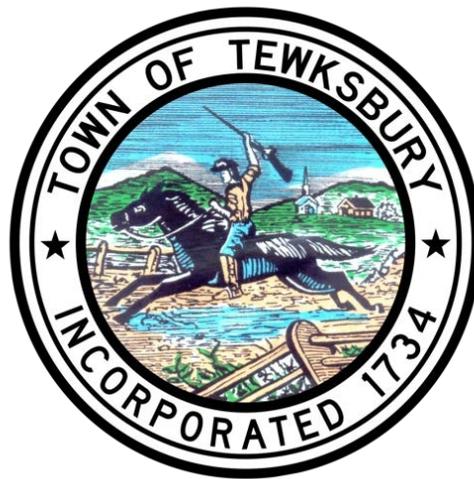


Street Design and Parking Lots Report

MS4 Permit Compliance



Town of Tewksbury, MA

Department of Public Works

999 Whipple Road

Tewksbury, MA 01876

June 30, 2022

TABLE OF CONTENTS

ATTACHMENTS	1
1.0 INTRODUCTION	2
1.1 Regulatory Requirement	2
1.2 Applicable Regulatory Mechanisms and Assessment Procedure.....	2
2.0 REVIEW OF REGULATORY MECHANISMS	4
2.1 Category 1: Impervious Area Management – Streets	4
2.2 Category 2: Impervious Area Management – Driveways	5
2.3 Category 3: Impervious Area Management – Sidewalks.....	6
2.4 Category 4: Impervious Area Management – Parking Lots.....	7
2.5 Category 5: Vegetation and Landscaping/Limits of Disturbance.....	9
3.0 RECOMMENDED REGULATORY UPDATES.....	10
3.1 Updates to Zoning Bylaw	10
3.2 Updates to Subdivision Rules and Regulations.....	11
4.0 IMPLEMENTATION TIMEFRAMES FOR REGULATORY UPDATES.....	12

ATTACHMENTS

Attachment A – Regulatory Review Matrix

1.0 INTRODUCTION

1.1 Regulatory Requirement

The 2016 Massachusetts Municipal Separate Storm Sewer Systems (MS4) General Permit, which came into effect on July 1, 2018, regulates discharges from small MS4s to waters of the United States. The Permit requires MS4 operators to develop, implement, and enforce a stormwater management program (SWMP). The purpose of the SWMP is to reduce the discharge of pollutants from the MS4 to the maximum extent practicable, to protect water quality, and to satisfy the applicable water quality requirements of the Clean Water Act. MS4 operators must implement various Best Management Practices (BMPs) for each of the following six minimum control measures:

- Public Education and Outreach
- Public Participation/Involvement
- Illicit Discharge Detection and Elimination
- Construction Site Runoff Control
- Stormwater Management in New Development and Redevelopment (Post-Construction Stormwater Management)
- Good Housekeeping and Pollution Prevention for Municipal Operations

As part of the minimum control measure for Post-Construction Stormwater Management, Section 2.3.6 of the 2016 MS4 Permit requires regulated communities to assess current street design and parking lot guidelines and other local requirements that affect the creation of impervious cover, and to summarize those findings in a report. The purpose of this exercise is to determine if changes to existing design standards can be made to support low impact design options and, where appropriate, propose recommendations and schedules to incorporate policies and standards into the relevant regulatory mechanisms to minimize impervious cover in parking areas and street designs.

The Town of Tewksbury shall implement recommendations included in this report in the specified timeframe, where recommendations are feasible, and the timeframes identified are achievable. The status of this assessment and any planned or completed changes to the relevant regulatory mechanisms shall be reported in each MS4 annual report.

1.2 Applicable Regulatory Mechanisms and Assessment Procedure

The following bylaws, rules & regulations, policies, and/or design standards address the creation of impervious cover in Tewksbury:

- Town Charter
- Zoning Bylaw
- Subdivision Rules and Regulations

Additionally, Tewksbury's Stormwater Management and Erosion Control Bylaw and Regulations were reviewed but found not to include any relevant language relating to the creation of impervious cover in Tewksbury. Each regulatory mechanism listed above was reviewed using the matrix included in Attachment A. The mechanisms were reviewed using a list of key questions in five

categories, and the degree to which each mechanism addresses a key question was rated as Conventional, Better, or Best using a system based on the Local Bylaw and Regulation Assessment Tool developed by MassAudubon.¹ The definition for each rating is as follows:

- Conventional: The key question is not addressed, or no flexibility is allowed in design requirements. Dimensional standards include required minimum but no maximum (i.e., minimum driveway width but no maximum).
- Better: The key question is addressed, and some flexibility is allowed in design requirements, usually by special permit. LID design practices, including minimizing created impervious area, are encouraged but not required.
- Best: The key question is addressed, and flexibility in design is allowed by-right. LID practices, including minimizing created impervious area, are required or incentivized.

