
SITE PLANNING



INTRODUCTION

Each property within the Raymond Commercial District has its own unique set of opportunities and constraints. Site planning should be based upon a careful understanding of the site in order to develop environmentally sound plans that will improve the functionality, safety, and visual character of the district.

From any vantage point – car, pathway, or nearby neighborhoods – the commercial corridor should be an attractive, inviting place.

Site Planning Goals

- Distinctive, attractive gateways that welcome people to Raymond.
- Quality development that reflects the uniqueness of each property and reinforces Raymond’s sense of place and character.
- An attractive, safe, and functional environment that is conducive to commerce and other permitted activities.
- Encourage all forms of transportation within the commercial district by providing safe, attractive, and universally accessible facilities.
- Open space throughout the commercial area to enhance its appearance and support pedestrian use.
- Quality redevelopment of transitional or substandard properties.
- Protection for abutting residential properties through sensitive site planning, buffering, and architectural design.
- Upgrading the visual character and pedestrian scale of the commercial district by appropriate design standards for architecture, site planning, signage, landscaping, and lighting.
- Maintain efficient traffic flow and high levels of safety.

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OBJECTIVES

Good site planning results in an attractive, safe, and economically viable relationship between buildings, parking, signage, lighting, landscape, and the surrounding environment. Site plans should minimize the negative visual effects of unbroken parking lots, feature high-quality landscaping, accommodate pedestrian movement, and encourage appropriate connections to adjacent properties.



Typical commercial development lacking in scale, landscaping and pedestrian amenity. Parking lots are dominant visual elements.



New development with parking on the side, extensive landscaping, preserved trees, and building relatively near the street,



A new mixed use building with parking and entrances in the rear.

DESIGN GUIDELINES

Locations of Buildings and Parking. Locate buildings along major roadways as close to the front property line as allowed by the Land Use Ordinance to establish a visual edge to the street and give scale and interest to the pedestrian environment. In cases where new structures are being proposed, locate parking at the rear or side of the building.

Relationships to Residential Properties. Avoid facing residential neighborhoods with service areas, parking lots, outdoor storage yards, and other similar features in commercial developments. In cases where these features must face residential properties, install a buffer at least 6 feet in height. A minimum width of twenty-five (25) feet is required by the Land Use Ordinance to provide for an adequate area for the installation and maintenance of the landscaped buffer. The adequacy of these requirements should be reviewed by the Planning Board.

Connector Roads. New development located along connector roads should follow a neighborhood pattern. Design connector roads to serve local traffic for all forms of transportation and provide access to new development. New roads should not be designed as high-speed bypasses around existing roadways. Right of way improvements on connector roads should include on-street parking where appropriate, granite curbing, landscaped esplanades, and paved sidewalks. Extend walkways from the building facade to the sidewalk.

Entranceways. Orient the main building entrance(s) to the public street. Design entries as significant architectural features. See **Architecture** for additional standards on entranceways.

Visibility. Maintain minimum sight distance, as required by the Land Use Ordinance, along roadways to allow drivers time to react, read and respond to signage, and make other decisions.

Buildings in Existing Parking Lots. The development of smaller commercial buildings on out-parcels in existing large parking areas is strongly encouraged.

Corner Locations. Corner locations are particularly important because they are visible from two separate streets and are a focal point for pedestrian activity. Design corner buildings with elements of pedestrian interest facing both streets. (See **Architecture**.) Corner lots should not be used exclusively for parking.

Buffers. Use plant materials, berms, fences, and other landscape elements to create suitable buffers between residential and commercial properties. Buffers should present an attractive appearance from both commercial and residential viewpoints.

Pedestrian Use Areas. Design the area between the front of the building and the roadway to encourage pedestrian use. This applies to both the east side of Route 302, where there is an existing walkway, as well as other locations where walkways may be constructed in the future. Where appropriate, include features such as outdoor dining areas, street-side gardens, and sitting areas. Where sidewalks are not present, the site design should be able to accommodate future walkways.

Links to the Community. Preserve or create linkages with surrounding buildings, neighborhoods, and other parts of the community as part of the site planning process. In designing these facilities, consider pedestrian access, views, noise, traffic, security, lighting, the privacy of abutting commercial or residential neighbors, and other factors relating to the safety and welfare of the user.

