Appendix A

INFORMATION REQUIRED WITH APPLICATIONS

A-1. In General

(a) As provided in Section 49, it is presumed that all of the information listed in this appendix must be submitted with an application for a zoning, sign, special use, or conditional use permit to enable the permit-issuing authority to determine whether the development, if completed as proposed, will comply with all the requirements of this chapter. As set forth in Section 92, applications for variances are subject to the same provisions. However, the permit-issuing authority may require more information or accept as sufficient less information according to the circumstances of the particular case. A developer who believes information presumptively required by this appendix is unnecessary shall contact the planning staff for an interpretation.

(b) As also provided in Section 49, the administrator shall develop application processes, including standard forms, to simplify and expedite applications for simple developments that do not require the full range of information called for in this appendix. In particular, developers seeking only permission to construct single-family or two-family residences or to construct new or modify existing signs should contact the administrator for standard forms.

A-2. Written Application

Every applicant for a variance or a zoning, sign, special use, conditional use permit or certificate of appropriateness shall complete a written application containing at least the following information:

(1) The name, address, and phone number of the applicant.

(2) If the applicant is not the owner or lessee of the property in question, or their agents, or persons who have contracted to purchase the property contingent upon their ability to acquire the necessary permits, or the agents of such persons (who may make application in the name of such owner, lessee, or contract vendee)(i) the name, address, and phone number of the owner, (ii) the legal relationship of the applicant to the owner that entitles the applicant to make application, and (iii) written documentation that the owner of the property has authorized the filing of the application.

(3) The date of the application.

(4) Identification of the particular permit sought.

(5) A succinct statement of the nature of the development proposed under the permit or the nature of the variance.

(6) Identification of the property in question by street address and tax map reference.

(7) The zoning district within which the property lies.

(8) A boundary survey showing the dimensions and the number of square feet in the lot where the development is to take place.

(9) The gross floor area of all existing or proposed buildings located on the lot where the development is to take place.

(10) If the proposed development is a two-family or multi- family residential development or an architecturally integrated subdivision, the number of one, two, three, or four bedroom dwelling units proposed for construction.

A-3. Development Site Plans

Subject to Section A-1 of this appendix, every application for a variance or a zoning, sign, special use or conditional use permit shall contain plans that locate the development site and graphically demonstrate existing and proposed natural, man-made, and legal features on and near the site in question, all in conformity with Sections A-4 through A-6 of this appendix.

A-4. Graphic Materials Required for Plans

(a) The plans shall include a location map that shows the location of the project in the broad context of the town or planning jurisdiction. This location map may be drawn on the development site plans or it may be furnished separately using reduced copies of maps of the town's planning jurisdiction.

(b) Development site plans shall be drawn to scale, using such a scale that all features required to be shown on the plans are readily discernible. Very large developments may require that plans show the development in sections to accomplish this objective without resorting to plans that are so large as to be cumbersome, or the objective may be accomplished by using different plans or plans drawn to different scales to illustrate different features. In all cases, the permit-issuing authority shall make the final determination whether the plans submitted are drawn to the appropriate scale, but the applicant for a conditional or special use permit relies in the first instance on the recommendations of the planning staff.

(c) Development site plans should show on the first page the following information:

(1) Name of Applicant
(2) Name of Development (if any)
(3) North Arrow
(4) Legend
(5) Scale

(d) All of the features required to be shown on plans by Sections A-5 and A-6 may be included on one set of plans, so long as the features are distinctly discernible.

A-5. Existing Natural, Man-Made and Legal Features

(a) Development site plans shall show all existing natural, man- made, and legal features on the lot where the development is to take place, including but not limited to those listed below. In addition, the plans shall also show those features indicated below by an asterisk that are located within fifty feet in any direction of the lot where the development is to take place, and shall specify (by reference to the Table of Permissible Uses or otherwise) the use made of adjoining properties.

(b) Existing natural features:

(1) Tree line of wooded areas.

(2) Individual trees twelve inches in diameter or more, identified by common or scientific name.

(3) Orchards or other agricultural groves by common or scientific name.

*(4) Streams, ponds, drainage ditches, swamps, boundaries of floodways and floodplains.

(5) (If the proposed development is a subdivision of more than fifty lots or if more than five acres of land are to be developed), base flood elevation data (See Article XVI, Part I).

*(6) Contour lines (shown as dotted lines) with no larger than five-foot contour intervals. (As indicated in Subsection A-6(b)(17), proposed contour lines shall be shown as solid lines.)

(7) Boundaries of applicable Areas of Environmental Concern in accordance with the State Guidelines for AECs (15 NCAC 7H) pursuant to the Coastal Area Management Act of 1974.

(c) Existing man-made features:

*(1) Vehicle accommodation areas (including parking areas, loading areas and circulation areas, see Section 290), all designated by surface material and showing the layout of existing parking spaces and direction of travel lanes, aisles, or driveways.

(2) Streets, private roads, sidewalks, and other walkways, all designated by surface material.

(3) Curbs and gutters, curb inlets and curb cuts, and drainage grates.

(4) Other storm water or drainage facilities, including manholes, pipes, and drainage ditches.

(5) Underground utility lines, including water, sewer, electric power, telephone, gas, cable television.

(6) Aboveground utility lines and other utility facilities.

*(7) Fire hydrants.

*(8) Buildings, structures and signs (including dimensions of each).

(9) Location of exterior light fixtures.

*(10) Location of dumpsters.

(d) Existing legal features:

(1) The zoning of the property, including zoning district lines where applicable.

(2) Property lines of the tract to be developed (with dimensions identified), adjacent property lines (including corporate limits, town boundaries and county lines).

(3) Street right-of-way lines.

(4) Utility or other easement lines.

(5) Deed book and page reference demonstrating ownership of property.

A-6. Proposed Changes in Existing Features or New Features

(a) Development site plans shall show proposed changes in (i) existing natural features (see A-5(b)), (ii) existing manmade features (see A-5(c)), and (iii) existing legal features (see A-5(d)).

(b) Development site plans shall also show proposed new legal features (especially new property lines, street right-of-way lines, and utility and other easements), as well as proposed man-made features, including, but not limited to, the following:

(1) The number of square feet in every lot created by a new subdivision and the total number of lots created.

(2) Lot dimensions, including lot widths measured in accordance with Section 183 and average lot size.

(3) The location and dimensions of all buildings and freestanding signs on the lot, as well as the distances all buildings are set back from property lines, streets or street right-of-way lines (see Section 184).

(4) Principal side(s) building elevations for typical units of new buildings or exterior remodelings of existing buildings, showing building heights (see Section 186) and proposed wall sign or window sign area;

(5) The location and dimensions of all recreational areas provided in accordance with Article XIII, with each area designated as to type of use;

(6) The location and dimensions of all areas intended to remain as usable open space. The plans shall clearly indicate whether such open space areas are intended to be offered for dedication to public use or to remain privately owned.

(7) Streets, labeled by classification (see Section 210) and street name showing linear feet, whether curb and gutter or shoulders and swales are to be provided and indicating street paving widths, approximate grades and typical street cross-sections. Private roads in subdivisions shall also be shown and clearly labeled as such.

(8) Curbs and gutters, curb inlets and curb cuts, drainage grates.

(9) Other storm water or drainage facilities, including manholes, pipes, drainage ditches, retention ponds, etc.

(10) Sidewalks and walkways, showing widths and surface material.

(11) Bridges.

(12) Outdoor illumination with lighting fixtures sufficiently identified to demonstrate compliance with Section 242.

(13) Underground utility lines, including water, sewer, electric power, telephone, gas, cable television. Water and sewer pipe line signs shall be labeled.

(14) Aboveground utility lines and other facilities.

(15) Fire hydrants.

(16) Dumpsters.

(17) New contour lines resulting from earth movement (shown as solid lines) with no larger than five-foot contour intervals (existing lines should be shown as dotted lines).

(18) Scale drawings of all signs requiring permits pursuant to Article XVII, together with an indication of the location and dimensions of all such signs.

(19) Vehicle accommodation areas (including parking areas, loading areas, and circulation areas, see Section 290), all designated by

surface material and showing the dimensions and layout of proposed parking spaces and the dimensions and direction of travel of lanes, aisles, and driveways.

(20) Proposed plantings or construction of other devices to comply with the screening requirements of Article XIX, Part I, as well as proposed plantings of trees to comply with the shading requirements of Article XIX, Part II and the parking area landscaping requirements of Section 301. Plans shall label shrubbery by common or scientific name, show the distance between plants and indicate the height at the time of planting and expected mature height and width. Plans shall label trees by common or scientific name, show the circles of the mature crowns (major trees shall be drawn at diameter = 30'; dwarf or decorative trees shall be drawn at their actual mature crown), and indicate the height at the time of planting.

A-7. Documents and Written Information in Addition to Plans

In addition to the written application and the plans, whenever the nature of the proposed development makes information or documents such as the following relevant, such documents or information shall be provided. The following is a representative list of the types of information or documents that may be requested:

(1) Documentation confirming that the applicant has a legally sufficient interest in the property proposed for development to use it in the manner requested, or is the duly appointed agent of such a person.

(2) Certifications from the appropriate agencies that proposed utility systems are or will be adequate to handle the proposed development, as set forth in Article XV, and that all necessary easements have been provided.

(3) Detailed description of play apparatus or other recreational facilities to be provided in miniparks.

(4) Legal documentation establishing homeowners associations or other legal entities responsible for control over required common areas and facilities.

(5) Bonds, letters of credit, or other surety devices.

(6) Stamped envelopes containing the names and addresses of all those to whom notice of a public hearing must be sent to comply with Section 102 or Section 54.

(7) Complete documentation justifying any requested deviation from specific requirements established by this chapter as presumptively satisfying design standards.

(8) Written evidence of permission to use satellite parking spaces under the control of a person other than the developer when such spaces are allowed pursuant to Section 298.

(9) Written evidence of good faith efforts to acquire satellite parking under the circumstances set forth in Section 298.

(10) A traffic impact assessment performed and prepared by a qualified transportation or traffic engineer or planner in accordance with the guidelines delineated in Appendix J. Thresholds for triggering a traffic impact assessment are contained in Appendix J. *(Amendment 3/99)*

(11) Time schedules for the completion of phases in staged development, as required by Section 61.

(12) The environmental impact of a development, including its effect on historically significant or ecologically fragile or important areas in accordance with the guidelines delineated in Appendix K. *(Amendment 3/99)*

(13) If any street is proposed to intersect with a state maintained road, a copy of the application for driveway approval as required by the Department of Transportation, Division of Highways Manual on Driveway Regulations.

(14) Proposed deed restrictions or covenants to be imposed upon newly created lots.

A-8. Number of Copies of Plans and Documents

With respect to all plans and other documents required by this appendix, the developer shall submit the number of copies (not to exceed ten) that the administrator deems necessary to expedite the review process and to provide necessary permanent records.

Appendix B

SPECIFICATIONS ON DRIVEWAY ENTRANCES

B-1. All driveway entrances and other openings onto town-maintained streets shall, at a minimum, conform to the requirements set forth in this appendix. Driveway entrances to state-maintained streets shall also conform to the standards contained herein as well as those of the North Carolina Department of Transportation. In the event of a conflict between the two sets of standards, the most restrictive standard shall apply.

B-2. Basic Driveway Dimensions

	Map Reference (See Figure 1)	1 and 2 Family Residential	Multi-Family Residential and Commercial	Industrial
Width[1]	W			
One-Way		10'-12'	15'-18'	20'-25'
Two-Way		10'-12'	30-'36'	40'-50'
Right Turn Radius or Flare[2]	R	5"	15'-30'	15'-30'
Minimum Spacing[3]				
From Property Line	P	0'	0'	-R
From Street Corner	C	5'		
Between Driveways	S	3'		
Minimum Angle[4]	A	45°	45°	45°

[1]Multi-lane driveway widths to be determined by the Public Works Director based upon the number of lanes, the type of land use served, and the use of channelizing islands.

[2]On the side of a driveway exposed to entry or exit by right turning vehicles. The radii for major generator driveways to be determined by the Public Works Director.

[3]Measured along the curb or edge of pavement from the roadway end of the curb radius or flare.

[4]Minimum acute angle measured from edge of pavement, and generally based on one-way operation. For two-way driveways and in high pedestrian activity areas, the minimum angle should be 70 degrees.

B-3 Driveway Spacing

(a) The standards for driveway spacing delineated in Section B-2 are intended as general guidelines for driveways with low and moderate traffic volumes. Spacing for high volume driveways (such as shopping centers, major apartment complexes, etc.) shall be determined by the Public Works Director based upon actual traffic conditions and needs.

(b) The number of permissible driveways on an individual property shall be determined as follows:

	Maximum Number of Driveways By Street	
Frontage	Arterial	All Other
<50'	1	1
51' - 150'	1	2
151' - 500'	2	3
>500'	3	4

B-4 Dedication of Right-of-Way/Roadway Improvements

Applicants for driveways may be required to dedicate right-of-way for and construct or reimburse the cost of constructing medians, acceleration and deceleration lanes, and traffic storage lanes in order to connect a driveway to a street. The need for these improvements will be determined by the Public Works Director and in cases involving driveway connections onto state-maintained roads, the consent of the North Carolina Department of Transportation must also be obtained. The need for the improvements must be reasonably attributable to the traffic utilizing the driveway and the improvements must be designed to serve the driveway traffic.

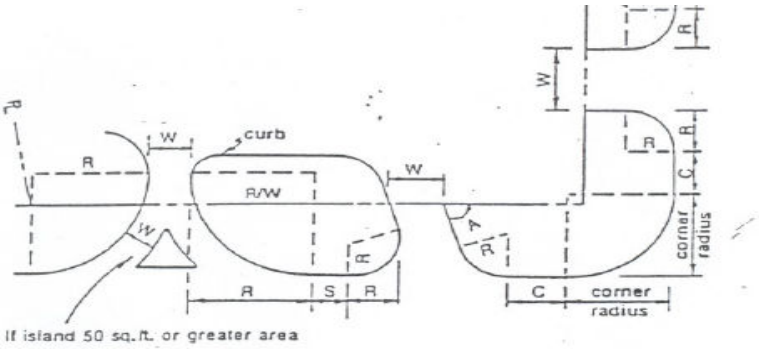


Figure 1 *Driveway dimensions measurements*

Source: Guidelines For Driveway Location and Design, Institute of Transportation Engineers, 1987.

Appendix C

SPECIFICATIONS FOR STREET DESIGN AND CONSTRUCTION

C-1. Design Speed, Sight Distance, Centerline Radius

	Minor	Local	Sub-Collector	Collector
Design Speed	25 mph	25 mph	30 mph	35 mph
Minimum Sight Distance on Vertical Curve	150'	150'	200'	200'
Minimum Centerline Radius	150'	150'	200'	250'

C-2. Cut and Fill Slopes

Cut and fill slopes on any street right-of-way may not exceed 3:1.

C-3. Sight Distances at Intersections

(a) At no-stop intersections, the intersection shall be constructed so that a person standing at a location on the centerline of any street 90 feet from the intersection of the street centerlines has an unobstructed view to a point located on the centerline of the intersecting street 90 feet (in either direction) from the intersection of the street centerlines. See Standard Diagram No. 1.

(b) Subject to subsection (c), at stop intersections, the intersection shall be constructed so that a person standing 10 feet back of the intersection of right-of-way lines on the stop street has an unobstructed view to a point on the right-of-way line of the intersecting through street located 70 feet from the intersection of the right-of-way lines. See Standard Diagram No. 2.

(c) At stop intersections where a residential street intersects with a state-maintained primary road, the intersection shall be constructed so that a person standing 30 feet back of the intersection of right-of-way lines on the stop street has an unobstructed view to a point on the centerline of the through street located 150 feet from the intersection of the street right-of-way lines. See Standard Diagram No. 3.

C-4. Radius at Street Intersections

At street intersections, the intersections of the paved surfaces shall be rounded with a minimum radius as shown in Standard Diagram No. 4 and No. 5. Where streets intersect at less than right angles, a greater radius may be required.

C-5. Clearing and Grubbing

Clearing and grubbing shall be performed within the limits shown on the plans. All timber, brush, roots, stumps, trees, or other vegetation cut during the clearing operations shall become the contractor's responsibility to dispose of, and shall be either removed from the project by him, or satisfactorily disposed of on-site.

C-6. Grading and Compaction

Streets shall be graded in accordance with the lines and grade set by the engineer. Before placing curb and gutter or base on the graded subgrade, the subgrade shall be compacted to 95% ASSHO T99 for a depth of 6 inches and then shall be proof rolled in the presence of the engineer. Places that are found to be loose, or soft, or composed of unsuitable materials, whether in the subgrade or below it, must be dug out and refilled with suitable material. All embankments or fills shall be made in one-foot horizontal lifts of suitable material. The fill shall be rolled twice with a vibratory roller weighing not less than eight tons.

C-7. Street Base

Arterial, collector, and marginal access streets shall have a base course 8 inches thick which shall be crushed stone conforming to D.0.T. Type ABC stone. The stone base course shall be placed in 4 inch layers, watered as necessary, and compacted to 100% AASHO T99. The contractor shall be responsible for keeping the stone base free of contamination from clay or other foreign materials. Handling and placement of stone base shall all be in accordance with D.0.T. specifications. Minor, local and subcollector streets shall have a 7-inch thick base course utilizing soil type and compacted to 95% AAASHO T99.

C-8. Street Surfaces

The asphalt surface course shall meet D.0.T. specs for Type I-2 asphalt. At a minimum, the asphalt shall be placed in one 2-inch layer, and shall be handled and placed in accordance with D.0.T. specifications. A pavement design study shall be required before surfacing arterial and marginal access streets.

C-9. Pavement Section Variations

Sections C-6, C-7, and C-8 set the standards that shall apply under normal soils conditions. However, where soils are unusually unstable, the public works director may allow or require the developer to have soil tests run and a pavement design made by a qualified soils engineer. Under these circumstances, the public works director may allow pavement sections constructed to lesser standards than those set forth above (for good soils) or require pavement sections constructed to greater standards than those set forth above (for unstable soils).

C-10. Street Cross Sections

Streets shall be constructed and utilities located in accordance with Standard Drawing No. 6 or No. 7.

C-11. Curb and Gutter

(a) The concrete curb and gutter shall be constructed according to the lines and grades established by the engineer. The concrete shall meet the State Highway requirements. The curb and gutter shall be 24 inches wide, and shall have a vertical curb face. The forms shall be of metal, free of marks or kinks, and shall be rigidly held in position. The engineer shall approve the positioning of the forms before concrete is poured. The concrete shall be placed in the forms in a manner to prevent segregation, and tamped or vibrated sufficiently to prevent honeycombs. The concrete shall be finished smooth and even by means of rollers or floats. Expansion joints shall be provided every 30 feet, and false joints every 10 feet.

(b) Curb and gutter shall be constructed in accordance with Standard Drawing No. 8.

C-12. Sidewalks

Sidewalk construction shall be similar to street construction, with subgrade compacted to 95% AAASHO T99. Concrete sidewalks shall be 4 inches thick (increasing to 6 inches thick at driveway entrances), and shall be at least 4 feet wide. Expansion joints shall be provided every 30 feet; false joints at 10 feet.

C-13. Wheel Chair Ramps

Where required, wheel chair ramps shall be constructed in accordance with Standard Drawing No. 9.

C-14. Storm Water Runoff Control

(a) The minimum design frequency for storm runoff shall be 10 years for storm sewer collection and 25 years for cross drainage (i.e., drainage facilities crossing a street).

(b) All storm drainage pipe shall be reinforced concrete and no pipe may be smaller than fifteen inch diameter.

(c) Culvert outlet protection and swale erosion protection shall be designed based on a 10 year storm.

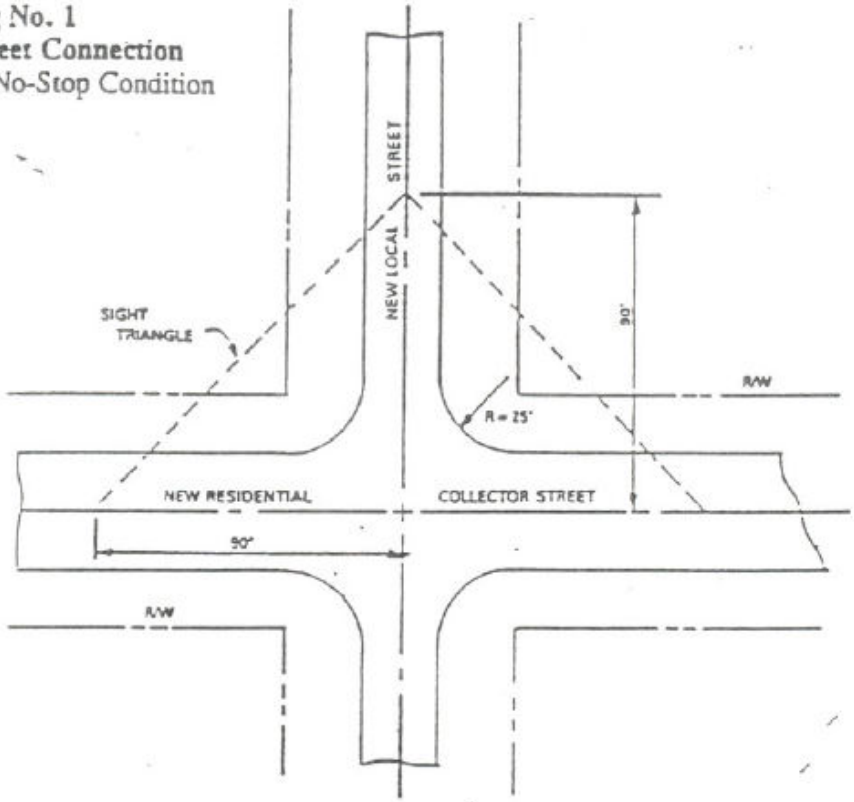
(d) All storm drainage structures and pipes shall be designed and constructed in accordance with Department of Transportation specifications and Standard Drawings

No. 10 through No. 14, as amended. However, in case of a conflict, the standard drawings shall prevail.

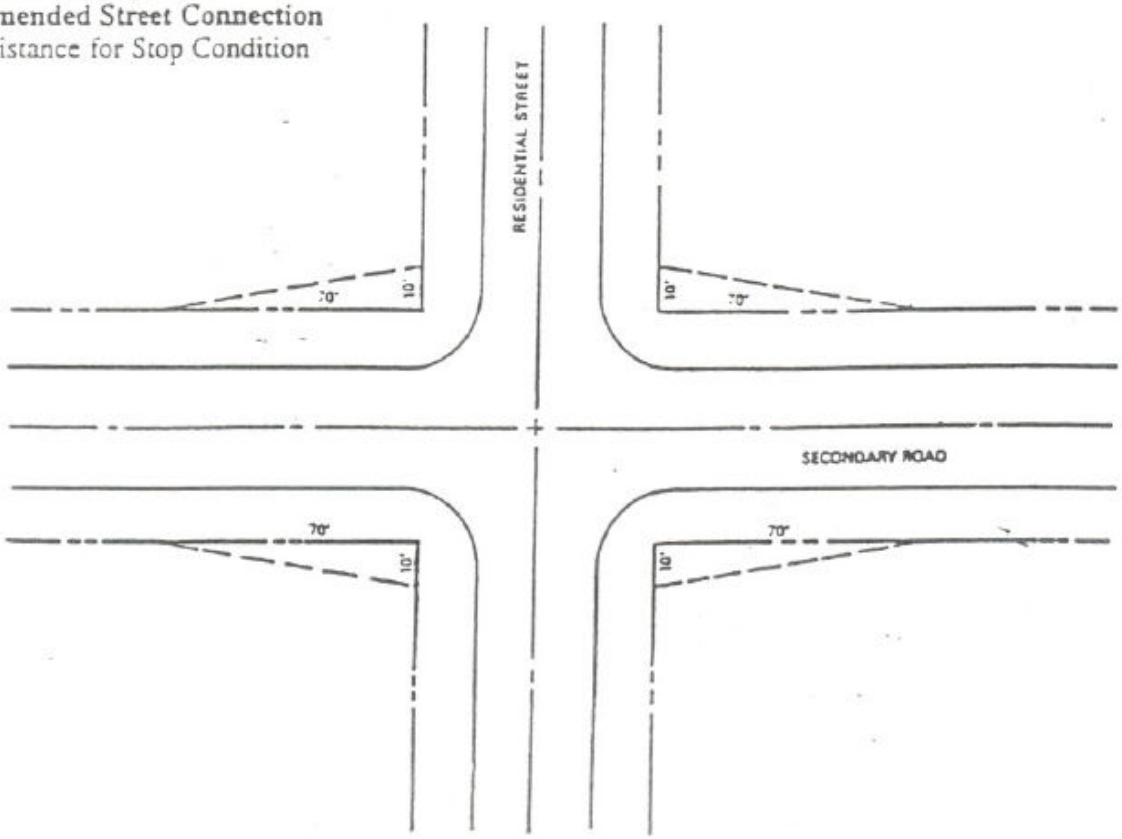
C-15. Sedimentation Control

Road shoulders, swales, back-of-curbs, and cut and fill banks shall be completely dressed up by the contractor and seeded as soon as possible.