The results of this analysis are summarized in Section 2.0. Recommended updates to the assessed regulatory mechanisms are included in Section 3.0, and a proposed timeline for implementing those updates is presented in Section 4.0

¹ Supporting LID in Your Community, Local Bylaw and Regulation Assessment Tool, MassAudubon, 2017.
<https://www.epa.gov/npdes-permits/stormwater-tools-new-england#pcsm>

2.0 REVIEW OF REGULATORY MECHANISMS

The matrix included in Attachment A was used to review how Tewksbury's regulatory mechanisms and design standards address the creation of impervious cover in Tewksbury in the following categories:

- Impervious Area Management – Streets
- Impervious Area Management – Driveways
- Impervious Area Management – Sidewalks
- Impervious Area Management – Parking Lots
- Vegetation and Landscaping/Limits of Disturbance

This section summarizes the results of the analysis for each category.

2.1 Category 1: Impervious Area Management – Streets

Category 1 includes key questions such as the minimum roadway widths in Tewksbury, required right-of-way widths, and the minimum and/or maximum cul-de-sac diameter.

The roadway design standards for the Town are specified in Section 8, Design Standards, in the Subdivision Rules and Regulations. Streets in Tewksbury are classified as either Industrial/Commercial or Residential. Table 1 in the Rules and Regulations includes roadway right of way widths, pavement widths, and outside diameters of turnarounds and travel ways for residential and industrial/commercial streets.

Table 1: Horizontal Design Standards (Subdivision Rules and Regulations, Appendix B-1)

	Right of Way	Streets	Outside Diameter of Turnaround		Travel Way
		Paved Surface	Right of Way	Paved Surface	
Industrial/ Commercial	60'	34'	120'	100'	32'
Residential	50'	24'	110'	90'	22'

Section 8 states that "The Board may waive any design requirement or impose additional design requirements if the Board finds, based upon the conditions of the site that such waivers or additional requirements are necessary or desirable to provide for safe and convenient vehicular and pedestrian travel."

Minimum Residential Roadway Width & Determinant

This section was rated "conventional" due to the singular category for residential roadways with no flexibility in applying the design standards set forth in the Subdivision Rules and Regulations.

Minimum Non-Residential and Mixed-Use Roadway Pavement Widths & Determinants

This section was rated "conventional" due to the singular category for non-residential roadways with no flexibility in applying the design standards set forth in the Subdivision Rules and Regulations.

Road Right-of-Way Widths

This section was rated “conventional” due to the 50-foot right-of-way specification for residential roadways and 60-foot right-of-way specification for industrial/commercial roadways in the Subdivision Rules and Regulations.

Road Right-of-Way Allowable Usage

This section was rated “conventional”; road right-of-way allowable usage is not mentioned in any of the Town’s current regulatory mechanisms.

Allowable Dead End Street Design

This section was rated “conventional” due to specified design standards for dead end streets, or “single access streets”, including maximum length and turnaround diameter. Section 8, Design Standards in the Subdivision Rules and Regulations states that “Single access streets shall not exceed 1,000 feet in length” and “A cul-de-sac street turnaround shall be designed in the following way: A loop turnaround which shall be offset in relation to the street to form a ‘q’ whereby the street intersects with itself in a 90-degree angle. (A “lollipop” configuration is also allowed). The outside diameter shall be 90 feet in diameter from the gutter line. The sideline diameter of the loop turnaround shall provide a constant shoulder width throughout the entire street, except that at the intersection the shoulder width may vary to meet other requirements of these rules.”

Allowable Cul de Sac Design

This section was rated “conventional”; center islands for cul de sacs, or “single access streets” are not mentioned in any of the Town’s current regulatory mechanisms.

Curb Cuts/ Flush Cuts

This section was rated “conventional”; curb cuts/ flush curbs are not mentioned in the Subdivision Rules and Regulations. Section 8.24.020 of the Town Charter states that sidewalk ramps or curb cuts are required for handicap access to building entrances or walkways.

2.2 Category 2: Impervious Area Management – Driveways

Category 2 includes key questions such as minimum and/or maximum driveway widths, required front yard setbacks, and whether or not shared driveways are allowed in the Town of Tewksbury.

The driveway design standards for the Town are specified in the Zoning Bylaws.

Required Minimum Driveway Width

This section was rated “conventional” because driveway width is not specified for residential use, and minimum driveway widths are specified for business or industrial use with no flexibility. Section 5170 of the Zoning Bylaw, Design Requirements for Business or Industrial Parking Facilities, states that “Each lot may have one access driveway which shall be at least 24 feet wide at its narrowest point but not more than the required width for safe vehicle movements onto the adjacent roadway, without entering into the opposing lane” and that “In the case of an access driveway, which shall be used for one-way traffic only, the minimum width may be reduced to 14 feet at its narrowest point.”

Ability to Reduce Minimum Driveway Width

This section was rated “conventional” because there is no driveway width specified for residential use, and there is no flexibility in the driveway width requirements for business or industrial use in the Zoning Bylaw.

