

New Hampshire Small MS4 Regulation Assessment Report

**Assessment of Street Design and Parking Lot Guidelines &
Implementation of Low Impact Development and Green
Infrastructure**

TOWN of DERRY

Prepared By:

Town of Derry

Department fo Public Works

14 Manning Street

Derry, NH 03038

June 2022

Introduction

Sections 2.3.6.c and 2.3.6.d requires that the Town assess current street design and parking lot guidelines and other local requirements that affect the creation of impervious cover or the implementation of low-impact development practices. The results of the assessment are documented in this report which evaluates whether appropriate reductions in impervious area and green infrastructure practices are allowable and where in the Town regulations and ordinances these are allowed and under what circumstances. The assessment also reviewed existing local regulations, zoning, and construction codes to determine whether green infrastructure practices are allowed when appropriate site conditions exist including green roofs, infiltration practices, and water harvesting devices.

Previous Assessments

The Town through its Conservation Commission reviewed alternative low impact development in 2000-2001 with the Smart Growth Committee. This was reviewed a second time in 2007-2008 with the Southern NH Planning Commission with their Alternative Roadway Design Standards Roundtable. Since the first assessment, various changes to the ordinances have been implemented that promote stormwater pollution prevention, protection of resources, and conservation of open space.

Assessment

This report was prepared by the Town of Derry Public Works with input from the following: Environmental Coordinator, Engineering Coordinator, Director of Public Works, Planning Department, and Code Enforcement Officer/Building Inspector. All comments and considerations were included in the attached table. The findings were submitted to the Derry Planning Board for their review during its June 2022 meeting. As of the preparation of this report, no comments have been received from the Planning Board and none are anticipated.

The assessment reviewed the following categories:

- Rights-of-Way – Widths, Clearing and Grubbing, Street Trees
- Utilities – Locations: under pavement vs. adjacent to pavement
- Roadways - Widths and Lengths, Density, Frontage , Alternative Street Design, Street Alignment, Pervious pavement
- Cul-de-Sacs – Dead end and connector streets, Radius, Hammerheads, Bioretention areas,
- Curbs – Requirements for curbs and/or swales
- Sidewalks – When required, pervious pavement, Pedestrian Network Layouts, Pavement Disconnection Layout
- Parking Ratios – Parking minimums, Space Sizing, On-Street versus Off-Street Parking ratios

- Parking Lots and Driveways – Parking Stall Size, Parking Lanes, Lot Landscaping Requirements and Use of Bioretention, Pervious surface for parking and driveways, Common/Shared Driveways.
- Dimensions and Density – Flexible Design for Cluster Housing and Protection of Open Space, Use of Setback Areas for Stormwater Treatment
- Wetland Bylaws and Regulations – Buffers, Prime Wetlands
- Landscaping – Use as Bioretention, Soil Compaction
- Green Infrastructure – Green Roofs, Infiltration Practices (rain gardens, pervious pavement,) Rainwater Harvesting (rain barrels)

Summary

Town of Derry ordinances and regulations allow low-impact development design options including infiltration and retention practices such as bioretention areas, rain gardens, curb extensions, and planter gardens. Developers have adequate flexibility to meet stormwater retention and control requirements through the use of certain low-impact development practices. The attached table highlights certain aspects of LID within the Town’s ordinances and regulations, how or whether the current ordinances meet certain identified published practices, and whether revisions should be made. At this time, the Town does not identify recommended changes to existing ordinances or regulations as extensive discussion has gone into the derivation of current guidelines and adequate flexibility is available during the preliminary planning stages.

- The Town of Derry follows the AASHTO Green Book Table 5-5 Minimum Width of Travel Way and Shoulders for two-Lane Local Roads in Rural Areas with consideration of truck and agricultural equipment travel. The minimum required pavement width was derived from careful considerations with public works and emergency response officials of traffic volume, on-street parking (where required), and passage of emergency vehicles and school buses.
- Being in a winter climate, road standards have been developed with guidance from the AASHTO Green Book and ensure adequate room for snow clearing, storage, and snowmelt drainage. A 50-foot right-of-way allows for a utility corridor and safe sloping.
- Derry permits a density bonus for development under specific circumstances in a certain zoning district.
- Pervious pavement has not been proven reliable for residential roads but has been permitted under certain circumstances for overflow parking or a sidewalk to meet stormwater treatment requirements. There are no restrictions for the use of pervious pavement for private driveways.
- Subdivisions with closed drainage systems may use vegetated swales for stormwater conveyance and treatment. Curbing is not required along internal edge of cul-de-sacs and the green area within may be used for stormwater treatment and bioretention.
- Minimum percentages of development and redevelopment must be landscaped. Landscape islands may be used for bioretention and stormwater treatment purposes as well as to create discontinuous impervious areas. The placement of these within parking

lots would be allowed based on site-specific conditions such as soils, depth to groundwater table or bedrock, and slope.

