satisfaction of the following conditions: 1. No more than three (3) lots shall share a common driveway. 2. Each lot must meet all dimensional requirements for a lot in the district in which the land is located. 3. The applicant shall, on a separate topographic site plan, demonstrate that each individual lot to be served by the common driveway meets all of the legal requirements for access without the use of a common driveway or	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
GOAL 3: SMART DESIGNS THAT REDUCE OVERALL IMPERVIOUSNESS								
Impervious cover limits and infiltration rates	Not usually addressed in zoning and subdivision regs for rural/suburban residential	Require no net increase in site run-off from pre- to post-development	Impervious cover limits tailored to the commuity and district type (i.e. <10% total impervious cover in rural districts, but higher in urban and redevelopment districts); post-development infiltration should be equal to or greater than pre-development. Following best practice may also help communities comply with MS4 permit requirements	For Open Space Development Plan: Provisions shall be made so that at least fifty (50) percent of the land area of the tract, exclusive of land set aside for roadways shall be open, or undeveloped, land and shall conform to the following: a. No more than fifty (50) percent of the designated open space may be comprised of wetlands or Riverfront Area as defined by the Massachusetts Wetlands Protection Act, M.G.L. c	*(Not applicable)*	Not addressed	Not addressed	Not addressed

Street location	No standards addressed OR Numeric and geometric standards based primarily on vehicular travel and safety, with basic pedestrian requirements e.g. sidewalks	Flexibility in applying standards, to reduce area of impact, grading, avoid key natural features	OSRD design preferred by-right. Require locating streets to minimize grading and road length, avoid important natural features	*(Not applicable)*	All streets in the subdivision shall be designed so that, in the opinion of the Board, they will provide safe vehicular travel. Due consideration shall also be given by the subdivider to the attractiveness of the street layout in order to obtain the	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Road width	No categories addressed OR Major and minor categories, 24-30'	Wide, medium, narrow categories. 22-24' max, plus 2' shoulders	Wide, medium, narrow, and alley categories. 20-24' widest for 2 travel lanes, 18-20' low traffic residential neighborhood, plus 2' shoulders. Allow alleys and other low traffic or secondary emergency access and all shoulders to use alternative, permeable materials.	*(Not applicable)*	Not addressed	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Road ROW width	ROW Width not addressed OR 50-75', fully cleared and graded	40-50', some flexibility in extent of clearing	20-50'depending on road type	*(Not applicable)*	Not addressed	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Access Options	Common drives not addressed, No common drives allowed, Dead end allowed with limit on length and # of units	Allow dead end with limit on length and # of units. Allow common drives up to 2-3 units	Allow one way loop streets. Allow common drives up to 4 units, and alleys and rear-loading garages where suitable.	Every land use for which a building permit or other permit is required shall be on a lot having the required frontage and vehicular access over the required frontage to a portion of the said lot to within fifty feet of the structure for which the permit is required. (Art. 36. 5/4/99) No private street or driveway to residential dwellings or to commercial or industrial districts shall be permitted through residentially zoned or developed property, provided however that the Planning Board, acting as Special Permit Granting Authority, may grant a Special Permit to allow for a common drive or access upon satisfaction of the following conditions: 1. No more than three (3) lots shall share a common driveway. 2. Each lot must meet all dimensional requirements for a lot in the district in which the land is located. 3. The applicant shall, on a separate topographic site plan, demonstrate that each individual lot to be served by the common driveway meets all of the legal requirements for access without the use of a common driveway or	A dead-end street or dead-end interior drive shall not extend more than 650 feet from: a through public street, or a street or interior drive that intersects with a through public street in at least two places that are not less than 125 feet apart, provided such street or interior drive is constructed in accordance with the standards for streets and rights-of-way set forth in the Subdivision Regulations.	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Dead Ends/Cul-de-sacs	No standards addressed OR 120 ft or more minimum turnaround	Minimize end radii – 35 ft	Allow hammerhead turnaround	*(Not applicable)*	Not addressed	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Cul-de-sacs	No standards addressed OR Full pavement standard	Encourage center landscaping with bioretention	Require center landscaping with bioretention	*(Not applicable)*	Not addressed	*(Not applicable)*	*(Not applicable)*	
Curbing	No standards addressed OR Curbing required full length both sides of road	Allow curb breaks or curb flush with pavement to enable water to flow to vegetated LID features	Open drainage with roadside swales and no curbs preferred	*(Not applicable)*	Bituminous concrete berm shall conform to the materials and construction methods as specified in Section 470 of the Standard	*(Not applicable)*	*(Not applicable)*	
Roadside Swales	Not addressed OR Allowed as an option	Preferred over closed drainage	Preferred, with criteria for proper design. Adoption of technical specifications and design templates for green infrastructure recommended	*(Not applicable)*	Not addressed	*(Not applicable)*	*(Not applicable)*	
Utilities	Off sets required contributing to wide road ROWs	Not specified - flexible	Allow under road, sidewalks or immediately adjacent to roads to enable placement of roadside swales.	*(Not applicable)*	Utilities. The installation of public utilities shall conform to the standards of the following subsections: A	*(Not applicable)*	*(Not applicable)*	
Sidewalks	Material not addressed OR Concrete or bituminous required	Some flexibility in material and design	Prefer permeable pavement or permeable pavers	*(Not applicable)*	Bituminous concrete sidewalks shall conform to the material and construction methods as specified in Section 701 of the Standard Specifications and as indicated on Plates 1 and 2.[1] B. Sidewalks shall be constructed on both sides of the roadway at the property line on collector streets as indicated on Plate 2. Sidewalks may be constructed only on one side of the roadway at the property line on minor streets as indicated on Plate 1 unless, in the opinion of the Board, they are not warranted. The Board may waive the sidewalk requirement or require that they be constructed on both sides of the roadway. When sidewalks are deleted, grass strips shall be extended in their place. C. Bituminous concrete sidewalks shall: (1) Be laid in two courses of 1 1/2 inches each to a depth after rolling of three inches; (2) Conform to the material requirements of M3.11.000 of the Standard Specifications for Class I, bituminous concrete pavement; and	*(Not applicable)*	*(Not applicable)*	
Sidewalk location	Required both sides of road	Allow on only 1 side of road especially in low density neighborhoods	Prefer siting with land contours and for best pedestrian utility (e.g. connect with common areas and shared open spaces) – not necessarily immediately parallel to road.	*(Not applicable)*	Sidewalks shall be constructed on both sides of the roadway at the property line on collector streets as indicated on Plate 2. Sidewalks may be constructed only on one side of the roadway at the property line on minor streets as indicated on Plate 1 unless, in the opinion of the Board, they are not warranted. The Board may waive the sidewalk requirement or require that they be constructed on both sides of the roadway. When sidewalks are deleted, grass strips shall be extended in their place.	*(Not applicable)*	*(Not applicable)*	
Sidewalk drainage	Draining to road, closed drainage system required	Not addressed	Disconnect drainage from road system – e.g.adjacent green strips or within vegetated areas that can absorb sheet flow	*(Not applicable)*	Not addressed	*(Not applicable)*	*(Not applicable)*	
GOAL 4: ADOPT GREEN INFRASTRUCTURE STORMWATER MANAGEMENT PROVISIONS								

Rooftop runoff	Not addressed OR Prohibit directing clean roof runoff into closed municipal drainage systems.	Allow clean roof runoff to be directed to landscaped or naturally vegetated areas capable of absorbing without erosion, or infiltration	Require directing clean roof runoff to landscaped or naturally vegetated areas capable of absorbing, or infiltration	*(Not applicable)*	Not addressed	Not addressed	Annual groundwater recharge rates shall be maintained, by promoting infiltration through the use of structural and nonstructural methods. At a minimum, annual recharge from the post-development site shall mimic the annual recharge from pre-development site conditions. The recharge volume may be reduced for developments where clean rooftop runoff (as defined by the MA DEP Stormwater Management Policy) is directed to pervious areas where it can either infiltrate into the soil or flow over it with sufficient time and velocity to allow for filtering. In such a situation, the effective impervious area of the site may be reduced by the roof area to be infiltrated. To use this credit, the following conditions must be met: [1] The rooftop contributing area to any one discharge location cannot exceed 1,000 square feet. [2] The contributing length of a rooftop to a single discharge location cannot exceed 75 feet.	
Overall stormwater design; piping and surficial retention vs. LID	Conventional stormwater system design standards	Encourage LID features and BMPs; design standards often not specified	LID design standard encouraging infiltration, allowing surficial ponding of retained runoff for up to 72 hours; systems designed for larger volume storms, accounting for future precipitation predictions; credit for green roofs towards stormwater requirements. Following best practice may also help communities comply with MS4 permit requirements	*(Not applicable)*	Not addressed - see Stormwater Management and Erosion Control	Not addressed	At a minimum, all projects shall comply with the performance standards of the most recent version of the Massachusetts Department of Environmental Protection (DEP) Stormwater Management Policy, as well as the following: B. General criteria. The following general performance criteria shall be applicable to all stormwater management plans, unless otherwise provided for in this regulation: (1) No untreated discharges. All stormwater runoff generated from land development and land use conversion activities shall not discharge untreated stormwater runoff directly to a wetland, local water body, municipal drainage system or abutting property, without adequate treatment. (2) Channel protection. Protection of channels from bank and bed erosion and degradation shall be provided by controlling the peak discharge rate from the two-year storm event to the pre-	Activities within buffer zone and/or riverfront area shall be low-impact development techniques to the greatest extent possible...Loss of annual recharge to groundwater shall be eliminated or minimized through the use of infiltration measures, including environmentally sensitive site design, low-impact development techniques, stormwater best management practices and good operation and maintenance. At a minimum, the annual recharge from the post-development site shall approximate the annual recharge from the pre-development conditions based on soil type. This standard is met when the stormwater management system is designed to infiltrate the required recharge volume as determined in accordance with the current Massachusetts Stormwater Handbook. H. Work performed, including any structure such as a roadway, driveway or any other structure, in a buffer zone or riverfront area shall be mitigated, at a ratio of at least 1:1, with implementation of low-impact
Site Plan/Design Requirements	LID not addressed	Encourage use of LID features in site design - such as reduced imperviousness, maintaining natural hydrology, preserving open space, and rainwater reuse	Include bioretention and other vegetated LID features in site landscaping/open space requirements. Following best practice may also help communities comply with MS4 permit requirements. See section 2.3.5 of the MS4 permit for more information	*(Not applicable)*	Not addressed - see Stormwater Management and Erosion Control	It has been determined that proper management of construction site/alteration and post-development stormwater runoff will minimize damage to public and private property and infrastructure, safeguard the public health, safety, environment and general welfare of the public, protect water and aquatic resources, and promote groundwater recharge to protect surface and groundwater drinking supplies. This bylaw seeks to meet that purpose through the following objectives: (1) Establish decision-making processes surrounding land development activities that protect the integrity of the watershed and preserve the health of water resources; (2) Require that new development, redevelopment and all land conversion activities maintain the after-development runoff characteristics as equal to or less than the pre-development runoff characteristics in order to reduce flooding, stream bank erosion	Annual groundwater recharge rates shall be maintained, by promoting infiltration through the use of structural and nonstructural methods. At a minimum, annual recharge from the post-development site shall mimic the annual recharge from pre-development site conditions. The recharge volume may be reduced for developments where clean rooftop runoff (as defined by the MA DEP Stormwater Management Policy) is directed to pervious areas where it can either infiltrate into the soil or flow over it with sufficient time and velocity to allow for filtering. In such a situation, the effective impervious area of the site may be reduced by the roof area to be infiltrated. To use this credit, the following conditions must be met: [1] The rooftop contributing area to any one discharge location cannot exceed 1,000 square feet. [2] The contributing length of a rooftop to a single discharge location cannot exceed 75 feet.	*Not applicable*
Allow easy siting of LID features (bioretention, swales, etc.)	Not addressed OR Require waivers from subdivision standards	Encouraged along road ROW	Allowed on lots, common open space, or road ROW, easement recorded. For commercial development, allow an increase in floor area ratio or other developmental incentives for green roofs	*(Not applicable)*	Not addressed	Not addressed	*(Not applicable)*	Not addressed
Permeable paving	Not addressed OR Require waivers from subdivision standards	Allowed on private residential lots for parking, patios, etc.	Allowed for residential drives, parking stalls, spillover parking spaces, emergency access ways (with proper engineering support for emergency vehicles) Two track design allowed for driveways and secondary emergency access ways (where required)	*(Not applicable)*	Driveway aprons shall be paved, provided with bituminous concrete berm and so 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.	Not addressed	*(Not applicable)*	Not addressed
Stormwater management O&M plan	Typically only addressed if municipality has a stormwater or LID bylaw, or for areas subject to wetlands permitting	Required	Required, contents specified in alignment with current MassDEP Stormwater Handbook. Following best practice may also help communities comply with MS4 permit requirements	*(Not applicable)*	Not addressed - see Stormwater Management and Erosion Control	Not addressed - see Stormwater Management and Erosion Control	Operation and maintenance plan contents. An operation and maintenance plan (O&M plan) is required at the time of application for all projects. The maintenance plan shall be designed to ensure compliance with the permit and the Stormwater and Erosion Control Bylaw and that the Massachusetts surface water quality standards, 314 CMR 4.00, are met in all seasons and throughout the life of the system. The operation and maintenance plan shall remain on file with the Planning Board and shall be an ongoing requirement. The O&M plan shall include: (1) The name(s) of the owner(s) for all components of the system; (2) A map showing the location of the systems and facilities, including catch basins, manholes/access lids, main and stormwater devices; (3) Maintenance agreements that specify: (a) The names and addresses of the person(s) responsible for	A long-term operation and maintenance plan shall be developed and implemented to ensure that the stormwater management system functions as designed.
Construction Erosion and Sedimentation Plan, and stormwater control	Basic general requirements	Required, contents specified - the site design process should include soil erosion and sedimentation control measures	Goes beyond minimum NPDES requirements. Requires minimization of site disturbance, reduction of construction waste, control measures not removed until proof of soil stabilization a	Site plan must include: Plans to prevent the pollution of surface or groundwater, erosion of soil both during and after construction, excessive run-off, excessive raising or	Not addressed - see Zoning Bylaws	Not addressed - see Zoning Bylaws	Not addressed - see Zoning Bylaws	A plan to control construction-related impacts, including erosion, sedimentation and other pollutant sources during construction and land disturbance activities (construction

Stormwater discharge detection & elimination	Not addressed	Discharges and connections noted and/or limits set on quantity and quality	Illicit discharges and connections are probibited and enforced. Following best practice may also help communities comply with MS4 permit requirements. Find more information in section 2.3.4.a of the MS4 permit	*(Not applicable)*	Not addressed	Not addressed	No untreated discharges. All stormwater runoff generated from land development and land use conversion activities shall not discharge untreated stormwater runoff directly to a wetland, local water body, municipal drainage system or abutting property, without adequate treatment.	No new stormwater conveyances (e.g., outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of Topsfield. All illicit discharges to the stormwater management system are prohibited.
Post- construction stormwater management and drainage patterns	Not addressed	Allow LID	Resemble pre-existing conditions of volume, velocity, quality and location, as nearly as possible, requiring LID to the max extent feasible. Retain vol of runoff >1in. per sq.ft. of impervious surface and/or remove 90% TSS post-construction & 50% TP generated on the site for new development, or >0.8in. per sq.ft and/or remove 80% TSS and 50% of TP load for redevelopment. Following best practice may also help communities comply with MS4 permit requirements.	*(Not applicable)*	Not addressed	Require that new development, redevelopment and all land conversion activities maintain the after-development runoff characteristics as equal to or less than the pre-development runoff characteristics in order to reduce flooding, stream bank erosion, siltation, nonpoint source pollution, property damage, and to maintain the integrity of stream channels and aquatic habitats; Establish minimum construction/alteration and post-development stormwater management standards and design criteria for the regulation and control of stormwater runoff quantity and quality; establish minimum design criteria for the protection of properties and aquatic resources downstream from land development and land conversion activities from damages due to increases in volume, velocity, frequency, duration, and peak flow rate of stormwater runoff; establish minimum design criteria for measures to minimize nonpoint source pollution from stormwater runoff which would otherwise	§ 364-7 Post-development stormwater management criteria. A. At a minimum, all projects shall comply with the performance standards of the most recent version of the Massachusetts Department of Environmental Protection (DEP) Stormwater Management Policy, as well as the following. B. General criteria. The following general performance criteria shall be applicable to all stormwater management plans, unless otherwise provided for in this regulation: (1) No untreated discharges. All stormwater runoff generated from land development and land use conversion activities shall not discharge untreated stormwater runoff directly to a wetland, local water body, municipal drainage system or abutting property, without adequate treatment. (2) Channel protection. Protection of channels from bank and bed erosion and degradation.	On-site infiltration devices shall be used so that post-construction lot surface runoff shall not be greater than pre-construction lot surface runoff...Stormwater management systems shall be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates.
As-built surveys	Not addressed	Recommended	Required, with written instructions for process; electronic submittal allowed	*(Not applicable)*	As-built plans showing the location, grades and other significant information regarding utilities and roads shall be prepared by the applicant and submitted to the Board within six months following the final approval of the improvements as herein provided. This may be done by submitting revised Mylars or linens of the approved definitive plan showing the actual existing as-built conditions.	Not addressed	Not addressed	Not addressed
Intra-departmental communication and coordination	Not addressed	Informally or loosely occurring	Required for plan review and/or permit approvals	*(Not applicable)*	Not addressed	Not addressed	Not addressed	Not addressed
Enforcement	No	Yes	Yes with fines. Same entity should oversee permit approvals and enforcement	This By-Law shall be administered and enforced by the Inspector of Buildings of the Town of Topsfield. Duties of the Topsfield Inspector of Buildings under this By-Law shall include the receiving of applications, certificates of compliance, action on violations, and any other lawful actions necessary to assure conformance with this By-Law. The Inspector of Buildings shall withhold a permit including any required certificate of occupancy for this construction, alteration, or moving of any building or structure if the building or structure as constructed, altered or moved would be in violation of this By-Law; and no permit or license shall be granted for a new use of a building, structure, or land which use would be in violation of this By-Law. (Art. 47, 5/9/78; Art. 23, 5/5/81; Art. 25, 5/4/82). Whoever violates any of the provisions of this By-Law, including the terms and conditions of any special permit or variance granted hereunder, shall, unless other provision is expressly made, forfeit and pay a fine of not more than three hundred ($300.00) dollars per violation. Each day such a	Not addressed	The Stormwater Coordinator, the Planning Board or an authorized agent of the Planning Board shall enforce this bylaw, regulations, orders, violation notices, and enforcement orders, and may pursue all civil and criminal remedies for such violations. Enforcement shall be further defined and included as part of any Stormwater Regulations promulgated as permitted under § 220-5 of this bylaw.[1] This bylaw may also be enforced by the Planning Board, its agent or any police officer of the Town of Topsfield, by any available means in law or equity, including but not limited to enforcement by noncriminal disposition pursuant to MGL c. 40, § 21D. Each day a violation exists shall constitute a separate violation. When enforced through noncriminal disposition, unless otherwise specifically provided for by bylaw, rule or regulation, the penalties shall be as follows: A. First violation: $25	The Stormwater Coordinator, the Planning Board or an authorized agent of the Planning Board shall enforce this bylaw, regulations, orders, violation notices and enforcement orders, and may pursue all civil, criminal and noncriminal remedies for such violations. B. Notices and orders. (1) The Planning Board or an authorized agent of the Planning Board may issue a written notice of violation or enforcement order to enforce the provisions of the bylaw or the regulations thereunder, which may include requirements to: (a) Cease and desist from construction or land-disturbing activity until there is compliance with the Bylaw and the stormwater management permit; (b) Repair, maintain or replace the stormwater management system or portions thereof in accordance with the operation and maintenance plan; (c) Perform monitoring, analyses and reporting;	When the Conservation Commission determines that an activity is in violation of the Bylaw or a permit issued under the Bylaw, the Commission may: (1) Issue an enforcement order under the Bylaw; and/or (2) Issue fines under § 250-18 of the Bylaw; and/or (3) Take any other action authorized by law.
GOAL 5: ENCOURAGE EFFICIENT PARKING								
Parking	Specific minimums set based on projected maximum use times	Encourage minimum # needed to serve routine use (e.g. 2/residential unit with any additional/visitors parking behind in driveway or on street.	Establish Maximum Parking spaces allowed. Do not require more than 2/residence. Allow tenants separate, optional lease agreements for parking.	Minimum Parking Requirements: 1. Dwelling unit (two or more bedrooms): 2 spaces 2. Dwelling unit (fewer than 2 bedrooms): 1 space	*Not addressed - see Zoning Bylaw*	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Commercial Parking	Specific minimums set based on projected maximum use times adding all on-site uses together.	Some flexibility to reduce minimums based on street or other available nearby parking or transit.	Allowed shared parking for uses with different peak demand times. Provide model agreements/deed restrictions. Reduce parking requirements near transit. Limit parking stall size (9ftx18ft max), with up to 30% smaller for compact cars	Retail sales and service: 1 space per 250 sq. ft. gross floor area exclusive of storage area but not fewer than 3 spaces per separate enterprise 4. Business or Professional Offices: 1 space per 300 sq. ft. gross floor area 5. Restaurants: a. Restaurant, Full Service: i. 1 space per 5 seats with a minimum of 12 spaces in the Business District Village ii. 1 space per 3 seats with a minimum of 20 spaces in the Business District Highway, Business District Highway North and the Business Park District b. Restaurant, Limited Service: i. 1 space per 100 square feet of gross floor area with a minimum of 8 spaces in the Business District Village ii. 1 space per 100 square feet of gross floor area with a minimum of 20 spaces in the Business District Highway, Business District Highway North and the Business Park District c. Restaurant, Snack and Non-Alcoholic Beverage: i. 1 space per 100 square feet of gross floor area with a minimum of 8 spaces in the Business District Village ii. 1 space per 100 square feet of	*Not addressed - see Zoning Bylaw*	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
LID in Parking Areas	LID not addressed OR Require waivers e.g. for planting islands to drain down rather than built up surrounded by curbs	Allow LID/bioretention within parking areas.	Require landscaping within parking areas, as LID/bioretention, at a minimum of 10% of the interior area landscaped and a minimum of 25 square feet for island planting areas.	General Requirements. All off street parking areas and loading areas, other than those provided for dwellings, but including drives and other access ways, shall be treated with bituminous or other impervious surfacing material; and shall be provided where necessary with appropriate bumper and wheel guards. Illuminations shall be so arranged as to deflect light away from adjoining lots and abutting streets; and screening shall be provided where required by this By-Law.	*Not addressed - see Zoning Bylaw*	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*

Wenham

Factors	Needs Improvement	Improved	Optimal	Zoning Bylaw	Chapter 300: Subdivision of Land	Chapter 255- 13.5 Site Plan Review	Chapter 210: Stormwater Management	Town of Wenham Planning Board Rules and Regulations
				https://cms4files1.revize.com/wenhamma/Wenham%20Zoning%20Bylaw%20Revised%20Feb%202020.pdf	Draft reviewed	https://ecode360.com/31434212?highlight=stormwater&searchId=8547776360581843#31434212	https://ecode360.com/31533561	https://cms4files1.revize.com/wenhamma/Wenham%20PB%20Rules%20and%20Regulations%20Updates%206-6-19%20Final.pdf
GOAL 1: PROTECT NATURAL RESOURCES AND OPEN SPACE								
Soils managed for revegetation	Not addressed	Limitations on removal from site, and/or requirements for stabilization and revegetation	Prohibit removal of topsoil from site. Require rototilling and other prep of soils compacted during construction	Not addressed	Not addressed	Not addressed	*(Not applicable)*	*(Not applicable)*
Limit clearing, lawn size, require retention or planting of native vegetation/naturalized areas	Not addressed OR General qualitative statement not tied to other design standards	Encourage minimization of clearing/ grubbing	Require minimization of clearing/grubbing with specific standards	No area or areas totaling 0.5 acre or more on any parcel or contiguous parcels in the same ownership shall have existing vegetation clear-cropped or be filled six inches or	*(Not applicable)*	Minimize the volume of cut and fill, the number of removed trees six inches caliper or larger, the length of removed stone walls, the	*(Not applicable)*	*(Not applicable)*
Require native vegetation and trees	Not addressed OR General qualitative statement	Mixture of required plantings of native and nonnative	Require at least 75% native plantings	Planted area requirements. Planted areas shall contain an appropriate mix of the following types of plants. Plant species shall be appropriate to proposed use, siting, soils, and other environmental conditions. Where the Planning Board determines that the planting of trees is impractical, the permit applicant may substitute shrubbery for trees. Shrubs and hedges shall be at least 2.5 feet in height at the time of planting, and have a spread of at least 18 inches. Existing trees with a caliper of six inches or more shall be preserved wherever feasible. Measurement shall take place six inches above grade. B. Deciduous trees shall be at least two inches in caliper as measured six inches above the root ball at time of planting. Deciduous trees shall be expected to reach a height of 20 feet within 10 years after planting. Evergreens shall be a minimum of eight feet in height at the time of planting.	All cut or fill bankings that tend to wash or erode shall be planted with suitable, well-rooted, and low-growing plantings. All plants shall be the equivalent of nursery-grown stock in good health, free from inury, harmful insects and ieseases. Ths use of invasive species is prohibited. Perennial grass turf installed as sod is an acceptable alternative for the planting of banks.	Not addressed	*(Not applicable)*	*(Not applicable)*
GOAL 2: PROMOTE EFFICIENT, COMPACT DEVELOPMENT PATTERNS AND INFILL								
Lot size	Not addressed OR Required minimum lot sizes	OSRD/NRPZ preferred. Special permit with incentives to utilize	Flexible with OSRD/NRPZ by right, preferred option	Minimums based on residential versus business district. ORSD density bonus: The Planning Board may award a density bonus to increase the number of dwelling units beyond the basic maximum number. The density bonus for the flexible development shall not, in the aggregate, exceed 50% of the basic maximum number. The units required by Subsection I shall not be considered as density bonus units. Computations shall be rounded to the lower number. A density bonus may be awarded in the following circumstances: For each additional 10% of the site (over and above the required 40%) set aside as contiguous open space, a bonus of 5% of the basic maximum number may be awarded; provided, however, that this density bonus shall not exceed 25% of the basic maximum number. For every two dwelling units restricted to occupancy by persons over the age of 55, one dwelling unit may be added as a density bonus; provided, however, that this density	Subdivisions shall meet the requirements for lot size, frontage, and all other requirements under existing zoning laws. No subdivision rules can dictate the size, shape, width, frontage or use of lots except that they shall comply with all applicable zoning requirements.	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Setbacks	Not addressed OR Required minimum front, side, and rear setbacks	Minimize, allow flexibility	Clear standards that minimize and in some instances eliminate setbacks	Minimums based on residential versus business district	Subdivisions shall meet the requirements for lot size, frontage, and all other requirements under existing zoning laws. No subdivision rules can dictate the size, shape, width, frontage or use of lots except that they shall comply with all applicable zoning requirements.	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Frontage	Not addressed OR Required minimum frontage for each lot/unit	Minimize especially on curved streets and cul-de-sacs	No minimums in some instances, tied into other standards like OSRD design and shared driveways.	Minimums based on residential versus business district	Subdivisions shall meet the requirements for lot size, frontage, and all other requirements under existing zoning laws. No subdivision rules can dictate the size, shape, width, frontage or use of lots except that they shall comply with all	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Common driveways	Not addressed OR Not allowed, strict limitations	Allow for 2-3 residential units	Allow for up to 4 residential units, preferrably constructed with permeable pavers or pavement	Common driveways serving not more than three lots may be allowed by special permit by the Planning Board. A common driveway must satisfy all of the conditions in § 255-5.2F, Residential driveways, as well as all of the following conditions: [Amended 4-23-2018 ATM by Art. 23] (a) The center line intersection with the street center line shall not be less than 45°; (b) A minimum cleared width of 12 feet shall be maintained over its entire length; (c) A roadway surface of a minimum of pavement or at least four inches of graded gravel, placed over a properly prepared base, graded and compacted to drain from the crown shall be installed;The driveway shall be located entirely within the boundaries of the lots being served by the driveway; (d) Proposed documents shall be submitted to the Planning Board demonstrating that, through easements, restrictive covenants, or other appropriate legal devices, the maintenance, repair, snow removal	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
GOAL 3: SMART DESIGNS THAT REDUCE OVERALL IMPERVIOUSNESS								

Impervious cover limits and infiltration rates	Not usually addressed in zoning and subdivision regs for rural/suburban residential	Require no net increase in site run-off from pre- to post-development	Impervious cover limits tailored to the community and district type (i.e. <10% total impervious cover in rural districts, but higher in urban and redevelopment districts); post-development infiltration should be equal to or greater than pre-development. Following best practice may also help communities comply with MS4 permit requirements	In the Aquifer Protection and /overlay District: Permitted Uses: Uses rendering impervious less than 20% of a lot (exclusive of wetlands and land in the Floodplain Overlay District). Drainage. All runoff from impervious surfaces shall be recharged on the site to the maximum extent possible. The preferred method is dispersion	Not addressed	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Street location	No standards addressed OR Numeric and geometric standards based primarily on vehicular travel and safety, with basic pedestrian requirements e.g. sidewalks	Flexibility in applying standards, to reduce area of impact, grading, avoid key natural features	OSRD design preferred by-right. Require locating streets to minimize grading and road length, avoid important natural features	*(Not applicable)*	All streets in the subdivision should be designed so that in the opinion of the Board, they will provide safe and convenient access for all users of all ages and abilities by all modes of transportation including pedestrians, bicyclists, motorists	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Road width	No categories addressed OR Major and minor categories, 24-30'	Wide, medium, narrow categories 22-24' max, plus 2' shoulders	Wide, medium, narrow, and alley categories. 20-24' widest for 2 travel lanes, 18-20' low traffic residential neighborhood, plus 2' shoulders. Allow alleys and other low traffic or secondary emergency access and all shoulders to use alternative, permeable materials.	*(Not applicable)*	Minimums from 22' to 32' depending on street and subdivison type.	*(Not applicable)*	*(Not applicable)*	The Site Plan that is submitted must contain at least the following information:...An evaluation of the use of possible low-impact development techniques, and details of any measures employed. Measures could include any of the following: (a) Steps taken to minimize land disturbance; (b) Preservation of natural drainage features; (c) Minimizing sediment runoff with vegetative strips, diversions swales, sediment traps, check; dams, stabilized construction entrances, dust control, silt fences, or other means; (d) Stormwater BMPs that infiltrate 90% of annual storm events; (e) Landscaping that promotes on-site water retention and infiltration; and (f) Minimizing widths of streets and driveways to reduce creation of impervious area.
Road ROW width	ROW Width not addressed OR 50-75', fully cleared and graded	40-50', some flexibility in extent of clearing	20-50'depending on road type	*(Not applicable)*	Minimum ROW width: 60 feet for Type I and 70 feet for Type II and III streets	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Access Options	Common drives not addressed, No common drives allowed, Dead end allowed with limit on length and # of units	Allow dead end with limit on length and # of units. Allow common drives up to 2-3 units	Allow one way loop streets. Allow common drives up to 4 units, and alleys and rear-loading garages where suitable.	Common driveways serving not more than three lots may be allowed by special permit by the Planning Board. A common driveway must satisfy all of the conditions in § 255-5.2F, Residential driveways, as well as all of the following conditions: [Amended 4-23-2018 ATM by Art. 23] (a) The center line intersection with the street center line shall not be less than 45°; (b) A minimum cleared width of 12 feet shall be maintained over its entire length; (c) A roadway surface of a minimum of pavement or at least four inches of graded gravel, placed over a properly prepared base, graded and compacted to drain from the crown shall be installed;The driveway shall be located entirely within the boundaries of the lots being served by the driveway; (d) Proposed documents shall be submitted to the Planning Board demonstrating that, through easements, restrictive covenants, or other appropriate legal devices, the maintenance, repair, snow removal	Not addressed	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Dead Ends/Cul-de-sacs	No standards addressed OR 120 ft or more minimum turnaround	Minimize end radii – 35 ft	Allow hammerhead turnaround	*Not addressed*	Dead-end streets (cul-de-sac) are discouraged and shall be permitted as minor streets only. Developers should make every effort to avoid the creation of dead-end streets and should connect proposed subdivisions to existing dead-end streets wherever reasonable and practicable... Where the Board has approved a proposed development of a dead-end street that ends in a cul-du-sac, the cul-du-sac shall have a circular turning radions of not less than 60 fee or a maximum of 100 feet (measured at the center line) and a property line radius of at least 85 feet...the length of a dead-end street allowed by right is a maximum of ont thousand feet as measured along the centerline of construction of the street.	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Cul-de-sacs	No standards addressed OR Full pavement standard	Encourage center landscaping with bioretention	Require center landscaping with bioretention	*(Not applicable)*	All cul-de-sac street shall have turnaround islands that are planted with trees and/or other vegetation or left with natural tree growth instead of paving the entire area of the cul-de-sac.	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Curbing	No standards addressed OR Curbing required full length both sides of road	Allow curb breaks or curb flush with pavement to enable water to flow to vegetated LID features	Open drainage with roadside swales and no curbs preferred	*(Not applicable)*	Berms shall be constructed along both sides of major, secondary, and minor streets. Their construction shall meet requirements set forth	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Roadside Swales	Not addressed OR Allowed as an option	Preferred over closed drainage	Preferred, with criteria for proper design. Adoption of technical specifications and design templates for green infrastructure recommended	*(Not applicable)*	Not addressed	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Utilities	Off sets required contributing to wide road ROWs	Not specified - flexible	Allow under road, sidewalks or immediately adjacent to roads to enable placement of roadside swales.	*(Not applicable)*	All electrical, telephone, fire alarm, and other wires and cables shall be installed underground unless, in the opinion of the board and the appropriate utility company, such	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Sidewalks	Material not addressed OR Concrete or bituminous required	Some flexibility in material and design	Prefer permeable pavement or permeable pavers	*(Not applicable)*	[Sidewalk] construction shall be of bituminous concreet with a 1" topcoat, 2" binder course and 10" gravel base that meet the requirements set for the MA DOT in their latest volume of Standard Specificiations for Highways and Bridges.	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*

Sidewalk location	Required both sides of road	Allow on only 1 side of road especially in low density neighborhoods	Prefer siting with land contours and for best pedestrian utility (e.g. connect with common areas and shared open spaces) – not necessarily immediately parallel to road.	*(Not applicable)*	Sidewalks must meet ADA standards and must be at leas 5 feet in width and shall be constructed on both sides of the street starting at the property line with in the opinon of the Board such sidewalks are necessary. Their construction shall be of bituminous concreet with a 1" topcoat, 2" binder course and 10" gravel base that meet the requirements set for the MA DOT in their latest volume of Standard Specificiations for Highways and Bridges. The Planning Board may waive the requirement and permit sidewalks on only one side where an in-lieu-of payment, in an amount approved by the Planning Board is made. Such payments shall be deposited into a dedicated Pedestrian & Bicycle Parking Reserve Account.	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Sidewalk drainage	Draining to road, closed drainage system required	Not addressed	Disconnect drainage from road system – e.g. adjacent green strips or within vegetated areas that can absorb sheet flow	*(Not applicable)*	Not addressed	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
GOAL 4: ADOPT GREEN INFRASTRUCTURE STORMWATER MANAGEMENT PROVISIONS								
Rooftop runoff	Not addressed OR Prohibit directing clean roof runoff into closed municipal drainage systems.	Allow clean roof runoff to be directed to landscaped or naturally vegetated areas capable of absorbing without erosion, or infiltration	Require directing clean roof runoff to landscaped or naturally vegetated areas capable of absorbing, or infiltration	*(Not applicable)*	Not addressed	Not addressed	*(Not applicable)*	*(Not applicable)*
Overall stormwater design; piping and surficial retention vs. LID	Conventional stormwater system design standards	Encourage LID features and BMPs; design standards often not specified	LID design standard encouraging infiltration, allowing surficial ponding of retained runoff for up to 72 hours; systems designed for larger volume storms, accounting for future precipitation predictions; credit for green roofs towards stormwater requirements. Following best practice may also help communities comply with MS4 permit requirements	*(Not applicable)*	All projects disturbing an acre or more of land shall meet the requirements and design and performance standards of the Town of Wenham Stormwater Management Plan… Limited waivers may be granted when appropriate to encourage…green development practicies such as green roofs, nature-based improvements, additional permantely protected opense spaces (beyond the requirements of zoning).	*(Not applicable)*	*(Not applicable)*	The Site Plan that is submitted must contain at least the following information:...An evaluation of the use of possible low-impact development techniques, and details of any measures employed. Measures could include any of the following; (a) Steps taken to minimize land disturbance; (b) Preservation of natural drainage features; (c) Minimizing sediment runoff with vegetative strips, diversions swales, sediment traps, check; dams, stabilized construction entrances, dust control, silt fences, or other means; (d) Stormwater BMPs that infiltrate 90% of annual storm events; (e) Landscaping that promotes on-site water retention and infiltration; and (f) Minimizing widths of streets and driveways to reduce creation of impervious area.
Site Plan/Design Requirements	LID not addressed	Encourage use of LID features in site design - such as reduced imperviousness, maintaining natural hydrology, preserving open space, and rainwater reuse	Include bioretention and other vegetated LID features in site landscaping/open space requirements. Following best practice may also help communities comply with MS4 permit requirements. See section 2.3.5 of the MS4 permit for more information	*(Not applicable)*	These Rules and Regulations are intended to guide and support the Planning Board in shaping the physical development of Wenham toward development patterns that advance community goals for resource protection, public health, safety and wellness, community character, greenhouse gas reduction, and resiliency to climate change. Particular attention will be given to lot and subdivision design, low impact design, and nature-based improvements, community connectivity, age-friendly development, open spaces, parks, and the retntion of major site features.	*(Not applicable)*	*(Not applicable)*	The Site Plan that is submitted must contain at least the following information:...An evaluation of the use of possible low-impact development techniques, and details of any measures employed. Measures could include any of the following; (a) Steps taken to minimize land disturbance; (b) Preservation of natural drainage features; (c) Minimizing sediment runoff with vegetative strips, diversions swales, sediment traps, check; dams, stabilized construction entrances, dust control, silt fences, or other means; (d) Stormwater BMPs that infiltrate 90% of annual storm events; (e) Landscaping that promotes on-site water retention and infiltration; and (f) Minimizing widths of streets and driveways to reduce creation of impervious area.
Allow easy siting of LID features (bioretention, swales, etc.)	Not addressed OR Require waivers from subdivision standards	Encouraged along road ROW	Allowed on lots, common open space, or road ROW, easement recorded. For commercial development, allow an increase in floor area ratio or other developmental incentives for green roofs	*(Not applicable)*	All permanent stormwater control structures (including but not limited to detention/retention ponds. Oil/water separators, weirs, etc.) should be located on separate parcels places under the ownershio, control, responsibility, and liability of a Homeowners Association comprised of the property owners of this subdivision or another entity that the Planning Board deems acceptable.	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Permeable paving	Not addressed OR Require waivers from subdivision standards	Allowed on private residential lots for parking, patios, etc.	Allowed for residential drives, parking stalls, spillover parking spaces, emergency access ways (with proper engineering support for emergency vehicles) Two track design allowed for driveways and secondary emergency access ways (where required).	*(Not applicable)*	Not addressed	*(Not applicable)*	*(Not applicable)*	Not addressed
Stormwater management O&M plan	Typically only addressed if municipality has a stormwater or LID bylaw, or for areas subject to wetlands permitting	Required	Required, contents specified in alignment with current MassDEP Stormwater Handbook. Following best practice may also help communities comply with MS4 permit requirements	*(Not applicable)*	All stormwater management systems must have an Operation and Maintenance Plan to ensure that systems function as designed, following Section of the Stormwater Management Bylaw of the Town of Wenham and Appendix B of these regulations.	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Construction Erosion and Sedimentation Plan, and stormwater control	Basic general requirements	Required, contents specified - the site design process should include soil erosion and sedimentation control measures	Goes beyond minimum NPDES requirements. Requires minimization of site disturbance, reduction of construction waste, control measures not removed	*(Not applicable)*	erosion and sediment controls must be implemented during construction as delineated in the Stormwater Management Bylaw for the Town of Wenham and	Minimize the volume of cut and fill, the number of removed trees six inches caliper or larger, the length of removed stone walls, the	*(Not applicable)*	An applicant must describe its plan for properly stabilizing the site before construction begins and the BMPs that it will use during construction to minimize