Required Front Yard Setback

This section was rated "conventional" because there is no flexibility in the required minimum setbacks specified in Appendix B of the Zoning Bylaw for all zoning districts.

Two-Track Design

This section was rated "conventional" because there is minimal flexibility in the design standards in the Zoning Bylaw.

Shared Driveways

This section was rated "better" because shared driveways are allowed with a special permit from the Planning Board for residential uses and are recommended for business or industrial uses in the Zoning Bylaws. Section 5160, Design Requirements for Residential Parking Facilities states that "Subject to the granting of a special permit from the Planning Board, a driveway may be shared by not more than two lots. Each shared driveway shall be governed by a maintenance agreement running in perpetuity with the land. The frontage and area of such common driveway shall be in addition to the minimum frontage and area required under Section 4000." Section 5170, Design Requirements for Business or Industrial Parking Facilities states that "To the extent feasible, lots and parking areas shall be served by common private access ways, in order to minimize the number of curb cuts in these districts. Such common access ways shall be in conformance with the standards of the Department of Public Works. Proposed documentation (in the form of easements, covenants, or contracts) shall be submitted with the site plan demonstrating that proper maintenance, repair, and apportionment of liability for the common access way and any shared parking areas have been agreed upon by all lot owners proposing to use the common access way. Common private access ways may serve any number of adjacent parcels deemed appropriate by the Planning Board. Common private access ways shall not be wider than 24 feet at any point where it crosses required open space or any parking setback area required hereunder."

2.3 Category 3: Impervious Area Management – Sidewalks

Category 3 includes key questions such as sidewalk placement requirements, minimum sidewalk widths, and allowable sidewalk materials in the Town of Tewksbury.

The sidewalk design standards for the Town are specified in the Subdivision Rules & Regulations.

Sidewalk Placement Requirements

This section was rated "conventional" because sidewalks are required on both sides of every street of all subdivision streets as described in Section 9.5, Sidewalks, Pedestrian Ways, Cross Walks and Bicycle Paths in the Subdivision Rules and Regulations.

Sidewalk Width

This section was rated "conventional" because there is no flexibility in the five-foot minimum required width for sidewalks in Section 9.5, Sidewalks, Pedestrian Ways, Cross Walks and Bicycle Paths in the Subdivision Rules and Regulations.

Sidewalk Material

This section was rated "conventional" because there is no flexibility in the sidewalk material design standards in the Subdivision Rules and Regulations. Section 9.5, Sidewalks, Pedestrian Ways, Cross Walks and Bicycle Paths states that "Sidewalks shall consist of six inches of bank run gravel (or

equivalent) covered with three inches of processed grading gravel. The gravel base shall be covered with a wearing surface of three inches of hot mix asphalt Class I, Type 1, bituminous concrete applied in two even courses.”

2.4 Category 4: Impervious Area Management – Parking Lots

Category 4 includes key questions such as required parking ratios, required parking space dimensions, and whether landscaping is required in parking lot designs.

The parking lot design standards for the Town are specified in the Zoning Bylaw. Appendix C of the Zoning Bylaw specifies the off-street parking requirements for each use.

Required Parking Ratios

This section was rated "conventional" because Appendix C of the Zoning Bylaw specifies the minimum amount of parking spaces required for residential uses, exempt and institutional uses, commercial uses, and industrial uses with no or limited flexibility to reduce the minimums based on street or other available parking or transit. The number of handicapped parking spaces required per total number of parking spaces, is specified in section 8.24.020, Handicapped Parking, in the Town's Charter.

Allowable Off-Street Parking for Commercial and Mixed Uses

This section was rated "conventional" because parking facilities are required to be located on site for any building or structure upon a lot that activity will be conducted upon. The minimum number of parking spaces required for different commercial and industrial uses is specified in Appendix C of the Zoning Bylaws.

Off-Site Parking Distance Limit

This section was rated "conventional" because off-street parking is required to be located on the same lot in the Town's Zoning Bylaws. Section 5420, Parking and Loading Area Design and Location for Nonresidential Facilities, states that "Parking spaces more than five hundred (500) feet from the building entrance they serve may not be counted towards fulfillment of parking requirements unless the Planning Board determines that circumstances justify this greater separation of parking from use."

Ability to Reduce Parking Requirements Where Public Transportation is Available

This section was rated "conventional" because there is no flexibility in the parking requirements where public transportation is available in the Zoning Bylaws.

Other Ability to Reduce Parking Ratios

This section was rated "better" because parking requirements can be reduced by no more than 30% with a special permit from the Planning Board, or in the case of mixed uses, if it can be demonstrated that the need for parking occurs at different times. Section 5120, Relief from Parking Regulations by Special Permit from the Planning Board, states that the Planning Board may authorize a decrease in the number of parking spaces no more than 30% of the total number of spaces required in the Zoning Bylaw, with various conditions defined in the section. Section 5132, Mixed Use Requirement, states that "In the case of mixed uses, the requirements shall be the sum of the requirement calculated separately for each area of use, so that adequate space shall be provided to accommodate the cars of all persons on the premises at any one time. Parking spaces for one use

shall not be considered as providing the required spaces for any other use, except when it can be clearly demonstrated that the need for parking occurs at different times.”