- Derry increased wetland buffers for Prime Wetlands improve sediment filtration and nutrient removal for stormwater and decrease potential flooding by providing additional opportunities for stormwater infiltration.
- Developers are encouraged to limit clearing within the right-of-way to the minimum necessary to construct the roadway, drainage, sidewalk, and utilities, and to maintain site lines. Under this approach, it is not required to clear and grub the entire right-of-way.
- Removing topsoil while avoiding diminishing the infiltration characteristics and avoiding compaction of soils by construction vehicles are nearly impossible to work around or avoid. In addition, these as well as restoring permeability of any soils that were impacted are impossible to enforce. It would also be unnecessary since approved subdivisions and construction projects already have to meet AOT and town stormwater retention and treatment requirements. Construction crews have been conditioned to avoid natural resource area such as streams and wetlands. To impose additional aerial restrictions would not be practical.
- Landscape buffering and tree strips are required along new streets where feasible while certain districts require a landscape plan.
- Dead-end streets and cul-de-sacs are limited on length and number of dwelling units to promote a continuation of existing streets in adjoining areas and reduce emergency response times. In one zoning district cul-de-sacs are restricted unless conducive to a harmonious village environment.

The Town's zoning ordinance attempts to maintain the rural character of the community. A significant portion of the community is residentially zoned with 3-acre minimum lot sizes which is an effective demonstration of LID principles.

Green Infrastructure

The Town does not restrict the use of Green Roofs, infiltration practices (rain gardens), water harvesting of stormwater for non-potable uses. Plumbing modifications to incorporate non-potable sources within a building's plumbing must be approved through the Building Department to ensure there are no improper cross-connections.

ASSESSMENT OF STREET DESIGN AND PARKING LOT GUIDELINES AND FEASIBILITY OF ALLOWING GREEN INFRASTRUCTURE

NPDES MS4 Community: **Derry, NH**

Street, Parking Lot, Sidewalk, Driveway, Utility Placement Standards in Subdivision and Zoning Regulations					
Right of Ways					
Y/N	Checklist Item	Location in code and any standards	Notes (shown in italics) / Example Language	Change(s) recommended	Proposed schedule to incorporate changes
N	Is the minimum right of way width less than 45 feet for a residential street? (For 500 ADT, between 33 and 36 feet?)	Section 170 Attachment 2 Table B-Table of Geometric Standards (The minimum ROW is 50 ft for Service roads with ADTV of 1000 vehicles/day.) Section 170-26 Streets	<i>The Town of Derry classifies streets into three categories, each with associated average daily traffic volumes (ADTV): Arterial, collector, and Service being the lowest ADTV of 1000 vehicles per day or fewer with a pavement width of 24 feet. Derry, NH is located in a winter climate. The road standard has been developed with guidance from the AASHTO Green Book. A 50-foot right-of-way allows for a utility corridor and safe sloping.</i>	None	None
Y	Are street cross sections provided to show how elements of a right of way might vary given different contexts?	170-26 Streets A.(13) All proposed streets in which the subbase is within four feet of the estimated seasonal high water table shall have underdrains installed in the subgrade (see Typical Roadway Cross Section for New Construction, Figure No. 1).[1] Test pits will be required along the proposed roadway at two-hundred-foot intervals to verify water table elevation. Where refusal (bedrock) is encountered a two-foot coarse sand subbase shall be placed between bedrock and the road base materials (See Figure No. 1) 170-26 Streets A.(15) All roadway construction shall conform to the Typical Roadway Cross Section for New Construction (Figure No. 1) as well as Table B, Table of Geometric Standards, attached to these regulations.	<i>Site plan requirements for new subdivision roads are required to provide cross-section drawings as well.</i>	None	None
Y	Do the regulations limit clearing and grubbing within the right-of-way to the minimum necessary?	Subdivision & Site Plan Construction Monitoring -DPW Procedures & Checklist - 2. CLEARING & GRUBBING 2.1.1. Only the areas as designated in the Alteration of Terrain Permit and approved by the TOWN shall be disturbed as part of the construction process.	<i>Developers are encouraged to limit clearing within the right-of-way to the minimum necessary to construct the roadway, drainage, sidewalk, and utilities, and to maintain site lines. Under this approach, it is not required to clear and grub the entire right-of-way.</i>	None	None
Y	Are street trees required for new streets?	165-32.4 West Running Brook District (4) Streetscape. (a) Trees. Any new development must be accompanied by a landscape plan that will address the location, suitability, and species of trees, shrubs, or other plantings within the development. In new developments, street trees shall be planted every 50 linear feet of street right-of-way. Street trees shall be planted not closer than 25 feet to one another. 170-64 Landscape and Buffering Requirements - B.Landscape standards. (1) A street tree strip, 15 feet in width, running parallel to the frontage of any nonresidential or multifamily residential property shall be provided in all zoning districts except the Central Business District and the Traditional Business Overlay District. Within any street tree strip, a minimum of one indigenous shade tree (such as oak, maple, elm, ash, linden, etc.) with a minimum caliper of 2.5 inches and branching height of not less than eight feet at the time of planting shall be provided for each 50 feet of street frontage. Street trees shall be planted not closer than 25 feet to one another.	<i>Maintaining or requiring a tree strip parallel to new streets works in concert with adequate right-of-way widths.</i>	None	None