Existing Trees/Shrubs. Preserve existing healthy trees and shrubs where possible (or transplant specimens to another area of the site where practical) to maintain the character of the landscape. (See Landscape.)

Impervious Surfaces. Scale the area of paved surfaces needed for parking, driveways, service areas, and similar functions to the building size according to the land use ordinances. Maximize the percentage of the site devoted to green space.

Visibility. Minimum safe sight distance, as defined under local ordinance and, in cases where required, as



This new corner building provides both streets with attractive facades. Setbacks allow room for sitting areas.

defined by the Maine Department of Transportation, should be maintained along roadways to allow drivers time to react to pedestrians, read and respond to signage, and make other decisions.

Quality. Long-term durability and appearance of all site and architectural improvements should be an important consideration. Construction methods should comply with current industry standards, applicable building codes, and the land use ordinances.

Sustainability. Site plans should adhere to the principle of Low Impact Development (strategies designed to mimic natural hydrologic function by reducing stormwater runoff and increasing groundwater recharge and pollutant treatment) for the treatment of stormwater runoff, protection of the underlying aquifer, and protection of the environment to the maximum extent possible.

Shared Driveways. Shared driveways along Routes 302 should be installed where feasible to reduce the number of curb cuts and provide a safer vehicular and pedestrian environment.

Internal Vehicle Connections. Wherever possible, provide connections between abutting properties to facilitate deliveries and minimize turning movements onto the highway. Internal connections should be designed by a traffic engineer to provide safe, direct access between adjacent lots. Cross easements should be provided as required. Traffic calming measures – such as speed tables, well-marked crosswalks, raised crosswalks, vertical curbing, curvilinear road alignment, neckdowns, curbed islands, and signage – are encouraged to reduce speeding on internal connections.

Outdoor Sales and Storage. Areas designated for outdoor sales, storage, or service should be designed as an integral part of the site and architectural plan.



This office complex offers a variety of exterior spaces and relates well to surrounding residential areas through attention to design, scale, and details.



Mass plantings can be used to separate pedestrian paths from parking areas and add continuity to the site plan. Existing trees were preserved to shade the parking area and add scale to the building. .



This curbed, landscaped island divides entering and exiting traffic. The identification sign is located away from the intersection to avoid interfering with the motorists' line of sight.



A site plan for this bank responds to specific conditions on the property, creating functional, human-scaled spaces.



The number of curb cuts and the relatively steep cross-slopes on sidewalks create an unsafe/uninviting environment for the pedestrian and wheelchair user.

OBJECTIVES

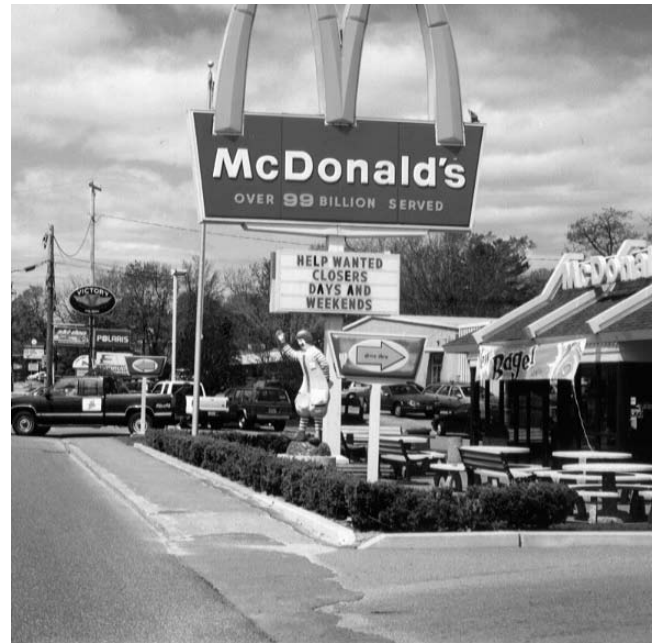
Pedestrian spaces can provide opportunities for socialization and recreation, while creating a stronger identity for Raymond’s commercial district. Open spaces can include ecologically sensitive lands, small public plazas, common greens, stands of significant trees, and pedestrian facilities.