Standard Drawing No. 1
Recommended Street Connection
Sight Distance for No-Stop Condition

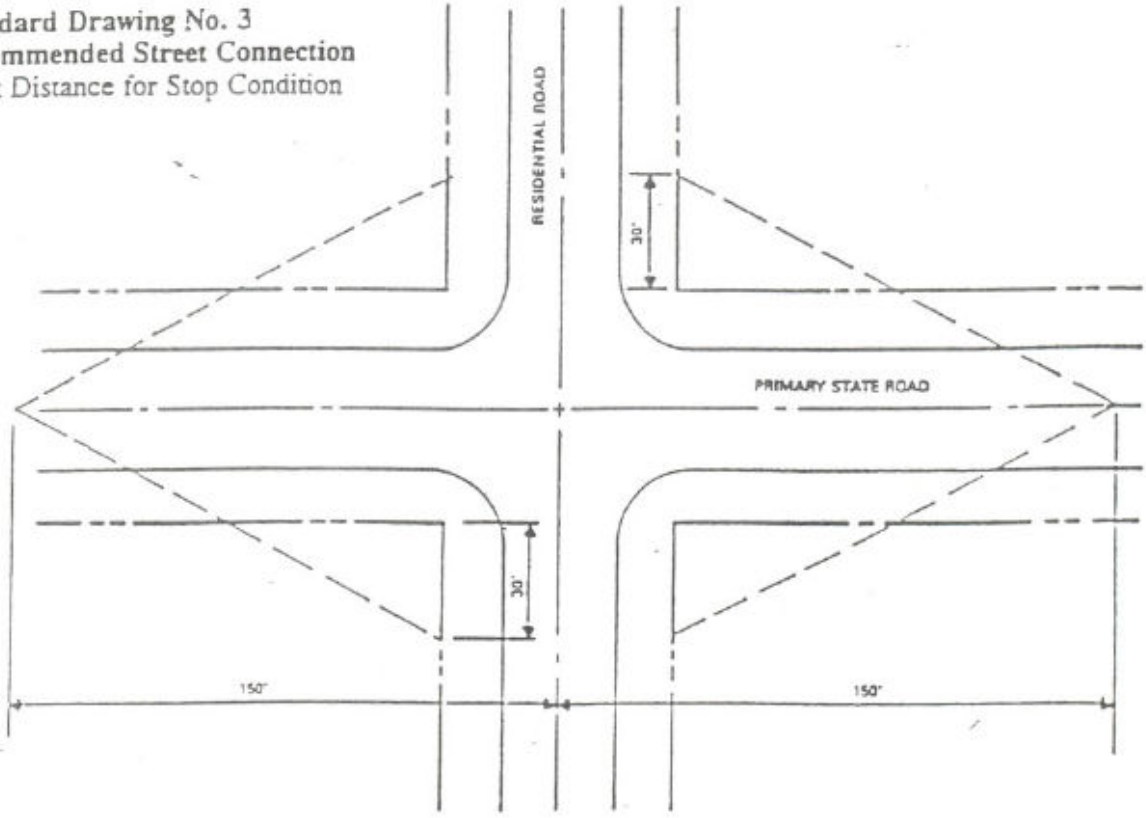


Standard Drawing No. 2
Recommended Street Connection
Sight Distance for Stop Condition

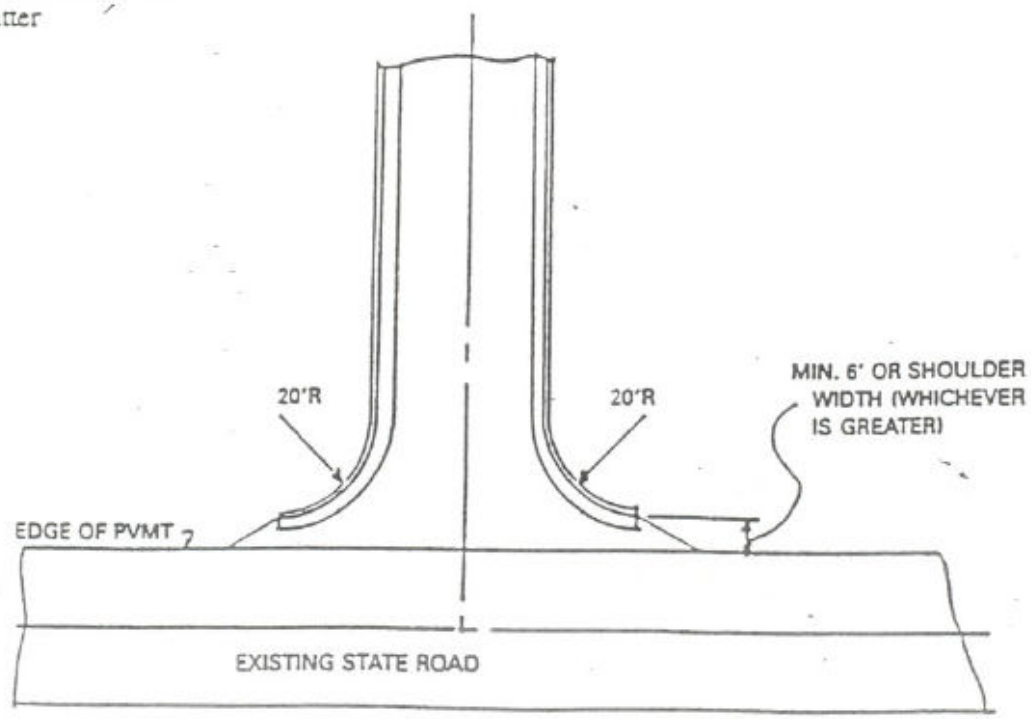


Appendix C-5

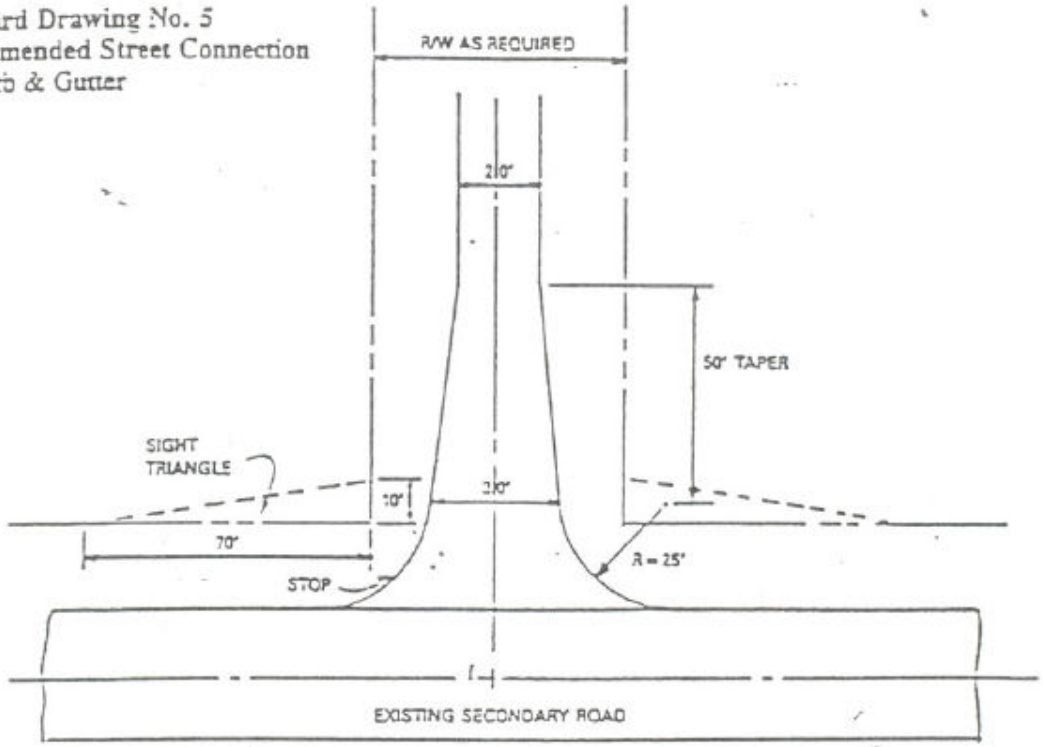
Standard Drawing No. 3
Recommended Street Connection
Sight Distance for Stop Condition



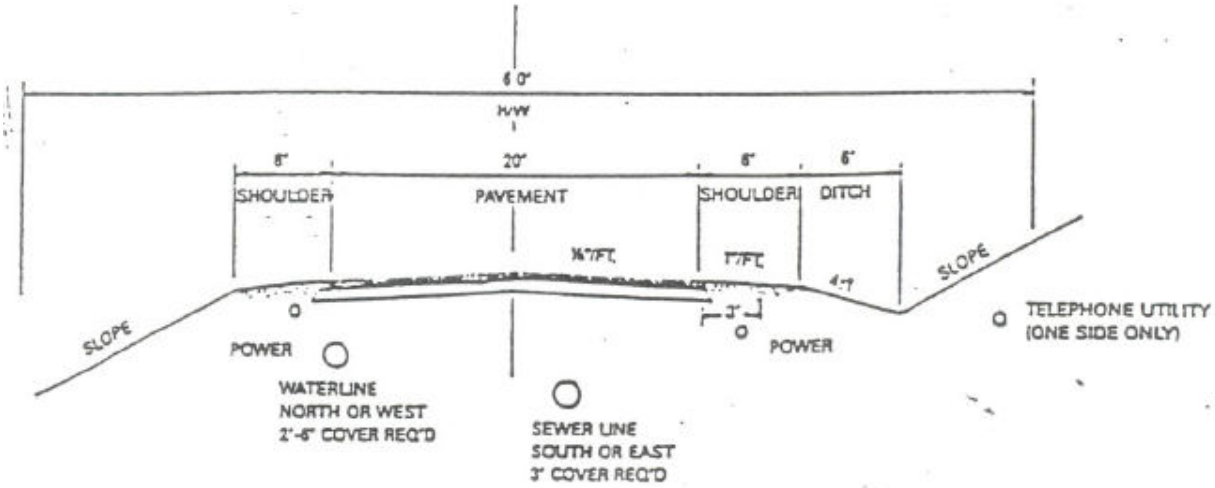
Standard Drawing No. 4
Recommended Street Connection
Curb & Gutter



Standard Drawing No. 5
Recommended Street Connection
No Curb & Gutter



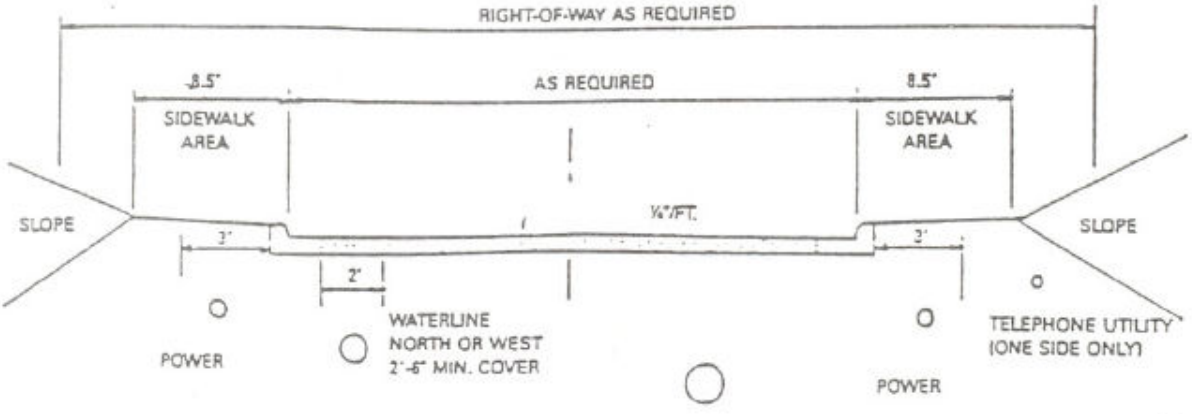
Standard Drawing No. 6
Residential Street
No Curb & Gutter



TERRAIN	MAX. SLOPE
LEVEL	3:1
ROLLING	3:1
HILLY	3:1

Appendix C-7

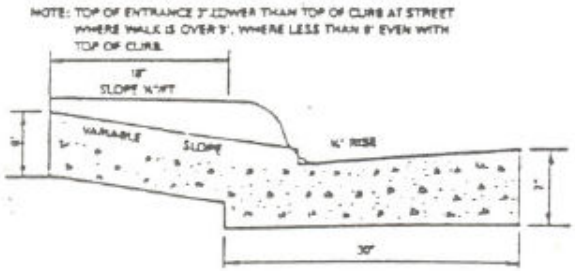
Standard Drawing No. 7
Residential Street
Curb & Gutter



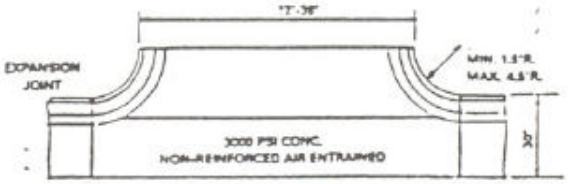
TERRAIN	MAX. SLOPE
LEVEL	2:1
ROLLING	2:1
HILLY	1½:1

Standard Drawing No. 8
Standard Curb & Gutter

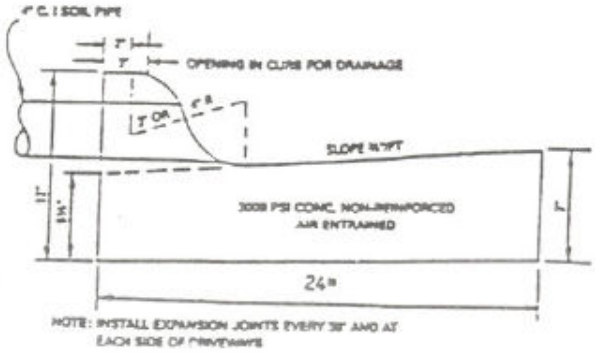
Concrete Driveway & Gutter



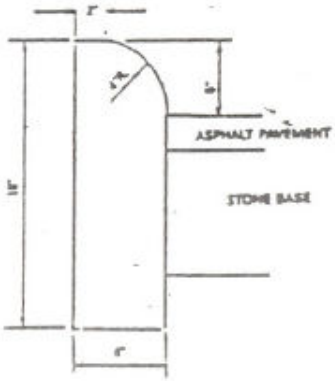
Plan of Driveway Entrance



Curb & Gutter



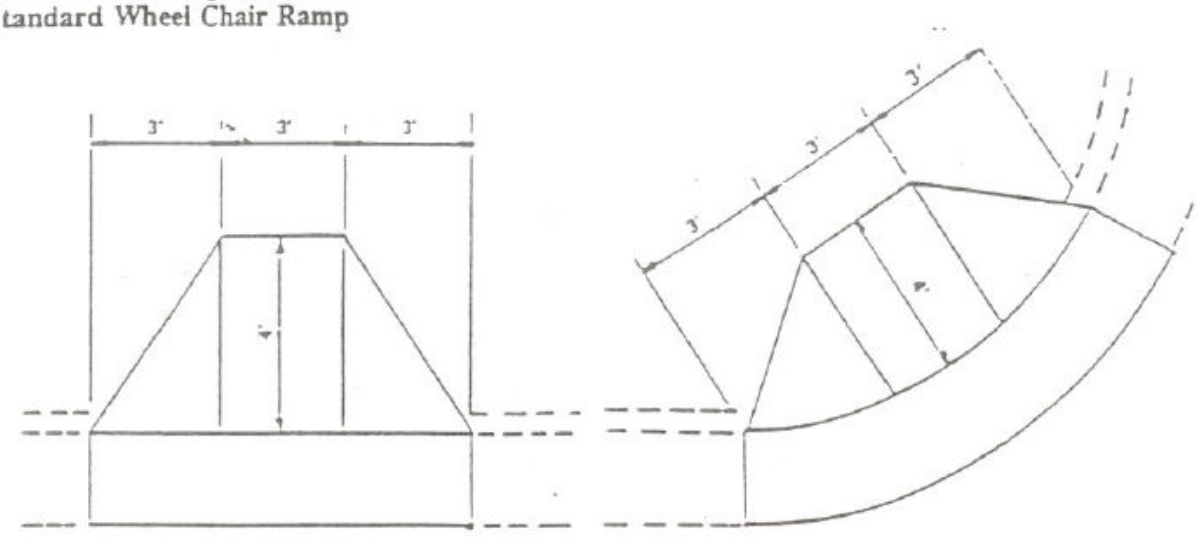
Traffic Island Curb



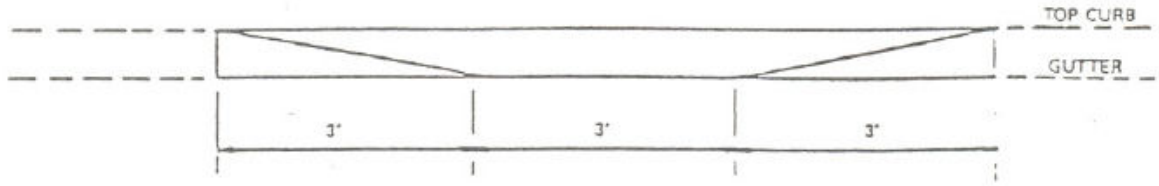
Appendix C-8

Standard Drawing No. 9
Standard Wheel Chair Ramp

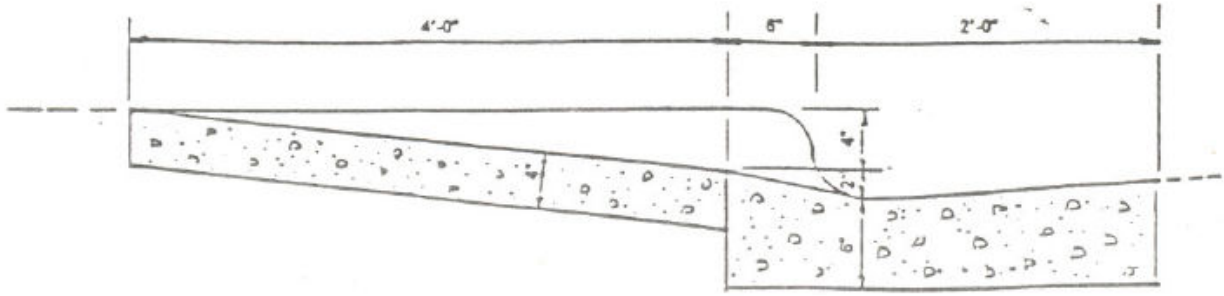
Plan



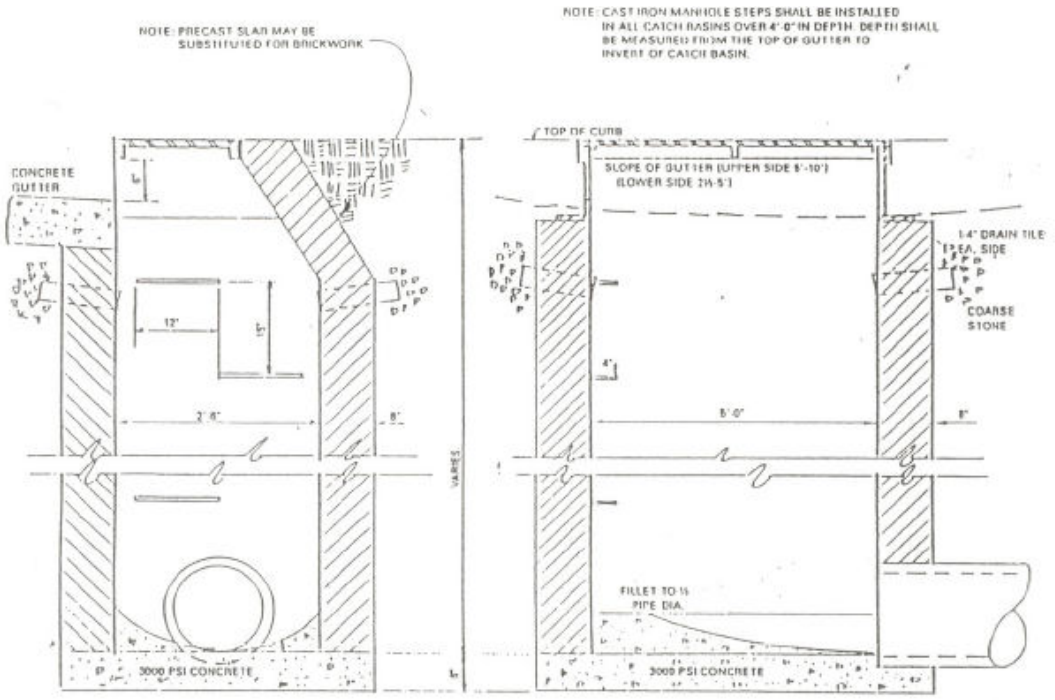
Front Elevation



Section Thru Ramp



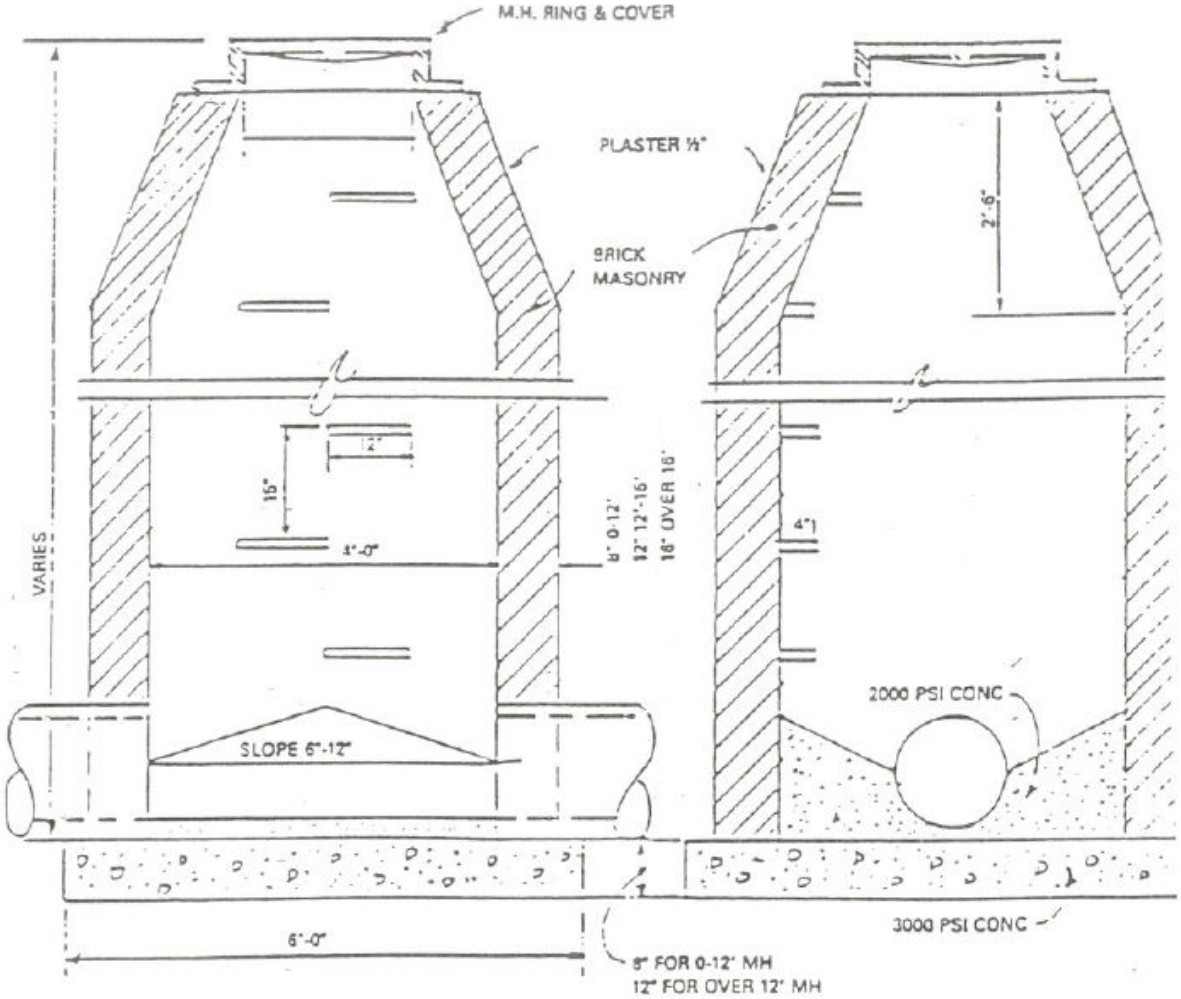
Appendix C-9

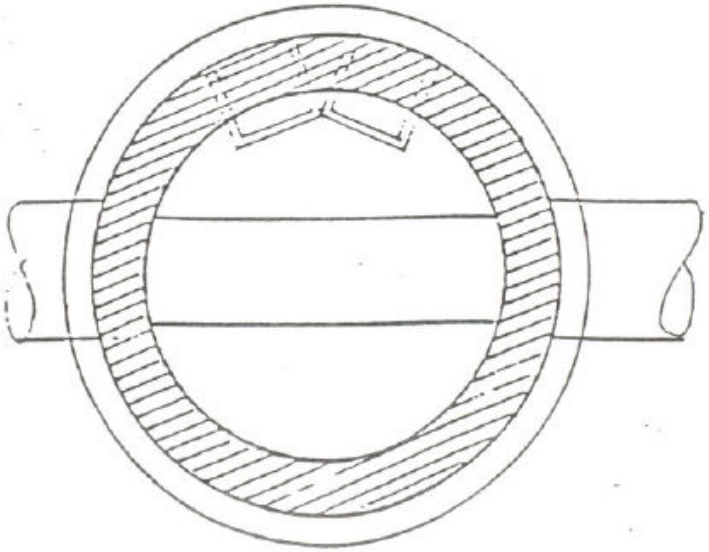


Standard Drawing No. 10
Standard Catch Basin

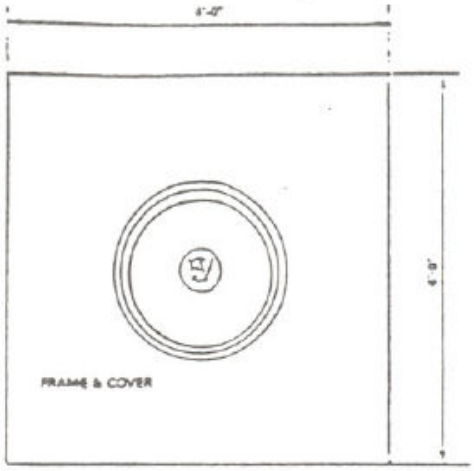
Appendix C-10

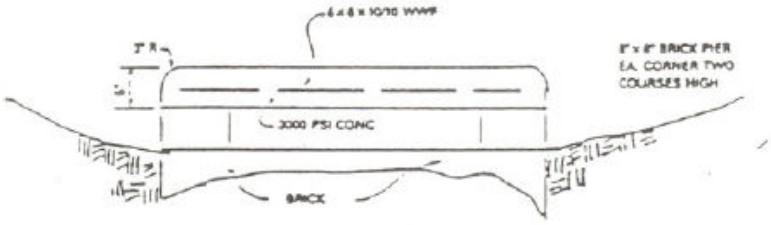
Standard Drawing No. 11
Storm Water Manhole