Stormwater discharge detection & elimination	Not addressed	Discharges and connections noted and/or limits set on quantity and quality	Illicit discharges and connections are probibited and enforced. Following best practice may also help communities comply with MS4 permit requirements. Find more information in section 2.3.4.a of the MS4 permit	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	Prohibited activities. A. Illicit discharge. No person shall dump, discharge, cause or allow to be discharged any pollutant or nonstormwater discharge into the municipal storm drain system, watercourse, waters of the commonwealth or abutting property. B. Illicit connection. No person shall construct, use, allow, maintain or continue any connection to the municipal storm drain system, regardless of whether the connection was permissible under applicable law, regulation or custom at the time of connection. C. Obstruction of the municipal storm drain system. No person shall obstruct or interfere with the normal flow of stormwater into or out of the municipal storm drain system without prior written approval from the Planning	*(Not applicable)*
Post- construction stormwater management and drainage patterns	Not addressed	Allow LID	Resemble pre-existing conditions of volume, velocity, quality and location, as nearly as possible, requiring LID to the max extent feasible. Retain vol of runoff >1in. per sq.ft. of impervious surface and/or remove 90% TSS post-construction & 50% TP generated on the site for new development, or >0.8in. per sq.ft and/or remove 80% TSS and 50% of TP load for redevelopment. Following best practice may also help communities comply with MS4 permit requirements.	*(Not applicable)*	*(Not applicable)*	Minimize the volume of cut and fill, the number of removed trees six inches caliper or larger, the length of removed stone walls, the area of wetland vegetation displaced, the extent of stormwater flow increase from the site, soil erosion, and threat of air and water pollution;	*(Not applicable)*	The Site Plan that is submitted must contain at least the following information:...An evaluation of the use of possible low-impact development techniques, and details of any measures employed. Measures could include any of the following: (a) Steps taken to minimize land disturbance; (b) Preservation of natural drainage features; (c) Minimizing sediment runoff with vegetative strips, diversions swales, sediment traps, check; dams, stabilized construction entrances, dust control, silt fences, or other means; (d) Stormwater BMPs that infiltrate 90% of annual storm events; (e) Landscaping that promotes on-site water retention and infiltration; and (f) Minimizing widths of streets and driveways to reduce creation of impervious area.
As-built surveys	Not addressed	Recommended	Required, with written instructions for process; electronic submittal allowed	*(Not applicable)*	Not addressed	Not addressed	Not addressed	Not addressed
Intra-departmental communication and coordination	Not addressed	Informally or loosely occurring	Required for plan review and/or permit approvals	*(Not applicable)*	In the Town of Wenham, certain services are provided to subdivisions under the jurisdiction of various Town departments and other quasi-public agencies. Compliance with the applicable regulations and requirements of these agencies and departments shall be required before a plan is approved by the Planning Board, and certification of performance relative to the proper construction and installation of respective utilities shall be required before the performance guarantee can be reduced or released.	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Enforcement	No	Yes	Yes with fines. Same entity should oversee permit approvals and enforcement	*(Not applicable)*	Not addressed	*(Not applicable)*	Enforcement. A. The authorized enforcement agency or an authorized agent of the authorized enforcement agency shall enforce this bylaw, regulations, orders, violation notices, and enforcement orders, and may pursue all civil and criminal remedies for such violations. B. Civil relief. If a person violates the provisions of this bylaw, regulations, permit, notice, or order issued thereunder, the authorized enforcement agency may seek injunctive relief in a court of competent jurisdiction, restraining the person from activities which would create further violations or compelling the person to perform abatement or remediation of the violation. C. Orders. The authorized enforcement agency or an authorized agent of the	*(Not applicable)*
GOAL 5: ENCOURAGE EFFICIENT PARKING								

Parking	Specific minimums set based on projected maximum use times	Encourage minimum # needed to serve routine use (e.g. 2/residential unit with any additional/visitors parking behind in driveway or on street.	Establish Maximum Parking spaces allowed. Do not require more than 2/residence. Allow tenants separate, optional lease agreements for parking.	Minimum of 2 parking spaces per dwelling unit. Shared parking. Notwithstanding any other provisions of this bylaw, common parking areas may be permitted by the Planning Board, subject to site plan approval, for the purpose of servicing two or more principal uses on the same or separate lots, provided that: Evidence is submitted that parking is available within 400 feet of the premises, which satisfies the requirements of this bylaw and has excess capacity during all or part of the day, which excess capacity shall be demonstrated by a competent parking survey conducted by a traffic engineer registered in the Commonwealth of Massachusetts. (1) A proposed contract, agreement, or suitable legal instrument acceptable to the Town's legal counsel shall be filed with the Planning Board, specifying the location of all spaces to be jointly used, the number of such spaces, the hours during the day that such	*Not applicable*	*Not applicable*	*Not applicable*	*(Not applicable)*
Commercial Parking	Specific minimums set based on projected maximum use times adding all on-site uses together.	Some flexibility to reduce minimums based on street or other available nearby parking or transit.	Allowed shared parking for uses with different peak demand times. Provide model agreements/deed restrictions. Reduce parking requirements near transit. Limit parking stall size (9ftx18ft max), with up to 30% smaller for compact cars	Minimums based on principal use: The following standards shall apply to off-street parking for nonresidential uses. A. Parking space size. Each parking space shall measure 10 feet in width and 20 feet in length. Handicapped parking. Parking spaces for the exclusive use of handicapped individuals shall be provided in accordance with the most recent local, state, and federal rules and regulations. B. Lighting. All lighting shall be shielded so as not to shine directly onto a public or private way or onto any property in a residential district or into the night sky. Poles for lighting shall be limited to four feet in height. C. Prohibition. Parking spaces shall be arranged so as not to require backing of automobiles onto any street. Special permit. Any parking requirement set forth herein may be reduced upon the issuance of a special permit by the Planning Board if the Board finds that the reduction	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
LID in Parking Areas	LID not addressed OR Require waivers e.g. for planting islands to drain down rather than built up surrounded by curbs	Allow LID/bioretention within parking areas.	Require landscaping within parking areas, as LID/bioretention, at a minimum of 10% of the interior area landscaped and a minimum of 25 square feet for island planting areas.	D.Additional parking standards for areas subject to site plan review. All parking areascontaining more than five spaces shall be either contained within structures or subject to the following requirements: Surface. The parking area and access driveways thereto shall be surfaced with bituminous or cement concrete material and shall be graded and drained so as to dispose of all surface water accumulation away from adjacent public ways. Storage. Unless authorized by special permit of the Planning Board, there shall not be any storage of materials or equipment or display of merchandise within required parking area except as part of building operations approved by the Zoning Board of Appeals or Planning Board, as appropriate. Location. Parking shall not be located nearer than 15 feet from any lot line.	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*

West Newbury

Factors	Needs Improvement	Improved	Optimal	Zoning Bylaw (including floodplain)	Subdivision Rules & Regulations	Planning Board Regulations (including site plan review)	Community's Stormwater Bylaw and rules and regs	Wetlands Bylaw	Parking Regulations
GOAL 1: PROTECT NATURAL RESOURCES AND OPEN SPACE									
Soils managed for revegetation	Not addressed	Limitations on removal from site, and/or requirements for stabilization and revegetation	Prohibit removal of topsoil from site. Require rototilling and other prep of soils compacted during construction	he SPGA may adopt regulations to govern design features of projects. Such regulations shall be consistent with subdivision regulations adopted by the municipality. (10.G.4)	Required: A general note indicating deposition of topsoil on the site, which note shall include how topsoil will be handled in areas of cut and fill; how and where topsoil will be stockpiled, if applicable; the minimum amount of topsoil to be redistributed on or to the site; and that no topsoil will leave the site except in accordance with the West Newbury Soil Removal By-law (3.3.3.4.2.) A permit shall be required for the removal of soil, loam, sand, or gravel from any parcel of land when incidental to and in connection with the construction of a building on the parcel (1-2B) environmental impact statement required which addresses the potential dangers of erosion and sedimentation caused by both the construction, operation and maintenance of the proposed development and its alternatives shall be detailed (enviro impact statement, 6.iv) stabilization required under the sediment and erosion control plan (4.4.5)	not addressed	Institute interim and permanent stabilization measures, which shall be instituted on a disturbed area as soon as practicable but no more than 14 days after construction activity has temporarily or permanently ceased on that portion of the site; (8.E.12)	Soil not permitted to be tampered with on the premises, unless by special permit: No person shall remove, fill, dredge, build upon, degrade, or otherwise alter resource areas protected by this bylaw, or cause, suffer, or allow such activity, or leave in place unauthorized fill, or otherwise fail to restore illegally altered land to its original condition, or fail to comply with a permit or an enforcement order issued pursuant to this bylaw (XII) alter is, in part, defined as Destruction of plant life including but not limited to cutting or trimming of trees, shrubs, and other vegetation (X)	*(Not applicable)*
Limit clearing, lawn size, require retention or planting of native vegetation/naturalized areas	Not addressed OR General qualitative statement not tied to other design standards	Encourage minimization of clearing/ grubbing	Require minimization of clearing/grubbing with specific standards	general qualitative statement. Land Clearing, Soil Erosion and Habitat Impacts. Clearing of natural vegetation shall be limited to that which is necessary for the construction, operation and maintenance of the facility or otherwise prescribed by applicable laws, regulations, and bylaws. (5.G.7, d) Vegetation in the buffer areas described below shall not be disturbed, destroyed or removed, except for normal maintenance of structures and landscapes approved as part of the project. The buffer area may be included in the calculation of protected open space. All driveways necessary for access	The developer shall make every effort to retain natural vegetation, shade trees and natural features on the site. No shade trees or natural features shall be removed from a site unless necessary for construction (4.9.) 5.7.6. All cut banking that may wash or erode must be planted with a low growing evergreen shrub such as laurel, pine or juniper, and seeded with a deep rooted perennial grass to prevent erosion. Right-of-ways shall not be clear-cut. Trees shall only be removed to accommodate the proposed roadway and underground utilities (4.9)	The location of wetlands, streams, water bodies, aquifers, aquifer recharge areas, drainage swales, areas subject to flooding, and unique natural land features, including all stonewalls, trees over eight (8) inches in diameter measured at breast height, rocky outcrops, and the general location of the tree line must be recorded in site plan review, but no design standards (IV.B.2.k)	Stormwater management systems shall be designed to avoid disturbance of areas susceptible to erosion and sediment loss, avoiding, to the greatest extent practicable: the damaging of large forest stands; building on steep slopes (15% or greater); and disturbing land in wetland buffer zones and floodplains. (7.E.5) Minimize soil erosion and control sedimentation during construction; (8.E.4)	No clearing permitted on the premises, unless by special permit: No person shall remove, fill, dredge, build upon, degrade, or otherwise alter resource areas protected by this bylaw, or cause, suffer, or allow such activity, or leave in place unauthorized fill, or otherwise fail to restore illegally altered land to its original condition, or fail to comply with a permit or an enforcement order issued pursuant to this bylaw (XII) alter is, in part, defined as Destruction of plant life including but not limited to cutting or trimming of trees, shrubs, and other	*(Not applicable)*
Require native vegetation and trees	Not addressed OR General qualitative statement	Mixture of required plantings of native and nonnative	Require at least 75% native plantings	All land not covered by buildings, roads, drives, walkways or recreation facilities shall be left in a natural state, cultivated, or landscaped with indigenous plantings or grass (7.A.15) also required in site plan review: 2.Proposes a landscape design that favors native and drought-tolerant species and avoids invasive plants (8.B.6.e)	Street trees of a species approved by the Tree Warden shall be planted on each side of each street in a subdivision, except where the Definitive Plan shows trees to be retained which are healthy and adequate (5.7.1) 5.7.5.no evergreen trees such as pine, fir, spruce or hemlock are to be planted without the approval of the Tree Warden or Planning Board. native vegetation otherwise not mentioned	Plantings of native evergreen species planted at a minimum height of six (6) feet. Suggested for land use buffers(IV.C.3.b)no other mention of native species requirements	not addressed	not addressed	*(Not applicable)*
GOAL 2: PROMOTE EFFICIENT, COMPACT DEVELOPMENT PATTERNS AND INFILL									
Lot size	Not addressed OR Required minimum lot sizes	OSRD/NRPZ preferred. Special permit with incentives to utilize	Flexible with OSRD/NRPZ by right, preferred option	required minimum lot sizes in all besides business and industrial districts: 80,000 sq ft in Res A, 40,000 in Res B, 20,000 in Res C (6.A) under special permit min lot sizes move to 160,000 in Res A, 80,000 in Res B, and 40,000 in Res C (6.A.1) Contradicted in 6.A.5m which states that under special permit A, B, and C min lot sizes are 60,000 ft. Provides OSPD (OSRD) as a special permit for any res development with no minimum lot size, permit to edit dimensional requirements, clear design process, and subdivison/site plan review design standards but no statement of preference (6.B.3.)	*(Not applicable)*	*(Not applicable)*	his Bylawshall be applicable to any alteration,disturbance, including clearing, grading, excavation, development,or redevelopment that will disturbland surface areaequal to or greater than1 acre (43,560 s.f.) (5)	*(Not applicable)*	*(Not applicable)*
Setbacks	Not addressed OR Required minimum front, side, and rear setbacks	Minimize, allow flexibility	Clear standards that minimize and in some instances eliminate setbacks	required front side and rear setbacks: in Res A, B, and C mins are 40ft for front, and 20 ft for side and back yards. Businesses have 15 ft mins for all 3 setbacks, and ind. Has 50 ft mins for all 3 setbacks (6.A). Under special permit res A and B have 40 ft mins for all setbacks. res C has 40 ft min front and 20 ft min side and back (6.A.1) Contradicted in 6.A.5, which states that under special permit A, B, and C must have 50ft setbacks all around. lot size, shape, and other dimensional requirements for lots within an OSPD may be modified from the requirements of 6.A (6.B.9).	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	There shall be no parking space or loading bays except for driveways in the first 10 feet of the applicable front yard setback requirement (3.1.1)
Frontage	Not addressed OR Required minimum frontage for each lot/unit	Minimize especially on curved streets and cul-de-sacs	No minimums in some instances, tied into other standards like OSRD design and shared driveways.	required minimum frontage for each lot: Res A and B: 200 feet, Res C 150 feet; bus, and ind. 100 feet (6.A) Res A, B, and C may be reduced to 100 under special permit (6.A.1) ORSD design allowed by special permit (6.B.3.) lot size, shape, and	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Common driveways	Not addressed OR Not allowed, strict limitations	Allow for 2-3 residential units	Allow for up to 4 residential units, preferably constructed with permeable pavers or pavement	A common or shared driveway may serve a maximum of three dwelling units in ORSD dev. (6.B.11) In other districts Common Driveways shall require a special permit from the Planning Board with the 3 residential units allowed (7.D) Common driveways shall meet the dimensional and construction standards of the Town of West Newbury minor roadway standards, as are outlined in	Common driveways allowed but does not address how many units: Common Driveways will be graded in accordance with otherwise Section 5.2. and paved in accordance with Section 5.2.3 to a width of at least fifteen (15) feet, unless otherwise approved by the Planning Board.	Mentioned as a design standard in site plan review: Common or shared driveways and parking lots which reduce curb cuts, reduce impervious areas, and enhance pedestrian circulation (IV.2.b.ii)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
GOAL 3: SMART DESIGNS THAT REDUCE OVERALL IMPERVIOUSNESS									
Impervious cover limits and infiltration rates	Not usually addressed in zoning and subdivision regs for rural/suburban residential	Require no net increase in site run-off from pre- to post-development	Impervious cover limits tailored to the community and district type (i.e. <10% total impervious cover in rural districts, but higher in urban and redevelopment	*(Not applicable)*	not addressed	not addressed	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Street location	No standards addressed OR Numeric and geometric standards based primarily on vehicular travel and safety, with basic pedestrian requirements e.g. sidewalks	Flexibility in applying standards, to reduce area of impact, grading, avoid key natural features	OSRD design preferred by-right. Require locating streets to minimize grading and road length, avoid important natural features	*(Not applicable)*	Streets shall also be designed to be aesthetically pleasing and to blend with the surrounding landscape and the character and topography of the area as prescribed in the Town Roadway Design Guidelines. The Board will give due regard to the prospective character of different subdivisions, nature of terrain and the prospective amount of travel upon the various streets and sidewalks therein (4.2.1.)	Unless waived by the Planning Board, all roadways and sidewalk construction within the site shall be designed in accordance With the Town of West Newbury's Rules and Regulations Governing the Subdivision of Land. Sidewalks, crosswalks, walkways, bike racks, or other pedestrian access which allow access to adjacent properties and between individual businesses within a	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*

Road width	No categories addressed OR Major and minor categories, 24-30'	Wide, medium, narrow categories. 22-24' max, plus 2' shoulders	Wide, medium, narrow, and alley categories. 20-24' widest for 2 travel lanes, 18-20' low traffic residential neighborhood, plus 2' shoulders. Allow alleys and other low traffic or secondary emergency access and all shoulders to use alternative, permeable materials.	*(Not applicable)*	minor and major catagories, 20 feet for major and minor local access roads, 22 feet for minor collector road and 24 feet for major collector road, minor shoulders allowed to be alt/permeable materials (4.2.6.3) width may be reduced to 18 feet on roadways at the discretion of the Planning Board, Public Safety and the Highway Superintendent on minor local access roads based on grade and drainage requirements (4.2.6.3.)	Unless waived by the Planning Board, all roadways and sidewalk construction within the site shall be designed in accordance With the Town of West Newbury's Rules and Regulations Governing the Subdivision of Land. Sidewalks, crosswalks, walkways, bike racks, or other pedestrian access which allow access to adjacent properties and between individual businesses within a development site. (IV.C.2.iv)	*(Not applicable)*	*(Not applicable)*	Parking aisle widths are: 24 feet for 2 way 90, 60, 45 and 30 degrees and parallel to curb, 24 feet for 1 way 90 degrees and parallel to curb, 18 feet for 60 degrees, 16 feet or 45 degrees, and 15 feet fo 30 degrees. (3.6.1.)
Road ROW width	ROW Width not addressed OR 50-75', fully cleared and graded	40-50', some flexibility in extent of clearing	20-50'depending on road type	*(Not applicable)*	The minimum width of street rights-of-way shall be 50 feet (4.2.6.1) Right-of-ways shall not be clear-cut. Trees shall only be removed to accommodate the proposed roadway and underground utilities. A deciduous tree canopy shall be maintained, whenever possible, over the roadway to restrict the visual width of the roadway and calm traffic. A planting plan for the right-of way, including shade trees, shall be required in any area not having adequate native growth. Any tree greater than 18 inches in diameter in the right-of-way of the proposed roadway shall be identified on plan and consideration shall be given to the road alignment to preserve the tree at the discretion of the Planning Board with consultation of the Tree Warden. (4.9)	Unless waived by the Planning Board, all roadways and sidewalk construction within the site shall be designed in accordance With the Town of West Newbury's Rules and Regulations Governing the Subdivision of Land. Sidewalks, crosswalks, walkways, bike racks, or other pedestrian access which allow access to adjacent properties and between individual businesses within a development site. (IV.C.2.iv)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Access Options	Common drives not addressed, No common drives allowed, Dead end allowed with limit on length and # of units	Allow dead end with limit on length and # of units. Allow common drives up to 2-3 units	Allow one way loop streets. Allow common drives up to 4 units, and alleys and rear-loading garages where suitable.	*(Not applicable)*	allow deadends with limit on length and # of units, allow common drives with up to 3 units (mentioned in zoning bylaw): dead end streets shall not exceed 800 feet in length unless, in the opinion of the Board, a greater length is necessitated by topography or other local conditions. Dead end streets shall be provided at the closed end with a turnaround having an outside pavement diameter of 100 feet and a property line diameter of 120 feet (4.2.8.2.)	Mentioned as a design standard in site plan review: Common or shared driveways and parking lots which reduce curb cuts, reduce impervious areas, and enhance pedestrian circulation (IV.2.b.ii)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Dead Ends/Cul-de-sacs	No standards addressed OR 120 ft or more minimum turnaround	Minimize end radii – 35 ft	Allow hammerhead turnaround	*(Not applicable)*	addressed in constuction site index	not addressed but refferred to subdivision regulations (IV.C.2.iv)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Cul-de-sacs	No standards addressed OR Full pavement standard	Encourage center landscaping with bioretention	Require center landscaping with bioretention	*(Not applicable)*	Circular turnarounds shall provide a landscaped island in the center. The applicant shall submit a landscape plan for the central portion of turnaround. (4.2.8.3)	not addressed but refferred to subdivision regulations (IV.C.2.iv)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Curbing	No standards addressed OR Curbing required full length both sides of road	Allow curb breaks or curb flush with pavement to enable water to flow to vegetated LID features	Open drainage with roadside swales and no curbs preferred	*(Not applicable)*	4.2.5.1 Modified Cape Cod berm shall be required along all edges of pavement unless an alternative design is approved by the Board. 5.5.1.Bituminous concrete berms and curbs shall be provided along each side of the roadway. (5.5.1)	not addressed but refferred to subdivision regulations (IV.C.2.iv)	*(Not applicable)*	*(Not applicable)*	follows subdivision guidelines (4.1.1.)
Roadside Swales	Not addressed OR Allowed as an option	Preferred over closed drainage	Preferred, with criteria for proper design. Adoption of technical specifications and design templates for green infrastructure recommended	*(Not applicable)*	allowed but not specifically addressed	not addressed but refferred to subdivision regulations (IV.C.2.iv)	Mentioned and allowed as an option - not directly prefered, but design standards provided: Size drainage swales to accommodate the 25-year storm event and velocities below 4 feet per second (7.E.13)	*(Not applicable)*	*(Not applicable)*
Utilities	Off sets required contributing to wide road ROWs	Not specified - flexible	Allow under road, sidewalks or immediately adjacent to roads to enable placement of roadside swales.	*(Not applicable)*	All private/public utility systems including electric supply lines and telephone lines shall be installed in accordance with Section 5.3.4.1 below the finished grade of proposed streets (4.7.1.).	not addressed but refferred to subdivision regulations (IV.C.2.iv)	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*
Sidewalks	Material not addressed OR Concrete or bituminous required	Some flexibility in material and design	Prefer permeable pavement or permeable pavers	*(Not applicable)*	Sidewalks shall be constructed in two courses; 1 ½ inch course of bituminous concrete binder with a 1 1/2 inch top course on an eight (8) inch gravel subbase foundation (M1.03.1) and shall pitch down towards the gutter 1/4" vertical for each horizontal foot. At its discretion, the Planning Board may require that a sidewalk be constructed of concrete rather than bituminous concrete	not addressed but refferred to subdivision regulations (IV.C.2.iv)	*(Not applicable)*	*(Not applicable)*	follows subdivision guidelines (4.1.1.)
Sidewalk location	Required both sides of road	Allow on only 1 side of road especially in low density neighborhoods	Prefer siting with land contours and for best pedestrian utility (e.g. connect with common areas and shared open spaces) – not necessarily immediately parallel to road.	*(Not applicable)*	The Board may approve a "meandering" location in which the sidewalk follows existing terrain, with consideration to stone walls, large, mature trees, rock outcroppings and other natural or historically significant features, enabling the construction of the sidewalk to minimize disturbance to such features. All or portions of a meandering sidewalk may be located outside the right-of-way provided that a proper easement is granted to the Town. (4.3.1.1.) no sidewalks required on local access roads, 1 side of road required on minor collector roads, 2 sides required on major collector roads (4.3.1.2.)	Unless waived by the Planning Board, all roadways and sidewalk construction within the site shall be designed in accordance With the Town of West Newbury's Rules and Regulations Governing the Subdivision of Land. Sidewalks, crosswalks, walkways, bike racks, or other pedestrian access which allow access to adjacent properties and between individual businesses within a development site. (IV.2.a.iv)	*(Not applicable)*	*(Not applicable)*	follows subdivision guidelines (4.1.1.)
Sidewalk drainage	Draining to road, closed drainage system required	Not addressed	Disconnect drainage from road system – e.g. adjacent green strips or within vegetated areas that can absorb sheet flow	*(Not applicable)*	not addressed	In order to minimize design and permitting conflicts, the Applicant must demonstrate that the proposed development will be permitted to connect to any public utility systems including drainage infrastructure. (IV.4)	*(Not applicable)*	*(Not applicable)*	closed drainage system required for paved areas larger than 10,000 sq ft. with one catch basin per 20,000 sq ft. Drainage may connect to an existing water course or town drainage system upon selectman approval (4.2.1.)
GOAL 4: ADOPT GREEN INFRASTRUCTURE STORMWATER MANAGEMENT PROVISIONS									
Rooftop runoff	Not addressed OR Prohibit directing clean roof runoff into closed municipal drainage systems.	Allow clean roof runoff to be directed to landscaped or naturally vegetated areas capable of absorbing without erosion, or infiltration	Require directing clean roof runoff to landscaped or naturally vegetated areas capable of absorbing, or infiltration	*(Not applicable)*	Foundation, perimeter or roof drains may be connected into the street drainage system if approved by the Town DPW (4.4.9.)	*(Not applicable)*	not addressed	*(Not applicable)*	*(Not applicable)*

Overall stormwater design; piping and surficial retention vs. LID	Conventional stormwater system design standards	Encourage LID features and BMPs; design standards often not specified	LID design standard encouraging infiltration, allowing surficial ponding of retained runoff for up to 72 hours; systems designed for larger volume storms, accounting for future precipitation predictions; credit for green roofs towards stormwater requirements. Following best practice may also help communities comply with MS4 permit requirements	*(Not applicable)*	To the extent practicable all stormwater management systems shall be designed to incorporate the Massachusetts Executive Office of Environment Affairs Low Impact Development (LID) strategies for stormwater storage, filtration and infiltration through small scale landscaping techniques. Where a LID stormwater management system is approved by the Board, requirements of this regulation otherwise applicable to a conventional stormwater management system may be omitted without a specific waiver by the Board. (4.4.3.)	The location and description of all existing and proposed septic systems, water supply, storm drainage systems, utilities, refuse, and other waste disposal methods requied in site plan review, but no design standards mentioned (IV.1.B.L)	Low Impact Development (LID) and Green Infrastructure (GI) site design strategies shall be utilized to preserve existing natural features of the site, minimize the creation of impervious surfaces, and manage stormwater in a decentralized fashion, unless infeasible. (7.C.1) Projects must use Low Impact Development (LID) techniques unless Infeasible as defined in the Bylaw. These may include but not be limited to reduction in impervious surfaces, disconnection of impervious surfaces, bioretention (rain gardens) and infiltration systems. (7.E.3) systems are designed for large storms and future precipitation requirements (7.E)	*(Not applicable)*	*(Not applicable)*
Site Plan/Design Requirements	LID not addressed	Encourage use of LID features in site design - such as reduced imperviousness, maintaining natural hydrology, preserving open space, and rainwater reuse	Include bioretention and other vegetated LID features in site landscaping/open space requirements. Following best practice may also help communities comply with MS4 permit requirements. See section 2.3.5 of the MS4 permit for more information	In addition to the development and performance standards listed under Section 8.B. Site Plan Review, the design and construction standards listed in Sections 4-6 of the Rules and Regulations Governing the Subdivision of Land, West Newbury, MA shall be applied in the review and approval of an OSPD-SP. (6.b.7. e) - e.Open Space and Environmental Protection: 1.Minimizes adverse impacts to open space and viewscapes, and adverse environmental impacts to such features as wetlands, floodplains, surface water and groundwater. 2.Proposes a landscape design that favors native and drought-tolerant species and avoids invasive plants. f.Community Character: 1.Minimizes obstruction of scenic views from publicly accessible locations. 2.Minimizes impacts to important natural or historical features. 3.Screens objectionable features, such as large blank walls, open dumpsters, loading or storage areas	*(Not applicable)*	Site design described in depth but little to no mention of the incorporation of LID features: A landscaped buffer strip at least ten (10) feet wide, adjacent to public roads Unless waived by the Planning Board due to safety, pedestrian uses, or lot shape, buffer strips planted with a combination of grass, medium height shrubs, and shade trees. At all street or driveway intersections, plantings set back so that they do not present an obstruction to sightlines., Surface parking lots containing over twenty (20) spaces with one shade tree per ten (10) parking spaces, such trees to be located either in the parking area or within ten (10) feet of it. It is recommended that at least five percent (5%) of the interior of the parking area shall be maintained with landscaping, including trees	design criteria require LID features and help communities comply with MS4: Projects must use Low Impact Development (LID) techniques unless Infeasible as defined in the Bylaw. These may include but not be limited to reduction in impervious surfaces, disconnection of impervious surfaces, bioretention (rain gardens) and infiltration systems. (7.E.3).	*(Not applicable)*	*(Not applicable)*
Allow easy siting of LID features (bioretention, swales, etc.)	Not addressed OR Require waivers from subdivision standards	Encouraged along road ROW	Allowed on lots, common open space, or road ROW, easement recorded. For commercial development, allow an increase in floor area ratio or other developmental incentives for green roofs	*(Not applicable)*	not addressed	*(Not applicable)*	LID features allowed and required for permitting, but no mention of Lid allowed along ROW	*(Not applicable)*	*(Not applicable)*
Permeable paving	Not addressed OR Require waivers from subdivision standards	Allowed on private residential lots for parking, patios, etc.	Allowed for residential drives, parking stalls, spillover parking spaces, emergency access ways (with proper engineering support for emergency vehicles) Two track design allowed for driveways and secondary emergency access ways (where required).	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	not addressed beyond Projects must use Low Impact Development (LID) techniques unless Infeasible as defined in the Bylaw. These may include but not be limited to reduction in impervious surfaces, disconnection of impervious surfaces, bioretention (rain	*(Not applicable)*	follows subdivision guidelines (4.1.1.)
Stormwater management O&M plan	Typically only addressed if municipality has a stormwater or LID bylaw, or for areas subject to wetlands permitting	Required	Required, contents specified in alignment with current MassDEP Stormwater Handbook. Following best practice may also help communities comply with MS4 permit requirements	*(Not applicable)*	required per stormwater bylaw but not addressed in subdivision	*(Not applicable)*	Required for projects larger than an acre of land: This Bylaw shall be applicable to any alteration, disturbance, including clearing, grading, excavation, development, or redevelopment that will disturb land surface area equal to or greater than 1 acre (5.A), A permit must be obtained prior to the commencement of a Disturbance activity that may result in the disturbance of an area of one acre or more, or activities that are part of a larger common plan of Development disturbing one acre or more.	*(Not applicable)*	*(Not applicable)*
Construction Erosion and Sedimentation Plan, and stormwater control	Basic general requirements	Required, contents specified - the site design process should include soil erosion and sedimentation control measures	Goes beyond minimum NPDES requirements. Requires minimization of site disturbance, reduction of construction waste, control measures not removed until proof of soil stabilization or reestablishment of vegetation. Written procedures for site inspection and enforcement included. Following best practice may also help communities comply with MS4 permit requirements. See section 2.3.5 of the MS4 permit for more information	No building permit may be issued for any development that would cause disturbance of more than 1 acre, as determined by the Inspector of Buildings, without a Construction Phase Erosion and Sediment Control Plan and a Stormwater Management Plan that demonstrate compliance with the Massachusetts Stormwater Standards (2008 or as further updated) and the Massachusetts Stormwater Handbook (2008 or as further updated) (7.A.11)	A Comprehensive Sedimentation and Erosion Control Plan shall be submitted to the Board and/or other Town agencies showing the staging of construction and the measures to limit water borne and wind induced erosion, which shall include quick rooting vegetation, expeditious stabilization of disturbed area, hay bales, diversions, siltation fences, and sedimentation basins (4.4.5.)	*(Not applicable)*	Required for projects larger than an acre of land: This Bylaw shall be applicable to any alteration, disturbance, including clearing, grading, excavation, development, or redevelopment that will disturb land surface area equal to or greater than 1 acre (5.A), A permit must be obtained prior to the commencement of a Disturbance activity that may result in the disturbance of an area of one acre or more, or activities that are part of a larger common plan of Development disturbing one acre or more.	*(Not applicable)*	*(Not applicable)*
Stormwater discharge detection & elimination	Not addressed	Discharges and connections noted and/or limits set on quantity and quality	Illicit discharges and connections are probibited and enforced. Following best practice may also help communities comply with MS4 permit requirements. Find more information in section 2.3.4.a of the MS4 permit	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	The selection, design and construction of all pre-treatment, treatment and infiltration BMPs shall be in accordance with the Massachusetts Stormwater Handbook and shall be consistent with all elements of the Massachusetts Stormwater Standards including but not limited to those regarding new stormwater conveyances, peak runoff rates, recharge, land uses with higher potential pollutant loads, discharges to Zone II or interim wellhead protection areas, sediment and erosion control, and illicit discharges. (7.C.2)	*(Not applicable)*	*(Not applicable)*
Post- construction stormwater management and drainage patterns	Not addressed	Allow LID	Resemble pre-existing conditions of volume, velocity, quality and location, as nearly as possible, requiring LID to the max extent feasible. Retain vol of runoff >1in. per sq.ft. of impervious surface and/or remove 90% TSS post-construction & 50% TP generated on the site for new development, or >0.8in. per sq.ft and/or remove 80% TSS and 50% of TP load for redevelopment. Following best practice may also help communities comply with MS4 permit requirements.	*(Not applicable)*	Stormwater management for each subdivision shall accomplish the following: (1)Reproduce, as nearly as possible, the hydrological conditions in the ground and surface waters prior to the development (4.4.1.), Stormwater management systems shall be designed in accordance with the Massachusetts Department of Environmental Protection (DEP) Stormwater Management Policy Handbook and Technical Handbook as most recently amended, whether or not the subdivision falls within the jurisdiction of the Wetlands Protection Act. In addition, all stormwater management systems must comply with the EPA/DEP Stormwater Phase II requirements. To the extent practicable all stormwater management systems shall be designed to incorporate the Massachusetts Executive Office of Environment Affairs Low Impact Development (LID) strategies for stormwater storage, filtration and infiltration through small scale landscaping techniques. Where a LID	*(Not applicable)*	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 12 Solids (TSS) related to the total post-construction impervious area on the site and 60% of the average annual load of Total Phosphorus (TP) related to the total post-construction impervious surface area on the site. Average annual pollutant removal requirements shall be achieved through one of the following methods: (7.3.C) 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	*(Not applicable)*	*(Not applicable)*

As-built surveys	Not addressed	Recommended	Required, with written instructions for process; electronic submittal allowed	*(Not applicable)*	as built plan required with ideals on content and instructions for process 5.16.1.A Street Acceptance Plan and As-Built Plan and Profile shall be submitted to the Planning Board prior to street acceptance., no mention of electronic submittal. Also mentioned in 3.3.6.	The Planning Board may require As-Built Plans following completion of a project. See Rules and Regulations Governing the Subdivision of Land, Section 5.16., for the applicable requirements. (5.G)	some as built plans/drawings required, process not specified. Permittees shall submit as-built drawings no later than one year after completion of construction projects. The as-built drawings must depict all on-site controls, both structural and non-structural, designed to manage stormwater associated with the completed site. (7.F), Upon completion of the work allowed under a Stormwater Management Permit, the permittee shall submit a report (including certified as-built construction plans) (12)	*(Not applicable)*	*(Not applicable)*
Intra-departmental communication and coordination	Not addressed	Informally or loosely occurring	Required for plan review and/or permit approvals	This By-Law shall be enforced by the Inspector of Buildings. (8.D.1), no intra departmental coordination addressed	not addressed	Some collaboratiion but not outright stated: An Associate Member, nominated by the Planning Board and duly appointed annually by the Board of Selectmen, shall vote on special Permits when a member of the Board is absent; The Board may hire a Town Planner, secretary and other professional assistance (I.2.e) The Board may hire a Town Planner, secretary and other professional assistanceas needed for the conduct of its duties. Personnel added to the payroll of the Town are subject to the job description, personnel regulations, and appropriations voted by the Town Meeting or adopted by the Board of Selectmen. (I.2.f)	Not required for permitting and generally not addressed: An applicant seeking an approval and/or permit shall file an appropriate application with the Stormwater Authority in a form and containing information as specified in this Bylaw and in regulations adopted by the Stormwater Authority. (II.2) Mentioned in rules and regs more: The Stormwater Authority under the Town of West Newbury Stormwater Bylaw shall administer, implement, and enforce these regulations. Any powers granted to or duties imposed upon the Stormwater Authority may be delegated in writing by the Stormwater Authority to its employees or agents including other town departments and staff. (4)	Upon request of the Commission, the Select Board and town counsel may take legal action for enforcement under civil law. Upon request of the Commission, the chief of police may take legal action for enforcement under criminal law. (XII) Municipal boards and officers, including any police officer or other officer having police powers, shall have authority to assist the Commission in enforcement. (XII)	no intra-departmental coordination mentioned
Enforcement	No	Yes	Yes with fines. Same entity should oversee permit approvals and enforcement	This By-Law shall be enforced by the Inspector of Buildings. (8.C.1), Any person violating any provisions of this By-Law, any of the conditions under which a permit is issued, or any decision rendered by the Board of Appeals, may be fined not more than one hundred ($100.00) dollars for each offense. Each day that each violation continues shall constitute a separate offense. (8.D.1)	planning board is the governing entity, but enforcement and fines are not addressed (6.0)	The following Regulations are adopted by the West Newbury Planning Board as authorized by M.G.L. Chapter 40A, the Zoning Bylaw, and other Bylaws and Regulations of the Town. - no mention of enforcement of fines (I.1.B)	The Stormwater Authority or its authorized agent shall enforce this Bylaw, and any associated regulations, orders, violation notices, and enforcement orders and may pursue all civil remedies for such violations. (8) The penalty for the first violation shall be a warning. The penalty for the second violation shall be $100. The penalty for the third and subsequent violation shall be $300. Each day or part thereof that such violation occurs or continues shall constitute a separate offense. (I.8.C), The Stormwater Authority under the Town of West Newbury Stormwater Bylaw shall administer, implement, and enforce these regulations. Any powers granted to or duties imposed upon the Stormwater Authority may be delegated in writing by the Stormwater Authority to its employees or agents including other town departments and staff. (4)	The Commission shall have authority to enforce this bylaw, its regulations, and permits issued thereunder by letters, phone calls, electronic communication and other informal methods, violation notices, non-criminal citations under G.L. Ch. 40 §21D, and civil and criminal court actions. Any person who violates provisions of this bylaw may be ordered to restore the property to its original condition and take other action deemed necessary to remedy such violations, or may be fined, or both. (XII) Any person who violates any provision of this bylaw, or regulations, permits, or administrative orders issued thereunder, shall be punished by a fine set by the Commission of not more than $300. Each day or portion thereof during which a violation continues, or unauthorized fill or other alteration remains in place, shall constitute a separate offense, and each provision of the bylaw, regulations, permits, or	planning board enforces but no fines mentioned
GOAL 5: ENCOURAGE EFFICIENT PARKING									
Parking	Specific minimums set based on projected maximum use times	Encourage minimum # needed to serve routine use (e.g. 2/residential unit with any additional/visitors parking behind in driveway or on street.	Establish Maximum Parking spaces allowed. Do not require more than 2/residence. Allow tenants separate, optional lease agreements for parking.	not addressed	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	Not Addressed
Commercial Parking	Specific minimums set based on projected maximum use times adding all on-site uses together.	Some flexibility to reduce minimums based on street or other available nearby parking or transit.	Allowed shared parking for uses with different peak demand times. Provide model agreements/deed restrictions. Reduce parking requirements near transit. Limit parking stall size (9ftx18ft max), with up to 30% smaller for compact cars	not addressed	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	*(Not applicable)*	planning board may vary parking regulations to accommodate areas designated for compact cars only (6.2.) Otherwise not addressed
LID in Parking Areas	LID not addressed OR Require waivers e.g. for planting islands to drain down rather than built up surrounded by curbs	Allow LID/bioretention within parking areas.	Require landscaping within parking areas, as LID/bioretention, at a minimum of 10% of the interior area landscaped and a minimum of 25 square feet for island planting areas.	*(Not applicable)*	not addressed	Surface parking lots containing over twenty (20) spaces with one shade tree per ten (10) parking spaces, such trees to be located either in the parking area or within ten (10) feet of it. It is recommended that at least five percent (5%) of the interior of the parking area shall be maintained with landscaping, including trees, in landscape islands or plots with no more than twenty (20) parking spaces between each island or plot. (IV.3) Landscaped islands to provide shade and drainage in the parking lot. (IV.2.iv.v)	not addressed	*(Not applicable)*	no more than 20 spaces shall be provided in a row without separation by an interior driveay and by a landscaped area. (3.8.1.)

Appendix B: Community Reports

Amesbury Ordinance and Regulation Review

Overview

Merrimack Valley Planning Commission (MVPC) provides technical assistance to its municipalities to achieve and maintain compliance with Federal and State regulations. This report summarizes MVPC's review of the City of Amesbury's ordinances and regulations for consistency and adherence with the Environmental Protection Agency's (EPA) Municipal Separate Storm Sewer (MS4) permit. Specifically, the requirements for year 4 of the MS4 permit: section 2.3.6b - report assessing current street design and parking lot guidelines and other local requirements that affect creation of impervious surface, and section 2.3.6c - report assessing existing local regulations to determine the feasibility of making green roofs, infiltration practices, and water harvesting devices allowable, were reviewed. The following ordinances and regulations were provided to MVPC by Amesbury municipal officials:

- Zoning Ordinance (includes site plan review)
- Wetland Protection Ordinance and Regulations
- Subdivision Rules and Regulations
- IDDE Ordinance

This community specific summary will be compiled into a comprehensive regulation review report to be submitted to the Massachusetts Department of Environmental Protection as a deliverable for the Merrimack Valley Planning Commission's MS4 Municipal Assistance Grant. The work completed through this grant was accomplished in collaboration with the Greenscapes North Shore Coalition (Ipswich River Watershed Association, Salem Sound Coastwatch and MVPC).

Amesbury has made substantial progress towards ensuring impervious surface reduction and low impact development (LID) implementation within their ordinances and regulations. Amesbury's zoning ordinance and subdivision regulations are successful at maintaining design standards which protect natural resources, encourage low impact development solutions, reduce overall impervious space, and encourage efficient parking through practices such as cul-de-sac landscaped islands, required landscaping within parking lots with design standards, flexibility with lot sizes tailored to district type, and open space requirements. However, some of Amesbury's stormwater related standards and requirements are dispersed throughout their codes, and requirements for an Operations and Maintenance plan and MS4 required removal of Total Suspended Solids (TSS) and Total Phosphorus (TP) for new development and redevelopment sites are missing.