Current Required Parking Space Dimensions

This section was rated “conventional” because there is no flexibility in the parking dimensional regulations in the Zoning Bylaws. Section 5140, Standard Car Parking Dimensional Requirements, specifies the required minimum width of parking stall, parking stall line length, and width of maneuvering aisle for different types of parking. Dimensional requirements for handicapped parking spaces is specified in section 8.24.020, Handicapped Parking, in the Town’s Charter.

Shared Parking Agreements

This section was rated “better” because shared driveways are allowed for residential uses, and shared driveways and parking areas are allowed for business and industrial uses with a special permit in the Zoning Bylaws. Section 5170, Design Requirements for Business or Industrial Parking Facilities states that “Proposed documentation (in the form of easements, covenants, or contracts) shall be submitted with the site plan demonstrating that proper maintenance, repair, and apportionment of liability for the common access way and any shared parking areas has been agreed upon by all lot owners proposing to use the common access way.”

Model Shared Parking Agreement

This section was rated “conventional” because a model shared parking agreement is not provided in any of the Town’s current regulatory mechanisms.

Drive Aisle Dimensions

This section was rated “conventional” because there is no flexibility in the minimum maneuvering aisle widths for different angles of parking in Section 5140, Standard Car Parking Dimensional Regulations. Section 5170, Design Requirements for Business or Industrial Parking Facilities, states that “Interior driveways may be reduced to no less than 20 feet for two-way traffic and 14 feet for one-way traffic.”

Drive Aisle Width

This section was rated “conventional” because reducing maneuvering aisle or interior driveway widths is not mentioned in any of the Town’s current regulatory mechanisms.

Allowable Parking Lot Materials

This section was rated “conventional” because the use of structural permeable pavement in parking lots is not mentioned in any of the Town’s current regulatory mechanisms. Section 5170 of the Zoning Bylaw, Design Requirements for Business or Industrial Parking Facilities, states that “Required parking spaces, loading areas and driveways shall be provided and maintained with suitable grading, paved surfaces and adequate drainage.”

Spillover Paving Materials

This section was rated “conventional” because spillover paving is not mentioned in any of the Town’s current regulatory mechanisms.

Required Landscaping in Parking Lots

This section was rated “better” because the Zoning Bylaws require landscaped areas in parking and loading facilities and require landscape buffers in heavy industrial districts and where business or

industrial uses abut a residential district. Section 5400, Landscaping, Screening and Buffer Requirements states that “All parking lots and loading facilities shall be suitably landscaped to minimize their visual impact on the lot and upon adjacent property by the use of existing vegetation where appropriate and by the use of new trees, shrubs, walls, fences or other landscape elements. Any parking lot with more than 40 parking spaces shall include a landscaped area(s) that shall not be less in area than five (5) percent of the total area of the parking lot and shall be in addition to any minimum open space required under Section 5. Landscaped area(s) shall be provided with a minimum width of at least 10 feet, curbing and shade trees of at least 12 feet in height or such other landscaping as may be required by the Planning Board.”

2.5 Category 5: Vegetation and Landscaping/Limits of Disturbance

Category 5 includes key questions such as whether stormwater practices are allowed to be incorporated into required landscape areas and if there are minimum yard sizes in place for various uses in the Town of Tewksbury.

The design standards for vegetated areas for the Town are specified in the Zoning Bylaws.

Vegetated Stormwater Practices in Landscape Areas (Buffer Strips, Landscape Islands, etc.)

This section was rated “conventional” because landscape buffers are required between properties and buildings, and in all parking lots and loading facilities as stated in the Zoning Bylaw, but vegetated stormwater practices are only specifically mentioned in the Highway Corridor Overlay District section of the Zoning Bylaws which states that “Wastewater and stormwater management systems serving the HCOD District may be located within the landscape buffer areas.” X

Roof Runoff Requirements

This section was rated “conventional” because roof runoff is only required to be treated for lots occupied or proposed to be occupied in a groundwater protection district in the Town’s Zoning Bylaw. Section 8323, Uses and Activities Requiring a Special Permit, states that “Stormwater runoff from rooftops, driveways and other impervious surfaces shall be routed through grassed water quality swales, as sheet flow over lawn areas, or into constructed stormwater wetlands, sand filters, organic filters and/or similar systems capable of removing nitrogen from stormwater.”

Maximum and Minimum Yard Sizes for Various Uses

This section was rated “conventional” because minimum lot, front, side and rear yard sizes for all zoning districts are specified in Appendix B, Table of Dimensional Requirements in the Zoning Bylaws.

