

**ARTICLE V                      DESIGN STANDARDS**

**Article 5.1. Land Unsuitable for Development.**

- (A) Suitability of Land. Land Unsuitable for Development shall be governed by the provisions of Section 5.5.3 of the Zoning Ordinance. Additionally, land deemed unhealthy for residential purposes in the judgment of the Board following consultation with the DEM'S ISDS Section will not be approved for subdivision.
  
- (B) When calculating the number of residential building lots or units permitted on any parcel, land included in all of the following categories shall be considered unsuitable for development and shall be deducted from the acreage of the parcel:
  - 1. Freshwater wetlands, not including areas of perimeter wetland within fifty (50') feet of the edge of any bog, marsh, swamp or pond; or any applicable 100-foot or 200-foot riverbank wetlands, as defined by Rhode Island General Laws Section 2-I-20 (1987), as amended. Accordingly, only the biological wetlands are excluded from the calculations;
  
  - 2. Areas within a 100-year flood zones, as defined by FEMA;
  
  - 3. Land within any publicly or privately held easement on which above or below-ground utilities, including but not limited to electrical transmission lines, are constructed; and,

**Article 5.2. General Design Standards—Standards Common to All Types of Development**

The design of all subdivisions and land development projects shall conform to the Town of North Smithfield Zoning Ordinance and Land Development and Subdivision Regulations. The Planning Board has established the elements contained in these Regulations as minimum design standards. The Planning Board may raise or lower these standards upon a site visit and/or review of the proposed plan, if the Board feels in doing so that adequate provisions have been/must be made in the plan to accomplish the purposes identified in Section 1-1 of these Regulations.

The applicant, at his/her own expense, shall construct all improvements required by the Planning Board as a condition of approval for any subdivision or land development project subject to these Regulations. The developer may negotiate with the Town Council for reimbursement of additional expenses incurred in the construction and installation of oversized improvements which are required by the Board or Director of Public Works.

- (A) Site Planning. Depending on a property's location, the styles and patterns of development are different, and therefore, the application of these standards will necessarily depend upon the surrounding area in which development is proposed.

Reminder: All applications subject to these Regulations, regardless of whether they involve the construction of a new

street or development of a single existing lot, must conform with the Town's Zoning Ordinance and any other applicable Town Ordinances and Regulations.

To the maximum extent practicable, development should be located to preserve the natural features of the site, to avoid areas of environmental sensitivity, and to minimize alterations of and negative impacts to natural features, historic and cultural resources, and scenic areas. Excavation of material including gravel, sand and rock is prohibited unless it is necessary to accommodate the construction of subdivision roads, drainage and utility structures, driveways, sidewalks, septic systems and houses with reasonable yard areas. Grading of streets and lots shall, to the extent possible, conform to the natural topography of the area. A Site Analysis that considers both the existing natural and built context as described below should be conducted as part of the conceptual site planning process.

New development or redevelopment shall incorporate characteristics of the surrounding area when the area exhibits a positive site layout and/or functional patterns (e.g., buildings close to street, shared parking and access, and generous landscaping); otherwise, the Planning Board will look to the applicant to improve the area with his/her proposal and not further degrade an are

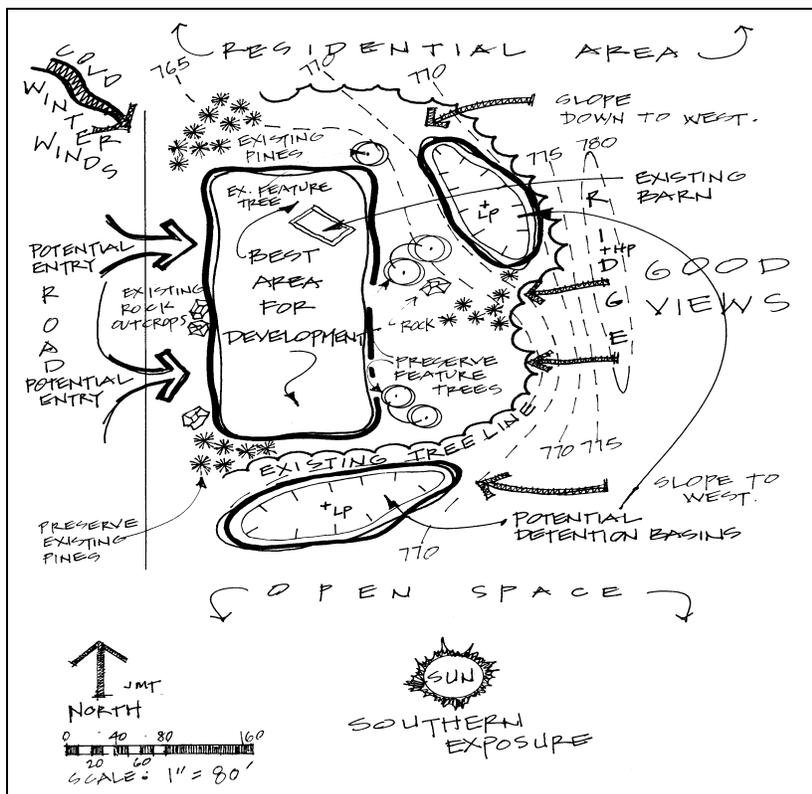


Figure 1. Example of Site Analysis

(B) Natural Context

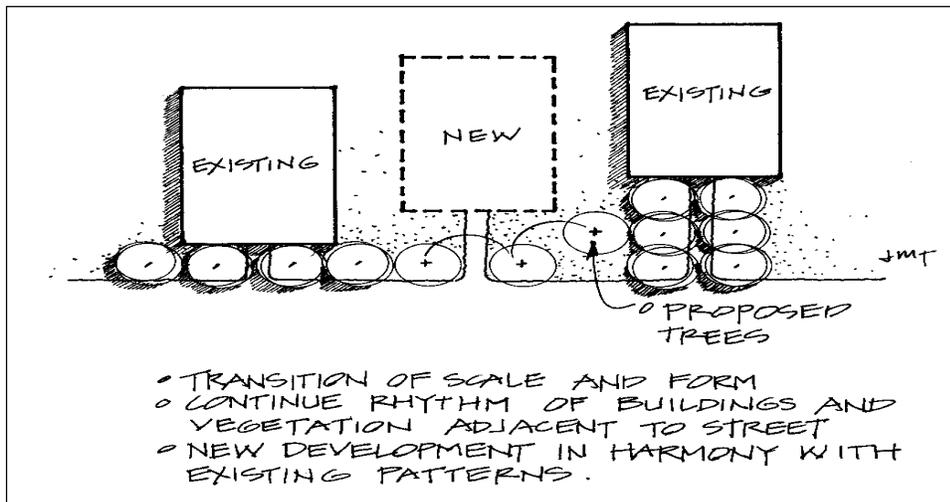
1. Building envelopes shall be located so that character-defining site features such as stone walls, open fields, stands of mature trees, rolling topography (especially slopes

in excess of 15%), ridgelines and outcrops, wetlands, streams, rivers, ponds and lakes, and listed historic and natural resources are preserved.

2. Structures shall not be placed on ridgelines or hillcrests. These areas are potentially erosive, may negatively impact drainage patterns and because they will be highly visible, will adversely impact the character of neighborhoods and scenic, natural viewsheds.
3. Development should take advantage of natural solar irradiation through southern exposure and design features in order to reduce energy usage and increase connections to the surrounding environment. Vegetation, berms, and shade structures should be used to provide warmer areas during winter and cooler areas during summer.
4. Green spaces shall be contiguous whenever possible, rather than divided into smaller areas.
5. Utilize the space between buildings as viable "outdoor rooms" which can function as pedestrian transition areas, provide building connections and project coherence.

(C) Built Context. Existing design, details such as form, type and texture of materials, balance, symmetry/asymmetry, natural factors, pedestrian circulation, access, and connections should be respected. Continuity of positive aspects of the nearby architectural style and other elements of the built environment will be the primary focus of the review process. The Slatersville Area Plan prepared by Everett Associates shall be used as a guide when reviewing development proposals in the village areas. The more general standards contained herein will be used on a town-wide basis.

1. Placement of buildings shall consider the location of nearby compatible and incompatible uses, traffic corridors, vegetation, and other existing site characteristics. Where adjacent setbacks are inconsistent, an attempt shall be made to moderate them. If this is not possible, vegetation, walls and other landscape features shall be used to continue the rhythm of the built environment.



*Figure. 2 Continue Prevailing Setback Patterns*

2. In densely developed areas, such as in the historic Village of Slatersville, buildings should generally be placed adjacent to the sidewalk or at their front setback lines in order to enliven the street. This siting, in combination with landscape treatment, reinforces and strengthens the streetscape and facilitates pedestrian activity.
  3. Multiple buildings in a single development should create a positive functional relationship. Buildings should be clustered to achieve a village feel. This creates opportunities for plazas and pedestrian areas while preventing long "barrack-like" rows of buildings. When clustering is impractical, a visual and/or landscape linkage shall be established.
  3. When adjacent residential and non-residential uses can mutually profit from connection rather than separation, applicable connective elements such as walkways, common landscape areas, shared driveways, building orientation, and unfenced property lines shall be employed.
- (D) Flood Hazard Areas and Watercourses. Proposed construction in flood hazard areas as defined in Section 6.18 of the Zoning Ordinance should be avoided whenever possible. Any construction that is permitted must comply with the Zoning Ordinance and approval granted through the subdivision or land development process.
1. All submissions shall show the location of any portion of the plat which lies within any floodway, floodplain and flood fringe land and shall show the base flood elevation as prescribed for these areas at the specific location. Where the plat location is entirely within these zones, it shall be noted on the plat drawing.
  2. All plat proposals will be reviewed by the Planning Board or its agent to assure that the design of the plat is consistent with the need to minimize flood damage. Public improvements, facilities, and utilities must be constructed or installed in a manner that will minimize flood damage. Adequate drainage must be provided to minimize the accumulation of water.

Where water courses, drainage ways, channels or streams will be altered, relocated or otherwise changed on a subdivision plat, the developer or his engineer shall provide such additional information regarding said proposed change of water course, drainage way, channel or stream and their drainage characteristics outside the immediate plat as required by the Board.

- (E) Erosion and Sediment Control. Erosion and Sediment Control design shall be in accordance with Section 18 of North Smithfield's Zoning Ordinance, as amended.

Site design should avoid steep slopes, minimize slopes in graded areas and work with the natural drainage and topography of the site. Original boundaries, alignment and slopes of watercourses within the project locus shall be preserved to the greatest extent feasible.

Development plans should preserve natural features, keep cut and fill operations to a minimum and ensure conformity with topography so as to adequately handle the volume and velocity of surface water runoff.

(F) Lot Design Standards

1. All lots shall front on an improved or bonded public street. The minimum frontages listed in Section 5.5.1 District Dimensional Regulations of the North Smithfield Zoning Ordinance are intended to be the minimum lot widths at the required setback lines. There shall be no reduction in lot widths on cul-de-sacs as is allowed for frontages.
2. Except on those sides bordering a street, lots shall have no interior angles of greater than two hundred twenty-five (225) degrees over a distance of 20 feet. Corrective administrative subdivision lines shall be exempted from this provision when there are no other reasonable options.
3. The preferred lot shape is rectangular and the depth to width ratio should not exceed 2.5 to 1.
4. Lots shall not extend through a block to another existing or proposed residential street.
5. In general, sides of lots should be perpendicular to the street.

(G) Block Design Standards. In residential subdivisions, blocks shall not be greater than one thousand (1,000) feet in *length*.

1. General. Vehicular and pedestrian circulation should be clearly organized and functional, providing safe and efficient means of access to all non-sensitive areas of the site. Vehicular and pedestrian circulation areas should be separated to ensure safety, with appropriate linkages at designated inter-modal transportation nodes. A development's circulatory system, including roadways, paths, and parking areas provides the pattern for human experience and should be designed considering aesthetics, social and environmental issues.

Use special accents at all entries. Monuments, uniquely textured paving, plantings, walls, sculptures, and specimen trees should be used to generate visual interest.

Roads and parking areas should be designed to respect natural features and topography, and to present an attractive "streetscape" environment. Vast expanses of paving without visual relief are undesirable. Materials should be harmonious with the existing, surrounding environment. Materials such as brick, granite stone, wood, and textures/colored concrete are encouraged.

2. Roads. Integrate access points for automobiles and pedestrians carefully—especially within the village centers where pedestrian and vehicle traffic co-exist. Driveways should be shared by adjacent developments wherever possible to minimize curb cuts and impervious surfaces.