Standard Drawing No. 12
Yard Inlet Cover





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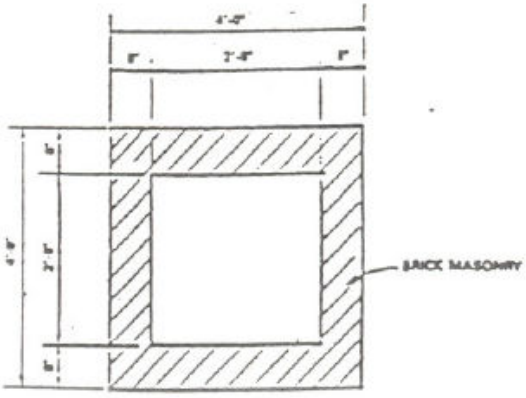
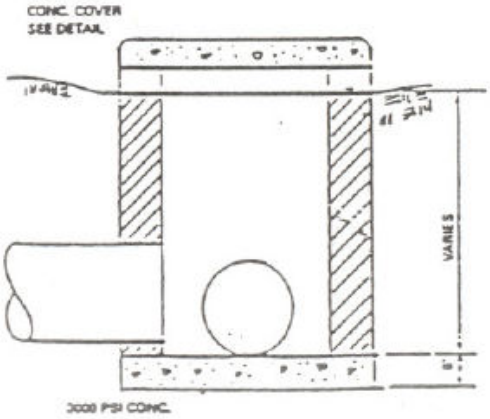
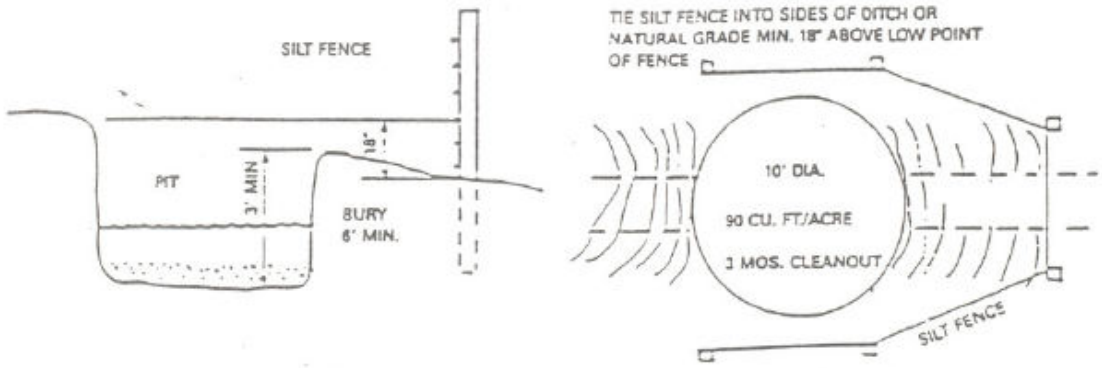
Yard Inlet

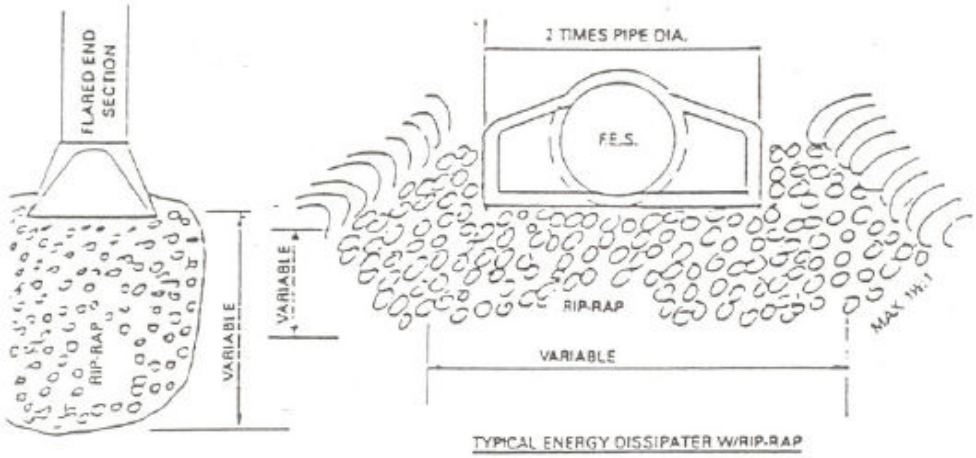




Standard Drawing No. 14
Sedimentation Control

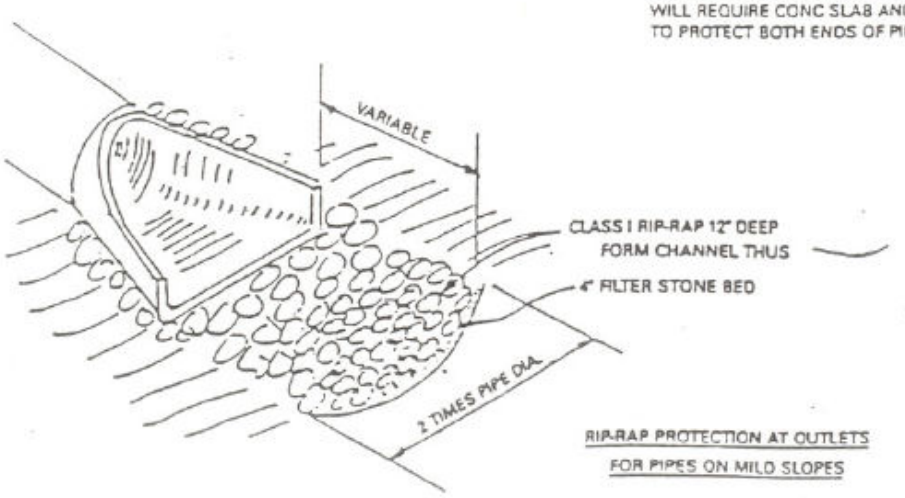


FENCE AND SEDIMENT PIT FOR POINTS OF CONCENTRATED DRAINAGE



TYPICAL ENERGY DISSIPATER W/RIP-RAP

NOTE:
FLARED END PIPES GREATER THAN 36"
WILL REQUIRE CONC SLAB AND/OR RIP-RAP
TO PROTECT BOTH ENDS OF PIPE



RIP-RAP PROTECTION AT OUTLETS
FOR PIPES ON MILD SLOPES

Appendix C-13

Appendix D

VEHICLE ACCOMMODATION AREA SURFACES

D-1. Paved Surfaces

Vehicle accommodation areas paved with asphalt shall be constructed in the same manner as street surfaces (Appendix C, Sections C-6 through C-9). If concrete is used as the paving material, vehicle accommodation areas shall be similarly constructed except that six inches of concrete shall be used instead of two inches of asphalt. The public works director may allow other paving materials to be used so long as the equivalent level of stability is achieved.

D-2. Unpaved Surfaces

Vehicle accommodation areas without paving shall be constructed in the same manner as paved areas except that crushed stone of the following types may be used in lieu of asphalt, concrete, or other paving material:

Size 13 Crushed Stone

APPENDIX E

SCREENING AND TREES

E-1 Guide for Protecting Existing Trees

Section 316 provides for the retention and protection of large trees when land is developed. In order to better ensure the survival of existing trees, the developer shall heed the following guidelines:

(a) Protect trees with fencing and armoring during the entire construction period. The fences should enclose an area ten feet square with the tree at the center.

(b) Do not excavate beneath the crown of the tree.

(c) Do not compact the soil around existing trees with any equipment. Do not pile direct or store material or park equipment beneath the crown of the tree.

(d) Keep fires or other sources of extreme heat well clear of existing trees.

(e) Repair damaged roots and branches immediately. Exposed roots should be covered with topsoil. Whenever roots are destroyed, a proportional amount of branches must be pruned so that the tree doesn't transpire more water than it takes in. Injured trees must be thoroughly watered during the ensuing growing year.

(f) All existing trees which will be surrounded by paving should be pruned to prevent dehydration. The method of pruning will depend upon the tree species.

(g) No paving or other impermeable ground cover should be placed within the dripline of large trees (12 inches or greater in diameter) or within two-thirds of the distance from the trunk to the dripline of any other size tree to be retained.

E-2 Standards for Street and Parking Lot Trees

Trees planted in compliance with the requirements of Sections 315 and 317 should have most or all of the following qualities. The trees recommended in Section E-10 represent the best combinations of these characteristics.

(a) Hardiness:
- (1) Resistance to extreme temperatures.
- (2) Drought resistance.
- (3) Resistance to storm damage.
- (4) Resistance to air pollution.
- (5) Ability to survive physical damage from human activity.

(b) Life Cycle:
- (1) Moderate to rapid rate of growth.
- (2) Long life.

(c) Foliage and Branching:
- (1) Tendency to branch high above the ground.
- (2) Wide spreading habit.
- (3) Relatively dense foliage for maximum shading.

(d) Maintenance:
- (1) Resistance to pests.
- (2) Resistance to plant diseases.
- (3) Little or no pruning requirements.
- (4) No significant litter problems.

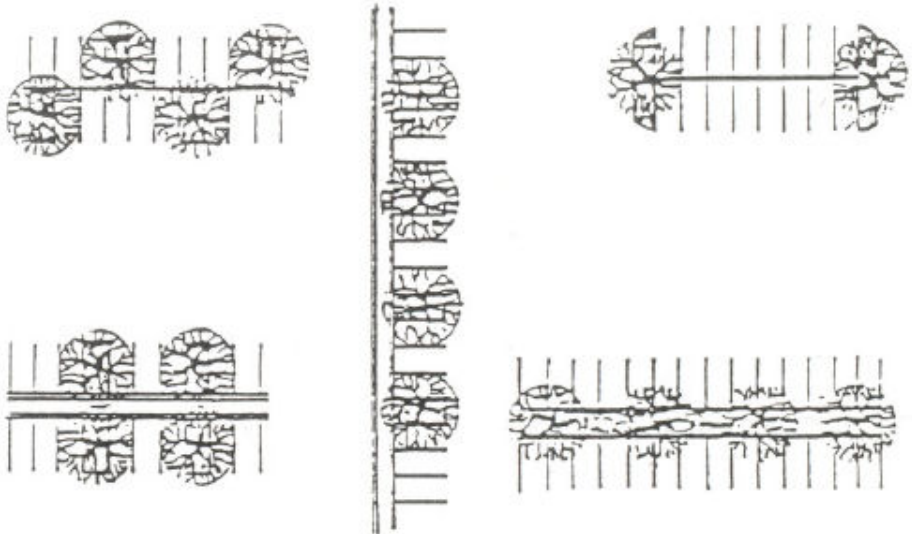
E-3 Formula for Calculating 20% Shading of Paved Vehicle Accommodation Areas

Following is an elementary formula for determining the number of shade trees required in and around paved parking lots in order to presumptively satisfy the shading requirements of Section 317.

[1]	Calculate square footage of the vehicle accommodation area. Include parking spaces, driveways, loading areas, sidewalks, and other circulation areas. Do not include building area and any area which will remain completely undeveloped:		sq.ft.
[2]	Multiply:	X .20	
[3]	Area to be shaded:		sq.ft.
	Add:		
[4]	Areas shaded by existing trees to be retained in and around the vehicle accommodation area:*		sq.ft.
[5]	Area shaded by required screening trees, if any:*		
[6]	Area shaded by required street trees, if any:*		
[7]	Subtotal:		sq.ft.
	(If line [7] is greater than line [3], then the shading requirement has been met. If not, go on to line [8].		
[8]	Enter the difference between line [7] and line [3]:		sq.ft.
[9]	Divide line [8]	by 707	
[10]	Total number of shade trees required **within** the vehicle accommodation area:		trees

*Existing trees retained in compliance with Section 316 will be credited according to their actual crown radius. Shaded area may be calculated as follows: 3.14 X (crown radius)^2 = shaded area. Trees planted within the vehicle accommodation area are credited with shading 707 sq.ft. (Based on a crown radius of 15 ft.). New or existing trees on the perimeter of the parking lot are credited for having only half a crown over the vehicle accommodation area (e.g., new perimeter trees will be crediting for shading 354 sq. ft.). Generally all trees planted in compliance with the screening requirements of Article XIX, Part I and the street tree requirements of Section 315 will be considered perimeter trees.

E–4:
Typical Parking Lot Planting Islands



E-5 Guide for Planting and Maintaining Trees

The trees recommended in Section E-10 have minimal maintenance requirements. However, all trees must receive a certain degree of care, especially during and immediately after planting. In order to protect an investment in new trees, the developer and his or her agents should follow these guidelines when planting:

(a) Plant trees with a minimum caliper of two inches measured six inches above the ground and a root ball no smaller than two feet in diameter.

(b) The best times for planting are early spring and early fall. Trees planted in the summer run the risk of dehydration.

(c) Plant all trees at least three-and-a-half feet from the end of head-in parking spaces in order to prevent damage from car overhangs.

(d) Dig the tree pit at least one foot wider than the root ball and at least six inches deeper than the ball's vertical dimension.

(e) Especially in areas where construction activity has compacted the soil, the bottom of the pit should be scarified or loosened with a pick ax or shovel.

(f) After the pit is dug, observe sub-surface drainage conditions. Where poor drainage exists, the tree pit should be dug at least an additional twelve inches and the soil amended to allow roots to grow properly.

(g) Backfill should include a proper mix of soil and fertilizer. All roots must be completely covered. Backfill should be thoroughly watered as it is placed around the roots.

(h) Immediately after it is planted, the tree should be supported with stakes and guy wires to firmly hold it in place as its root system begins to develop. Remove stakes and ties after one year.

(i) Spread at least three inches of mulch over the entire excavation in order to retain moisture and keep down weeds. An additional three-inch saucer of mulch should be provided to form a basin around the trunk of the tree. This saucer helps catch and retain moisture.

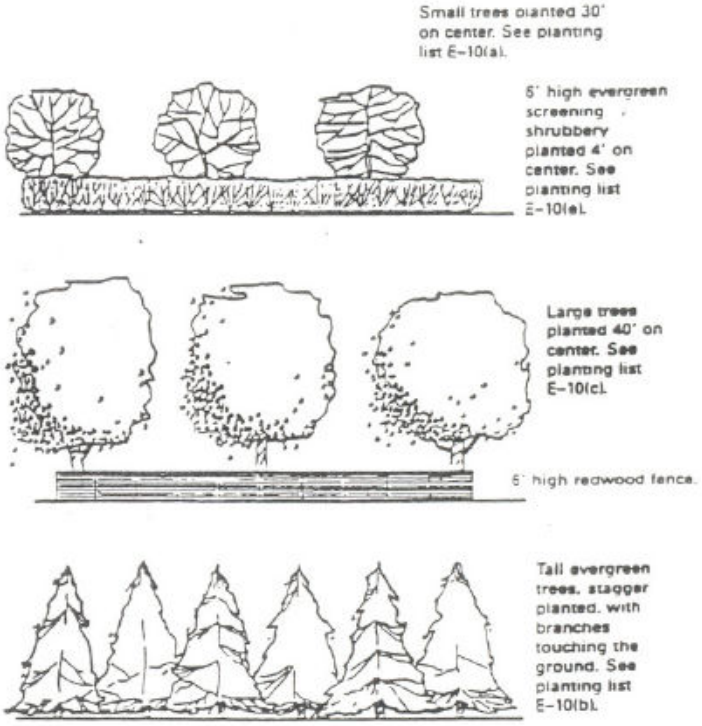
(j) The lower trunks of new trees should be wrapped with burlap or paper to prevent evaporation and sun scald. The wrapping should remain on the tree for at least a year.

(k) Conscientious post-planting care, especially watering, pruning and fertilizing, is a must for street and parking lot trees. Branches of new trees may be reduced by as much as a third to prevent excessive evaporation.

For more detailed information regarding the planting and maintenance practices for trees, refer to guidelines prepared by Harriet F. Phillips and entitled, *Planting, Pruning and Annual Maintenance Practices for Street and Park Trees,* Appendix F.
Insert Exhibit E-6

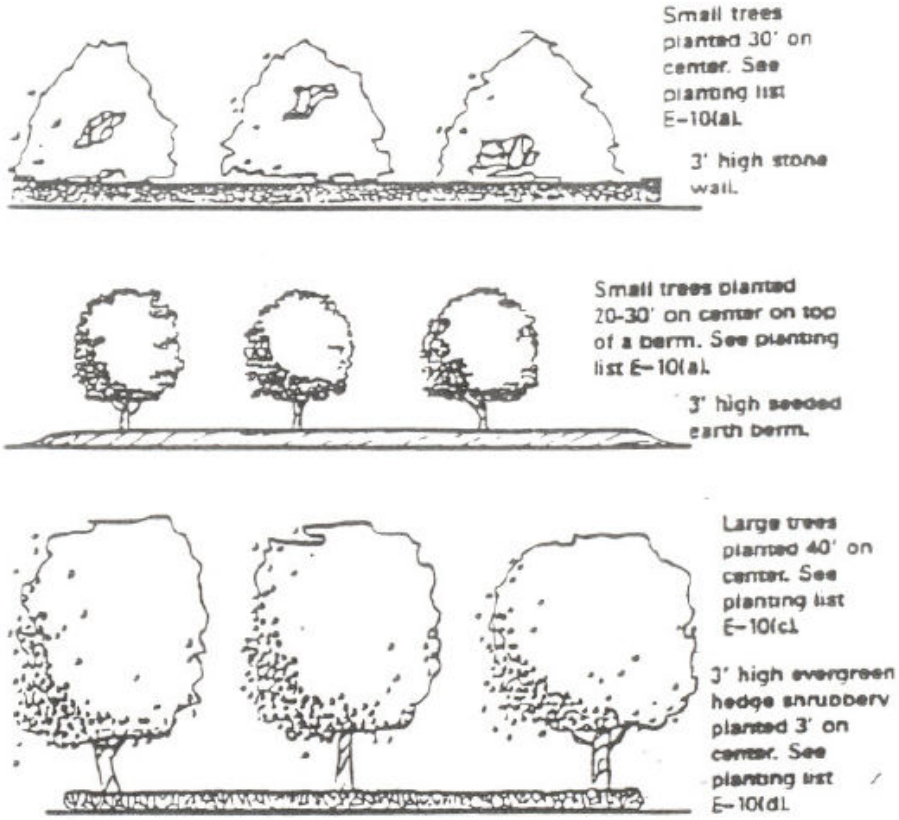
E–6:
Typical Opaque Screens

Type A



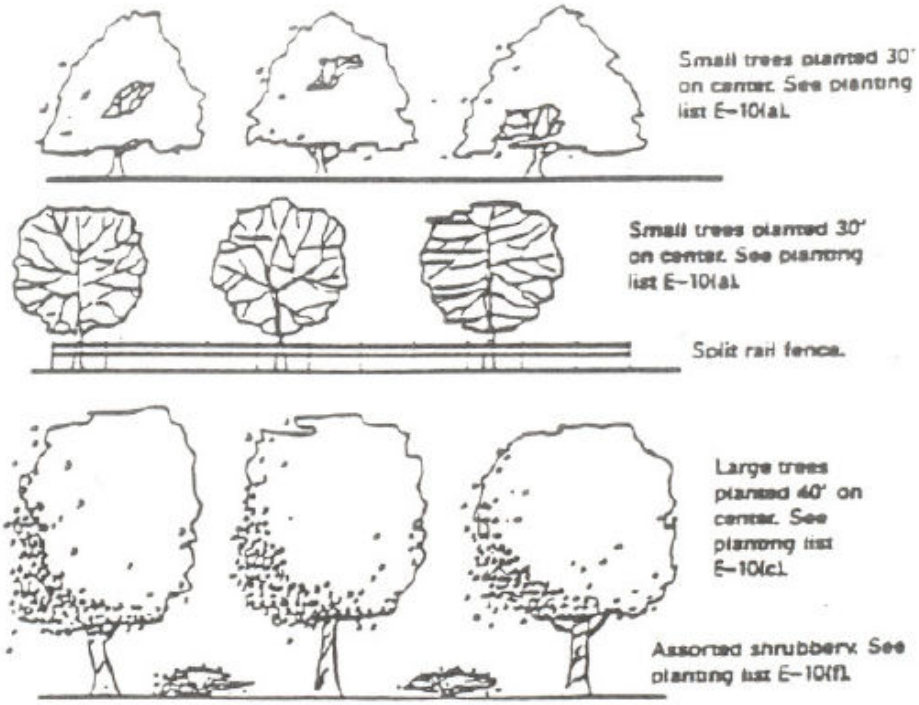
E–7:
Typical Semi-Opaque Screens

Type B



E–8:
Typical Broken Screens

Type C



E-9 Guide for Planting Shrubs

Shrubs planted for screening purposes should be given a proper culture and sufficient room in which to grown. Shrubs should, at a minimum, be in three gallon containers and a minimum of 30 inches in height. They should be planted no more than 18 inches apart in a diamond or staggered pattern. Many of the guidelines for tree planting listed in Section E-5 also apply to shrubs. However, because specific requirements vary considerably between shrub trees, this Appendix does not attempt to generalize the needs of all shrubs. For detailed planting information or individual species, refer to: *Landscape Plants of the Southeast* by R. Gordon Halfacre and Anne R. Shawcroft.

E-10 Lists of Recommended Trees and Shrubs

The following lists indicate plantings which will meet the screening and shading requirements of Article XIX of the Land Development Ordinance. The lists are by no means comprehensive and are intended merely to suggest the types of flora which would be appropriate for screening and shading purposes. Plants were selected for inclusion on these lists according to four principal criteria: general suitability for the coastal plain section of North Carolina, ease of maintenance, tolerance of town conditions, and availability from area nurseries. When selecting new plantings for a particular site, a developer should first consider the types of plants which are thriving on or near that site. Accordingly, native North Carolina species should often be favored. However, if an introduced species has proven highly effective for screening or shading in coastal plain towns, it too may be a proper selection.

Recommendations for suitable plants for buffering and parking lot landscaping are contained in Appendix G and recommendations for street trees are listed in Appendix H. Both sets of recommendations were prepared by Harriet F. Phillips and are used extensively by the Edenton Tree Committee.

E-11 Small Trees for Partial Screening

The following trees are recommended for use in all types of screens. Though smaller than the trees listed in planting lists E-12 and E-13, each of these trees will reach a height of at least 20 feet.

RIVER BIRCH (Betula nigra) Height: 20-40'; Spread: 8-16'.
The River Birch is a native tree which usually grows along stream banks. In landscape design, it is adaptable to either high or low locations, but still requires a lot of moisture. This tree has an interesting, papery bark and a graceful branching habit. It has no special pest or maintenance problems.

AMERICAN HORNBEAM (Carpinus carolinia) Height: 20-30'; Spread: 15-20'.
This native tree has a natural yet refined appearance. It is slow growing, but at maturity it serves as an excellent small shade tree. Its fluted, "muscular" trunk is an interesting feature. In the wild, the American Hornbeam is common in moist rich soil, yet, when used in landscape design, it is soil tolerant and does not require an unusual amount of water. It has no pests and no special maintenance problems.

EASTERN REDBUD (Cercis canadensis) Height: 20-30'; Spread: 12-25'.
This native tree is covered by beautiful pink flowers in the Spring and develops a dense round crown when allowed to grown in direct sunlight. The Redbud has some pests, and its fruit pods may present a litter problem, but it recommends itself for being drought resistant and tolerant of polluted city air.

FLOWERING DOGWOOD (Cornus florida) Height: 15-30'; Spread: 15-20'.
The Dogwood is a native woodland tree which is very popular for landscape planting. It is considered to be a fairly hardy tree, but, when planted in direct sun, it must be frequently watered. A healthy dogwood will develop attractive horizontal branches and a bushy crown. Dogwoods look best when planted in groups or when used as an accent in borders. These trees should be guarded against borers and other pests.

RUSSIAN OLIVE (Elaegnus augustifolia) Height: 15-20'; Spread: 20-30'.
The Russian Olive can withstand severe exposure and will grow in almost any soil. Its toughness and wide spreading habit make it an exceptional screening plant. The foliage is an attractive silver-gray color and its flowers, though inconspicuous, are very fragrant. The Russian Olive is especially notable for its rapid growth. It has no pest problems but it may require periodic trimming of dead twigs.

MOUNTAIN SILVERBELL (Halesia monticola) Height: 20-40'; Spread: 20'.
Silverbells are attractive multi-stem trees which are native to the southeastern United States. They are excellent plants for a natural effect and are best placed where their small flowers and pods will be closely observed. Compared to other trees on this list, its crown is more open and irregular. The Mountain Silverbell has no pests, no maintenance problems, and no special soil requirements.

AMERICAN HOLLY (Ilex opaca) Height: 15-30'; Spread: 10-20'.

This familiar native tree possesses a pyramidal evergreen crown with abundant red berries in the winter. It grows best in full sun and prefers moist yet well drained soils. If the lower limbs are allowed to grow naturally, they will branch to the ground. Hollies should be protected from high winds. The American Holly is a relatively slow grower.

CRAPE MYRTLE (Lagerstroemia indica) Height: 15-25'; Spread: 15-20'.

This popular flowering tree is decorative and interesting in all seasons. However, it should not be expected to stand alone as a screen. It is most effective against an evergreen background. It grows best in direct sun and may develop mildew problems when planted in shade. Crape Myrtle may be pruned to a desired shape, but when left on its own it will form a densely branching crown.