Vegetated Stormwater BMPs in Setbacks

This section was rated “conventional” because landscape buffers are required between properties and buildings, and in all parking lots and loading facilities as stated in the Zoning Bylaw, but vegetated stormwater practices are only specifically mentioned in the Highway Corridor Overlay District section of the Zoning Bylaws which states that “Wastewater and stormwater management systems serving the HCOD District may be located within the landscape buffer areas.”

3.0 RECOMMENDED REGULATORY UPDATES

This section includes recommended regulatory updates identified as a result of the analysis summarized in Section 2.0. The recommended language will update Tewksbury's regulatory mechanisms to meet the following goals:

- Promote efficient, compact development patterns and infill
- Promote smart designs for streets and parking lots that reduce overall impervious area and directly connected impervious area²
- Support low impact design³ options

The updates recommended in this section will be implemented in the timeframes included in Section 4.0, where feasible.

3.1 Updates to Zoning Bylaw

The following updates to the Zoning Bylaw should be considered to meet the goals outlined above:

- Update Section 4000, Dimensional Regulations, and Appendix B, Table of Dimensional Requirements, to encourage the minimization of clearing and grubbing within lots and to allow minimization of lot size, setback and frontage requirements.
- Update Section 5100, Parking and Loading Requirements, and Appendix C, Table of Parking Requirements, to establish maximum parking spaces allowed, to allow flexibility to reduce parking requirements based on street or other available parking or transit, to allow shared parking by-right, and to explicitly allow LID/ best management practices, including bioretention, in required landscape areas within parking areas.
- Update Section 5160, Design Requirements for Residential Parking Facilities and Section 5170, Design Requirements for Business or Industrial Parking Facilities, to allow common driveways by right, to allow for flexibility in reducing the minimum driveway widths for business or industrial use, and to encourage the use of permeable pavers or pavement for driveways.
- Update Section 5320, Stormwater Runoff, to encourage the use of LID features in site design and to count bioretention and other vegetated LID features towards site landscaping and open space requirements, and to require directing clean roof runoff to landscaped or naturally vegetated areas for infiltration.

² Directly connected impervious area (DCIA), or effective impervious area, is the portion of impervious cover that creates a direct conveyance of stormwater to a storm drain or waterway.

³ Low impact development (LID) is defined by EPA as a management approach and set of practices that can reduce runoff and pollutant loadings by managing stormwater runoff as close to its source(s) as possible and promoting the use of natural systems to manage stormwater by infiltration, evapotranspiration, and rainwater harvesting/reuse.

3.2 Updates to Subdivision Rules and Regulations

The following updates to the Subdivision Rules and Regulations should be considered to meet the goals outlined in Section 3.0:

- Update Section 8, Design Standards, and Appendix B-1 and B-2, to encourage the use of LID features in site design and to allow for flexibility in reducing road width and road right-of-way widths. This section should also recommend the use of alternative, permeable materials for low traffic or secondary emergency access ways and all shoulders. The single access street design standards in this section should be updated to allow minimized end radii, or alternative dead-end street designs such as hammerhead turnarounds, to explicitly allow islands and to require center landscaping with bioretention where appropriate.
- Update Section 9.4, Curbs, to state that roadside swales are preferred over closed drainage systems. This section should also be updated to explicitly allow curb cuts near landscaped areas to allow stormwater to flow into vegetated features or green infrastructure.
- Update Section 9.5, Sidewalks, Pedestrian Ways, Cross Walks and Bicycle Paths, to allow for flexibility in reducing sidewalk, cross walk and bicycle path widths, to only require sidewalks on one side of streets or ways, and to encourage use of alternative, permeable materials.

4.0 IMPLEMENTATION TIMEFRAMES FOR REGULATORY UPDATES

Under Section 2.3.6.b. of the 2016 Massachusetts MS4 Permit, the Town of Tewksbury shall implement recommended updates to their regulatory mechanisms included in this report in the timeframes outlined in this section, where feasible. The timeframes reflect the regular meeting schedule of the relevant Town departments and boards and consider any other planned updates to the regulatory mechanisms. Implementation timeframes for the recommended updates to each document are summarized in Table 4.1.

Regulatory Mechanism	Appropriate Review Board	Complete First Draft of Updates	Complete Internal Review	Present Updates to Appropriate Review Board	Adopt Proposed Changes
Zoning Bylaw	Zoning Board of Appeals	March 2023	August 2023	Fall 2023	June 2024
Subdivision Rules and Regulations	Planning Board	March 2023	August 2023	Fall 2023	June 2024