Utilities					
Y/N	Checklist Item	Location in code and any standards	Notes (<i>shown in italics</i>) / Example Language	Change(s) recommended	Proposed schedule to incorporate changes
Y	Does the code allow utilities to be placed under the paved section of the ROW?	<p>Section 170-27 Sewers - A. Sanitary sewers and manholes shall be located at the center of the traveled lanes on the north and east sides of public right-of-way where possible.</p> <p>Section 170-28 Water Mains - A. Water main shall be located on the south and west sides of public right-of-way where possible.</p> <p>Section 170-31 Other Utilities - A. In all proposed subdivisions, electric, telephone, cable, and other utility distribution lines shall be installed underground per specifications of the utility companies involved</p>	<p><i>Utilities (electric, telephone, cable TV, fiber optic, and all other conduits) may be located under the roadway or immediately adjacent to the roadway to optimize use of the right of way area for swales and other stormwater management facilities, sidewalks, and street trees.</i></p> <p><i>In an area where water and sewer are present/available, the water main and sewer main must be 10-feet apart per NHDES regulations. Most subdivisions have underground electric/CATV conduits and drainage to also fit within right-of-way.</i></p>	None	None
Y	Does the code allow utilities to be placed immediately adjacent to the paved section of the ROW?			None	None

Roadway Widths and Lengths					
Y/N	Checklist Item	Location in code and any standards	Notes (shown in italics) / Example Language	Change(s) recommended	Proposed schedule to incorporate changes
N	Is paved roadway <u>width</u> between 18 and 22 feet in low density residential developments with no bicycle lanes present? Low density residential neighborhoods are those with less than 400 average daily trips according to AASHTO, 2001.	The Town of Derry classifies streets into three categories, each with associated average daily traffic volumes (ADTV): Arterial, collector, and Service being the lowest ADTV of 1000 vehicles per day or fewer with a pavement width of 24 feet. <ul style="list-style-type: none"> Section 170 Attachment 2 Table B-Table of Geometric Standards - The minimum ROW is 50 ft for Service roads. Section 170-26 Streets 	<i>The Town of Derry follows the AASHTO green Book Table 5-5 Minimum Width of Travel Way and Shoulders for Two-Lane Local Roads in Rural Areas with consideration of truck and agricultural equipment travel.</i> <i>The minimum required pavement width was derived from careful considerations with public works and emergency response officials of traffic volume, on-street parking (where required), and passage of emergency vehicles and school buses.</i>	None	None
N	At higher densities, are parking lanes allowed to also serve as traffic lanes (i.e., queuing streets)?	(Not specifically mentioned in regulations)	<i>This does not apply to new subdivision roads. Existing roads have a fog line which makes travel illegal.</i>	None	None
N	Are narrower pavement <u>widths</u> allowed on road sections where there are no houses, buildings, intersections, or on-street parking spaces?		<i>Being in a winter climate, road standards have been developed with guidance from the AASHTO Green Book and ensure adequate room for snow clearing, storage, and snowmelt drainage. In addition, the lack of houses, building, or intersections does not imply there will not be in the near future, which would require additional expensive and unnecessary road construction/paving.</i>	None	None
N	Are reductions in frontage distances allowable where appropriate (i.e. open space developments, around cul-de-sacs, and along outside sideline of curved streets) to increase number of homes per unit length and to minimize street length?	Frontage is determined by District <u>District</u> <u>Frontage</u> GC/GC-IV/OMB/IND-I/IND-III/IND-IV/IND-V/IND-VI/MDR - 125ft min GC-II/GC-III/ORD/LDR - 200ft min WRBD/CBG/TBOD - 50ft min NC - 200 ft min at front lot line on arterial and connector roads only) MFR/MHDR/MHDR-II (single- and 2-family dwellings) - 100ft (served by municipal water, sewer, or both) 125ft (served by community water system) MFR/MHDR/MHDR-II (more than 2 units per building) - 150ft min LMDR - 150 ft min MHPD - None	<i>Frontage is determined by district.</i>	None	None
Y&N	Are developers encouraged to explore alternative street layouts to increase the number of homes per unit length and minimize the length of the roadway?	165-32.4. West Running Brook District - H.(3) Density bonus. A density bonus of one unit per five acres shall be granted where applicants provide for full public access to community amenities, such as trails, ballfields or playgrounds. The Board may grant other density bonuses based on provisions of market-rate housing, protection of sensitive environmental resources, or the provision of other amenities. Article XIX Independent Adult Community Overlay District 165-149 Density. The total number of dwelling units permitted in any independent adult community development is based on the underlying zoning district and the total number of dwelling units that would otherwise be approved under a conventional subdivision development. The maximum permitted number of dwelling units is equal to the number of dwelling units that could be supported in a traditional subdivision of the same parcel(s) based on the provisions of the underlying base zoning district, except in areas that are serviced by both municipal water and sewer, in which case the number of dwelling units shall be equal to no more 1.5 units times the number of dwelling units that could be supported in the base underlying zoning district. 165-153 Other provisions. A. Limitation on number of independent adult community units. The Planning Board shall not accept for consideration any proposal which, if approved, would increase the total number of all independent adult units, approved since the adoption of this article, above the number representing 3% of the total number of dwelling units within the Town as determined by the Tax Assessor.	<i>Density bonus allowed under specific circumstances and applies for site plans.</i>		