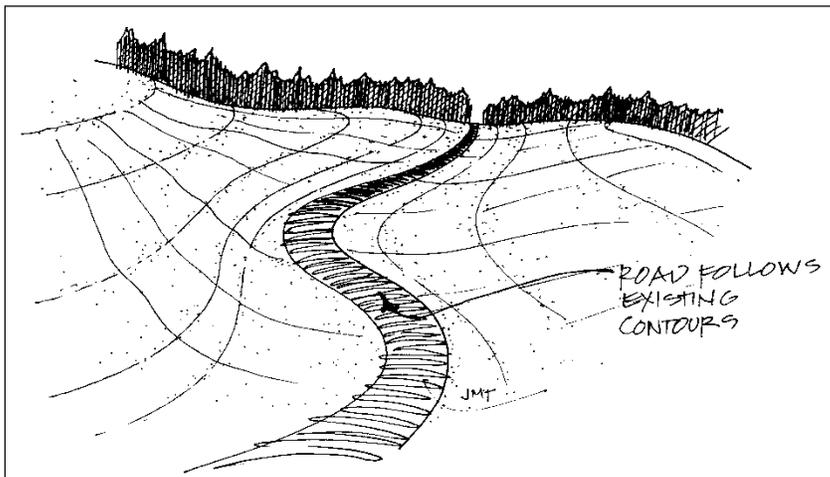
Every development should have sufficient emergency access as required by the local Fire and Police Departments. Separate customer access and circulation from service truck access.

Roads and driveways should follow existing contours to minimize site disturbance designed parallel, rather than perpendicular, to existing slopes (Figure 3).

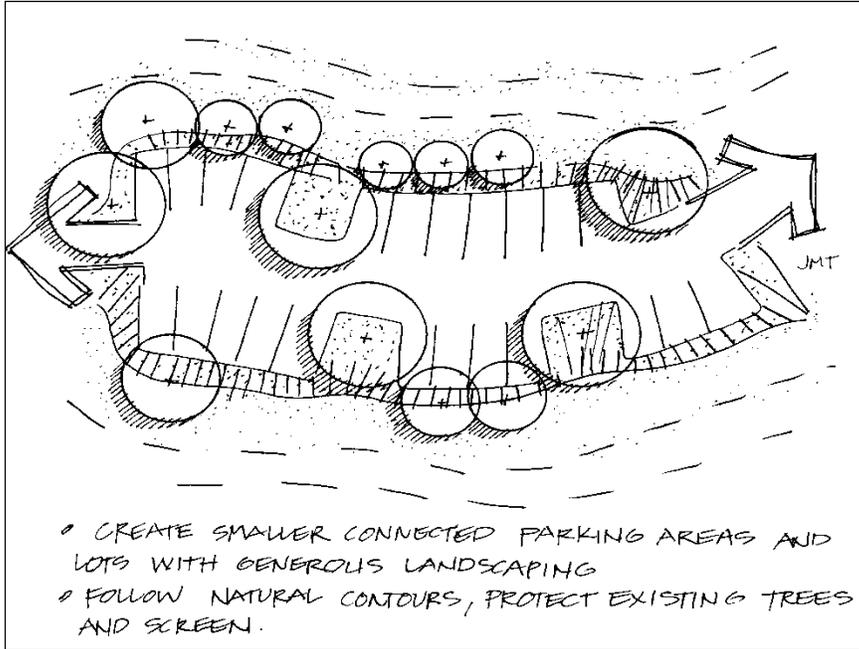
3. Parking. Off street parking shall be provided in accordance with existing Ordinances, however, the Planning Board may recommend relief for good cause. In general, where parking areas can be reduced in size, or spaces shared with adjacent businesses, it is considered beneficial to reduce impervious surface areas and maintain a more natural appearance.

A landscaped buffer strip at least ten (10) feet wide, continuous except for approved driveways, shall be established adjacent to any public road except in instances where the Planning Board deems this would unduly detract from the adjacent streetscape and/or architectural character of the area.

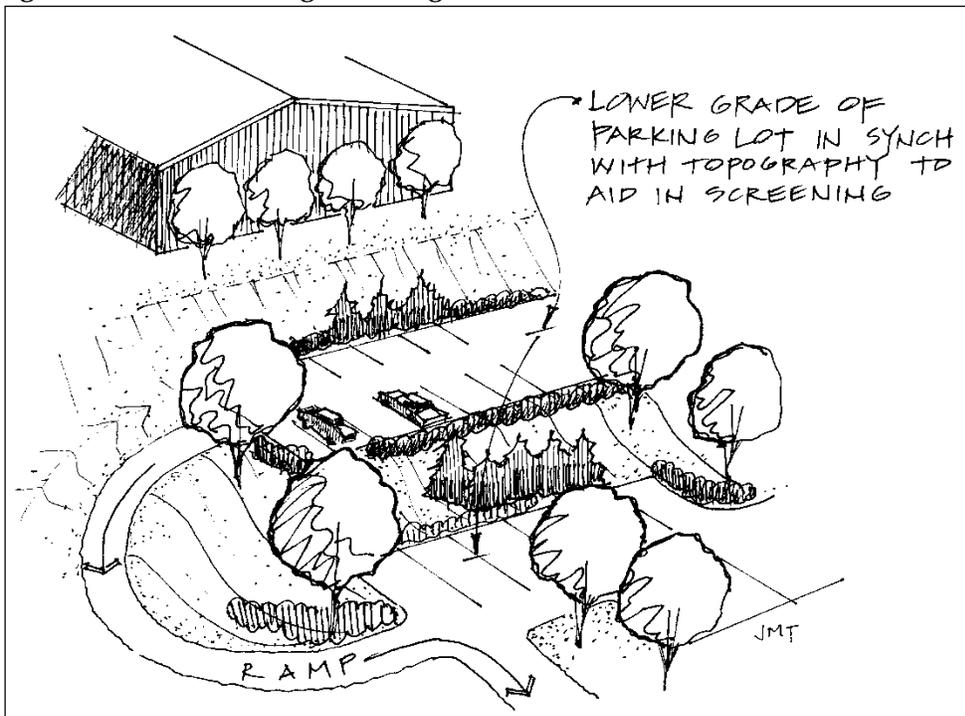
Divide large parking lots into a series of smaller connected lots using raised landscape strips at least five (5) feet wide (preferably more) with one shade tree for every 5 spaces (Figure 4).



**Figure 3. Follow Existing Contours**



**Figure 4. Divide Large Parking Lots**



**Figure 5. Creatively Utilize Grade Changes in Parking Lots**

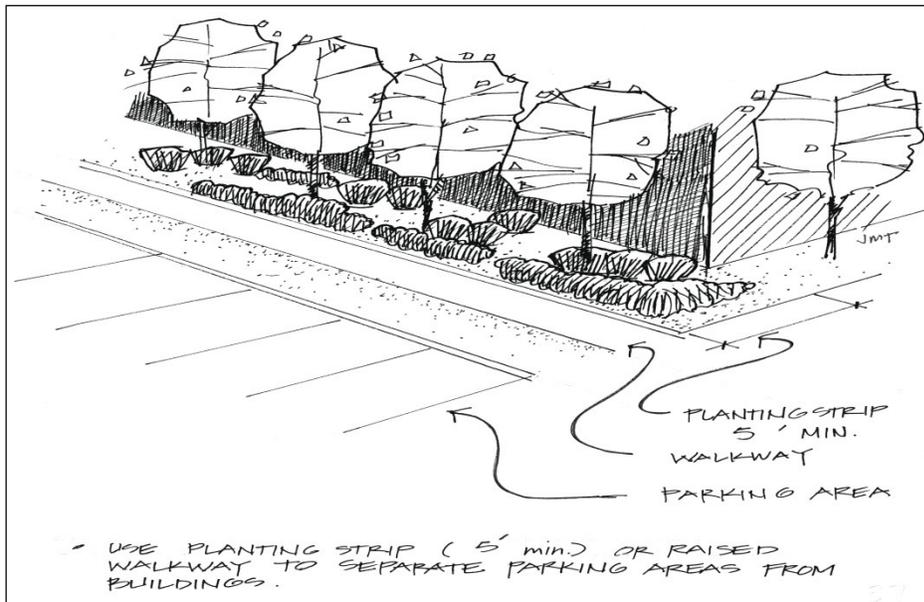
Lower the grade of parking lots, where practical and respectful of existing topography, to aid in screening views of automobiles while permitting views of buildings (Figure 5).

Parking areas should be separated from buildings by a raised walkway or planting strip at least 5 (preferably more) feet wide. Parking areas directly abutting the building shall not be considered acceptable (Figure 6). Protective car stops or guardrails may be required to protect vegetation or to better delineate pedestrian areas.

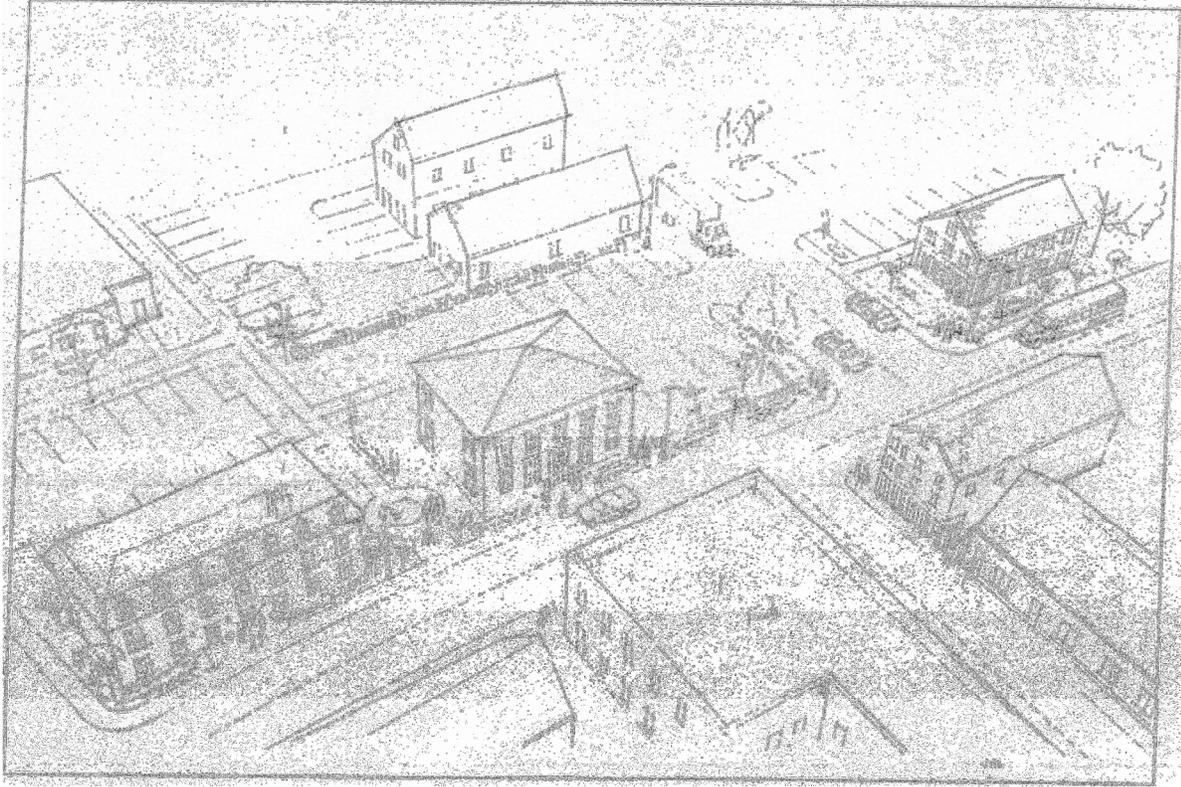
The buffer strip shall be planted with grass, shrubs and shade trees (minimum 3 inch caliper diameter at breast height, minimum height of 5 feet, planted at least every 30 feet along the road frontage).

Parking areas shall be located to the rear or sides of buildings out of sight from passing traffic to the greatest extent possible. Vegetative buffering, berms, walls and fences should be used to screen parking to the greatest extent possible from all surrounding areas. In all developments, pedestrian walkways should be provided through and between parking areas and separate buildings and wherever possible to adjacent streets. Figure 7 exemplifies a desired outgrowth of these standards.

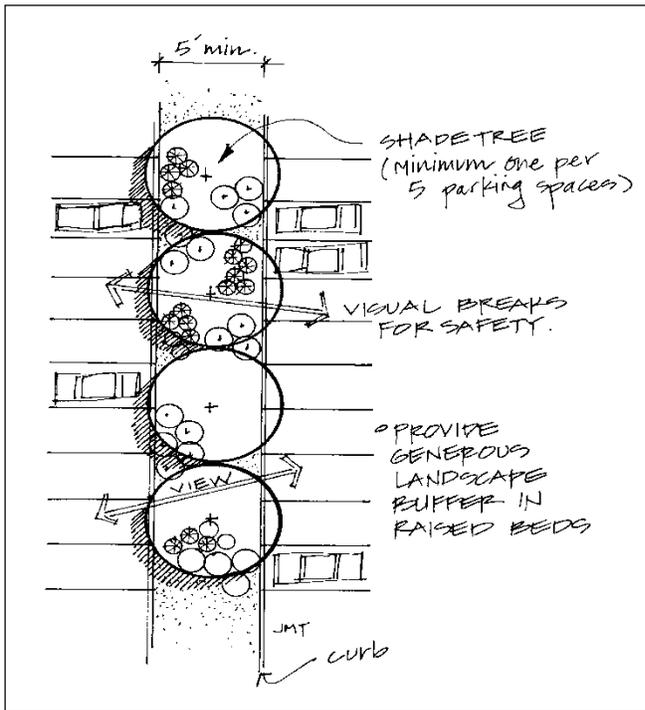
Parking areas shall be softened with vegetative screens with at least one tree per 5 parking spaces should be provided. A continuous wall of green should be provided with breaks for visual safety (Figure 8).