Town of Tewksbury - MS4 Permit Compliance

Street Design and Parking Lots Report Attachment A: Regulatory Review Matrix

Key Question	Zoning Bylaw		Subdivision Rules & Regulations		Storwater Bylaw/ Stormwater Management and Erosion Control Regulations		Score
	Section Reference	Language	Section Reference	Language	Section Reference	Language	
Category 1: Impervious Area Management - Streets							
Minimum residential roadway width & determinant			Appendix B-1, Horizontal Design Standards, Appendix B-2, Typical Street Cross-Section	24' Paved Surface and 22' Travel Way for Residential streets. Outside Diameter of Turnaround: 110' Right of Way and 90' Paved Surface.			Conventional
Minimum non-residential and mixed-use roadway pavement widths & determinants			Appendix B-1, Horizontal Design Standards, Appendix B-2, Typical Street Cross-Section	34' Paved Surface and 32' Travel Way for Industrial/Commercial streets. Outside Diameter of Turnaround: 120' Right of Way and 100' Paved Surface.			Conventional
Road right-of way widths			Appendix B-1, Horizontal Design Standards, Appendix B-2, Typical Street Cross-Section	60' Right of Way for Industrial/Commercial streets and 50' Right of Way for Residential streets.			Conventional
Road right-of-way allowable usage			Appendix B-1, Horizontal Design Standards, Appendix B-2, Typical Street Cross-Section	Not mentioned.			Conventional
Turnarounds for dead end streets - are various designs allowed?			Section 8, Design Standards	Single access streets shall not exceed 1,000 feet in length. There shall be no more than 40 residential dwelling units on a single access street or series of streets having only one terminus onto a through street. In a non-residential subdivision, there shall be no more than 250,000 square feet of floor area on a single access street or series of streets having only one terminus onto a through street. A cul-de-sac street turnaround shall be designed in the following way: A loop turnaround which shall be offset in relation to the street to form a 'q' whereby the street intersects with itself in a 90 degree angle. (A "lollipop" configuration is also allowed). The outside diameter shall be 90 feet in diameter from the gutter line. The sideline diameter of the loop turnaround shall provide a constant shoulder width throughout the entire street, except that at the intersection the shoulder width may vary to meet other requirements of these rules.			Conventional
Minimum/maxium cul-de-sac diameter - are islands allowed?			Section 8, Design Standards	Outside diameter of 90 feet from the gutter line. Islands are not mentioned.			Conventional
Use of curb cuts/flush curbs allowed	5173, Common Driveway in the Business or Industrial Districts	To the extent feasible, lots and parking areas shall be served by common private access ways, in order to minimize the number of curb cuts in these districts.	9.4, Curbs	Curb cuts/flush curbs are not mentioned. A continuous vertical granite curb shall be provided as an integral part of the new streets. The curbing shall conform to the Commonwealth of Massachusetts Department of Transportation Standard Specifications for Highways and Bridges and the Massachusetts Department of Transportation Construction Standard Details, as amended. Vertical Granite curbing shall include cement concrete on both the front and back faces of the vertical curb. The Board may require alternative curb materials depending on local conditions and the location and purpose of the curb.			Conventional

Town of Tewksbury - MS4 Permit Compliance

Street Design and Parking Lots Report Attachment A: Regulatory Review Matrix

Key Question	Zoning Bylaw		Subdivision Rules & Regulations		Storwater Bylaw/ Stormwater Management and Erosion Control Regulations		Score
	Section Reference	Language	Section Reference	Language	Section Reference	Language	
Category 2: Impervious Area Management - Driveways							
Required minimum driveway width	5170, Design Requirements for Business or Industrial Parking Facilities	Not specified for residential use. Driveways for business or industrial use required to be at least 24 feet wide at its narrowest point but not more than the required width for safe vehicle movements onto the adjacent roadway, without entering into the opposing lane. In the case of an access driveway, which shall be used for one-way traffic only, the minimum width may be reduced to 14 feet at its narrowest point. Interior driveways may be reduced to no less than 20 feet for two-way traffic and 14 feet for one-way traffic.					Conventional
Ability to reduce minimum driveway width	5160, Design Requirements for Residential Parking Facilities, 5170, Design Requirements for Business or Industrial Parking Facilities	No width requirement for residential use, no flexibility in driveway width for business or industrial use.					Conventional
Required front yard setback	Section 4000, Dimensional Regulations, Appendix B, Table of Dimensional Requirements	Minimum front yard setbacks for all zoning districts specified.					Conventional
Two-track design allowed?	5160, Design Requirements for Residential Parking Facilities, 5170, Design Requirements for Business or Industrial Parking Facilities	Not mentioned.					Conventional
Shared driveways allowed?	5160, Design Requirements for Residential Parking Facilities, 5173, Common Driveway in the Business or Industrial Districts	Subject to the granting of a special permit from the Planning Board, a driveway may be shared by not more than two lots. Each shared driveway shall be governed by a maintenance agreement running in perpetuity with the land. The frontage and area of such common driveway shall be in addition to the minimum frontage and area required under Section 4000. To the extent feasible, lots and parking areas shall be served by common private access ways, in order to minimize the number of curb cuts in these districts. Such common access ways shall be in conformance with the standards of the Department of Public Works. Proposed documentation (in the form of easements, covenants, or contracts) shall be submitted with the site plan demonstrating that proper maintenance, repair, and apportionment of liability for the common access way and any shared parking areas has been agreed upon by all lot owners proposing to use the common access way. Common private access ways may serve any number of adjacent parcels deemed appropriate by the Planning Board. Common private access ways shall not be wider than 24 feet at any point where it crosses required open space or any parking setback area required hereunder.					Better