N	Can permeable paving be used for residential roads, shoulders, and parking lanes?	<p>170 Attachment 2 TABLE B – TABLE OF GEOMETRIC STANDARDS</p> <p>10. Pavement (See Figure 1)</p> <p>g. Minimum bituminous pavement thickness (concrete base course) - 2.5"</p> <p>h. Minimum bituminous pavement thickness (concrete wearing course) - 1.5"</p>	<p><i>Town ordinances require solid bituminous pavement. Permeable pavement has not proven to be reliable for residential roads. The Town has allowed permeable paving on private commercial property (Overlook Medical Park) for an overflow parking lot, limited parking spaces (Bank at Peppermint Corner), as well as a sidewalk to meet stormwater treatment requirements.</i></p>	None	None
Y	Do alignments specify: Streets ought to be located in order to protect important natural features, avoiding low areas and steep slopes in particular?	<p>Article XIX Independent Adult Community Overlay District- 165-145 - A (2) To encourage innovations in residential developments so that the growing demand for housing may be met by a greater variety in type, design and layout of dwellings, while conserving open space within such a development. A.(4) To encourage flexibility in site planning which will respect and conserve natural resources, such as streams, ponds, floodplains, wooded areas, steep slopes, and other areas of significant beauty or importance to the environment.</p> <p>Article VI District Provisions 165-32.4. West Running Brook District - I(1)(a) Overall form. Areas of new construction shall be sited so as to best preserve natural vistas and existing topography. [1] In all areas, peripheral greenbelt open space shall be designed to follow the natural features whenever possible and to maintain an agricultural, woodland, or countryside character.</p> <p>I(1)(b) Village layout. [1] Overall layout. Villages shall be designed in a pattern of interconnecting streets and alleys, defined by buildings, street furniture, landscaping, pedestrianways, and sidewalks. The layout should be suited to the existing topography and other natural features of the area to minimize cut and fill and grading throughout the site.</p>	<p><i>In most cases, cut/fills are required to reduce steep slopes. The Town follows the AASHTO Green Book geometric standards.</i></p>	None	None

Cul-de-Sacs

Y/N	Checklist Item	Location in code and any standards	Notes (shown in italics) / Example Language	Change(s) recommended	Proposed schedule to incorporate changes
Y & N	Are dead ends discouraged by the regulations? (e.g. by encouraging or requiring connected streets or one-way loop streets)?	<p>Section 170-26 A.(5) The arrangement of streets in a proposed subdivision shall, in the discretion of the Planning Board, provide for the continuation of existing streets in adjoining areas and for their proper projection when adjoining land is developed in the future.</p> <p>Section 170-26 A.6. All streets in a proposed subdivision shall be designed that, in the opinion of the Planning Board, they will provide safe vehicular traffic while discouraging movement of through traffic, unless this condition is deemed desirable at a given location by the Board.</p> <p>Section 176-26 B.5. Single access cul-de-sac streets shall not contain more than 30 dwelling units nor be longer than 2,000 feet as measured from the center line of the nearest through street to the center-line radius point of the cul-de-sac. The geometry of proposed culs-de-sac shall conform to the Table of Geometric Standards attached herewith (Table B)</p> <p>Section 165-32.4 West Running Brook District I.(2) Street and sidewalk network. (d) Culs-de-sac. Culs-de-sac are prohibited, unless conducive to a harmonious village</p> <p>Article XIX Independent Adult Community Overlay District Section 165-45</p> <ul style="list-style-type: none"> o A.(2) To encourage innovations in residential developments so that the growing demand for housing may be met by a greater variety in type, design and layout of dwellings, while conserving open space within such a development. o A.(3) To recognize that developments housing older persons typically generate lower average rates of vehicular traffic. 	<p><i>Dead-end streets are discouraged as connectivity is preferred/promoted. An applicant 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 connected road network is of great importance to functioning and efficient road network, reducing response time for public safety officials.</i></p>	None	None
				None	None
Y	Are landscaped/bioretenion islands allowed in the center of cul-de-sacs? If curbing for cul-de-sacs is required, is it allowed to be perforated or notched to enable the flow of stormwater into the island area?	Section 170-26 A.14 Granite curbing shall not be required along the internal edge of cul-de-sac, but the green area within the circle shall be graded two percent (+2%) from the edge of pavement to the center of the cul-de-sac.		None	None
N	Is minimum required radius for a cul-de-sac set for LID purposes?	<p>Section 170 Attachment 2 Table B</p> <p>5.b. Minimum radius of right-of-way at closed end - 75'</p> <p>5.c. Minimum radius of pavement at closed end - 62'</p>	<p><i>The minimum required pavement width was derived from careful considerations with planning, public works, and emergency response officials of traffic volume, on-street parking (where required), and passage of delivery vehicles, emergency vehicles, and school buses.</i></p>	None	None
N	Are alternative turnarounds such as hammerhead allowed on short streets in low density residential developments?		<p><i>Hammerheads are not allowed for Town accepted subdivisions. They are possible in limited circumstances for Adult Overlay District.</i></p>	None	None