**Figure 6. Planting Strip and Raised Walkway**



**Figure 7. Parking behind buildings**

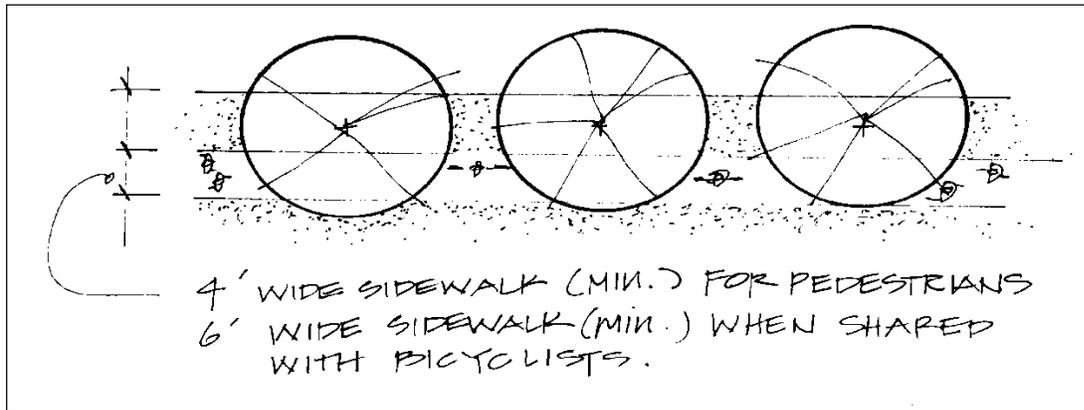


**Figure 8. Acceptable parking island**

4. Pedestrian Pathways. Natural earth-like walking paths shall be encouraged outside the village centers. Asphalt (bituminous concrete) walkways shall be avoided for aesthetic and environmental reasons in such outlying areas.

Within the village centers, sidewalks and paved pathways should be a minimum of 4 feet wide. Clearly defined pedestrian access should be provided from bus stops to primary building entrances. In areas where bicycles are expected to share the sidewalk, they should be a minimum of 6 feet (Figure 9).

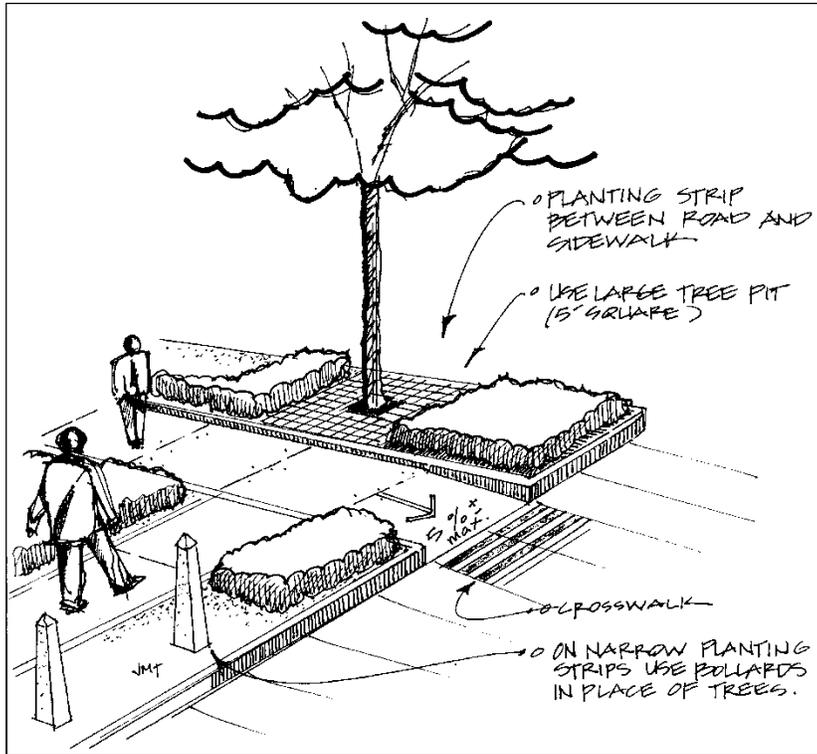
Informal pathways/trails should be provided to connect adjacent natural areas and potential future regional pathways and bikeways.



**Figure 9. Sidewalk Widths**

Crosswalks, signs, or other warning cues should be used wherever pedestrians cross traffic aisles (Figure 10). Developments should provide ample pedestrian open spaces (green spaces) for enjoyment of pedestrians. Walkways and open areas shall be generously vegetated.

5. Stairways and Ramps. All buildings should be handicapped accessible in accordance with state and federal laws. Stairs should combine visual attractiveness with safety considerations and provide landings every 10 stairs for visual variation and pedestrian rest. Sloping paths are preferable to ramps or lifts. However where ramps are used, they should be handicapped accessible and integrated with the building design.



**Figure 10. Sidewalks and Crosswalks**

- (H) Landscaping Standards. To the maximum extent possible, the natural landscape should be preserved. Landscaping should reflect the site as a whole, integrating the various elements of site design into the plan with the surrounding landscape elements and processes. Effort shall be made to use native plants with high wildlife value and aesthetic interest. Plants should also accent the cultural landscape, providing such elements as rhythm, spatial structure, color, texture, etc. to the built environment. A landscape plan (certified by a RI registered Landscape Architect) shall be provided as part of any Preliminary submission involving the construction or extension of a public right of way.

Landscaping shall address plant materials such as trees, shrubs, ground cover, grass, flowers, etc., but may also include other materials such as wetlands, stone walls, paving materials, planters, signage, and street furniture. Areas that may be required to provide landscaping shall include, but are not necessarily limited to the following:

1. Drainage facilities, such as retention/detention basins, or drainage swales;
2. Entrance features;
3. Open space areas;
4. Proposed recreation facilities;
5. Buffer areas;
6. Lot areas that are disturbed during the construction process or where extensive grading removes a significant amount of natural vegetation;
7. Areas subject to re-grading or stabilization for soil erosion and sediment control purposes;

8. Areas disturbed by utility installation; and
9. Cul-de-sac islands.

Trees and other existing vegetation shall be retained whenever feasible; areas within the drip line should be temporarily fenced or otherwise protected against damage during construction.

Plantings installed by the applicant shall be maintained until the time of the release of the maintenance guarantee as required by the Planning Board. Any unhealthy or dead trees or landscape improvements shall be replaced at the developer's expense and shall be guaranteed for one (1) year.

All areas not covered by structures, service yards, driveways, paths, etc. should be landscaped. The following are planting design concepts that should be used whenever possible:

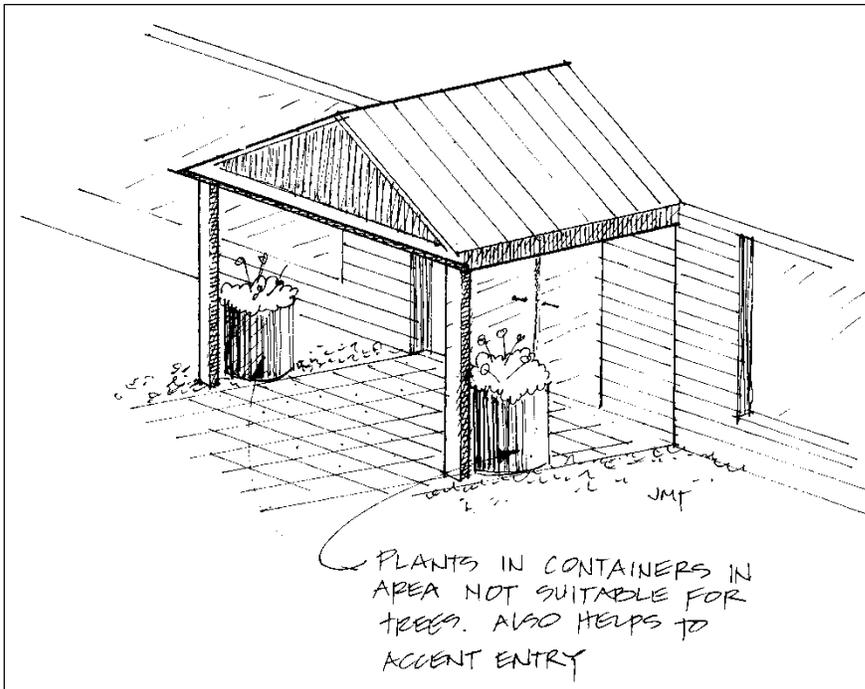
- a. Specimen trees in informal groupings and rows at major focal points
- b. Use of flowering vines on walls and arbors
- c. Use of planting to create shadow, texture, patterns, rhythm, aroma, color, etc.
- d. Use of trees to create canopy and shade, especially in parking areas
- e. Use of berms, planting and walls to screen outdoor areas from wind and noise.
- f. The development of sloped properties should follow the natural contours of the land.

Terraced parking lots, stepped building pads, and larger setbacks should be used to preserve the general topography of the site and to minimize grade differences between adjacent streets and properties, especially when adjacent downhill properties are residential.

Landscaping around the entire building to soften edges and moderate scale is recommended, particularly near parking lots, entrances, and other pedestrian areas. Plants in containers are encouraged for areas not conducive to permanent plantings (Figure 11).

2. Landscaped Setback Yards, Berms, Walls, and Screens. Vegetated setback yards, berms, walls, and other screens provide barriers to undesirable land uses such as roadways, parking lots, utility areas, loading docks, trash pickup areas, and transportation corridors. These barriers will vary in materials and dimensions depending on the intensity of adjacent land uses and other design considerations. The goal should be to provide as much buffering as possible from undesirable land uses.

Fences and walls should be architecturally appropriate. Walls shall be terraced with wall sections no more than 5 feet in height. Chain link fencing should be avoided except where necessary for security purposes.

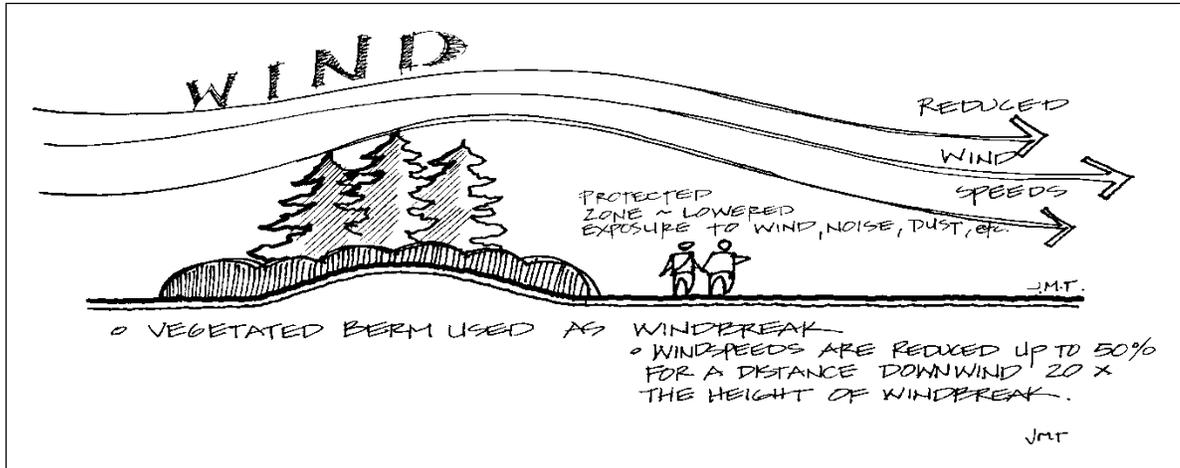


**Figure 11 . Container Plants**

Utilize berms, vegetation and walls to:

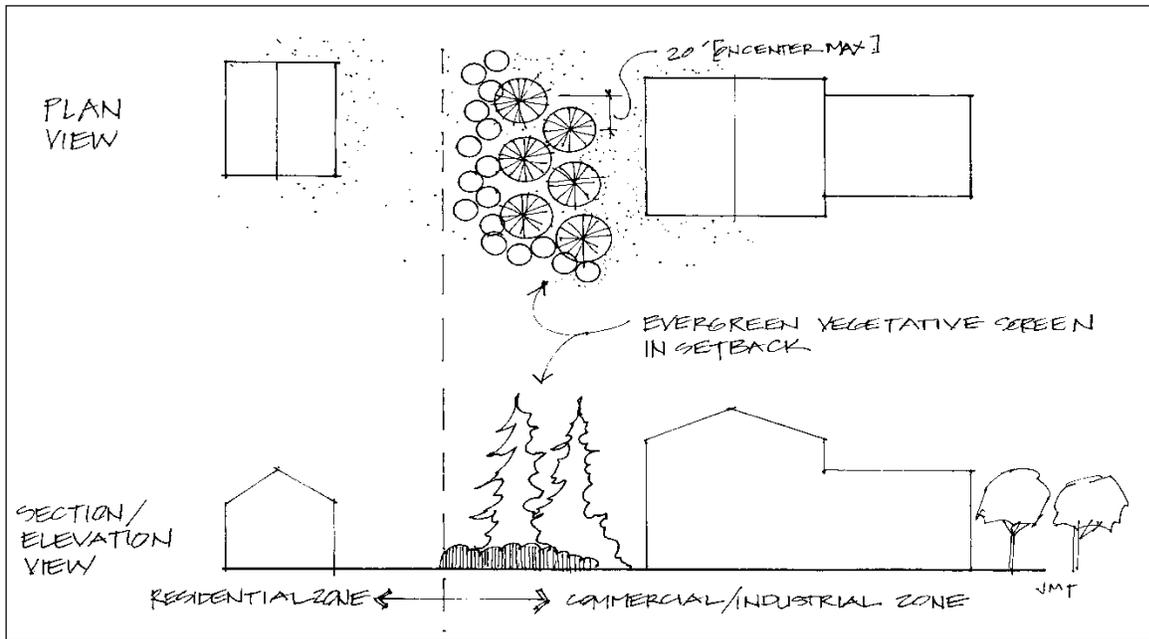
1. Reduce wind speeds in and around developments, particularly where development on ridges cannot be avoided and in open areas where winds could cause uncomfortable pedestrian conditions.

Provide insulation to reduce the need for heat and air conditioning. Reduce dust, fumes, noxious smells or other potential air borne pollutants near certain industrial land uses (Figure 12).



**Figure 12. Windbreaks**

Adjacent residential and non-residential uses should be segregated as much as possible in order to maintain a healthy residential environment through the use of berms, walls, fences, buffer yards, and other barriers unless connections are for some reason desirable. A screen along the lot line should be provided consisting of either a row of evergreens at least 6 feet in height at planting, which will grow into a thick hedge not less than 6 feet high, or an opaque and neatly maintained fence not less than six feet in height (Figure 13).



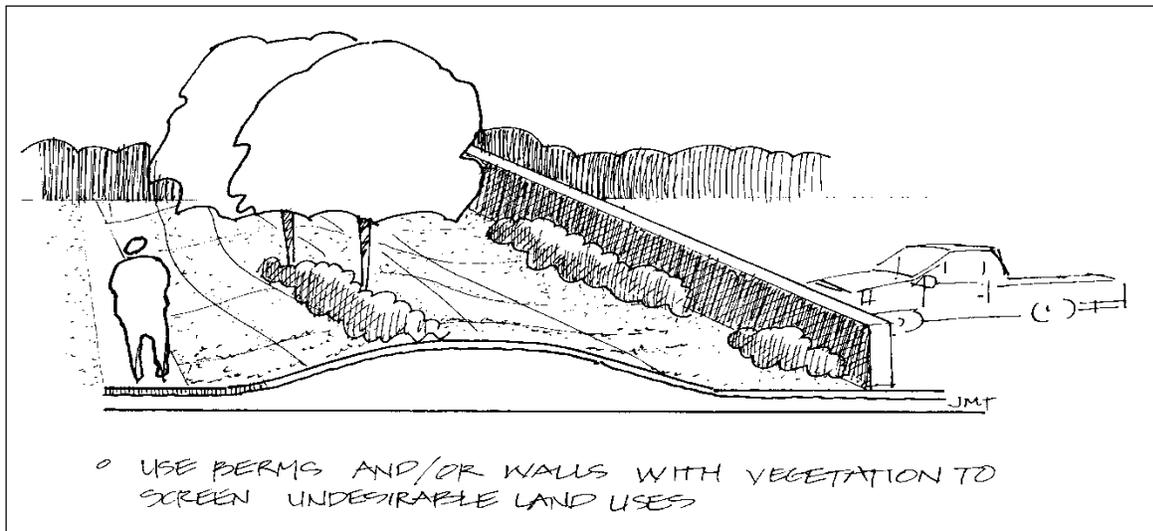
**Figure 13. Use Vegetative Screens**

Screen parking lots and undesirable facades of buildings. Consider the following screening options:

1. Evergreen trees (maximum 20 feet on center)
2. 3-4 foot high evergreen hedge, fence, berm, or wall; 36" maximum immediately in front of buildings
3. Masonry walls approximately 4 feet in height consisting of stone, brick, or other similar solid masonry materials (Figure 14)
4. Wooden walls approximately 4 feet tall and constructed of heavy wood, or heavy wood and masonry to form an opaque screen
5. Depressing the parking lot so that its elevation is approximately 4 feet below adjacent land use

Long expanses of fence or wall surfaces should be offset and architecturally designed to prevent monotony. Landscape pockets should be provided at 50-foot minimum intervals along the wall. Vines should be used to break up flat surfaces. Terracing should be used when retaining walls exceed heights of 5 feet.

Berms can be used to block wind, noise, views and other undesirable land uses or to vary soil depths above unfavorable soil conditions (Figure 14).



**Figure 14. Berms and Screen Walls**

- (K) **Vegetation and Plant Lists.** Species should be suitable for U.S.D.A. Zone 5 hardiness. Use of native vegetation and xeriscaping (low water use landscaping) is encouraged. Scale of plants should be compatible with buildings and land use. Plants should be used to moderate changes in scale. Larger plants can be used to buffer and soften buildings while smaller plants with greater sensory interest can be used in pedestrian areas.

The approved plant list reference is entitled *Sustainable Trees and Shrubs*, third edition, and 1999, authored by the University of Rhode Island Cooperative Extension Landscape Horticulture Program. Although the list is comprehensive, designers and

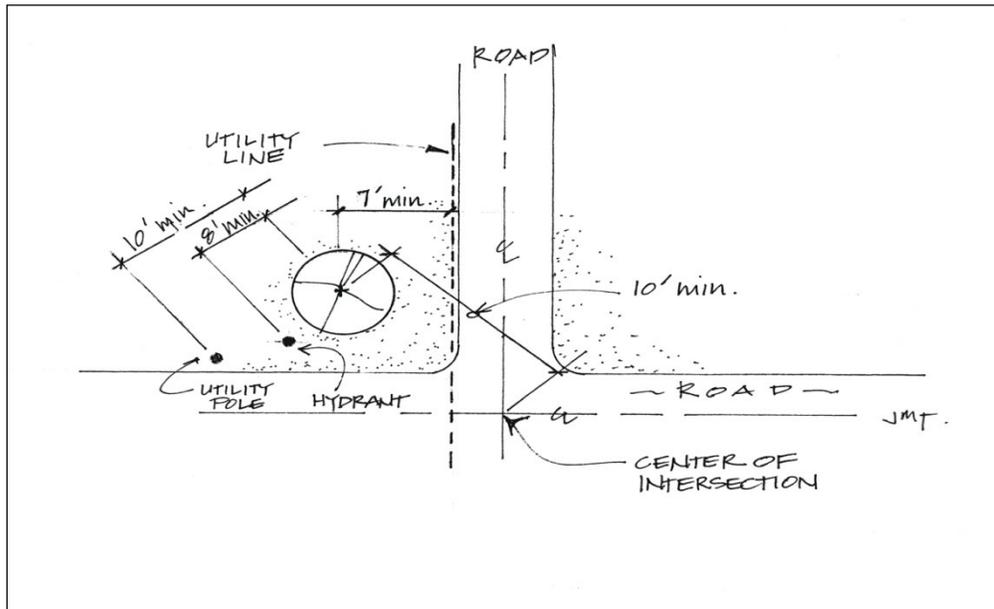
developers should feel free to add species that they feel augment the objective outlined within this document.

### 1. Plant Size, Quality, Spacing, and Distribution

Newly planted large shade trees should have a minimum caliper size of 3 inches dbh, minimum 5 feet in height and should be staked securely for a period of two years from date of planting. The lowest branch should be sufficiently above finished grade in order to meet ADA standards.

Street trees should be planted along both sides of all streets at not more than 30 feet apart, preferably closer, as long as they do not obstruct sight triangles at street intersections. Trees and large shrubs should be placed as follows:

- a. A minimum of 7 feet between centers of trees or large shrubs and edge of driveway, water meter or gas meter and sewer laterals.
- b. A minimum of 10 feet between centers of trees or large shrubs and point of intersection of driveways and streets or walkways.
- c. A minimum of 10 feet between center of trees and large shrubs to utility poles.
- d. A minimum of 8 feet between center of trees or large shrubs and fire hydrants and fire department sprinkler and standpipe connections (Figure 15).



**Figure 15. Tree Placement and Spacing**

No species of plant or large shrub should be planted under the overhead lines or over underground utilities if its growth might interfere with the installation or maintenance of any public utilities.

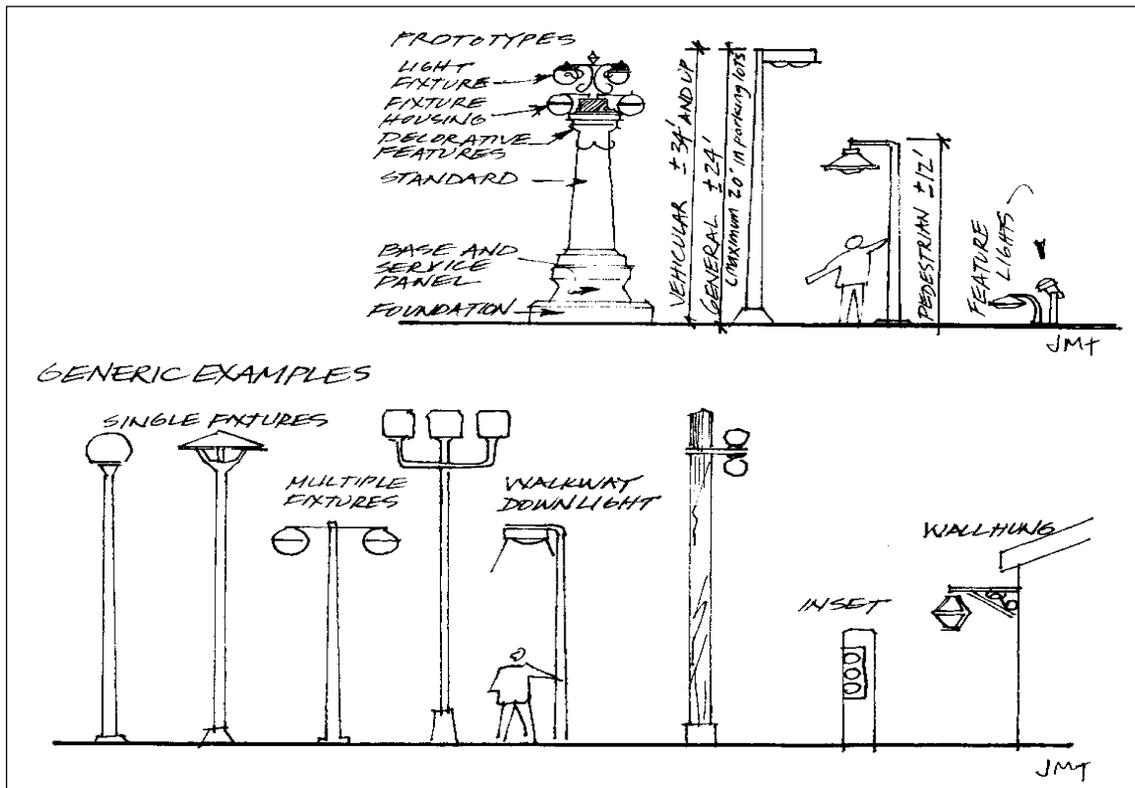
Evergreen trees should be planted no further apart than 20 feet on center, depending on

species, to screen parking lots and large commercial buildings in order to provide a visual barrier between commercial and residential areas.

- (L) Lighting. Lighting shall be designed so as not to disturb adjacent properties or traffic. Lights should be directed down and the height of light standards appropriate to the site.

Upward lighting, such as accent lighting shall be carefully directed away from oncoming traffic. Canopy lighting shall be recessed.

Lamp and post selection should reflect architectural style of the building and be sensitive to adjacent architecture (Figure 16).



**Figure 16. Examples of Overhead Lighting and Fixtures**

- (M) Site Furnishings and Amenities. Site furnishings such as trellises, benches, lighting, trash containers, fencing, phone booths, etc. should be integral elements of the design and should be shown on the plans. Site furnishings shall be placed leaving adequate space for the stockpiling and removal of snow.