SOURWOOD (Oxyndrum arboreum) Height: 20-30'; Spread: 10-15'.

Sourwoods are handsome native trees which are most effective in landscape design when planted in groups. They are easy to transplant and as each tree matures it assumes a slender form with upright branches. Sourwood prefers relatively dry acid soils. Its only special maintenance problems may be infestations of webworms.

CAROLINA CHERRY-LAUREL (Prunus caroliniana) Height: 20-30'; Spread: 15-20'.

This tree is prized for its dense evergreen foliage. It may be trimmed as a hedge, but also serves as an excellent screen in its natural form. The Cherry-Laurel grows rapidly and has no pests. However, it may not be as cold hardy as other trees on this list.

CALLERY PEAR (Pyrus calleryana) Height: 20-40'; Spread: 20-30'.

The Callery Pear has recently gained popularity as a city street tree because it is impervious to air pollution. Furthermore, it will grow in relatively infertile soils. It is a beautiful, upright tree which grows rapidly and is long lived. However, it may be subject to an assortment of pests and diseases. The "Bradford" variety is not recommended, due to its poor branching structure resulting in a short life.

E-12 Large Trees for Evergreen Screening

The following trees are ideal for screening large scale areas such as shopping centers and industrial sites. They are also effective in combination with other, smaller screening plants. All three are moderate to fast growers. They are not considered to be shade trees.

DEODAR CEDAR (Cedrus deodara) Height: 40-150'; Spread: 30'+.

The Deodar Cedar is a useful attractive evergreen. It should be allowed plenty of room in order to assume its beautiful natural form. Its pendulous branches should be allowed to touch the ground. It prefers relatively dry soils, grows rapidly, and is easy to maintain. "True Cedars" such as the Deodar are not native to North America, but they have become quite popular in the South as a landscape tree.

SOUTHERN MAGNOLIA (Magnolia grandiflora) Height: 40-60'; Spread: 25'+.

Magnolias are striking trees which serve well as screens when their branches are allowed to grow to the ground. Generally, this tree does well in city conditions, but it should be planted in quite rich acidic soils and it requires a lot of moisture. Furthermore, Magnolias require ample space for growth. It planted in full sunlight, they will grow rapidly. Because it drops large waxy leaves, seed pods, and flowers, the Magnolias may present a litter problem.

CANADIAN HEMLOCK (Tsuga canadensis) Height: 30-70'; Spread: 20'+.

It may be sheared or pruned to any shape, but when it grows naturally, its graceful branches form an excellent high screen. The Hemlock prefers cooler, partially shaded locations and does best in highly fertile soils. It grows quite rapidly. Carolina hemlocks are not widely available and are not as reliable to withstand heat as the Canadian Hemlock.

E-13 Large Trees for Shading

The following trees may be used for screening, but they are recommended especially for shading trees and parking lots. Unless otherwise noted, they will grow rapidly. Each species will attain a mature spread of a least thirty feet.

NORWAY MAPLE (Acer platanoides) Height: 40-50'; Spread: 50'+.

Maples as a group are not particularly tolerant to city conditions. The Norway Maple is an exception, however, as it is relatively invulnerable to air pollution and has no special maintenance requirements. This tree assumes a wide spreading form and provides very dense shade. In the autumn, the leaves are a brilliant red and yellow. The Norway Maple grows rapidly, but it is subject to ice and wind damage. Plenty of room should be available for its shallow roots and it should be given ample water.

RED MAPLE (Acer rubrum) Height: 40-50'; Spread: 25'+.

This tree is an example of a Maple which is not recommended where there will be high concentrations of air pollution. However, with its excellent shading characteristics and beautiful colors, it should not be ignored. This tree grows rapidly, but, unlike the Norway Maple, it does not become brittle with age. The Red Maple is a native tree which is usually found in moist, even swampy areas, but it adapts will to a variety of situations. Although subject to Maple insects and diseases, it is usually a long lived tree. Cultivars of this species should be used.

GINKGO or MAIDENHAIR TREE (Ginkgo biloba) Height: 40-80'; Spread: 30'+.

The Ginkgo is a tree which is recommended for several outstanding reasons. It is one of the oldest surviving species of trees. It is adaptable to any soil, climate, or degree of exposure to the sun. It does quite well in the city. It has no pests, no diseases, and no pruning requirements. In sum, it is a tree of exceptional vitality. The N.C. Department of Forest Resources call the Ginkgo, "probably the best all around street tree". Two reservations are worth stating, however. First, only male trees should be planted because female Ginkgos bear a messy, malodorous fruit. Second, the Ginkgo is a slow grower. When young, it has a rather gangly appearance. It takes 25 to 30 years to assume its mature, symmetrically spreading form.

HONEYLOCUST (Gleditisia triacanthos) Height: 50-75'; Spread: 25'+.

Its open, spreading form and feathery leaves may give the Honeylocust a frail appearance, but it is in fact a quite sturdy tree, notable for its resistance to city conditions. Grass and shrubs thrive beneath a Honeylocust because it casts a light shade.

This tree is especially useful for its ability to be transplanted at a relatively advanced age. Accordingly, it may be used for immediate effect in a landscape design. The Honeylocust has its own pests and diseases, but it is fairly hardy. Thornless and fruitless varieties such as "Moraine" are strongly recommended.

SWEET GUM (Liquidamber styraciflua) Height: 60-100'; Spread: 50'+.

The Sweet Gum is a native bottomland tree which adapts to a variety of soils. Its dense foliage and balanced form make it an excellent shade tree for large open areas. The Sweet Gum needs sun and plenty of room to achieve maximum size and beauty. In the fall, its leaves turn a brilliant wine and gold color. Other than clean up of its prickly seed balls, the Sweet Gum poses no special maintenance problems. Seedless varieties are available.

LONDON PLANE-TREE (Platanus acerifolia) Height: 70-100'; Spread: 30'+.

The London Plane-Tree is excellent for streets and parking lots for a variety of reasons. It puts out its branches high enough above the ground so as not to obstruct traffic. Its broadly spreading crown makes is especially useful along wide streets. The London Plane is one of the world's hardiest trees in polluted air. Although it needs plenty of sun and moisture, it is undemanding about soil. Finally, it is very long lived. The London Plane-Tree is a hybrid of the Sycamore, and like the Sycamore, it may suffer from certain diseases. However, it is more resistant. Cultivars are available.

EASTERN RED OAK (Quercus rubra) Height: 50-70'; Spread: 40'+.

This tree grows faster than any other oak, two feet or more per year. It is prized as a tree because its high branching habit gives it an ideal shape. The Red Oak grows in almost any average soil and presents no special maintenance problems.

WILLOW OAK (Quercus phellos) Height: 60-80'; Spread: 30'+.

This is another rapidly growing oak. It has proven to be quite successful as a street and parking lot tree. Its slender leaves give it a finer texture than that of other oaks, but it still casts excellent shade. The Willow Oak is native to bottomland soils, and, thus, it needs plenty of moisture. It often spreads majestically as it matures so it should be given ample room to grow. No significant pests or diseases afflict the Willow Oak.

SCARLET OAK (Quercus coccinea) Height: 60-80'; Spread: 40'+.

This is a third oak which grows rapidly and is easy to maintain. The Scarlet Oak is more difficult to transplant that the red or the willow, but it may be a worthwhile selection for its excellent foliage.

LAUREL OAK (Quercus laurifolia) Height: 40-60'; Spread: 30'+.

The Laurel Oak grows more slowly than the other oaks listed above, but it has the advantage of being nearly evergreen in piedmont sections of North Carolina. It has proven to be a good street tree and does quite well under city conditions. It presents no special maintenance problems.

LITTLELEAF LINDEN (Tilia cordata) Height: 30-50'; Spread: 25'+.

Lindens are notable for their exceptional symmetry and their ability to grow in poor soils. The Littleleaf Linden requires plenty of moisture, but it has proven to be useful for city planting and is especially recommended as a street tree. With its many thick branches and abundant foliage, the Linden provides very dense shade. It should be sprayed for aphids in order to prevent sticky droppings from the leaves. Best suited for parks.

E-14 Small Shrubs for Evergreen Screening

The following shrubs are recommended for informal (unclipped) hedges or screens. Each species grows to a height of less than six feet; therefore, these shrubs are appropriate for Semi-opaque Screens.

GLOSSY ABELIA (Abelia grandflora) Height: 4-6'; Spread: 3-5'.

Abelia is quite common in local nurseries and tends to be less expensive than other shrubs on this list. It bears pale pink flowers throughout the summer. Although it has proven quite popular for informal hedges, it has several drawbacks. Abelia should be pruned and thinned to maintain its best form. It may drop its leaves due to low temperatures, lack of pruning, or starvation.

WARTY BARBERRY (Barberis verruculosa) Height: 3-4'; Spread: 3-4'.

Barberrys as a group have proven to be excellent as hedge plants. With their dense, spiny limbs, they are effective barriers in public places. The Warty Barberry is a shrub with a neat, compact habit. It is soil tolerant and has no special maintenance requirements. It grows slowly, but it will reach a height of 3 to 4 feet within five years.

WINTERGREEN BARBERRY (Berberis julianae) Height: 4-6'; Spread: 2-5'.

This is another Barberry which forms an impenetrable thorny hedge. In fact, it grows even more densely than the Warty Barberry. It is pest resistant and is very hardy. No pruning is required. Because it is fairly slow growing, it will take eight to ten years to reach a height of 5 to 6 feet.

DWARF HORNED HOLLY (Ilex cornuta 'rotunda') Height: 3'; Spread: 3-4'.

This shrub is an excellent selection for a low hedge. It is soil tolerant and requires no pruning or other special care once established. With its spiny leaves, this plant appears to be and is, in fact, rugged. Like all hollies, it grows best in full sun, but unlike others of its species, it produces bright red berries without both sexes being present.

LITTLELEAF JAPANESE HOLLY (Ilex crenata 'microphylla') Height: 4-6'; Spread: 5-7'.

This holly is a good substitute for the more finicky and often more expensive boxwood. It withstands pruning, but is quite attractive in its natural form. Although considered to be slow growing, it will form a stiff 6-foot tall hedge within ten years. The Littleleaf Japanese Holly grows will in both sun and shade and does will in city conditions.

CONVEXA JAPANESE HOLLY (Ilex crenata 'convexa') Height: 4-6"; Spread: 3-5'.

The Convexa Japanese Holly is another good boxwood substitute. This shrub is considered to be one of the most attractive, hardy and serviceable hollies for landscape use. It is attractive in either a clipped or unclipped form. It grows faster than the Littleleaf Japanese Holly.

INDIA HAWTHORN (Raphiolepis indica) Height: 3-4'; Spread: 4-5'.

With its spreading, irregularly branching, the India Hawthorn makes an excellent informal hedge. It is tolerant of a variety of soils and is fairly drought resistant. However, it is not as cold tolerant and pest resistant as other shrubs on this list.

AZALEAS and RHODODENDRONS (Rhododendron species) Height: 3'+; Spread: 3'+.

Many varieties of azaleas and rhododendrons are dense and evergreen and are, therefore, good screening material. The universal popularity of this large shrub family belies the fact that its members must not be planted indiscriminately. As a group, Rhododendron species prefer cool, moist, well drained, acidic soil which has a fairly high organic content. They do best in shade or partial shade particularly when they are planted in extremely hot or windy locations. Planting in full sun is not recommended. In spite of these requirements, once established in good soil with the correct culture and water, both rhododendrons and azaleas tend to take care of themselves. Some relatively hardy and vigorous species are: Kurume Azaleas (R. obtusum), Snow Azaleas (R. mucronatum), Indian Azaleas (R. indicum), and the native Carolina Rhododendron (R. carolinianum).

E-15 Large Shrubs For Evergreen Screening

The following shrubs are recommended for high hedges or screens. Each species grows to a height of more than 6 feet; therefore, these shrubs are appropriate for Opaque Screens.

THORNY ELAENGUS (Elaengus pungens) Height: 8-10'; Spread: 6-10'.
This shrub is tolerant of may adverse conditions. It will grow rapidly in relatively infertile, dry soils. Its dense thorny branches form an excellent natural hedge. It is one of the most common evergreen shrubs in the South.

BURFORD HOLLY (Ilex cornuta 'Burfordii') Height: 8-15'; Spread: 6-8'.
The Burford Holly has been called, "one of the best and most serviceable of all broad leaved evergreens for general planting in the South". It is soil tolerant, grows rapidly, requires no pruning, and usually has no pest problems. Its dark green leaves lack the usual holly spines.

YAUPON HOLLY (Ilex vomitorial) Height: 5-15'; Spread: 6-12'.
This is another versatile holly, slower growing than the Burford, but equally as adaptable to adverse conditions. It is a native shrub which has proven to be one of the most drought resistant of all hollies. It may be clipped to maintain any desired height. The Yaupon Holly is very heavily fruited and will attract birds.

LAUREL or SWEET BAY (Laurel nobilis) Height: 10-12'; Spread: 8-10'.
Laurel is a tough low maintenance shrub which does best in fertile, well drained soils. Pruning is not required but it may be sheared to any desired form. It screens well with a single row planting. The Laurel has been a popular landscaping plant since ancient times.

JAPANESE PRIVET (Ligustrum japonicum) Height: 6-10'; Spread: 5-6'.
The Japanese Privet will survive almost any adversity including heat, cold, drought, air pollution, and poor soil. Accordingly, it is one of the most popular hedge plants in America. This and other Ligustrums are fast growing and remarkable pest free. They are ideal as a high screen in large scale areas. It has been said that if a Ligustrum will not grow in a particular location, then nothing will.

FORTUNE TEA OLIVE (Osmanthus fortunei) Height: 9-12'; Spread: 5-7'.
This Osmanthus hybrid is a popular, though non-descript, shrub. With its vigorous growth, it will form an excellent screen or border. It is soil tolerant. The Fortune Tea Olive is most notable for its inconspicuous yet highly fragrant flowers.

RED PHOTINIA (Photinia glabra) Height: 6-10'; Spread: 4-5'.
This low maintenance shrub is often selected for its glossy saw toothed leaves which are a bright red when they first appear. Photinia forms a good hedge when planted in full sun. It has somewhat looser foliage than other plants on this list. In recent years, Red Photinia has become very popular in the Southeast.

LAURESTINUS VIBURNUM (Viburnum tinus) Height: 10-12'; Spread: 10-12'.

This Viburnum is prized for its luxuriant dark green foliage. It is valuable for screens and, though sometimes clipped as a formal hedge, it can remain uncut for years and still keep its good form. It grows best in medium fertile soils and prefers dry conditions in the late summer. All Viburnums withstand city conditions well.

APPENDIX F

Planting, Printing and Annual Maintenance Practices
For Street and Park Trees
Prepared by: Harriet F. Phillips, Ph.D.

Herein are contained recommended practices to be followed in the planting and pruning of Street and Park trees and those annual maintenance practices that will contribute to the health and appearance of public plantings in the Town of Edenton, North Carolina.

I. Selection and Planting of Street and Park Trees

A. Time to Plant

Most hardy trees and shrubs can be moved successfully in the fall or spring. The fall planting season extends from the time the leaves begin to turn color until after the leaves have fallen (October-November in Edenton). The spring planting season begins when the soil warms up and is dry enough to work and continues until growth starts (March and April in Edenton). Fall planting has the advantage of allowing the root system to grow in the late fall before top growth begins the following spring. Planting can be done to the likelihood of greater moisture stress.

B. Selection of Specimens

1. What to Look for When Purchasing Plants

Nursery-grown plants generally have better root and branch structure and become established more quickly than trees collected from fields or woods. The quality of plants selected can be as important in determining their success in the landscape as proper selection of species, planting and maintenance. A young plant with structural defects may never thrive and produce a suitable specimen. A healthy well-grown nursery plant is a good investment.

The following factors should be considered when purchasing trees and shrubs:

a) Apparent health and vigor—live buds; no buds; no dried out wood; if in leaf, normal color, density and size of leaves.
b) Healthy root system—free of kinks or circling roots; if in containers, sufficient root volume to anchor plant but not pot bound.
c) Top-to-root ratio—moderate ratio of top growth to root system. A small root system may not be able to support a large top.
d) Well-trained branch structure—straight trunk standing without support, evenly distributed branches radially and vertically, branches set as wide angles to the trunk; for vertically, branches set at wide angles to the trunk; for shrubs—evenly distributed branches and symmetry of growth.
e) Freedom from disease, insect pests or mechanical injury.

2. Size of Nursery Stock

Large shade trees are measured in caliper determined at 6” above the soil line for trees up to and including 4” in diameter. Tree caliper is measured 12” above the soil line for trees greater than 4” in diameter. Trees are classified by size in one-fourth inch intervals up to 2” in diameter, one-half inch intervals up to 4” in diameter, and 1” intervals over 4” in diameter.

For public plantings, trees with a minimum one and one-fourth inch to one and one-half inch caliper are recommended. Trees of this size become established more quickly and are less subject to vandalism and accidental breakage than smaller plants. Trees over 4” caliper are not routinely recommended due to expense, need for heavy equipment and extra long-term care required.

Small trees are measure in height determined at one foot intervals up to 6’ in height, and two foot intervals over 6’. Plants of 6’-8’ size are recommended.

Shrubs are measured in height or spread depending on their growth habit. They are classified in groups with 3” increments up to 18”, and in 6” increments over 18” in height or spread. Availability of various size grades depends somewhat on the species and its growth rate. A size intermediate in the range of those available is recommended.

3. Types of Nursery Stock

Trees are handled “bare-root” (roots free of soil and wrapped in moist packing moist packing material), “balled and burlapped” (dug with a ball of soil, wrapped in burlap and tied), or in containers.

Dormant deciduous trees of less than 2” caliper may be available “bare-root” for fall or early spring planting. Some kinds of small deciduous trees, most large trees, and evergreens are moved “balled and burlapped” in the spring or fall. Many deciduous and evergreen trees are shrubs are now available at all times of the year in containers ranging from one (1) gallon to ten (10) gallons or more in size. Balled and burlapped and container grown plants tend to suffer less transplanting shock than plants moved bare-root.

C. Planting Instructions

1. Preplant Care

If planting can not be done immediately after plants are purchased, they must be kept cool and moist. Bare-root plants should be heeled-in by digging a trench in a shaded location large enough to accommodate the root system without crowding. Lay the tree roots in the trench and mound moist soil, wood shavings, or peat over the roots. Store balled and burlapped plants in the shade and keep the root ball moist. Take care not to break the root ball when moving the plants. Container-grown plants should be kept shaded and watered.

2. Preparing the Planting Hole

A properly dug planting hole is roomy with good bottom drainage. Holes need be no deeper than needed to allow the plant's crown to sit an inch or so above the surrounding soil level. For bare-root trees, make the hole wide enough to accommodate the roots when they are spread out naturally. For balled and burlapped and container plants, dig the hole twice the diameter of the root ball container.

Loosen the soil on the bottom and sides of the hole to provide easier penetration of developing roots. The soil dug from the planting hole is satisfactory fro backfilling around the roots if it is a well-drained, average loam. Heavy clay soil or very sandy soil may benefit from thoroughly mixing organic matter (compost, damp peat) with the backfill.

3. Planting Care Root Plants
   a) Soak root system in water about twelve (12) hours.
   b) Remove any broken or bruised roots.
   c) Mound and firm the soil in the center of the planting hole to hold the crown of the plant up with the roots spread out naturally at about a 6" depth.
   d) Holding the trunk so the previous soil line is 1-2" above finished ground level, gradually fill and tamp soil around roots taking care not to break or bruise the roots and to avoid air pockets.

4. Planting Balled and Burlapped Plants
   a) Carefully set the ball in the planting hole without cracking the ball of soil. The ball should sit about an inch or two higher than the surrounding soil. Add backfill under the ball to bring to correct height.
   b) Check that the ball is centered and the trunk aligned vertically.
   c) Alternatively backfill and firm the soul halfway up the ball.
   d) Loosen the twine and burlap from around the top and shoulder of the ball. Fold the burlap back into the hole or cut it off.
   e) Finish filling the hole making sure the burlap is well buried.

5. Container Plants
   a) Handle the plant by the container, not the trunk.
   b) Carefully remove the container (cut it, if necessary).
   c) Loosen the root ball by hand or slit with a knife to provide good soil contact. If roots are matted around the bottom and sides of the ball or circling the ball, remove or straighten them. Removing as much as one-half of the roots from the outer 1" of the ball should not harm the plant.

d) Set the plant in the hole so that it sits an inch or two higher than the surrounding soil.
e) Alternately fill and firm the soil around the root ball.

6. Finishing the Job
   a) Shape the soil on top of the hole to form a broad shallow saucer with the rim just inside the lip of the original hole.
   b) Fill the basin slowly with the water. Water thoroughly.
   c) After the water has soaked in, reshape the basin to make the base of the plant slightly higher than the bottom of the basin. Unless the soil has washed off the top of the root ball, do not add soil over the root ball to obtain the desired basin shape.
   d) Place 2”-3” of mulch (wood chips, shredded bark, etc.) over the basin and surrounding lip to reduce moisture loss, moderate soil loss, moderate soil temperature, and reduce settling and cracking of the soil.
   e) Fertilizer at planting is not necessary or recommended.
   f) See directions for pruning “Newly Planted Trees”, page F-11.
   g) Staking is not always needed to make a tree stand upright, but trees in public planting areas need to be staked to help them achieve good root anchorage and protect them from vehicles, lawn mowers, animals and vandals.

Drive two or three 2 x 2” stakes one and one-half feet deep into the soil just clear of the planting hole. If wind is not a problem, the stakes should be placed so as to provide maximum protection from traffic and equipment. In moderate to strong wind situations, an imaginary line drawn through the support stakes should be at right angles to the wind direction.

Wire covered with hose or tubing to protect the trunk, elastic webbing, belting, or polyethylene tape can be used for ties. Ties are located near the top of the stake and a figure eight loop is made between trunk and stake. The ties should not be within two and one-half feet from the top of the tree in order to avoid unnecessary stress on the trunk. (See Figure 1, page F-14).

II. Annual Maintenance

A. Newly Planted Trees (1st and 2nd growing season after planting)

The first two years after planting are critical in the life of a tree. For street trees they are particularly difficult because of the often less than ideal site conditions. It is better to plant a smaller number of trees at one time with reasonable assurance of care for several years thereafter, than to over plant and neglect them. The following instructions pertain to trees but, with the exception of stake and tie care, apply equally well to shrub plantings.

Seasonal care includes a minimum of two visits to each tree the first two growing seasons: one in March and one in August.

First Season: The following maintenance operations should be performed at each visit:

1. Check condition of mulch. Aerate (loosen) with pitchfork if tightly packed. Add new mulch to maintain 2-3" level.
2. Remove weeds and grass from mulched area. These compete with the tree for water and increase the likelihood of mower damage to tree.
3. Check stakes and ties. Keep taut.
4. Prune off any broken branches in proper manner (see Where and How to Make a Pruning Cut.", page F-9)
5. Check health of plant including possible attack by insects and disease. Seek advice of extension agent for control measures.
6. Water thoroughly, if needed. Deep watering is necessary to avoid shallow root systems and unstable trees. Additional watering should be done, one a week whenever rainfall levels during the growing season are less than 1" per month.

Second Season: Same operations as first year except:

1. Remove stakes and ties unless trunk and root anchorage appear to be weak, in which case, leave stakes and ties one more year. Removing all wire and tie material is especially important to avoid its cutting into the bark and girdling the trunk.
2. Fertilize the tree just before new growth starts in the spring. A fertilizer containing only nitrogen is sufficient for most new trees. It can be applied to the soil surface in readily soluble form (ammonium nitrate, ammonium sulfate) at the rate of .10-.25 lb-sq. yd. and watered in.

B. Established Plants

Plants in the ground three of more years are usually considered "established". The following procedures for the maintenance of street and park plantings should be done each year.

1. Late Winter to Early Spring

a) Prune to train young plants for proper shape and branch structure. (See directions for "Newly Planted and Young Trees, pg 11). To avoid later problems and the need for heavy equipment it is wise to correct structural defects early in the life of a plant.
b) Apply fertilizer, as needed, to plants showing poor growth and/or foliage color. Fertilize plants in restricted root zone areas (e.g. downtown Broad Street) annually. (See following section on Fertilization).
c) Aerate and replenish mulch in park shrub borders.
d) Broad-leaf weed control for lawn areas in parks.
e) Perform previously outlines spring maintenance for newly planted trees.

2. Mid-Summer

a) Water plants weekly in areas of restricted root space whenever rainfall is less than 1” per month. Water other trees and shrubs if signs of wilting occur.
b) Use Poast or Fusilade with a non-ionic surfactant (Enduce, Agri-Dex) for grass control in shrub borders and for edging.
c) Check for insect and disease problem. Ask county extension agent for diagnosis and recommended control measures.
d) Prune hedges and shrubs to keep within bounds.

3. Late Summer
a) Prune out dead, diseased and broken limbs according to recommended procedures (See page F-9).
b) Remove excessive basel sucker growth and limb up street trees to provide proper clearance and sight distance.

4. All Seasons
After storms, cleanly prune stub ends of broken limbs within the crown of the tree back to the next largest branch.

Broken and town stubs are prime decay entry points and lead to major problems if not cleanly pruned at the time of breakage.

C. Fertilization

The extent to which fertilizers are applied to established plantings depends on the fertility of the soil in which they are growing. If plants are making good growth and have good foliage color, the soil is probably fertile enough. On plantings showing signs of malnutrition, fertilizer is best applied in the spring about the time buds are beginning to grow. The results of a soil analysis can provide recommended treatment and application rates for general fertilization and micronutrients needs. The following information contains broad guidelines for application methods and rates for various plantings.

1. Shrub Beds

A 5-10-5 fertilizer may be broadcast on the beds at a rate of 25 lbs/1000 sq ft. Individual plants, depending on size would receive 1 to 3 or 4 handfuls.