Curbs					
Y/N	Checklist Item	Location in code and any standards	Notes (<i>shown in italics</i>) / Example Language	Change(s) recommended	Proposed schedule to incorporate changes
Y&N	Do street standards allow for LID stormwater management approaches (i.e. swales or other such BMPs instead of curb and gutter)? Or are curbs and gutters REQUIRED improvements? Where curbs are necessary/required, are curb cuts/perforated curbs that allow runoff into swales or other stormwater BMPs allowed?	170-26 Streets A.14. Vertical granite curbing shall be required on all new roadways, together with a closed drainage system except where it is impractical or impossible to comply with State of New Hampshire requirements concerning stormwater treatment and discharge, or in areas where the Derry Planning Board prefers an uncurbed typical section. Granite curbing shall not be required along the internal edge of culs-de-sac, but the green area within the circle shall be graded two percent (+2%) from the edge of pavement to the center of the cul-de-sac.	<i>Subdivision roads require a closed drainage system. However, some designs pipe stormwater to vegetated swales for conveyance and stormwater treatment purposes. Site plans incorporate granite or bituminous curbs where necessary.</i>	None	None
Y	Does the town have criteria for design of roadside swales?	170-65 H. All open ditches and swales shall be designed to have a maximum flow velocity of 10 feet per second. All open ditches and swales shall be designed in accordance with Design of Stable Channels With Flexible Linings, Hydraulic Engineering Circular No. 15, published by the United States Department of Transportation, October 1975	<i>As applicable, the NHDES Alteration of Terrain (AOT) permit addresses requirements and criteria for road side swales.</i>	None	None

Sidewalks					
Y/N	Checklist Item	Location in code and any standards	Notes (shown in italics) / Example Language	Change(s) recommended	Proposed schedule to incorporate changes
N	In lower density residential contexts, are sidewalks allowed on just one side of a street? (As opposed to always required on <u>both</u> sides of residential streets.)	<p>Sidewalks are required under certain conditions including the following:</p> <p>Section 170-26 A.9 - Sidewalks shall be required in a subdivision when the average lot size is less than 43,560 square feet.</p> <p>Section 170-26 A.10. Where necessary, in the judgment of the Planning Board, sidewalks and/or rights-of-way (ROW) for pedestrian travel and access may be required in subdivisions when the average lot size is one acre or larger, between subdivisions, or between a subdivision and public property.</p> <p>Section 170-62 A.5. Sidewalks shall be constructed or maintained along the frontage of nonresidential or multifamily sites at locations where the Town of Derry or NHDOT presently maintains sidewalks, where construction of such walks is planned in the future, and at other locations where directed by the Planning Board.</p> <p>Section 165-32.4 West Running Brook District I.(2) Street and sidewalk network. (a) Sidewalks. Sidewalks are required along all road frontages of new development. The width of the sidewalk shall be consistent with the prevailing pattern in the immediate neighborhood, provided that no new sidewalk shall be less than four feet wide.</p>	<i>Low density neighborhoods will likely not have a sidewalk as they cannot meet up with an existing sidewalk network. BY not requiring sidewalk in these situations, the town reduces impermeable area as recommended under LID criteria.</i>	None	None
N	Is permeable paving allowed for sidewalks?	<p>Section 170-26 A.9. Sidewalks shall be required in a subdivision when the average lot size is less than 43,560 square feet. The sidewalk shall be five feet wide minimum with a six-inch crushed gravel base and a two-inch binder course overlaid with a one-inch finish course of hot bituminous concrete pavement. All sidewalk construction shall conform to the requirements of the Americans with Disabilities Act.</p> <p>170 Attachment 2 TABLE B – TABLE OF GEOMETRIC STANDARDS 12. Sidewalks (where required)</p> <p>a. Minimum width 5'</p> <p>b. Minimum gravel base course 6"</p> <p>c. Minimum bituminous concrete surface 3"</p>	<i>Permeable paving has been used only once for a State Right-Of-Way (Manchester Road). Permeable pavement sidewalks are otherwise not permitted.</i>	None	None
Y	Are alternative pedestrian network layouts allowed (rather than placement in ROW)?	<p>Section 165-32.4 West Running Brook District I.(1)(b) Village layout.</p> <p>-[1] Overall layout. Villages shall be designed in a pattern of interconnecting streets and alleys, defined by buildings, street furniture, landscaping, pedestrian ways, and sidewalks. The layout should be suited to the existing topography and other natural features of the area to minimize cut and fill and grading throughout the site.</p> <p>-[2] Pedestrian connections. No less than one eight-foot pedestrian alley or way must be provided for every 250 feet of street frontage in retail areas, connecting with rear parking lots.</p> <p>I.(3) Pedestrian and bicycle access. (a) Connections between uses. Pedestrian and bicycle connections between mixed use development and residential areas are required.</p>	<i>Proposed subdivision proposals within WRB District are utilizing alternate off-street paths.</i>	None	None
N	Is sidewalk width standard set for LID purposes?	<p>165-32.4. West Running Brook District - I (2) Street and sidewalk network.</p> <p>(a) Sidewalks. Sidewalks are required along all road frontages of new development. The width of the sidewalk shall be consistent with the prevailing pattern in the immediate neighborhood, provided that no new sidewalk shall be less than four feet wide.</p> <p>170 Attachment 2 TABLE B – TABLE OF GEOMETRIC STANDARDS 12. Sidewalks (where required)</p> <p>a. Minimum width 5'</p>	<i>All new sidewalks are required to be 5-feet wide for snow removal operations. While the suggested LID standard = 4 feet or less, it is only permitted to remain at 4 feet where appropriate.</i>	None	None
Y	Where curb and gutter streets are required for stormwater drainage, are sidewalks allowed to be disconnected from the stormwater drainage system?		<i>Guidelines suggest grading of impervious sidewalk surfaces should be done so as to direct stormwater runoff to bioretention areas or other such facilities to eliminate or keep flow out of the municipal storm drain system.</i>	None	None