Improvements could be made to these codes by developing a centralized location for all stormwater related permitting requirements and design standards and implementing MS4 requirements of an Operations and Maintenance plan and TSS/TP removal quantities. Further, thresholds for stormwater permit requirements could be modified to encapsulate more development activities.

Recommendations

Goal 1: Protect Natural Resources and Open Space

- **Zoning Ordinance and Subdivision Regulations**: Amesbury's zoning ordinance and subdivision regulations are very successful at incorporating language which protects natural resources and open space, including prohibiting the removal of earth materials, requiring permanent stabilization, and requiring the reduction of practices like cut and fill and disturbance of existing vegetation. While non-invasive species plantings are required within Amesbury's SGOD district, and trees are required to conform to the standards of the American Association of Nurserymen, Greenscapes recommends explicitly stating a requirement for native species plantings both in the zoning ordinance's site plan review criteria, and within the subdivision regulation's design standards.

Goal 2: Promote Efficient, Compact Development Patterns and Infill

- ***IDDE Ordinance:*** Currently, the zoning ordinance requires a stormwater management permit for any land disturbance of 43,560 feet. To encapsulate a wider breadth of projects which may alter natural stormwater processes, Greenscapes recommends developing new permit thresholds: a minor permit for developments over 20,000 square feet of land disturbance which requires administrative review and approval from a conservation agent, and a major permit for land disturbances over 43,650 square feet (multi-dwelling or large commercial project), which requires a public hearing and approval by the planning board/conservation commission.

Goal 3: Smart Designs that Reduce Overall Imperviousness

- **Subdivision Regulations:** While Amesbury's subdivision regulations encourage street design related to natural topography, common driveways, and cul-de-sacs with landscaped center islands, several standards could be edited to reduce impervious surface creation. Currently, the standards require bituminous concrete sidewalks and curbing on all roads and sidewalks to be placed on both sides of the road in all circumstances. Greenscapes recommends permitting permeable paving for sidewalks in low volume areas, and local or more rural roads to be developed without curbing to promote open drainage. Further, Greenscapes recommends permitting sidewalks on one side of the road in low density areas and encouraging sidewalks to be designed in conformance with natural topography. Finally, LID practices like rain gardens could be encouraged within landscaped center islands with curb cuts permitted to allow more on-site stormwater retention.

Goal 4: Adopt Green Infrastructure Stormwater Management Provisions

- ***Zoning Ordinance and Subdivision Regulations:*** While Amesbury's zoning ordinance and subdivision regulations are successful at encapsulating the majority of MS4 requirements, they do not address the MS4 required removal of Total Suspended Solids (TSS) and Total Phosphorus (TP) for new development and redevelopment sites, nor require an Operations and Maintenance plan accompanying a Stormwater Management Permit. Greenscapes recommends requiring a 90% TSS and 60% TP generated on site for

new developments post-construction and an 80% TSS and 50% TP generated on site for redevelopments post-construction as required by the MS4 permit. Greenscapes also recommends requiring an Operations and Maintenance Plan within the subdivision regulations after section 6.05 Erosion and Sedimentation Control Plans, with similar details on requirements and contents.

- ***Stormwater Ordinance:*** While the majority of language regarding LID and other MS4 requirements can be found throughout the zoning ordinance and subdivision regulations, the decentralization of this language makes it difficult to ensure all requirements are achieved, both for the municipality and developer. Greenscapes recommends centralizing all of this information within the Illicit Discharge and Connection Stormwater Ordinance and developing regulations for this ordinance which hold the majority of design standards as they relate to LID and MS4 requirements, so they may be more easily compiled and revised as necessary.

Goal 5: Encourage Efficient Parking

- ***Zoning Ordinance:*** The zoning ordinance is currently very successful at encouraging efficient parking by requiring a minimum number of parking spaces for residential and commercial uses, permitting a reduction in required parking and shared parking agreements, and having explicit standards which encourage LID within parking lots. Greenscapes recommends also developing maximum parking space requirements to limit excess impervious surface creation and permitting 30% of parking spaces for compact cars in lots over 20 spaces.

Timeline and Implementation

To be filled in after community meeting

Andover Bylaw and Regulation Review

Overview

Merrimack Valley Planning Commission (MVPC) provides technical assistance to its municipalities to achieve and maintain compliance with Federal and State regulations. This report summarizes MVPC's review of the Town of Andover bylaws and regulations for consistency and adherence with the Environmental Protection Agency's (EPA) Municipal Separate Storm Sewer (MS4) permit. Specifically, the requirements for year 4 of the MS4 permit: section 2.3.6b - report assessing current street design and parking lot guidelines and other local requirements that affect creation of impervious surface, and section 2.3.6c - report assessing existing local regulations to determine the feasibility of making green roofs, infiltration practices, and water harvesting devices allowable, were reviewed. The following bylaws and regulations were provided to MVPC by Andover municipal officials:

- Zoning Bylaw (includes site plan review
- Wetland Protection Bylaw
- Subdivision Rules and Regulations
- Stormwater Management Bylaw & Rules and Regulations

This community specific summary will be compiled into a comprehensive regulation review report to be submitted to the Massachusetts Department of Environmental Protection as a deliverable for the Merrimack Valley Planning Commission's MS4 Municipal Assistance Grant. The work completed through this grant was accomplished in collaboration with the Greenscapes North Shore Coalition (Ipswich River Watershed Association, Salem Sound Coastwatch and MVPC).

Andover has requirements which support Low Impact Development (LID) within their Watershed Protection Overlay District (WPOD) Groundwater Protection Overlay District (GWPOD), namely the reduction of land disturbance practices which would instigate erosion and runoff. Andover's HM and SCRO districts also require the incorporation of LID practices with specific examples to reduce impact to she Shawsheen River. Andover supports Open Space Residential Development through their cluster development option allowed by special permit, which requires 30% or more open space. However, development outside of these circumstances is not subjected to comply with LID practices. Main areas of improvement lie in updating this conventional planning process to encourage developers to utilize LID strategies in all cases.

Andover's Stormwater Management Bylaw and accompanying Regulations do a great job encouraging LID practices in parcels greater than 43,560 square feet by prohibiting topsoil removal from sites, encouraging the minimization of clearing, requiring 100% native species plantings, and encouraging the use of LID and Best Management Practices (BMPs) as listed in the Massachusetts Stormwater Handbook to reduce runoff and nutrient discharge. Improvements for these regulations surround ensuring Stormwater Management permits are

required for smaller parcel projects, and the requirement of an explicitly named Soil Erosion and Sedimentation Control Plan.

Recommendations

Goal 1: Protect Natural Resources and Open Space

- ***Zoning Bylaw, Wetland Protection Bylaw, & Subdivision Regulations:*** While the Stormwater Regulations require planting of 100% native species, there is no mention of this requirement throughout other bylaws and regulations in related contexts. Greenscapes recommends incorporating this language throughout all relevant codes to maintain consistency, or to refer to the stormwater regulations in lieu of mentioning a 100% native planting requirement.
- ***Subdivision Regulations:*** The subdivision regulations address the need for soil stabilization during and after construction activities, however they do not provide specific standards and instead defer to "methods deemed appropriate by the Board". Greenscapes recommend providing clearly defined stabilization methods to avoid inconsistency and nuance. Further, though they require the stabilization of long-term stockpiles of earth through well-defined methods, the definition of long-term stockpile differs from that of the stormwater regulations. The subdivision regulations define long-term as over 60 days, while the stormwater regulations require stabilization for stockpiled soils left for over 30 days. Greenscapes recommends altering the definition in the subdivision regulations to maintain consistency with the stormwater regulations.

Goal 2: Promote Efficient, Compact Development Patterns and Infill

- ***Zoning Bylaw:*** The zoning bylaw permits cluster developments and multi-family development by special permit, which promotes Open Space Residential Development practices such as maximizing open space and reducing building and lot footprint. However, these design practices are not favored for developers, nor are they required to be considered. Greenscapes recommends that cluster development be permitted by right and that developers be required to analyze a cluster development option when designing residential properties. To promote the further use of Cluster Developments, Andover could also reduce the minimum parcel size for a cluster development from 10 acres to 5 acres.
- ***Stormwater Bylaw and Regulations:*** Currently, the stormwater bylaw and regulations require a stormwater management permit for any land disturbance of 43,560 feet, or approximately 1 acre. To encapsulate a wider breadth of projects which may alter natural stormwater processes, Greenscapes recommends developing new permit thresholds: a minor permit for developments between 3,000-20,000 square feet of land disturbance (typical single family home construction), which requires administrative review and approval from a conservation agent, and a major permit for land disturbances over 20,000 square feet (multi-dwelling or large commercial project), which requires a public hearing and approval by the conservation commission.

Goal 3: Smart Designs that Reduce Overall Imperviousness

- ***Zoning Bylaw:*** Andover's zoning bylaw has the foundations to reduce overall imperviousness and is in need of various small improvements to language. Joint driveways are permitted by special permit for up to two residents within the General Business District. Greenscapes recommends permitting joint driveways for use beyond the General Business District, and recommends permitting pervious pavers for use in both common and regular driveway construction. Further, the zoning bylaw does encourage the "maximum retention of topographic features" but does not explicitly encourage or allow Low Impact development (LID) practices like the creation of rain gardens/swales/green roofs to assist with maintaining pre-construction site conditions. Greenscapes recommends explicitly permitting the use of LID practices with specific examples and design standards.
- ***Subdivision Regulations:*** Subdivision regulations rely heavily on conventional practices which increase imperviousness. Maximum roadway widths are set for major and minor roads which exceed recommended maximums. Greenscapes recommends reducing the maximum width requirements for major roads from 28 ft to 20-24 ft, reducing the requirement for minor roads from 26 ft to 18-20 ft, and maintaining the requirement at 18 ft for local roads to reduce imperviousness. Cul-de-sac center islands are permitted, but do not allow landscaping under most circumstances. Greenscapes recommends allowing landscaped center islands by-right with specific requirements for bioretention pending an acceptable Operations and Maintenance plan from the developer. Finally, sidewalks are required to be composed of impervious bituminous concrete in all instances. Greenscapes recommends permitting permeable paving by right pending an acceptable Operations and Maintenance plan from the developer.

Goal 4: Adopt Green Infrastructure Stormwater Management Provisions

- ***Stormwater Bylaw and Regulations:*** Andover's stormwater bylaw and regulations are primarily successful at incorporating Green Infrastructure practices into their language, including the inclusion of language surrounding the incorporation of structural and nonstructural BMPs to reduce stormwater discharge, and the requirement of Total Suspended Solid and Total Phosphorous removal rates. However, neither document addresses the creation of a "Construction, Erosion, and Sedimentation Control Plan", and instead refers to the criteria within the Massachusetts Stormwater Management Policy. Greenscapes recommends mentioning this plan by name and providing specific design standards surrounding the expectations for the plan's development, including the implementation of LID practices and sediment stabilization techniques to control erosion.
- ***Zoning Bylaw:*** The zoning bylaw does explicitly require the use of LID within the HMS and SCROD districts, along with reference to the types of LID desired, with intention to lessen the impacts of development along the Shawsheen river. Greenscapes recommends expanding this recommendation beyond these two districts and require LID to be incorporated throughout the community with specific examples. Greenscapes also recommends the incorporation of incentives for developers who choose LID

practices, such as allowing an increase in floor area ratio pending the development of a green roof.

Goal 5: Encourage Efficient Parking

- ***Zoning Bylaw***: The zoning bylaw is very successful in limiting parking stall size, permitting 30% spaces for compact cars, and encouraging shared parking. The bylaw does also mention requiring landscaping in parking lots at a minimum of 5% interior if the lot exceeds 20 spaces. Greenscapes recommends requiring lots with more than 20 spaces to be separated by landscaped areas of at least 8 feet and incorporating one shade tree per 8 parking spaces, with curb cuts to allow infiltration in landscaped islands. Greenscapes also recommends requiring LID techniques when feasible in landscaped parking lot islands as well as grass strips between the sidewalk and parking area. As necessary, language requiring LID in parking areas can be carried over to Subdivision Regulations and Stormwater Bylaw and Regulations.

Timeline and Implementation Plan

Following a conversation with Andover's project liaison, the following endeavors were identified as priorities for implementation:

- Include language which addresses native plant requirements in bylaws and regulations.
- Include language which addresses low impact development practices within parking areas.
- Add requirement specifications for an Erosion and Sedimentation Control Plan within Stormwater codes.
- Incorporate further low impact development promoting language throughout code design standards as deemed appropriate.

The town will begin revising or recodifying their zoning bylaw, stormwater management bylaw, and subdivision regulations in the next year, and will implement recommended revisions for each code as they relate to impervious surface reduction and low impact development creation during the larger revision process.

Bylaw and Regulation Review for the City of Beverly

Overview

To ensure Beverly's compliance with year 4 MS4 permit requirements 2.3.6b: report assessing current street design and parking lot guidelines and other local requirements that affect creation of impervious surface and 2.3.6c: report assessing existing local regulations to determine the feasibility of making green roofs, infiltration practices, and water harvesting devices allowable, the following bylaws and regulations were reviewed:

- Zoning Ordinance
- Wetland Protection & Conservation Ordinance
- Subdivision Regulations
- Open Space Residential Design (OSRD)
- Stormwater Management Bylaw & Rules and Regulations

Beverly is concluding a yearlong effort to rewrite its Chapter 249 Stormwater Management Ordinance and Master Rules & Regulations for Contractors. Chapter 249 will update with new standards for new development and redevelopment projects to include Low Impact Development (LID) to the maximum extent feasible, following standards in the MA Stormwater Handbook. This effort includes development of a LID Worksheet and Review that calculates a LID score based on the project's LID elements. A minimum score will be required for each zoning district. A LID Design Guide will accompany the roll out of Stormwater Management Ordinance and Master Rules & Regulations for Contractors.

Recommendations

Goal 1: Protect Natural Resources and Open Space

The **Stormwater Regulations,** revised April 2021, requires different permits and Erosion/Sediment Control and Materials Management Plans for projects disturbing land for one acre or more, less than one acre of land but more than one-quarter acre, and less than one-quarter acres of land.

"Clearing and grading of natural resources such as forest and wetlands shall not be permitted, except when in compliance with all other chapters of the Ordinances of the City. Clearing techniques that retain natural vegetation and drainage patterns, as described in the Manual, shall be used to the satisfaction of the Department." 1V.6. 2) Page 50

Greenscapes recommends incorporating quantitative standards, such as allowed volume of soil excavation and percentage of native plantings into both the Zoning Ordinance and Stormwater Regulations.

Goal 2: Promote Efficient, Compact Development Patterns and Infill

OSRD 300-54 [4] "*Common/Shared driveways. A common or shared driveway may serve a maximum number of six lots."* Making common driveways more accessible (by permit or by right) decreases regional imperviousness and conserves more open space. Greenscapes would recommend including some flexibility in paving material, making permeable pavement an option for certain developments.

Additional recommended language can be found in Volume 2 Chapter 1 of the MA Stormwater Handbook, which contains a list of techniques for reducing impervious areas.

Goal 3: Smart Designs that Reduce Overall Imperviousness

Beverly's LID Design Guide has as a major objective to limit impervious area to reduce the heightened effects of climate change – urban heat islands, increased runoff volume and other negative effects. Impervious areas may be reduced with vegetated areas, porous pavement or planter beds allowing water to infiltrate naturally where possible. Green roofs and rain gardens are encouraged to improve water quality and reduce the heat island effect.

Currently in the Zoning Code, OSRD 300-54 [3] *"encourage the use of nonstructural stormwater management techniques (such as rain gardens and open grass and bioretention swales) and other drainage techniques that do not create impervious surface and that enable infiltration."*

OSRD 300-54 [4] *"Undisturbed areas. At least 50% of the total tract shall be undisturbed, whether by initial or subsequent construction or structures and, except as otherwise provided in Subsection H(1)(d), shall be shown on the OSRD site plan as "Not To Be Disturbed." An undisturbed area is any land left in its natural vegetated state."*

Zoning Ordinance contains flexibility in setbacks, street widths, sidewalk location and the potential for shared driveways and "hammerhead turnarounds" if deemed by the Planning Board to support ORSD. For minor streets, "*Curbs, sidewalks, and street trees are only mandatory in exceptional circumstances*" (375-15 Minor subdivisions). Greenscapes would recommend specifying the maximum paved width for all road and including us of alternative, permeable materials.

Goal 4: Adopt Green Infrastructure Stormwater Management Provisions

The City of Beverly is preparing a Stormwater Management Ordinance that will fully support LID within the City for all zoning districts with reference to specific standards from the MA Stormwater Handbook. At this time, the work is sensitive so the review will continue as Beverly prepares for public comment.

The goal is to provide incentives for the inclusion of LID elements and stormwater management plans (O&M plans, erosion and sedimentation plans included) in new developments and redevelopments.

Goal 5: Encourage Efficient Parking

Beverly's **Zoning Ordinance** does not require a certain minimum number of spaces depending on use, except for Artist Live/Work Requirements Ch 300-119. LID is not specifically addressed. Greenscapes recommendations would include removing the curb requirement and encouraging maximum number of spaces (instead of minimum) while making shared parking opportunities more accessible.

Shared parking could be more specifically described to include allowances for peak demand times and reduced stall sizes when possible. Use of permeable pavers would be a Greenscapes recommendation.

Implementation Plan

Since Beverly is preparing a Stormwater Management Ordinance and LID Design Guide, the following actions were identified as the important and achievable first steps towards making LID more accessible within the City of Beverly.

1. Complete the Stormwater Management Ordinance and seek passage by the City Council.
2. Continue to use its stormwater committee comprised of municipal staff, consultants like SSCW and even residents, to promote LID practices and other stormwater management practices more well-known
3. Support awareness of the LID Design Guide among developers seeking to work in Beverly
4. Update Beverly LID projects on the Greenscapes LID viewer

Boxford Bylaw and Regulation Review

Overview

Merrimack Valley Planning Commission (MVPC) provides technical assistance to its municipalities to achieve and maintain compliance with Federal and State regulations. This report summarizes MVPC's review of the Town of Boxford's bylaws and regulations for consistency and adherence with the Environmental Protection Agency's (EPA) Municipal Separate Storm Sewer (MS4) permit. Specifically, the requirements for year 4 of the MS4 permit: section 2.3.6b - report assessing current street design and parking lot guidelines and other local requirements that affect creation of impervious surface, and section 2.3.6c - report assessing existing local regulations to determine the feasibility of making green roofs, infiltration practices, and water harvesting devices allowable, were reviewed. The following bylaws and regulations were provided to MVPC by Boxford municipal officials:

- Zoning Bylaw (includes site plan review)
- Wetland Protection Bylaw
- Subdivision Rules and Regulations
- Stormwater Management Bylaw & Rules and Regulations

This community specific summary will be compiled into a comprehensive regulation review report to be submitted to the Massachusetts Department of Environmental Protection as a deliverable for the Merrimack Valley Planning Commission's MS4 Municipal Assistance Grant. The work completed through this grant was accomplished in collaboration with the Greenscapes North Shore Coalition (Ipswich River Watershed Association, Salem Sound Coastwatch and MVPC).

Boxford has clearly taken some steps to promote Low Impact Development (LID) strategies for stormwater management, as evinced by language requiring LID practices to be implemented unless infeasible within the Stormwater Bylaw, and the general flexibility within the Subdivision Regulations as they relate to curbing, bioswale implementation, cul-de-sacs, and sidewalks.

However, this language is not consistent throughout all bylaws. Specifically, no codes beyond the Stormwater Bylaw and Regulations explicitly state a preference or requirement for LID practices. Further, no codes successfully address the protection of natural resources and open space, and in many instances stringent design guidelines do not allow for the promotion of design principles which reduce suburban sprawl and enhance native ecosystems. Main areas of improvement to align Boxford's codes with stormwater best practices lie in ensuring all relevant design guidelines are both addressed to promote impervious surface reductions and subsequent stormwater runoff reductions. Ensuring there are no inconsistencies between codes will also move Boxford forward.

Recommendations

Goal 1: Protect Natural Resources and Open Space

- ***Zoning Bylaw, Subdivision Regulations, Stormwater Rules and Regulations, Stormwater Management Bylaw*:** Design guidelines requiring native plants to be used for revegetation are largely unaddressed across all the Boxford's bylaws analyzed. Though Boxford's Stormwater Regulations require all projects to adhere to the MA Stormwater Handbook, this guide is meant as a comprehensive resource for all types of stormwater management and LID techniques, which does not explicitly address several relevant design standards. For this reason, Greenscapes recommends adding language explicitly requiring at least 75% native plantings for revegetation. Further, while Boxford's Earth Removal and Earth Filling Projects section (205) within their Board of Health Regulations addresses topsoil removal, this code is not referenced within other regulations. Greenscapes recommends adding reference to this code within the design standards of the Subdivision and Stormwater Regulations.

Goal 2: Promote Efficient, Compact Development Patterns and Infill

- ***Zoning Bylaw:*** Boxford's Zoning Bylaw has several design standards which could improve to promote efficient, compact development. The code does permit multi-family, clustered development within the Elderly Housing District, however this language does not expand beyond the district. Greenscapes recommends the encouragement of an expansion of these types of facilities beyond use for elderly housing to encourage clustered development in line with Open Space Residential Development principles. Further, Greenscapes recommends permitting accessory dwelling units on lots as another step towards more clustered and open space friendly development.

Goal 3: Smart Designs that Reduce Overall Imperviousness

- ***Subdivision Regulations:*** Boxford's Subdivision Regulations are successful at permitting LID techniques through their flexibility with curbing, open drainage, and sidewalk location, as well as requiring naturally vegetated cul-de-sacs. However, the regulations do require larger Right of Ways (ROW) than recommended, and only reference specifications on road width requirements within the regulation's appendix figure 3. Greenscapes recommends implementing a small table within the regulations which conveys ROW and road width requirements for streets for easy reference. Greenscapes also recommends developing road and ROW requirements which fall into three categories, wide, medium, and narrow, with a maximum width of 24 feet for the wide category. Further, Greenscapes recommends allowing ROW requirements below 50 feet, especially for local roads.
- Subdivision Regulations: Common driveway requirements are addressed in depth within the Zoning Bylaw, though when reference is made to common driveways within the Subdivision Regulations, no link is made to the detailed specifications within the Zoning Bylaw. Greenscapes recommends referring to Zoning Bylaw section 196-29 when referencing common driveways within the Subdivision Regulations.

- ***Subdivision Regulations, Zoning Bylaw Stormwater Bylaw & Regulations:*** Boxford's Zoning Bylaw successfully mentions that the rate of runoff during construction and post-development shall not exceed the rate of pre-development. Greenscapes recommends expanding these standards to the Stormwater Bylaw and Subdivision Regulations by explicitly stating that land shall be developed to maximize on-site stormwater recharge, and post-development infiltration and runoff shall be equal to or greater than pre-development levels, to ensure a reduction in runoff to adjoining streets, lots, and watercourses. Greenscapes also recommends explicitly stating maximum impervious area requirements on lots dependent on district type within the Zoning Bylaw, tailoring impervious cover limits to districts and ensuring clear and measurable design standards.

Goal 4: Adopt Green Infrastructure Stormwater Management Provisions

- ***Subdivision Regulations and Stormwater Bylaw & Regulations:*** Boxford's Stormwater Bylaw and Regulations do briefly mention a requirement to use nonstructural, or LID practices unless infeasible to reduce the discharge of stormwater from development sites. However, no design standards accompany this requirement, nor does this language carry over into the design standards of the Subdivision Regulations. Greenscapes recommends requiring LID within the design standards of the Subdivision Regulations under section 300-16: Lot drainage, with specific examples of LID practices such as rain barrels and bioswales, as well as design standards for their implementation, or reference to a body of literature which holds these standards. Greenscapes also recommends implementing similar language regarding design standards and examples within the Stormwater Regulations 295-5: Procedures or referring to the Subdivision Regulations in lieu.
- ***Stormwater Bylaw & Regulations***: Currently, Boxford's Stormwater Bylaw and Regulations do not prohibit illicit discharges and connections as required for the MS4 General Permit. There is also no other identifiable legal authority, such as an IDDE Bylaw, which prohibits this action. Greenscapes recommends inserting language explicitly prohibiting Illicit Discharges with enforcement within the Stormwater Bylaw or developing a separate IDDE bylaw.
- ***Stormwater Bylaw & Regulations:*** While Boxford's Stormwater regulations refer to an Erosion and Sedimentation Control Plan, it is only referred to in passing, with no description of its contents nor requirements. Greenscapes recommends, similarly to the Operation and Maintenance Plan, that the Erosion and Sedimentation Control Plan be explicitly addressed, with plan contents specified as well as any design requirements. This would be an ideal location to address design requirements regarding goal 1: Protect natural resources and open space.

Goal 5: Encourage Efficient Parking

- ***Zoning Bylaw:*** Boxford's zoning bylaw currently establishes parking requirements based off square feet and does not consider maximum use times for shared commercial parking. Further, parking stall size requirements are not explicitly addressed, nor is LID in parking areas. Greenscapes recommends permitting shared parking for uses with different peak demand times and explicitly stating parking stall size requirements, which

are optimally 9x18 feet. Finally, Greenscapes recommends incorporating language within the bylaw which requires landscaped islands for parking lots over 20 spaces with curb cuts for runoff recharge, LID practices encouraged, and tree planting requirements to increase shade. This language could be further implemented within the design requirements for the Subdivision Regulations as well as the Stormwater Regulations.

Timeline and Implementation Plan

Following a conversation with Boxford's project liaison, the following endeavors were identified as priorities for implementation:

- Include language which addresses 75% or more native plant requirements to enhance sediment stabilization
- Develop one set of design standards to reference throughout all bylaws and regulations to ensure consistency between codes, including a section with LID design standards
- Explicitly prohibit Illicit Discharges within the Stormwater Bylaw to ensure MS4 compliance and safe waterways
- Explicitly state requirements for parking stall sizes
- Address the specific content required within the Erosion and Sedimentation Control Plan as it done for the O&M plan

The town will begin discussion on these efforts this summer following this report's formal release and feels that model language for regulation revisions could be prepared by the end of summer with implementation soon after, while revisions to bylaws may extend until appropriate parties are available to convene and vote on their amendment.

Bylaw and Regulation Review for the Town of Danvers

Overview

To ensure Danvers' compliance with year 4 MS4 permit requirements 2.3.6b: report assessing current street design and parking lot guidelines and other local requirements that affect creation of impervious surface and 2.3.6c: report assessing existing local regulations to determine the feasibility of making low impact development, infiltration practices, and water harvesting devices allowable, the following bylaws were reviewed:

- Zoning Bylaw and Zoning Regulations
- Subdivision of Land Rules & Regulations
- Stormwater Management & Land Disturbance Bylaw and Stormwater Regulations
- Wetlands Protection Bylaw and Wetlands Regulations

Recommendations

Goal 1: Protect Natural Resources and Open Space

The most exemplary language lies in the **Wetlands Regulations** which provides specific performance standards for land disturbance and stabilization within the 35' buffer zone. Greenscapes recommends including these same standards in the **Zoning Bylaw and Regulations**. For example, the following language could be added to Section 4.4 Site Plan Review Procedure: "If permitted, the total allowable volume of soil alteration on site shall not exceed XX% of the total area of the lot".

The **Zoning Regulations** currently include recommendations for all native plantings in Section 7.6.5 governing development in the Character Based Zoning Districts and in the Stormwater Regulations Section 6. Greenscapes recommends including these specifications and planting requirements to all landscaped areas, even those that do not apply for a stormwater permit or fall in the CBZDs.

Goal 2: Promote Efficient, Compact Development Patterns and Infill

According to Danvers' **Zoning Bylaw & Regulations** and the **Subdivision Regulations**, dimensional requirements do not currently allow for much flexibility in lot size or setback/frontage depths outside of the CBZD where there is varied dimensional requirements depending on building/development type. Greenscapes recommends allowing for more flexibility in dimensional requirement throughout the municipality and not just in the central, most urban districts.

Common driveways are currently allowed by special permit according to the **Zoning Bylaw** Section 30.2. "*Lots served by a common/shared driveway must be for single family dwelling use only. For purposes of non-residential uses, common / shared driveways are allowed by right with Site Plan Review in accordance with Section 4 of this Zoning Bylaw. A common/shared driveway shall serve no more than two (2) lots".* Greenscapes would recommend including this, or similar language in the **Subdivision Regulations** as well, which currently require one driveway per lot, while also increasing the accessibility of common driveways to be used by more than 2 units.

Lastly, the **Zoning Bylaw** goes on to require "*new development projects in the CBZDs shall maintain or achieve pre-development hydrology through sustainable site design techniques that infiltrate, filter, store, evaporate and detain storm water close to its source. The post-construction peak runoff rate for the one-year, twenty-four (24) hour rain event shall not exceed the existing peak runoff rate for the same storm event from the site under existing conditions prior to submittal of an application. Low Impact Design (LID) practices, as identified in the Zoning Regulations, should be incorporated into the design as necessary to achieve the required runoff rate".* Greenscapes would recommend that this requirement be extended outside of the CBZD and applicable to all development projects as regulated by the **Zoning and Subdivision Regulations**. Additionally, Greenscapes recommends incorporating a limit to % impervious surface in open space. Section 33.3 of the Zoning Bylaw requires impervious surface coverage to be limited to 33%, but Greenscapes (and the Audubon Review Matrix) would recommend <10% wherever possible.

Goal 3: Smart Designs that Reduce Overall Imperviousness

Sections 7.5 and 7.6 of the **Zoning Regulations** contain Development Principles and Sustainable Development Standards that Greenscapes strongly recommends incorporating into all zoning districts. Exemplary language includes: "*Low Impact Development (LID) techniques should be used to reduce the concentration of stormwater runoff and maintain existing stormwater flows. Where feasible, bioswales, rain gardens and other bioretention techniques should be employed. Green roofs and rain storage systems are encouraged in order to reduce and reuse roof drainage. Pervious paving materials shall be used where feasible to reduce runoff from hardscaped areas and integrated into the design of the project".* One major improvement to the **Subdivision Regulations** would be to either incorporate the language above, or reference it directly in Section V, Design Standards.

During the review process, Greenscapes found little to no reference of common drive allowances and required road widths that could be updated to be more conservative. As described in the summary of Goal 2, Greenscapes would recommend making common driveways allowable by right for up to 4 units and would recommend minimizing necessary road widths for all road categories: wide, medium, narrow, and alley categories. 20-24' widest for 2 travel lanes, 18-20' low traffic residential neighborhood, plus 2' shoulders. Where possible, allow alleys and other low traffic or secondary emergency access and all shoulders to use alternative, permeable materials. These adjustments should be made in Section 7, Dimensional Requirements in the **Zoning Bylaw** and Section 7.10 Public Realm Design Standards in the **Zoning Regulations**.

Goal 4: Adopt Green Infrastructure Stormwater Management Provisions

As discussed above, the text regulating Stormwater Management in Character Based Zoning Districts, Section 7.6.4 in the **Zoning Regulations** thoroughly describes and encourages the use of LID techniques. Within said text, the positive environmental impact is described and justifications for certain developments are included throughout. This section of the Regulations is rather lengthy, but the added language is informative and worth including. Greenscapes would recommend referencing this section of the regulations throughout the rest of the **Zoning Bylaw** and **Subdivision Regulations** and making LID techniques required for all development types/districts.

The **Stormwater Bylaw** and **Stormwater Regulations** also do a good job referencing the MA Stormwater Handbook when it comes to Stormwater Performance Standards. Again, the importance of adherence to

said standards is described within the Bylaw. Stormwater O&M Plans and Erosion and Sedimentation Control Plans are well described in the **Stormwater Regulations**.

Goal 5: Encourage Efficient Parking

At the risk of sounding like a broken record, once again the regulations specific to the CBZD are the most optimal, when it comes to promoting and executing efficient parking opportunities. Not only is shared parking well described: "*From Sec 18.5.D Parking Standards in CBZD: A combination of uses on-site using shared parking lots with offset peak demand times where: a shared parking agreement with proximate properties where uses have offset peak demand times; uses have a high rate of parking turnover; or evidence of similar uses and location situations operating successfully with lower amounts of parking"*, but many different lot arrangements are described and illustrated within the text of Section 18 of the **Zoning Bylaw.** The only recommendation here would be to, once again, make these requirements an recommendations applicable throughout all districts and specifically referenced in the **Subdivision Regulations.**

Implementation Plan

The town of Danvers is concluding a year long bylaw review with the support of a different contractor who is supporting some of their other MS4 Compliance efforts. Greenscapes plans to revisit these recommended changes when the town is ready to submit their improved bylaws, but was unable to share them with the revision team before June 30th.

Essex Bylaw and Regulation Review

Overview

To ensure Essex's compliance with year 4 MS4 permit requirements 2.3.6b: report assessing current street design and parking lot guidelines and other local requirements that affect creation of impervious surface and 2.3.6c: report assessing existing local regulations to determine the feasibility of making green roofs, infiltration practices, and water harvesting devices allowable, the following bylaws and regulations were reviewed:

- Zoning Bylaw (includes site plan review)
- Subdivision Regulations
- Stormwater Management and Land Disturbance Bylaw

Essex zoning, subdivision, and stormwater management and land disturbance bylaws do some things very well in terms of encouraging low-impact development (LID) strategies. For instance, they state an explicit preference for swales and other types of open drainage systems over piped systems to provide for the recharge of aquifers. The potential areas of improvement within its bylaws are largely centered around adding more specific requirements or standards to promote green infrastructure practices. In other words, LID strategies are in many cases not expressly forbidden, nor are they highlighted as preferred design techniques.

It should also be noted that development opportunities in Essex are limited due to very few opportunities for sewage treatment and disposal. Essex soils are not conducive to septic tank installation according to 310 CMR 15 – Title 5. The municipal sewer system is also at capacity; Town of Essex Bylaw 7-7 Sewer Service Area states:

> *It is also the purpose of this by-law to regulate the connections to and extension of the Town's sewer system in order to preserve and manage limited treatment capacity pursuant to an intermunicipal agreement with the City of Gloucester which limits the total treatment capacity available to the Town of Essex to 225 thousand gallons a day.*

Given these restrictions on development, it is especially important for Essex to pay attention to the way its bylaws impact redevelopment projects.

Recommendations

Goal 1: Protect Natural Resources and Open Space

> **Zoning Bylaw:** Topsoil management, clearing limitations, and native vegetation requirements are addressed in the Site Plan Review requirements and the Open Space Residential District which do address minimizing vegetation and soil removal. Greenscapes recommends adding specific standards to limit topsoil removal and vegetation clearing. Additionally, Essex's bylaws do not address native vegetation

requirements and Greenscapes recommends adding language to specifically require native species to revegetate areas. Finally, these enhanced requirements should apply to redevelopment projects as well as greenfield sites.

Subdivision Regulations: Essex's subdivision regulations require reducing, to the extent possible, volume of cut and fill and vegetation removal. Greenscapes recommends adding specific standards to limit topsoil removal and vegetation clearing as well as expanding language to specifically require native species to revegetate areas.

Stormwater and Erosion Control and Wetland Protection Bylaws: Not applicable to this goal.

Goal 2: Promote Efficient, Compact Development Patterns and Infill

Zoning Bylaw: The Zoning Bylaw outlines minimum lot size, setbacks, and frontage requirements. It does allow some of these minimums to be bypassed in OSRD zones, with special permission from the Planning Board. Greenscapes recommends reducing these minimum requirements, expanding the instances in which they can be bypassed, and incentivizing compact development patterns across all zones. Additionally, the use of common driveways is addressed only for Open Space Residential Development and in that case limits common drives to three lots. Greenscapes recommends explicitly allowing for common driveways across zones in order to facilitate compact development and reduce areas of imperviousness.

Subdivision Regulations: The subdivision regulations refer back to the Zoning bylaw for lot dimension and building setback requirements.

Stormwater Management and Erosion Control Bylaw and Regulations and Wetland Regulations: Not applicable to this goal.

Goal 3: Smart Designs that Reduce Overall Imperviousness

Zoning Bylaw: The Zoning Bylaw's strongest case for reducing overall imperviousness is its limits on Lot Coverage to between 25% and 50% outlined in 6-3.2.1 Table of Dimensional Requirements. This requirement could be further strengthened by requiring no net increase in stormwater runoff pre- and post-development. The zoning bylaw largely does not address other opportunities to reduce overall imperviousness, such as road and sidewalk design requirements. Since most activity in Essex will be redevelopment, Greenscapes recommends that these criteria be added to encourage or mandate low-impact development patterns in redevelopment projects in all zones.

Subdivision Regulations: Overall, Essex's subdivision regulations would be classified as "Improved" according to the Mass Audubon Bylaw Review Tool, meaning the specifications laid out do make some effort to reduce imperviousness but more could be

done to further encourage the use of low-impact design standards. For example, one positive aspect of its existing subdivision regulations, Essex is one of the few North Shore towns that specifically mentions road-side swales as a drainage option within subdivisions. Specific examples like this go a long way in illustrating low-impact design options for developers. To further promote LID techniques, Greenscapes recommends that street design standards allow for streets to be located to minimize grading and avoid natural features, to further reduce the minimum widths of roads and road right-of-ways, to allow flexibility in development design by allowing for common drives and dead-end streets with hammerhead turnarounds, and to allow for open drainage instead of curbing along streets. Greenscapes also recommends Essex specifically allow for the use of permeable pavement options for sidewalks and driveways within their subdivision regulations.

Stormwater Management and Erosion Control Bylaw and Regulations and Wetland Regulations: Not applicable to this goal.

Goal 4: Adopt Green Infrastructure Stormwater Management Provisions

Zoning Bylaw: Within the zoning bylaw, stormwater management is addressed primarily in the Site-Plan Review drainage requirements, which does require that soil erosion during and after construction is minimized. However, it does not address LID features as a means of stormwater control except encouraging infiltration within the Water Resource Protection Overlay District. Greenscapes recommends adding requirements for bioretention and other vegetated LID features in site design and open space requirements across all potential development and redevelopment projects.

Subdivision Regulations: Essex's subdivision regulations do a good job of promoting LID stormwater management practices, stating that "open drainage featuring grassed areas will be preferred over piped conveyance," facilitating groundwater recharge in the process. It also specifies that "Lots shall be prepared and graded consistent with drainage so that stormwater does not exit the site at a volume or velocity greater than the pre-existing condition." In order to further encourage the implementation of green infrastructure for stormwater management, Greenscapes recommends adding design standards for LID features in order to measure successful implementation, specifying that permeable pavement can be used in certain instances in the subdivision, and requiring as-built surveys.

Stormwater Management and Land Disturbance Bylaw: The primary purpose of this bylaw is to "regulate illicit connections and discharges to the storm drain system." The bylaw focuses on regulating connections to the grey-infrastructure system and ignores the use of LID techniques to avoid the necessity of such connections. It does, however, outline requirements for construction erosion and sedimentation plans and operations and maintenance plans for stormwater management systems, which are recommended practices. In general, Essex bylaws include few specifics regarding design standards for

stormwater management systems. Greenscapes recommends including specific design standards and offering concrete examples of green infrastructure options in order to meet those design standards.

Goal 5: Encourage Efficient Parking

Zoning Bylaw & Subdivision Bylaws: Essex requires a minimum number of parking spaces dependent on the type of facility. In order to encourage efficient parking, Greenscapes recommends eliminating these minimums, or specifying cases in which developers can reduce these minimums and utilize shared parking facilities.

Stormwater Management and Erosion Control Bylaw and Regulations, Wetland Regulations: Not applicable to this goal.

Resources and Implementation Plan

Essex is currently working with Coneco on MS4 compliance requirements in regards to stormwater bylaw review. Greenscapes has shared this report with the Coneco team who plan to use this analysis to inform their revisions. Essex is also working with the Metropolitan Area Planning Council (MAPC) on an overhaul of their zoning bylaws. Greenscapes has shared this report with the MAPC team in order for them to inform their revisions. The zoning bylaw revision work will resume in the fall of 2022, pending grant funding.

This report will be sent to Essex Selectmen, and the Planning Board Chair and Vice-Chair to consider future bylaw changes. One potential limitation identified as a barrier to implementing all the recommended changes is that as a small town, Essex has limited resources to review planned developments. This limitation should be kept in mind for any proposed changes to bylaws.

Georgetown Bylaw and Regulation Review

Overview

Merrimack Valley Planning Commission (MVPC) provides technical assistance to its municipalities to achieve and maintain compliance with Federal and State regulations. This report summarizes MVPC's review of the Town of Georgetown's bylaws and regulations for consistency and adherence with the Environmental Protection Agency's (EPA) Municipal Separate Storm Sewer (MS4) permit. Specifically, the requirements for year 4 of the MS4 permit: section 2.3.6b - report assessing current street design and parking lot guidelines and other local requirements that affect creation of impervious surface, and section 2.3.6c - report assessing existing local regulations to determine the feasibility of making green roofs, infiltration practices, and water harvesting devices allowable, were reviewed. The following bylaws and regulations were provided to MVPC by Georgetown municipal officials:

- Zoning Bylaw (includes site plan review)
- Wetland Protection Bylaw
- Subdivision Rules and Regulations
- Stormwater Management Bylaw & Rules and Regulations

This community specific summary will be compiled into a comprehensive regulation review report to be submitted to the Massachusetts Department of Environmental Protection as a deliverable for the Merrimack Valley Planning Commission's MS4 Municipal Assistance Grant. The work completed through this grant was accomplished in collaboration with the Greenscapes North Shore Coalition (Ipswich River Watershed Association, Salem Sound Coastwatch and MVPC).