DESIGN GUIDELINES

Building Entrances. Design building entrances to welcome the pedestrian and provide places of comfort and enjoyment. Outdoor spaces for a variety of uses – rest areas, dining, displays, and aesthetic enhancement – that will create a more pleasing pedestrian environment are strongly encouraged.

Site Furnishings. The use of site furnishings – benches, waste receptacles, bike racks, planters, bollards, clocks – to create functional, attractive outdoor areas is strongly encouraged. Where they are used, site furnishings should be designed to complement the architecture in terms of color, texture, form, and style. All furnishings should be designed for low maintenance and suitability for outdoor installations.

Artwork. The use of freestanding sculpture, wall murals, fountains, special benches, or other forms of artwork is encouraged to add visual interest to the pedestrian environment.



This outdoor eating area is separated from traffic by a subtle grade change and a hedge. However, advertising features such as these visually overwhelm the space and are strongly discouraged in Raymond. .

Outdoor Activity Areas. Provide inviting outdoor spaces for people to sit, relax, and socialize where appropriate for commercial buildings with footprints in excess of 15,000 SF. Design open spaces as outdoor rooms, with consideration to ground surfaces, landscaping, lighting, and site furnishings.



Location and Design. Where outdoor spaces are proposed, they should be developed in highly visible locations. The design of such spaces should consider the number of users, traffic patterns, maintenance, and the physical requirements of the space.

The site development around this garden center provides a welcoming entrance and encourages



A semi-public garden that provides a place for people to sit, relax, and socialize. The detailing echoes the traditional materials found in nearby buildings.



This small public plaza provides an interesting internal focus for a multi-building site. The wooden decking and traditional building materials complement each other in scale and texture.



A small garden and sitting area that enriches a multi-purpose pathway. Careful consideration has been given to the materials, landscaping, and furnishings to create a durable, attractive public landscape.



An informal dining area in front of a restaurant provides shade and enclosure in an attractive setting.



Simple sidewalk seating areas frame a significant view and provide a rest area for pedestrians. The steep bank on the left has been planted with perennials for a colorful, low-maintenance groundcover.

OBJECTIVES

Facilities for pedestrians and cyclists are envisioned throughout the Raymond commercial district. Existing and proposed road corridors should include sidewalks, crosswalks, pedestrian amenities, and bicycle facilities to encourage people to walk and ride throughout the area.

Developers should provide attractive, safe, and functional walkways between the public right-of-way and the main entrance, in accordance with the design guidelines below. Internal walkways should invite pedestrians and cyclists onto the property and make them feel welcome.

Interconnections between adjacent properties should be developed to encourage pedestrian and bicycle movement and reduce vehicular trips onto the road network.

DESIGN GUIDELINES

Sidewalks. Provide sidewalks and planted esplanades within or near the right-of-way on the west side of Route 302 and in other locations where sidewalks do not currently exist. Where appropriate, coordinate bicycle and pedestrian facilities with abutting land uses to create interconnections throughout the commercial district and linkages to surrounding residential neighborhoods and public lands or parks.

Coordination with Site Plan. Plan sidewalks to avoid conflicts with landscaping, utilities, grading, drainage structures, signs, and other elements on the site plan. Walkways should be designed to facilitate



The vision for Raymond's commercial district calls for sidewalks along all public roadways to encourage safe pedestrian movement.



Esplanades can be grass or planted with annuals, perennials, grasses, or shrubs for seasonal color.

snow removal. Walkways in parking lots should be aligned with the main entry or a focal point on the building to assist in wayfinding.

Crosswalk Locations. Where sidewalks intersect with driveways or roads, crosswalks may be required to emphasize possible conflict points and improve visibility.

Crosswalk Design. Crosswalks should be marked by a change in pavement texture, pattern, or color to maximize pedestrian safety in parking areas and other potentially hazardous areas. Select crosswalk materials that are highly durable and slip resistant. Raised crosswalks may be used as a traffic calming device and to make crosswalks more visible. Crosswalks should be designed by a traffic engineer as part of the site circulation plan. Signs may be warranted at the discretion of the Town in certain situations as recommended by the Institute for Traffic Engineers (ITE).