Town of Tewksbury - MS4 Permit Compliance							
Street Design and Parking Lots Report Attachment A: Regulatory Review Matrix							
Key Question	Zoning Bylaw		Subdivision Rules & Regulations		Storwater Bylaw/ Stormwater Management and Erosion Control Regulations		Score
	Section Reference	Language	Section Reference	Language	Section Reference	Language	
Category 3: Impervious Area Management - Sidewalks							
Requirements for sidewalk placement (ie, are sidewalks required on both sides of the street?)			9.5, Sidewalks, Pedestrian Ways, Cross Walks and Bicycle Paths	To provide for safe pedestrian travel, sidewalks shall be required in all subdivisions on both sides of every street. A sidewalk shall be required along that portion of any existing public street upon which the subdivision has frontage			Conventional
Minium width (probably 4' for ADA compliance)			9.5, Sidewalks, Pedestrian Ways, Cross Walks and Bicycle Paths	The sidewalks shall be a minimum of five feet wide and constructed in accordance with the requirements of the Massachusetts Architectural Access Board, the typical structural cross-section (see Appendix B-2) and with the Commonwealth of Massachusetts Department of Transportation Standard Specifications for Highways and Bridges, as amended, unless the Board authorizes different design to respond to local topography or other circumstances.			Conventional
Are permeable/pervious sidewalks allowed?			9.5, Sidewalks, Pedestrian Ways, Cross Walks and Bicycle Paths	Permeable pavement not mentioned. Sidewalks shall consist of six inches of bank run gravel (or equivalent) covered with three inches of processed grading gravel. The gravel base shall be covered with a wearing surface of three inches of hot mix asphalt Class I, Type 1, bituminous concrete applied in two even courses.			Conventional
Category 4: Impervious Area Management - Parking Lots							
Current required parking ratios	Appendix C, Table of Parking Requirements	Minimum amount of parking spaces required for all categories of residential uses, exempt and institutional uses, commercial uses, and industrial uses.					Conventional
Allowable off-street parking for commercial/mixed uses?	5100, Parking and Loading Requirements, Appendix C, Table of Parking Requirements	No building or structure shall be located upon any lot and no activity shall be conducted upon any lot unless the required parking facilities are provided on site in accordance with this section.					Conventional
Off-site parking distance limit	5420, Parking and Loading Area Design and Location for Nonresidential Facilities	Parking spaces more than five hundred (500) feet from the building entrance they serve may not be counted towards fulfillment of parking requirements unless the Planning Board determines that circumstances justify this greater separation of parking from use.					Conventional
Potential to reduce parking requirements where public transportation is available?	5100, Parking and Loading Requirements	Not Mentioned.					Conventional
Other ability to reduce parking ratios?	Section 5120, Relief from Parking Regulations by Special Permit from the Planning Board, 5132, Mixed Use Requirement	In the case of mixed uses, the requirements shall be the sum of the requirement calculated separately for each area of use, so that adequate space shall be provided to accommodate the cars of all persons on the premises at any one time. Parking spaces for one use shall not be considered as providing the required spaces for any other use, except when it can be clearly demonstrated that the need for parking occurs at different times.					Better
Current required parking space dimensions	5140, Standard Car Parking Dimensional Requirements	Minimum provisions defined for standard car parking dimensional regulations for different angles of parking including width of parking stall, parking stall length of line, and width of maneuvering aisle.					Conventional