Exterior vending machines such as soft drink and cigarette dispensers are to be discouraged, unless they are screened such that they do not constitute another outdoor sign or advertisement.

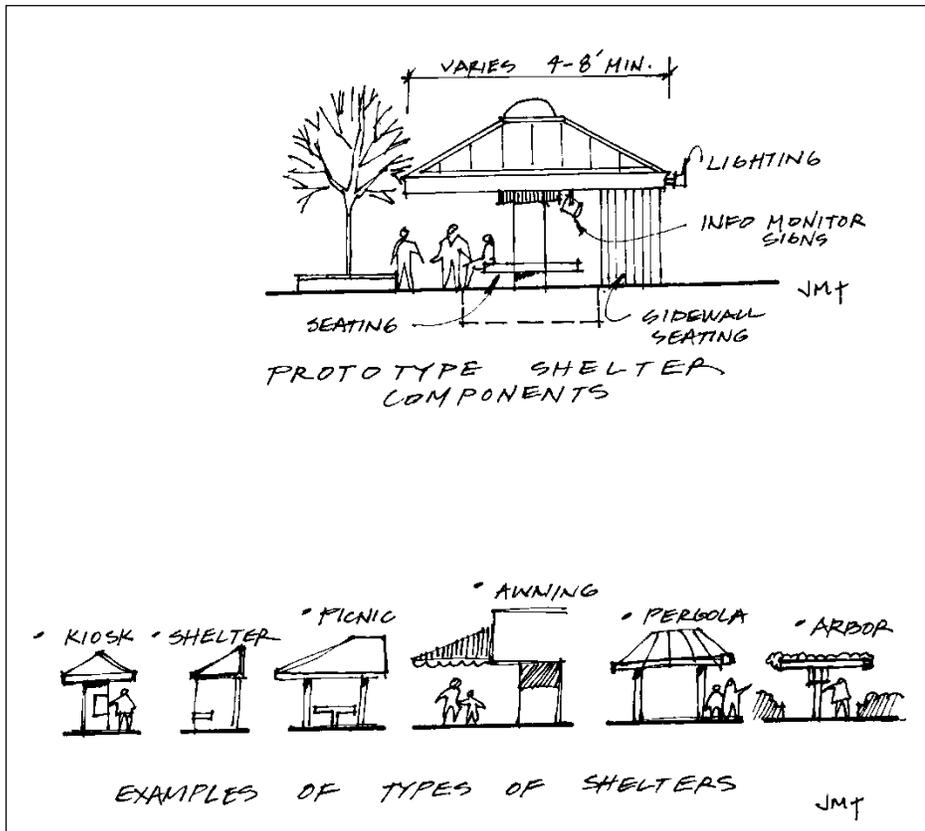
- (N) Seating/Benches. Rest areas such as benches and wall seating should be provided

where pedestrians walk long distances. At least one seat for every 100 feet of pathway is a good rule of thumb. A variety of bench heights should be provided for different uses and user groups:

1. For the elderly, a wall height of 18-22 inches is preferable.
2. Wall heights of 24-36 inches provide a surface to lean against in a half-sitting position.
3. Benches are typically 18-20 inches high and 12-18 inches wide.

(O) Shade Structures and Shelters. Shade structures and shelters (Figure 17). Some examples

1. Kiosks
2. Typical shelter
3. Picnic area
4. Awnings
5. Pergolas
6. Arbors



**Figure 17. Kiosks and Shelters**

### **Article 5.3. On-site Storage and Use of Materials**

No materials of a hazardous nature as defined by the Hazardous Substance Act (Rhode Island General Laws 23-24-2) shall be stored except with the explicit approval of the Town and then in strict compliance with applicable local, state, and federal regulations governing such storage.

All aboveground storage tanks containing hazardous materials should use the highest state of the art equipment to ensure safety. Facilities should include secondary containment within a vault constructed of appropriate materials, i.e., concrete.

Outside storage of materials supplies, or equipment, including trucks or other motor vehicles, must comply with the appropriate applicable sections of the Zoning Ordinance. Further, equipment shall be screened on sides and top in harmony the architecture, design, and appearance of neighboring structures and other surroundings.

### **Article 5.4. Building Design**

- (A) **Maintaining Local Architectural Character.** New developments and expansions shall be integrated with and complementary to existing architecture. Development projects should reuse existing buildings of character whenever possible. Vacant, historic buildings should be stabilized and preserved until rehabilitated.

"... In performing their functions, Town commissions and boards should require owners to emulate typical village building forms when carrying out new construction, renovations or restorations. "

- 1994 Slatersville Area  
Plan

- (B) **Facades and Exterior Walls.** Facades should be articulated to reduce massive scale and uniform, impersonal appearances of large buildings and provide visual interest that will be consistent with the community's identity, character and scale.

Facades greater than 100 feet in length, measured horizontally, shall incorporate wall plane projections or recesses having a depth of at least 3% of the length of the facade and extending at least 20 percent of the length of the facade. No uninterrupted length of any facade shall exceed 100 horizontal feet.

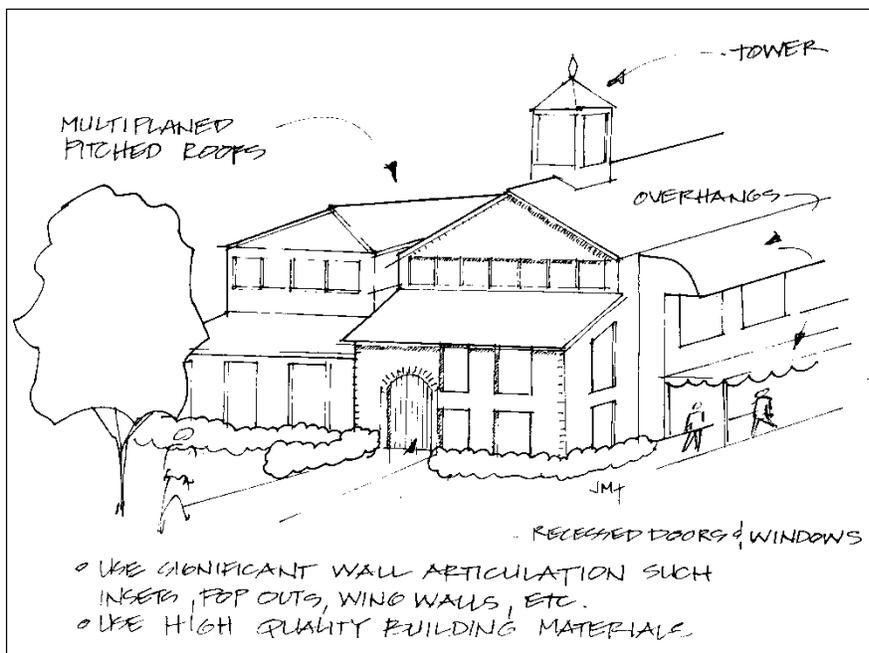
Ground floor facades that face public streets shall have arcades, display windows, entry areas, awnings, or other such features along no less than 60 percent of their horizontal length.

- (C) **Multi-planed pitched roofs and entryways.** (Figure 18) Each principal building on a site shall have clearly defined, highly visible customer entrances featuring at minimum four of the following:
  - 1. Recesses/projections

2. Arcades, overhangs or canopies
3. Raised corniced parapets over the door
4. Peaked Roof Forms
5. Arches
6. Outdoor Patios
7. Display Windows
8. Architectural details such as tile work and molding which are integrated into the building structure and design
9. Integral planters or wing walk that incorporate landscaped areas and/or places for sitting

(D) Detailed Features. Buildings should have architectural features and patterns that provide visual interest, at the scale of the pedestrian, reduce massive aesthetic effects, and recognize local character. The elements in the following standard should be integral parts of the building fabric, and not superficially applied trim or graphics, or paint. Building facades must include a repeating pattern such as: color change, texture change or material module change.

(E) Wall material and colors. Exterior buildings materials should be aesthetically pleasing and compatible with materials and colors used in adjoining neighborhoods. Predominant exterior building materials shall be high quality materials, such as: brick, wood sandstone, other native stone, tinted, textured, concrete masonry units.



**Figure 18. Required Building Elements**

Recessed doors & windows

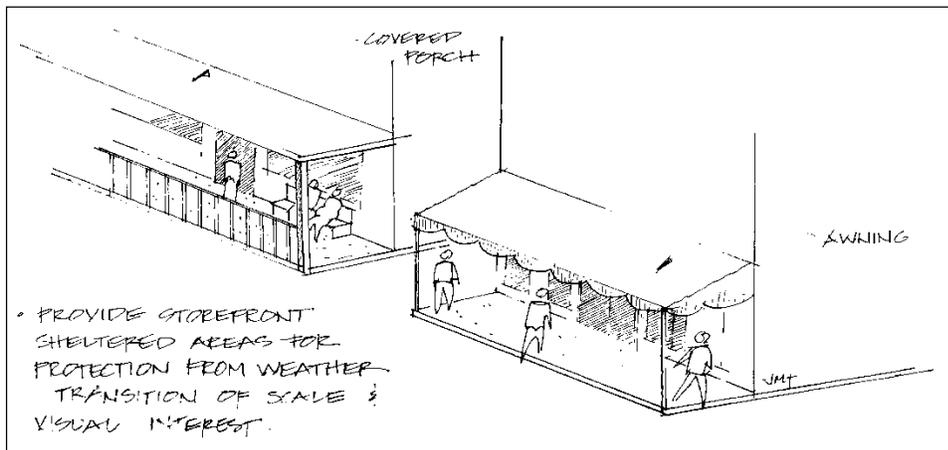
- Use significant wall articulation such insets, Pop outs, wing walls, etc.
- Use high quality building materials.

Predominant exterior building materials shall not include the following:

1. Tilt-up concrete panels
2. Pre-fabricated steel panels
3. Large blank walls
4. Flat roofs without a decorative cornice or parapet
5. Unpainted concrete and cinderblock walls
6. Highly reflective surfaces
7. Square "box like" buildings
8. Mixing of unrelated exterior materials
9. Exposed pipe columns

Franchise architecture is strongly discouraged. Building elevations should be designed to fit into the surrounding neighborhood. Architectural gimmicks, such as roof lights, distinctive roof shapes, large false cornices and parapets that sacrifice the integrity of a streetscape to promote a single structure should be avoided. Building forms shall be designed to create and define visually attractive exterior and functional spaces. Auxiliary structures should be architecturally consistent with primary structures on site.

(F) Commercial Storefront Design. Interesting and enticing storefronts are one of the most crucial ingredients in promoting a vital environment in a commercial development. Storefronts should be generous, providing ample displays and entrances and a level of design detail that establishes individuality for each shop while assuring relatedness to the complex. Provide protection from rain and snow for pedestrians through the use of covered walkways and waiting areas, vegetation, and recessed entryways (Figure 19).



**Figure 19. Storefront Sheltered Areas**

- Provide storefront sheltered areas for protection from weather. Transition of scale & visual interest.

- (G) Architectural Elements. Every new building in North Smithfield should strive to contain some, if not all, of the following desirable architectural elements. Although designs not containing such elements may be permitted, the architect should be prepared to explain his/her design and how it meets the intent of the standards:

In general, base material should appear "heavier" in appearance than walls. Windows, doors, and other openings should be detailed to establish them as important parts of the total composition. Design details should be employed to accentuate all entries.

Where a flat roof not meant to be visible from the street is used in the building's design, decorative cornices and parapet walls should be used to screen the roof and to delineate the building's profile.

Mechanical equipment should not be located on the roof if the building is located below grade of an adjacent road unless it can be hidden from view by building elements that are designed for that purpose as an integral part of the building design.

Roofs should be an integral part of the building design and overall form of the structure and should respond to the general design and nature of other roofs along the street. Roofs shall have no less than two of the following features:

1. Parapets concealing flat roofs and rooftop equipment such as HVAC units from public view. The average height of such parapets shall not exceed 15% of the height of the supporting wall and such parapets shall not at any point exceed one-third of the height of the supporting wall. Such parapets shall feature three dimensional cornice treatment.
2. Overhanging eaves, extending no less than 3 feet past the supporting walls.
3. Sloping roofs that do not exceed the average height of the supporting walls, with an average slope greater than or equal to 1 foot of vertical rise for every 3 feet of horizontal run and less than or equal to 1 foot of vertical rise for every 1 foot of horizontal run.
4. Three or more roof slope planes.