Pedestrian Refuge Zones. Install pedestrian islands (five foot minimum width) in driveways where the crossing distance is greater than 32 feet.

Bicycle Racks. Bike racks are strongly encouraged for all commercial establishments where customers and/or employees are likely to arrive on bicycles.

Internal Walkways. Provide continuous internal walkway(s) from the public sidewalk to the principal customer entrance of all principal buildings on the site. Walkways should also connect other buildings on multi-building developments, transit stops, and other points of pedestrian activity.



An island provides a refuge zone for pedestrians crossing this wide driveway. Permanent crosswalks should have been used to minimize annual maintenance.

Location of Walkways. Locate internal walkways in areas where motorists can anticipate pedestrians and react accordingly. Design walkways to give the pedestrian a full view of oncoming vehicles, with minimal interference from trees, shrubs, and parked cars. Walkways should avoid drive-through lanes, access and service drives, and other high-traffic routes. Locate traffic control signs, light fixtures, trees, or other potential obstacles far enough from walkways to prevent interference with pedestrian movement.



A raised walkway that provides a high level of contrast with the surrounding parking lot. However, the width of the walk is compromised by the overhang of the cars, making pedestrian movement difficult.



An internal walkway that is an integral part of the site development plan, coordinated with building placement, landscaping, and lighting.

Walkways Adjacent to Buildings. For commercial structures with two or more units, provide a paved walkway along the full length of facades with customer entrance and abutting parking areas. Locate these walks at least five feet from the facade to provide room for planting beds.

Walkways in Parking Lots. Separate internal walkways in parking lots from parked cars and aisles by raised curbing, grass esplanades (4' minimum), curb stops, or other means that protect the pedestrian. Granite is preferred for its longevity, low maintenance, and appearance. Include landscaped islands in parking lots to provide visual relief, shade, and scale.

Connecting Rear Parking Lots. Provide clearly marked pedestrian connections between rear parking lots and front/side entries. Connections may be in the form of internal passageways or gaps in adjacent buildings.

Interconnections. Provide internal pedestrian connections between abutting properties to encourage walking and bicycling and discourage additional auto trips onto major roadways. Avoid crossing parking lots, major interior roadways, service areas, drive-throughs, and other potential points of conflicts. Where such crossings are unavoidable, they should be well marked and as direct as possible.



A wide walkway that provides a well marked, attractive pathway to the main entrance. Separated walkways are more desirable than systems that end behind parked cars

Width. Sidewalks within the public ROW should have a minimum width of 4', although six feet or greater may be desirable to accommodate pedestrians, bicyclists, and wheelchair users. Walkways through parking lots should be a minimum of five feet wide to allow two people to pass comfortably. Additional width may be necessary in certain conditions, e.g., where shopping carts may be used, where heavy pedestrian traffic is anticipated, or where cars overhang the walkway.

Material Selection. Asphalt (bituminous concrete) should be used on new and reconstructed sidewalks within the public right of way. Entrance walks and special features may be paved with other materials, such as stamped/colored asphalt, textured concrete, brick, or interlocking pavers. When concrete walkways are used, they should be broom finished to provide a safer walking surface and a higher level of visual interest.

High Use Areas. Broom finished concrete, brick, stamped/colored asphalt, or pavers is encouraged for sitting areas, pedestrian plazas, building entrances, or other designed open spaces.

Lighting. Illuminate sidewalks to the minimum standards recommended by the Illuminating Engineering Society of North America (IESNA) to promote safe use in the evening hours. (See Lighting.)

Drainage. Avoid sheet flow of stormwater across pathways. Size culverts to prevent ponding and other interruptions.

OBJECTIVES

All commercial uses should provide convenient, safe, and attractive parking in accordance with the guidelines below. Lots should be designed to serve the adjacent buildings, the site, and the commercial corridor without becoming a dominant visual element. Every effort should be made to break up the scale of parking lots by reducing the total amount of paved surface visible from the road and subdivide the lots into smaller components.