Several application methods are used, but some require specialized equipment for injection of fertilizer. More common methods include surface broadcasting and soil incorporation.

In non-lawn areas, surface application is the easiest and most effective method for nitrogen and micronutrient fertilizers. The rate of application depends on tree size. Apply fertilizer starting two and one-half feet from the trunk to a distance extending 25-30% beyond the spread of the branches.

For trees up to 3” in diameter:
5-10-5: 2 lbs/inch trunk diameter
10-6-4: 1 lb/inch trunk diameter

For trees over 3” in diameter:
5-10-5: 5 lb/inch trunk diameter
10-6-4: 3 lb/inch trunk diameter

If rate is indicated in excess of 20 lbs. of 5-10-5 or 10 lbs. of 10-6-4 in 100 square feet of surface area, divide the fertilizer in two or more portions and apply at 4-6 week intervals. When roads and sidewalks cover much of the surface area under the plant, the rate of application should be reduced and the amount apportioned in several smaller applications.

For plants in lawn area, soil incorporation is a more effective method of fertilizer application. Fertilizer is placed in holes bored in the soil to more directly place nutrients in the root zone area and avoid over fertilization of the lawn.

Holes should be drilled with an auger or punched with a soil corer to avoid soil compaction resulting from merely pounding holes into the soul. Drill holes 10-12” deep and 2-3’ apart beginning away from the trunk to avoid injury to the main support roots. Continue drilling holes in a spiral pattern extending 25-30% beyond the spread of the branches. Pour one (1) cup of 5-10-5 or one-half cup 10-6-4 in each hole. Fill holes with water. After water drains, refill hole with good topsoil.

Plants located in paved areas providing limited root space and little surface soil area benefit from annual fertilizer application. Micronutrient (e.g. iron and zinc) deficiencies may also be more common and require special attention. Spring surface application at a reduced rate is recommended for such plants.

Slow release fertilizers are available which release small amounts of nutrients over 6-18 months. These are often expensive and no more effective than other methods, but may be used for plants that are difficult to reach for more regular fertilizations.

III. General Pruning Principles.

Successful pruning requires knowledge of plant growth and development, growth habits of different kinds of plants and an ability to mentally envision the future from of a given specimen. It is not possible to provide directions for every situation that necessitates pruning. The following are only general guidelines. Additional references should be consulted for further information of handling particular problems or plant species. Only with good pruning and training can the maximum aesthetic and functional benefit be acquired from plants.

A. Purposes of Pruning

One must have a clear purpose in mind before any pruning is done. This purpose will dictate the time of pruning and the kind of cuts to be made. Valid reasons for pruning include:

1. To Train Young Plants—The arrangement, attachment, and size of scaffold branches (main structural branches) can be controlled to produce vigorous and mechanically strong plants. The early removal of crowded, rubbing and crossing branches will eliminate later

problems. Pruning should take advantage of the plant's natural growth habit.

2. To Maintain Health and Appearance—Pruning must be done to remove dead, diseased and broken branches. A dense top may be thinned to allow for passage of light and to reduce wind resistance.

3. To Control Plant Size—Control of plant height and spread may be needed to reduce interference with utility wires, views and traffic. Initial selection of plants with a size and growth habit compatible with site conditions can minimize such pruning, but existing plantings may require pruning to direct their growth in an appropriate manner.

4. For Safety—The safety of citizens and property must always be considered. Trees or branches that through age, storm damage, old pruning wounds or disease become sufficiently decayed internally to pose an imminent threat to people or property must be removed promptly.

B. When to Prune

The correct time to prune depends of the type of plant, its condition and the results desired. Some general rules are as follows:

1. Light pruning can be done anytime. Unwanted growth is most easily removed when it is small.

2. Broken, dead, weak or hazardous branches should be removed whenever they occur. It is often more easy to see theses problems during the growing season.

3. Young plants are best trained during the dormant season from after leaf fall to before the period of rapid spring growth. Pruning at this time results in more rapid plant development and wound healing. A few broadleaf evergreens grow most rapidly after the weather warms up in late spring and pruning should be delayed until spring growth occurs.

4. Control of plant growth is best achieved when pruning is done soon after growth is complete for the season. Such pruning should not be so severe or early to encourage new shoot growth. In general, mid to late summer pruning results in maximum growth reduction.
5. Trees and shrubs with desirable flowers should be pruned according to the time the plant blooms. Plants that bloom in spring should be pruned near the end of their blooming period. Plants that bloom in summer or fall should be pruned in winter.

6. Research has shown that pruning wounds heal 20% more quickly in the spring due to decay fungi produce spores. Therefore, fall pruning is discouraged.

C. Basic Pruning Methods

The type of pruning cut not only affects the initial appearance of the branch or plant but also determines growth. The following pruning methods produce quite different growth responses.

1. Heading back is cutting a one year old shoot back to a bud ("tip pruning"), or cutting an older branch back to a stub or a munch smaller later. Heading back a large branch is often called "topping", "lopping" or "stubbing" (See Figure 2, page F-14).

   In response to tip pruning, new growth develops from one or more buds just below the cut (See Figure 3, page F-15). The result is denser branching.

   The response to topping or stubbing is a flush of shoots growing from latent buds in the trunk. These shoots are new and will branch internally. These can break out easily as well as increase wind resistance within the crown.

   Tip pruning is acceptable in the training of young trees. Topping or stubbing is prohibited by the Edenton Tree Ordinance. (See later section of correct pruning of Mature Trees.)

2. Thinning Out is the removal of a lateral branch at its point of origin of shortening a branch by cutting to a lateral large enough to assume the terminal role (Figure 4, page F-15). Reducing the height of a tree or branch by cutting back to a large lateral is called "drop-crotching". The lateral back to which a branch is cut should have at least one-third the diameter of the branch removed.

   The growth response to thinning is distributed more evenly throughout the plant than the response to heading. The plant becomes more open and retains a more natural form. Thinning is the more commonly used pruning method.

D. Where and How to Make a Pruning Cut

The location of the pruning cut in relation to branch attachment determines the size of the wound, the rate of wound healing and exposure to decay organisms. The closeness of the cut also affects the amount of regrowth from the base of the cut and the strength of attachment when a branch is thinned to a lateral.

Current research indicated pruning cuts should be made close to, but beyond, the branch bark ridges and the collar at the base of a branch. Branch bark ridges are areas, rings or lines of bulging bark that may be rough and darker in color than the surrounding bark (See Figure 5, page F-16).

This zone is a naturally strong physical barrier to decay. Pruning just outside the branch bark ridges is not the same as a "flush" cut, which is made as close as possible to the base of the branch. Flush cuts produce unnecessarily large wounds and increase the likelihood of decay.

In removing small branches with hand shears of long-handled lopping shears, make a close cut by placing the blade just to the outside of the branch bark ridge of the limb to be removed (Figure 6). In heading back to a bud, a diagonal cut is made about one-fourth inch above the bud. The cut should be made above a bud that will grow in the desired direction (See Figures 6 & 7, p. F-16, p. F-17).

Limbs over 1" in diameter must usually be cut with a saw. Those over 2" should be cut in three steps to avoid splitting and tearing the bark. The first cut should be made on the underside of the branch, 1-2 feet from the crotch. Cut the branch about one-fourth of the way through or until the saw begins to bind. The second cut is made from the top within 1-2 inches out from the first cut. The third cut is made just beyond the branch back ridge or color to remove the stub (see Figure 8, page F-17). If the stub is heavy it should be removed with two cuts instead of one, the first cut made from the underside.

Removing a large branch with a narrow crotch angle is similar to the above except the third cut should be made upward at a 30-40 degree angle to the actual union of the branch and trunk. The actual union is often much lower than the apparent junction where they touch (See Figure 9, page F-18).

The use of pruning paints the cover the surface of the wound is of doubtful value. People think it looks "professional", but current research indicates that no dressing currently available in the United States will prevent decay of influence the rate of wound healing. In fact, some indications are that wound dressings can actually increase decay when they crack with age and allow water to accumulate on the cut surface.

A correctly made, smooth pruning cut is the best insurance against decay. It is wise to prune branches as soon as it becomes evident of their need for removal. Smaller wounds heal more rapidly. In order to make smooth cuts, tools should be kept sharp and when pruning diseased or decayed wood, tools should also be disinfected with rubbing alcohol before using them on healthy plants.

E. Pruning Trees of Different Ages

1. Newly Planted and Young Trees

At planting, prune only broken or rubbing branches. Other branches, however low on the trunk should not be removed at this time as they will provide nutrition to the plant during the critical first years of establishment. Do not indiscriminately prune back ends of branches or the main trunk. Continue to remove only broken branches and dead twigs during the first growing seasons.

The third year after planting, prune only the crown of the plant. This process will continue over several years. A young tree should be left with more branches than will ultimately be wanted to provide for the greatest total growth.

Start by removing or heading back those branches that are clearly unwanted, such as those growing inward across the crown or those with narrow angles of attachment to the trunk (See figure 10, page F-18).

Trees that form a central leader (e.g. Ginkgo, Pines, Holly) should be pruned to maintain a leader. This may be achieved by heading back competing laterals (See Figure 11, page F-19), removing vigorous erect watersprouts (See Figure 12, page F-19), or removing the leader if it has already been outgrown by a vigorous lateral (See Figure 13, page F-19).

Trees along streets and sidewalks will need to have their major scaffold limbs at least above head height, but until trees have reached the desired height of the lowest scaffold, some lower lateral branched are allowed to remain. Select laterals of weak to moderate vigor spaced 4-12 inches apart to remain as temporary branches to protect and nourish the trunk. As the tree develops a sturdy trunk and top, gradually remove the temporary branches.

Eventually, the main permanent scaffold branches of a tree must be selected. Depending on the plant's size and growth rate, this process may take several years. When selecting permanent limbs it is important to remember that the position of a limb on a trunk remains essentially the same throughout the life of the tree. As the branch increases in diameter, the distance to the ground actually decreases (See Figure 14, page F-19)

Scaffold branches should have wide angles of attachment to the trunk, should be vertically spaced 12-24 inches apart and should be evenly spaced all around the trunk (See Figure 15, page F-20).

Trees that do not naturally form a central leader but instead have a vase-shaped habit or multiple trunks (e.g., Elms, Crepe myrtle) require care in selection of scaffold branches. Vertical spacing is critical to avoid weak branch structure.

2. Mature Trees

Mature street tree plantings need to be evaluated for clearance for vehicular and pedestrian traffic. Training young trees for suitable height of lowest branch may eliminate the need for pruning; however, lower limbs may have bent downward over time necessitating pruning to raise the crown (also called crown lifting and heading-up). When raising the crown, thin back to a more upright large lateral or remove the limb entirely. Cutting back to a small upright lateral often results in the need to further pruning as the branch eventually loses vigor due to loss of photosynthetic foliage area and shade from upper branches. Maintain a tree's symmetry by pruning branches opposite those removed in raising the crown.

Crown lifting may need to be done over several years to avoid removing too much foliage and thereby weakening the tree. Removing too many lower limbs at once also decreases a tree's stability. For a

properly balanced tree, at least one-half of the foliage should be on branches originating in the lower two thirds of the trunk.

Pruning may also be needed over time to correct branches interfering with utility wires. Both trees and wires are essential for the health and prosperity of the community. Inexperienced topping results in complaints and unnecessary butchering of trees. Careful tree trimming can remedy the problem and preserve the shape of trees. Directional pruning has the most lasting benefits. This method involved opening paths for wires through trees by removing smaller branches. The branches selected to remain are those growing away from the wires.

Initial selection of plants with a mature size and shape appropriate for the planting site will reduce the need for pruning of mature trees to control growth. Existing plants and changing site conditions will still make crown reduction a necessary pruning operation. Crown reduction is the thinning of branches to reduce spread, height or to remove limbs jutting out beyond the general outline of the tree. Size can be most effectively maintained if crown reduction is begun as the plant reaches maximum acceptable size. Pruning will be more difficult and the larger wounds harder to heal if pruning is delayed.

Topping is often mistakenly done to reduce size. Topping is cutting main branches back to stubs with little regard for their location. Size reduction is correctly done by a thinning process called “drop-crotching” (see F- 9). This practice retains the natural shape of the tree, reduces regrowth of watersprouts and minimizes the chance of decay in the wound (See Figure 16, page F-20).

Dense headed trees may benefit from crown thinning to open up the crown and allow better light penetration, more productive growth and lessen wind resistance. Start from the top and work down removing small, weaker, heavily shaded inner branches. If a tree was poorly trained, cuts up to six inch diameter may be needed to remove branches arising to close together.

Stubs of limbs broken by storms and wind should be pruned back to the next larger branch as a routine practice of storm clean up (See Figure 17, page F-20). Such stubs are the major point of entry for decay causing organisms. Their subsequent decay makes them a hazard to persons and property.

Mature trees may also require routine removal of basal sucker growth and vigorous watersprouts arising from earlier pruning wounds.

3. Aging Trees

Older trees will require periodic cleaning out to remove dead, dying of broken wood. Watersprouts arising from old pruning cuts should also be removed as close to their base as possible. Examine old pruning wounds for defects and signs of decay.

Crown reduction may be called for where the branch system seems inadequate for the height and weight carried, or the tree as a whole is in declining health. Some kinds of trees, such as Oak, Elm and Linden, will tolerate relatively severe pruning, others, such as Maple, Sycamore and Ash, are less tolerant. As previously stated, drop-crotching is the correct procedure for crown reduction. Large pruning wounds on older trees rarely heal and can be expected to show signs of decay in the future.

Crown renewal of restorative pruning may be needed on trees that were pruned improperly in earlier years. Crown renewal is the practice of reshaping a tree that has been topped to restore a more natural form, improve health and give it greater structural strength. A tree is probably worth saving if the main scaffold branched and trunk are sound or can be cut back to sound wood. A dead branch stub that has a collar of live wood should be cut just at the outer edge of the collar (See Figure 18, page F-21). Branches that have grown from topped scaffold branches should be thinned until only 1-3 remain on each scaffold. These remaining branches should be thinned back to large, low laterals to reduce possible wind damage and to encourage stronger attachment. Crown renewal is best done during the growing season gradually over a 2-4 year period. Restorative work on topped trees must be recognized as a stop gap method and action should be taken to provide eventual replacements for such plants.

Figure 1.

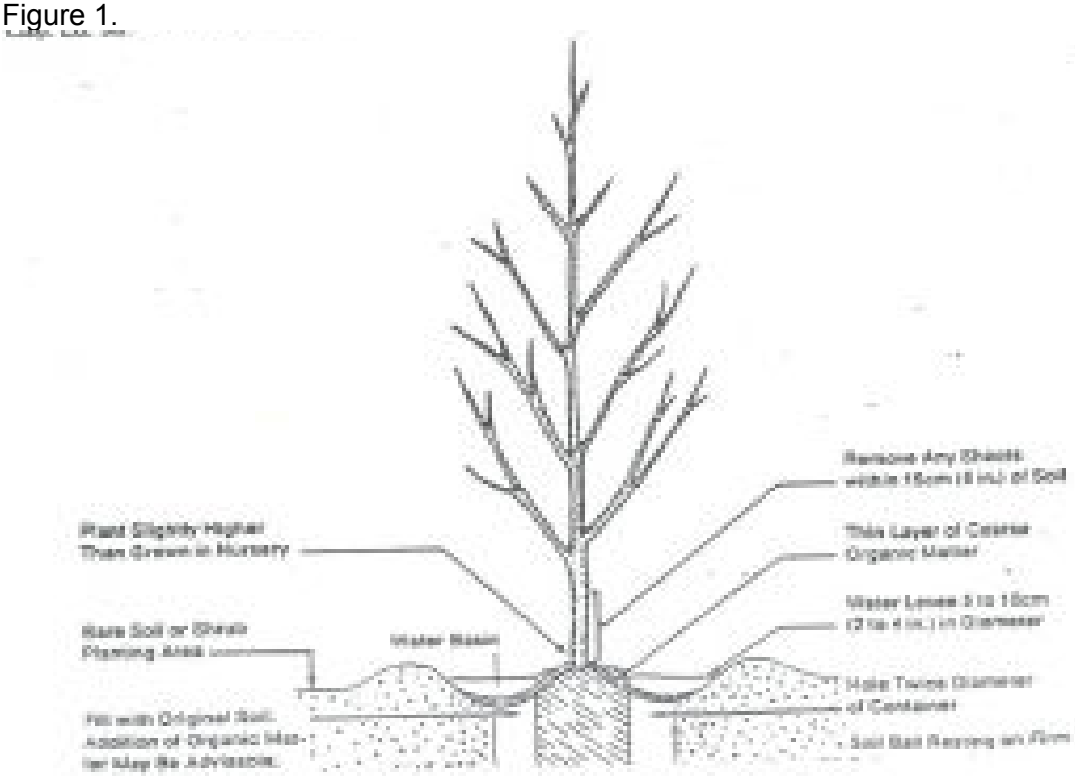


Figure 2.

Figure 3

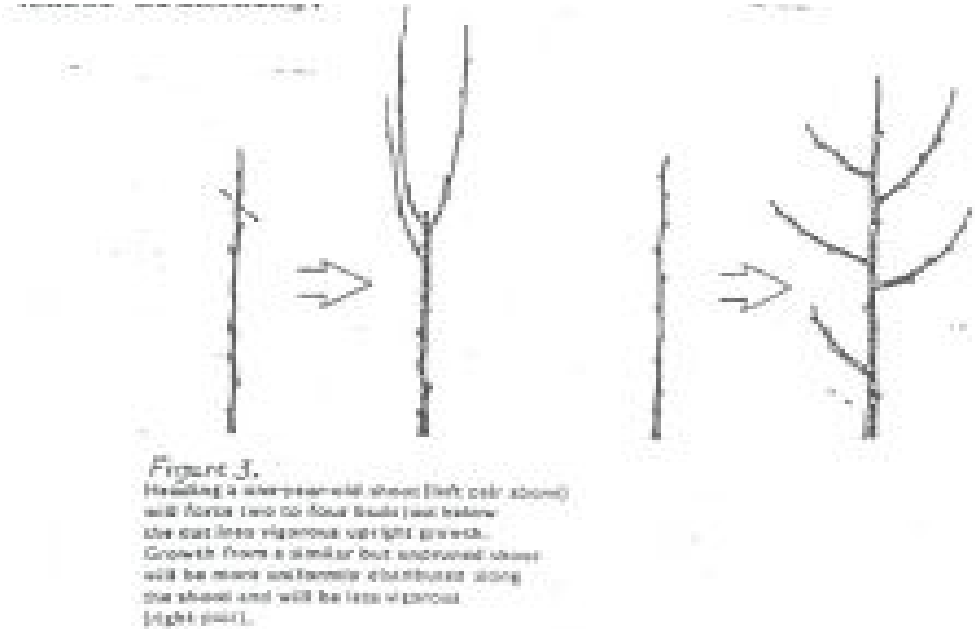


Figure 4

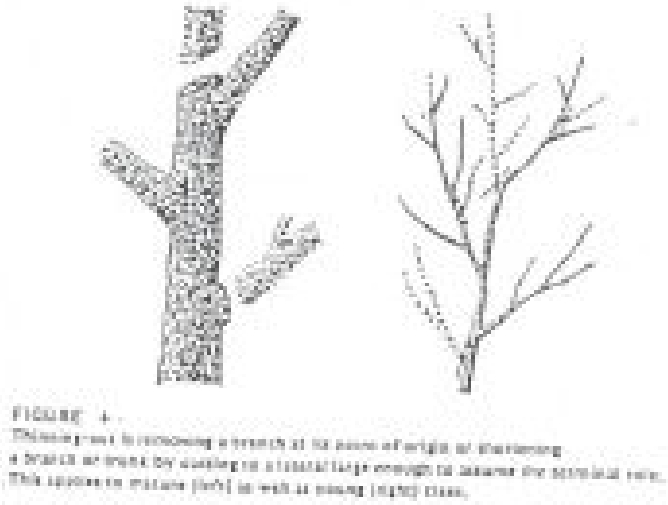


Figure 5

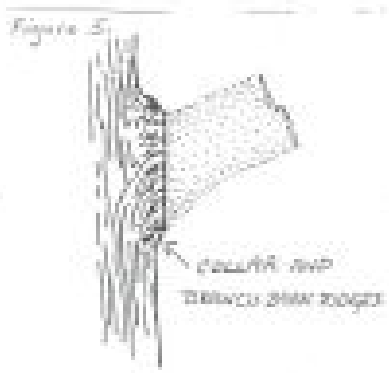
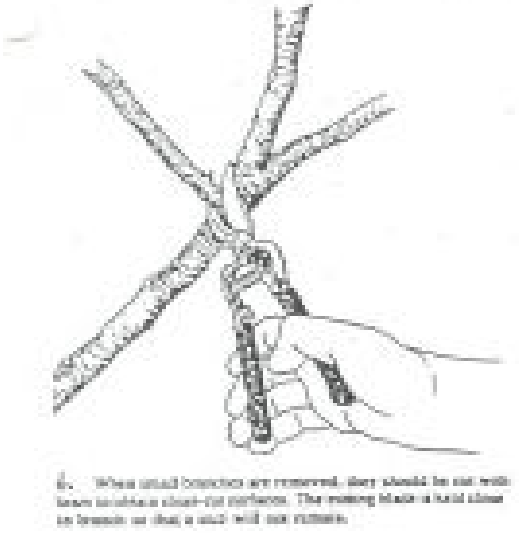


Figure 6



6. When small branches are removed, they should be cut with hand or pruning shears, leaving clean-cut surfaces. The pruning blade is hard alloy so branch or twig will not rotten.

Figure 7

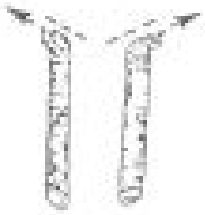


Figure 7. Pruning cut at collar body forces the growth in a desired direction. The new shoot growth will follow the direction of the desired line. Source: Adapted from USDA Home and Garden Bulletin 165.

Figure 8

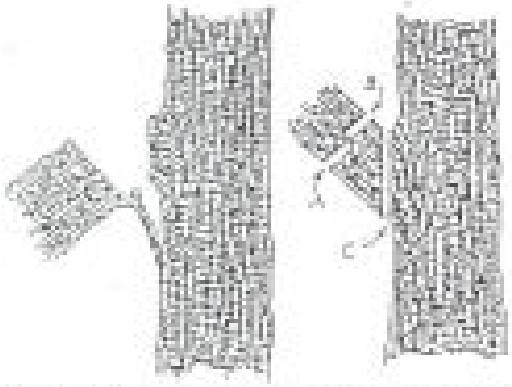


Figure 8. (left): The wrong way to prune a large branch. A single cut close to the stem stem may result in scaring of the bark.

The correct way to prune a large branch. A preliminary undercut is made at A; a second cut is made at B, to sever the main part of the branch. The remaining stub is removed by cutting at C.

Figure 9

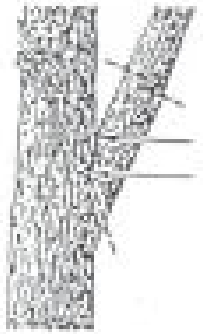


FIGURE 9.
When removing a large branch with a sharp branch attachment, angle the cut out upward toward the top of the second union of the branch with the trunk. Although they touch, the branch and trunk are not united between the two arrows.

Figure 10

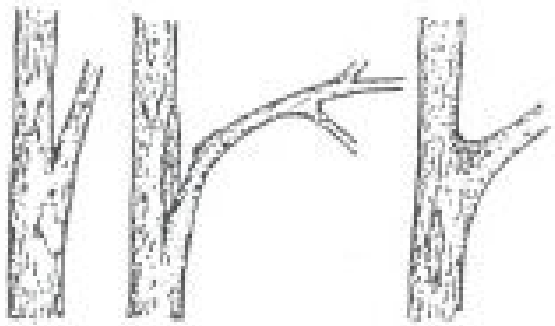


FIGURE 10. Branches which have acute angles (left) may split when the branch matures and becomes heavy (center). Narrow angled branches should be removed and wide angled branches (right) should be encouraged.

Figure 11

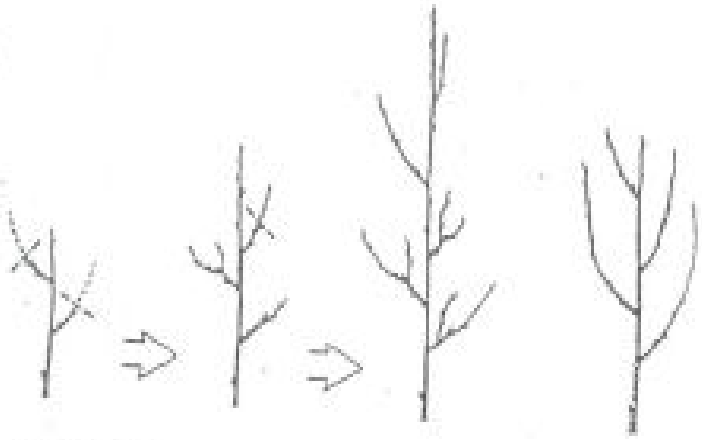


FIGURE 11.
You can maintain a leader by heading back any laterals that may compete with it (extreme left); prune these laterals fairly severely if they are temporary (left center). The tree will grow taller (right center) than if it had not been pruned (extreme right).

Figure 12, 13

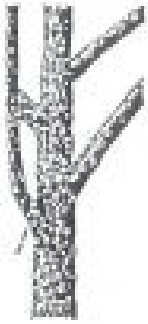


FIGURE 12.
Occasionally a young vigorous branch (weeping oak) will grow more upright than the others and will compete with the leader.
Unless the water in which it grows is devoid of lakes, the upright branch should be removed (broken line).