Georgetown has made substantial progress towards ensuring impervious surface reduction and low impact development implementation within their bylaws and regulations. Georgetown's Open Space Residential Design (OSRD) option is very progressive in its flexibility with lot size, setback, and frontage modifications, and required to be submitted for any development over 10 acres or 10 lots. Georgetown's Subdivision Regulations are very successful at protecting natural resources through regulating earth removal and minimizing grading and requiring permanent erosion control structures when necessary. Improvements can be made to these codes by expanding OSRD principles beyond OSRD developments, and explicitly addressing several smart designs that will reduce overall imperviousness.

Georgetown's Stormwater Bylaw & Regulations are equally as progressive, requiring both major and minor permits with applicability specified, thus ensuring all ranges of development are working towards stormwater mitigation. The regulations require low impact development practices unless infeasible, and successfully address all MS4 requirements, including illicit discharge prohibition, total suspended solids/phosphorus requirements, and an erosion and sedimentation control plan. These codes could be improved primarily by providing greater specificity and design standards to low impact development best management practices.

Recommendations

Goal 1: Protect Natural Resources and Open Space

- ***Zoning Bylaw, Subdivision Regulations, Wetland Bylaw, Stormwater Bylaw & Regulations:*** While all codes are progressive regarding minimization of clearing/grubbing and prohibition of topsoil removal, none of Georgetown's reviewed codes currently require native vegetation plantings for development activities. Greenscapes recommends explicitly requiring native vegetation plantings within the design requirements of all codes as appropriate to ensure consistency.
- ***Zoning Bylaw:*** Georgetown's zoning bylaw does address standards surrounding minimization of clearing/grubbing and topsoil removal for their Floodplain District, Water Resource District, Groundwater Protection District, and OSRD, however there is no overarching requirement within the site plan review to explicitly minimize earth removal. Greenscapes recommends explicitly stating within section L of the site plan approval that earth removal shall not be permitted except under provisions of Chapter 49.

Goal 2: Promote Efficient, Compact Development Patterns and Infill

- ***Zoning Bylaw:*** Georgetown's zoning bylaw's OSRD does a great job promoting efficient and compact development patterns and is required to be considered for all developments over 10 lots or 10 acres. However, it is optional to consider OSRD for units on a parcel less than 10 acres. Greenscapes recommends expanding the requirement to consider OSRD to developments over 5 lots or 5 acres to encapsulate a broader spectrum of projects.

Goal 3: Smart Designs that Reduce Overall Imperviousness

- ***Zoning Bylaw:*** Georgetown's zoning bylaw has specific limits for impervious surface creation within the Water Resource District and Groundwater Resource District, requiring a special permit for uses rendering 40% and 15% of impervious space respectively. Greenscapes recommends expanding limits on impervious space for lots to all districts, tailored appropriately to district type. Further, the zoning bylaw's OSRD specifically requires streets to be designed and located in a manner which maintains natural topography and minimizes cut and fill. Greenscapes recommends expanding that design requirement to all districts and placing it under section Q: Construction, within the site plan approval.
- ***Subdivision Regulations:*** Georgetown's subdivision regulations do not specify street width requirements beyond stating that 26 feet pavement is deemed an acceptable street. Greenscapes recommends revising street width recommendations to feature categories for local and major roads with major road width requirements being 24 feet and minor being 20 feet. Cul-de-sac islands are also not addressed within the subdivision regulations. Greenscapes recommends explicitly permitting cul-de-sac center islands with native landscaping, curb cuts, and LID like raingardens. Finally, sidewalks are required to be composed of impervious bituminous concrete in all

instances. Greenscapes recommends permitting permeable paving for sidewalks in low volume areas.

Goal 4: Adopt Green Infrastructure Stormwater Management Provisions

- ***Zoning Bylaw:*** Georgetown's zoning bylaw site plan approval does require some consideration for LID practices such as rainwater retention devices, however only the OSRD explicitly encourages the use soft, nonstructural stormwater management techniques. Greenscapes recommends expanding encouragement for the use of soft stormwater management techniques to all developments and placing this language within site plan approval section O: Stormwater management, infiltration, and retention.
- ***Subdivision Regulations:*** Georgetown's subdivision regulations do require structural stormwater management techniques, like catch basins, to be designed to manage large storms and exfiltrate the stormwater quantity within 72 hours, however the regulations do not explicitly encourage or require the use of LID techniques, nor provide comparable standards for their creation. Greenscapes recommends encouraging LID with design standards and permitting its use on lots and in common open space with easement recorded.
- ***Stormwater Bylaw & Regulations:*** Georgetown's stormwater regulations do require LID unless infeasible, however design standards do not expand beyond requiring compliance with "generally accepted methods". Greenscapes recommends providing detailed design standards with examples of LID mentioned.

Goal 5: Encourage Efficient Parking

- ***Zoning Bylaw:*** Georgetown's zoning bylaw addresses requirements for off street parking for residential structures but does not address requirements for commercial parking. Greenscapes recommends addressing these requirements, including specifications on parking stall dimensions, permission to utilize 30% of spaces in lots over 20 spaces for compact cars, and allow shared parking for uses with different peak demand times. Greenscapes also recommends requiring curb cuts for landscaped parking islands and encouraging LID like raingardens within landscapes areas surrounding parking. Language requiring LID within parking areas could also be expanded to subdivision and stormwater regulations.

Timeline and Implementation

Following a conversation with Georgetown's project liaison, the following endeavors were identified as priorities for implementation:

- Add language surrounding LID design standards and requirements within regulations.
- Pursue projects which are in line with these recommendations, including native species plantings for several locations in the town and LID stormwater control implementation.
- Add language which permits flexible design standards within the zoning bylaw.

The town is already pursuing much of these efforts through Conservation Protection Act funded projects as well as a current Municipal Vulnerability Preparedness grant application. This

summer Georgetown will begin to pursue changes to regulations at a board or committee level. They will also seek to address changes to the zoning bylaw by the next town meeting.

Bylaw and Regulation Review for the City of Gloucester

Overview

To ensure Gloucester's compliance with year 4 MS4 permit requirements 2.3.6b: report assessing current street design and parking lot guidelines and other local requirements that affect creation of impervious surface and 2.3.6c: report assessing existing local regulations to determine the feasibility of making LID, infiltration practices, and water harvesting devices allowable, the following bylaws and regulations were reviewed:

- Zoning Ordinance (Including Special District Regulations)
- Open Space Residential Development (Section 5.15 of Zoning Ordinance)
- Subdivision Rules & Regulations
- Drainage Ordinance

Overall, the ordinances and regulations that manage or relate to stormwater in the city of Gloucester do a decent job at addressing natural solutions and monitoring the creation of impervious surfaces in the community. There is a great foundation for more progressive language that would make low impact development and green infrastructure applications even more accessible.

For starters, Appendix A-1 of the **Subdivision Rules & Regulations** contains model language that could be incorporated in the **Zoning Ordinance** and even in the **Drainage Ordinance** when defining Stormwater Management:

"*The purpose and intent of Stormwater Management shall include: 1) for quantitative control of stormwater runoff, a system of native species vegetation and structural measures that control the increased volume and rate of surface runoff caused by human-made changes to the land and 2) for qualitative control of stormwater runoff, a system of native species vegetation, structural and other measures, that reduce or eliminate pollutants that might otherwise be carried off by surface runoff."*

This statement, in addition to the incorporation of detailed design standards, could immediately strengthen all of Gloucester's stormwater related regulations. Approaches to minimizing impervious surface creation in development projects can be found in Volume 2 Chapter 1 of the MA Stormwater Handbook. Detailed recommendations and design specifications can be found in Volume 2 Chapter 2 of the Handbook, which is an excellent resource for stormwater and LID guidance. Text and specifications should be pulled directly from this resource for use in the municipal documents.

Recommendations

Goal 1: Protect Natural Resources and Open Space

Protection and preservation of natural resources and open space is fairly well covered throughout Gloucester's regulations. The **Zoning Ordinance** requires a special permit for earth fill removal with even stricter limitations in certain special districts. However, the **Open Space Residential Development** section of the **Zoning Ordinance** and the **Subdivision Rules & Regulations** are more vague and ask that "due regard for natural features" be shown and that "any grade changes keep with the natural

appearance of an area". Greenscapes recommends strengthening this language to include specific standards for soil stabilization and to require native species in re-vegetation efforts.

Goal 2: Promote Efficient, Compact Development Patterns and Infill

There is room for improvement in the **Zoning Ordinance** and **Subdivision Rules & Regulations**, but there is also a great foundation for efficient, compact development. There are instances of shared language which sets a great example for consistency across different regulations. Both regulating documents define and encourage the use of shared driveways for up to 4 units and mention the stormwater benefits of such development. The Stormwater Management Appendix, A-1, of the **Subdivision Rules & Regulations** also includes exemplary language for infiltration monitoring which should be applied to permitting for all developments:

"*Stormwater Management Plans submitted must demonstrate that the proposed development or activity has been planned and designed and will be constructed and maintained to meet each of the following standards: 1) Ensure that after development, runoff from the site or activity approximates the rate of flow, velocity, volume and timing of runoff that would have occurred following the same rainfall conditions under pre-development conditions*"

Another area of improvement would require adjustments to the "Minimum Dimensional Requirements" used in both regulations. The **Open Space Residential Development** guidelines allow for flexibility in lot size, frontage and set backs, which Greenscapes would recommend applying in the other regulations as well.

Goal 3: Smart Designs that Reduce Overall Imperviousness

Gloucester's **Subdivision Rules and Regulations** contain the best foundational language for supporting a reduction in imperviousness throughout the community. The regulations call for preservation of natural topography in street and sidewalk placement and suggest the most conservative roadway widths. There are even specific recommendations for shared driveways and hammerhead turnarounds. While these things are not currently addressed in the **Zoning Ordinance,** Greenscapes would recommend incorporating the same detailed design standards from the **Subdivision Rules & Regulations**, which can be found in Section 6.2. The **Open Space Residential Development** guidelines contain some useful language, specifically about "permanent preservation of open space", so Greenscapes would recommend applying the same priorities outside of the OSRD districts.

An improvement that could be made to all regulations would be to make a consistent reduction in the amount/length of curbing required on all road types. More frequent curb cuts would significantly increase infiltration potential and would work harmoniously with vegetated roadside swales, which are already encouraged in the drainage section of the **Subdivision Rules & Regulations.** "Soft, open (non-structural) stormwater management techniques" should be encouraged and prioritized in the **Zoning Ordinance** as well.

Goal 4: Adopt Green Infrastructure Stormwater Management Provisions

All of Gloucester's stormwater regulations could do a better job at promoting green infrastructure and LID techniques. In many instances, natural solutions are mentioned as an option for stormwater control,

but none are prioritized or recommended for specific locations. Both the **Zoning Ordinance** and **Subdivision Rules & Regulations** have detailed requirements for Site Plan Reviews, so the same level of detail should be explained and expected for other permitting requirements like a Stormwater Management O&M Plan and a Construction Erosion & Sedimentation Plan, neither of which are thoroughly addressed. In these plans, when included, specific development recommendations can be made. Specifications for appropriate LID techniques can be found in Volume 2 Chapter 2 of the MA Stormwater Handbook. Techniques could include different applications for bioretention, permeable paving in parking lots or driveways, and much more.

Goal 5: Encourage Efficient Parking

Efficient parking is moderately covered in Gloucester's regulations and shared parking opportunities are encouraged. One main improvement would be transitioning all language that regulates distribution of parking spaces from "minimum parking spaces required" to "maximum parking spaces" and including more detailed guidance for shared parking. Stall sizes should also be referenced and minimized.

LID in parking areas is briefly mentioned for certain special districts in the **Zoning Ordinance** and in the detailed design standards within the **Subdivision Rules & Regulations.** This guidance could be improved, by providing specific requirements, as opposed to allowances, for vegetated areas based on lot area or number of spaces.

Implementation Plan

Implementation plan will be established after reviewing the finalized bylaw review matrix with community liasons.

Groveland Bylaw and Regulation Review

Overview

Merrimack Valley Planning Commission (MVPC) provides technical assistance to its municipalities to achieve and maintain compliance with Federal and State regulations. This report summarizes MVPC's review of the Town of Groveland's bylaws and regulations for consistency and adherence with the Environmental Protection Agency's (EPA) Municipal Separate Storm Sewer (MS4) permit. Specifically, the requirements for year 4 of the MS4 permit: section 2.3.6b - report assessing current street design and parking lot guidelines and other local requirements that affect creation of impervious surface, and section 2.3.6c - report assessing existing local regulations to determine the feasibility of making green roofs, infiltration practices, and water harvesting devices allowable, were reviewed. The following bylaws and regulations were provided to MVPC by Groveland municipal officials:

- Zoning Bylaw (includes site plan review)
- Wetland Protection Bylaw
- Subdivision Regulations
- Stormwater Management and Land Disturbance Bylaw

This community specific summary will be compiled into a comprehensive regulation review report to be submitted to the Massachusetts Department of Environmental Protection as a deliverable for the Merrimack Valley Planning Commission's MS4 Municipal Assistance Grant. The work completed through this grant was accomplished in collaboration with the Greenscapes North Shore Coalition (Ipswich River Watershed Association, Salem Sound Coastwatch and MVPC).

Groveland has requirements which support Low Impact Development (LID) and reduce imperviousness throughout their codes, particularly through the Subdivision Regulations, which ensure practices including on-site topsoil redistribution, side slope stabilization, street development in line with topographic preservation, and cul-de-sacs with landscaped islands. Further, Groveland's Conservation Subdivision Design, in line with Open Space Residential Development practices, is successful at outlining development which requires or encourages LID practices and the preservation of natural features while reducing suburban development sprawl. However, development outside of these circumstances is not subjected to comply with these practices. Main areas of improvement lie in updating the conventional planning process to encourage developers to utilize LID strategies in all cases and ensuring consistency between codes.

Groveland's Stormwater Management Bylaw does a good job encouraging LID practices in parcels greater than 20,000 square feet by explicitly requiring LID design strategies to be implemented with examples, as well as requiring an Erosion and Sedimentation Control Plan, Operation and Maintenance Plan, and numeric limitations on total suspended solids and phosphorous. Improvements for these regulations entail ensuring Stormwater Management

permits are required for smaller parcel projects, and developing design standards which explicitly protect natural features and open space.

Recommendations

Goal 1: Protect Natural Resources and Open Space

- ***Zoning Bylaw, Stormwater Bylaw & Subdivision Regulations:*** Groveland's Wetlands Protection Bylaw does a great job explicitly requiring the replanting of native wetland species when disturbing wetland ecosystems. However, this language is not carried through in other bylaws and regulations. Greenscapes recommends explicitly requiring native vegetation plantings within the design requirements in the Zoning and Stormwater bylaw, as well as within the Subdivision Regulations to avoid inconsistency and ensure native vegetation plantings during development.
- ***Stormwater Bylaw:*** Groveland's Zoning and Wetland Protection Bylaw, as well as their Subdivision Regulations, have explicit requirements which require the minimization of clearing and grubbing, as well as standards for revegetation, promoting the retention and reestablishment of vegetation. However, this specificity does not carry over to the Stormwater Bylaw. Instead, a general qualitative statement, tied to no specific design standards, is mentioned. Greenscapes recommends that more specific design standards related to stormwater runoff and erosion be developed, particularly as they pertain to the minimization of clearing and grubbing, to ensure consistency and provide measurable standards for successful development. Alternatively, the Stormwater Bylaw could explicitly reference the Zoning, Subdivision, and Wetland codes as standards for clearing and grubbing.

Goal 2: Promote Efficient, Compact Development Patterns and Infill

- ***Zoning Bylaw:*** The zoning bylaw permits conservation subdivision design (CSD), which promotes Open Space Residential Development practices such as maximizing open space, reducing building and lot footprint, and preferring LID stormwater practices. However, these design practices do not extend beyond CSD, nor is this design standard favored for developers or required to be considered. Greenscapes recommends that CSD be permitted by right and that developers be required to analyze a CSD option when designing residential developments over 5 units in size. Further, Greenscapes recommends permitting flexibility as it relates to setbacks, lot size, and frontage in all residential developments to reduce the building footprint and overall imperviousness where appropriate.
- ***Stormwater Bylaw and Subdivision Regulations:*** Currently, the stormwater bylaw and regulations require a stormwater management permit for any land disturbance of 20,000 feet. To encapsulate a wider breadth of projects which may alter natural stormwater processes, Greenscapes recommends developing new permit thresholds: a minor permit for developments between 3,000-20,000 square feet of land disturbance (typical single family home construction), which requires administrative review and approval from a conservation agent, and a major permit for land disturbances over 20,000 square feet (multi-dwelling or large commercial project), which requires a public hearing and approval by the planning board.

Goal 3: Smart Designs that Reduce Overall Imperviousness

- ***Stormwater Bylaw and Subdivision Regulations:*** Groveland's Zoning Bylaw is successful in stating requirements for maximum impervious area on lots, tailoring impervious cover limits to districts and ensuring clear and measurable design standards. Greenscapes recommends expanding these standards to the Stormwater Bylaw and Subdivision Regulations by explicitly stating that land shall be developed to maximize on-site stormwater recharge, and post-development infiltration and runoff shall be equal to or greater than pre-development levels, to ensure a reduction in runoff to adjoining streets, lots, and watercourses.
- ***Subdivision Regulations:*** Groveland's Subdivision Regulations successfully permit meandering roads which appropriately conform to topography, traffic islands with natural landscaped plantings, and sidewalk requirement reductions. However, there are several standards which hinder smart designs that reduce overall imperviousness, particularly in Article IV. Both street and Right of Way (ROW) widths go beyond maximum recommendations, and only reference major and minor categories. Further, vertical or sloped curbing is required along the full length of roads in all situations, and impervious surfaces are required for sidewalk pavement. Greenscapes recommends redividing road and ROW requirements into three categories, reducing road widths to 18-20 feet for low traffic and 20-24 feet for high traffic, and allowing ROW requirements below 50 feet, especially for local roads. Further, Greenscapes recommends explicitly permitting curb breaks or curbs flush with pavement to enable water to flow to vegetation instead of pooling on roadways and sidewalks. For local and country roads, Greenscapes recommends open drainage with no curbing, instead relying on low impact development features like bio-swales to mitigate runoff. Similarly, pervious pavers could be explicitly permitted, particularly in open spaces like parks, to reduce imperviousness and enhance on site infiltration of stormwater.

Goal 4: Adopt Green Infrastructure Stormwater Management Provisions

- ***Subdivision Regulations and Zoning Bylaw:*** Groveland's Stormwater Bylaw does a great job explicitly requiring Low Impact Development (LID) techniques with examples. However, the Subdivision Regulations do not mention LID within their design standards, nor reference the Stormwater Bylaw in lieu. Further, the Zoning Bylaw only mentions LID practices in relation to Conservation Subdivision Design. Greenscapes recommends explicitly stating LID design standards within the Subdivision Regulations Article IV, as well as within the Zoning Bylaw as a general design expectation required beyond CSD development. Alternatively, both codes could reference the Stormwater Bylaw in this location to maintain consistency.
- ***Subdivision Regulations:*** Groveland's Stormwater Bylaw requires an Operation and Maintenance Plan (O&M) with contents specified, however there is no reference to this plan within the Subdivision Regulations, resulting in inconsistency with requirements. Similar to the Subdivision's reference to an Erosion Control Plan whose contents are specified within the Stormwater Bylaw, we recommend the regulations make reference

to the requirement of a Stormwater O&M plan. We also recommend explicit reference to the Stormwater Bylaw when mentioning both plans in the Subdivision Regulations.

Goal 5: Encourage Efficient Parking

- ***Zoning Bylaw:*** Groveland's zoning bylaw is primarily successful in developing standards which encourage efficient parking, including requiring extensive landscaping within parking areas, however some design standards could be further specified to avoid confusion. Greenscapes suggests explicitly stating that two parking spaces per dwelling unit is the maximum requirement, to prevent excess impervious surface creation. Further, Groveland's current parking stall dimensional requirement is 9x20 feet, while the standard is 9x18 feet. Greenscapes suggests making this reduction, as well permitting 30% of parking in lots over 20 spaces to be composed of smaller compact spaces. Finally, to enhance the onsite infiltration of stormwater in parking lots, Greenscapes suggests requiring landscaped islands to have curb cuts which allow stormwater recharge, as well as bioretention like rain gardens incorporated within the islands.
- ***Subdivision Regulations and Stormwater Bylaw:*** While Groveland's Zoning Bylaw does a great job requiring landscaping within parking areas, there is no reference to this requirement within the design standards of the Subdivision Regulations and Stormwater Bylaw. Greenscapes recommends either developing a complimentary design standard for each code, or explicitly referencing the Zoning Bylaw when discussing design standards to reduce inconsistency.

Timeline and Implementation Plan

Following a conversation with Groveland's project liaison, the following endeavors were identified as priorities for implementation:

- Include language which addresses 75% or more native plant requirements in all bylaws and regulations to enhance sediment stabilization
- Ensure all codes carry consistent language throughout and reference each other when applicable to reduce confusion
- Require a conservation subdivision design plan to be submitted for any definitive subdivision plan to ensure developers consider this alternative form of development
- Implement parking stall reductions from 9x20 feet to 9x18 feet and permit compact cars to enhance parking availability and reduce imperviousness
- Require a small-scale stormwater permit for developments between 3,000-20,000 square feet to ensure all levels of development are considering stormwater mitigation

The town will begin discussion on these efforts within the two months following this report's formal release and feels that revisions to regulations could happen fairly quickly, while revisions to bylaws may extend until appropriate parties are available to convene and vote on their amendment.

Hamilton Bylaw and Regulation Review

Overview

To ensure Hamilton's compliance with year 4 MS4 permit requirements 2.3.6b: report assessing current street design and parking lot guidelines and other local requirements that affect creation of impervious surface and 2.3.6c: report assessing existing local regulations to determine the feasibility of making green roofs, infiltration practices, and water harvesting devices allowable, the following bylaws and regulations were reviewed:

- Zoning Bylaw (includes site plan review)
- Subdivision Rules and Regulations
- Stormwater Management Permit Rules & Regulations
- Stormwater Management Bylaw
- Illicit Discharge Detection and Elimination Bylaw

Hamilton has clearly considered ways in which to promote low-impact development strategies for storm water management, as evidenced by the specific language used in bylaws and regulations related directly to stormwater. Highlights include requiring LID techniques wherever possible and citing specific examples of LID strategies (i.e. reducing impervious area, directing of roof runoff toward rain gardens and swales) to help guide developers in their planning efforts.

However, it has not included similar language promoting LID in its zoning bylaw and subdivision regulations, creating some inconsistencies across these bylaws which can limit LID adoption. The main areas of improvement to these zoning bylaw and subdivision rules and regulations to facilitate the use of LID strategies will be in allowing for, or requiring, development patterns that take advantage of natural stormwater systems. Hamilton's Zoning Bylaw and Subdivision Rules and Regulations outline many design standards that mandate a certain amount of impervious cover for streets, sidewalks, and parking facilities. These types of stringent requirements limit developer's ability to adopt LID techniques even when recommended in the stormwater management regulations.

Recommendations

Goal 1: Protect Natural Resources and Open Space

> **Zoning Bylaw:** Hamilton has given consideration in its bylaws to managing soils for revegetation, limiting clearing size, and promoting native vegetation and trees. However, all of the recommendations for promoting these practices are within specific types of development – either Senior Housing or Open Space and Farmland Preservation Development. Greenscapes recommends expanding these requirements to all types of development and re-development projects.

Subdivision Rules and Regulations: The subdivision rules and regulations do not address requirements around managing soils, limiting clearing, or using native plants to re-vegetates. Greenscapes recommends that the requirements in the zoning bylaws with these specifications should be replicated within the subdivision rules and regulations.

Stormwater Management Permit Rules & Regulations, Stormwater Management Bylaw, Illicit Discharge Detection and Elimination Bylaw: Not applicable to this goal.

Goal 2: Promote Efficient, Compact Development Patterns and Infill

Zoning Bylaw: Hamilton's zoning bylaw outlines minimums for lot size, setbacks, frontage requirements. The only exception to these minimum requirements is "an applicant may obtain a Special Permit from the Planning Board for an OSFPD." Greenscapes recommends making these requirements flexible, with Open Space Residential Development patterns the preferred option, and by-right, instead of requiring a special permit. In addition, Greenscapes recommends allowing for common drives that serve up to 4 units; currently the zoning bylaws limit the use of common drives to two lots.

Stormwater Management Permit Rules & Regulations, Stormwater Management Bylaw, Illicit Discharge Detection and Elimination Bylaw: Not applicable to this goal.

Goal 3: Smart Designs that Reduce Overall Imperviousness

Zoning Bylaw: The limited mentions of efforts to promote smart designs to reduce imperviousness within the zoning bylaw are primarily found within the Open Space and Farmland Preservation Development section, which specifies that "Streets shall be designed and located in such a manner as to maintain and preserve natural topography, significant landmarks and trees, to minimize cut and fill, and to preserve and enhance views and vistas on or off the subject property," which allows for common driveways of up to three units, and specifies sidewalks shall "be provided to link residences with parking areas, recreation facilities (including parkland and open space) and adjacent land uses." Greenscapes recommends amending these bylaws to allow for common drives up to four units and to make these flexible requirements for street and sidewalk location applicable across all development and redevelopment projects, not only OSFPD developments.

Subdivision Rules and Regulations: Within the subdivision rules and regulations, many of the opportunities to promote low-impact development are either overlooked or specify design criteria that actually forces developers to install impervious surfaces. Greenscapes recommends that these rules and regulations be amended to reduce requirements for impervious surfaces and add in allowances for smart design options. For example, the minimum width of major and secondary streets is between 32' and 44', wider than recommended pavement width to promote LID. The use of dead-end

streets is discouraged or prohibited currently. LID techniques would allow for the use of dead end street and cul-de-sacs to permit flexible development patterns. The regulations currently require that sidewalks be paved with bituminous concrete; Greenscapes would recommend allowing for permeable paving material for sidewalks. Amendments should also be made to curbing and drainage requirements to allow for open drainage to roadside swales, where appropriate.

Stormwater Management Permit Rules & Regulations, Stormwater Management Bylaw, Illicit Discharge Detection and Elimination Bylaw: Not applicable to this goal.

Goal 4: Adopt Green Infrastructure Stormwater Management Provisions

Zoning Bylaw: Green infrastructure solutions are addressed within Hamilton's Open Space and Farmland Preservation Development and Senior Housing Special Residential Regulations, which both specifically encourage low impact development practices. The mention of specific LID techniques including open swales, rainwater retention systems, and plans to minimize impervious areas are particularly useful in pushing developers toward these practices. Greenscapes recommends that this type of specific language be applied to all development and redevelopment projects, not only to these special regulations.

Subdivision Rules and Regulations: Drainage specifications for subdivision focus on the use of grey infrastructure, i.e. drains, catch basins, and manholes and the associated design standards. Currently the subdivision rules and regulations do not mention LID techniques. Greenscapes recommends adding specific language allowing for LID features within subdivisions. Even though LID techniques are addressed within the Stormwater Management Rules and Regulations, it is still helpful to include mention of LID within the subdivision rules to make it easier for developers to adopt these strategies. One positive aspect of the existing regulations is the requirement for as-built surveys.

Stormwater Management Permit Rules & Regulations: Overall, Hamilton's stormwater management rules and regulations are very strong in supporting and requiring the use of LID techniques, where applicable. One very positive aspect of these regulations is the citing of specific LID techniques "which will result in less impervious area, direction of roof runoff toward rain gardens and swales, and plantings indigenous to the area." Two other positive aspects of these rules and regulations is the citing of specific performance standards for stormwater systems and requiring operations and maintenance plans and as-built surveys for stormwater management systems.

Stormwater Management Bylaw: Hamilton's stormwater management bylaw outlines the administration of its stormwater management permit. While most LID provisions are outlined in the rules and regulations, the bylaw does permit a stormwater credit system whereby "This credit system will allow applicants the option to use better site design

practices to reduce some of the requirements specified in the criteria section of the Regulations." This credit system is one way to encourage the use of LID practices. However, it is not clear whether it has been developed in Hamilton and the vagueness of the language in the bylaw creates a hurdle for developers to navigate as they design development and redevelopment projects. Greenscapes recommends offering more specific language around how this credit system would work, including the citation of specific LID techniques that can be used and which requirements they would therefore reduce.

Illicit Discharge Detection and Elimination Bylaw: This bylaw provides strong language to prohibit illicit connections and discharges to the municipal storm drain system and empowers the town manager to enforce this bylaw.

Goal 5: Encourage Efficient Parking

Zoning Bylaw:. Hamilton's Zoning Bylaw specifies minimum parking space requirements dependent on the type of development. Greenscapes recommends establishing maximum allowed parking spaces and allowing for shared parking for uses with different peak demand times. Additionally, parking spaces are required to be paved with bituminous or other surfacing material; Greenscapes recommends allowing for the use of permeable paving material for parking spaces.

Subdivision Rules and Regulations, Stormwater Management Permit Rules & Regulations, Stormwater Management Bylaw, **Illicit Discharge Detection and Elimination Bylaw:** Not applicable to this goal.

Timeline and Implementation Plan

Hamilton recently reviewed and revised its stormwater regulations in November 2021 with the help of Weston & Sampson. This revision is also apparent from the many "optimal" ratings the current stormwater regulations received from this analysis. As such, further revisions of the stormwater management rules and regulations are not currently a priority for the town. Additionally, the town does not have immediate plants to revisit zoning and subdivision bylaws and regulations. The Planning Board does tend to require the inclusion of LID techniques beyond that which is strictly required by the regulations in order to preserve the rural nature of Hamilton. However, the town is currently facing the prospect of a large ANR (approval not required) development. As such, there may be some appetite for a revision of the rules and regulations in fall of 2023. Greenscapes hopes that these recommendations will be under consideration if and when a future revision occurs and we stand ready to assist Hamilton in any way possible to facilitate the implementation of these recommendations.

Haverhill Ordinance and Regulation Review

Overview

Merrimack Valley Planning Commission (MVPC) provides technical assistance to its municipalities to achieve and maintain compliance with Federal and State regulations. This report summarizes MVPC's review of the City of Haverhill's ordinances and regulations for consistency and adherence with the Environmental Protection Agency's (EPA) Municipal Separate Storm Sewer (MS4) permit. Specifically, the requirements for year 4 of the MS4 permit: section 2.3.6b - report assessing current street design and parking lot guidelines and other local requirements that affect creation of impervious surface, and section 2.3.6c - report assessing existing local regulations to determine the feasibility of making green roofs, infiltration practices, and water harvesting devices allowable, were reviewed. The following ordinances and regulations were provided to MVPC by Haverhill municipal officials:

- Zoning Ordinance
- Wetland Protection Ordinance
- Subdivision Rules and Regulations
- Stormwater Management Ordinance

This community specific summary will be compiled into a comprehensive regulation review report to be submitted to the Massachusetts Department of Environmental Protection as a deliverable for the Merrimack Valley Planning Commission's MS4 Municipal Assistance Grant. The work completed through this grant was accomplished in collaboration with the Greenscapes North Shore Coalition (Ipswich River Watershed Association, Salem Sound Coastwatch and MVPC).

Haverhill has requirements which protect natural resources and support compact development, particularly through their zoning ordinance's flexible development option and design standards related to erosion control and vegetation preservation. Further, Haverhill's stormwater ordinance is successful at requiring the stormwater permitting process for parcels over 1 acre. However, Haverhill's stormwater ordinance is missing several MS4 requirements including explicitly prohibiting illicit discharges and addressing the MassDEP required removal of Total Suspended Solids (TSS) and Total Phosphorus (TP) for new development and redevelopment sites of. Further, some design standards are not consistent throughout codes.

Improvements could be made to these codes by addressing all MS4 requirements including prohibiting illicit discharges, stating content requirements for the Erosion and Sedimentation Control Plan and Operation and Maintenance Plan, and including TSS and TP requirements. Further, design standards regarding LID could be developed further, and design standards regarding natural resource protection could be made consistent among codes.

Recommendations

Goal 1: Protect Natural Resources and Open Space

- ***Subdivision Regulations and Stormwater Ordinance***: Haverhill's zoning ordinance is very successful at providing design standards which protect natural resources and open space, however many of these design standards are not consistent with those found in the stormwater ordinance and subdivision rules and regulations. Greenscapes recommends developing similar design standards for things such as topsoil removal, erosion control measures, clearing and grubbing, and native vegetation planting throughout all codes, or referencing the zoning ordinance's standards in lieu. For example, the zoning ordinance could be referenced within the subdivision regulations section 5. Subdivision Design Standards under 5.4 additional design standards for landscaping.

Goal 2: Promote Efficient, Compact Development Patterns and Infill

- ***Zoning Ordinance:*** Haverhill's zoning ordinance is successful at permitting efficient compact development through their flexible development option allowed by right in several residential districts for parcels over 3 acres. Further, open space requirements, lot size, setbacks, and frontage are specific to district and use. Greenscapes recommends permitting reductions in things like frontage and setbacks for lots outside of flexible development pending a special permit and permitting common driveways for several residential units pending a special permit.
- ***Stormwater Ordinance:*** Currently, the stormwater ordinance requires a stormwater management permit for any land disturbance of 43,560 feet. To encapsulate a wider breadth of projects which may alter natural stormwater processes, Greenscapes recommends developing new permit thresholds: a minor permit for developments over 20,000 square feet of land disturbance which requires administrative review and approval from a conservation agent, and a major permit for land disturbances over 43,650 square feet (multi-dwelling or large commercial project), which requires a public hearing and approval by the planning board/conservation commission.
-

Goal 3: Smart Designs that Reduce Overall Imperviousness

- ***Subdivision Regulations:*** Most standards within the subdivision regulations contribute to impervious surface creation. Currently, the standards do not require streets to be designed in such a manner as to maintain and preserve natural topography, do not address cul-de-sac center island requirements, and require bituminous concrete sidewalks and curbing on all roads. Greenscapes recommends explicitly requiring streets to be designed with natural topography in mind, permitting cul-de-sac center islands with native landscaping, curb cuts, and LID like raingardens, permeable paving for sidewalks in low volume areas, and allowing local or more rural roads to be developed without curbing to promote open drainage.

Goal 4: Adopt Green Infrastructure Stormwater Management Provisions

- ***Stormwater Ordinance:*** While Haverhill's stormwater ordinance does include some MS4 requirements and references the Massachusetts Stormwater Handbook for design standards and guidance, several MS4 requirements are missing as well as more explicit, measurable design standards. Greenscapes recommends developing a section for both

the required Erosion and Sedimentation Plan and Operation and Maintenance Plan which details the purpose, contents, and standards for both plans' creation. Further, the ordinance does not address the MS4 required removal of Total Suspended Solids (TSS) and Total Phosphorus (TP) for new development and redevelopment sites. Greenscapes recommends requiring a 90% TSS and 60% TP generated on site for new developments pot-construction and an 80% TSS and 50% TP generated on site for redevelopments pot-construction as required by the MS4 permit. The ordinance also does not prohibit illicit discharges as required by the MS4 permit. Greenscapes recommends explicitly prohibiting illicit discharges with examples and exemptions, or, if an IDDE ordinance already exists, referencing that ordinance directly. Finally, Greenscapes recommends developing design standards as they relate to LID and erosion control beyond those within the stormwater handbook.

Goal 5: Encourage Efficient Parking

- ***Zoning Ordinance:*** The zoning ordinance currently requires specific parking requirements dependent on use, permits shared parking for uses with different peak demand times, and allows parking requirement reductions. To further encourage efficient parking, Greenscapes recommends developing maximum parking space requirements to limit excess impervious surface creation and permitting 30% of parking spaces for compact cars in lots over 20 spaces. Greenscapes also recommends explicitly requiring or encouraging LID within landscaped parking islands and requiring parking islands to have curb cuts for stormwater infiltration. This language could also be expanded to the stormwater ordinance design standards.

Timeline and Implementation

To be filled in after community meeting

Ipswich Bylaw and Regulation Review

Overview

To ensure Ipswich's compliance with year 4 MS4 permit requirements 2.3.6b: report assessing current street design and parking lot guidelines and other local requirements that affect creation of impervious surface and 2.3.6c: report assessing existing local regulations to determine the feasibility of making green roofs, infiltration practices, and water harvesting devices allowable, the following bylaws and regulations were reviewed:

- Zoning Bylaw
- Rules and Regulations Governing the Subdivision of Land
- Design Review Board: Steps for the Design Review Process
- Stormwater Management Bylaw
- Stormwater Management Regulations
- Wetlands Protection By-Law Rules and Regulations

Ipswich has clearly done a lot of work to make sure their bylaws support low-impact development (LID) and green infrastructure systems for stormwater management and as such, many of their bylaws offer specific language mandating or supporting these strategies.

In Greenscapes's view, the main areas of improvement in these bylaws is to ensure that the regulations that most strongly support LID techniques and green infrastructure systems are applicable to all development and redevelopment projects in Ipswich. For example, the zoning regulations for Open Space Residential Zoning have a lot of good language to facilitate LID implementation. Ipswich should ensure that these regulations apply across all development and redevelopment projects. There are also a few discrete instances when inclusion of more specific language or requirements will facilitate the implementation of LID techniques and green infrastructure solutions.

Recommendations

Goal 1: Protect Natural Resources and Open Space

Zoning Bylaw: Not applicable to this goal.

Rules and Regulations Governing the Subdivision of Land: Ipswich already has fairly strong regulations around soil preservation, sedimentation and erosion control requirements in its subdivision regulations, requiring the minimization of the stripping of vegetation and grading and promoting the preservation of as many trees as possible. To further strengthen these regulations, Greenscapes recommends specifying that topsoil cannot be removed from the site and adding specific standards around the minimization of clearing/grubbing. Ipswich's requirement that "native species shall be used for re-vegetation," is an excellent example of unambiguous language supporting

LID techniques. The town can support the planting of native species by making available a list of suitable native-species options for re-vegetation.

Design Review Board: Steps for the Design Review Process: The design board review outlines landscaping specifications which encourage the use of suitable plants as well as requiring the minimization of clearing. Greenscapes recommends amending these requirements to require the use of native species in at least 75% of plantings.

Stormwater Management Bylaw, Stormwater Management Regulations, Wetlands Protection By-Law Rules and Regulations: Not applicable to this goal.

Goal 2: Promote Efficient, Compact Development Patterns and Infill

Zoning Bylaw: Ipswich's Zoning Bylaw outlines minimum lot sizes, setbacks, and frontage requirements by district. It does allow some flexibility on these dimensional requirements for Open Space Residential Zoning. Greenscapes recommends making these dimensional requirements flexible, with open-space residential development patterns allowed by right across the town and not limited to specific zones. Similarly, common drives are only allowed in OSRZ and the Floodplain district. Greenscapes recommends allowing for common drives across the town in order to reduce imperviousness and promote compact development patterns.

Rules and Regulations Governing the Subdivision of Land, Design Review Board: Steps for the Design Review Process, Stormwater Management Bylaw, Stormwater Management Regulations, Wetlands Protection By-Law Rules and Regulations: Not applicable to this goal.

Goal 3: Smart Designs that Reduce Overall Imperviousness

Zoning Bylaw: The Zoning bylaw offers some specific design standards for OSRZ that promoted reduced imperviousness including allowing for common drives, and for "T" or "Y" shaped turnarounds instead of a cul-de-sac. Greenscapes recommends allowing for common drives across the town in order to reduce imperviousness and promote compact development patterns.

Rules and Regulations Governing the Subdivision of Land: Most of the design standards to reduce imperviousness are addressed within the subdivision regulations. Ipswich has a mix of standards that encourage or prohibit LID techniques and development patterns. Standards that support LID include street design standards which minimize the width of pavement and street right-of-ways, requiring landscaped islands in cul-de-sacs, and allowing utility lines to be installed in street right-of-ways. Areas that could be further improved to support LID techniques include allowing for one-way loop streets and dead ends without a limit on length, stating a preference for open drainage instead of mandating curbing, specifying design standards for roadside swales, allowing for

flexibility for sidewalk location, and encouraging the use of permeable pavement for sidewalks. Greenscapes also recommends specifying impervious cover limits within the subdivision regulations.

Design Review Board: Steps for the Design Review Process: Currently there is nothing noted in the design review board standards that promotes smart designs to reduce overall imperviousness. However, these standards do represent an opportunity to add specifications that mandate the use of LID techniques.

Stormwater Management Bylaw, Stormwater Management Regulations, Wetlands Protection By-Law Rules and Regulations: Not applicable to this goal.

Goal 4: Adopt Green Infrastructure Stormwater Management Provisions

Zoning Bylaw: Greenscapes recommends that Ipswich remove the requirement that bituminous concrete be used for OSRD driveways and instead allow for permeable driveway design and material.

Rules and Regulations Governing the Subdivision of Land: Ipswich's subdivision regulations clearly have a goal of encouraging green infrastructure adoption, as evidenced by the design specifications for stormwater systems that utilize "overland flow and re-infiltration as priority techniques for the treatment of run-off" and mandating the harvesting of rooftop runoff. Another positive aspect of these regulations is the requirement for an as-built survey upon completion of the project. Ipswich's requirement that "when feasible and appropriate, applicants shall use natural-looking, open drainage" and citing of specific LID techniques that can be used to manage stormwater, i.e. bio retention facilities, swales, and infiltration techniques, is a great example of specific language within regulations. To further promote the adoption of green infrastructure, Greenscapes recommends adding language allowing for the easy siting of LID features on common open space or road rights-of-way and permitting permeable pavement for residential drives and parking facilities.