Parking lots should utilize the minimum amount of land necessary for day to day operations. Applicants will be expected to investigate ways to achieve less lot coverage through shared parking, reserved landscaped areas, off-site parking, and other techniques that are appropriate to the particular use.

Parking lots should be designed as inviting, pedestrian-friendly places by careful attention to landscaping, lighting, and walkways. With proper planning, parking lots can balance the needs of both the vehicle and the pedestrian.

DESIGN GUIDELINES

Site Locations. Wherever possible, locate parking lots at the rear or sides of commercial buildings. Where land use conflicts occur, (e.g., unavoidable siting of a parking lot next to a home) screen the lot with evergreen trees, earth berms, solid walls, or shrubs.

Scale. Divide parking areas for 16 or more cars into smaller spaces to reduce their mass and scale through the use of trees, landscaped islands, grade changes, low walls, or other features.

Screening from Public Roads. Where parking is located within the front setback, it should be screened to minimize the view of parked vehicles. Appropriate screening may include berms, fencing, stone walls, shrubs, or a combination of materials. The height of the screen should be 3.5 feet to minimize the view of vehicles while still providing a clear view of the building and signage.

Circulation Design. Circulation patterns for parking lots with more than 40 spaces should be designed by a professional qualified to perform traffic analysis to meet the Land Use Ordinances. The Planning Board may require a professional qualified to perform traffic analysis for smaller lots where there are particular public safety issues.



Landscaped islands help to ensure the long-term health of parking lot plantings. The islands help break down the scale of the lot so it does not dominate the building.

Internal Traffic Flow. Clearly delineate internal traffic patterns to ensure the safety of motorists, delivery vehicles, and pedestrians. Parking space, directional arrows, crosswalks, and other markings on the ground should be delineated with pavement paint or other suitable material to ensure safe circulation.

Dead End Parking Lots. Parking lots with a single access point are strongly discouraged. Dead-end parking lots should not contain more than ten spaces. If dead-ends are unavoidable, provide space to safely turn a vehicle around without having to back out.

Shared Parking. Shared parking is strongly encouraged in situations particularly where abutting businesses have differing hours of peak parking demand. Cross easements will be required to allow the use of shared parking in these instances.



Dead-end parking lots are difficult to exit, especially when the lot is full.

Reduction in Parking Areas. For developments where projected parking needs are less than ordinance requirements, the site plan may show fewer spaces as long as land is reserved to meet future demand in accordance with Raymond ordinance provisions.

Side Lot Parking. Parking on the side of buildings should not extend closer to the street than the front facade. The space between the parking lot and the roadway should be landscaped.

Safety. Use shrubs, ornamental grasses, walls, or other landscape elements with care to maintain the visibility of cars and pedestrians within parking lots.

Snow Storage. Provide space for snow storage in the design of parking areas. The areas used for snow should avoid landscaping, utilities, and signage. Site storage areas to avoid problems with visibility, drainage, or icing during winter months.



These wide parking lot islands will provide ample room for tree growth.



An attractively landscaped parking lot that is a positive asset to the surrounding commercial area.



Concrete pavers create a permanent crosswalk that affords good visibility and contrasting surface texture.



Landscaped islands should have been used here to provide scale, reinforce internal circulation routes, and lead pedestrians to the entrance.



A raised walkway through this parking lot provides a safe, attractive pedestrian route. Reflective paint used in the crosswalk marks the route in a highly visible manner.



Parked cars are effectively screened by a low concrete block wall and ornamental plantings.

OBJECTIVES

Service areas should be designed to meet the needs of the commercial facility while minimizing traffic or visual impacts, loud noises, or objectionable smells. Service areas should be the smallest size needed to fit the specific requirements of the building and its intended operations. Sharing of loading docks, delivery areas, and service areas is encouraged.

DESIGN GUIDELINES

Locations. Where practical, locate exterior service and utility areas, loading docks, storage facilities, and dumpsters in places that do not face public roadways or abutting residential properties.

Screening. Screen service areas, loading docks, delivery areas, trash receptacles, and mechanical equipment to minimize visibility from sensitive viewpoints such as public and private roadways, main entrances, abutting neighborhoods, public open spaces, and pathways. Service areas should be screened with architectural elements such as walls or fences. Screening may be further enhanced with evergreen trees, shrubs, and earth berms. Gates on utility enclosures should be designed to prevent sagging.