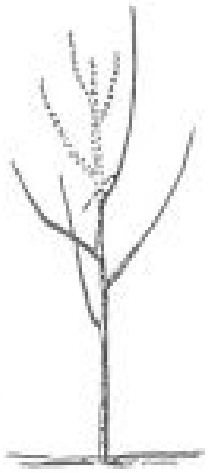


FIGURE 13.
When a leader has been outgrown by one or more laterals, thin the leader back to one of its most vigorous and upright laterals which in turn will become the leader.

Figure 14

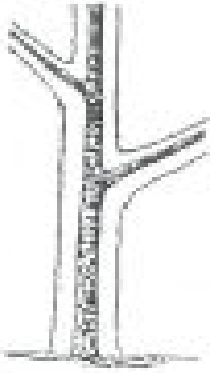


FIGURE 14.
As a tree grows, branches (dark shaft) develop on the trunk and at the same time increase in diameter, becoming slower to the ground.

Figure 15

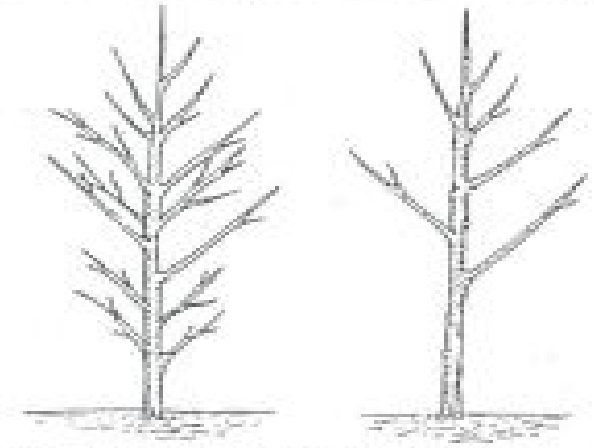


Figure 16

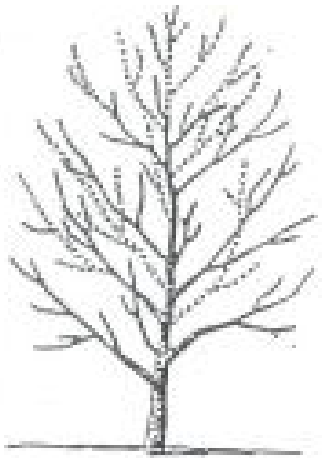


FIGURE 16.
You can reduce the height and spread of a tree and yet maintain its natural shape. Branches thinned are outlined by broken lines.

Figure 17

Figure 17 PRUNING TO REPAIR DAMAGE

Figure 18

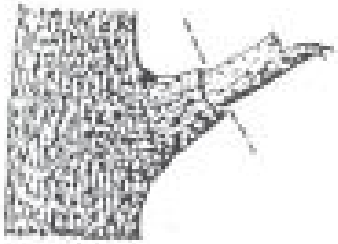


FIGURE 18.
A dead branch stub that has a collar of live wood should be cut just at the outer edge of the collar.

References and Photo Credits

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APPENDIX G

Plants for Buffer and Parking Lot Landscaping

Prepared by: Dee Phillips
September, 1988

The following plants, grouped by size, are suitable for use in northeastern North Carolina. The list is meant to provide suggestions for developers and is by no means to provide suggestions for developers and is by no means inclusive. Effective use of these plants can be obtained only with attention to their specific cultural requirements.

A further list of shade trees for use in parking areas and selected references on landscape plants is included in a separate handout entitled, “Street Trees Approved for Use”.

Groundcovers

Ajuga reptans, Carpet Bugle

Cotoneaster dammeri, Bearberry Cotoneaster

Cotoneaster salicifolius, “Scarlet Leader”, Scarlet Leader Cotoneaster

Euonvmus fortunei, “Coloratus”, Wintercreeper

Hedera helix, English Ivy

Hypericum calycinum, St. John’s Wort

Juniperus chinesis, “Sea Spray”, Sea Spray Juniper

Juniperus conferta, “Blue Pacific”, Blue Pacific Juniper

Juniperus conferta, “Emerald Sea”, Emerald Sea Juniper

Juniperus horizontalis, “Bar Harbor”, Bar Harbor Juniper

Juniperus horizontalis, “Blue Chip”, Blue Chip Juniper

Juniperus horizontalis, “Wiltonii”, Blue Rug Juniper

Lirope spicata, Lilyturf

Lirope spicata, “Variegata”, Variegated Creeping Liriope

Festuca ovina, “Glauca”, Blue Fescue

Ophiopogon japonicus, Mondo Grass

Vinca minor, Periwinkle

Shrubs to 3'

Abelia x *grandiflora, "Sherwoodie", Dwarf Abelia

Aspidistra elotior, Cast-iron plant

Cotoneaster salicifoluius, "Autumn Fire", Autumn Fire Cotoneaster

Euonymus japonica, "Microphylla", Box Leaf Euonymus

Ilex crenata, "Helleri", Heller Holly

Ilex crenata, "Repandens", Repandens Holly

Ilex vometoria, "Schilling's Dwarf", Schilling's Holly

Janiperus conferta, Shore Juniper

Janiperus sargentii, Sargent Juniper

Lirope muscari, "Big Blue", Big Blue Lilyturf

Nandina domestica, "Nana", Dwarf Nandina

Nandina domestica, "Harbour Dwarf", Harbour Dwarf Nandina

Pittosporum tobira, "Wheeler's Dwarf", Dwarf Pittosporum

Rhododendron, "Gumpo", Gumpo Azaleas

Spiraea x bumalda, Bumald Spirea

Yucca filamentosa, Beargrass

Shrubs 3'-5'

Abelia x grandiflora, Glossy Abelia

Clethra alnifolia, Summersweet

Cytisus scoparius, Scotch Bloom

Diervilla sessilifolia, Southern Bush honeysuckle

Hydrangea macrophylla, Bigleaf Hydrangea

Hydrangea guercifolia, Oakleaf Hydrangea

Ilex crenata, "Burfordi Nana", Dwarf Burford Holly

Ilex cornuta, "Carissa", Carissa Holly

Ilex cornuta, "Rotunda", Dwarf Chinese Holly

Ilex crenata, "Compacta", Dwarf Japanese Holly

Ilex glabra, "Compacta", Compact Inkberry

Ilex verticillata, "Nana", Dwarf Winterberry

Ilex vomitoria, "Nana", Dwarf Yaupon

Kerria japonica, Japanese Kerria

Ligustrum japonicum, "Coriaceum", Dwarf Japanese Provet or Curlyleaf Privet

Prunus laurocerasus, "Otto Luyken", Dwarf Cherry Laurel

Prunus laurocerasus, "Schipkaensis", Shipka Cherry Laurel

Raphiolepis indica, Indian Hawthorne, (e.g. "Clara", "Janis", "Pinkie", "Snow White")

Rhododendron, Glenn Dale Hybrids (e.g. "Fashion", "Glacier")

Rhododendron obtusum, Kurum Azalea (e.g. "Coral Bells", "Hino Crimson")

Rhus aromatica, Fragrant sumac

Spiraea nipponica, "Snowmound", Snowmound Spirea

Weigela florida, Weigela

Shrubs 5' to 8'

Acuba japonica, Japanese Acuba

Acuba japonica, "Variegata", Gold Dust Plant

Buddleia davidii, Butterfly Bush

Calvcanthus floridus, Carolina Allspice

Cortaderia sellowana, Pampas Grass

Forsythia intermedia, Border Forsyhis

Ilex certicillata, Winterberry

Juniperus chinensis, "Pfitzerana", Pfitzer Juniper

Nandina domestica, Heavenly Bamboo

Pyracantha coccinea, "Navajo", Navajo Firethorn

Rhodedendron indica, Indica Azalea (e.g. "Formosa", "George Taber", "Mrs. G.G. Gerbing", "Pride of Mobile", "Southern Charm")

Shrubs 8' to 12'

Acanthopanax sieboldianus, Five-leaf Aralia

Buxus sempervirens, American boxwood

Buxus microphylla, var. japonicus, Japanese Boxwood

Camellia japonica, Japanese Camellia

Clevera japonica, Japanese Cleyera

Cytisus x praecox, Warminster Broom

Euonymus kiautschovicus, "Manhattan", Spreading Euonymus

Hibiscus syriacus, Rose of Sharon

Ilex crenata, "Convexa", Blisterleaf Holly

Illicum parviflorum, Anise-tree

Juniperus chinesis, "Hetzii", Hetz Juniper

Ligustrum japonicum, Japanese Privet

Osmanthus heterophyllus, Holly Osmanthus

Pyracantha coccinea, "Mohave", Mohave Firethorn

Raphiolepis umbellata, Yeddo Hawthorn (e.g. "Majestic Beauty", "Springtime")

Viburnum japonicum, Japanese Viburnum

Shrubs 12' or More

Eleagnus pungens, Thorny Eleagnus

Eleagnus umbellate, Autumn Eleagnus

Ilex cornuta, "Burfordii", Burford Holly

Ligustrum lucidum, Wax-Leaf Ligustrum

Myrica cerifera, Wax Myrtle

Osmanthus x fraseri, Red-tip

Pittosporum tobira, Japanese Pittosporum

Podocarpus macrophyllus, English Cherry Laurel

Pyracantha coccinea, "Teton", Teton Firethorn

Platycladus orientalis, "Oriental Arborvitae"

Small Trees 10'-20'

Aesculus pavia, Red Buckeye

Amelanchier arborea, Juneberry

Chionanthus virginicus, Fringetree

Cotinus coggygria, Smoketree

Ilex attenuate, "Nellie R. Stevens, Nellie Stevens Holly

Magnolia stellata, Star magnolia

Vitex agnus-castus, Chastetree

Medium Trees 20'-35'

Acer palmatum, Japanese Maple

Albizia julibrissin, Mimosa

Crataegus phaenopyrum, Washington Thorn

Ilex opaca, American Holly

Ilex x attenuata, "Foster #2" Foster Holly

Ilex, "Savannah", Savannah Holly

Ilex vomitoria, Yaupon

Koelreuteria paniculata, Golden Raintree

Magnolia x soulangina, Saucer Magnolia

Pinus thunbergiana, Japanese Black Pine

Prunus coroliniana, Carolina Cherry Laurel

Viburnum plicatum, var. tomentosum, Doublefile Viburnum

Large Trees 40' or More

Betula nigra, River Birch

Cedrus atlantica, Blue Atlas Ceder

Credrus deodora, Deodar Cedar

Cupressocyprus leylandii, Leland Cypress
Pinus elliottii, Slash Pine

Pinus taeda, Loblolly Pine

APPENDIX H

Street Trees Approved for Use

Botanical name, common name and occasional descriptive comments are given for each plant. Cultivars are specified where appropriate to distinguish superior selections of a species. In some cases, use is restricted only to specified cultivars.

Large Trees

- American Holly (Ilex opaca)—Evergreen. To 50 feet but slow growing. Sun/shade. Fruits best in sun. Best left color in shade. Good specimen of background plant. Many cultivated varieties available. Berries on female plants only but need male to pollinate. Pyramidal shape. Requires male and female for fruit. Native.

- Atlantic White Cedar (Chamaecyparis thyoides)—Evergreen. 40 to 50 feet. Sun. Native to southern swamps where stands provide cover to wildlife. Medium growth rate. Green/bluish needles.

- Black Cherry (Prunus serotina)—To 80 feet but few attain this height. Sun for fruit production. Shade tolerant. Plant near hedgerows for maximum benefit to wildlife and to minimize leaf and fruit drip in traffic areas. Has messy fruit and insects. Pyramidal shape. Fast growth.

- Eastern Red Cedar (Juniperus virginiana)—Evergreen. 40 to 60 feet. Sun/light shade. Tolerates wide range of soils. Grows fast; can be pruned. Good windbreak. Birds love berries. Pyramidal shape. Medium growth. Has exfoliating bark.

- Green Ash (Fraxinus pennsylvanica)—Deciduous. Average size is 50 to 60 feet. Sun/shade tolerant. Prefers sun. Rugged, fast growing, good breeding, nesting sites for birds. Seeds provide food for wildlife.

- Ginkgo biloba (Maidenhair Tree)—50 to 80 feet. Slow to medium growth. Full sun. Male plants only, seed grown plants prohibited, known male cultivars include:

    - Autumn Gold—Nice fall color
    - Lakeview—Cone form
    - Mayfield—Narrow Habit
    - Palo Alto—Broad Spreading
    - Princeton Sentry (narrow-upright habit)—Tapered Trunk
    - Santa Cruz—Low Spreading

- Oak (Quercus)—75 to 100 feet. Sun/shade. Varieties: Laurel (Q. laurifolia), Willow (Q. phellos), Live (Q. virginiana, Chestnut (Q. prinus), Red (Q. rubra), Scarlet (Q. coccinea), Shingle (Q. imbricaria), semi-evergreen. Water (Q. nigra), Swamp White (Q. bicolor), deciduous. Among the best trees for attracting wildlife. Other varieties do well in drier soils.

- Red Maple (Acer rubrum)—Deciduous. 60 to 90 feet. Tolerant of shade. First to bloom in spring. Good fall color. Medium to rapid growth. Range of soil types. Produces dense shade, cover for birds. Surface roots. Most widely distributed tree in the east. Subject to approval of Tree Committee.

- River Birch (Betula nigra)—Deciduous. 40 to 70 feet. Sun Grows rapidly. Irregular, open crown. Does will along streams. Native. Pyramidal. Multi-trunk, exfoliating bark.

- Southern Magnolia (Magnolia grandiflora)—Evergreen. Sun. Slow to medium growth. Magnificent fragrant white flowers. Cones and leaves prized for floral decorations. Aggressive shallow roots. Needs space. Plant as specimen. Native.

- Sweetgum (liquidambar styraciflua)—Deciduous. To 100 feet. Sun Fast growing. Produces spiny fruit loved by animals; plant in beds, away from foot traffic. Good fall color. Encourage male species without gum balls (retundiloba' = fruitless). Pyramidal.

- Tulip popular (liriodendron tulipfera)—Deciduous. To 100 feet. Sun. showy blossoms often unnoticed because of height. Fast growing shade tree. Aggressive roots. Nice fall color. Native. Oval shape.

- Tupelo (Nyssa silvatica, N. aquatica)—Deciduous. 40 to 60 feet. Slow to medium growth. Thrives in shade or full sun. Silvatica likes moist soil; aquatica standing water. Spectacular fall color. Fruits eaten by wide variety of birds. Native.

<u>Small Trees</u>

- Crabapple (Malus species)—Deciduous. To 30 feet. Sun Moderate growth. Many varieties available. Brilliant though short lived show in spring. Fruit devoured by many birds. Good massed at woodland edge. Avoid planting near paths because of fruit drop.
    - Persistent Fruit: Callaway, Centurion, Sugar Tyme

- Crapemyrtle (Lagerstroemia indica)—Deciduous. There are many cultivars available but the following are recommended because of their tolerance or resistance to powdery mildew.
    - Apalachee--15' to 20', light lavender flowers, cinnamon bark, flowers early.
    - Biloxi—20' to 30', pale pink flowers, recurrent flowering
    - Comanche—15' to 20', coral pink flowers
    - Lipan—15' to 20', medium lavender flowers, white/beige bark
    - Miami—20' to 30', dark pink flowers
    - Muskogee—20' to 30', light lavender flowers
    - Natchez—20' to 30', white flowers
    - Osage—15' to 20', clear pink flowers, heavy flowering, late June flowering
    - Sioux—15' to 20', dark pink flowers, gray bark

- Tuscarora—20’ to 30’, carol pink flowers
- Tuskegee—20’ to 30’, dark pink to near red flowers
- Wichita—20’ to 30’, light magenta flowers
- Yuma—15’ to 20’, medium lavender flowers

- Flowering Dogwood (Cornus florida)—Deciduous. 20’ to 30’, the best plants are from regional seed sources, needs to be well watered. Slow to medium growth. Native.

- Hawthorn (Crataegus species)—Deciduous. 20’ to 30’. Sun. Rapid growth. Brilliant white flowers similar to cherry. Bright red berried attract birds. Spike like thorns. Washington Hawthorn (C. phaenopyrum) is found in moist areas from Florida to Pennsylvania and is a good landscape tree. Native. Green Hawthorne for poor soil and poor drainage.

- Holly, Foster (Ilex x attenuate)—Evergreen. 20’ to 30’. Rapid growth. Sun to park shade. Pyramidal. Heavy berry production.

- Savannah Holly (Ilex)—Evergreen. 25’ to 30’ Rapid Growth.

- Pawpaw (Asimina triloba)—Deciduous. 20’ to 30’ feet. Light sun u under tall hardwoods. Yellow fall color. Late summer fruit is delicious, tastes like bananas, prized by mammals and birds. Tends to form colonies. Difficult to find in nurseries. Native.

- Persimmon (Diospyros virginiana)—Deciduous. 30’ to 60’ but slow growing. Sun. Also known as Possumwood. Male and female flowers on separate plants. Fruit astringent until ripe, sought after by birds and mammals. Best growth in moist, rich soil. Native.

- Possumhaw (Ilex deciduas)—Deciduous. 10’ to 20’ feet. Sun/Partial shade. Multi-trunked. Male plant needed to pollinate female for fruiting. Bright red berried attract wildlife in winter. Also known as Deciduous Holly. Fruit persists in fall, spring.

- Red Buckeye (Aesculus pavia)—Deciduous. 10’ to 20’ feet. Medium growth rate. Dappled shade to avoid leaf scorch. Good planted as specimen or at the edge of a woodland. Showy red flowers attract hummingbirds. Numerous cultivars but hard to find. Native.

- Red Mulberry (Morus rubra)—Deciduous. 40 to 70. Sun/some shade. Blackberry-like fruits prized by birds. Male and female flowers on separate plants. Plant near woodland edge to avoid fruit drop in traffic areas. Unripe fruit poisonous.

- Sassafras (Sassafras albidum)—Deciduous. 30 to 60 feet. Sun Medium to fast growth. Grows naturally along woodland’s edge Attractive yellow-green spring flowers, bright yellow fall color, and bluish berries. Interesting leaves aromatic when crushed. Native.

- Shadbush Serviceberry (Amelanchier Canadensis)—To 20 feet. Light sun. Plant along woodland's edge to avoid fruit drop on paths. Among the earliest to bloom in spring. Early fruit provides food for nesting birds. Also known as Shadbush, Sarvis and Juneberry. Good naturalized in hedgerows. Native.

- Silverbell (Halesia carolina)—Deciduous. 20 to 40 feet. Medium growth rate. Sun/shade. Needs moisture. Delicate white bell-like flowers in spring. Good near wetland, creek. H. Diptera a more showy variety. Native. White, bell shape flowers.

- Sweet Bay (Magnolia virginiana)—Semi-Evergreen. 15 to 30 feet. Sun/shade. Moderate to fast growth. Showy white fragrant flowers and aromatic leaves. Carefree but highly under used. Prefers soil with neutral acidity but highly tolerant of moisture and soil conditions. Native.

- Waxmyrtle (Myrica cerifera)—Evergreen. 20 feet. Fast growth. Train to tree form. Native.

- White Fringetree (Chionanthis virginicus)—Deciduous. 15 to 30 feet with narrow crown. Sun/part shade. Fragrant white flowers with narrow petals. Dark purple fruit. Native.

- Winged Sumac (Rhus copallina)—Deciduous. To 25 feet. Sun. Open Crown. Fast growing. Good for woodland edge. Forms colonies. Reddish hairy berries are late winter food for birds. Likes good drainage. Drought tolerant. Nice fall color.

- Trident Maple (Acer buergeranum)—Deciduous. 30 feet. Oval form. Sun. Very tolerant of adverse conditions.

- Kousa Dogwood (Comus kousa)—Deciduous. 20' to 30' feet. Horizontal branches. Resistant to anthrachose. Sun to part shade.

- Saucer Magnolia (Magnolia soulagiana)—Deciduous. 15' to 25' feet. Beautiful, large pink flowers in late winter/early spring. Can be killed by frost. Medium growth.

- Purple-leaf Plum (Prunis cerasifera)—Deciduous. Moderate to rapid growth. Reddish purple leaves. Short-lived.

- Yoshino cherry (Prunus yedoensis)—Deciduous. 30' to 40' feet. Celebrated in Washington, D.C. Clustered white/pink flowers in March and April. Sun.

- Yaupon Holly (Ilex vomitoria)—Evergreen. Sun. Moderate growth rate. Gray stems, red fruit. Range soil types. 15' to 20' feet. Native.

- Goldenraintree (Koelveuteria paniculata)—Deciduous. 20' to 35' feet. Sun to part shade. Moderate to rapid growth. Yellow flowers with remaining seed display through fall. Tolerant of poor, dry urban conditions.

- Chinese Pistache (Pisracia chinensis)—Deciduous. 20’ to 35’ feet. Sun. Moderate to rapid growth. Tolerant of soil (not wet). Nice fall foliage.

- Honey Locust (Gleditsia tracanthos)—Deciduous. Sun. 20’ to 75’ feet. Moderate fast growth.

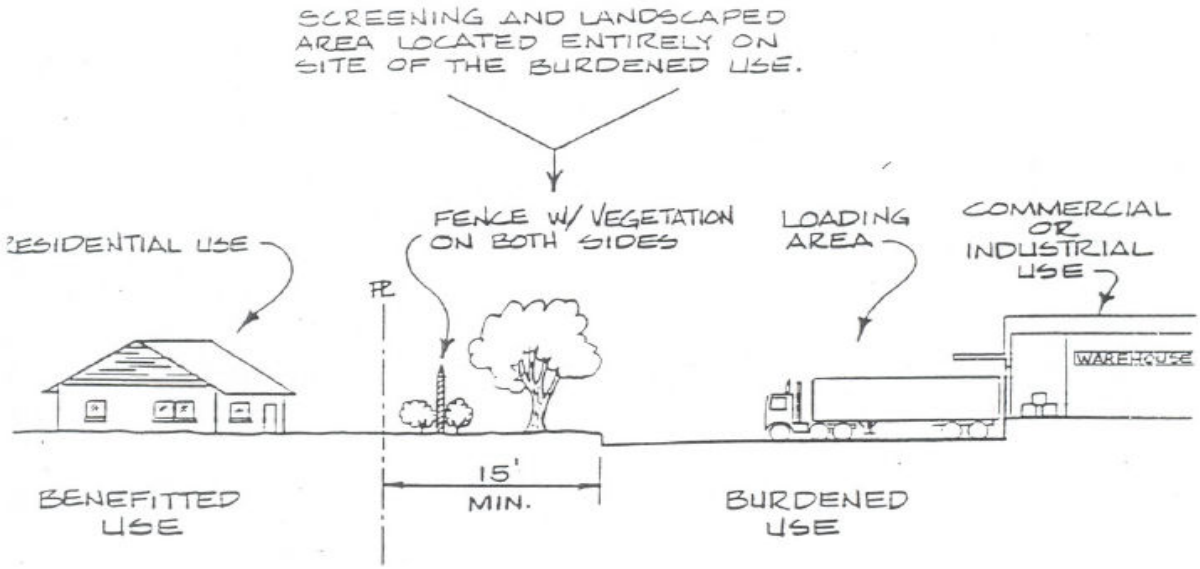
- Littleleaf Linden (Tila cordata)—Deciduous. Sun 30’ to 50’ feet. Rapid growth rate. Pyramidal Tolerates poor soil.

- Japanese Zelkova (Zelkova serrata)—Deciduous. Sun to part shade. 50’ to 80’ feet. Medium to rapid growth rate. Tolerant of adverse conditions. Vase shape and easy fall cleanup.