Design Review Board: Steps for the Design Review Process: The only aspect of the design review process that affects green infrastructure for stormwater management is the specification that pedestrian walkways should "avoid asphalt." Greenscapes recommends that this requirement be re worded to explicitly allow for the use of permeable pavement options.

Stormwater Management Bylaw: Ipswich's stormwater bylaw has specified that "The use of non-structural LID Management practices and Better Site Design are encouraged to minimize reliance on structural management measures." The permitting authority can approve incentives for the use of these techniques. Greenscapes would encourage outlining specific incentives or LID standards by-right instead of requiring special

approval and leaving incentives up to the discretion of the Permitting Authority to ease the permitting of green infrastructure.

Stormwater Management Regulations: In general, Ipswich's Stormwater Management Regulations do a good job of promoting green infrastructure for stormwater management. Highlights include specifying performance standards and explicitly stating that LID techniques can be used to meet these standards and requiring an operations and maintenance plan, construction erosion and sedimentation plan, and as-built survey. To further strengthen support for green infrastructure solutions, Greenscapes recommends adding in standards for rooftop runoff. Ipswich already has great language in its subdivision regulations that could be included in the stormwater regulation so as to apply to all development and redevelopment projects.

Wetlands Protection By-Law Rules and Regulations

Goal 5: Encourage Efficient Parking

Zoning Bylaw: Ipswich's zoning bylaws specify minimum parking spaces by type of development but does allow for joint use of parking areas by special permit of the zoning board of appeals such that "joint use may be made of required parking spaces by intermittent use establishments such as churches, assembly halls, or theaters, whose peak parking demand does not conflict with that of the other use." This is an excellent example of thinking dynamically about the parking needs across establishments to reduce the total amount of parking required in Ipswich. Greenscapes would only recommend to make sure that the special permit process is not too onerous in order to facilitate and maximize joint parking agreements. Ipswich also does a good job specifying LID techniques that must be utilized in parking areas.

Rules and Regulations Governing the Subdivision of Land, Design Review Board: Steps for the Design Review Process, Stormwater Management Bylaw, Stormwater Management Regulations, Wetlands Protection By-Law Rules and Regulations: Not applicable to this goal.

Resources and Implementation Plan

Ipswich's commitment to low-impact development means that they have already gone through a major stormwater bylaw revision and this analysis reflects that their current bylaws and regulations score highly based on Mass Audubon's bylaw review tool. Going forward, the towns would like to make sure that LID best management practices are applicable to all development and redevelopment projects going forward.

According to this analysis, most of the recommended amendments to Ipswich's bylaws center around the rules and regulations governing the subdivision of land. Amending these rules would enhance the use of LID techniques in subdivisions that do not pursue Open Space Residential Zoning. Specific recommended changes to these regulations include the addition of impervious cover limits, preferring the use of permeable pavement materials for sidewalks, residential drives and parking areas, and adding language around design criteria for roadside swales to facilitate their adoption.

Ipswich independently identified the application of their existing bylaws and regulations around LID as a barrier to these projects. As a small town, their reliance on external peer-review engineers makes it difficult to know if they are as focused on LID as the town is trying to be. The town would like to pursue ways to enhance their internal expertise on LID to be better able to evaluate the use of LID techniques in proposed development and redevelopment projects.

Lawrence Ordinance and Regulation Review

Overview

Merrimack Valley Planning Commission (MVPC) provides technical assistance to its municipalities to achieve and maintain compliance with Federal and State regulations. This report summarizes MVPC's review of the City of Lawrencel's ordinances and regulations for consistency and adherence with the Environmental Protection Agency's (EPA) Municipal Separate Storm Sewer (MS4) permit. Specifically, the requirements for year 4 of the MS4 permit: section 2.3.6b - report assessing current street design and parking lot guidelines and other local requirements that affect creation of impervious surface, and section 2.3.6c - report assessing existing local regulations to determine the feasibility of making green roofs, infiltration practices, and water harvesting devices allowable, were reviewed. The following ordinances and regulations were provided to MVPC by Lawrence municipal officials:

- Zoning Ordinance (includes site plan review)
- Wetland Protection Ordinance
- Subdivision Rules and Regulations
- Stormwater Management Ordinance & Rules and Regulations

This community specific summary will be compiled into a comprehensive regulation review report to be submitted to the Massachusetts Department of Environmental Protection as a deliverable for the Merrimack Valley Planning Commission's MS4 Municipal Assistance Grant. The work completed through this grant was accomplished in collaboration with the Greenscapes North Shore Coalition (Ipswich River Watershed Association, Salem Sound Coastwatch and MVPC).

Lawrence has clearly taken steps to promote Low Impact Development (LID) strategies for stormwater management. The stormwater bylaw and accompanying regulations are very successful at not only requiring LID but providing examples and design standards which preserve natural resources and open space. Further, the Zoning Ordinance's small minimum lot sizes and other parking requirements encourage efficient, compact parking with landscaping. However, several design standards within the zoning ordinance and subdivision regulations do not explicitly protect natural resources, encourage LID, or decrease impervious surfaces.

Lawrence's position as a densely settled gateway city means that the primary form of development is redevelopment of small parcels, rendering conventional Open Space Residential development impractical. Given the unique nature of Lawrence, improvements could best be made by developing some new design standards within the subdivision regulations and zoning ordinance which ensure they mitigate impervious surface creation, protect natural resources, and encourage LID. Further, requiring incremental options for developers to encourage onsite stormwater infiltration when LID is not an option could help reduce stormwater loads to combined sewage systems.

Recommendations

Goal 1: Protect Natural Resources and Open Space

- ***Zoning Ordinance and Subdivision Regulations:*** Lawrence's stormwater ordinance and accompanying regulations are very successful at managing soils for revegetation and minimizing clearing and grubbing by requiring sediment stabilization both during and after construction activities with clear standards, and explicitly prohibiting excess grading during construction. However, Lawrence's zoning ordinance and subdivisions regulations do not address either of these concerns beyond a requirement to preserve existing trees whenever possible. Greenscapes recommends copying or developing similar design standards to be placed within the zoning ordinance's site plan review sec. 29-49 "Landscape Standards and Specifications" and the subdivision regulation's design standards 16.16.050 "Open Spaces" in place of 16.16.050 B "Due regard shall be shown…" to provide more specific and measurable design standards. The stormwater regulations could also be referenced within these sections in lieu of developing new design standards.
- ***Zoning Ordinance, Subdivision Regulations, Wetlands Ordinance, and Stormwater Regulations:*** While Lawrence's codes are successful at requiring some standards which protect natural resources, none of Lawrence's codes explicitly require the planting of native species during development activities. Greenscapes recommends explicitly requiring the planting of native species for permitted activities within the resource, buffer zones, and riverfront areas of the Wetland Ordinance, as well as within the subdivision's design standards 16.16.050 "Open Spaces', the zoning ordinance's site plan review 29-49, and the stormwater regulation's design and performance criteria 7-2. Alternatively, this design standard could be placed only within the stormwater regulations, and all other codes could reference the stormwater regulation in lieu.

Goal 2: Promote Efficient, Compact Development Patterns and Infill

- ***Zoning Ordinance:*** Lawrence's zoning bylaw establishes specific lot size, setback, and frontage requirements for each district with minimum open space requirements for residential lots, however reductions to lot sizes and other standards by special permit are not explicitly permitted, and common driveways are not addressed. To permit further flexibility and promote compact development patterns, Greenscapes recommends permitting a reduction in lot, setback, and/or frontage requirements pending planning board approval and compliance to design standards.

Goal 3: Smart Designs that Reduce Overall Imperviousness

- ***Subdivision Regulations:*** Several components of Lawrence's subdivision regulations increase overall impervious and could be revised to allow impervious surface reductions. Currently, street locations are not required to be placed in a manner which maintains natural topography, road widths are not explicitly specified, and cul-de-sac center islands are not addressed. Further, there are no specifications for curbing or sidewalk placement beyond "conformity with the requirements of the director of engineering and the city engineer". Greenscapes recommends explicitly stating requirements for road widths, curbing, and sidewalk placement, including the

development of major and minor road width categories, requiring sidewalks on one or two sides of the road depending on the district, and permitting open drainage without curbing on more local or rural roads. Greenscapes also recommends developing a standard which requires streets to be designed and located in a manner which maintains and preserved natural topography, explicitly permitting cul-de-sac center islands with native landscaping, curb cuts, and LID like raingardens, and permitting permeable paving for sidewalks in low volume areas.

Goal 4: Adopt Green Infrastructure Stormwater Management Provisions

- ***Subdivision Regulations***: Lawrence's stormwater regulations do a great job requiring low impact development (LID) techniques during development with specific examples and design standards, as well as complying with all MS4 requirements. However, none of these requirements are addressed within the subdivision regulations, nor are the stormwater regulations referred to in lieu. Instead, stormwater drainage facilities are required to be constructed in conformity with the requirements of the water commissioner and the director of engineering with no explicit design standards. Greenscapes recommends developing a new design standard section titled "Stormwater" which addresses the requirements to have a Stormwater Management Plan, Erosion and Sedimentation Control Plan, an Operation and Maintenance Plan, and directly references the stormwater regulations for design standards.
- ***Zoning Ordinance, Subdivision Regulations, Wetlands Ordinance, and Stormwater Ordinance***: While Lawrence's wetlands ordinance does explicitly state that any municipal board etc. shall have the authority to assist the commission with the enforcement of the chapter, no other codes have an explicit statement of intradepartmental coordination. Greenscapes recommends developing a section titled "Review by other bodies" or the like which explicitly addresses intradepartmental review for the zoning, stormwater, and subdivision codes.

Goal 5: Encourage Efficient Parking

- ***Zoning Ordinance:*** The zoning ordinance currently requires a minimum number of parking spaces for residential and commercial uses, encourages carpooling and subsidized public transport programs, has limits on parking stall sizes, and permits parking reductions under several circumstances. It also requires landscaping of parking lots with specific design standards. To further improve on the landscaping design requirements for parking lots, Greenscapes recommends explicitly requiring or encouraging LID within landscaped parking islands and requiring parking islands to have curb cuts for stormwater infiltration.

Timeline and Implementation

Following a conversation with Lawrence's project liaisons, the following endeavors were identified as priorities for implementation:

- Solidifying the newly revised stormwater ordinance and accompanying regulations

- Developing incremental design standards which require LID unless infeasible, but in circumstances where LID is not feasible, require the onsite containment and infiltration of stormwater onsite. If subsurface conditions do not permit on site infiltration, then the development of an overflow system to the combined sewer would be recommended. If all other recommendations are not feasible, only then would a direct connection to a combined system be permitted

The City is currently in the process of adopting the revised stormwater ordinance and accompanying regulations, and will look to revise design standards to ensure more development activities promote onsite infiltration and LID if possible.

Lynnfield Bylaw and Regulation Review

Overview

To ensure Lynnfield's compliance with year 4 MS4 permit requirements 2.3.6b: report assessing current street design and parking lot guidelines and other local requirements that affect creation of impervious surface and 2.3.6c: report assessing existing local regulations to determine the feasibility of making green roofs, infiltration practices, and water harvesting devices allowable, the following bylaws and regulations were reviewed:

- Zoning Bylaw
- Subdivision Regulations
- Stormwater Rules and Regulations
- Stormwater Management Bylaw

Lynnfield recently completed a bylaw review and revision with the help of MS4 consultant Comprehensive Environmental (CEI) to update the stormwater management bylaw and regulations and subdivision regulations. The impacts of this previous review are clearly seen in Greenscapes's analysis; Lynnfield's stormwater bylaw and regulations, and the stormwater section of the subdivision regulations show a clear preference for low-impact development (LID) techniques and clear standards to facilitate their implementation. The language used within these bylaws and regulations can serve a useful reference point for other communities in the region looking to implement such changes within their own bylaws.

As a result, Greenscapes recommendations for Lynnfield's bylaws are mostly around the design standards laid out in the zoning bylaw and subdivision bylaw which contribute to the use of impervious surfaces in the town. The recommended changes to these standards would serve to further promote the use of LID across development and redevelopment projects in Lynnfield and contribute to their clearly defined goal of promoting LID and green infrastructure as the preferred stormwater management strategies.

Recommendations

Goal 1: Protect Natural Resources and Open Space

> **Zoning Bylaw, Subdivision Regulations, Stormwater Rules and Regulations, Stormwater Management Bylaw:** Rules around managing soils for revegetation, limiting clearing/grubbing, and requiring native plants be used for revegetation are largely unaddressed across all of the Lynnfield's bylaws analyzed. Greenscapes recommends adding language requiring the minimization of clearing and topsoil removal and requiring at least 75% native plantings for revegetation.

Goal 2: Promote Efficient, Compact Development Patterns and Infill

Zoning Bylaw: Lynnfield's zoning bylaw outlines minimum lot sizes, setbacks, and frontage requirements. It does allow for exceptions to these minimums within the Planned Village Development District (PVDD) and by special permit for Green Belt Residential Development. Greenscapes recommends allowing for these types of flexible development patterns across all development and redevelopment projects in Lynnfield, not only in the special PVDD or by special permit. The zoning bylaw does allow for common drives in circumstances where lots have deficient frontage. Greenscapes would recommend allowing for common driveways for up to 4 residential units in order to facilitate compact development patterns.

Subdivision Regulations, Stormwater Rules and Regulations, Stormwater Management Bylaw: Not applicable to this goal.

Goal 3: Smart Designs that Reduce Overall Imperviousness

Zoning Bylaw: The only parts of Lynnfield's zoning bylaw that pertain to this goal are some specifications for PVDD around street and sidewalk locations, specifying that "The overall site design shall include a cohesive transportation network providing for vehicular and pedestrian circulation to and within the PVDD." Greenscapes recommends adding language which requires siting streets and sidewalks take into account local features and topography, and minimize the required grading and clearing.

Subdivision Regulations: Most of Lynnfield's design requirements that impact imperviousness reside within the town's subdivision bylaws. Most of these requirements actual mandate a minimum level of imperviousness, by specifying road and sidewalk width, requiring curbing, limiting the use of dead-end streets. In order to promote low-impact development and reduce imperviousness, Greenscapes recommends making removing these minimum requirements. Specifically, required roadway width should be reduced, dead end streets and cul-du-sacs should be allowed with a hammerhead turnaround, open drainage should be allowed instead of requiring bituminous curbing, and sidewalks should be allowed to be constructed with permeable pavers.

Stormwater Rules and Regulations, Stormwater Management Bylaw: Not applicable to this goal.

Goal 4: Adopt Green Infrastructure Stormwater Management Provisions

Zoning Bylaw: The zoning bylaw specifies that "The addition of 600 square feet or more of impervious area shall require the applicant to specify a means to prevent an increase in the rate of rainfall runoff for the site resulting from the proposed alteration. Computations prepared by a registered professional engineer in support of the design of these preventive means shall be provided with the application. No increase of the peak rate of runoff for the two-, ten-, and one-hundred-year storms." However, the only strategies to reduce runoff outlined in this bylaw are grey-infrastructure systems, i.e.

holding ponds, dry wells, piping. Greenscapes recommends citing specific green infrastructure strategies that can be used to meet the requirement of no increase in the peak runoff rate.

Subdivision Regulations and Stormwater Rules and Regulations: Lynnfield's subdivision bylaw and stormwater rules and regulations do a good job of promoting green infrastructure solutions to stormwater management, specifying design criteria and requiring the use of LID site planning and design strategies, and requiring the establishment of an operations and maintenance plan for the long-term management of the system. To further promote the use of green infrastructure practices, Greenscapes recommends adding language mandating the use of rooftop runoff to vegetated areas, including bioretention and other LID features in site design and landscaping, adding language specifically permitting the use of permeable pavement or residential drives and parking areas, and requiring as-built surveys.

Stormwater Management Bylaw: Lynnfield's stormwater management bylaw prohibits the illicit discharges and connections to the municipal storm drainage system and outlines the enforcement of its existing rules and regulations. The bylaw is clearly defined and Greenscapes does not have any recommended improvements to these two areas. Most of the specifics around stormwater management can be found in the Stormwater Rules and Regulations.

Goal 5: Encourage Efficient Parking

Zoning Bylaw: Mandated minimum parking spaces by type of commercial establishment, no mention of residential minimums. Greenscapes recommends allowing for shared parking for uses with different peak demand times to eliminate these minimum parking space requirements and for reduced parking requirements near transit. Greenscapes also recommend the addition of requirements for landscaping and LID/bioretention within parking areas.

Subdivision Regulations, Stormwater Rules and Regulations, Stormwater Management Bylaw: Not applicable to this goal.

Resources and Implementation Plan

As Lynnfield recently underwent a review and revision of their stormwater bylaws, stormwater regulations, and subdivision regulations as it relates to stormwater management, a further revision based on these recommendations is not an immediate priority for the town.

Lynnfield will bring these recommendations to their boards to determine whether there is additional appetite to amend the subdivision and zoning bylaws to further promote the use of low-impact development processes. Greenscapes will also provide Lynnfield with examples of

implemented bylaws which promote LID to use as a template should the town wish to move forward on these recommended changes.

Bylaw and Regulation Review for the Town of Manchester-by-the-Sea

Overview

To ensure Manchester's compliance with year 4 MS4 permit requirements 2.3.6b: report assessing current street design and parking lot guidelines and other local requirements that affect creation of impervious surface and 2.3.6c: report assessing existing local regulations to determine the feasibility of making low impact development, infiltration practices, and water harvesting devices allowable, the following bylaws were reviewed:

- Zoning Bylaw
- Subdivision Regulations
- Stormwater Control Bylaw (current draft)
- Wetlands Protection Bylaw (current draft)
- Miscellaneous General Bylaws

During the bylaw review process, Greenscapes found that the strongest sections of Manchester's Zoning Bylaw and Subdivision Regulations, were the sections that directly referenced the MA Stormwater Handbook. Most of Greenscapes' recommendations are related to incorporating more language from the handbook into the municipal regulations and making LID the standard stormwater development practice, instead of a "allowable option" for stormwater control.

Recommendations

Goal 1: Protect Natural Resources and Open Space

To achieve the goal of protecting natural resources and open space, Manchester's regulations require special permits for soil removal over 250 cubic yards, or for any permanent change in topography, according to Article XII of the **General Bylaws** and Section 6.16 of the **Zoning Bylaw.** These permits, when enforced by the Building Inspector would effectively conserve open space and preserve natural spaces. These regulations could be more stringent and could be improved by referencing specific standards for restabilization of disturbed soil/vegetation and by requiring native plantings in revegetation efforts.

Goal 2: Promote Efficient, Compact Development Patterns and Infill

The **Zoning Bylaw** currently contains the best language when it comes to promoting efficient compact devlopment. Though the allowable range of impervious surface coverage could be lowered to 10-15% (instead of the 25-40% as is currently allowed in Section 5.4 Minimum Area and Dimensional Requirements), the bylaw clearly states that "*Stormwater management systems must be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates. Loss of annual recharge to groundwater should be minimized through the use of infiltration measures to the maximum extent practicable. The annual recharge from the post-development site should approximate the annual recharge rate from the pre-development or existing site conditions, based on soil types"*. The **Subdivision Regulations** and **Stormwater Control Bylaw** contain similar language, pulled directly from the MA Stormwater Handbook.

This goal could be better achieved if regulations allowed for common drives, by right, for up to 4 residential units. The **Zoning Bylaw** currently reads "*Furthermore, no common driveway shall be accepted as a public road; nor shall the Town under any circumstances be held liable for construction, reconstruction, maintenance, or snow removal on any common driveway, unless by contract duly entered into by the Town and all landowners served by the common driveway. Common driveways shall be built in accordance with the following standards: 1. Minimum driveway width: 16'(18' if over 100' in length) residential use; 24' all other uses. 2. Maximum driveway grade of 10%. 3. Maximum driveway length of 500'. 4. The common driveway, at its intersection with the street, must provide a leveling off area with a slope no greater than 1% for the first 20' and a slope no greater than 5% for the next 30'",* without specifying the allowable usage/access for a common drive. More flexible allowances could be added immediately before or after this statement in Section 8.4 Common Driveways, in the **Zoning Bylaw** and similar language should be included or referenced in the **Subdivision Regulations.**

Greenscapes also recommends improving the flexibility of dimensional requirements for all lots. A special permit is currently required for any deviation from the dimensional requirements listed in Section 5.4 of the **Zoning Bylaw.** If the required dimensions were minimized, there would be less of a need for special permits to promote more compact development.

Goal 3: Smart Designs that Reduce Overall Imperviousness

The **Subdivision Regulations** are the only document that in any way regulates impervious surface creation in the town of Manchester. There are some highlights, such as the allowance for curb cuts, described in Appendix A Roadway Construction Specification Standards "*to allow stormwater runoff to flow into dry swales*" and the requirement for cul-de-sac centers "*to be landscaped with low maintenance trees and shrubbery".* However, later in the regulations, swales are prohibited thus negating their reference in the recommendation for curb cuts. Greenscapes recommends rectifying this disparity and allowing for swales, or grassed channels along roadways, built to standards described in Volume 2 Chapter 2 of the MA Stormwater Handbook. Greenscapes would also recommend encouraging the use of bioretention practices in the landscaped center of cul-de-sacs.

Also, in regards to cul-de-sacs and dead end streets, Greenscapes strongly recommends reducing the required roadway diameter from it's current 100'-120' to 70-'80' and make hammerhead turnarounds allowable. Road and ROW widths should also be reduced, thus minimizing impervious surface creation and resultant stormwater runoff.

Goal 4: Adopt Green Infrastructure Stormwater Management Provisions

Once again, there are some highlights in the **Zoning Bylaw** and **Subdivision Regulations** that clearly encourage the use of low-impact-development practices. It is clear that standards and related language were pulled directly from the MA Stormwater Handbook, which is an excellent resource for LID guidance.

From the **Subdivision Regulations** Section 8.4 Stormwater – Drainage: *"Storm water drainage systems shall implement "Best Management Practices" and conform to the guidelines described in the Performance Standards and Guidelines for Storm Water Management in Massachusetts published by the Massachusetts Department of Environmental Protection. Under certain circumstances, the Planning Board may also consider, after demonstration by a registered engineer, other designs and practices common to Low Impact Development (LID) to mitigate the effects of storm water runoff when reviewing*

storm water drainage systems". Here, Greenscapes would recommend prioritizing this type of stormwater management technique, instead of "only under certain circumstances". Bioretention techniques and swales are mentioned in the **Subdivision Regualtions** but are not preferred. Wherever possible, Greenscapes recommends making LID practices the development standard, instead of an allowable option.

LID and Green Infrastructure techniques could be made more accessible if they were more thoroughly described within the **Zoning Bylaw** and **Subdivision Regulations.** The descriptions could be specific references to Volume 2 Chapter 2 of the handbook, or even standards and illustrations directly in the text of the bylaw.

Goal 5: Encourage Efficient Parking

The **Zoning Bylaw** is the only regulating document that discusses parking space dimensions and requirements. Unfortunately, shared parking agreements are not discussed anywhere in the bylaw, which maximizes parking areas and impervious coverage throughout the town. Greenscapes recommends reducing required parking and establishing maximum number of spaces, depending on peak use times and other nearby shared parking opportunities.

Landscaping requirements within parking areas are breifly discussed in Section 6.2.6 of the **Zoning Bylaw** but Greenscapes would recommend encouraging more sustainable landscaping techniques such as rain gardens and bioretention within the parking areas at a minimum of 10% of the parking area (instead of the 5% area of vegetation/trees currently required).

Implementation Plan

A detailed implementation plan will be discussed and developed with input from the municipal liasons on July 1st, 2022. As noted, the Stormwater Control Bylaw and other sections of the General Bylaw are currently under review, making this the perfect time for input from the Greenscapes team.

Bylaw and Regulation Review for the Town of Marblehead

Overview

To ensure Marblehead's compliance with year 4 MS4 permit requirements 2.3.6b: report assessing current street design and parking lot guidelines and other local requirements that affect creation of impervious surface and 2.3.6c: report assessing existing local regulations to determine the feasibility of making low impact development, infiltration practices, and water harvesting devices allowable, the following bylaws were reviewed:

- Zoning Bylaw (Section 200)
- Subdivision Bylaw (Section 258)
- Stormwater Management Bylaw (Section 195)
- Wetlands Protection Bylaw (Section 194)

In the bylaw review process, Greenscapes found that Marblehead, like many other communities does not have accessible documentation that describes the general SOPs of development being done by their municipal staff (DPW). In the town of Marblehead, like many other towns, most development, or redevelopment is being done BY the town – a new parking lot or renewed sidewalks, but there is no regulating authority or documentation of how that redevelopment is being constructed. The most important recommendation that Greenscapes would like to make is to create, or make accessible this type of regulation or documentation of standard operating procedures.

Overall, Marblehead's bylaws did not address or include much regulating language related to impervious surface creation or onsite infiltration requirements. For example, as shown in the matrix for Goal 2: promoting efficient and compact development patterns, the only mention of monitoring discharge rates is in the Street Utility Design section of the Subdivision Regulations, which states: *"The design of the stormwater management system for the subdivision shall not increase the volumes or rates of discharge off site."* In this section, would be a great place to encourage specific development techniques that promote infiltration, thus decreasing discharge rates.

All of Marblehead's bylaws could be made stronger by including prioritization of low impact development and better infiltration practices. Detailed recommendations for better achieving each goal are outlined below.

Recommendations

Goal 1: Protect Natural Resources and Open Space

Marblehead's bylaws do not currently protect natural resources very effectively. "Any removal of soil, loam and/or gravel" from a development site currently requires a special permit, but there is no indication that such permits are regulated or enforced. This concern came directly from Marblehead staff and is included as one of the easiest improvements to be made going forward. In more clearly enforcing the Soil Removal permit, Greenscapse would also recommend quantifying the amount of allowable soil removal more clearly, based on % volume, and making restabilization of disturbed sites required as well.

Greenscapes would also recommend establishing a list of preferred, native plant species for landscaping and soil restabilization practices that should be found in the **Zoning Ordinance** or elsewhere on the town's website.

Goal 2: Promote Efficient, Compact Development Patterns and Infill

In their current state, Marblehead's bylaws barely address compact development patterns. This section of the bylaw review matrix is almost entirely orange, "in need of improvement" because any deviation from the dimensional requirements listed in Sec 200 – Attachment 2 and development of a shared driveway would currently require a special permit for "use intervention". Greenscapes recommends improving the flexibility of lot dimensions and making common driveways allowable by right, instead of by special permit.

In regards to imperviousness, **Subdivision Bylaw** currently requires "*a watershed analysis shall be performed by a registered civil engineer (and submitted with the definitive plan) for pre- and post-development conditions to show flooding impacts for the one-, ten-, and one-hundredyear storm events using SCS TR-55 and/or TR-20 stormwater modeling methods. The design of the stormwater management system for the subdivision shall not increase the volumes or rates of discharge off site*". Greenscapes would recommend tying this requirement to % imperviousness as well. Here, there could be specific recommendations for LID or infiltration techniques that would reduce the rate of runoff on a new or re-development site.

Goal 3: Smart Designs that Reduce Overall Imperviousness

Similar to the results found with respect to Goal 2, the review process determined that Marblehead's dimensional requirements for street and ROW widths in the **Subdivision Bylaw** do not currently minimize impervious surface creation in their town. However, during the review of Greenscapes' findings, municipal staff pointed out that despite the 70' ROW requirement for collector streets, there are no streets matching that description within the municipality. These guidelines, they believed, were borrowed from another municipality and were not modified to better describe the Marblehead landscape. Despite this anomaly, Greenscapes would recommend modifying these categories and associated requirements to be more conservative: wide, medium, narrow, and alley categories. 20-24' widest for 2 travel lanes, 18-20' low traffic residential neighborhood, plus 2' shoulders. Greenscapes would also recommend allowing alleys and other low traffic or secondary emergency access and all shoulders to use alternative, permeable materials.

Another recommendation that was discussed with municipal staff is the inclusion of common drives and hammerhead turnarounds. As currently described in the **Subdivision Bylaw**, dead end streets are allowed with a 100'-130' turning diameter. Municipal staff claimed that this diameter is not enforced and that narrower paths are easily achievable. Greenscapes recommends updating the Subdivision Bylaw to include more conservative paving requirements.

Lastly, in an attempt to improve infiltration along roadsides and next to sidewalks, Greenscapes would recommend prioritizing grassed channels/roadside swales and allowing for more frequent curb cuts that would direct stormwater into the ground instead of into the built system. Standards for both techniques can be found in Volume 2, Chapter 2 of the MA Stormwater Handbook.

Goal 4: Adopt Green Infrastructure Stormwater Management Provisions

To better achieve Goal 4, adopting Green Infrastructure standards, Greenscapes recommends better utilizing the MA Stormwater Handbook, which is already referenced in the **Stormwater Management Bylaw**, however briefly. The bylaw currently states "*Stormwater management systems shall be designed to be at least as stringent as the latest Massachusetts Stormwater Handbook design requirements".* This bylaw could be more informative by pointing directly to Volume 2, Chapter 2 of the Handbook where specific BMP design standards are thoroughly described. The **Subdivision Bylaw** currently allows for grassed swales to be used to retain "first flush" but are not prioritized as a stormwater management technique and no construction standards are included. A more thorough description and prioritization of techniques such as these would greatly strengthen both the Subdivision and Stormwater Management Bylaws. Municipal staff agreed that these adjustments were a priority and believe that "peppering in" more language related to LID standards would be beneficial to developers.

Goal 5: Encourage Efficient Parking

Marblehead's **Zoning Ordinance** includes exemplary language regarding shared parking, but only for the Smart Growth Overlay District which applies to only two lots within the town boundary. The ordinance currently states: "*Shared use of required parking. At the discretion of the approving authority, shared use may be made of required parking spaces by intermittent use establishments such as churches, assembly halls, or theaters whose peak parking demand is only at night or on Sundays and by other uses whose peak demand is only during the day. In order for such shared parking to be eligible to satisfy required off-street parking standards in whole or in part, prior to plan approval a formal agreement shall be made in writing by the owners of the uses involved concerning the number of spaces involved, substantiation of the fact that such shared use is not overlapping or in conflict, and the duration of the agreement…"*. Greenscapes would recommend applying this promotion of shared parking to all zones in the town of Marblehead where the commercial districts are small and surrounded by residential zones. Greenscapes would also recommend establishing maximum stall sizes of 9x18 for all parking lots and requiring landscaping and LID practices based on # of spaces and total lot area. During the review of Greenscapes findings, municipal staff claimed that there are very few opportunities for new lot development, so Greenscapes encouraged them to consider these practices in the event that existing lots are re-developed.

Implementation Plan

Following an in-depth discussion with Marblehead's community liasons from the planning and engineering department, the following actions were determined as the highest priority and easiest to achieve. Changes to the Zoning Ordinance must be submitted in final form by the end of January but adaptation to the Subdivision or Stormwater Bylaws can happen at anytime but will need to be posted and reviewed at Town Meeting.

1. Quantify allowable soil removal and enforce special permits,
2. Review and decrease required road widths and radii of cul-de-sacs and dead-ends,
3. Make common drives for up to 4 units allowable by right,
4. Once available, make "Recommeded Development Guidelines for Single-Lot Developments" available to homeowners and those executing smaller scale developments.

Merrimac Bylaw and Regulation Review

Overview

Merrimack Valley Planning Commission (MVPC) provides technical assistance to its municipalities to achieve and maintain compliance with Federal and State regulations. This report summarizes MVPC's review of the Town of Merrimac's bylaws and regulations for consistency and adherence with the Environmental Protection Agency's (EPA) Municipal Separate Storm Sewer (MS4) permit. Specifically, the requirements for year 4 of the MS4 permit: section 2.3.6b - report assessing current street design and parking lot guidelines and other local requirements that affect creation of impervious surface, and section 2.3.6c - report assessing existing local regulations to determine the feasibility of making green roofs, infiltration practices, and water harvesting devices allowable, were reviewed. The following bylaws and regulations were provided to MVPC by Merrimac municipal officials:

- Zoning Bylaw (includes site plan review)
- Wetland Protection Bylaw
- Subdivision Rules and Regulations
- Stormwater Management Bylaw & IDDE Bylaw

This community specific summary will be compiled into a comprehensive regulation review report to be submitted to the Massachusetts Department of Environmental Protection as a deliverable for the Merrimack Valley Planning Commission's MS4 Municipal Assistance Grant. The work completed through this grant was accomplished in collaboration with the Greenscapes North Shore Coalition (Ipswich River Watershed Association, Salem Sound Coastwatch and MVPC).

Merrimac has made substantial progress towards ensuring impervious surface reduction and low impact development implementation within their bylaws and regulations. Flexible design standards as they relate to lot size, setbacks, and frontage extend beyond the OSRD by explicitly permitting reductions pending planning board approval. Further, the zoning bylaw, subdivision regulations, and wetland bylaw are all successful at providing design standards which manage soil for revegetation and limit clearing and grubbing while requiring revegetation. However, the subdivision regulations do require some design standards which increase imperviousness, and both the stormwater bylaw and subdivision regulations need more specificity regarding low impact development design requirements. Finally, the stormwater bylaw does not address necessary post construction volumes of Total Suspended Solids (TSS) and Total Phosphorus (TP).

Improvements could be made to these codes by revising some design standards within the subdivision regulations and developing design standards as they relate to low impact development within the subdivision regulations and stormwater bylaw. Requirements for TSS and TP removal could also be addressed within the stormwater bylaw to maintain MS4 compliance.

Recommendations

Goal 1: Protect Natural Resources and Open Space

- ***Zoning Bylaw, Subdivision Regulations, Wetland Bylaw:*** Merrimac's OSRD design standards successfully require the planting of native species during landscaping; however, this standard is not carried over to other development types, nor to other relevant bylaws and regulations. Greenscapes recommends placing a requirement for native species plantings within the zoning bylaw site development standards (19.9). Further, Greenscapes recommends editing the language within the Subdivision regulations from "street trees of nursery stock conforming to current standards…" to include language about a native species requirement. This language could also be incorporated within the Wetland Bylaw 17.7 to ensure permitted activities within wetland areas require native species planting.
- ***Stormwater Bylaw:*** While the current stormwater bylaw's stormwater management & erosion and sediment control plan does hold some specificity in regulating disturbed areas and sedimentation, more specific design standards could be in place which already exist within the subdivision rules and regulations, such as prohibiting topsoil removal, requiring cut banking stabilization, and permanent vegetation stabilization structures. Greenscapes recommends implementing some of these more specific design standards within the stormwater bylaw to ensure consistency. Greenscapes also recommends requiring native plantings within the stormwater management & erosion and sediment control plan.

Goal 2: Promote Efficient, Compact Development Patterns and Infill

- ***Stormwater Bylaw and Subdivision Regulations:*** Currently, the stormwater bylaw and regulations require a stormwater management permit for any land disturbance of 20,000 feet. To encapsulate a wider breadth of projects which may alter natural stormwater processes, Greenscapes recommends developing new permit thresholds: a minor permit for developments between 3,000-20,000 square feet of land disturbance (typical single family home construction), which requires administrative review and approval from a conservation agent, and a major permit for land disturbances over 20,000 square feet (multi-dwelling or large commercial project), which requires a public hearing and approval by the planning board/conservation commission.

Goal 3: Smart Designs that Reduce Overall Imperviousness

- ***Zoning Bylaw:*** Merrimac's zoning bylaw has specific limits for impervious surface creation within the Water Resource District requiring a special permit for uses rendering 15% of impervious space respectively. Greenscapes recommends expanding limits on impervious space for lots to all districts, tailored appropriately to district type. Further, the zoning bylaw's OSRD specifically requires streets to be designed and located in a manner which maintains natural topography and minimizes cut and fill. Greenscapes recommends expanding that design requirement to all districts.
- ***Subdivision Regulations:*** Merrimac's subdivision regulations are successful at requiring street design standards which avoid important natural features, permitting flexible

sidewalk placement, and requiring utilities underground. However, several design standards could be improved upon to better reduce overall imperviousness. Cul-de-sac islands are also not addressed within the subdivision regulations. Greenscapes recommends explicitly permitting cul-de-sac center islands with native landscaping, curb cuts, and LID like raingardens. Finally, sidewalks are required to be composed of impervious bituminous concrete in all instances, and curbing is required on all streets. Greenscapes recommends permitting permeable paving for sidewalks in low volume areas and permitting local or more rural roads to be developed without curbing to promote open drainage.

Goal 4: Adopt Green Infrastructure Stormwater Management Provisions

- ***Subdivision Regulations:*** While the subdivision regulations do provide extensive design standards for conventional stormwater management practices, there are none for low impact development management practices. Greenscapes recommends stating LID design standards within 4.4: Drainage of the subdivision regulations, including a requirement to include LID unless infeasible in site design, examples of LID, minimum compliance with Massachusetts Department of Environmental Protections' (MassDEP)most recent stormwater handbook, and standards such as groundwater recharge and flooding protection.
- ***Stormwater Bylaw:*** Merrimac's stormwater bylaw does encourage the use of LID and provide examples of LID actions, however like the subdivision regulations, no design standards for LID practices accompany this. Greenscapes recommends developing the same design standards to be addressed within the subdivision regulations or referencing the regulations in lieu. Further, the stormwater bylaw does not address the MassDEP required removal of Total Suspended Solids (TSS) and Total Phosphorus (TP) for new development and redevelopment sites. Greenscapes recommends requiring a 90% TSS and 60% TP generated on site for new developments pot-construction and an 80% TSS and 50% TP generated on site for redevelopments pot-construction

Goal 5: Encourage Efficient Parking

- ***Zoning Bylaw:*** The zoning bylaw currently requires a minimum number of parking spaces for residential and commercial uses and permits 20% of parking spaces for compact cars in lots over 50 spaces. Greenscapes recommends also developing maximum parking space requirements to limit excess impervious surface creation and permitting shared parking for uses with different peak demand times in applicable districts. Greenscapes also recommends explicitly requiring or encouraging LID within landscaped parking islands and requiring parking islands to have curb cuts for stormwater infiltration. This language could be expanded to the subdivision regulations drainage design requirements.

Timeline and Implementation Plan

Following a conversation with Merrimac's project liaison, the following endeavors were identified as priorities for implementation:

- Implementing language on TSS and TP standards within the stormwater bylaw

- Developing a major and minor permit category for stormwater permitting activities which accurately reflects the average lot sizes of Merrimac
- Clean up inconsistencies in design standards throughout codes
- Incorporate changes to Zoning Bylaw during its planned revision over the next year.

The town, come July 1st, will be onboarding new planning staff who will take on some of the revision activities. Revisions to the stormwater bylaw will be priority and revisions to the zoning bylaw will take place over the course of the year with hope to incorporate during next year's spring town meeting.

Methuen Ordinance and Regulation Review

Overview

Merrimack Valley Planning Commission (MVPC) provides technical assistance to its municipalities to achieve and maintain compliance with Federal and State regulations. This report summarizes MVPC's review of the City of Methuen's ordinances and regulations for consistency and adherence with the Environmental Protection Agency's (EPA) Municipal Separate Storm Sewer (MS4) permit. Specifically, the requirements for year 4 of the MS4 permit: section 2.3.6b - report assessing current street design and parking lot guidelines and other local requirements that affect creation of impervious surface, and section 2.3.6c - report assessing existing local regulations to determine the feasibility of making green roofs, infiltration practices, and water harvesting devices allowable, were reviewed. The following ordinances and regulations were provided to MVPC by Methuen municipal officials:

- Zoning Ordinance (includes site plan review)
- Wetland Protection Ordinance
- Subdivision Rules and Regulations
- Stormwater Management Ordinance & Rules and Regulations

This community specific summary will be compiled into a comprehensive regulation review report to be submitted to the Massachusetts Department of Environmental Protection as a deliverable for the Merrimack Valley Planning Commission's MS4 Municipal Assistance Grant. The work completed through this grant was accomplished in collaboration with the Greenscapes North Shore Coalition (Ipswich River Watershed Association, Salem Sound Coastwatch and MVPC).

Methuen has made substantial progress towards ensuring impervious surface reduction and low impact development implementation within their ordinances and regulations. Methuen's OSRD option is successful at promoting compact development patterns and reducing overall imperviousness, while the stormwater ordinance and accompanying regulations provide comprehensive design standards which protect natural resources and encourage LID, as well as achieve MS4 compliance. However, some activities permitted within the subdivision regulations contribute to an increase in impervious surfaces, and some successful standards within the zoning ordinance do not extend beyond the OSRD option. Further, there is some inconsistencies among the code's design standards.

Proactive improvements could be made to these codes by revising some subdivision design standards to ensure they mitigate impervious surface creation as much as possible, ensuring all codes are consistent with one another, and extending some design standards beyond the OSRD.

Recommendations

Goal 1: Protect Natural Resources and Open Space

- ***Subdivision Regulation, Zoning Ordinance, & Conservation Commission Regulations:*** Methuen's Stormwater Ordinance and accompanying regulations are successful at requiring specific design standards which protect natural resources, including specifications for erosion and sedimentation control measures, protection of natural vegetation, and encouragement for native plantings along all critical environmental features. However, design standards within the subdivision regulations, zoning ordinance, and conservation commission regulations are not directly aligned with these requirements. Greenscapes recommends directly referencing the stormwater ordinance and regulations within relevant design standards of other codes to ensure consistency throughout. For example, within the subdivision regulations, language which states that standards as they relate to stormwater and natural resource preservation will be designed in accordance with the stormwater ordinance could be placed at the beginning of section 4.0: design standards.