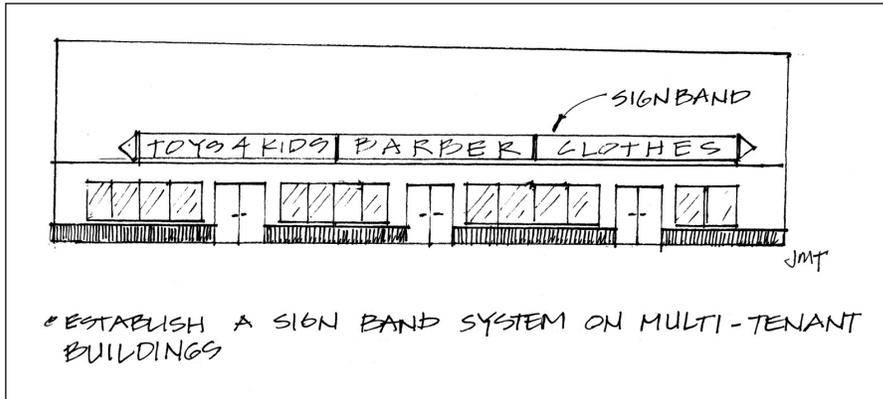
Signs may be printed/painted on awnings but should be restricted to the awning flap (valance) or the end panels of angles, curved, or box awnings. Awning signs are regulated by the Town's sign code. Sign design guidelines are included below.

- (H) Building Designs should seek to de-emphasize auto related building elements such as garages. Where possible, garages should not be visible from the street.

#### **Article 5.5. Signage**

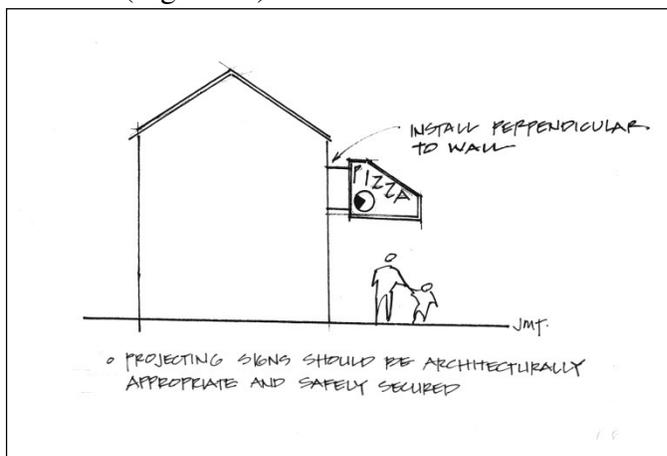
- (A) Design, Dimension, Scale and Location. Signage should be provided for both vehicles and pedestrians. Each development should work within a pre-established "sign envelope" according to the type of sign and size of the development. Envelope size should be proportional to the size of the overall development and immediate streetscape as defined in the Zoning Ordinance.

Signs should be simple, easy to read by passing motorists, adequately illuminated, and should complement the color, materials and design of the building architecture. Signs and their illumination shall not adversely impact public safety. For multi-tenant buildings, a comprehensive signage program shall be developed; only one freestanding sign is allowed (Figure 20).



**Figure 20. Signs**

Projected and/or hanging signs shall reflect the architecture and be safely secured (Figure 21).



**Figure 21. Projecting/hanging signs**

**Article 5.6. Servicing the Building**

- (A) Loading Areas. Loading areas shall not be in front of buildings. Locate loading areas at the rear or sides of buildings and screen as appropriate (Figure 22). Areas adjacent to residential properties should be free of service circulation. Dumpsters, air conditioners, HVAC equipment, trash compaction equipment and other utilities shall be incorporated into the building architecture or screened from view with appropriate fencing or plantings.

All trash and garbage bin shall be:

- 1. stored in an approved enclosure unless bins are stored in an approved service yard,
- 2. easily accessible by each tenant,
- 3. located away from residential areas,
- 4. architecturally compatible with the project,
- 5. screened using plant materials, and
- 6. provided with stress pads to avoid damage to pavement (Figure 23).

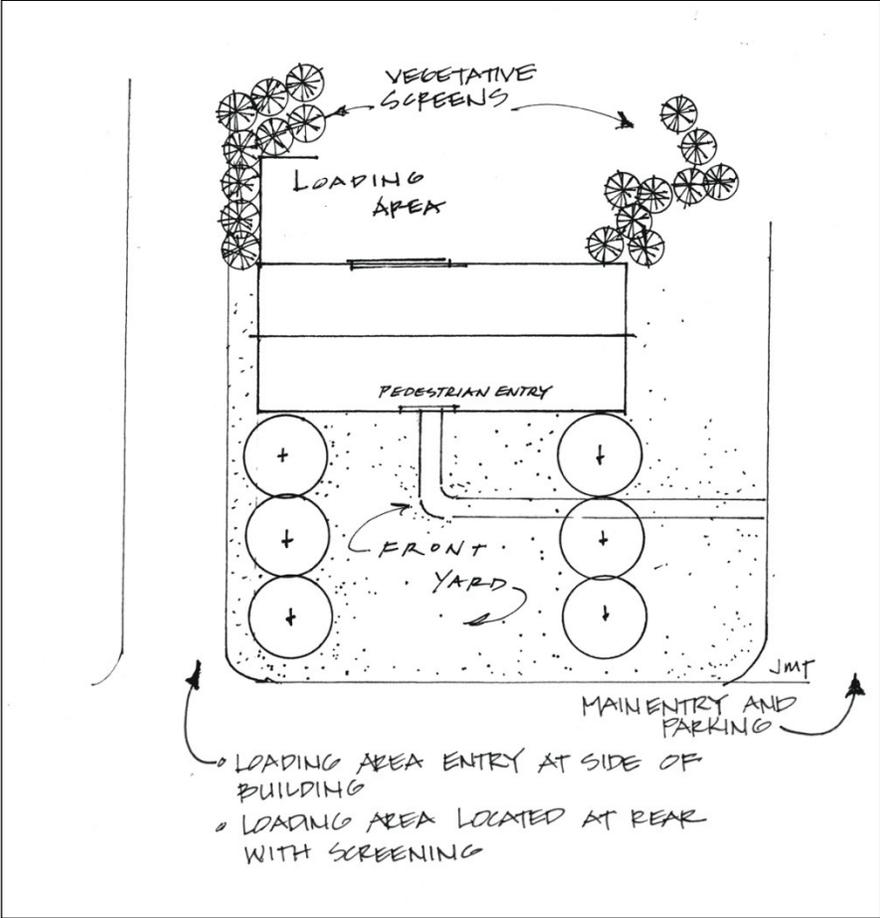
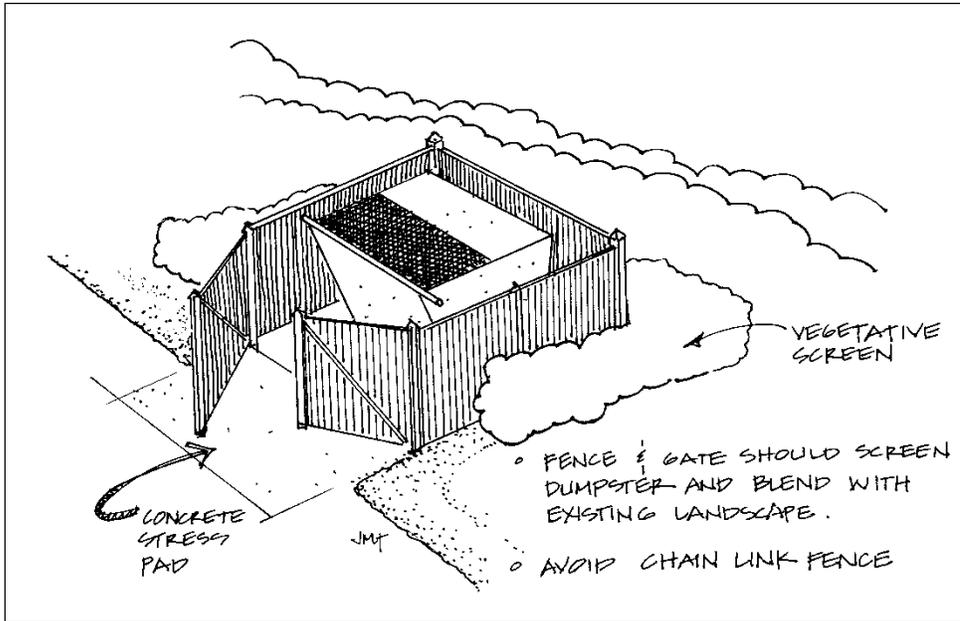


Figure 22. Loading Areas



**Figure 23. Dumpster Screened from View**

**Article 5.7. Standards for the Construction of Public Improvements**

*(A) Right-of-Way Standards*

1. Street Frontage Requirements. The parcel to be developed shall have frontage on and physical access to an existing improved public street that has been formally accepted by the Town of North Smithfield for street or highway purposes, or frontage on a highway owned and maintained by the State of Rhode Island excluding limited access highways and access ramps of limited access highways. Said frontage shall be in compliance with frontage requirements of Section 5.5.1 District Dimensional Regulations of the North Smithfield Zoning Ordinance. The Planning Board may require the developer to make certain improvements to the street or roadway abutting the property, or leading to the property being developed for drainage, safety, traffic or other reasons as deemed proper by the Board. Lot frontage for lots located entirely on cul-de-sacs may be reduced by 20%. Lot width may not be reduced.
2. Access to the Development. All developments shall have at least two (2) means of public street access to enter and exit the proposed subdivision unless the Planning Board determines that two (2) means of public street access is not possible and/or practical due to site orientation or physical site conditions.
3. Miscellaneous Street Requirements.
  - a. Street rights-of-way shall be fifty (50) feet in width for required 26' pavement widths and forty (50) feet for 22' pavement widths.

- b. Street layout will be considered in relation to the existing street system and to the Comprehensive Plan.
- c. Street rights-of-way, both existing and proposed, shall be continued with at least the same width through the development.
- d. Street intersections shall coincide precisely with or be offset by at least one hundred and fifty (150) feet on centerlines.
- e. Streets shall intersect as nearly as practicable at right angles; no intersection shall have an angle of less than sixty (60) degrees.
- f. Private streets and driveways shall not be shown on a plat.
- g. Minor residential streets shall have a paved width of twenty-six (26) feet. Where the Planning Board finds that topography, soils and other factors allow natural swale drainage and no curbing, twenty-two (22) feet may be allowed for cul-de-sacs serving no more than four (4) residential dwellings.
- h. The Board may require additional pavement width up to forty (40) feet for arterial streets subject to heavy traffic.
- i. Grades of minor residential streets shall not be less than 0.5 percent nor more than ten (10%) percent. Arterial streets shall not exceed five (5) percent in grade nor be less than 0.5 percent in grade. Except, however, that when a local residential street intersects with an arterial street, the maximum grade of the local residential street may not exceed one (1) percent for a distance of thirty (30) feet from the intersection of said arterial street. Grades in cul-de-sacs shall not exceed two (2) percent.
- j. Dead end streets shall not be more than six hundred (600) feet in length measured from the center of the turn-around to the centerline of the intersecting street. The turn-around shall have an outside curb/berm radius of forty feet. The right-of-way radius shall be fifty (50) feet. All dead end streets shall be clearly marked at their entrances. Where a dead end street is to provide access to adjacent property, the Board may require provision for a temporary paved turn-around or "Tee" until such time as the adjacent tract is developed and the street is extended. All dead end streets shall be clearly marked at their entrances.
- k. Where a deflection angle of ten (10) degrees or more occurs along the centerline of a street, a curve with a radius of not less than one hundred and fifty (150) feet shall be introduced.
- l. Corners at intersections shall be rounded to provide a curb radius of not less than twenty (20) feet.
- m. An extension of an existing street shall have the same name as the existing street. Names of other proposed streets shall be substantially and phonetically different from any existing street name in the Town.
- n. Reservation of strips of land controlling access to a street will not be permitted. Reservation strips shall be included within the street right-of-way.
- o. Streets shall be crowned or super elevated with a minimum 2% slope to the gutter line.

(B) *Sidewalks.* Sidewalks are required on one side of a street in all zones unless waived by the Board in consideration of the following on a case-by-case basis

1. Development intensity,
2. Probable volume of pedestrian traffic,
3. Proximity of public facilities and service areas,
4. Dead-end streets no more than 600 feet long,
5. Extensions of existing streets without sidewalks,
6. Lots zoned for 40,000 square feet or greater, or,
7. Subdivision of no more than 6 lots or units.

Where the Board feels a special safety hazard may be created, sidewalks may be required on both sides of said street.

In the RU-20 zone or zones of equal or higher densities, developments of greater than 5 lots or 10 units shall have sidewalks.

- (C) *Bicycle Paths.* Bicycle paths shall be incorporated into the proposed development where they are necessary to extend an existing bicycle path or bike walk; to intersect with proposed State and local bicycle facilities; to connect adjacent developments where vehicular connections would be impractical; to further the goals of the *North Smithfield Comprehensive Plan*; or where adjacent or nearby public or private schools, recreation areas, or other similar facilities would be likely to generate bicycle traffic.