Parking Ratios

Y/N	Checklist Item	Location in code and any standards	Notes (shown in italics) / Example Language	Change(s) recommended	Proposed schedule to incorporate changes
N	Are parking maximums used in any instances (to prevent too much parking)?		<p><i>Generally, developers are attempting to meet minimums for parking density set forth in the Land Development Control Regulations. With Covid skewing traditional retail shopping, it may be an opportunity for the Planning Board to review parking lot minimum requirements for all classes of development.</i></p> <p><i>Establishing maximum may not be necessary. Parking reductions could be allowed for factors such as: mixed land uses, access to alternative transportation, and demographics. Flexibility is a key component to providing adequate but not excessive parking.</i></p>	None	None
Y	Does zoning require <u>more than</u> 3 off street parking spaces per 1,000 sq. ft. of gross floor area for office uses?	Section 170-63 C.4.(s) Office: one space per 300 feet of gross floor area *(equals 3-1/3 space per 1000 sq ft)			
N	Does zoning require <u>more than</u> 4.5 off street parking spaces per 1,000 sq. ft. of gross floor area for shopping centers?	Section 170-63 C.4.(g) Retail store, shopping center, supermarket, grocery store or bank: one space for each 300 square feet of gross floor area *(equals 3-1/3 space per 1000 sq ft)			
Y	Does zoning vary parking requirement by zone to reflect places where more trips are on foot or by transit?	Section 170-63 - A.(4) Required off-street parking facilities shall be provided on the same lot as the principal use or uses they are intended to serve except within the Central Business District and the Traditional Business Overlay District. Within the CBD and TBOD parking may be met with a combination of both public and private on-			
Y	Does zoning have reduced off-street parking requirements for its downtown zoning district?	and off-street parking.			
Y	Does zoning allow reduced parking requirements for properties within walking distance to multiple services?	Section 170-63 - B. A parking plan shall be developed for each property proposed for multifamily development in the Traditional Business Overlay District, and the parking plan shall be submitted as part of the conceptual discussion with the Planning Board. The expected demand on parking spaces may be modified based on the unique characteristics of the individual structure or use and the characteristics of mixed uses which operate at different times during the day. The plan shall identify how the expected parking demand can be met utilizing on-site surface parking,			
Y	Does zoning have lower parking requirements for properties in the more densely developed residential districts?	parking to be made available within the building, public parking available in on-street spaces, or in parking garages or parking lots. The parking analysis may also consider the availability of public or private satellite parking structures.			
Y	Does zoning require <u>more than</u> 2 off-street parking spaces per residential unit?	Section 170-63 Parking Requirements C.4. Parking density requirements by use: (a) Multifamily dwellings, including independent adult communities: 1.5 spaces per bedroom with a minimum of two spaces per dwelling unit. In the TBOD, parking for multifamily shall be one space per bedroom, with a minimum of 1.5 spaces per dwelling unit.[Amended 2-21-2007; 3-4-2015; 5-6-2015; 4-7-2021] (b) Elderly housing: 1.5 spaces per dwelling unit.	<i>Dependent on Zoning District</i>		
Y	Does zoning require 2 off-street parking spaces per residential unit?	Article XIX Independent Adult Community Overlay District 165-145 - H. A minimum of two parking spaces shall be provided for each dwelling unit within the proposed development			

Parking Lots and Driveways

Y/N	Checklist Item	Location in code and any standards	Notes (shown in italics) / Example Language	Change(s) recommended	Proposed schedule to incorporate changes
N	Is requirement for standard parking lot stall consistent with LID purposes?	170-63 Parking Requirements D. Dimensional requirements. (1) Standard parking spaces shall be a minimum of nine feet wide by twenty feet long. [Amended 5-6-2015] (2) Handicapped parking spaces shall conform to the dimensional requirements of the ADA.	<i>LID Standard = 9 feet or less by 18 feet or less. The Town will stay with the current standard.</i>	None	None
N	Is requirement for drive lane width consistent with LID purposes?	170-63 Parking Requirements D. Dimensional requirements. (3) Two-way parking aisles shall be a minimum of 24 feet wide. One-way parking aisles shall be a minimum of 18 feet wide.	<i>LID Standard = 9 feet wide for one lane / 18 feet wide for two lanes. The Town will stay with the current standard</i>	None	None
Y	Is there a minimum percentage of a parking lot required to be landscaped?	170-63 A. (6) A curbed, raised and landscaped island, a minimum of 15 feet in width, shall be provided where parking spaces, service or delivery aisles, interior access drives, aisles and vehicular accessways abut a public street in all zoning districts of the Town of Derry except within the Central Business District and Traditional Business Overlay District. [Amended 3-28-2007; 5-6-2015] (7) A curbed, raised and landscaped island, a minimum of 10 feet in width, shall be provided between groupings of 20 or more parking spaces in all zoning districts within the Town of Derry. (8) A minimum of 5% of the interior area of any proposed parking area and aisles shall be provided as interior landscaped green space in all parking lots containing more than 20 parking spaces. [Amended 3-28-2007]	<i>In addition, the town requires a percentage of the buildable parcel to be landscape as opposed to just a percentage of the parking lot.</i>	None	None
Y	Do landscaping requirements for parking areas <u>allow</u> for vegetated areas with bioretention functions?	(not specifically restricted)	<i>Although 170-63 states landscaped islands must be raised, the Town allows them to be used for bioretention to meet stormwater retention and treatment requirements.</i>	None	None
Y/N	Is the use of pervious surfacing materials <u>allowed</u> for parking stalls, spillover parking areas, shoulders, etc.?		<i>Pervious pavement are not specifically allowed by regulation and have not been successful due to winter maintenance requirements. In two limited situations, pervious surface materials were allowed for an overflow parking area (Overlook Medical Park) and limited parking spaces (Bank) to meet stormwater management requirements.</i>		
Y	Are pervious materials for single family driveways (porous pavers, paving stones, pervious asphalt or concrete), and/or use of two-track design for residential driveways allowed?		<i>There are no restrictions on driveway materials once outside the Right-of-Way.</i>	None	None
Y	Does zoning allow for common or shared driveways ?	Article XI Design and Construction Standards Section 170-62 A.1. Common driveways may be permitted for up to three building units. Article XIX Independent Adult Community Overlay District 165-150 J. Common driveways for two to three dwelling units are permitted.		None	None