Screening Design. Design structural screens to match or complement the materials, detailing, scale, and color of the main building. Where chain link fencing is required for safety, it should be used in conjunction with landscaping and painted black or a similar dark color, or coated with dark vinyl. Plastic slats inserted into chain link fencing are not permitted.

Service Access. Site service areas to accommodate the turning movements of vehicles used for trash pickup, deliveries, and similar functions without conflicting with other vehicles.

Coordination. Prior to Planning Board submittal, coordinate the site plan with utility companies, fuel suppliers, trash haulers, the fire department, and others who may have input into the design and siting of service areas and facilities.

Protection. Where architectural screening or free-standing fencing is used for screening, it should be protected with curbing, granite posts, concrete filled steel bollards, or reinforced in a manner that will prevent damage from service vehicles.

Conflicts with Pedestrians. Separate service drives from internal walkways, parking areas, or sidewalks by landscaped islands, grade changes, or other devices to reduce the possibility of pedestrian contact. If the plan shows a potential conflict, demonstrate what safety measures will be used.



A typical trash enclosure. Its appearance could be improved by plantings along its sides, detailing to match nearby buildings, reinforcing the gates, and staining a dark color.

This service area, located at the rear of a commercial building, is screened from view by a solid wall topped by a trellis structure that repeats design elements used elsewhere on the site.

Recycling Facilities. The installation and use of recycling bins, in addition to dumpsters, is encouraged. Bins should be screened in a manner similar to other service areas. Dumpsters and recycling areas should be consolidated wherever practical.



This service area is effectively buffered by grade change and existing evergreen trees.



This service area is effectively integrated into the side of the building and well screened by an evergreen buffer.



Chain link fence provides security, but is too transparent to provide any visual screening.



This trash enclosure was not properly sized to handle the dumpster needed for the facility.



A variable height fence used to provide visual separation between a convenience store and its residential neighbor. Note exterior storage behind fencing.



Mechanical units for senior housing are hidden behind a fence with opaque and translucent panels.

OBJECTIVES

Developments consisting of more than one structure should exhibit a high degree of coordination in site planning, architectural design, site design, and site detailing. All physical components should be designed to complement the overall plan.

DESIGN GUIDELINES

Master Plan Provide a conceptual master plan for projects that will be developed in phases and for multi-building developments (MBD's). The master plan should illustrate the general location of future buildings, parking lots, provisions for vehicular and pedestrian circulation, utilities, service areas, storm-water management, and other components of site development. The plan should demonstrate the inter-relationship between all parts of the development, and how it will proceed in an orderly, coordinated fashion.

Phasing Plan. Provide a phasing plan as part of the Site Plan application to illustrate the sequence of construction, and what steps will be taken to ensure compatibility between current and future activities in accordance with the master plan.

Building Orientation. All buildings in MBD's should be laid out to create usable, attractive pedestrian spaces, preserve significant site features, and minimize the view of parking areas.



Informal lawn areas provide welcome visual relief and opportunities for programmed activities.

Outdoor Spaces. MBD's should include outdoor use areas such as greens, plazas, and courtyards. Orient buildings to open spaces rather than internal roadways with suitable access to both exterior spaces and parking. Link outdoor spaces with buildings, parking areas, and other components of the development with a coordinated pedestrian circulation system, including seating and outdoor activity areas. Design outdoor spaces to separate pedestrian and vehicular traffic with landscaping, grade changes, and other site features.

Coordinations. Coordinate signage, lighting, and landscaping with all other elements of the site. (See Signs, Lighting, and Landscaping.)



Similar roof pitches, pedestrian use areas, and traditional building materials help unify this multi-building site.

PHASED DEVELOPMENTS & MULTIPLE BUILDING DEVELOPMENTS



Buildings in this multi-building development are oriented to a grid pattern, with strong pedestrian circulation.



This MBD is unified by a common architectural style and coordinated landscaping, lighting, and outdoor spaces.



Signage for multi-building development can reinforce the aesthetics of the commercial district by careful attention to detailing and materials.