- Ironwood, American hornbeam (Carpinos caroliniana)—Deciduous. 20’ to 30’ feet. Slow growth. Sun to part shade. M

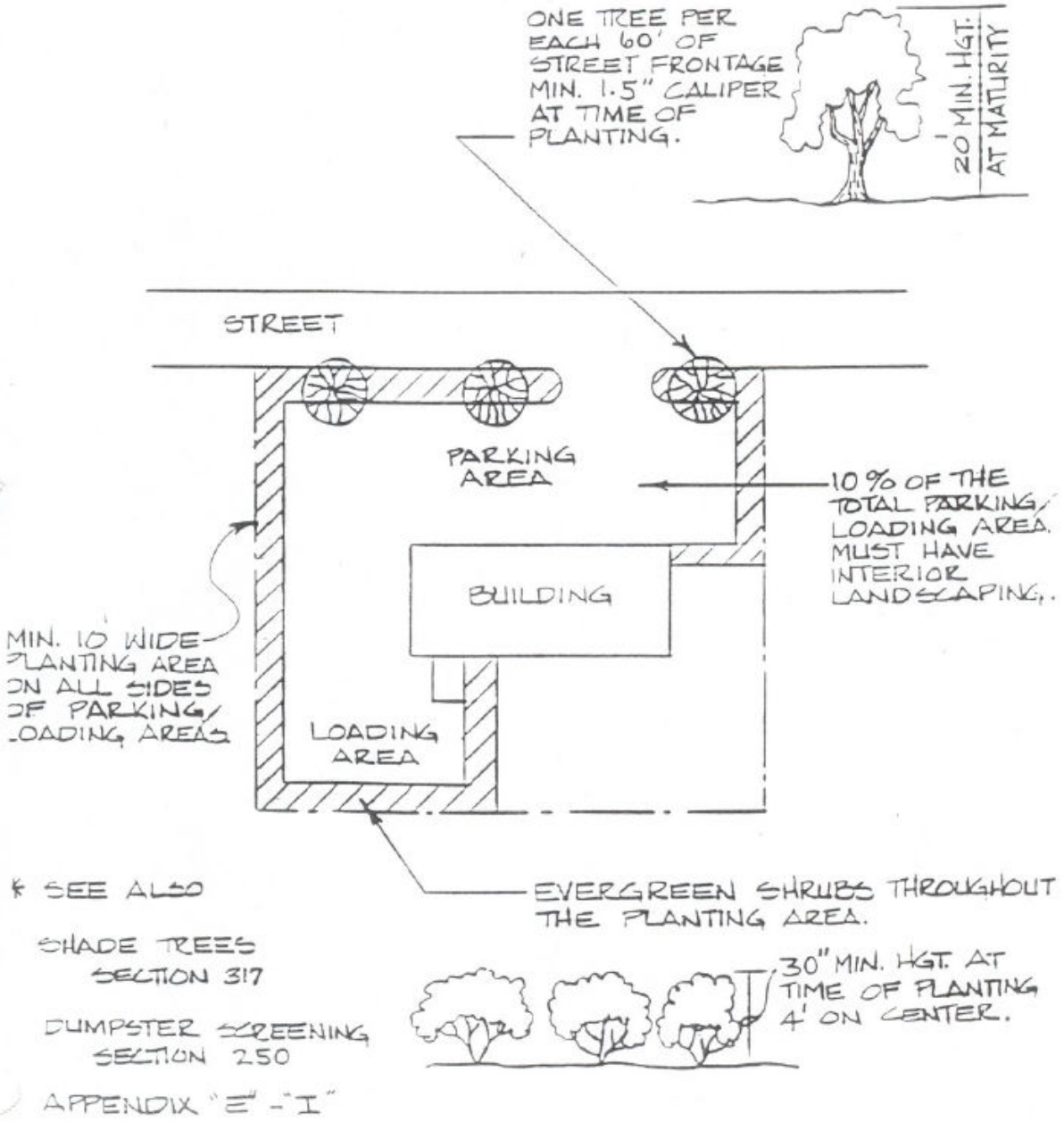
TYPICAL SCREENING SITUATION

ARTICLE XIX



PARKING LOT LANDSCAPING

SECTION 301



* SEE ALSO

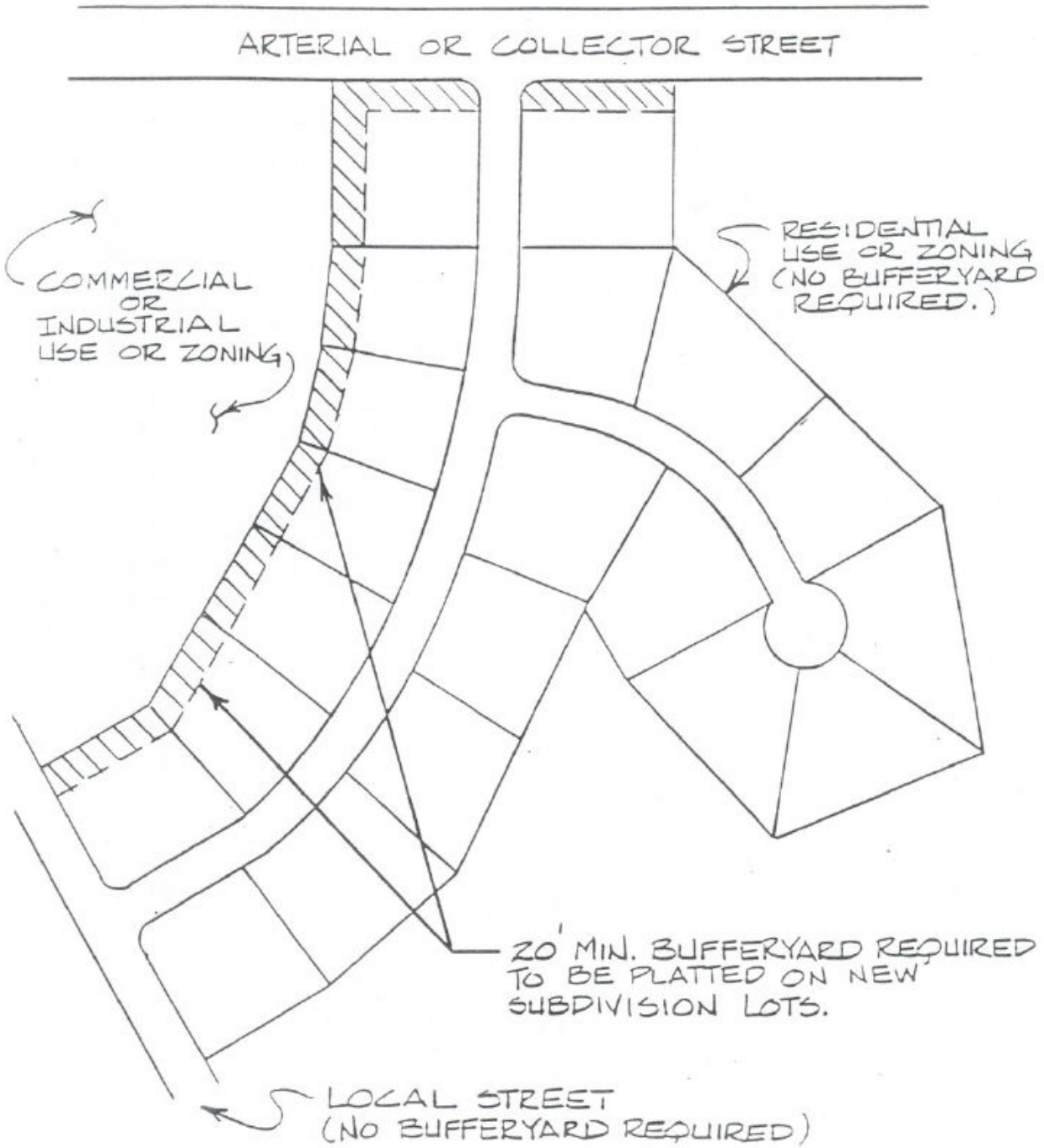
SHADE TREES
SECTION 317

DUMPSTER SCREENING
SECTION 250

APPENDIX "E" - "I"

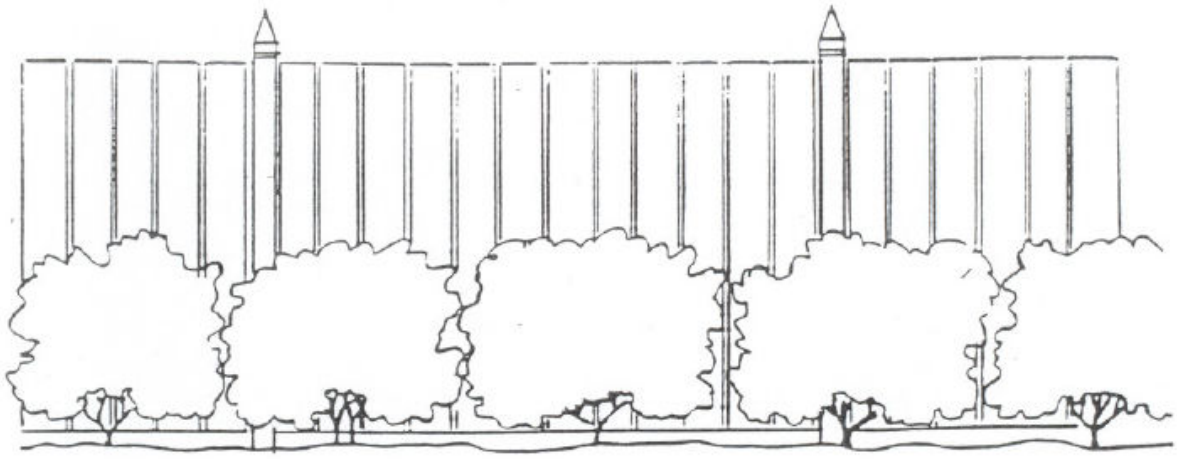
SUBDIVISION BUFFERYARDS

SECTION 311



SCREENING WITH FENCES and WALLS

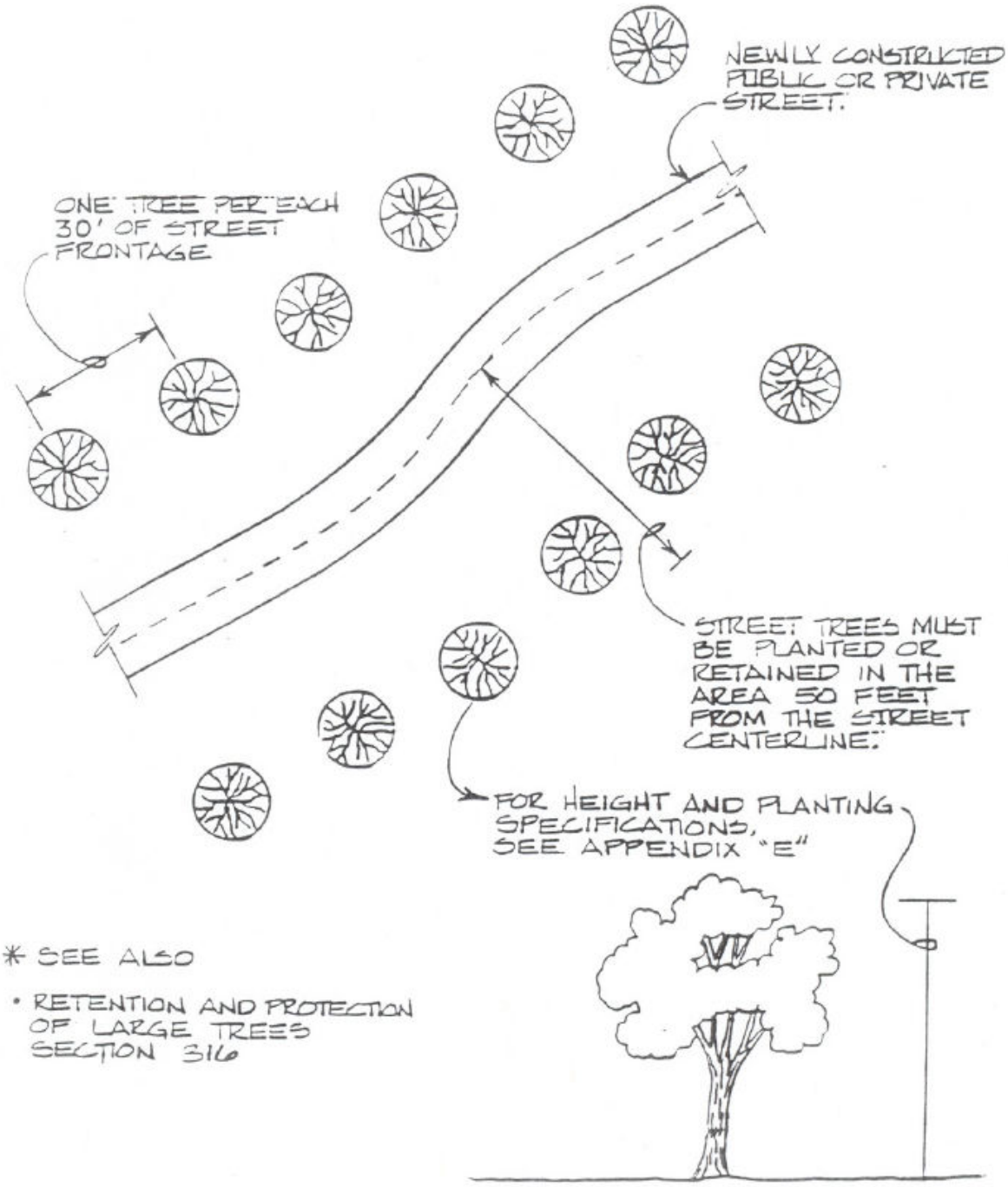
SECTION 313



VEGETATION MUST OBSTRUCT AT LEAST 50% OF THE SURFACE AREA OF A WALL OR FENCE ON BOTH SIDES.

STREET TREES

SECTION 315

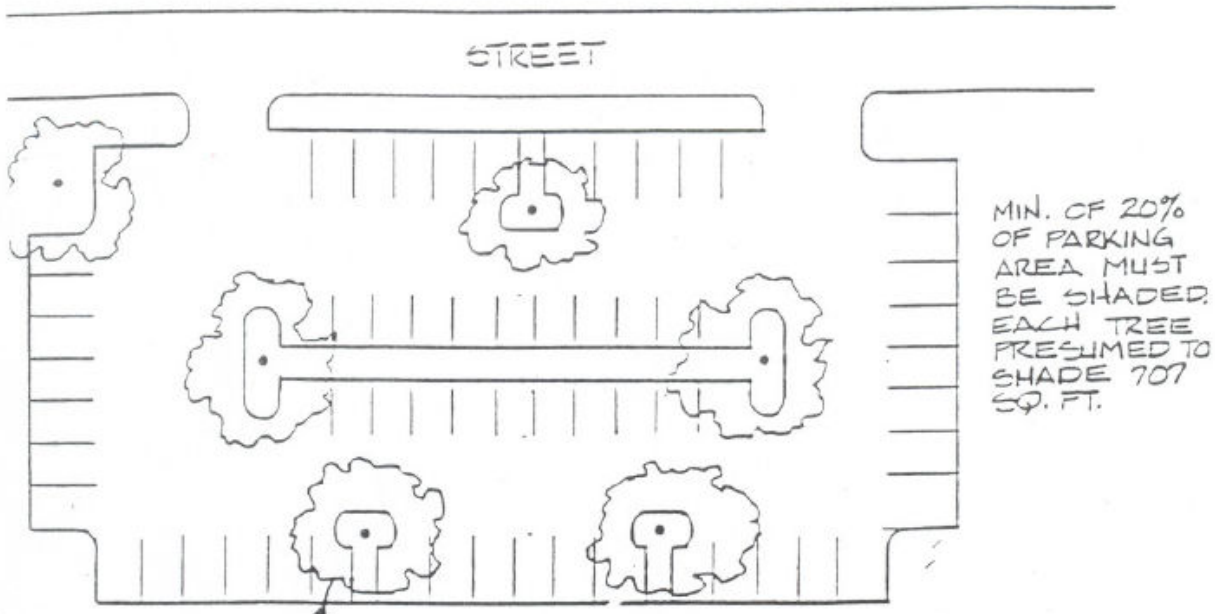


* SEE ALSO

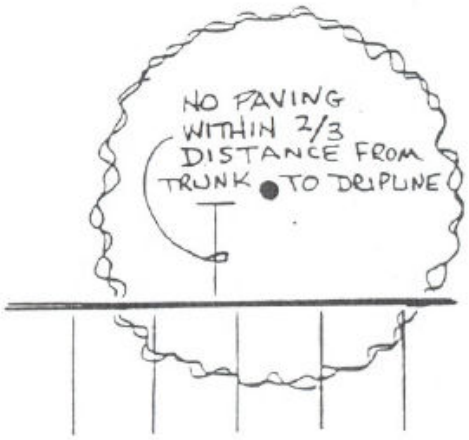
- RETENTION AND PROTECTION OF LARGE TREES SECTION 316

SHADE TREES

SECTION 317



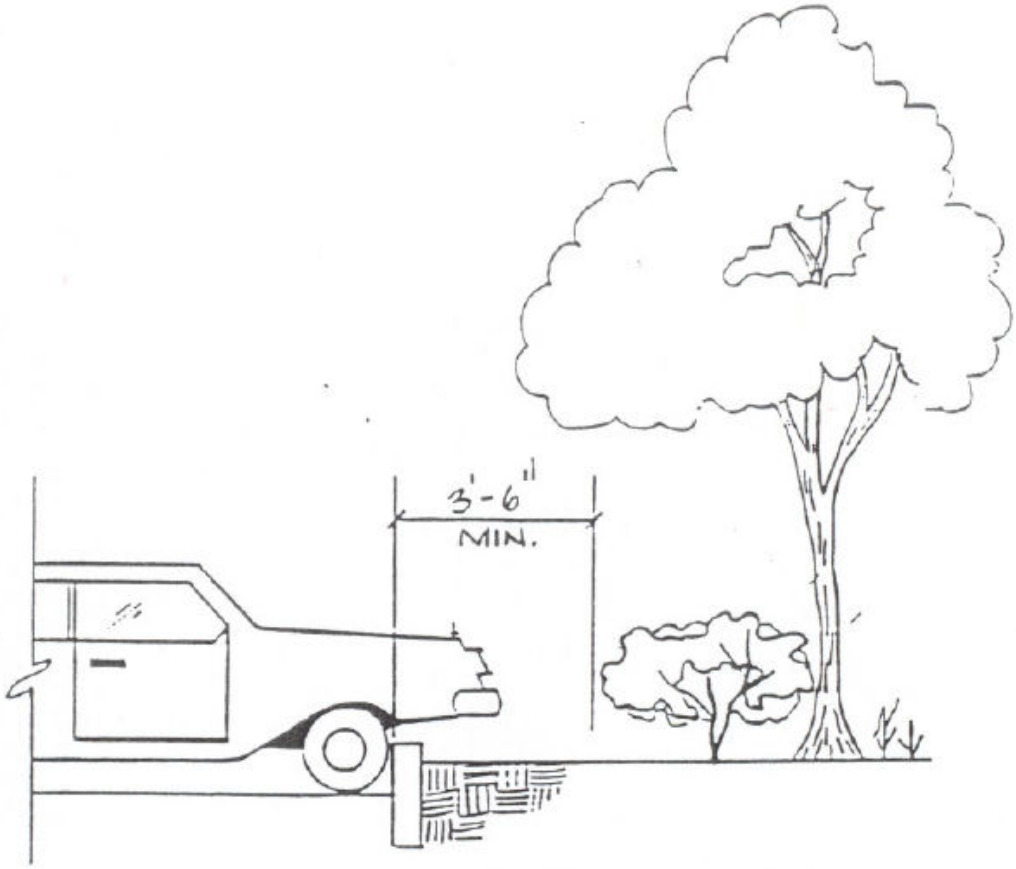
SHADE TREES MUST BE DECIDUOUS



- SEE ALSO
  - PARKING LOT LANDSCAPING SECTION 301
  - APPENDIX "E"
  - RETENTION AND PROTECTION OF LARGE TREES SECTION 316

PROTECTION OF TREES and VEGETATION FROM VEHICLE OVERHANG

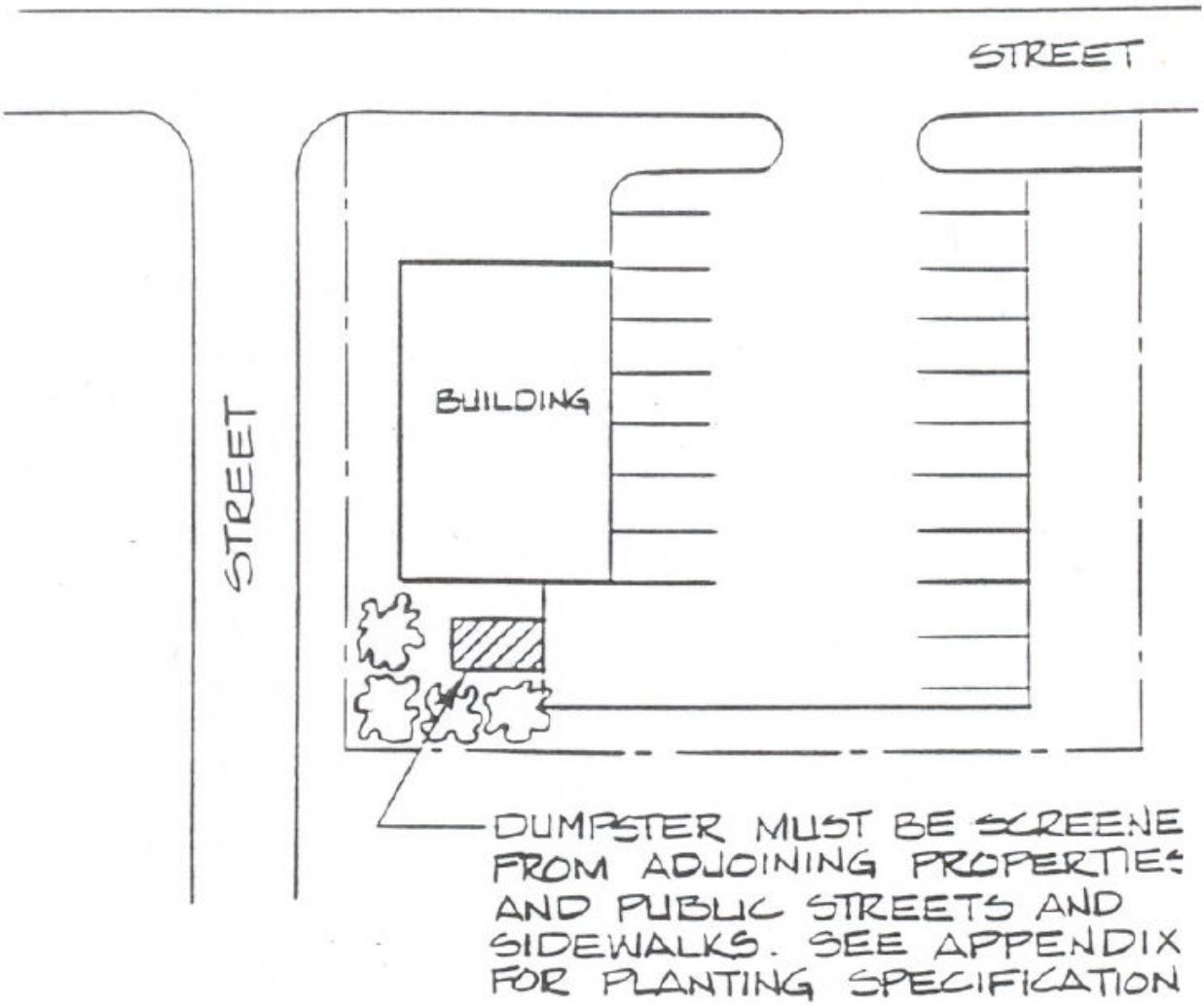
SECTION 317(d)



TREES AND VEGETATION MUST BE LOCATED SO AS TO PREVENT VEHICLES FROM STRIKING OR OVERHANGING THEM.

DUMPSTER SCREENING

SECTION 250



APPENDIX J

GUIDELINES FOR THE PREPARATION OF A TRAFFIC IMPACT ASSESSMENT

J-1. Thresholds for Requiring a Traffic Impact Analysis (TIA)

(a) Utilizing the chart below as a general guideline, the Town staff will obtain pertinent information concerning the proposed development from the applicant and will make a recommendation regarding the need for the preparation of a TIA to the Town Council.

	Level of Study Required		
	None	**Standard TIA**	**Enhanced TIA**
Land Use	**Density/Intensity of Proposed Development**		
Residential	< 100 units	100 to 500 units	>500 units
Office	< 50,000 sf	50,000 to 350,000 sf	> 350,000 sf
Hotel	< 100 rooms	100,000 to 500 rooms	> 500 rooms
Industrial or warehouse	< 150 employees	150 to 1,000 employees	> 1,000 employees
Shopping Center	< 80,000 sf	80,000to 100,000 sf	> 100,000-sf
Retail	< 25,000 sf	25,000 - 80,000 sf	> 80,000 sf
Other Uses	< 100 peak hour trips	100 to 500 peak hour trips	> 500 peak hour trips

J-2. General Requirements for a Standard TIA

(a) A Traffic Impact Analysis (TIA) is to be prepared and sealed by an engineer registered in North Carolina and specializing in traffic or transportation, with experience in preparing TIA's.

(b) A standard TIA includes the following elements:

(1) Abstract-or Summary—summarize description of proposed development, location, traffic generation, existing and future conditions (level of service), and recommended improvements. Should not exceed two pages, preferably one page.

(2) Description of Development—describe acreage included in development, existing and proposed land use, existing and proposed zoning, proposed density (number of houses, square feet of development, etc.).

(3) Study Area—generally 1/4 mile to li2 mile from each proposed site access along roads accessed by the site. This area may in a few cases be greater if the site is on a road with no intersections within that distance.

(4) Site Location—include location map showing site in relation to major streets and at least one mile radius from site.

(5) Traffic Generation—indicate number of trips generated by site daily, AM peak hour, PM peak hour (AM peak hour may be omitted for retail uses which are not expected to generate significant traffic volumes during this period). Indicate internal or pass-by traffic generation if appropriate. For rezoning may indicate traffic generation under existing zoning as well as proposed zoning. Indicate source of trip generation rate, land use code, and units used to derive generation.

(6) Trip Distribution—indicate percentage distribution of trips by direction within study area and method used to obtain.

(7) Access Location(s)—location of planned streets or driveways and access to existing streets. Indicate other streets or driveways within study area, including those across the street. Indicate coordination with NCDOT where appropriate.

(8) Existing Road and Traffic Conditions—street laneage and classification, traffic control devices, existing daily traffic volumes within study area. Show traffic volumes and level of service of signalized intersections and proposed site access points within study area during AM and PM peak hour (PM only for retail). Include work sheets or computer printouts showing counted traffic volumes and level-of-service. Illustrate in figure(s) showing peak hour volumes, lanes, level of service. For unsignalized intersections, show level-of-service for individual movements. Discuss transit service if applicable. Discuss accident history, if appropriate.

(9) Planned Improvements—discuss and describe any. planned road improvements in the study area or which could affect future traffic. Note whether project is shown on thoroughfare plan, collector street plan, or NCDOT Transportation Improvements Program (TIP).

(10) Future Conditions—same as for existing -conditions, plus site traffic assigned to driveways or access points, for conditions with full build-out of Project, at buildout year. Include growth in background traffic due to other approved developments or to general growth in area. May show more than one phase, if project is to be phased. Discuss any conflicts with other driveways or streets, queuing problems, potential safety problems.

(11) Pedestrian Facilities—indicate location of existing and proposed sidewalks and crosswalks, internal pedestrian paths.

(12) Recommended Improvements—indicate improvements required for access points and signalized intersections within study area to operate at acceptable level of service (D or better). These may include site access, internal site circulation, signalization, signal modification (retiming, additional phases), lane modifications or additions, or street widening. A

signal warrant study is not required but may be included as supporting documentation where a traffic signal is requested. Note: showing recommended improvement does not necessarily indicate responsibility for improvement. Report may indicate which improvements are due to development and which are due to existing problems or other growth in traffic, and may suggest responsibility of developer or of other parties for improvements. Proposed improvements should be shown schematically on figure.