Dimensions and Density

Y/N	Checklist Item	Location in code and any standards	Notes (<i>shown in italics</i>) / Example Language	Change(s) recommended	Proposed schedule to incorporate changes
Y	Are there any special districts or flexible design opportunities that enable clustering of buildings and greater protection of open space areas on a site?	165-32.4 West Running Brook District I. Design standards for all areas. (1)(a) Overall form. Areas of new construction shall be sited so as to best preserve natural vistas and existing topography. -[1] In all areas, peripheral greenbelt open space shall be designed to follow the natural features whenever possible and to maintain an agricultural, woodland, or countryside character. -[2] The village shall be distinguished from the peripheral, greenbelt open space by a well-defined line or edge so that developed areas will transition very quickly to rural, undeveloped lands. (4)(b) Buffer zones. A vegetated buffer of at least 100 feet shall be provided between residential areas and adjacent zones. (4)(c) Public space. Each retail area shall contain one or more public spaces, such as a green, pocket park, gazebo, or picnic area. These spaces should be designed to encourage community interaction.	<i>The Town's current zoning allows for flexible development to utilizing LID site design strategies for conserving natural hydrologic functions and reducing impervious surfaces for preventing runoff. Recent Oakwood Development on Tsienneto Road avoided impact to open space areas.</i>	None	None
		165-38 Manufactured Housing Park District E.(1) Standards for parks. (c) At least 10% of the total park area, exclusive of the interior access drives, private roads, unit spaces, and utility and service areas, shall be reserved for recreation and open space purposes for the exclusive use of the residents thereof. Recreation areas shall be enclosed by appropriate fencing to protect children from streets, access drives and parking areas. Land designated for recreation and open space purposes shall be approved by the Planning Board as being suitable for the intended use. [Amended 6-5-2007]			
Y	Is the use of bioretention and other stormwater practices allowed in setback areas?	(No restrictions identified against it.)	<i>NHDES Alteration of Terrain regulations for large disturbances encourage bioretention and other environmental treatments of similar nature. The placement of bioretention areas, rain gardens, filter strips, swales, and constructed wetlands within required setback areas for front, rear, and side yards would be allowed based on site-specific conditions such as soils, depth to groundwater table and slope.</i>	None	None

Wetlands Bylaw and Regulations

Y	Do regulations increase the required buffer above beyond what is required by the Wetlands Protection Act and/or establish more protective standards for buffer zones?	<p>165-75. By the authority granted in RSA 674:16-17 and 674:20-21, and in the interest of public health, convenience, safety, and the general welfare, the Wetlands Conservation Overlay District is established in order to regulate the use of land areas subject to extended periods of high water table, flooding, or standing water. It is the intent of this district to:</p> <p>A. Prevent the development of structures or other land uses on naturally occurring wetlands which would contribute to the pollution of surface water and groundwater.</p> <p>B. Prevent the alteration of natural wetlands which provide flood protection, recharge of groundwater supply, or augmentation of stream flow during dry periods.</p> <p>E. Create an undisturbed and natural buffer to the prime wetlands.</p> <p>F. Protect unique and unusual natural areas.</p> <p>G. Protect wildlife habitats and maintain ecological balances.</p> <p>165-77 PRIME WETLANDS BUFFER ZONE That area extending 150 feet beyond the boundary of each prime wetland as defined above.</p> <p>165-80 [7] Any special exception granted shall not disturb the 75 feet of the prime wetlands buffer zone nearest the prime wetland</p> <p>165-18 Waste disposal systems near wetlands. No waste disposal systems shall be located closer than 75 feet to any wetland.</p> <p>165-20 Wetland setbacks. A. No buildings shall be located closer than 75 feet to any wetland one acre or larger in size, and no building shall be located closer than 30 feet to any wetland less than one acre in size.</p>	<p><i>(Increased for Prime Wetlands) Increased wetland buffer zones improve sediment filtration and nutrient removal from stormwater, and decrease potential flooding by providing additional opportunities for stormwater infiltration. However, the wetlands protection regulations do not include performance standards for the buffer zone, and not all resource areas are afforded a buffer zone under the definitions of wetlands protection regulations.</i></p>	None	None
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Landscaping