An internal walkway oriented toward the main entry of a restaurant in a multiple building development. The planting strips with ornamental grasses and perennials separate the pathway from overhanging bumpers.

OBJECTIVES

Buffering or screening should be used to ensure compatibility between certain land uses which could have inherent conflicts, such as commercial developments and residential neighborhoods, or loading docks and parkland. Plantings, earth berms, stone walls, grade changes, fences, distance, and other means can create the necessary visual and psychological separation when used in accordance with the Land Use Ordinance and the following guidelines.

DESIGN GUIDELINES

Appropriateness. The selection of the proper type of buffer (e.g., plantings, berms, fences, etc.) should result from an understanding of existing site conditions, distances to property lines, and the intensity of the proposed and adjacent land use. Discussions regarding the need for buffers and appropriate sizes and types should begin at the pre-application meetings with staff or planning board.

Design. Stone walls, plantings, landforms, and other features used for buffers should be similar in form, texture, scale, and appearance to other landscape elements. Structural measures (e.g., screening walls and fencing) should likewise be related to the architecture in terms of scale, materials, forms, and surface treatment.

Plantings. Vary the size and species composition of evergreen trees where a naturalistic buffer is appropriate. Create seasonal interest by using native flowering trees and shrubs (see Landscape).

Maintenance. Maintain buffers to provide the level of screening required by the Planning Board at the time of Site Plan approval. If plantings die, suffer from lack of maintenance, or grow to a point where they no longer serve as effective buffers, they should be replaced or reinforced with additional plantings to meet the intent of the approved plan.



This stand of trees creates an effective visual buffer between the road and the plaza parking lot.



A 6-8' high earth berm, planted with evergreen trees and shrubs, creates an effective screen to separate an access drive from residential properties.



Grade changes and a stone wall were used to screen the parking lot of this new commercial development.



Buffer plantings can achieve a natural look through the use of a variety of native plant materials..

OBJECTIVES

Curbing and enclosed stormwater systems are generally not encouraged in Raymond except where sidewalks or pedestrian corridors are adjacent to traffic lanes. Where curbing is required, it should consist of high quality, durable materials that can stand Maine winters. The need for curbing should be partially determined by consideration of stormwater management, pedestrian circulation, and maintenance.

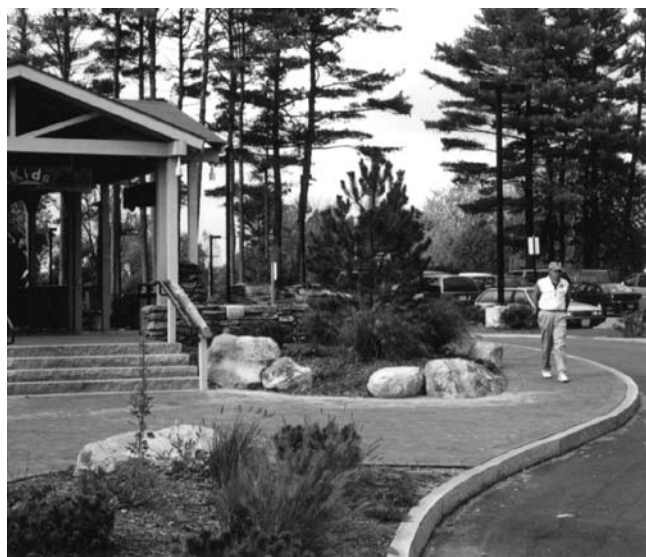
DESIGN GUIDELINES

Location. Curbing may be used along access drives, interconnecting driveways, and in parking lots if required by the grading and drainage plan and as a means to provide additional protection to pedestrian areas.

Intersections. Granite curbing should be used on the radii where driveways intersect with public roads.

Materials. Where internal curbs are used, granite is the preferred material, followed by concrete (precast or cast in place). The use of vertical asphalt curbing, which is highly susceptible to winter damage from plowing operations, is not encouraged. Cape Cod style (sloped) curbing may be appropriate along entrance drives and inside parking lots where cost and maintenance may be issues.

Maintenance. If curbing within the public right of way becomes damaged or deteriorated, it should be replaced in a manner that meets the design guidelines.