Goal 2: Promote Efficient, Compact Development Patterns and Infill

- ***Zoning Ordinance:*** Methuen's zoning ordinance is successful at promoting efficient and compact development patterns through their minimum open space requirements, OSRD option for multiple districts, and flexible setback, lot size, and frontage requirements. To further improve the effectiveness of OSRD, Greenscapes recommends permitting this option by right in some residential districts and/or requiring developers to consider an OSRD plan for projects above a certain square footage threshold. Beyond improvements to OSRD, Greenscapes recommends permitting common driveways in some residential districts to further promote compact development.

Goal 3: Smart Designs that Reduce Overall Imperviousness

- ***Zoning Ordinance:*** Methuen's zoning ordinance OSRD option both encourages streets to be designed in such a manner as to maintain and preserve natural topography, and encourages soft, nonstructural stormwater management techniques. However, these requirements do not extend beyond OSRD development situations. Greenscapes recommends placing language within the site plan review's section C: approval, which states that development shall be designed in the site plan so as to ensure street placement is in relation to natural topography and nonstructural stormwater management techniques are used unless infeasible.
- ***Subdivision Regulations:*** Methuen's subdivision regulations have several standards which could be edited to reduce impervious surface. Currently, the standards do not require streets to be designed in such a manner as to maintain and preserve natural topography, do not address cul-de-sac center island requirements, and require bituminous concrete sidewalks and curbing on all roads. Greenscapes recommends explicitly permitting cul-de-sac center islands with native landscaping, curb cuts, and LID like raingardens, permeable paving for sidewalks in low volume areas, and local or more rural roads to be developed without curbing to promote open drainage.

Goal 4: Adopt Green Infrastructure Stormwater Management Provisions

- ***Subdivision Regulations and Conservation Commission Regulations****:* Methuen's stormwater ordinance and accompanying regulations are very successful at encouraging LID techniques with specific examples and design standards, as well as incorporating all MS4 requirements. However, some of these design standards are not in line with those addressed within the subdivision and conservation commission regulations. Greenscapes recommends directly referencing the stormwater ordinance and regulations within relevant design standards of these codes to ensure consistency throughout. The example provided in Goal 1 would achieve consistency for these requirements within the subdivision regulations. Further, similar language could be placed within the conservation commission regulation's section 5, A. General as a minimum design standard.

Goal 5: Encourage Efficient Parking

- ***Zoning Ordinance:*** The zoning ordinance currently requires specific parking requirements dependent on use, permits shared parking for uses with different peak demand times, and allows parking requirement reductions. To further encourage efficient parking, Greenscapes recommends developing maximum parking space requirements to limit excess impervious surface creation and permitting 30% of parking spaces for compact cars in lots over 20 spaces. Greenscapes also recommends explicitly requiring or encouraging LID within landscaped parking islands and requiring parking islands to have curb cuts for stormwater infiltration. This language could also be expanded to the stormwater regulations design standards.

Timeline and Implementation

To be filled in after community meeting scheduled on ___

Middleton Bylaw and Regulation Review

Overview

To ensure Middle ton's compliance with year 4 MS4 permit requirements 2.3.6b: report assessing current street design and parking lot guidelines and other local requirements that affect creation of impervious surface and 2.3.6c: report assessing existing local regulations to determine the feasibility of making green roofs, infiltration practices, and water harvesting devices allowable, the following bylaws and regulations were reviewed:

- Zoning Bylaw
- Subdivision of Land Bylaw
- Subdivision Rules & Regulations
- Stormwater Management Bylaw
- Stormwater Management Rules and Regulations

Middleton's bylaws are characterized by a mix of requirements that would be classified as "optimal" to facilitate low-impact development (LID), as well as areas with room for improvement to further LID implementation and the use of green infrastructure for stormwater management. Greenscapes recommendations focus on the addition of specific language and standards within the stormwater bylaw and rules and regulations to call out the use of LID techniques to achieve Middleton's clearly defined stormwater standards. There are also areas within the zoning and subdivision bylaws where current standards require the use of impervious surfaces. Revisions to these requirements to require or encourage alternative development practices that reduce areas of imperviousness would contribute to the integration of LID techniques throughout the town.

Recommendations

Goal 1: Protect Natural Resources and Open Space

Zoning Bylaw: Middleton's zoning bylaw specifies that "Planted areas shall contain an appropriate mix of plant species appropriate to proposed use, siting, soils, and other environmental conditions.' Greenscapes recommends adding specific language requiring at least 75% native plantings.

Subdivision of Land Bylaw and Subdivision Rules & Regulations: Neither the subdivision bylaw nor the rules and regulations outline requirements for soil management for revegetation or to limit clearing size. Greenscapes recommends that Middleton prohibits the removal of topsoil from sites and requires minimization of clearing/grubbing within subdivisions. The subdivision rules and regulations do prohibit the use of invasive species. Greenscapes recommends adding specific language requiring at least 75% native plantings.

Stormwater Management Bylaw and Stormwater Rules and Regulations: Largely not applicable to this goal. The stormwater rules and regulations do specify a requirement

for “Interim and permanent stabilization practices for the site, including a schedule of when the practices will be implemented. Site plans should ensure that existing vegetation is preserved where possible and that disturbed portions of the site are stabilized. Use of impervious surfaces for stabilization should be avoided.” Greenscapes recommends adding specific standards to require the minimization of clearing/grubbing.

Goal 2: Promote Efficient, Compact Development Patterns and Infill

Zoning Bylaw: Middleton’s zoning bylaw outlines minimum lot size, setbacks and frontage requirements based on the type of development. The bylaw does state that “Flexible development may be authorized upon the issuance of a special permit by the Planning Board,” with incentives to preserve open space in developments. Greenscapes recommends allowing for this type of flexible development by right instead of requiring special permission. Within the zoning bylaw, common driveways serving not more than two lots may be allowed by special permit. Greenscapes recommends allowing for common drives for up to 4 residential units without requiring a special permit.

Subdivision of Land Bylaw: Middleton’s subdivision bylaws refer to the zoning bylaws for lot, setback, and frontage area requirements. However, the subdivision bylaw prohibits the use of common driveways. Greenscapes recommends allowing for common drives for up to 4 residential units within subdivisions.

Subdivision Rules & Regulations, Stormwater Management Bylaw, Stormwater Rules and Regulations: Not applicable to this goal.

Goal 3: Smart Designs that Reduce Overall Imperviousness

Zoning Bylaw: The zoning bylaw does a good job of explicitly limiting impervious cover limits to 75% of lots in business and light industrial districts, and to 70% of multifamily or attached dwellings. The bylaw does mandate “Curb cuts shall be limited to the minimum width for safe entering and exiting.” Greenscapes recommends explicitly allowing for open drainage along roadways. Other factors to reduce imperviousness are largely not addressed within the zoning bylaws.

Subdivision of Land Bylaw: Greenscapes recommends the standards for street design laid out in Middleton’s subdivision bylaw be amended to allow for less impervious surface by requiring locating streets to minimize grading and road length and reduce the minimum road right-of-way. (Actually, in the subdivision rules and regulation, the width of street right of ways is “no less than 20 feet” while the minimum in the bylaw is 40 feet. Revising the bylaw to be in line with existing rules and regulations would follow best practices for LID development.) Cul-du-sacs are only permitted if they are less than 500 feet in length and with a turn-around diameter of 120 feet. Greenscapes recommends that dead end streets, one-way loop streets, and common driveways be allowed to facilitate flexible development patterns. Currently the bylaw requires the

construction of bituminous sidewalks on both sides of the street. Greenscapes recommends that the subdivision bylaw be amended to encourage the use of permeable pavement for sidewalks and to permit their siting for best pedestrian utility, not necessarily immediately parallel to both sides of the street.

Subdivision Rules & Regulations: The subdivision rules and regulations do a better job than the subdivision bylaw of promoting smart designs to reduce imperviousness. Middleton should look to reduce areas of inconsistencies between them in favor of the specifics offered in the rules and regulations, specifically in requirements for street right-of-way widths. Dead end streets are only permitted by Board approval. Greenscapes recommends that dead end streets, one-way loop streets, and common driveways be allowed to facilitate flexible development patterns. Currently, bituminous berms are required along streets. Greenscapes recommends explicitly allowing for open drainage along roadways. Greenscapes recommends that the subdivision bylaw be amended to encourage the use of permeable pavement for sidewalks and to permit their siting for best pedestrian utility, not necessarily immediately parallel to both sides of the street. Greenscapes also recommends Middleton amend its subdivision rules and regulations to explicitly prefer the use of roadside swales over closed drainage, and to allow for utilities to be sited immediately adjacent to roads to enable placement of roadside swales.

Stormwater Management Bylaw, Stormwater Rules and Regulations: Not applicable to this goal.

Goal 4: Adopt Green Infrastructure Stormwater Management Provisions

Zoning Bylaw: Middleton's zoning bylaw outlines site/plan design requirements, including topography and drainage plan and utility and landscaping plan. It specifies that "To the extent practicable, the proposed development shall be located to preserve and enhance the natural features of the site, to avoid disturbances of environmentally sensitive areas, to minimize adverse impacts of development on adjoining properties, to minimize the alteration of the natural features of the site and to preserve and enhance scenic points, historic buildings and places and similar community assets which add value and attractiveness to the subdivision and the Town." Greenscapes recommends including bioretention and other vegetated LID features in site landscaping requirements.

Subdivision of Land Bylaw: Middleton's subdivision bylaw requires a "definitive plan of a subdivision shall include a detailed system designed to adequately dispose of surface water and to provide for minimum of subsequent maintenance." However, these requirements do not require the use of LID features and BMPs." Greenscapes recommends including bioretention and other vegetated LID features in site landscaping requirements.

Subdivision Rules & Regulations: Middleton's subdivision rules and regulations do not offer specific guidelines for stormwater management systems but instead refer back to the subdivision bylaw for stormwater standards. Greenscapes recommends including specific standards encouraging or requiring LID techniques be used, with specific design standards outlined. The rules and regulations also allow for porous pavement options in certain situations with Board approval. Greenscapes recommends allowing for permeable pavement by right in clearly defined instances instead of requiring a special permit.

Stormwater Management Bylaw; Stormwater Rules and Regulations: Middleton's stormwater management bylaw and rules and regulations do a good job of outlining permitting requirements for stormwater systems, ensuring that erosion and sedimentation control measures are put in place, requiring long-term operations and maintenance plans, and specifying means of enforcement. However, they do not make explicit reference to the use of LID practices within stormwater management systems. Greenscapes recommends including LID design standards encouraging infiltration, allowing surficial ponding of retained runoff for up to 72 hours, credit for green roofs towards stormwater requirements, and including bioretention and other vegetated LID features in site landscaping requirements.

Goal 5: Encourage Efficient Parking

Zoning Bylaw: Middleton requires minimum parking spaces dependent on the type of development, i.e. residential or various commercial uses. Greenscapes recommends eliminating mandated minimum numbers of parking spaces and adding allowances for shared parking for uses with different peak demand times. Middleton does require tree planting in larger parking areas and 5% of the interior of the parking lot being maintained with landscaping. Greenscapes recommends expanding the landscaping requirement within parking areas as bio retention, at a minimum of 10% of the interior area landscapes and a minimum of 25 square feet for island planting areas.

Subdivision of Land Bylaw, Subdivision Rules & Regulations, Stormwater Management Bylaw, Stormwater Rules and Regulations: Not applicable to this goal.

Resources and Implementation Plan

Middleton is in the process of revising its subdivision bylaws, a process which they expect will be complete by the end of October 2022. The town is looking to include many of the recommendations of this analysis in these revised bylaws. To facilitate these revisions, Middleton is looking forward to using the references provided in this report for modal language and examples of well-executed bylaws.

Revision of the zoning bylaw is a longer-term goal as the town has recently completed a Master Plan in 2019 and is working towards a full zoning audit. Greenscapes stands ready to assist with the implementations of these recommended revisions when Middleton reaches this point in their zoning revision process.

Newbury Bylaw and Regulation Review

Overview

Merrimack Valley Planning Commission (MVPC) provides technical assistance to its municipalities to achieve and maintain compliance with Federal and State regulations. This report summarizes MVPC's review of the Town of Newbury's bylaws and regulations for consistency and adherence with the Environmental Protection Agency's (EPA) Municipal Separate Storm Sewer (MS4) permit. Specifically, the requirements for year 4 of the MS4 permit: section 2.3.6b - report assessing current street design and parking lot guidelines and other local requirements that affect creation of impervious surface, and section 2.3.6c - report assessing existing local regulations to determine the feasibility of making green roofs, infiltration practices, and water harvesting devices allowable, were reviewed. The following bylaws and regulations were provided to MVPC by Newbury municipal officials:

- Zoning Bylaw (includes site plan review)
- Wetland Protection Bylaw
- Subdivision Rules and Regulations
- Stormwater Management Bylaw & Rules and Regulations
- IDDE Bylaw

This community specific summary will be compiled into a comprehensive regulation review report to be submitted to the Massachusetts Department of Environmental Protection as a deliverable for the Merrimack Valley Planning Commission's MS4 Municipal Assistance Grant. The work completed through this grant was accomplished in collaboration with the Greenscapes North Shore Coalition (Ipswich River Watershed Association, Salem Sound Coastwatch and MVPC).

Newbury has made substantial progress towards ensuring impervious surface reduction and low impact development implementation within their bylaws and regulations. Newbury's bylaws and regulations are generally proactive regarding the protection of natural resources and open space, and Newbury's zoning ordinance requirement for development over 4 lots or units or more to submit an OSRD plan is successful at promoting compact development patterns. Further, Newbury's stormwater bylaw not only requires low impact development, but provides specific examples and design standards. However, some activities permitted within the subdivision regulations contribute to an increase in impervious surfaces, and stormwater permits are only required for projects disturbing over 1 acre of land. Further, Newbury does not address the MassDEP required removal of Total Suspended Solids (TSS) and Total Phosphorus (TP) for new development and redevelopment sites.

Improvements could be made to these codes by revising some subdivision design standards to ensure they mitigate impervious surface creation as much as possible, implementing a major and minor stormwater permit, and revising the stormwater bylaw to include TSS and TP requirements and maintain MS4 compliance.

Recommendations

Goal 1: Protect Natural Resources and Open Space

- ***Zoning Bylaw, Wetland Protection Bylaw, Stormwater Regulations & Subdivision Regulations:*** While Newbury's bylaws are largely successful at managing soil for revegetation and limiting clearing, none of them address a requirement for native species plantings following construction activities. Greenscapes recommends incorporating this language throughout code's design requirements to maintain consistency or placing this design standard within the stormwater regulations and referencing the regulations within other code's design standards.
- ***Stormwater Regulations:*** While all other codes are successful at addressing design standards which limit clearing and require the retention of native vegetation during construction, the language within the stormwater regulations does not explicitly require the minimization of cut and fill, number of trees removed, and the like. Greenscapes recommends copying the design standards in section 117-42 of the subdivision regulations to the stormwater regulations, as not all projects which require a stormwater permit will be a subdivision and will thus not be subject to its requirements.

Goal 2: Promote Efficient, Compact Development Patterns and Infill

- ***Stormwater Bylaw and Subdivision Regulations:*** Currently, the stormwater bylaw and regulations require a stormwater management permit for any land disturbance of 43,560 feet, or one acre. To encapsulate a wider breadth of projects which may alter natural stormwater processes, Greenscapes recommends developing new permit thresholds: a minor permit for developments between 3,000-20,000 square feet of land disturbance (typical single family home construction), which requires administrative review and approval from a conservation agent, and a major permit for land disturbances over 20,000 square feet (multi-dwelling or large commercial project), which requires a public hearing and approval by the planning board.

Goal 3: Smart Designs that Reduce Overall Imperviousness

- ***Subdivision Regulations:*** Newbury's subdivision regulations are very successful at implementing design standards which reduce overall imperviousness through permitting road width reductions, encouraging open drainage with no curbing, requiring utilities underground, and permitting flexible sidewalk placement. Small improvements could be made to language by explicitly permitting cul-de-sac center islands with a native landscaping requirement, curb cuts, and LID like raingardens, permitting permeable paving for sidewalks in low volume areas, and incorporating language which requires streets to be designed and located in a manner as to maintain and preserve natural topography.

Goal 4: Adopt Green Infrastructure Stormwater Management Provisions

- **Stormwater Bylaw and Regulations:** Newbury's stormwater bylaw and accompanying regulations are successful at requiring LID practices, prohibiting illicit discharges, and requiring all necessary plans for a stormwater permit. However, it does not address the MS4 required removal of Total Suspended Solids (TSS) and Total Phosphorus (TP) for

new development and redevelopment sites. Greenscapes recommends requiring a 90% TSS and 60% TP generated on site for new developments pot-construction and an 80% TSS and 50% TP generated on site for redevelopments pot-construction as required by the MS4 permit.

- **Zoning Bylaw, Subdivision Regulations, Wetlands Bylaw, and Stormwater Bylaw:** While Newbury's wetlands ordinance does explicitly state that any municipal board etc. shall have the authority to assist the commission with the enforcement of the chapter, no other codes have an explicit statement of intradepartmental coordination. Greenscapes recommends developing a section titled "Review by other bodies" or the like which explicitly addresses intradepartmental review for the zoning, stormwater, and subdivision codes.

Goal 5: Encourage Efficient Parking

- ***Zoning Bylaw:*** The zoning bylaw currently requires a minimum number of parking spaces for residential and commercial uses, permits a reduction in required parking up to 25%, and allows shared parking for uses with different peak demand times. To further encourage efficient parking and reduce runoff from these impervious surfaces, Greenscapes recommends explicitly requiring or encouraging LID within landscaped parking islands and requiring parking islands to have curb cuts for stormwater infiltration. This language could be expanded to the stormwater regulations design standards or could be placed within the stormwater regulations design standards, with the zoning bylaw referencing the regulations in lieu.

Timeline and Implementation Plan

Following a conversation with Newbury's project liaison, the following endeavors were identified as priorities for implementation:

- Implementing language on TSS and TP standards within the stormwater bylaw
- Considering revisions to stormwater permitting thresholds
- Recodifying the Zoning Bylaw and implementing recommendations as they relate to LID throughout
- Adding language which explicitly requires the planting of native species within design standards

Newbury will be recodifying their zoning bylaw within the next year and looks to incorporate recommendations during that process. Newbury will also look to immediately revise the stormwater bylaw to include all required language related to TSS and TP standards for MS4 compliance.

Newburyport Bylaw and Regulation Review

Overview

Merrimack Valley Planning Commission (MVPC) provides technical assistance to its municipalities to achieve and maintain compliance with Federal and State regulations. This report summarizes MVPC's review of the City of Newburyport's ordinances and regulations for consistency and adherence with the Environmental Protection Agency's (EPA) Municipal Separate Storm Sewer (MS4) permit. Specifically, the requirements for year 4 of the MS4 permit: section 2.3.6b - report assessing current street design and parking lot guidelines and other local requirements that affect creation of impervious surface, and section 2.3.6c - report assessing existing local regulations to determine the feasibility of making green roofs, infiltration practices, and water harvesting devices allowable, were reviewed. The following ordinances and regulations were provided to MVPC by Newburyport municipal officials:

- Zoning Ordinance (includes site plan review)
- Wetland Protection Ordinance
- Subdivision Rules and Regulations
- Stormwater Management Ordinance & Rules and Regulations

This community specific summary will be compiled into a comprehensive regulation review report to be submitted to the Massachusetts Department of Environmental Protection as a deliverable for the Merrimack Valley Planning Commission's MS4 Municipal Assistance Grant. The work completed through this grant was accomplished in collaboration with the Greenscapes North Shore Coalition (Ipswich River Watershed Association, Salem Sound Coastwatch and MVPC).

Newburyport has made substantial progress towards ensuring impervious surface reduction and low impact development implementation within their bylaws and regulations. All of Newburyport's ordinances and regulations are proactive regarding the protection of natural resources and open space, and Newburyport's zoning ordinance requirement for lots over 3 acres or more to submit an OSRD plan is successful at promoting compact development patterns. Further, Newburyport's stormwater ordinance not only requires low impact development, but provides specific examples and design standards. However, some activities permitted within the subdivision regulations contribute to an increase in impervious surfaces, and some progressive zoning design standards do not extend beyond OSRD situations. Further, Newburyport does not address the MassDEP required removal of Total Suspended Solids (TSS) and Total Phosphorus (TP) for new development and redevelopment sites.

Improvements could be made to these codes by revising some subdivision design standards to ensure they mitigate impervious surface creation as much as possible and revising design standards within the zoning ordinance's site plan review to reflect some design standards found within OSRD. Further, the stormwater ordinance could be revised to include TSS and TP requirements to maintain MS4 compliance.

Recommendations

Goal 1: Protect Natural Resources and Open Space

- ***Subdivision Regulations and Wetland Ordinance:*** All of Newburyport's codes are very successful at managing soil for revegetation, minimizing clearing and grubbing, and requiring revegetation and other erosion reduction practices both during and after construction. Both the zoning ordinance and stormwater ordinance also require the planting of native species during revegetation activities. Greenscapes recommends also requiring native species plantings for permitted activities within the resource, buffer zones, and riverfront areas of the Wetland Ordinance, and within the subdivision regulation's 6.19 "Trees and Other Plantings".

Goal 2: Promote Efficient, Compact Development Patterns and Infill

- ***Zoning Ordinance:*** The zoning bylaw is successful at establishing very specific dimensional requirements for lots of various uses and within various districts. Further, its requirement to submit an OSRD application for parcels totaling 3 or more acres ensures that flexible design standards including reduced lot, setback, and frontage requirements. Greenscapes recommends also explicitly permitting reduced lot, setback, and frontage requirements pending a special permit for development circumstances outside of OSRD to promote compact development patterns in all circumstances.

Goal 3: Smart Designs that Reduce Overall Imperviousness

- ***Zoning Ordinance***: Newburyport's zoning ordinance OSRD is successful at requiring streets to be designed and located in a manner which maintains and preserved natural topography. However, this design standard is not mentioned beyond OSRD circumstances. Greenscapes recommends placing a standard which requires streets to be designed and located in a manner which maintains and preserved natural topography within the zoning ordinance's site plan review development and performance standards to ensure all roads are developed with natural topography in mind.
- ***Subdivision Regulations:*** Newburyport's subdivision regulations permit several activities which reduce overall imperviousness, including requiring peak flows and runoff to be the same before and after development, requiring streets be designed to conform to original topography, and having progressive road and right of way width requirements. However, several design standards could be improved to further reduce imperviousness. Cul-de-sac islands are also not addressed within the subdivision regulations. Greenscapes recommends explicitly permitting cul-de-sac center islands with native landscaping, curb cuts, and LID like raingardens. Further, sidewalks are required to be composed of impervious bituminous concrete in all instances, and curbing is required on all streets. Greenscapes recommends permitting permeable paving for sidewalks in low volume areas and permitting local or more rural roads to be developed without curbing to promote open drainage.

Goal 4: Adopt Green Infrastructure Stormwater Management Provisions

- ***Stormwater Ordinance:*** While Newburyport's stormwater ordinance does require the applicant to calculate anticipated nitrogen and phosphorus contributions from roads, lawns, and septic systems, it does not address the MS4 required removal of Total Suspended Solids (TSS) and Total Phosphorus (TP) for new development and redevelopment sites. Greenscapes recommends requiring a 90% TSS and 60% TP generated on site for new developments pot-construction and an 80% TSS and 50% TP generated on site for redevelopments pot-construction as required by the MS4 permit.
- ***Zoning Ordinance:*** Newburyport's zoning ordinance requires soft, nonstructural stormwater management techniques within the OSRD and Water Overlay Protection District, however these requirements are not extended to other districts or development circumstances. Greenscapes recommends explicitly referring to the stormwater ordinance's LID design standards within the zoning ordinance's site plan review development and performance standards "e. Stormwater runoff" to ensure consistency in design standards.

Goal 5: Encourage Efficient Parking

- ***Zoning Ordinance:*** The zoning ordinance currently requires a minimum number of parking spaces for residential and commercial uses, permits shared parking for uses with different peak demand times, and requires landscaping for all parking lots over 20 feet. Greenscapes recommends also developing maximum parking space requirements to limit excess impervious surface creation and permitting up to 30% of spaces in lots over 20 spaces to be smaller for compact cars. Greenscapes also recommends explicitly requiring or encouraging LID within landscaped parking islands and requiring parking islands to have curb cuts for stormwater infiltration.

Timeline and Implementation

Following a conversation with Newburyport's project liaisons, the following endeavors were identified as priorities for implementation:

- Including language within the stormwater regulations which require TSS and TP removal percentages for new and re development sites.
- Consolidating all design standards regarding LID into the stormwater regulations and ensure all relevant codes refer to the design standards to maintain consistency with requirements.

The City has already begun to move forward with the implementation of language surrounding TSS and TP removal percentages within their stormwater regulations, and project liaisons will continue to have discussions with relevant boards regarding the centralization of LID focused design standards in the stormwater regulations with a reference as necessary in other codes.

North Andover Bylaw and Regulation Review

Overview

Merrimack Valley Planning Commission (MVPC) provides technical assistance to its municipalities to achieve and maintain compliance with Federal and State regulations. This report summarizes MVPC's review of the Town of North Andover's bylaws and regulations for consistency and adherence with the Environmental Protection Agency's (EPA) Municipal Separate Storm Sewer (MS4) permit. Specifically, the requirements for year 4 of the MS4 permit: section 2.3.6b - report assessing current street design and parking lot guidelines and other local requirements that affect creation of impervious surface, and section 2.3.6c - report assessing existing local regulations to determine the feasibility of making green roofs, infiltration practices, and water harvesting devices allowable, were reviewed. The following bylaws and regulations were provided to MVPC by North Andover municipal officials:

- Zoning Bylaw (includes site plan review)
- Wetland Protection Bylaw
- Subdivision Rules and Regulations
- Stormwater Management Bylaw & Draft Rules and Regulations

This community specific summary will be compiled into a comprehensive regulation review report to be submitted to the Massachusetts Department of Environmental Protection as a deliverable for the Merrimack Valley Planning Commission's MS4 Municipal Assistance Grant. The work completed through this grant was accomplished in collaboration with the Greenscapes North Shore Coalition (Ipswich River Watershed Association, Salem Sound Coastwatch and MVPC).

North Andover has made substantial progress towards ensuring impervious surface reduction and low impact development implementation within their bylaws and regulations. North Andover's OSGOD Smart Growth Overlay District is particularly progressive in its dimensional and density requirements, parking requirements, and design standards which promote open space and native ecosystem retention. North Andover's Stormwater Bylaw and accompanying Regulations are equally as progressive for parcels over 43,560 square feet, requiring low impact development with extensive design standards and examples, and successfully addressing all MS4 requirements, including illicit discharge prohibition, total suspended solids/phosphorus requirements, and an erosion and sedimentation control plan. However, North Andover's Subdivision Regulations do not equally promote low impact development and open space design principles.

Improvements can be made to these codes by expanding OSGOD design principles beyond OSGOD developments and requiring the consideration of OSGOD when pursuing development within this district, requiring stormwater permits for smaller parcel projects under 43,560 square feet, and aligning design requirements within the subdivision rules and regulations with those of the stormwater regulations and OSGOD.

Recommendations

Goal 1: Protect Natural Resources and Open Space

- ***Zoning Bylaw:*** North Andover's zoning bylaw OSGOD district is successful at requiring native plantings with specification and addressing the preservation of mature trees. Further, the bylaw also ensures that design criteria reflect those within the stormwater bylaw, including a requirement of native plantings. However, other design principles do not expand past the OSGOD district. Greenscapes recommends requiring the preservation of mature trees across all districts, or explicitly referencing the stormwater regulations design standards for these practices within the site plan review environmental design criteria as it is referenced within the site plan review stormwater design criteria.

- ***Subdivision Regulations:*** Currently, North Andover's subdivision regulations refer to appendix V and VI for design standards as they relate to stormwater management and sedimentation and erosion control. However, these standards are not reflective of the erosion and sedimentation control plan contents and design standards addressed within the stormwater regulations. Greenscapes recommends either updating these appendixes to reflect the standards and requirements of the stormwater regulations or removing these appendixes and referring to the stormwater regulations in place of them.

Goal 2: Promote Efficient, Compact Development Patterns and Infill

- ***Zoning Bylaw:*** North Andover's zoning bylaw OSGOD does a great job promoting efficient and compact development patterns. However, these design standards are not required to be considered for applicants seeking development in the OSGOD district. Greenscapes recommends requiring applicants within the OSGOD district to seek plan approval in accordance with OSGOD requirements.
-
- ***Zoning Bylaw and Subdivision Regulations:*** North Andover's zoning bylaw provides flexibility with lot size, setbacks, and frontage for lots built within the OSGOD by not requiring specific lot and frontage minimums, nor setbacks. Further, OSGOD is successful in specifying minimum open space requirements. However, these flexible standards do not extend past the OSGOD, as strict dimensional requirements are addressed for all other districts. Greenscapes recommends relaxing the dimensional requirements by stating that the planning board may grant approval for reduced frontage, lot size, and setbacks provided that specific design standards are met. Further Greenscapes recommends addressing minimum open space requirements for all districts listed in Table 2. Revising these restrictions within the zoning bylaw would immediately bring the subdivision regulations into good standing as they reference that such dimensions "shall comply with the minimum standards of the Town of North Andover Zoning Bylaw".

- ***Stormwater Bylaw and Subdivision Regulations:*** Currently, the stormwater bylaw and regulations require a stormwater management permit for any land disturbance of 43,560 feet. To encapsulate a wider breadth of projects which may alter natural stormwater processes, Greenscapes recommends lowering the permitting threshold to 20,000 square feet.

Goal 3: Smart Designs that Reduce Overall Imperviousness

- ***Subdivision Regulations:*** North Andover's subdivision regulations have several design standards which could be revised to better reduce overall imperviousness. The subdivision regulations require 26 feet widths for minor roads and 30 feet widths for major roads, however the regulations do permit a waiver for a reduction in street width which is exercised frequently. Further, while cul-de-sac requirements are addressed, they do not detail landscaped island requirements, nor permit hammerhead turns. Greenscapes recommends explicitly permitting cul-de-sac center islands with native landscaping, curb cuts, and LID like raingardens, and permitting hammer head turns in some instances for low traffic dead end streets. Finally, sidewalks are required to be composed of impervious bituminous concrete in all instances, and curbing is required on all new streets. Greenscapes recommends permitting permeable paving for sidewalks in low volume areas and permitting local or more rural roads to be developed without curbing to promote open drainage.

- ***Zoning Bylaw:*** Like other design standards, the zoning bylaw's OSGOD is successful at reducing impervious cover limits, permitting green paving materials to minimize stormwater runoff, and reducing street width requirements. Greenscapes recommends expanding these design requirements beyond the OSGOD to all districts addressed in the zoning bylaw. Similar to the subdivision regulations, Greenscapes also recommends permitting local and more rural roads to be developed without curbing to promote open drainage.

Goal 4: Adopt Green Infrastructure Stormwater Management Provisions

- ***Subdivision Regulations:*** Currently, North Andover's proposed stormwater regulation revision goes above and beyond in addressing low impact development and achieving MS4 compliance. While the zoning bylaw is in direct communication with the requirements of the stormwater regulations, the subdivision regulations do not reference such regulations and instead utilize appendixes V and VI to address stormwater management provisions. The appendixes do not address low impact development design practices or accompanying standards, nor reference the stormwater regulations in lieu of that. They also have differing requirements for the Erosion and Sedimentation Control plan than those addressed in the stormwater regulations. Greenscapes recommends either updating these appendixes to reflect the standards and requirements of the stormwater regulations or removing these appendixes and referring to the stormwater regulations in place of them.

- ***Zoning Bylaw, Stormwater Bylaw, and Wetland Bylaw:*** North Andover's subdivision regulations are very successful at explicitly requiring intradepartmental coordination and review. While there is some implied intradepartmental communication within the zoning bylaw, Greenscapes recommends developing a section titled "Review by other bodies" or the like which explicitly addresses intradepartmental review for the zoning, stormwater, and wetland bylaws.

Goal 5: Encourage Efficient Parking

- ***Zoning Bylaw:*** The zoning bylaw is successful at providing parking space and dimensional requirements, including both minimums and maximum space requirements within the OSGOD. However, currently no maximum requirements for any uses outside of OSGOD. Greenscapes suggests explicitly stating that two parking spaces per dwelling unit is the maximum requirement, to prevent excess impervious surface creation. Further, while the zoning bylaw's OSGOD does address parking lot landscaping including native species requirements, these design standards do not go beyond the OSGOD. Greenscapes recommends explicitly requiring these practices within the site plan review design criteria. Further, Greenscapes recommends removing the language within the site plan design standards which require curbing of landscaped areas in parking lots, instead requiring curb cuts for landscaped parking islands, and encouraging LID like raingardens within landscapes areas surrounding parking. Language requiring LID within parking areas could also be expanded to subdivision regulations.

Timeline and Implementation

Following a conversation with North Andover's project liaisons, the following endeavors were identified as priorities for implementation:

- Require native plantings within the Wetland Protection Bylaw, with a comprehensive list of accepted species.
- Adopt revised Stormwater Regulations.
- Pending the adoption of the revised Stormwater Bylaw, remove appendix V and VI from subdivision regulations and instead ensure they refer to the stormwater design standards.

The town has already produced revised Stormwater Regulations which is compliant with MS4 and proactive regarding LID and will look to see it adopted prior to June 30th. Subsequent changes to the subdivision regulations will ensue soon after. Revisions to the Wetland Bylaw will also begin in the coming months.

North Reading Bylaw and Regulation Review

Overview

To ensure North Readings's compliance with year 4 MS4 permit requirements 2.3.6b: report assessing current street design and parking lot guidelines and other local requirements that affect creation of impervious surface and 2.3.6c: report assessing existing local regulations to determine the feasibility of making green roofs, infiltration practices, and water harvesting devices allowable, the following bylaws and regulations were reviewed:

- Zoning Bylaw
- Subdivision of Land Bylaw
- Site Plan Review Bylaw
- Stormwater Management Bylaw
- Stormwater Management Rules and Regulations

North Reading's stormwater management bylaw and rules and regulations are fairly strong in terms of supporting and promoting the use of low-impact development (LID) techniques. The limited improvements recommended for these stormwater-specific standards center around adding language about specific LID stormwater management techniques (i.e. roadside swales, bio-retention, etc) and design standards for each.

Most of Greenscapes's recommended amendments for North Reading's bylaws pertain to changes to the zoning, subdivision, and site plan review bylaws to allow for creative development patterns which take advantage of green infrastructure and natural solutions for stormwater management. In general, the goal is to reduce the amount of clearing and impervious surfaces in developments by, for example, reducing parking requirements, reducing required street widths, and allowing for the use of permeable pavement.

Recommendations

Goal 1: Protect Natural Resources and Open Space

> **Zoning Bylaw:** North Reading has specified that for Open Space Residential Developments "The landscape shall be preserved in its natural state, insofar as practicable, by minimizing tree and soil removal." Greenscapes recommends that this requirement to minimize tree and soil removal be expanded to apply to all development and redevelopment projects in town. North Reading also encourages the use of native plant species for OSRD. Greenscapes recommends that North Reading require at least 75% native plantings across all development projects.
>
> **Subdivision of Land Bylaw:** Not applicable to this goal.
>
> **Site Plan Review Bylaw:** The site plan review requires the retention of undisturbed habitat or the use of native plantings for revegetation on at least 10% of all sites.

Greenscapes recommends a requirement to minimize clearing/grubbing which may result in more than 10% of land remaining undisturbed.

Stormwater Management Bylaw: Not applicable to this goal.

Stormwater Rules and Regulations: The stormwater rules and regulations underscores the use of landscaping using native vegetation and minimizing land disturbance and clearing as a low-impact development (LID) technique for stormwater management. This is an excellent example of how these development practices can support broader stormwater management systems.

Goal 2: Promote Efficient, Compact Development Patterns and Infill

Zoning Bylaw: The zoning bylaw outlines minimum lot size, setbacks and frontage requirements. The bylaw does allow for the Community Planning Commission to waive these minimum requirements for Open Space Residential Districts. Greenscapes recommends the bylaw be amended to allow for these type of flexible requirements by right instead of requiring a special waiver. Common drives are not addressed in the zoning bylaws. Greenscapes recommends allowing for common drives for up to 4 residential units without requiring a special permit.

Subdivision of Land Bylaw: Dimensional requirements are laid out in the zoning bylaw. The subdivision bylaw does specify that "No common driveways will be allowed." Greenscapes recommends allowing for common drives for up to 4 residential units without requiring a special permit.

Site Plan Review Bylaw, Stormwater Management Bylaw, Rules and Regulations: Not applicable to this goal.

Goal 3: Smart Designs that Reduce Overall Imperviousness

Zoning Bylaw: North Reading does an excellent job limiting the amount of impervious area within a development, depending on the type of development. The zoning bylaw does outline standards within the OSRD and the Barry Center Residential Smart Growth Overlay District which impact the design of impervious surfaces. The amendments the Greenscapes recommends to facilitate LID adoption are to allow for dead ends / cul-de-sacs in these developments, to eliminate the requirement for curbing along both sides of the road in preference for open drainage with roadside swales, and to include a preference for the use of permeable pavement on sidewalks.

Subdivision of Land Bylaw: The subdivision bylaws are an area of significant opportunity for improvement to promote smart designs that limit imperviousness. On the issue of street location and design, Greenscapes recommends requiring locating streets to minimize grading and road length, avoiding important natural features, and reducing

the minimum widths for streets to as little as 18-20' for low-traffic residential neighborhoods, and reducing the road right-of-way widths to a 20'-50' depending on road type. For standards related to dead ends, common drives and cul-de-sacs, Greenscapes recommends allowing for common drives for up to 4 residential units, allowing for hammerhead turnarounds in lieu of cul-de-sacs for dead end streets, and eliminating the limits on length for dead-end and loop roads. Greenscapes would also recommend eliminating the requirement for curbing along both sides of the road in preference for open drainage with roadside swales. For sidewalks in subdivisions, Greenscapes recommends a stated preference for siting with land contours and for best pedestrian utility instead the current requirement that they be installed on both sides of the street and with a preference to use permeable pavement instead of the current requirement to use bituminous concrete.

Site Plan Review Bylaw, Stormwater Management Bylaw, Stormwater Rules and Regulations: Not applicable to this goal.

Goal 4: Adopt Green Infrastructure Stormwater Management Provisions

Zoning Bylaw: The zoning bylaw has minimal mentions of stormwater management provisions, as most of these are housed in the stormwater management bylaw and rules and regulations. The zoning bylaw does mention stormwater management for the Barry Center Residential Smart Growth Overlay District, and the Open Space Residential Development. Greenscapes recommends revision to the stormwater requirements for the Barry Center Residential Smart Growth Overlay District, which currently offer conventional stormwater design standards. The regulations in the stormwater rules and regulations, or the standards outlined for the OSRD already provide a good example of rules that promote green infrastructure for stormwater management. Greenscapes also recommends allowing for permeable pavement use on driveways and parking areas. Currently North Reading requires the use of bituminous or cement for all driveways.

Subdivision of Land Bylaw: North Reading's subdivision bylaws specify conventional stormwater system design standards but do not mention LID techniques. Greenscapes recommends including LID design standards encouraging infiltration; systems designed for larger volume storms, accounting for future precipitation predictions; credit for green roofs towards stormwater requirements.

Site Plan Review Bylaw: Not applicable to this goal.

Stormwater Management Bylaw: Mostly pertains to process and enforcement, no recommended changes.

Stormwater Rules and Regulations: North Reading's Stormwater rules and regulations overall do a good job of promoting the adoption of green infrastructure for stormwater management. Highlights include recommending 100% roof runoff recharge, requiring nonstructural stormwater management strategies to the maximum extent practicable,

requiring an operation and maintenance plan and erosion and sedimentation control plan, and prohibiting illicit stormwater discharges and requiring an as-built survey. In terms of further improvements, Greenscapes recommends adding language about specific LID stormwater management techniques (i.e. roadside swales, bio-retention, etc) and specific design standards for each.

Goal 5: Encourage Efficient Parking

Zoning Bylaw: North Reading requires a minimum number of parking spaces per residential or commercial unit. Greenscapes recommends instead establishing maximum allowed parking spaces for residential units, and allowing tenants separate, optional lease agreements for parking. For commercial developments, Greenscapes recommends allowing for shared parking for uses with different peak demand times and provide model agreements. Greenscapes further recommends that North Reading require landscaping within parking areas at a minimum of 10% of the interior area landscaped and a minimum of 25 square feet for island planting areas.

Subdivision of Land Bylaw: Not applicable to this goal.

Site Plan Review Bylaw: North Reading's site plan review specifies that "all areas designated as parking areas shall be paved." Greenscapes recommends amending this requirement to make it clear that permeable paving options are acceptable, or even preferable to traditional paving.

Stormwater Management Bylaw, Stormwater Rules and Regulations: Not applicable to this goal.

Timeline and Implementation Plan

North Reading indicated that review and revision of their bylaws and regulations as it pertains to stormwater management is a priority for the town. They are working with New England Civil Engineering to review site plan and subdivision bylaws to ensure consistency with their stormwater bylaws and regulations. This project will be started shortly and is expected to be completed in the next six months.

There are a few competing considerations to changes to North Reading regulations. For example, the fire department has legitimate safety concerns around limiting road width. This issue is illustrative of the issues that many towns will face balancing different stakeholders and town objectives when revising bylaws. Ongoing maintenance of green infrastructure systems was also a concern for North Reading. The town cited a lack of financial resources for continued maintenance of these systems as a limitation to their adoption going forward.