Bicycle paths may be incorporated into sidewalk systems within developments, at the discretion of the Planning Board. Bicycle path/sidewalks shall be no less than six feet in width, as to accommodate both pedestrian and bicyclist.

- (D) *Easements.* The Planning Board may require easements for easy access to improvements on private land that serve more than one lot as described below. The Board may require the dedication of land to the Town in lieu of easements if such dedication would provide the necessary control over and access to the intended use. Existing and proposed easements must be labeled accordingly on all plans.

Easements shall be provided for access to water, sewer, gas, communication and electrical lines, fire protection cisterns, and drainage structures not accessible from a public right of way.

1. *Sight Distance Easements.* Where deemed necessary by the Planning Board to establish or maintain adequate sight distances for vehicular traffic, the dedication of an easement to the Town may be required which would prohibit the erection or maintenance of any visual obstruction such as a structure, tree, shrub, wall, earthen embankment, hill or any other obstruction.
2. *Bicycle or Pedestrian Access Easements.* Bicycle and pedestrian access may be required on a separate strip of land outside of the right-of-way dedicated to the Town or on an easement having a minimum width of fifteen (15) feet.
3. *Conservation Easement.* All land dedicated for open space or recreational uses

shall be covered by a Conservation Easement to ensure its perpetual maintenance as conservation, recreation, or park land for the enjoyment of present and future residents.

#### **Article 5.8. Other Improvements to the Land**

- (A) *General.* The sub-divider, at his own expense, shall construct improvements according to specifications of the Board or otherwise designated Town Official. Required construction for each improvement is as follows:
  
- (B) *Utilities and Services.* All electric and telephone service shall be installed underground in conformity with rules and regulations in effect within the respective utility companies. All utilities shall be installed subsurface including electric, telephone and cable. All utility lines, curb stops and/or other subsurface facilities within street rights-of-way shall be installed and then backfilled and allowed to settle for a minimum of thirty (30) days prior to the preparation of street sub-base. The developer, at his own expense, shall construct improvements according to specifications of the Board or otherwise designated Town Official. Required construction for each improvement is as follows:
  
- (C) *Sanitary Sewer.* Sanitary Sewer shall be installed by the developer in accordance with the directions and specifications of the North Smithfield Sewer Commission and its engineers where connection to the municipal system is feasible or where connection to a proposed municipal sewer system is feasible within five (5) years of the filing date of the preliminary plat in accordance with the Sewer Commission's Plan. Where immediate connection to the existing sewer system is not possible, sewer pipes shall be capped or plugged at the ends pending later connection. A letter of verification from the Sewer Commission is required.  
  
The developer shall furnish and install the proper fittings in sewer lines and shall include branch connections to the lot lines of each lot to prevent the necessity of excavating at a later date.
  
- (D) *Water Lines.* Water lines shall be installed where connection to the municipal system feasible. Installation of water mains shall be in conformance to the America Water Works Association Standard Specifications for residential subdivisions and such other specification as required by the Water District or Districts serving the area.
  
- (E) *Surface Gutters and Subsurface Storm Drainage Pipes and Facilities.* Surface gutters and subsurface storm drainage pipes and facilities shall be installed, connected to dry wells or storm water basins or to the public storm drain system if connection is feasible.
  
- (F) *Street Signs.* Street signs shall be installed immediately after grading and preparation of sub-base. Street signs shall be of the size, type, and number specified by the Director

of Public Works, and Chief of Police. All dead end streets shall be clearly marked at their entrances.

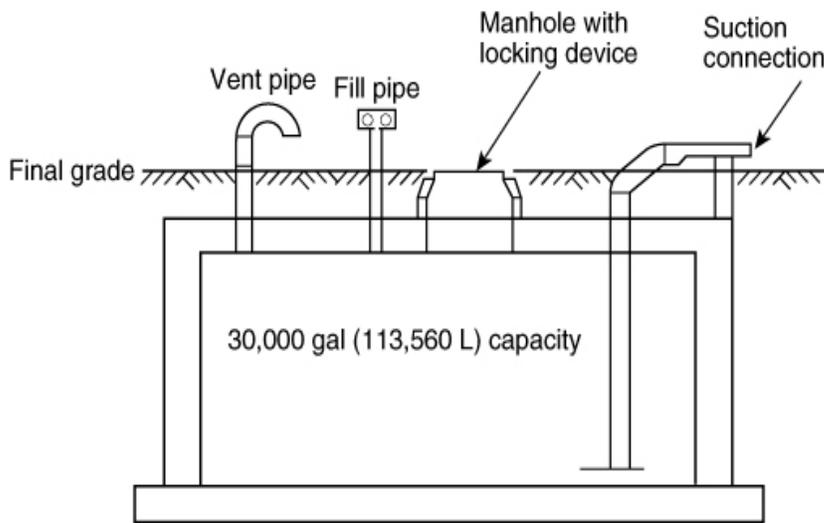
- (G) *Mail Delivery.* Individual mailboxes shall be illustrated on the construction plans. Alternatively, a centralized mailbox for all residents of the plat should be illustrated in conformance with the approval of the U. S. Postal Service.
- (H) *Clearing and Grubbing.* The entire right-of-way areas as shown on the plat shall be cleared and grubbed. All root systems, trees, stumps, bushes and other objectionable material shall be removed and disposed of. Healthy trees within the right-of-way may be left standing provided they are not more than five (5) feet from the right-of-way line.
- (I) *Oversized Improvements.* The subdivider may negotiate with the Town Council for reimbursement of additional expenses incurred in the construction and installation oversized improvements which are required by the Board or Director of Public Works.
- (J) *Street Lights.* Street lights will be installed at locations designated by the Director of Public Works. Setback requirements shall be a minimum four (4') feet from the edge of pavement and must satisfy ADA minimum width requirements for sidewalks. All costs associated with the purchase and installation of streetlights including but not limited to street light pole and lighting fixture shall be borne by the developer. Furthermore, the developer shall provide for the cost of providing electrification of lighting up to and through final acceptance of the roadway.
- (K) *Fire Hydrants/Fire Protection Cisterns.* Fire hydrants shall be installed in all developments where public water supply systems are available. Hydrant type, location, spacing and water pressure shall meet the minimum requirements of the National Fire Protection Association and local Fire Department.

In developments of 3 or more dwelling units, where a public water supply is not available, the installation of a 10,000 gallon underground cistern(s) may be required. The number of cisterns required shall be based on NFPA standard H.1.1 Residential Annex H or current adopted NFPA edition. The North Smithfield Fire Marshall or his designee shall determine the location of cisterns.

Specifications:

1. Tank- poly-resin or fiberglass.
2. Connections- 4 1/2" Standard Hydrant with no screw valve.
3. Access to vent port shall be 3' well tile. The well tile cover (man-hole cover) will be raised slightly above finish grade and be outfitted with a lock.
4. Tank shall be covered with a minimum of 4' of cover.

5. All connections to the tank shall be watertight.
6. The height of the relief vent shall be equal to the height of the steamer port of the dry hydrant.
7. Nozzle shall be 6" National Standard Thread and shall be protected by an end cap. The center of the nozzle shall be 3' above the ground level measured at the edge of the roadway.
8. The elbow of the feeder to the hydrant shall be encased in a 16" x 16" footing.
9. Horizontal piping from the hydrant to the tank shall be 6" schedule C-900 PVC or steel.
10. All pipe joints, fittings, and adapters shall be airtight.
11. Hydrant shall be 6' (maximum) from the edge of the roadway.



12. All four corners of the cistern shall be protected with concrete or steel bollards.

13. Double 3" fill pipe with a 2 1/2 national standard connection is required.

14. All tanks shall be installed to manufactures specifications and tank installation should be overseen a registered

design professional.

\*\*\*This is an example of a 30,000 gal cistern.

Prior to the issuance of building permits for housing units within a development for which a cistern is required, the cistern shall be installed, inspected, filled and deemed operational by the Fire Marshall or his designee.

## Article 5.9. Drainage Systems Design

The drainage system may be comprised of natural and manmade elements, including grassed swales, curbs, catch basins, culverts, and storm water pipes. The applicant is required to minimize the use of retention and detention basins and incorporate natural elements into the drainage design whenever possible using the Best Management Practices (BMP's) and standards of the State of Rhode Island Storm Water Design and Installation Standards Manual. The use of retention/detention ponds will only be allowed when the developer convinces the Planning Board that this is the only viable option for the development. BMP's such as grassed swales and vegetated filter strips, not only collect and transport storm water, but also mitigate pollution; reduce sedimentation; provide visual aesthetics, recreational opportunities, and potential wildlife habitat. However, in recognition of maintenance issues associated with these systems, alternatives may be proposed for consideration. Drainage structures shall be in conformance with the accepted State RIDOT Standards, or approved equals.

Drainage plans and drainage calculations shall be prepared by a State of Rhode Island Registered Professional Engineer. All applicable environmental permits must be obtained from state and federal regulatory agencies. The storm water drainage calculations, runoff rates, and system design shall be based on the application of the appropriate method as follows:

- (A) The Rational Method—This is the preferred method for pavement drainage and other small systems of three acres or less, where no wetlands, ponds, or other storage depressions are present, and where drainage is toward the point of analysis.

$Q=C \times I \times A$  where:  
Q=Peak Discharge  
C = Runoff Coefficient  
I = Rainfall Intensity  
A = Area of Watershed

U.S. Soil Conservation Service (1986) revised Technical Release 55 (TR-55) — This method is preferred for calculating runoff volume, peak discharge rate, and flood storage requirements for site development on sites generally larger than three acres or when detention basins are proposed.

- (B) Drainage Plan and Calculations. The drainage plan and drainage calculations shall contain the following information:
1. The proposed drainage system shall be designed to accommodate storm water such that post-construction conditions do not result in increased peak run-off from pre-construction conditions (zero net increase) for the 100-year frequency rainfall event.
  2. An estimate of the quantity of storm water surface run-off presently flowing from the land proposed to be subdivided, and that which would be generated by the proposed subdivision, calculated on the basis of the two (2), ten (10),

twenty-five (25), and one-hundred (100) year frequency, 24 hour, Type III, rainfall events.

3. An estimate of the quantity of storm water run-off entering the development naturally from upstream areas within the watershed under present conditions, calculated on the basis of the two (2), ten (10), twenty-five (25) and one-hundred (100) year frequency rainfall.
4. An analysis of the capability of existing watercourses, storm water culverts and other drainage facilities within the land proposed to be subdivided to handle the run-off as calculated under a. and b. above, and proposals to handle such surface run-off. Design criteria for drainage improvements shall conform to the State specifications, but may be modified by the Town of North Smithfield. Culvert and storm sewers shall be designed as follows: pipe sizing for the twenty-five (25) year frequency rainfall; cross culvert sizing for fifty (50) year frequency rainfall, one-hundred (100) year frequency in a special flood hazard zone.
5. Proposals for disposal of surface run-off, downstream from the development without danger to land and improvements or to the receiving water body.
6. The drainage plan and narrative shall further indicate how the following specific requirements will be met: (i) that each lot will be adequately drained; (ii) that natural drainage patterns will be maintained whenever possible; (iii) that all existing watercourses will be left open, unless approval to enclose is granted by the Planning Board and the Rhode Island Department of Environmental Management (RIDEM); (iv) that all new open watercourses will be seeded, sodded or paved depending on grades and soil types; and, (v) that a continuous drainage system will be installed and connected to a natural or manmade water course or to an existing piped storm drainage system. The ultimate destination of such continuous drainage shall be a permanent natural body of water or wetland. Where the Town's Engineer determines that such ultimate destination is impractical, the Board shall require the construction of a retention or detention area capable of accommodating proposed storm water volumes based on the two (2) year, ten (10) year, twenty-five (25) year, and one-hundred (100) year frequency rainfall events.

Where any part of the drainage system is proposed for location outside the public street right-of-way, the Planning Board and Department of Public Works must approve the proposed provisions for future maintenance.

All necessary easements to off-street watercourses will be submitted by the applicant and approved by the Town Solicitor.

Where volume velocity of the surface run-off is high, the flow thereof shall be controlled by one of the following: rip-rap, sediment basins, flow spreaders, or other applicable devices and/or techniques recommended in the Rhode Island Soil Erosion and Sediment Control Handbook. Where free water is encountered within three (3) feet of finished grade, adequate drainage shall be designed to be constructed at a depth of at least four (4) feet below finished grade.