Granite curbing holds up well to snowplows and heavy traffic while providing a solid edge for sidewalk paving.



Sloped granite curbing can facilitate turning movements and snow plowing.



While asphalt curbing is inexpensive to install, it is very prone to snowplow damage.



Precast concrete is a lower cost alternative to granite.

OBJECTIVES

Raymond strongly encourages the use of Low Impact Development (LID) measures (strategies that are designed to mimic natural hydrologic function by reducing stormwater runoff and increasing groundwater recharge and pollutant treatment) to reduce impacts from stormwater runoff and maintain the quality and quantity of groundwater.

DESIGN GUIDELINES

Site Analysis and Planning. Start the site planning process by identifying sensitive areas that could affect surface water flow: wetlands, streams, buffers, permeable soils, etc. Plan the site to minimize site disturbance and connected impervious areas.

Design. Break up stormwater flows from impervious surfaces into smaller components for dispersal into stabilized buffers, rain gardens, or vegetated swales. Stormwater treatment should occur throughout the development close to the source of runoff rather than in large detention basins. Infiltration areas should resemble natural landforms, avoiding geometric shapes. Side slopes should be landscaped with appropriate native species to reduce erosion.

LID Techniques. There are many Low Impact Development techniques that may be appropriate to site plans in Raymond:

- **Bioretention Areas (Rain Gardens):** Relatively small depressions filled with an organic growing media that filters stormwater and allows it to infiltrate into the groundwater.



Native grasses create an attractive vegetated buffer.

- **Infiltration Areas:** A means of filtering stormwater and directing it into the ground through the use of infiltration basins, trenches, and dry wells.
- **Filter Strips (Vegetated Buffers):** Natural or enhanced buffer strips that remove pollutants from stormwater, usually in the form of sheet flow.
- **Vegetated Swales:** Relatively flat elongated ditches used to convey stormwater to a treatment area. Vegetation within the swale reduces the velocity of the runoff and helps filter out sediment and other pollutants.
- **Level Lip Spreaders:** Structures installed within drainage channels to convert concentrated runoff into overland sheet flows.
- **Porous Pavement:** A permeable surface material, base course, and subbase which allows water to filter through to the underlying soils. Various types include porous asphalt, concrete block pavers, and plastic grids.



An infiltration area next to a parking lot provides an attractive and functional way to deal with on-site stormwater.



This stormwater management facility has been designed to blend into the landscape through transitional grading. The outfall pipe should have been integrated into the design.



Motorists driving past this shopping center only see the low juniper hedge, unaware of the detention basin on the far side. Hand-placed stonework protects the end of the culvert.



Rip-rap is often necessary to control erosion and stabilize slopes. In highly visible areas, a more refined appearance – accomplished through the use of hand-placed stone and/or ground cover – is necessary to avoid situations such as this.



A vegetated swale next to a walkway absorbs runoff from the paved surface and filters stormwater.

- **Cisterns:** Enclosed containers used to store rain-water for watering lawns and plantings.
- **Green Roofs:** Plantings installed on the roof to absorb runoff, reduce peak stormwater flows, and improve building efficiency.

Professional Consultation. Appropriate measures should be selected and designed with assistance of qualified design professionals. Stormwater management plans for Site Plan applications meeting Raymond ordinances should be prepared and stamped by a Professional Engineer (PE) registered in the State of Maine. Plantings should be designed by a qualified professional familiar with the growing and maintenance requirements of LID systems.

Structures. If man-made drainage structures (e.g., culverts, manholes, and outfalls) are required, and may be visible from roads or nearby neighborhoods, they should be screened or designed in a manner to reduce their visual impact.

Rip-Rap. Where ground protection is necessary in highly visible locations (e.g., at spillways and culverts), constructed from hand-placed rock or geo-grid, rather than coarse rip-rap.

Maintenance. Design stormwater facilities with appropriate access to ensure regular maintenance. A maintenance schedule should be presented as part of the site plan application.

Further Reference: www.state.me.us/dep/blwq/docstand/stormwater/stormwaterbmps/index.htm#manual

http://efc.muskie.usm.maine.edu/docs/LID_Fact_Sheet.pdf