Bylaw and Regulation Review for the City of Peabody

Overview

To ensure Peabody's compliance with year 4 MS4 permit requirements 2.3.6b: report assessing current street design and parking lot guidelines and other local requirements that affect creation of impervious surface and 2.3.6c: report assessing existing local regulations to determine the feasibility of making low impact development, infiltration practices, and water harvesting devices allowable, the following regulations were reviewed:

- Zoning Ordinance (Including Special Regulations)
- Subdivision Rules & Regulations
- Chapter 28 – Utilities (Specifically Article V – Stormwater Systems)
- Chapter 32 – Wetlands and River Protections
- Chapter 27 – Streets & Sidewalks

Overall, these regulations fell mostly in the "improved" category of the matrix. Many of the itemized factors were mentioned, but just not to the extent that an exemplary bylaw may have discussed or regulated each topic. For example, LID is mentioned in the Zoning Ordinance and the Subdivision Rules and Regulations even reference standards from the MA Stormwater Handbook, however there is also contradictory language that weakens and even invalidates the LID discussion such as "*all streets, sidewalks, parking areas, loading docks and exterior service areas shall be paved or surfaced with impervious materials".* Peabody's regulations do a good job advocating for the preservation of natural spaces and the highlights are related to landscaping requirements and sidewalk planning based on land contours instead of blanket paving requirements.

In the bylaw review process, Greenscapes found that Peabody, like many other communities does not have accessible documentation that describes the general SOPs of development being done by their municipal staff (DPW). In Peabody, like in many other towns, most development and redevelopment is being done BY the town – a new parking lot or renewed sidewalks, but there is no regulating authority or documentation of how that redevelopment is being constructed. The most important recommendation that Greenscapes would like to make is to create or make accessible this type of regulation or documentation of standard operating procedures.

Recommendations

Goal 1: Protect Natural Resources and Open Space

Language to be highlighted in Peabody's existing regulations lies in the **Zoning Ordinance**, where in Section 10.6, the ordinance references a list of preferred plant specifications the "ensures invasive, non-native and otherwise unfavorable species are prohibited from being planted". The first recommendation from Greenscapes is to make the list more accessible to viewers, either within the ordinance or posted on the city's website.

Another recommendation from Greenscapes is to more clearly quantify the allowed soil removal from sites during all development projects. As required by the **Zoning Ordinance**, according to Section 14;

Removal of Earth Products, "all removal" requires an earth removal permit, but it is not clear how the permit issuance is enforced.

Goal 2: Promote Efficient, Compact Development Patterns and Infill

Peabody's regulations, including the **Zoning Ordinance** and **Subdivision Rules & Regulations** currently require minimum lot sizes, setbacks and frontages for all zones. One recommendation from Greenscapes, related to the promotion of compact development, would be to decrease or eliminate minimum dimensional requirements, or at the very least make them more flexible.

Greenscapes would also recommend making common drives more accessible and described in the **Subdivisions Rules & Regs**, in addition to the **Zoning Ordinance**, where they are currently allowed by special permit for 3 dwelling units. Greenscapes would recommend making shared driveways allowed by right for up to 4 dwellings.

Lastly, there is currently some model language in the **Stormwater Systems Article**, which states that "*loss of annual recharge should be minimized through the use of infiltration measures to the maximum extent practicable…. Annual recharge from the post-development site should approximate the annual recharge from the predevelopment site conditions*". Greenscapes would recommend taking this language one step further by including standards for specific infiltration techniques. This improved language and recommendations for LID should also be incorporated into the **Subdivision Rules & Regs** in Sec IV.F.4 where design standards for drainage are currently described.

Goal 3: Smart Designs that Reduce Overall Imperviousness

Currently, it appears that impervious surface creation in the city of Peabody is not well managed or minimized. However, it appears that way because specific dimensional requirements, such as road width and ROW width could not be found throughout the **Zoning Ordinance**, and were only briefly mentioned in the **Subdivision Rules & Regs.** For this reason, Greenscapes recommends minimizing street widths for all categories, such as: wide, medium, narrow, and alley categories. 20-24' widest for 2 travel lanes, 18-20' low traffic residential neighborhood, plus 2' shoulders. Greenscapes would also recommend designing street layout to better preserve open space and natural features, as opposed to basing location strictly on ease of vehicular travel.

As stated in the summary of Goal 2, Greenscapes would recommend making common drives allowed by right for up to 4 dwelling units. In the **Subdivision Rules & Regs**, dead-end streets are currently allowed, but Greenscapes would recommend minimizing the turnaround radius to at least 35' (instead of the 40'-50' as is currently described). In Sec IV.A.6, where dead-end street requirements are detailed, it also states that landscaped islands are the responsibility of the neighboring homeowners. This arrangement is not a sustainable model for effective stormwater system maintenance. The landscaped island of dead-ends/cul-de-sacs could be equipped with a rain garden or other bioretention techniques, but should be properly maintained by trained municipal staff, not residents.

Similarly, Sec IV.H.3 of the **Subdivision Rules & Regs** states "*Grass plots shall be constructed within the street right-of-way, separating the pavement and the sidewalk. The grass plot shall extend the full length of each side of the street, and shall be a minimum width of four feet (4'), including granite curbing*". Without indication of grade, this grass path cannot be considered a roadside swale. Greenscapes would

recommend including standards for roadside swales/grassed channels from Volume 2, Chapter 2 of the MA Stormwater Handbook as the preferred method of sidewalk and roadway stormwater control.

Goal 4: Adopt Green Infrastructure Stormwater Management Provisions

There is one piece of exemplary language in Sec 10.4 (General Regulations Applicable in All Zoning Districts) of Peabody's **Zoning Ordinance** that states "*The use of low-impact-development strategies, i.e. rain gardens and bioretention cells, is strongly encouraged*". However, elsewhere in the ordinance there is very contradictory language that states "*…all streets, sidewalks, parking areas, loading docks and exterior service areas shall be paved or surfaced with impervious materials and construction with curbing, slopes and similar design features so the water falling on such areas and on buildings on the same premises and spilled liquid substances on such areas and in adjacent buildings will be contained, controlled and directed into an approved system of drainage structures and pipes...".* Greenscapes recommends enhancing the language in Sec 10.4 and including specific reference to the Stormwater Handbook as mentioned above, and reevaluating the need for fully impervious surfaces as currently described. The **Stormwater Systems Article** already mentions the Stormwater Handbook but the preference for LID techniques could be made more clear by pulling out specific text such as "*Proponents of projects subject to the Stormwater Management Standards must consider environmentally sensitive site design and low impact development techniques to manage stormwater. Proponents shall consider decentralized systems that involve the placement of a number of small treatment and infiltration devices located close to the various impervious surfaces that generate stormwater runoff in place of a centralized system comprised of closed pipes that direct all the drainage from the entire site into one large dry detention basin."*

Goal 5: Encourage Efficient Parking

The **Zoning Ordinance** already requires landscaping within all parking areas, based on lot volume. The one area of improvement, identified by Greenscapes, is the need for encouragement of shared parking. There are currently no parking regulations included in the **Subdivision Rules & Regulations** and the **Zoning Ordinance** includes requirements for spaces, based on zone/use. These requirements could be made more conservative by including opportunities to share spaces depending on peak use times or putting stricter time limits on certain parking areas. Lastly, other ways to reduce imperviousness in parking lots would be to allow for alternative materials like porous pavement and reduce stall size as much as possible.

Implementation Plan

After discussing the finalized bylaw matrix with representatives from the city of Peabody, the following actions have been prioritized and identified as the first steps towards improving LID accessibility:

- Posting list of preferred plant species on town website as attachment to Zoning Ordinance
- Reviewing and minimizing required road and ROW widths in Zoning and Subdivision R&R
- Including allowance for 4 unit shared driveways in Zoning Ordinance and Subdivision R&R

Rowley Bylaw and Regulation Review

Overview

Merrimack Valley Planning Commission (MVPC) provides technical assistance to its municipalities to achieve and maintain compliance with Federal and State regulations. This report summarizes MVPC's review of the Town of Rowley's bylaws and regulations for consistency and adherence with the Environmental Protection Agency's (EPA) Municipal Separate Storm Sewer (MS4) permit. Specifically, the requirements for year 4 of the MS4 permit: section 2.3.6b - report assessing current street design and parking lot guidelines and other local requirements that affect creation of impervious surface, and section 2.3.6c - report assessing existing local regulations to determine the feasibility of making green roofs, infiltration practices, and water harvesting devices allowable, were reviewed. The following bylaws and regulations were provided to MVPC by Rowley municipal officials:

- Zoning Bylaw (includes site plan review)
- Wetland Protection Bylaw
- Planning Board Rules and Regulations
- Stormwater Management Bylaw & Rules and Regulations

This community specific summary will be compiled into a comprehensive regulation review report to be submitted to the Massachusetts Department of Environmental Protection as a deliverable for the Merrimack Valley Planning Commission's MS4 Municipal Assistance Grant. The work completed through this grant was accomplished in collaboration with the Greenscapes North Shore Coalition (Ipswich River Watershed Association, Salem Sound Coastwatch and MVPC).

Rowley has made substantial progress towards ensuring impervious surface reduction and low impact development implementation within their bylaws and regulations. Rowley's zoning bylaw is very successful at permitting flexible design standards as they relate to lot size, setbacks, and frontage not just within their OSRD, but in several other districts by explicitly permitting reductions pending planning board approval and special permit. Further, Rowley requires an OSRD plan to be considered for lots over 5 acres or with 5 or more parcels and permits OSRD to be considered for 2 or more parcels on at least 5 acres of land. Rowley also has successful design standards as they relate to natural resource preservation and low impact development implementation which exist within the planning board regulations and the stormwater regulations respectively. However, some of these design standards are not consistent throughout all codes and require more specificity. Further, the stormwater bylaw does not address the MS4 required redevelopment Total Suspended Solids (TSS) and Total Phosphorus (TP) volumes.

Improvements could be made to these codes by ensuring design standards are consistent throughout codes and developing or copying design standards in some instances as they relate

to low impact development and natural resource preservation. TSS and TP requirements could also be addressed within the stormwater bylaw to maintain MS4 compliance.

Recommendations

Goal 1: Protect Natural Resources and Open Space

- ***Zoning Bylaw and Stormwater Regulations:*** Rowley's planning board rules and regulations are very successful at protecting natural resources and open space through detailed design standards. Similarly, the stormwater regulations and zoning bylaw have accompanying design standards which address some of the same requirements. However, both the zoning bylaw's site plan review criteria and stormwater regulation standards could be revised to include standards within the planning board regulations. These standards include requirements for native species plantings and the explicit minimization of grading and clearing especially of large trees with requirements for revegetation. Alternatively, both design standards could reference the planning board regulations in lieu.

Goal 2: Promote Efficient, Compact Development Patterns and Infill

- ***Stormwater Bylaw and Subdivision Regulations:*** Currently, the stormwater bylaw and regulations require a stormwater management permit for any land disturbance of 20,000 feet. To encapsulate a wider breadth of projects which may alter natural stormwater processes, Greenscapes recommends developing new permit thresholds: a minor permit for developments between 3,000-20,000 square feet of land disturbance (typical single family home construction), which requires administrative review and approval from a conservation agent, and a major permit for land disturbances over 20,000 square feet (multi-dwelling or large commercial project), which requires a public hearing and approval by the planning board/conservation commission. *noted that 20,000 square feet encapsulates the majority of single family homes in Rowley and is an appropriate standard for the time being*.

Goal 3: Smart Designs that Reduce Overall Imperviousness

- ***Planning Board Regulations:*** Rowley's planning board regulations are successful at requiring street design standards which minimize cut and fill, and common driveways which reduce overall imperviousness. However, several design standards could be improved upon to better reduce overall imperviousness. Cul-de-sac islands are also not permitted within the regulations. Greenscapes recommends explicitly permitting cul-de-sac center islands with native landscaping, curb cuts, and LID like raingardens. Sidewalks are also required to be composed of impervious bituminous concrete in all instances, and curbing is required on all streets. Greenscapes recommends permitting permeable paving for sidewalks in low volume areas and permitting local or more rural roads to be developed without curbing to promote open drainage. Finally, Rowley's Right of Ways (ROW) are generally high compared to Mass Audubon design standards and those seen in neighboring communities. Greenscapes recommends reducing ROW requirements to 50 for minor roads and 60 for major roads.

Goal 4: Adopt Green Infrastructure Stormwater Management Provisions

- ***Zoning Bylaw and Planning Board Regulations:*** While Rowley's stormwater regulations require the use of low impact development (LID) unless infeasible with accompanying design standards, both the zoning bylaw and planning board regulations do not refer to LID requirements or design standards throughout. Greenscapes recommends explicitly requiring LID unless infeasible within the zoning bylaw and planning board regulations, with accompanying design standards like those conveyed in the stormwater regulations. These design standards could sit within the zoning bylaw's site plan review criteria for evaluation (7.6.3) and the planning board regulation's design requirements under storm drainage or lot drainage (4.7). Alternatively, both codes could reference with stormwater bylaw within their design standards in lieu of mentioning specific design standards.
- ***Stormwater Bylaw*****:** Rowley's stormwater bylaw does address the requirement for low impact development unless infeasible with examples and references to materials for design standards, however it does not require the Massachusetts Department of Environmental Protection approved total suspended solid (TSS) and total phosphorus (TP) rates post redevelopment. Greenscapes recommends not only requiring TSS and TP removal quantities for new development sites, but the required 80% TSS and 50% TP removal for post construction redevelopment sites.

Goal 5: Encourage Efficient Parking

- ***Planning Board Regulations:*** The planning board regulations currently require a minimum number of parking spaces for residential and commercial uses and permits a reduction in required parking for uses which require less parking. Greenscapes recommends also developing maximum parking space requirements to limit excess impervious surface creation, permitting shared parking for uses with different peak demand times in applicable districts, and permitting 30% of parking spaces for compact cars in lots over 20 spaces. Greenscapes also recommends explicitly requiring or encouraging LID within landscaped parking islands and requiring parking islands to have curb cuts for stormwater infiltration. This language could be expanded to the stormwater regulations design standards.

Timeline and Implementation Plan

Following a conversation with Rowley's project liaison, the following endeavors were identified as priorities for implementation:

- Implementing language on re-development TSS and TP standards within the stormwater bylaw
- Meeting with the planning board to review recommendations and feasibility for implementation for revised design standards including cul-de-sac requirements, curbing requirements, and low impact development language

The project liaison intends to share this report with the planning board for their review to initiate a discussion regarding potential revisions pending the report's finalization. The town

will also look to immediately review and implement necessary revisions regarding TSS and TP standards for MS4 compliance.

Bylaw and Regulation Review for the City of Salem

Overview

To ensure Salem's compliance with year 4 MS4 permit requirements 2.3.6b: report assessing current street design and parking lot guidelines and other local requirements that affect creation of impervious surface and 2.3.6c: report assessing existing local regulations to determine the feasibility of making green roofs, infiltration practices, and water harvesting devices allowable, the following bylaws and regulations were reviewed:

- Zoning Ordinance (Including Special District Regulations)
- Wetland Protection & Conservation Ordinance
- Subdivision Regulations
- Stormwater Management Bylaw & Rules and Regulations

Salem's Subdivision Rules & Regulations had the most in depth language that regulated stormwater management, encouraged an overall reduction in impervious surfaces and allowed for low impact development techniques. All of the regulations could be more thorough in how they address/manage the creation of impervious surfaces and how resultant stormwater is managed on site. The Zoning Ordinance, Chapter 37 – Stormwater Management states:

"Criteria for erosion and sediment control and post-construction stormwater management, including stormwater performance standards, shall be defined and included as part of the regulations promulgated under subsection 37-4(b) of this chapter. The planning board will utilize the Massachusetts Stormwater Handbook for criteria and information including specifications and standards for the execution of provisions of this chapter. These include a list of acceptable stormwater treatment practices, with specific design criteria for each. Unless specifically altered in the rules and regulations, stormwater best management practices that are designed, constructed, and maintained in accordance with the Massachusetts Stormwater Management Standards and design and sizing criteria in the Massachusetts Stormwater Handbook shall be presumed by the planning board to be protective of Massachusetts water quality standards."

This is a great foundation for stormwater management and progressive development practices; however, the MA Stormwater Handbook is an enormous, comprehensive resource for all types of stormwater management and low impact development techniques. For this reason, Greenscapes suggests prioritizing specific techniques, or pulling specific language from the Handbook and its stormwater standards for increased clarity and consistency throughout Salem's stormwater regulations.

In the bylaw review process, Greenscapes found that Salem, like many other communities does not have accessible documentation that describes the general SOPs of development being done by their municipal staff (DPW). In Salem, like in many other towns, most development and redevelopment is being done BY the town – a new parking lot or renewed sidewalks, but there is no regulating authority or documentation of how that redevelopment is being constructed. The most important recommendation that Greenscapes would like to make is to create or make accessible this type of regulation or documentation of standard operating procedures.

Recommendations

Goal 1: Protect Natural Resources and Open Space

The **Zoning Ordinance**, **Stormwater Management Ordinance** and the **Subdivision Regulations** all use very general, qualitative language when it comes to managing soil removal, minimizing land disturbance and encouraging the use of native plantings. Greenscpes recommends incorporating quantitative standards, such as allowed volume of soil excavation and percentage of native plantings into both the Zoning Ordinance and Subdivision Regulations. These standards can then be referenced in the Stormwater and Wetland Protection regulations.

Goal 2: Promote Efficient, Compact Development Patterns and Infill

Currently, none of Salem's stormwater regulations effectively promote compact development. The **Wetland Protection Ordinance** and the **Subdivision Regulations** both indicate some flexibility in lot dimensions, so the first recommendation would be to include the same dimension flexibility in the **Zoning Ordinance**. Making common driveways more accessible (by permit or by right) would also decrease regional imperviousness and conserve more open space. This adjustment should be made to the **Subdivision Regulations.** Greenscapes would also recommend including some flexibility in paving material; making permeable pavement an option for certain developments. Additional recommended language can be found in Volume 2 Chapter 1 of the MA Stormwater Handbook, which contains a list of techniques for reducing impervious areas.

Goal 3: Smart Designs that Reduce Overall Imperviousness

Currently, the **Subdivision Regulations** contain the most conservative street widths, flexibility in sidewalk location and the potential for shared driveways and "hammerhead turnarounds". The **Zoning Ordinance** could be improved by including the same language. Another adjustment that would improve the **Zoning Ordinance** and the **Subdivision Regulations** would be to include the allowance for more frequent curb cuts instead of requiring full curbing on both sides of the street as is currently stated in the **Subdivision Regulations**. Curb cuts would promote on-site infiltration of stormwater runoff and would work harmoniously with roadside swales/drainage channels. BMPs such as these should be mentioned, if not prioritized in the stormwater regs and the associated specifications from the Stormwater Handbook should be directly referenced. See the "Conveyance BMPs" section of Volume 2 Chapter 2, starting on page 69 of the Handbook. Greenscapes would also recommend specifying the maximum paved width for all road types such as: wide, medium, narrow, and alley categories; 20-24' widest for 2 travel lanes, 18-20' low traffic residential neighborhood, plus 2' shoulders. Lastly, allow alleys and other low traffic or secondary emergency access and all shoulders to use alternative, permeable materials.

Goal 4: Adopt Green Infrastructure Stormwater Management Provisions

The newly adopted **Green Building Ordinance** includes excellent model language that could be incorporated into the **Zoning Ordinance** and referenced in the **Subdivision Regulations.** The **Green Building Ordinance** states:

"*City-owned properties shall employ best management practices and Low Impact Development (LID) to minimize stormwater runoff, thereby keeping water sources cleaner and reducing flooding. Additionally,*

land management practices shall maximize or increase sustainable vegetation to mitigate urban heat island effects and reduce flooding and encourage stormwater infiltration

All City projects must meet the federal requirements for stormwater regulations if the new paved area is over five thousand (5,000) square feet and for any size projects requiring impervious surface, it is encouraged to utilize permeable materials, including but not limited to porous paving, concrete, and bricks, when appropriate."
A statement such as this could then be followed by specific standards from the MA Stormwater Handbook, such as this excerpt from Standard 3:

"*Loss of annual recharge to groundwater shall be eliminated or minimized through the use of infiltration measures including environmentally sensitive site design, low impact development techniques, stormwater best management practices, and good operation and maintenance."*

To strengthen the regulations even more, specific BMPs should be recommended for specific uses, such as vegetated swales and drainage channels along roadways and sidewalks, bioretention in parking lots, etc. Associated specifications and detailed recommendations can be found in Volume 2 Chapter 2 of the MA Stormwater Handbook.

This goal could also be better met with more detailed requirements for documentation of stormwater management plans (O&M plans, erosion and sedimentation plans included). The **Zoning Ordinance** indicates that "*Any proposed building or additions of any size, excluding the construction of a two-family or single-family home, shall be subject to site plan review"* and lists the required contents. However, there is no mention of an Erosion and Sedimentation Control plan. The **Subdivision Regulations** require an Environmental Impact Report for developments of a certain size, and an Erosion & Sedimentation plan is included as a requirement for the Definitive Subdivision Plan. These foundational requirements could be strengthened by including language from Standards 7 and 8 of the MA Stormwater Handbook.

Goal 5: Encourage Efficient Parking

Salem's **Zoning Ordinance** currently requires a certain minimum number of spaces depending on use, though there is some flexibility in shared parking opportunities. LID is not addressed, and though planting is encouraged in large lots, the bounding curbs required limit the infiltration potential of the planted areas. Greenscapes recommendations would include removing the curb requirement and encouraging maximum number of spaces (instead of minimum) while making shared parking opportunities more accessible.

Similar to the **Zoning Ordinance**, shared parking could be more specifically described in the **Subdivision Regulations** to include allowances for peak demand times and reduced stall sizes when possible. These regs do allow for permeable pavers to be employed which Greenscapes would recommend be included in the **Zoning Ordinance**, or the **Streets and Sidewalks Ordinance** as well.

Implementation Plan

Following a review of the finalized bylaw matrix, the following actions were identified as the most important and most achievable first steps towards making LID more accessible in the city of Salem.

1. Include all recommended changes to the Subdivision Regulations in upcoming revision, working closely with city planner, Cassie Moskos.
2. Form a stormwater committee comprised of municipal staff, consultants like SSCW and even residents, with the intention of making LID practices and other stormwater management practices more well-known
    a. Stormwater Commmittee can review neighboring communities methods of incorporating LID into their municipal regulations and modify to accommodate Salem
    b. Stormwater Committee, with the help of SSCW/Greenscapes, can provide the Planning Board with LID guidance and training
3. Create and make accessible municipal development regulations that describe SOPs of DPW and other city-led development projects
4. Provide Greenscapes with updated information for LID viewer

Salisbury Bylaw and Regulation Review

Overview

Merrimack Valley Planning Commission (MVPC) provides technical assistance to its municipalities to achieve and maintain compliance with Federal and State regulations. This report summarizes MVPC's review of the Town of Salisbury's bylaws and regulations for consistency and adherence with the Environmental Protection Agency's (EPA) Municipal Separate Storm Sewer (MS4) permit. Specifically, the requirements for year 4 of the MS4 permit: section 2.3.6b - report assessing current street design and parking lot guidelines and other local requirements that affect creation of impervious surface, and section 2.3.6c - report assessing existing local regulations to determine the feasibility of making green roofs, infiltration practices, and water harvesting devices allowable, were reviewed. The following bylaws and regulations were provided to MVPC by Salisbury municipal officials:

- Zoning Bylaw (includes site plan review)
- Planning Board Rules and Regulations
- Planning Board Subdivision of Land
- Draft Storm Sewer Bylaw and Low Impact Development Regulation

This community specific summary will be compiled into a comprehensive regulation review report to be submitted to the Massachusetts Department of Environmental Protection as a deliverable for the Merrimack Valley Planning Commission's MS4 Municipal Assistance Grant. The work completed through this grant was accomplished in collaboration with the Greenscapes North Shore Coalition (Ipswich River Watershed Association, Salem Sound Coastwatch and MVPC).

Salisbury has requirements which support flexible design and low impact development throughout their codes, particularly through Flexible Residential Development, which encourages reduced lot sizes, setbacks, and frontage for all developments over 5 acres. Salisbury's Low Impact Development (LID) bylaw is also successful at encouraging LID practices with specific design standards. However, design standard specificity is not uniform throughout Salisbury's bylaws and regulations, with overarching language often standing in place of detailed design requirements.

Main areas for improvement for Salisbury are to develop more detailed design standards for the subdivision regulations as they relate to drainage and the protection of natural features, as well as design standards for the Flexible Residential Development. Further, it is unclear if Salisbury's Storm Sewer Bylaw and Low Impact Development bylaws are adopted or still in draft phases. The formal adoption of these codes if necessary would improve Salisbury's MS4 compliance and ability to encourage impervious surface reductions and LID techniques.

Recommendations

Goal 1: Protect Natural Resources and Open Space

- ***Subdivision of Land:*** Salisbury's subdivision regulations do not explicitly provide design standards which protect natural resources. Currently, the overarching statement "Due regard shall be shown for natural features" stands in place of measurable and replicable design standards. Greenscapes recommends developing specific standards in place of this statement which prohibit the removal of topsoil from a site during development, require specific revegetation and stabilization actions, minimize clearing/grubbing during development, and require the planting of native vegetation with examples or reference to source material with examples. Examples of this language can be found in Salisbury's draft storm sewer bylaw, which explicitly minimizes site alteration with measurable design standards.
- ***Zoning Bylaw and Planning Board Regulations:*** Salisbury's zoning bylaw and planning board regulations take some steps towards preserving natural features, including encouraging native species plantings, prohibiting invasive species plantings, requiring the preservation of the landscape in its natural state, and prohibiting earth removal except under specific circumstances. Several small language changes can be made to improve the specification of these design standards. Regarding earth removal, Greenscapes recommends in instances where earth removal is permitted, to prohibit the removal of topsoil from a development site and require its redistribution at an average depth of 6 inches across the site after development is complete. Regarding native species, Greenscapes recommends not only encouraging, but explicitly requiring the planting of native species. There is also a great opportunity within Salisbury's Flexible Residential Development to develop specific design standards or regulations which encapsulate the above recommendations.
- ***Storm Sewer Bylaw:*** Salisbury's storm sewer bylaw is successful at prohibiting excess clearing/grubbing and requiring native species plantings. However, it does not currently address requirements for revegetation of stabilization of erodible land during and following development. Greenscapes recommends developing a design standard which encapsulates such requirements. It is also unclear if Salisbury's draft storm sewer bylaw is adopted, or still in a draft phase. If still in a draft phase, Greenscapes recommends pursuing the official implementation of this bylaw.

Goal 2: Promote Efficient, Compact Development Patterns and Infill

- ***Zoning Bylaw and Planning Board Regulations:*** Salisbury's zoning bylaw and planning board regulations are successful at promoting flexible lot sizes, setbacks, and frontage requirements through their Flexible Residential Development (FRD) option. Salisbury also requires that any parcel of development 5 acres of more submit a special permit for an FRD, ensuring most large projects are required to incorporate flexible development into their design. To encapsulate a broader breadth of development projects, Greenscapes recommends lowering the acreage requirement for submittal of an FRD plan.

Goal 3: Smart Designs that Reduce Overall Imperviousness

- ***Subdivision of Land:*** Salisbury's subdivision of land regulations are successful at reducing overall imperviousness through their requirement of planting strips to absorb sidewalk runoff and flexibility in sidewalk location depending on topography and district. However, the regulations do not address cul-de-sac requirements, and have some stringent requirements on curbing, sidewalk paving material, and street location, which increase overall imperviousness. Greenscapes recommends first including language which permits streets to be designed in such a manner as to preserve natural topography and minimize cut and fill, while still maintaining vehicular and pedestrian safety. Following that, Greenscapes recommends explicitly permitting curb breaks or curbs flush with pavement to enable water to flow to vegetation instead of pooling on roadways and sidewalks. For local and country roads, Greenscapes recommends open drainage with no curbing, instead relying on low impact development features like bio-swales to mitigate runoff, like subdivision type 1 permits. Finally, Greenscapes recommends explicitly addressing cul-de-sacs within the subdivision design standards and permitting landscaped center islands as well as hammer head turns in low traffic dead end scenarios.

Goal 4: Adopt Green Infrastructure Stormwater Management Provisions

- ***Planning Board Regulations and Subdivision Regulations:*** Salisbury's Planning Board rules and regulations do a great job addressing low impact development through providing very specific examples and design requirements, and ensuring these practices are utilized to the maximum extent possible. Further, the subdivision regulations refer directly to the planning board regulations for design standards on new stormwater management systems. Small improvements could be made to these regulations by specifically addressing LID which mitigates rooftop runoff, permitting the easy sitting of LID features by allowing lots to be modified to accommodate LID as it is permitted in the LID regulations, and explicitly stating requirements for enforcement of such regulations, including fines in circumstances of violations.
- ***Stormwater Bylaw and LID Regulations:*** Much of Salisbury's stormwater bylaw's content requirements are successfully covered within their planning board rules and regulations. Small adjustments could be made to ensure both documents are in conversation with each other. While the planning board regulations permit permeable pavement, this is not addressed in the stormwater bylaw. Further, LID design standards within the LID regulations differ from those within the planning board regulations. Finally, while the planning board regulations capture all necessary TSS and TP load requirements, the LID regulations only address the 80% TSS reduction figure. Greenscapes recommends, if these bylaws and regulations are adopted, to ensure they hold comparable design standards to those found in the planning board regulations or reference the planning board regulations in lieu of design standards.

Goal 5: Encourage Efficient Parking

- ***Zoning Bylaw and Planning Board Regulations:*** Both regulations currently require a minimum number of parking spaces for residential and commercial uses, and also permit parking reductions for shared parking with different peak times in applicable districts. Greenscapes recommends also developing maximum parking space requirements to limit excess impervious surface creation. Further, Greenscapes recommends explicitly stating the width and length requirements for parking stalls, with recommended dimensions being 9x18 feet. Greenscapes also recommends explicitly requiring or encouraging LID within landscaped parking islands and requiring parking islands to have curb cuts for stormwater infiltration. This improvement could be made to the planning board regulations since the zoning bylaw references it for landscaping design requirements.

Timeline and Implementation

Following a conversation with Salisbury's project liaisons, the following endeavors were identified as priorities for implementation:

- Pursuing the revision and adoption of a Stormwater Bylaw and accompanying regulations, including a requirement of a major and minor stormwater permit with accompanying Erosion and Sedimentation Control Plan and Operation and Maintenance Plan, as required by Massachusetts Department of Environmental Protection.
- Pursuing the adoption of a Wetlands Bylaw

The town is highly motivated to pursue the adoption of a Stormwater Bylaw and Wetlands Bylaw to be in compliance with state regulations and aligned with regional actions. Conversations regarding the development of these codes are expected to initiate this summer, with intention for implementation within the next year.

Topsfield Bylaw and Regulation Review

Overview

To ensure Topsfield's compliance with year 4 MS4 permit requirements 2.3.6b: report assessing current street design and parking lot guidelines and other local requirements that affect creation of impervious surface and 2.3.6c: report assessing existing local regulations to determine the feasibility of making green roofs, infiltration practices, and water harvesting devices allowable, the following bylaws and regulations were reviewed:

- Zoning Bylaw (includes site plan review)
- Subdivision Regulations
- Stormwater Management and Erosion Control Bylaw & Regulations
- Wetland Regulations

Topsfield has clearly considered the use of Low-Impact Development (LID) through the establishment of its Open Space Development Plan, intended to "allow for greater flexibility in the design of residential developments in the Inner Residential and Agricultural District and Outlying Residential and Agricultural District" and reduce the negative impacts of development. Applicants are required to submit an Open Space Development Plan along with a conventional plan for tracts of land of at least 10 acres. As such, most developments must at least give due consideration to Open Space Planning practices. However, developers may also pursue a conventional plan, which under Topsfield's bylaws does not strongly promote low-impact development. Main areas of improvement lie in updates to this conventional planning process which encourage developers to utilize LID strategies in all cases.

Topsfield's stormwater management and erosion control bylaws and regulations demonstrate support for LID stormwater management practices with several instances of LID measures - such as rain gardens, bioretention cells, and non-structural methods to promote ground water recharge - explicitly called out. Improvements to these regulations will largely stem around making LID practices required, or the default stormwater management tools, rather than simply encouraged, which leaves a considerable amount of uncertainty for developers.

Recommendations

Goal 1: Protect Natural Resources and Open Space

> **Zoning Bylaw:** The zoning bylaw does set a maximum of excavated materials at 120% of the foundation of new structures and encourages minimizations of vegetation removal. However, it does not offer specific standards as to these limits nor does it set specific requirements for re planting vegetation and tre es. Greenscapes recommends additions to existing bylaws with specific, numeric standards to minimize topsoil removal and clearing and promote the planting of native vegetation to restore disturbed sites.

Subdivision Regulations: The subdivision regulations largely do not address issues around topsoil removal, limiting clearing, or maintaining or restoring areas of vegetation. The addition of these limits should mirror those in the zoning bylaw for clarity and consistency.

Stormwater and Erosion Control and Wetland Protection Bylaws: Not applicable to this goal.

Goal 2: Promote Efficient, Compact Development Patterns and Infill

Zoning Bylaw: Currently the zoning bylaws set minimums for lot size, setbacks, and frontage based on zoning district. Applicants are also required to analyze an Open Space Development option whereby the Planning Board may override these lot area or frontage requirements "provided that the Planning Board finds that the proposed plan is in harmony with the purpose and intent of this Open Space Development By-law." However, Open Space Development Plans require special approval from the Planning Board, a potential barrier to their adoption. In order to promote LID development, Greenscapes recommends this type of flexibility on lot size, frontage, and setbacks should be by-right, or the preferred option. Similarly, common drives, which are only allowed in certain circumstances and by special permit, should be granted by right in order to promote compact development patterns.

Subdivision Regulations: Currently the regulations outlined in the zoning bylaws apply to subdivisions.

Stormwater Management and Erosion Control Bylaw and Regulations and Wetland Regulations: Not applicable to this goal.

Goal 3: Smart Designs that Reduce Overall Imperviousness

Zoning Bylaw: The Zoning Bylaw currently does not limit imperviousness, except in cases for Open Space Developments, which specifies that 50% of land shall remain undeveloped. Other specifications reducing overall imperviousness are not addressed in the zoning bylaw.

Subdivision Regulations: Most of the means to reduce overall imperviousness are addressed in Topsfield's Subdivision Regulations. In general, where the subdivision regulations offer specifications in regards to impervious surfaces, it mandates a minimum requirement which ensures the construction of impervious surfaces. For example, it requires "bituminous concrete berms…along both edges of all roadways." Greenscapes recommends rewriting these specifications to require the use of LID development techniques which reduce overall imperviousness, i.e. limiting road and sidewalk widths, allowing for roadside swales instead of curbing along the length of both sides of the street. Additionally, Greenscapes encourages allowing for low-

impervious development by-right or in specific circumstances instead of by special permit. For example, sidewalks are required on both sides of the street unless the Planning Board explicitly waives this requirement. Instead of involving the Planning Board, Topsfield should adopt specific cases when sidewalks on one side of the street are acceptable.

Stormwater Management and Erosion Control Bylaw and Regulations and Wetland Regulations: Not applicable to this goal.

Goal 4: Adopt Green Infrastructure Stormwater Management Provisions

Zoning Bylaw: Largely not applicable to stormwater management outside of requiring site plans include "Plans to prevent the pollution of surface or groundwater, erosion of soil both during and after construction, excessive run-off, excessive raising or lowering of the water table, and flooding of other properties, as applicable." Greenscapes recommends adding specific standards for these plans to facilitate green infrastructure adoption.

Subdivision Regulations: Topsfield's subdivision regulations do not offer many specifics around stormwater management, relying on the town's Stormwater Management and Erosion Control Bylaw and Regulations to govern stormwater systems. Greenscapes recommends more specifics around stormwater requirements in the subdivision regulations themselves to promote LID practices, especially as it pertains to subdivision planning, i.e. allowing for permeable pavement, site plan/design requirements.

Stormwater Management and Erosion Control Bylaw and Regulations: Topsfield's stormwater and erosion control bylaw and regulations does a good job promoting groundwater recharge and citing specific examples of LID techniques that can be utilized, i.e. directing rooftop runoff to areas for recharge, specifying that runoff resemble pre-existing conditions and requiring no untreated discharges of stormwater. To further promote LID techniques, Greenscapes recommends Topsfield's regulations go further in requiring the specific stormwater management practices such as roadside swales, permeable pavements, and specific limits on imperviousness.

Wetland Regulations: Topsfield's Wetland Regulations focus on protecting wetland habitats during and following construction with an emphasis on erosion control during the construction process. It also specifies that "Activities within buffer zone and/or riverfront area shall be low-impact development techniques to the greatest extent possible" and specifies design criteria that "annual recharge from the post-development site shall approximate the annual recharge from the pre-development conditions based on soil type." This wording and citation of specific performance standards is a good example to carry over into other stormwater management requirements outside of the wetland buffer zone.

Goal 5: Encourage Efficient Parking

Zoning Bylaw: Mandates minimum number of parking spaces per dwelling unit or commercial space. In order to encourage efficient parking, Greenscapes recommends eliminating these minimums, or specifying cases in which developers can reduce these minimums. Additionally, currently parking areas are required to use impervious surfacing material. Allowing or requiring the use of permeable pavement and/or requiring landscaping with bioretention areas in parking lots will go a long way in promoting LID and reducing the overall imperviousness in Topsfield.

Subdivision Regulations, Stormwater Management and Erosion Control Bylaw and Regulations, Wetland Regulations: Not applicable to this goal.

Resources and Implementation Plan

The biggest hurdle for Topsfield to implement bylaw revisions is a lack of human resources. Topsfield currently does not have a town planner, and stormwater in the town falls under planning. Topsfield is looking at potentially hiring someone who could take on this role part time and manage the bylaw revision process. Ultimately the town would need funds to support this position and is exploring utilizing ARPA funds to temporarily support the position. Topsfield would also be interested in exploring future grant opportunities to fund future work on implementing the changes recommended in this analysis. Due to these human resource constraints, it is unlikely that a full bylaw revision will take place until this position can be filled or the work of revising bylaws can be supported by a grant award.

Wenham Bylaw and Regulation Review

Overview

To ensure Wenham's compliance with year 4 MS4 permit requirements 2.3.6b: report assessing current street design and parking lot guidelines and other local requirements that affect creation of impervious surface and 2.3.6c: report assessing existing local regulations to determine the feasibility of making green roofs, infiltration practices, and water harvesting devices allowable, the following bylaws and regulations were reviewed:

- Zoning Bylaw
- Subdivision of Land Bylaw
- Site Plan Review Bylaw
- Stormwater Management Bylaw
- Town of Wenham Planning Board Rules and Regulations

Wenham's Planning Board Rules and Regulations specify that "an evaluation of the use of possible low-impact development [LID] techniques" is required in submitted site plans. Clearly the use of LID is a priority for the town and the aim of Greenscapes recommendations is to help Wenham achieve this stated priority. Generally, Wenham's stormwater management bylaw and rules and regulations are fairly strong in terms of supporting and promoting the use of low-impact development (LID) techniques. The limited improvements recommended for these stormwater-specific standards center around adding language about specific LID stormwater management techniques (i.e. roadside swales, bio-retention, etc) and specific design standards for each.

Most of Greenscapes' recommended amendments for Wenham's bylaws pertain to changes to the zoning, subdivision and site plan review bylaws to allow for creative development patterns which takes advantages of green infrastructure and natural solutions for stormwater management. In general, the goal is to reduce the amount of clearing and impervious surfaces in developments by, for example, reducing parking requirements, reducing required street widths, and allowing for the use of permeable pavement.

Wenham is in the process of revising its subdivision bylaws, a process which is on hold while the down works on its Master Plan. For this analysis the proposed draft subdivision bylaw was reviewed and hopefully the recommendations included in this analysis can be implemented during the process of rewriting the subdivision bylaw.

Recommendations

Goal 1: Protect Natural Resources and Open Space

> **Zoning Bylaw:** Wenham's zoning bylaw does require the minimization of clearing/grubbing on areas of 0.5 acre or more. Planted area requirements state that "plant species shall be appropriate to proposed use, siting, soil and other environmental

conditions." Greenscapes recommends that this language be amended to require at least 75% native plantings. Greenscapes also recommends that Wenham prohibit the removal of topsoil from the site and require rototilling and other prep of soils compact during construction.

Subdivision of Land Bylaw: While the subdivision bylaw does specify that the use of invasive species is prohibited, it does not make any specific mention of native vegetation and trees. Greenscapes recommends that this language be amended to require at least 75% native plantings.

Site Plan Review Bylaw: The site plan review bylaw specifies that site plans should "minimize the volume of cut and fill." Greenscapes recommends that language be added to require at least 75% native plantings. Greenscapes also recommends that Wenham prohibit the removal of topsoil from the site and require rototilling and other prep of soils compact during construction.

Stormwater Management Bylaw, Town of Wenham Planning Board Rules and Regulations: Not applicable to this goal.