Town of Tewksbury - MS4 Permit Compliance

Street Design and Parking Lots Report Attachment A: Regulatory Review Matrix

Key Question	Zoning Bylaw		Subdivision Rules & Regulations		Storwater Bylaw/ Stormwater Management and Erosion Control Regulations		Score
	Section Reference	Language	Section Reference	Language	Section Reference	Language	
Allow for shared parking agreements	5173, Common Driveway in the Business or Industrial Districts	To the extent feasible, lots and parking areas shall be served by common private access ways, in order to minimize the number of curb cuts in these districts. Such common access ways shall be in conformance with the standards of the Department of Public Works. Proposed documentation (in the form of easements, covenants, or contracts) shall be submitted with the site plan demonstrating that proper maintenance, repair, and apportionment of liability for the common access way and any shared parking areas has been agreed upon by all lot owners proposing to use the common access way.					Better
Provide a model shared parking agreement	5100, Parking and Loading Requirements	Not mentioned.					Conventional
Current required drive aisle dimensions	5140, Standard Car Parking Dimensional Regulations, 5170, Design Requirements for Business or Industrial Parking Facilities	Minimum provisions defined for different angles of parking including width of maneuvering aisle. Interior driveways may be reduced to no less than 20 feet for two-way traffic and 14 feet for one-way traffic.					Conventional
Ability to reduce minimum drive aisle width	5140, Standard Car Parking Dimensional Regulations, 5170, Design Requirements for Business or Industrial Parking Facilities	No.					Conventional
Is the use of structural permeable pavement allowed?	5100, Parking and Loading Requirements	Not mentioned. Required parking spaces, loading areas and driveways shall be provided and maintained with suitable grading, paved surfaces and adequate drainage.					Conventional
Is spillover paving allowed to be impervious?	5100, Parking and Loading Requirements	Not Mentioned.					Conventional
Required landscaping in parking lots?	5400, Landscaping, Screening, and Buffer Requirements	Landscape buffers are required in heavy industrial districts and where business or industrial uses abut a residential district. Open space landscaping shall be maintained as open planted areas and used to (1) ensure buffers between properties, (2) provide landscaped areas between buildings, (3) minimize the visual effect of the bulk and height of buildings, structures, parking areas, lights or signs and (4) minimize the impact of the use property on land and water resources. All parking lots and loading facilities shall be suitably landscaped to minimize their visual impact on the lot and upon adjacent property by the use of existing vegetation where appropriate and by the use of new trees, shrubs, walls, fences or other landscape elements. Any parking lot with more than 40 parking spaces shall include a landscaped area(s) shall not be less in area than five (5) percent of the total area of the parking lot and shall be in addition to any minimum open space required under Section 5. Landscaped area(s) shall be provided with a minimum width of at least 10 feet, curbing and shade trees of at least 12 feet in height or such other landscaping as may be required by the Planning Board.					Better

Town of Tewksbury - MS4 Permit Compliance

Street Design and Parking Lots Report Attachment A: Regulatory Review Matrix

Key Question	Zoning Bylaw		Subdivision Rules & Regulations		Stormwater Bylaw/ Stormwater Management and Erosion Control Regulations		Score
	Section Reference	Language	Section Reference	Language	Section Reference	Language	
Category 5: Vegetation and Landscaping/Limits of Disturbance							
Are vegetated stormwater practices allowed/required to be incorporated into required landscape areas (buffer strips, landscape islands, etc)	5400, Landscaping, Screening, and Buffer Requirements, 8500, Highway Corridor Overlay District	Open space landscaping shall be maintained as open planted areas and used to (1) ensure buffers between properties, (2) provide landscaped areas between buildings, (3) minimize the visual effect of the bulk and height of buildings, structures, parking areas, lights or signs and (4) minimize the impact of the use property on land and water resources. Wastewater and stormwater management systems serving the HCOD District may be located within the landscape buffer areas.			19.120, Stormwater Management Plan	The design of treatment and infiltration practices shall follow the guidance in Volume 2 of the Massachusetts Stormwater Handbook, as amended, or other federally or State approved BMP design guidance.	Conventional
Is roof runoff required to be routed to pervious areas or dry wells?	8323, Uses and Activities Requiring a Special Permit	(Ground Water Protection District) For lots occupied, or proposed to be occupied, by single or two family residences, recharge shall be attained through site design that incorporates natural drainage patterns and vegetation in order to maintain pre-development stormwater patterns and water quality to the greatest extent possible. Stormwater runoff from rooftops, driveways and other impervious surfaces shall be routed through grassed waterquality swales, as sheet flow over lawn areas, or into constructed stormwater wetlands, sand filters, organic filters and/or similar systems capable of removing nitrogen from stormwater	9.7 Trees and other Vegetation	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 as determined by the Board. Wood chips, mulch, seeding or sodding shall be used to eliminate erosion. The Board may require or allow alternative measures for slopes equal to or greater than 3:1. All cleared areas of the street right-of-way, not to be planted with ground cover, and all disturbed areas within public easements, shall be loamed with not less than six inches depth of good quality loam and seeded with turf grass seed in accordance with good planting practice, including application of lime and fertilizer. Such areas shall be raked smoothly to allow mowing without equipment damage.			Conventional
Are maximum and minimum yard sizes in place for various uses?	Appendix B, Table of Dimensional Requirements	Minimum lot, frontage, front, side and rear yard sizeds are specified.					Conventional
Are vegetated stormwater BMPs allowed in setbacks?	5400, Landscaping, Screening, and Buffer Requirements, 8500, Highway Corridor Overlay District	Open space landscaping shall be maintained as open planted areas and used to (1) ensure buffers between properties, (2) provide landscaped areas between buildings, (3) minimize the visual effect of the bulk and height of buildings, structures, parking areas, lights or signs and (4) minimize the impact of the use property on land and water resources. Wastewater and stormwater management systems serving the HCOD District may be located within the landscape buffer areas.			19.120, Stormwater Management Plan	The design of treatment and infiltration practices shall follow the guidance in Volume 2 of the Massachusetts Stormwater Handbook, as amended, or other federally or State approved BMP design guidance.	Conventional