Y/N	Checklist Item	Location in code and any standards	Notes (shown in italics) / Example Language	Change(s) recommended	Proposed schedule to incorporate changes
Y	Is the use of bioretention and other stormwater practices allowed within landscaped areas for parking lots (versus requirement for curb and gutter management of stormwater)?	Bioretention and other stormwater practices within landscaped areas is allowed to meet stormwater retention and treatment requirements.	<p><i>NHDES Alteration of Terrain regulations for large disturbances encourages bioretention and other stormwater treatment practices of similar nature. The placement of these within parking lots would be allowed based on site-specific conditions such as soils, depth to groundwater table and slope.</i></p> <p><i>Guidelines suggest edging and curbing in parking lots be notched or perforated to allow stormwater flows into infiltration and bioretention areas. For larger parking lots, parking rows may be separated with planting strips that function to manage stormwater.</i></p>	None	None
			<p><i>note : Suggested standards on ensuring soil permeability below serve best under standards required for a stormwater management permit/and, but they may also be appropriate under zoning bylaw/ordinance - site plan review for projects that do not trigger stormwater permit requirements.</i></p>		
N	Is it clear that topsoil removal from the site should not diminish the infiltration characteristics of the site?		<p><i>Removing topsoil while avoiding diminishing the infiltration characteristics and avoiding compaction of soils by construction vehicles are nearly impossible to work around or avoid. In addition, these as well as restoring permeability of any soils that were impacted are impossible to enforce. It would also be unnecessary since approved subdivisions and construction projects already have to meet AOT and town stormwater retention and treatment requirements.</i></p>	None	None
N	Is there any mention of avoiding compaction of soils by construction vehicles and restoring permeability of soils for infiltration if compacted?		<p><i>Construction crews have been conditioned to avoid natural resource area such as streams and wetlands. To impose additional special restrictions would not be practical.</i></p>	None	None

Green Infrastructure Feasibility

Y/N	Checklist Item	Location in code and any standards	Notes (shown in italics)	Change(s) recommended	Proposed schedule to
	Are the following practices allowable when appropriate site conditions exist:				
Y	Green roofs	No Restriction Identified	<i>Green roofs are particularly appropriate for structures with a wide roof area, and typically are installed on flat or low angle rooftops.</i>	None	None
Y	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	No Restrictions w/exception of pervious pavement which is not allowed for streets and typically not for parking lots or sidewalks.	<i>Rain gardens, also referred to as bioretention areas, use soil, plants and microbes to treat stormwater before it is infiltrated or discharged, and function effectively on small sites or on large sites divided into multiple small drainages. Common applications include parking lot islands, median strips, and traffic islands.</i>	None	None
			<i>Porous/pervious paving may be appropriate for pedestrian-only areas and for low-volume, low-speed areas such as overflow parking areas, residential driveways, alleys, and parking stalls. If the underlying soils have a permeability of less than 0.3" per hour, use of an underdrain would be required. Permeable paving is not ideal for high traffic/high speed areas because it generally has lower load-bearing capacity than conventional pavement.</i>	None	None
			<i>Allow for bioretention areas or other vegetated stormwater facilities within treebelt areas and to count toward other required landscaping features, including site, parking or perimeter screening. This creates areas that function on aesthetics and stormwater management levels.</i>		
Y	Water harvesting devices such as rain barrels and cisterns, and the use of stormwater for non-potable uses	No Restriction Identified	<i>Cisterns and rain barrels are used to store rooftop runoff for later use for landscaping and other non-potable uses such as car washing. Under some circumstances, water stored in cisterns is even used in some cases for toilet flushing and/or irrigation of planters within buildings. Cisterns and rain barrels can be used in most commercial and residential properties where rooftop runoff is directed to a gutter and downspout.</i>	None	None
N	If yes, are there developer incentives for utilizing green infrastructure practices?			None	None

Local Building / Plumbing Codes

Y	Do local building codes allow the use of permeable paving, narrow driveways, green roofs or other LID techniques?	No Restrictions on private property.		None	None
Y	Do local plumbing codes allow the use of harvested rainwater for interior non-potable uses such as toilet flushing?	Subject to strict plumbing and health codes to ensure no cross-connections.		None	None

Bioretention Facility	Bioretention facilities (also known as rain gardens) are landscaped depressions designed with soils and a variety of plants to receive and treat stormwater through the use of natural processes. These natural processes include the uptake of water by plants and transfer of water to the atmosphere, and infiltration (or soaking up) of water into the soils where microbial action helps to breakdown pollutants and gravity pulls water further down through the soil layers to recharge groundwater
Green Roofs	Green roofs decrease greenhouse gas emissions caused by heating and cooling systems by making buildings more energy efficient through
Rainwater Harvesting (rain barrels, cisterns)	Rainwater harvesting is a means to capture runoff from rooftops and store it for non-potable uses such as irrigation and greywater plumbing. In addition to reducing the demand on public water supplies by replacing potable water with rainwater, rainwater harvesting can reduce peak stormwater flows, potentially reducing combined sewer overflows and other pollution associated with stormwater runoff.
Porous Pavement	With roads and parking lots accounting for a high percentage of impervious surface, porous asphalt can be an ideal Best Management Practice in the right location. It essentially eliminates the impervious surface that would otherwise be created. Porous asphalt uses a standard asphalt mix with no sand or fines and a polymer binder to provide strength and stability. The void spaces of this mixture allows rain and snowmelt to pass through to a subbase of stone aggregate that both supports the asphalt layer and provides storage for and treatment of rainfall or snowmelt.