Goal 2: Promote Efficient, Compact Development Patterns and Infill

Zoning Bylaw: The zoning bylaw specifies minimum lot sizes and the Planning Board may award incentives to utilize Open Space Residential Development (OSRD): "For each additional 10% of the site (over and above the required 40%) set aside as contiguous open space, a bonus of 5% of the basic maximum number [of residential units] may be awarded." Greenscapes recommends allowing OSRD by right, as the preferred option, instead of requiring a special permit. The zoning bylaw also specifies minimum setbacks and frontage. Greenscapes recommends minimizing and in some cases eliminating setbacks and minimum frontage requirements. And finally, "Common driveways serving not more than three lots may be allowed by special permit by the Planning Board." Greenscapes recommends allowing common drives for up to four residential units without the need for a special permit, preferably constructed with permeable pavers or pavement.

Subdivision of Land Bylaw: The subdivision bylaws refer back to the zoning bylaws for lot size, setbacks, and frontage requirements. Therefore, the recommended amendments to the zoning bylaws will also promote compact development patterns within subdivisions.

Site Plan Review Bylaw, Stormwater Management Bylaw, Town of Wenham Planning Board Rules and Regulations: Not applicable to this goal.

Goal 3: Smart Designs that Reduce Overall Imperviousness

Zoning Bylaw: There are a few discreet requirements in the zoning bylaw which related directly to encouraging smart designs that reduce overall imperviousness. Wenham's bylaws do a good job of limiting imperviousness in the Aquifer Protection and Overlay District to less than 20% of a lot. Greenscapes recommends expanding this requirement limiting imperviousness to other zones as well. Greenscapes also recommends allowing common drives for up to four residential units without the need for a special permit, preferably constructed with permeable pavers or pavement.

Subdivision of Land Bylaw: There are several amendments to Wenham's subdivision bylaw which would serve to reduce overall imperviousness in these developments. Impervious cover limits are not specified for subdivisions. Greenscapes recommends implementing specific impervious cover limits tailored to the community. The street layout in subdivisions is currently based on "safe and convenient access for all users." Greenscapes recommends requiring locating stress to minimize grading and road length and avoid important natural features. Greenscapes also recommends reducing the minimum road with (currently 22' to 32') to 18' to 20' for low traffic residential neighborhoods, and reducing minimum road right of way widths (currently 60' to 70') to 20' to 50' depending on road type.

Site Plan Review Bylaw, Stormwater Management Bylaw, Town of Wenham Planning Board Rules and Regulations: Not applicable to this goal.

Goal 4: Adopt Green Infrastructure Stormwater Management Provisions

Zoning Bylaw: Not applicable to this goal.

Subdivision of Land Bylaw: The subdivision bylaws states that "Particular attention will be given to lot and subdivision design, low impact design, and nature-based improvements." While LID is a clearly state priority, there are additional changes that will further this goal as it pertains to the use of green infrastructure for stormwater management. Two of the positive aspects of this bylaw is the requirement for an operations and maintenance plans for stormwater management systems and a requirement for intra-departmental communication and coordination. There are also several potential areas of improvement to advance the use of green infrastructure. Currently, the bylaw states that "All projects disturbing an acre or more of land shall meet the requirements and design and performance standards of the Town of Wenham Stormwater Management Plan… Limited waivers may be granted when appropriate to encourage…green development practices such as green roofs, nature-based improvements, additional permanently protected open spaces." Greenscapes recommends encouraging the use of LID design standards to encourage infiltration by right, instead of requiring a waiver. For siting stormwater management features, currently the bylaw specifies "All permanent stormwater control structures should be located on separate parcels places under the ownership, control, responsibility, and

liability of a Homeowners Association." Greenscapes recommends allowing LID features on lots, common space, or road ROW. Greenscapes also recommends requiring as-built surveys, currently not required in any of Wenham's bylaws.

Site Plan Review Bylaw: The specifications in the site plan review bylaw that relate to green infrastructure management center on erosion and sedimentation control during construction and post-construction stormwater drainage patterns. Currently the bylaw states "Minimize the volume of cut and fill, the number of removed trees six inches caliper or larger, the length of removed stone walls, the area of wetland vegetation displaced, the extent of stormwater flow increase from the site, soil erosion, and threat of air and water pollution." Greenscapes recommends adding language requiring the reduction of construction waste, and requiring that post-construction drainage patterns resemble pre, existing conditions of volume, velocity, quality and location, as nearly as possible, requiring LID to the max extent feasible. Greenscapes also recommends adding a requirement to direct clean roof runoff to landscaped or naturally vegetated areas capable of absorbing or infiltration.

Stormwater Management Bylaw: The stormwater management bylaw does a good job prohibiting illicit discharges and connections and outlining enforcement with potential fines for non-compliance. Greenscapes recommends requiring as-built surveys, currently not required in any of Wenham's bylaws.

Town of Wenham Planning Board Rules and Regulations: Wenham's Planning Board Rules and Regulations houses many of the requirements related to green infrastructure use and most of them already employ best management practices for encouraging the use of green infrastructure. Currently, the rules require that the site plan that is submitted contain "an evaluation of the use of possible low-impact development techniques and details of any measured employed." Greenscapes recommends adding specific design standards for LID systems. Additionally, the bylaw states that "measures could include any of the following: (a) Steps taken to minimize land disturbance; (b) Preservation of natural drainage features; (c) Minimizing sediment runoff with vegetative strips, diversions swales, sediment traps, check; dams, stabilized construction entrances, dust control, silt fences, or other means; (d) Stormwater BMPs that infiltrate 90% of annual storm events; (e) Landscaping that promotes on-site water retention and infiltration; and (f) Minimizing widths of streets and driveways to reduce creation of impervious area." Greenscapes recommends making these measures mandatory to the maximum extent possible. Greenscapes also recommends specifying design standards for post-construction stormwater management and drainage patterns as follows: Resemble pre-existing conditions of volume, velocity, quality and location, as nearly as possible, requiring LID to the max extent feasible. Retain vol of runoff >1in. per sq.ft. of impervious surface and/or remove 90% TSS post-construction & 50% TP generated on the site for new development, or >0.8in. per sq.ft and/or remove 80% TSS and 50% of TP load for redevelopment.

Goal 5: Encourage Efficient Parking

Zoning Bylaw: Wenham requires a minimum of two parking spaces per dwelling unit. Greenscapes recommends establishing a maximum number of parking spaces allowed and allowing tenants separate, optional lease agreement for parking. For commercial spaces, Wenham requirements are already optimal as they allow for shared parking areas for uses with different peak demands times. Currently, parking areas are required to be surfaced with bituminous or cement concrete. Greenscapes recommends allowing for permeable pavement in parking areas and requiring landscaping within parking areas, at a minimum of 10% of the interior area landscaped and a minimum of 25 square feet for island plantings.

Subdivision of Land Bylaw, Site Plan Review Bylaw, Stormwater Management Bylaw, Town of Wenham Planning Board Rules and Regulations: Not applicable to this goal.

Timeline and Implementation Plan

Wenham has engaged Weston and Samson to update all of their regulations with an eye to climate resiliency. However, this process has been put on hold as the town has decided to develop a Master Plan, a process which is to kick off at the end of June 2022, with J.M. Goldson as the consultant. Once this master plan is developed, the bylaw and regulation revision will be revisited with an eye to the goals outlined in this plan.

Wenham will look to use this analysis as a tool to inform their future revisions. The town is also keen to explore ways in which town infrastructure can utilize green infrastructure techniques, for example using rain gardens to treat stormwater runoff before it is discharged to a wetland. Wenham is in the process of looking for grant funding that may facilitate the installation of town-owned green infrastructure solutions.

West Newbury Bylaw and Regulation Review

Overview

Merrimack Valley Planning Commission (MVPC) provides technical assistance to its municipalities to achieve and maintain compliance with Federal and State regulations. This report summarizes MVPC's review of the Town of West Newbury's bylaws and regulations for consistency and adherence with the Environmental Protection Agency's (EPA) Municipal Separate Storm Sewer (MS4) permit. Specifically, the requirements for year 4 of the MS4 permit: section 2.3.6b - report assessing current street design and parking lot guidelines and other local requirements that affect creation of impervious surface, and section 2.3.6c - report assessing existing local regulations to determine the feasibility of making green roofs, infiltration practices, and water harvesting devices allowable, were reviewed. The following bylaws and regulations were provided to MVPC by West Newbury municipal officials:

- Zoning Bylaw
- Draft Wetland Protection Bylaw
- Planning Board Regulations
- Parking Regulations
- Subdivision Rules and Regulations
- Stormwater Management Bylaw & Rules and Regulations

This community specific summary will be compiled into a comprehensive regulation review report to be submitted to the Massachusetts Department of Environmental Protection as a deliverable for the Merrimack Valley Planning Commission's MS4 Municipal Assistance Grant. The work completed through this grant was accomplished in collaboration with the Greenscapes North Shore Coalition (Ipswich River Watershed Association, Salem Sound Coastwatch and MVPC).

West Newbury has made substantial progress towards ensuring impervious surface reduction and low impact development implementation within their existing bylaws and regulations and is fully in compliance with EPA MS4 year 4 requirements. West Newbury's zoning bylaw is very successful at permitting flexible design standards as they relate to lot size, setbacks, and frontage through their Open Space Preservation Development (OSPD) option for tracts of all sizes, and further dimensional requirements specific to district and use. West Newbury's stormwater bylaw and accompanying regulations accomplish all MS4 requirements and require Low Impact Development (LID) unless infeasible for parcels over 1 acre. However, some design requirements are not consistent throughout all codes as they relate to LID and impervious surface creation and require more specificity in some circumstances.

Proactive improvements could be made to these codes by ensuring design standards are consistent throughout codes, developing design standards as they relate to parking space requirements, creating minor and major stormwater permit categories to reflect West Newbury's average parcel sizes and permitting capacity, and developing standards which

streamline the permitting process, including authorizing the conservation agent to issue permits for all projects under 2 acres in size as done in communities of comparable size.

Recommendations

Goal 1: Protect Natural Resources and Open Space

- ***Planning Board Regulations:*** While several of West Newbury's codes address standards which protect natural resources and open space, this language is not present within the planning board regulation's site plan review. Greenscapes recommends directly referencing the stormwater bylaw and regulations within the site plan review section of the planning board regulations (IV). For example, language which states that standards as they relate to stormwater and natural resource preservation will be designed in accordance with the stormwater ordinance could be placed at the beginning of section C: Development and Design Standards.
- ***Planning Board Regulations, Wetland Protection Bylaw, Stormwater Regulations & Subdivision Regulations:*** While the zoning bylaw requires indigenous plantings on all landscaped land, there is no mention of this requirement throughout other bylaws and regulations in related contexts. Greenscapes recommends incorporating this language throughout all relevant codes to maintain consistency, or to refer to the zoning bylaw in lieu of mentioning a native planting requirement. For example, this language could be incorporated into the stormwater regulations section 8.E. Erosion Controls Design Standards. Further, Greenscapes recommends implementation of a Wetlands Protection Bylaw which encompasses state recommendations and requirements.

Goal 2: Promote Efficient, Compact Development Patterns and Infill

- ***Zoning Bylaw***: West Newbury's zoning bylaw's OSPD is very successful at permitting flexible development for all tract sizes in applicable districts and requiring a minimum amount of open space. Further, the zoning bylaw has lot sizes, setbacks, and frontage requirements specific to district and uses. To further ensure open space preservation in lots outside of OSPD, Greenscapes recommends placing a minimum open space requirement in table 6.A of the zoning bylaw tailored to district type.
- ***Stormwater Bylaw and Regulations:*** Currently, the stormwater bylaw and regulations require a stormwater management permit for any land disturbance of 43,560 feet, or approximately 1 acre. To continue ensuring relevant parcel sizes are still required to undergo necessary stormwater permitting, while mitigating time impacts of the permitting process, Greenscapes recommends developing tiered permit thresholds: a minor permit for developments between 40,000 square feet and 2 acres, which requires administrative review and approval from a conservation agent, and a major permit for land disturbances over 2 acres, which requires a public hearing and approval by the planning board. Greenscapes also recommends empowering staff with the administrative authority to go into the field and conduct site visits in order to further streamline the permitting process.

Goal 3: Smart Designs that Reduce Overall Imperviousness

- ***Subdivision Regulations and Planning Board Regulations:*** West Newbury's subdivision regulations are successful at requiring street design standards which minimize road widths, require streets and sidewalks to be designed with natural topography in mind, permit dead ends and cul-de-sacs with landscaped islands, and require utilities under the finished grade of proposed streets. However, some design standards could be improved upon to better reduce overall imperviousness. Beyond requiring landscaping for cul-de-sac center islands, Greenscapes recommends encouraging low impact development techniques like rain gardens, native plantings, and curb cuts within landscapes islands in section 4.2.8.3 of the subdivision regulations. Sidewalks are also required to be composed of impervious bituminous concrete in all instances, and curbing is required on all streets. Greenscapes recommends permitting permeable paving for sidewalks in low volume areas and permitting local or more rural roads to be developed without curbing to promote open drainage within the subdivision regulations section 4.3.1.2 and 4.2.5.1 respectively. Because West Newbury's planning board regulations are in direct communication with the subdivision regulations, revisions to the subdivision regulations will immediately improve the planning board regulations.

Goal 4: Adopt Green Infrastructure Stormwater Management Provisions

- ***Planning Board Regulations:*** West Newbury's stormwater bylaw and accompanying regulations are successful at requiring low impact development techniques and achieving MS4 compliance via prohibiting illicit discharges and requiring specific post construction stormwater standards. However, some of these standards and requirements are not consistent throughout all codes. The planning board regulation's site plan review does not address a requirement for low impact development or refer to the stormwater regulations in lieu. Greenscapes recommends directly referencing the stormwater regulations for design standards within subsection 3, "Landscaping" of the site plan review's development guidelines and standards.
- ***Subdivision Regulations and Stormwater Regulations:*** While LID practices are required to the extent practicable within the subdivision and stormwater regulations, there is no explicit statement which allows the easy sitting of LID features. Greenscapes recommends explicitly allowing LID in common spaces or road ROWs with easements recorded.
- ***Zoning Bylaw, Subdivision Regulations, Wetlands Bylaw, Planning Board Regulations, and Stormwater Bylaw***: West Newbury's codes do not explicitly require intradepartmental communication or coordination to help maintain consistency throughout codes. Greenscapes recommends developing a section titled "Review by other bodies" or the like which explicitly addresses intradepartmental review for all codes as applicable.

Goal 5: Encourage Efficient Parking

- ***Parking Regulations:*** The parking regulations do not currently provide any design standards for minimum or maximum parking requirements or parking stall widths. Greenscapes recommends developing a parking requirement table with maximum and minimums specific to different uses, including a 2 parking spaces per residence

maximum. Greenscapes also recommends requiring the parking stall dimensions of 9x18 ft and permitting shared parking for uses with different peak demand times. Finally, Greenscapes recommends explicitly requiring or encouraging LID within landscaped parking islands and requiring parking islands to have curb cuts for stormwater infiltration in section 3.8.1 of the parking regulations. This language could be expanded to the stormwater regulations design standards.

Timeline and Implementation

Following a conversation with West Newbury's project liaisons, the following endeavors were identified as priorities for implementation:

- Pursuing the implementation of a Wetlands Protection Bylaw which encompasses state requirements and recommendations
- Developing a streamlined stormwater permitting process
- Pursuing education and outreach activities which inform residents on LID identification maintenance to ensure their long-term functionality

West Newbury's stormwater working group will continue to work with MVPC to identify and prioritize opportunities to implement LID and impervious surface reductions while ensuring a streamlined and efficient permitting process.

Appendix C: Model Language for Implementation

Model Language for Implementation

Conversations with community liaisons revealed that many of them were interested in model language for implementing the recommended changes to their bylaws and regulations. Many cited a lack of resources as one of the primary barriers to implementing the recommendations that arose from this analysis. Therefore, Greenscapes created this list of examples of "optimal" bylaws and regulations within this study area for each of the five goals within the bylaw review tool. It is our hope that these references will serve as tools for communities looking to improve their bylaws and act as a means of knowledge-sharing across the North Shore region.

Goal 1. Protect Natural Resources and Open Space

- Haverhill offers a good example of zoning regulations which require that soils be managed for revegetation, limit clearing, and require the use of native species for revegetation. These standards can be found within the town's Zoning Ordinance. (https://ecode360.com/6262973)
- Newburyport offers an excellent example of bylaws which protect natural resources and open space. They have examples of language limiting the removal of topsoil, limiting clearing, and requiring native trees and vegetation across their zoning ordinance, subdivision rules and regulations, wetland ordinance, and stormwater ordinance and rules and regulations. (https://library.municode.com/ma/newburyport/codes/code_of_ordinances?nodeId=APXAZOORNE)
- Amesbury's zoning ordinance and subdivision regulations are very successful at incorporating language which protects natural resources and open space, including prohibiting the removal of earth materials, requiring permanent stabilization, and requiring the reduction of practices like cut and fill and disturbance of existing vegetation. (https://www.amesburyma.gov/DocumentCenter/View/2402/Amesbury-Zoning-Ordinance-PDF , https://www.amesburyma.gov/DocumentCenter/View/1453/Subdivision-Rules-and-Regulations-PDF?bidId=)

Goal 2. Promote Efficient, Compact Development Patterns and Infill

- Newbury offers a good example of a zoning bylaw which promotes efficient, compact development patterns, generally offering flexibility in lot size, setbacks, and frontage requirements. This example can be found within Newbury's Zoning Bylaw. (https://ecode360.com/15569988)
- Georgetown's minor and major permitting categories for the stormwater permit encapsulate all development over 3,000 square feet within the community and ensures proper erosion control standards and LID techniques are utilized. Further, Georgetown's OSRD option is highly successful at permitting flexible development. (https://ecode360.com/6484618)
- Newburyport's OSRD option is successful at permitting flexible development by requiring that OSRD be considered for parcels of land over 3 acres and providing specific design standards as they relate to natural resources, open space, and the like (https://library.municode.com/ma/newburyport/codes/code_of_ordinances?nodeId=APXAZOORNE)

- Rowley's zoning bylaw is successful at permitting flexible development both through their OSRD option, but also through encouraging flexible standards as they relate to lot size, setbacks, and frontage in development situations outside of OSRD (https://www.townofrowley.net/sites/g/files/vyhlif4956/f/uploads/zbl_all_updated_to_atm-stm_june_22-2020_1.pdf)

Goal 3. Smart Designs that Reduce Overall Imperviousness

- Gloucester offers a good example of subdivision regulations which offer optimal standards for street construction to limit impervious areas. The specifications for street construction can be found in sections 3, 4, and 6 of the subdivision rules and regulations.
- Boxford's Subdivision Regulations are successful at permitting LID techniques through their flexibility with curbing, open drainage, and sidewalk location, as well as requiring naturally vegetated cul-de-sacs (https://ecode360.com/10134935)
- Groveland's Subdivision Regulations successfully permit meandering roads which appropriately conform to topography, traffic islands with natural landscaped plantings, and sidewalk requirement reductions. (https://ecode360.com/35392357)
- Newburyport's subdivision regulations permit several activities which reduce overall imperviousness, including requiring peak flows and runoff to be the same before and after development, requiring streets be designed to conform to original topography, and having progressive road and right of way width requirements (https://www.cityofnewburyport.com/sites/g/files/vyhlif7106/f/uploads/subdivision_rules_and_regulations_adopted.pdf)

Goal 4. Adopt Green Infrastructure Stormwater Management Provisions

- Essex provides a good example of subdivision rules and regulations which require the use of green infrastructure practices for stormwater management, found in Section 7.3 in the "Rules and Regulations Relative to Subdivision Control." (https://www.essexma.org/planning-board/files/subdivision-control-rules-regulations) Of particular note is their stated preferences for open drainage which utilizes infiltration over piped conveyance.
- North Reading provides a good example of storm water management rules and regulations that enourage or mandate the use of green infrastructure, which they refer to as "Nonstructural Storm Water Management Strategies," found in the Stormwater Management Rules and Regulations, Appendix C: Stormwater Management Plan. (https://www.northreadingma.gov/sites/g/files/vyhlif3591/f/uploads/stormwater_appendices.pdf)
- Ipswich provides a good example of subdivision rules and regulations which require rainwater harvesting of rooftop runoff, found in Subdivision Rules and Regulations, Section 6.14.12 Roof Runoff. (https://ipswichma.gov/DocumentCenter/View/1014/Subdivision-Rules--Regulations)
- Methuen offers a good example of rules and regulations that promote the adoption of green infrastructure for stormwater management. The regulations do a particularly

good job of highlighting specific LID techniques that can be used. This example can be found in Methuen's Stormwater Ordinance and Rules and Regulations. (https://ecode360.com/attachment/ME3892/ME3892-S.pdf)

- Danvers' zoning regulations specific to development in Character Based Zoning Districts (which includes their entire downtown area and surrounding neighborhoods) do an excellent job providing necessary resources and descriptive standards for incorporating Low-Impact-Development techniques. Though rather lengthy, the text even describes the positive environmental impact these developments can have and justifies their prioritization. Specifically see Section 7.6.4, Stormwater Management Best Practices within the Zoning Regulations (https://www.danversma.gov/zoning-regulations/).

Goal 5. Encourage efficient Parking:

- Ipswich has an excellent example of language to allow properties to make joint use of parking spaces. This example can be found in Chapter VII of Ipswich's Zoning Bylaw, under the Subsection E. "Joint Use of Parking Areas." (https://www.ipswichma.gov/DocumentCenter/View/1015/Zoning-Bylaw)
- Ipswich also provides an example of low-impact development requirements within parking areas, located in Chapter VII of Ipswich's Zoning Bylaw, under subsection P "JSurface Draining and Curbing." (https://www.ipswichma.gov/DocumentCenter/View/1015/Zoning-Bylaw)
- Amesbury offers a good example of parking regulations which require the use of landscaping within parking areas as LID/bioretention features. These standards can be found within the community's zoning and site plan review. (https://www.amesburyma.gov/DocumentCenter/View/2402/Amesbury-Zoning-Ordinance-PDF)
- Groveland offers a good example of parking regulations which require the use of landscaping within parking areas as LID/bioretention features. These standards can be found within the town's Zoning Bylaw. (https://ecode360.com/35391189)

Other model language Resources

Coastal Stormwater Management Through Green Infrastructure: A Handbook for Municipalities: https://www.mass.gov/doc/coastal-stormwater-management-through-green-infrastructure-a-handbook-for-municipalities/download

Massachusetts Smart Growth / Smart Energy Toolkit: http://www.mass.gov/envir/smart_growth_toolkit/pages/mod-lid.html

Massachusetts Stormwater Handbook: http://www.mass.gov/eea/agencies/massdep/water/regulations/massachusetts-stormwater-handbook.html

Massachusetts Watershed Coalition, Community Guide to Growing Greener: http://commonwaters.org/resources/community-guide-to-growing-greener

Metropolitan Area Planning Council (MAPC) Low Impact Development Toolkit, Local Codes Checklist http://www.mapc.org/resources/low-impact-dev-toolkit/local-codes-lid

U.S. Environmental Protection Agency (EPA) Water Quality Scorecard: http://www2.epa.gov/smartgrowth/water-quality-scorecard-incorporating-green-infrastructure-practices-municipal

American Planning Association - Massachusetts Chapter, and the Home Builders Association of Massachusetts, Sustainable Neighborhood Road Design: A Guidebook for Massachusetts Cities and Towns http://www.apa-ma.org/apa-ma_documents/Publications/NRB_Guidebook_2011.pdf

City of Springfield, Green Infrastructure Technical Guidelines https://www.springfield-ma.gov/dpw/fileadmin/forms/Engineering/Green_InfrastructureTechnical_Guidlines_v2.pdf

Appendix D: Community Liaison List

Municipality	Contact Name(s)	Contact email(s)
Amesbury	Rob Desmarais	rob@amesburyma.gov
Andover	Jacki Byerley	jacki.byerley@andoverma.us
Boxford	Ross Povenmire, Chris Olbrot	rpovenmire@town.boxford.ma.us colbrot@town.boxford.ma.us
Georgetown	Peter Durkee	Peter Durkee pdurkee@georgetownma.gov
Groveland	Annie Schindler	aschindler@grovelandma.com
Haverhill	Jesse Middleton	jamiddleton@haverhillwater.com
Lawrence	Daniel McCarthy, Milagros Puello	mpuello@cityoflawrence.com dmccarthy@cityoflawrence.com
Merrimac	Alyssa Sexton	asexton@townofmerrimac.com
Methuen	Kathleen Caldwell, Joe Giarusso	kbcolwell@ci.methuen.ma.us JGiarrusso@ci.methuen.ma.us
Newbury	Martha Taylor, Sam Holt	planningboard@townofnewbury.org conscom@townofnewbury.org
Newburyport	Nick federico	nfederico@cityofnewburyport.com
North Andover	Amy Maxner, Andrew Shapiro	amaxner@northandoverma.gov ashapiro@northandoverma.gov
Rowley	Brent Baeslack	brent@townofrowley.org
Salisbury	Lisa Pearson	lpearson@salisburyma.gov
West Newbury	Leah Zambernardi, Wayne Amaral	lzambernardi@wnewbury.org dpwdirector@wnewbury.org
Hamilton	Patrick Reffett	preffett@hamiltonma.gov
Ipswich	Ethan Parsons	ethanp@ipswichma.gov
Middleton	Katrina O'Leary	katrina.oleary@middletonma.gov
North Reading	Danielle McKnight	dmcknight@northreadingma.gov
Topsfield	Heidi Gaffney	hgaffney@topsfield-ma.gov
Wenham	Kate Mallory	KMallory@wenhamma.gov
Lynnfield	Emilie Cademartori	ecademartori@town.lynnfield.ma.us
Essex	Brendhan Zubricki	bzubricki@essexma.org
Salem	Kate Kennedy, Amanda Chiancola, Deb Duhamel, Rebecca Dupont-Coutu	kkennedy@salem.com, achiancola@salem.com, dduhamel@salem.com, rjd@engineeringcorporation.com
Marblehead	Maggie Wheeler, Becky Curran	wheelerm@marblehead.org, rebeccac@marblehead.org
Beverly	Jenna Pirrotta, Eric Barber	jpirrotta@beverlyma.gov ebarber@beverlyma.gov
Peabody	Bill Stansfield, Lucia Del Negro, Andrew Levin	william.stansfield@peabody-ma.gov lucia.delnegro@peabody-ma.gov andrew.levin@peabody-ma.gov
Danvers	Stephen King, Sharon Clement, David Fields	sking@danversma.gov sclement@danversma.gov
Manchester	Chuck Dam, Sue Brown	damc@manchester.ma.us browns@manchester.ma.us
Gloucester	Michael Hale, Ryan Marques, Rebecca Dupont-Coutu	mhale@gloucester-ma.gov / rlopiccolo@gloucester-ma.gov rmarques@gloucester-ma.gov rjd@engineeringcorporation.com

Appendix E: List of Bylaws Reviewed

Community	Zoning		Stormwater Management		Wetland Protection		Subdivison		Other	
	Date last updated	Link	Date last updated	Link	Date last updated	Link	Date last updated	Link	Date last updated	Link
Amesbury	1/1/21	https://www.amesburyma.gov/DocumentCenter/View/2402/Amesbury-Zoning-Ordinance-PDF	8/11/20	https://ecode360.com/37175441	7/8/08	https://ecode360.com/13329110		https://www.amesburyma.gov/DocumentCenter/View/1453/Subdivision-Rules-and-Regulations-PDF?bidId=		
Andover	6/5/21	https://ecode360.com/15582155	4/20/2008, (new draft provided by municipality)	https://ecode360.com/15621021	4/28/10	https://ecode360.com/15620958		https://ecode360.com/15580713		https://ecode360.com/15617386
Boxford	5/12/09	https://ecode360.com/10134059	5/9/06	https://ecode360.com/10133701	9/12/20	https://ecode360.com/10133948	11/17/04	subdivision bylaw: https://ecode360.com/10134935		https://ecode360.com/10134278
Georgetown	6/21/21	https://ecode360.com/6484938	5/2/2016 (new draft provided by municipality)	https://ecode360.com/6484618	10/17/05	https://ecode360.com/6484873		provided by municipality		https://ecode360.com/6485427
Groveland	6/22/20	https://ecode360.com/35391189	6/22/20	https://ecode360.com/35390917	5/24/21	https://ecode360.com/36994673		https://ecode360.com/35392357		https://ecode360.com/35392022
Haverhill	10/11/20	https://ecode360.com/6262973	6/26/18	https://ecode360.com/6261944	7/23/96	https://ecode360.com/6262809		https://www.cityofhaverhill.com/departments/economic_development_and_planning/subdivision_of_land.php#revize_document_center_rz47		
Lawrence	8/15/11	https://www.cityoflawrence.com/DocumentCenter/View/1720/Zoning-Ordinances-PDF	3/17/2015 (new draft provided by municipality)	https://library.municode.com/ma/lawrence/codes/code_of_ordinances?nodeId=TIT20STMA	11/15/05	https://library.municode.com/ma/lawrence/codes/code_of_ordinances?nodeId=TIT18ENPRCO		https://library.municode.com/ma/lawrence/codes/code_of_ordinances?nodeId=TIT16SU		see word doc with updated site plan reivew
Merrimac	10/19/20	http://townofmerrimac.com/DocumentCenter/View/184/Zoning-Bylaw-PDF?bidId=	4/27//15	http://townofmerrimac.com/DocumentCenter/View/256/General-Bylaws-PDF?bidId=	4/27/15	http://townofmerrimac.com/DocumentCenter/View/256/General-Bylaws-PDF?bidId=		provided by municipality		http://townofmerrimac.com/DocumentCenter/View/184/Zoning-Bylaw-PDF?bidId=
Methuen	12/18/18	https://ecode360.com/32749441	2/8/06	https://ecode360.com/attachment/ME3892/ME3892-S.pdf		provided by municipality		https://ecode360.com/attachment/ME3892/ME3892-S.pdf		addressed in zoning bylaw
Newbury	4/23/19	https://ecode360.com/15569988	4/24/18	https://ecode360.com/15580378	11/12/19	https://ecode360.com/12472845		https://ecode360.com/12472936#12472936		https://www.townofnewbury.org/sites/g/files/vyhlif951/f/uploads/spr_submission_requirements_-_rev._2020-06-17.pdf
Newburyport	8/23/21	https://library.municode.com/ma/newburyport/codes/code_of_ordinances?nodeId=APXAZOORNE	9/24/10	https://www.cityofnewburyport.com/department-of-public-services/engineering-division/pages/local-regulations-and-ordinance	9/8/14	https://library.municode.com/ma/newburyport/codes/code_of_ordinances?nodeId=PTIICOOR_CH6.5EN_ARTIIWEPROR		https://www.cityofnewburyport.com/sites/g/files/vyhlif7106/f/uploads/subdivision_rules_and_regulations_adopted.pdf		https://library.municode.com/ma/newburyport/codes/code_of_ordinances?nodeId=APXAZOORNE_SXVSIPLRE
North Andover	na	https://ecode360.com/32682406	na	https://ecode360.com/32685529	na	https://ecode360.com/32682348		https://ecode360.com/32686798		https://ecode360.com/32683601
Rowley	6/22/20	https://www.townofrowley.net/sites/g/files/vyhlif4956/f/uploads/zbl_all_updated_to_atm-stm_june_22-2020_1.pdf	11/28/07	https://www.townofrowley.net/sites/g/files/vyhlif4956/f/uploads/concom_stormwaterbylaw2007.pdf	1/24/04	https://www.townofrowley.net/sites/g/files/vyhlif4956/f/uploads/concom_wetlandbylaw2004.pdf		https://www.townofrowley.net/sites/g/files/vyhlif4956/f/uploads/120516_planning_board_rules_reg.pdf		
Salisbury	5/20/19	https://ecode360.com/10445611		https://www.mass.gov/doc/town-of-salisbury-stormwater-bylaws/download	repealed 5/19/08	https://ecode360.com/10445555		provided by municipality		https://ecode360.com/10446395
West Newbury	4/29/19	https://www.wnewbury.org/sites/g/files/vyhlif1436/f/uploads/zoning_bylaw_as_amended_april_29_2019.pdf	4/29/19	https://www.wnewbury.org/sites/g/files/vyhlif1436/f/uploads/2019_town_bylaws_-_as_amd_04292019.pdf	4/29/19	https://www.wnewbury.org/sites/g/files/vyhlif1436/f/uploads/2019_town_bylaws_-_as_amd_04292019.pdf		https://www.wnewbury.org/sites/g/files/vyhlif1436/f/uploads/subdivision_r_r_adopted_10-3-06_revd_4_21_09revd_12_21_10_revd_09_03_19.pdf		parking regs and planning board regs provided by municipality

TOWN	REGULATION REVIEWED	LINK (if possible)
Beverly	Zoning Ordinance	https://ecode360.com/29283330
	Chapter 375 - Subdivision of Land	https://ecode360.com/29285336
	Chapter 565 - Wetlands Protection Regulations	https://ecode360.com/29286482
	Chapter 350 - OSRD Guidelines	https://ecode360.com/29321513
	Chapter 249 - Stormwater Management (Draft)	PDF shared by liason Eric Barber
	City of Beverly Master Rules & Regulations	PDF shared by liason Eric Barber
Danvers	Zoning Bylaw	https://www.danversma.gov/documents/danvers-zoning-bylaw/
	Zoning Regulations	https://storage.googleapis.com/proudcity/danversma/uploads/2021/12/Planning-Board-Zoning-Regulations-2021-12-14.pdf
	Subdivison Rules & Regulations	https://www.danversma.gov/documents/subdivision-rules-regulations/
	Stormwater Bylaw	https://www.danversma.gov/documents/idde-stormwater-bylaws-approved-oct-2020/
	Wetlands Regulations	https://www.danversma.gov/documents/wetlands-regulations/
	Wetlands Bylaw	https://www.danversma.gov/documents/wetland-bylaw-regulations/
Gloucester	Zoning Ordinance	https://library.municode.com/ma/gloucester/codes/zoning_ordinance?nodeId=THGLMA
	Subdivison Rules & Regulations	chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.gloucester-ma.gov/DocumentCenter/View/340/SubdivisionRulesandRegs2008?bidId=
	OSRD (Sec 5.15 of Zoning Ordinance)	https://library.municode.com/ma/gloucester/codes/zoning_ordinance?nodeId=SVSPRE_5.15OPSPREDE
	Drainage Ordinance	PDF shared by liason Ryan Marques
Manchester	Zoning Bylaw	chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.manchester.ma.us/DocumentCenter/View/4818/Zoning-bylaw-42022
	Subdivision Rules & Regulations	chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/http://manchester.ma.us/DocumentCenter/View/546/Subdivision-Regulations-PDF
	Wetlands Bylaw (Article XVII of General Bylaw)	chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/http://manchester.ma.us/DocumentCenter/View/2000/General-Bylaws-
	Stormwater Control Bylaw (Draft)	Word Doc shared by liason Sue Brown
	Floodplains Bylaw (Draft)	Word Doc shared by liason Sue Brown
Marblehead	Zoning Bylaw	https://ecode360.com/10438269
	Subdivision of Land Bylaw	https://ecode360.com/10439300
	Stormwater Management Bylaw	https://ecode360.com/10438138
	Wetlands Protection Bylaw	https://ecode360.com/10438079
Peabody	Zoning Ordinance	https://library.municode.com/ma/peabody/codes/zoning?nodeId=OFZOORPEMA
	Subdivision of Land Rules & Regulations	chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://peabodybusiness.com/wp-content/uploads/2018/05/Rules-Regulations-Governing-the-Subdivision-of-Land.pdf
	Chapter 27 - Streets & Sidewalks	https://library.municode.com/ma/peabody/codes/code_of_ordinances?nodeId=PTIITHCOCI_CH27STSIOTPUPL
	Chapter 28 - Utilities (Article V. Stormwater)	https://library.municode.com/ma/peabody/codes/code_of_ordinances?nodeId=PTIITHCOCI_CH28UT
	Chapter 32 - Wetlands Protection	https://library.municode.com/ma/peabody/codes/code_of_ordinances?nodeId=PTIITHCOCI_CH32WERIPRRE
Salem	Zoning Ordinance	https://library.municode.com/ma/salem/codes/zoning_ordinance?nodeId=ZOOR
	Subdivision Regulations	chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.salemma.gov/sites/g/files/vyhlif7986/f/uploads/subdivision_regulations.pdf
	Chapter 37 - Stormwater Management	https://library.municode.com/ma/salem/codes/code_of_ordinances?nodeId=PTIIICOOR_CH37STMA
	Chapter 50 - Wetlands Protection & Conservation	https://library.municode.com/ma/salem/codes/code_of_ordinances?nodeId=PTIIICOOR_CH50WEPRCO
	Chapter 38 - Streets & Sidewalks	https://library.municode.com/ma/salem/codes/code_of_ordinances?nodeId=PTIIICOOR_CH38STSI

Town	Bylaw/Regulation	Link
Hamilton	Zoning Bylaw	https://www.hamiltonma.gov/wp-content/uploads/2021/08/Zoning-Bylaw.Final-August-2021.pdf
Hamilton	Subdivision Regulations	https://www.hamiltonma.gov/government/planning-board/subdivision-regulations/
Hamilton	Stormwater Management Permit Rules & Regulations	https://www.hamiltonma.gov/wp-content/uploads/2016/12/Stormwater-Management-Permit-Rules-Regulations-11-16-2021.pdf
Hamilton	Stormwater Management Bylaws	https://www.hamiltonma.gov/government/board-of-selectmen/bylaws/
Hamilton	Illict Discharge Detection and Elimination By-Law	https://www.hamiltonma.gov/government/board-of-selectmen/bylaws/
Lynnfield	Zoning Bylaw	https://ecode360.com/30738580
Lynnfield	Subdivision Regulations	https://ecode360.com/28618080#28618080
Lynnfield	Conservation Commission Regulations: Stormwater Rules and F	https://ecode360.com/37964050#37964050
Lynnfield	Stormwater Management Bylaws	https://ecode360.com/28618585; https://www.town.lynnfield.ma.us/sites/g/files/vyhlif3391/f/uploads/stormwater_management.pdf
Topsfield	Zoning Bylaw	https://www.topsfield-ma.gov/zoning-board-appeals/pages/zoning-laws
Topsfield	Subdivision Regulations	https://ecode360.com/30265936#30265936
Topsfield	Stormwater Management and Erosion Control Bylaw	https://ecode360.com/30296774
Topsfield	Stormwater Management and Erosion Control Regulations	https://ecode360.com/30265630
Topsfield	Wetland Regulations	https://ecode360.com/30266437
Essex	Zoning Bylaw	https://www.essexma.org/sites/g/files/vyhlif4406/f/uploads/essex_bylaw_-_2022_v.1_0.pdf
Essex	Rules and Regulations Relative to Subdivision Control	https://www.essexma.org/planning-board/files/subdivision-control-rules-regulations
Essex	Stormwater Management and Land Disturbance Bylaw	https://www.essexma.org/sites/g/files/vyhlif4406/f/uploads/essex_bylaw_-_2022_v.1_0.pdf
Ipswich	Protective Zoning Bylaw	https://www.ipswichma.gov/DocumentCenter/View/1015/Zoning-Bylaw
Ipswich	Rules and Regulations Governing the Subdivision of Land	https://ipswichma.gov/DocumentCenter/View/1014/Subdivision-Rules--Regulations
Ipswich	Design Review Board: Steps for the Design Review Process	https://www.ipswichma.gov/DocumentCenter/View/1037/Design-Review-Board-Guidelines--Application
Ipswich	Stormwater Management Bylaws	https://ecode360.com/30685913
Ipswich	Stormwater Management Regulations	https://www.ipswichma.gov/DocumentCenter/View/13293/Draft_Ipswich_Stormwater_Regulations

Middleton	Zoning Bylaw	https://ecode360.com/10440524#10440524
Middleton	Subdivision of Land Bylaws	https://ecode360.com/30328471#30341560
Middleton	Subdivision Rules and Regulations	https://docs.google.com/document/d/1_2KthNeUoGSzKeZ_SPDgIjb5Lkx8fR_H/edit?usp=sharing&ouid=113353923203393468594&rtpof=true&sd=true
Middleton	Stormwater Management Bylaws	https://ecode360.com/30316132
Middleton	Stormwater Management Rules and Regulations	https://ecode360.com/30328471#30341560
Wenham	Zoning Bylaw	https://cms4files1.revize.com/wenhamma/Wenham%20Zoning%20Bylaw%20Revised%20Feb%202020.pdf
Wenham	Subdivision of Land Bylaws	[Draft reviewed, received via email]
Wenham	Site Plan Review Bylaw	https://ecode360.com/31434212?highlight=stormwater&searchId=8547776360581843#31434212
Wenham	Stormwater Management Bylaw	https://ecode360.com/31533561
Wenham	Planning Board Rules and Regulations	https://cms4files1.revize.com/wenhamma/Wenham%20PB%20Rules%20and%20Regulations%20Updates%206-6-19%20Final.pdf
North Reading	Zoning Bylaw	https://ecode360.com/10384134#10384134
North Reading	Subdivision of Land Bylaws	https://ecode360.com/10384134#10384134
North Reading	Site Plan Review Regulation	https://www.northreadingma.gov/sites/g/files/vyhlif3591/f/uploads/site_plan_review_regulation.pdf
North Reading	Stormwater Management Bylaw	https://www.northreadingma.gov/sites/g/files/vyhlif3591/f/uploads/stormwater_bylaw.pdf
North Reading	Stormwater Management Rules and Regulations	https://www.northreadingma.gov/sites/g/files/vyhlif3591/f/uploads/stormwater_rules_and_regs.pdf; https://www.northreadingma.gov/sites/g/files/vyhlif3591/f/uploads/stormwater_appendices.pdf