## **Article 5.10. Construction Standards**

- (A) **Construction Procedures.** The following procedures shall be followed by the developer and by contractors under the direction of the developer in the construction of any subdivision, land development or related improvements.
- (B) **Construction Plans.** One complete set of all construction plans, profiles, cross-sections or other working drawings of required improvements to the land shall be submitted to and approved by the Director of Public Works or his designee prior to any construction start.
- (C) **Pre-construction Meeting.** A pre-construction meeting shall be held with the Director of Public Works at least seven (7) days prior to the start of any improvements. The developer (or his duly authorized representative) and the on-site project manager shall attend this meeting.
- (D) **Notification.** No step in the construction of required improvements shall commence until the Director of Public Works has been notified at least twenty-four (24) hours in advance of the phases of construction.
- (E) **Inspection of Improvements.** Inspection and approval by the Director of Public Works or his designee, shall be required for the following phases of subdivision improvements:
  - 1. During and following installation of all underground drainage structures, systems and utilities prior to back filling;
  - 2. During and following the preparations of the road sub-grade and shoulders.
  - 3. During and following the spreading and compaction of the sub-base course;
  - 4. During and following the spreading and compaction of the base course prior to the application of the asphalt binder course;
  - 5. Immediately prior to and during the application and compaction of the asphalt surface course on the roadways and, if required, sidewalks, and
  - 6. Following all completion of all improvements and installation of bounds;
  - 7. At periodic intervals as required to ensure compliance with the approved Erosion and Sediment Control Plan.

The Director of Public Works may require inspection at such other intervals as he may deem necessary to assure proper construction of improvements.

- (F) **Request for Inspection.** Whenever an inspection is required the developer shall request the Director of Public Works to make such inspection. The Director of Public Works or his representative shall within 48 hours, exclusive of Saturday, Sunday and holidays, make such inspection and give to the developer written approval or disapproval of the improvements inspected by him. No subsequent step or phase shall commence until an inspection has been made and approval granted.

(G) **As-Built Drawings.** Upon completion of construction of all required improvements, and before the performance bond is released and the maintenance bond is accepted, the developer shall furnish two sets of as-built drawings ~~on transparent Mylar~~ of required improvements to the Administrative Officer. If sanitary sewer lines were installed, the developer shall furnish an additional set of as-built drawings to the North Smithfield Sewer Commission. As-Built Drawings must be computer generated with Computer Aided Drafting (CAD), automated mapping, or GIS software.

Copies of digital files on a commonly used form of digital media must be submitted with the hardcopy of the Plan to be approved. If submitted in an AutoCAD version, native files are required. If submitted in another computer-aided design (CAD) format, Drawing Exchange Files (DXF) are required. Geo-referencing coordinates for the plans within each layer in the NAD83-RISPC in feet are preferred, but local coordinates are acceptable. If not already shown on the Plan, supplemental metadata should include the name and version number of the computer software used to generate the digital files and the name, company address and registration number of the land surveyor performing the work.

- (H) **Inspection Fees.** Inspection fees shall be paid in the amount established in Article III General Requirements, and shall be paid in full before construction begins of any improvements requiring inspection.
- (I) The Public Works Director shall inform the Administrative Officer, in writing, that all required improvements have been constructed and inspected

#### **Article 5.11. Materials**

(A) General. Street construction shall be of bituminous concrete wearing surface, laid down and compacted by mechanical means on a compacted gravel foundation, in accordance with these specifications and conforming to the approved plans, profiles and cross-sections.

(B) Materials.

1. Gravel Borrow  
Shall meet RIDOT specification.

(C) Bituminous Material.

Base course and surface course shall meet RIDOT specification.

#### **Article 5.12. Construction Method**

(A) **Clearing and Grubbing.** The entire right-of-way areas as shown on the plat shall be cleared and grubbed. All root systems, trees, stumps, bushes and other objectionable

material shall be removed and disposed of. Healthy trees within the right-of-way may be left standing provided they are not more than five (5) feet from the right-of-way line.

- (B) Subsurface Water. Where free water is encountered within three (3) feet of finished grade, adequate drainage shall be constructed at a depth of at least four (4) feet below finished grade.
- (C) Preparation of Sub-base. The sub-base shall be thoroughly compacted by a 10-ton roller or its equivalent, true to the lines, grades and cross-sections shown on the accepted drawings. The sub-base shall be swept or otherwise cleaned of all mud, loose and foreign material and shall be thoroughly dry before any aggregate is spread.
- (D) Curb and Gutter. The edge of the wearing surface shall be held to line and grade by the installation of curbs and gutters. Granite curb shall be installed along both sides of the street for the entire length of the street and along the full radius at all street intersections and three (3) feet either side of all catch basin apron stones. Granite transition curb (RI Standard 7.58) shall be used to start all curb segments. The granite curb shall be installed at the edge of the street pavement area and shall conform to the latest edition of the "Standard Specifications for Road and Bridge Construction", published by the State of Rhode Island, Department of Public Works, Division of Roads and Bridges. Bituminous berm shall be 18" in width for both the binder and the surface course.
- (E) Spreading Base Aggregate. After the sub-base has been properly prepared and curbs and gutters set, the base aggregate with binder soil, or its equivalent, shall be spread for the full width and in such volume as to provide a twelve (12) inch cross-section after compaction in a "normal section", (18) inches in "cut section" and (24) inches in a "ledge cut". The base shall be spread and compacted in (6) inch lifts in such a manner that segregation of sizes is prevented. The materials to be used shall be either crusher run gravel or recycled asphalt mix.
- (F) Mixing. Each six (6) inch layer of the base aggregate shall be uniformly mixed and shaped to the lines, grades, and cross-sections shown on the accepted drawings by means of approved road grading equipment capable of mixing and shaping the course aggregate.
- (G) Compacting Aggregate. Immediately after the first layer of six (6) inch base aggregate has been properly shaped, it shall be rolled with a sufficient sized roller to achieve 95 percent Marshall Density. Rolling shall start longitudinally at the sides and proceed toward the center of the pavement overlapping on successive trips by at least one-half (1/2) the width of the rear wheel. Rolling shall continue until the base aggregate presents a firm even surface, true to lines, grades and cross-sections shown on the accepted drawings.

- (H) Application of Binder (Base Coat) Bituminous Concrete. Bituminous concrete binder coat shall be applied in accordance with the following specifications:
1. Preparation of Surface. The surface shall be clean of all debris prior to the application of an asphalt emulsion tack coat to all surfaces in accordance with RIDOT standards. Protrusions shall be removed and any holes, ripples or unevenness in the surface shall be brought back to true line and cross-section with proper compaction.
  2. Placement. The bituminous concrete shall be applied at a temperature of not less than 325 °F by an approved paving spreader equipped with a compactor. Such materials shall be placed in sufficient quantity to provide a minimum cross-section of two (2) inches after compaction. Original delivery slips showing the temperature and rate of application shall be made available to the Director of Public Works.
  3. Compaction. At a suitable time after placement, the bituminous concrete shall be rolled with a ten (10) ton roller equipped with a sprinkler system to wet the rolls, in the same manner as prescribed in paragraph 6 Compacting Aggregate, above.
- (I) Application of Top Coat Wearing Surface. (Bituminous Concrete) A top coat of Class I-1 bituminous concrete shall be applied in accordance with the following specifications:
1. Preparation of Surfaces. The base coat surface shall be swept clean of all sand and debris. An application of asphalt emulsion tack coat to all surfaces in accordance with RIDOT standards shall be applied. Protrusions shall be removed and any holes, ripples or unevenness in the surface shall be brought back to true line and cross-section by the soft application and proper compaction of a Class 1-2 bituminous concrete leveling course.
  2. Placement. The ideal temperature for initial compaction of bituminous concrete is 275°F but should never be more than 300°F. Final compaction shall be completed before the temperature of the material drops below 175°F. The bituminous concrete shall be applied by an approved paving spreader equipped with a compactor. Such materials shall be placed in sufficient quantity to provide a minimum compacted cross-section of two (2) inches. Original delivery slips showing the temperature and rate of application shall be made available to the Director of Public Works.
  3. Closing of Newly Constructed Streets. Upon completion of the placement and rolling of the Class I-1 bituminous concrete, the street or streets shall be closed to all traffic for a minimum period of four (4) hours.
  4. Seasonal Limits. Bituminous material shall be laid only when the temperature

of the air is 40°F and rising and not during unfavorable weather conditions.

### **Article 5.13. Curbs, Sidewalks, Driveways and Pedestrian Rights-of-Way**

- (A) Granite curb shall be installed along the full radius at all street intersections and 3' on either side of all catch basin apron stones. Granite transition curb (RI Standard 7.58 ) shall be used to start all curb segments.
- (B) In all zones, sidewalks are required on at least one side of the street under section 5-7(B). Curbing shall be granite on both sides of the street for the entire length of the street. The granite curb shall be installed at the edge of the street pavement area and shall conform to the latest edition of the "Standard Specifications for Road and Bridge Construction", published by the State of Rhode Island, Department of Public Works, Division of Roads and Bridges.
- (C) If it is determined by the Planning Board that both sides of the street do not require sidewalks, the side not requiring a sidewalk will conform to the following. The area between the back of the curb line and the right-of-way line shall be loomed to a depth of four (4') inches and seeded with a suitable grass seed.
- (D) Where concrete sidewalks are to be constructed, they shall be installed in the area between the back of the curb line and the right-of-way line. Such sidewalks shall be constructed over an eight (8") inch gravel base, shall be a minimum of four (4 ") inches thick, four (4) feet in width, measured from the edge of the right-of-way line, except at driveway crossings where the gravel base shall be increased to ten (10 ") inches.
- (E) Sidewalks shall not be lower at driveways except for eighteen (18') inches in from road edge.
- (F) Each residential lot shall have its own driveway not shared by any other lot.

### **Article 5.14. Drainage Structures and Facilities**

- (A) General. Storm water management within a proposed development shall be designed to minimize the volume and rate of runoff consistent with current RIDEM regulations, and to encourage infiltration into the ground. Wherever possible, grass swales and sheet flow of storm water over unpaved areas shall be employed instead of curbs and glitters and closed or piped drainage systems. Where practical, in lieu of a single large detention or retention area, a series of smaller basins shall be employed. Drainage systems may be located within designated open space areas with the permission of the Planning Commission. Drainage detention or retention basins shall be suitably landscaped and integrated into the overall site design.
- (B) All necessary surface and subsurface storm drainage structures and facilities shall conform to the following division sections and items of the Standard Specifications

for Road and Bridge Construction, latest edition, published by the State of Rhode Island, Department of Public Works, Division of Roads and Bridges, exclusive of any items therein covering methods of measurement and basis of payments:

Division 11, Section 200, Earthwork  
Division 11, Section 700, Drainage  
Section 205, Trench Earth Excavation  
Section 205, Trench Ledge Excavation  
Section 205, Backfill for Structures other than Pipe Culverts  
Section 205, Bedding and Backfill for Pipe Culverts Section  
701, Culverts and Storm Drains  
Section 702, Manholes, Inlets and Catch Basins  
Section 703, Under drains

- (C) All plats shall provide for the adequate drainage of all surface and subsurface waters. Any drainage facility shall conduct water to approved location and in a manner approved by the Director of Public Works and the Board.

Surface gutters and subsurface storm drainage pipes and facilities shall be installed, connected to dry wells or storm water basins or to the public storm drain system if connection is feasible. In conservation developments, drainage systems may be located within designated open space areas with the permission of the Planning Board. Drainage detention or retention basins shall be suitably landscaped and integrated into the overall site design as provided in Section 4-1 (L).

Where a water course, drainage way, channel or stream is located in a plat, or where a water course, drainage way, channel or stream will be altered, relocated or otherwise changed in a subdivision plat, the developer shall make adequate provisions for existing flow, future drainage needs and upstream runoff satisfactory to the Board. If the original groundwater elevation or the spring around water elevation, as certified by the developer's engineer, is higher than two (2) feet below finished grade of the lowest floor elevation of a building, sub-drainage facilities adequate to lower the ground water elevation to two (2) feet below said finished grade shall be installed, or a restriction on the plat specifying that the lowest floor elevation of a building shall be at least two (2) feet above ground water elevation.

- (D) All catch basin frames and grates shall be installed so that the rim is set one (P) inch lower than gutter grade during both the binder course and surface course phases of road development.
- (E) All catch basin and manholes will have a minimum of six (6') inches of clay brick used to adjust frame and grates or covers.
- (A) All drainage pipes greater than twelve (12') inches in diameter will be pre-cast concrete Class III - Class IV if cover is less than four (4) feet.

**Article 5.15. Permanent Monuments**

- (A) *General.* Monuments shall be placed where angles are turned in the survey, at street line intersections, property corners and at such other locations as the Board may designate i.e. front lot corners. Open space and/or conservation areas that are a condition of approval must be marked with monuments as well.
  
- (B) *Materials and Dimensions.* Permanent monuments shall be stone or reinforced concrete which shall be thirty-six (36') inches in length and six (6') inches square. A drill hole one-half (1/2') inch in diameter and three quarters (3/4) of an inch deep shall be placed and centered on the top surface of the monument.

**Article 5.16. Standards for Land Development Projects**

The standards in this section must be applied when a project is classified as a Land Development Project. If the project involves a public right-of-way or installation of, or connection to, infrastructure that serves the public and which must be maintained in accordance with appropriate health and safety standards, the previous section 5-2 is also applicable.

**Article 5.17. Street Classifications (reserved)**