J-3. General Requirements for an Enhanced TIA

(a) An enhanced TIA includes all of the elements of a standard TIA plus the following:

(1) Study Area—generally from 1 to 3 miles from each proposed site access along roads accessed by the site. The extent of the study area should be discussed with Town staff prior to initiating the TIA.

(2) Internal Circulation—review internal circulation patterns and note recommended changes.

(3) Trip Distribution—use of a computer model for distribution may be desirable for major projects.

(4) Future Conditions—projects in this category, other than perhaps shopping centers, are likely to be phased. Desirable-to show conditions at-end of planning period (generally 20 years or horizon used for thoroughfare plan) -

(5) Recommended Improvements—for major projects, these may involve changes to the thoroughfare plan or collector street plan. The project may include the construction of portions of thoroughfares within or adjacent to the site.

APPENDIX K

GUIDELINES FOR THE PREPARATION OF AN ENVIRONMENTAL REVIEW

K-1 Purpose.

The purpose of an Environmental Review (ER) is to provide the Town of Edenton with information necessary to evaluate the probable effects of a proposed major development upon the natural and man-made environment. The ER generally consists of (1) an inventory of existing natural and man-made conditions at the project site and in the general vicinity of the project, (2) an assessment of the probable impact of the project upon the identified natural and man-made conditions, (3) a listing of all licenses, permits, and other approvals required by local, state, and federal law, and (4) a plan for mitigating the identified adverse impacts of the project. The ER is not intended to be a duplication of State of NC environmental regulations. It is intended to be a "Review" that inventories conditions utilizing data and information from various local, state and federal agencies.

K-2 Contents.

An ER shall include the following elements:

(a) Description of the proposed project.

(b) Inventory of existing natural and man-made conditions at the project site and the vicinity of the site:

(1) Topography and slope.
(2) Geology.
(3) Floodplains, wetlands, and water bodies.
(4) Areas of Environmental Concern as identified by CAMA.
(5) Soils suitability.
(6) Vegetation, including endangered and threatened species.
(7) Wildlife, including endangered and threatened species habitat.
(8) Historical, cultural, and archaeological resources.
(9) Unique natural features.
(10) Existing land use.
(11) Existing utilities, including stormwater drainage systems.
(12) Existing street system and transportation facilities.
(13) Man-made hazard areas.

(c) Statement as to the conformance of the proposed project with the Town's Land Use, Comprehensive Plan, Thoroughfare Plan, Utilities Plan, and similar local, regional, and state plans.

(d) Statement as to the compatibility of the proposed project with the existing and projected character of the neighborhood or area surrounding the site.

(e) An assessment of the probable impacts of the proposed project on the following:

(1) The existing natural features identified in (b) above.

(2) Historical, cultural, and archaeological resources.
(3) Air quality.
(4) Water quality.
(5) Noise.
(6) Use, scale, and visual coherence of the surrounding neighborhood or area.
(7) Demographic and community character changes.
(8) Community facilities and services such as schools, health care facilities, water and sewer systems, storm water drainage systems, solid waste collection and disposal, public safety, open space and recreation, and street and transportation system.
(9) Man-made hazards.

(f) A listing of all applicable licenses, permits, and other approvals required by local, state, and federal law.

(g) A plan outlining what steps the applicant proposes to undertake to mitigate significant adverse impacts during construction and operation of the proposed project. The mitigation plan should evaluate alternatives for mitigating adverse impacts and should identify those adverse impacts which can not be avoided.

APPENDIX L

GUIDELINES FOR THE PREPARATION OF A FISCAL IMPACT STATEMENT

L-1 Rationale for Fiscal Impact Analysis.

Given the increasing strain on municipal budgets throughout the United States, elected officials and municipal staff members have become increasingly aware of the direct public costs associated with private land development projects. New development brings with it new homes, jobs and land uses which in turn mean new residents, businesses and visitors will be introduced to a growing community. Such growth places new burdens on local governments which are often unequipped to efficiently or even adequately provide the public services required by new residents, employers and visitors, especially in light of the rapid pace at which new development proposals are being processed in towns such as Edenton.

In order to properly plan for new growth in order to protect the health, safety and welfare of existing and new residents, local government officials must be able to accurately project resident and school-age children populations attributable to new development. They must also plan an appropriate governmental response to such a project. For instance, they must project the number of additional public employees-policemen, firemen, teachers, etc.-and the kinds of municipal facilities that will be needed to serve the changing population. Furthermore, they must decide whether or not the proposed land use fits in with the locality's future land use plan, as expressed in Edenton's Land Classification Map, which graphically represents the community's vision for its future. A fiscal impact analysis provides municipal officials with access to the information needed to make these kind of decisions.

A fiscal impact analysis provides a realistic projection of the direct, current, public costs and revenues associated with a proposed development project to the local jurisdiction(s) in which the development would be located. When properly done, a formal fiscal impact study should include simple, straightforward procedural steps used to estimate costs and revenues associated with development so that all citizens may understand its assumptions and calculations. Such an analysis provides a participating locality with several major benefits. First and foremost, it can help the community to project service requirements of anticipated development. It can also aid municipal officials in the process of monitoring the costs associated with significant land use, rezoning and annexation decisions.

Fiscal impact analysis can also provide certain projections of how a new development may impact the existing marketplace, (i.e. the local housing market and/or the local retail economy). Finally, it can also help a community maintain a reasonable long-term balance in its fiscal management by comparing fiscally beneficial decisions with those that are not.

The following six distinct methods are commonly used in developing a formal fiscal impact analysis:

1. *Per Capital Multiplier Method*
2. *Case Study Method*
3. *Service Standard Method*
4. *Comparable City Method*

5. *Proportional Valuation Method*
6. *Employment Anticipation Method*

Each method has its particular strengths and weaknesses and is more applicable to certain types of development within a given geopolitical context. However, while each of these various methods incorporate a different projection model based upon unique fiscal and development assumptions, all generally focus upon developing a public cost-benefit analysis of a proposed new development. Thus, no matter which method is ultimately used in developing a fiscal impact analysis for the Edenton community, each study should consider, if not directly incorporate into the formal cost-benefit analysis, each of the items delineated in subsection L-2.

L-2 General Fiscal Impact Study Requirements.

(a) General Market Analysis

(1) Demographic Analysis
- (i) Local and regional population and growth trends, including school population trends

(2). Land Use Analysis
- (i) Inventory of existing land uses
- (ii) Inventory of land uses proposed by the Land Classification Map

(3) Existing Tax Base Analysis
- (i) Total local accessed real property value
  1. Commercial property
  2. Industrial property
  3. Residential property
- (ii) Total number of taxable land parcels
  1. Commercial properties
  2. Industrial properties
  3. Residential properties

(4) Real Estate Market Analysis
- (i) Provide a general range of market values for residential or non-residential products similar to those proposed in the development being analyzed.

(5) Retail Market Analysis
- (i) Identify Primary, Secondary and Tertiary Marketplaces
- (ii) Identify Retail Market Strengths
- (ii) Identify Retail Market Weaknesses
- (iv) Identify Degree of ‘Leakage’ of Retail Spending to Peripheral Marketplaces
- (v) Identify Existing Market Linkages
- (vi) Estimated Linkage and Market Recapture Opportunities

(b) Municipal Cost/Benefit Analysis

(1) General Assumptions

(i) Project population and population-induced demand resulting from the proposed development
(ii) Determine population and student increase resulting from the proposed development
(iii) Project square footage of commercial space added and growth-induced demand for retail consumption and office space resulting from the proposed development

(2) Cost Calculation
(i) Municipal Operating Expense Impacts
Determine the anticipated local service response by each category below, including number of public employees and additional capital investments resulting from the proposed development:

Total and per capita municipal operating costs and capital expenditures
a. General government
b. Financial and administrative
c. General control and public buildings
d. Public safety
1. Police protection
2. Fire protection
e. Community Development (Planning)
f. Public works
1. Highways
2. Sewerage
3. Sanitation
4. Water supply
g. Health and Welfare
1. Public Welfare
2. Hospitals
3. Health Department
4. Office of Social Services
h. Recreation and culture
1. Parks
2. Libraries
i. Debt service

(ii) School System Operating Expense Impacts
Estimate the impact of the proposed development on the following local school system operating expenditures:

Total and per capita school district operating costs

a. Operating
1. Local, primary and secondary
2. School district administration
b. Debt service

(3) Revenue Calculation

(i) Projecting Own Source Revenues

a. Tax Revenues

- Real property taxes
- Personal property taxes
- Income taxes
- Sales taxes
- Property transfer taxes
- Occupation and business privilege taxes

(ii) In developing fiscal impact assessments for non-residential developments (particularly retail developments), it will be imperative that the analysis include an estimate for the impact of the proposed business on existing businesses in the locality. This analysis should project the net effect of the new business on local income in light of the increased competition for local spending, jobs, office or retail space, etc. The net impact could affect each of the tax revenue categories listed above, and thus impact the final calculation of projected revenues associated with the proposed project.

For each of these categories, a fiscal impact analysis of a nonresidential project should incorporate a coefficient representing net new business and income drawn to the locality as a percentage of total income attributable to the proposed project. This coefficient is very difficult to estimate due to the difficulty in quantifying the impact of a new business on the existing marketplace. Nevertheless, this estimate is vital to the development of an accurate fiscal impact assessment of a commercial project. In order to provide the best estimate possible, the fiscal analyst must assess the local competition as well as the capacity of the local population to support the new facility. For instance, a freestanding discount retail store developed without significant, planned residential growth has to depend mightily on capturing a significant proportion of existing similar business. This existing similar business could be captured to a certain extent from currently untapped consumers from a neighboring town or county; however, the new development will almost certainly absorb some consumer spending away from existing local merchants.

(iii) Charges/Miscellaneous Revenues

a. Interest earnings
b. Application Fees and permit revenue
c. User and hook-up fees
d. Fine revenue
e. Forfeiture and penalty revenue

(iv) Projecting Intergovernmental Transfers From:

a. State Government

- Sales tax redistribution
- Income tax redistribution
- Motor Fuels tax
- NCDOT investment
- Cigarette and Alcohol tax impacts
- Educational basic assistance impacts
- Educational categorical aid impacts

b. Federal Government
- Revenue sharing
- CDBG funding
- ISTEA funding

4. Cost/Benefit (Revenue/Expenditure) Analysis

Compare projected costs and revenues associated with the proposed project and determine the net, direct fiscal impact of the project on the locality. *(Amended 3/99)*

TOWN OF EDENTON

DESIGN STANDARDS
FOR COMMERCIAL & MEDICAL DISTRICTS
(OUTSIDE OF THE HISTORIC DISTRICT)

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5. Fenestration ……11

6. Materials & Colors ……..12

Appendix A Design Standards Example Photos (Catalogue)

Appendix B Substantial Renovation Chart

PURPOSE, SCOPE AND AUTHORITY

PURPOSE

The Town of Edenton is expected to experience growth in the coming years. It is the role of the Town Council, Planning Board and other boards and commissions to ensure that future development is in keeping with Council's vision of the Town and in the best long term interest of the residents.

In 2004, the Town of Edenton asked a group of citizens to study architectural standards and make recommendations to Council for possible inclusion of standards in the Town's Unified Development Ordinance.

Design standards such as these are intended to document a community's design objectives with the use of illustrations and other examples so that developers and consultants can visualize how their projects work towards the goals of the Town Plan. They are intended to assist property owners, developers and town review boards with the preliminary planning, design and evaluation of proposals and approval of projects. By incorporating the standards in the early phases of design, time consuming and costly changes can often be avoided. In addition, they are intended to reduce or eliminate the more common architectural characteristics of sprawl development, and work towards a common vision for Edenton's future.

The goal of this document is to ensure that, over time, the standards will improve the character and natural beauty of the community making it an even more attractive and prosperous place.

SCOPE

This manual provides design standards for all new construction and substantial renovations (see Appendix B) of commercial and medical properties outside of Edenton's Historic District. A map of affected areas has been illustrated on page 4 of this manual for easy reference; however it is recommended that you check with the latest zoning maps on file at the Town Planning Office to verify what properties are covered.

AUTHORITY

For all projects involving new construction or substantial renovation (see Appendix B) of a building or buildings; the Town reserves the right to retain a licensed architect, at the applicant's expense, to review the application and provide a report regarding whether or not the application complies with these design standards.

This document is intended to act in conjunction with the Town of Edenton's Unified Development Ordinance. In the event of a conflict or discrepancy between the two documents, the most restrictive standard shall apply.

DISTRICT BOUNDARIES MAP

SITE PLANNING & LANDSCAPING

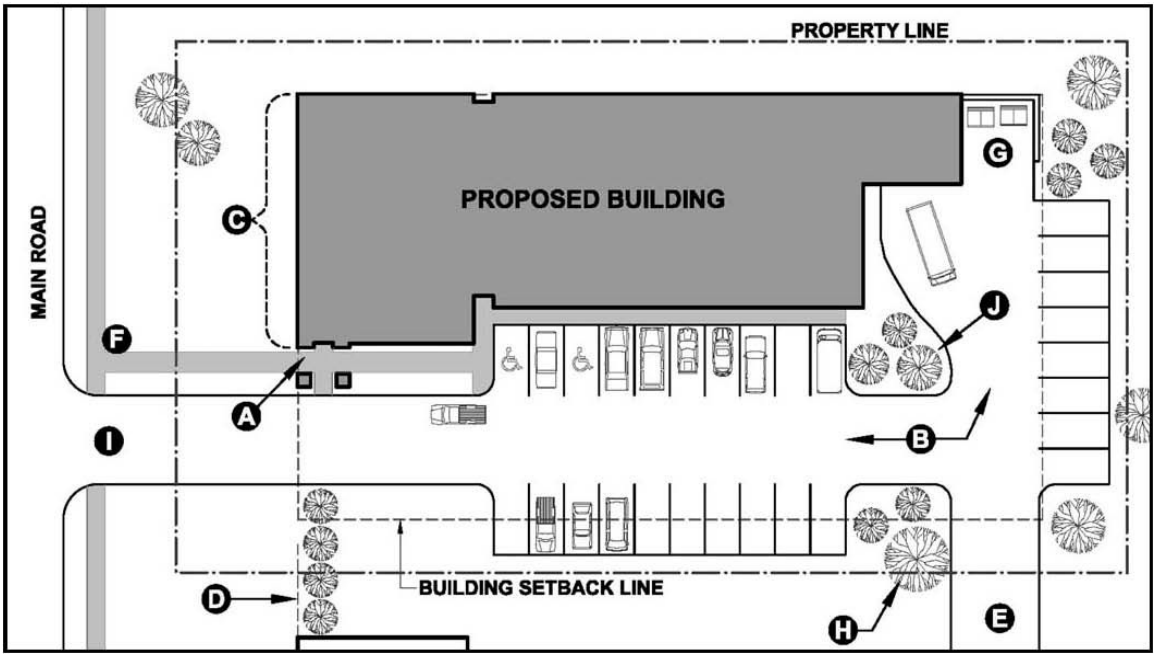


Figure 1: Sample Site Layout. The building is brought forward as close to the street as possible, with parking and other services tucked around the side and back. This helps to define the identity of the street and gives the business maximum public exposure.

1.1 The primary building entry should always be placed at the front of the building (facing the front lot line) and be clearly identifiable from the street. **(A)** In this example, an entry vestibule is created which faces the front, side and rear parking area simultaneously. (NOTE: Property boundaries adjacent to controlled access highways will require a 50-foot foliated buffer yard; and secondary frontages on major or minor arterials will require formal street tree plantings).

1.2 Parking should be placed at the side or rear of the lot and screened from view whenever possible. Break the parking areas up into groups of no more than 20 spaces per area separated by landscaping areas. **(B)**

1.3 Place as much of the building width at the front of the lot as possible to maximize front façade exposure to the public. **(C)** The front façade should be kept parallel to the street.

1.4 To reinforce the "street-edge", align with neighboring buildings which are also close to the front setback line. Landscaping can also be used to reinforce this line. **(D)**

1.5 Whenever possible, attempt to link with adjacent parking lots or provide shared parking areas which can serve neighboring buildings simultaneously. **(E)** This provides a secondary means of access to the site and can ease congestion on the main road.

1.6 Provide sidewalks for the full width of the property with a direct link to the primary building entry. **(F)**

1.7 Loading docks, service areas and trash facilities should be located at the rear of the building and not visible from the street. Fences (no chain link), walls or landscaping can be used to shield them from view. **(G)**

1.8 Incorporate any existing, older trees into new site plan development whenever possible to reduce waste and salvage good shade trees. **(H)**

1.9 Minimize the amount of curb-cuts by having a single driveway in and out of the property from the main road whenever possible. Secondary access points from side roads are encouraged on larger projects when warranted. Curb cuts should only be as wide as necessary to accommodate needed lanes. Curb radiuses should be kept to a minimum. **(I)**

1.10 The parking lot areas should be designed in regular, rectangular shapes. Irregular wedge shaped parking areas created by following angled property lines are discouraged. However this does not prohibit angled parking. Only create as much paved area as absolutely necessary. The Town encourages the use of pervious pavers.

1.11 Landscaped islands and other green space should be consolidated into useful areas, and not just narrow strips of grass or plantings. **(J)** (NOTE: Property boundaries adjacent to controlled access highways will require a 50-foot foliated buffer yard; and secondary frontages on major or minor arterials will require formal street tree plantings).

SITE PLANNING & LANDSCAPING

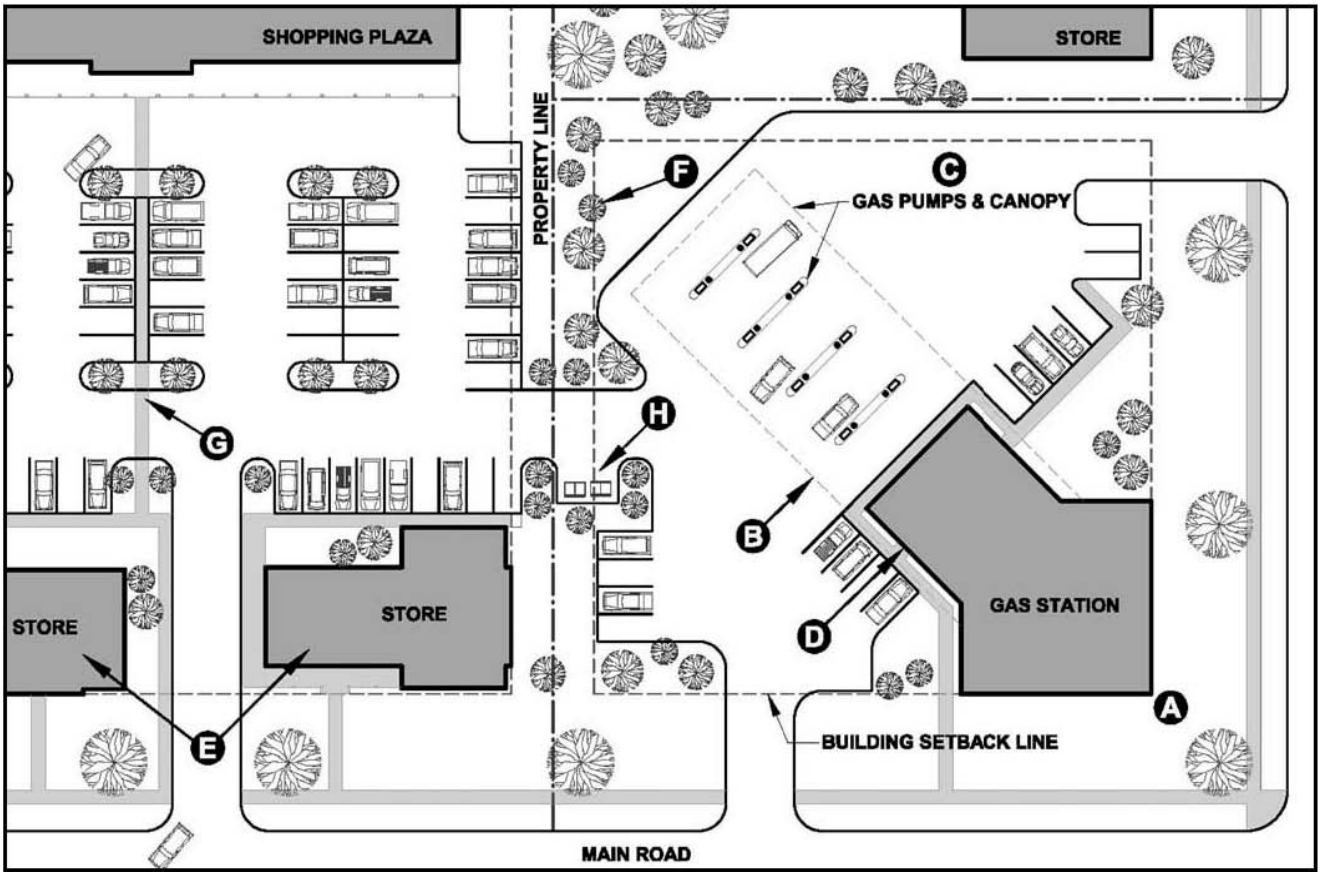


Figure 2: Redefining the Edges. Corner lots are especially important in defining the street. Special attention should be paid to bringing the building mass all the way out to meet the corner. Large shopping plazas should also attempt to infill the front of their lots with new commercial space to take advantage of the road frontage.

1.12 Corner lots should try to place as much building mass near the intersection as possible to help anchor the lot and take advantage of the high visibility. **(A)**

1.13 Gas station canopies should be designed as an integral part of the station architecture whenever possible. This can allow for a visual or even physical connection which provides shelter between the vehicle and the building. **(B)** See Appendix 'A' for examples.

1.14 Alternative gas station layouts include placing the pumps near the rear of the lot while having the convenience store out in front near the street. **(C)** This helps to highlight the building, shield the utilitarian pump canopy and pulls the curb-cuts away from the intersection, creating easier access.

1.15 When it is not feasible to place the building entry directly on the front façade, attempts should be made to ensure that it is still readily visible and faces the main road or internal street. **(D)**

1.16 Older shopping plazas set back far from the street can benefit from developing the land at the front of their lot. This helps to define the street character and allows for more "one-stop" shopping and shared parking opportunities. **(E)**

1.17 Provide trees and other landscape screening to shield large parking areas from adjacent lots. **(F)**

1.18 Large parking lots are encouraged to provide landscaped islands and walkways which help to break up the visual expanse of blacktop and encourage safe pedestrian travel areas. **(G)**

1.19 Some developments may benefit from having a shared access to a common dumpster location which both neighboring properties can use. **(H)**

1.20 All public access ways on the site should comply with the *Americans With Disabilities Act*. Visit their Web page www.usdoj.gov/crt/ada/adahom1.htm for more information.

SCALE & MASSING

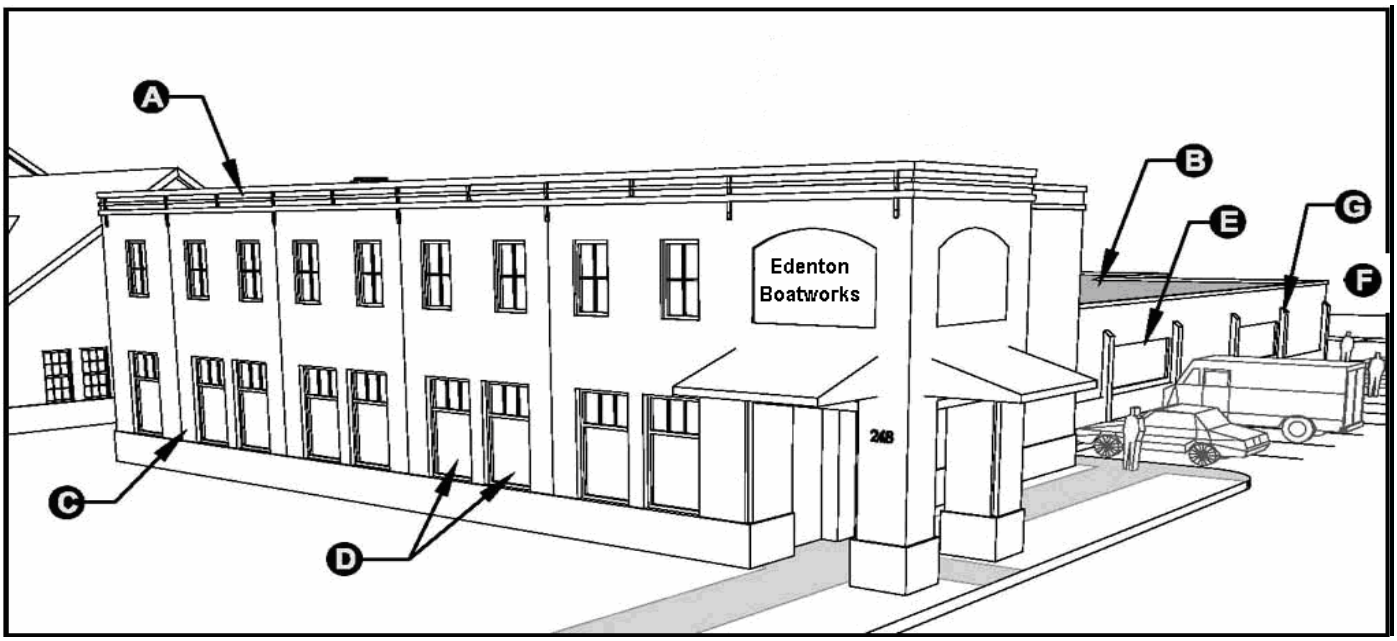


Figure 3: Breaking up the Masses Helps Reduce the Scale. Dividing the building volume up into a variety of shapes helps to reduce the perceived scale of the architecture and allows placement of the more important volumes up near the front of the site.

2.1 Place a majority of the building mass close to the road to help define the street edge. In this example, the two-story mass is placed at the front of the lot, and likely contains the most public functions including reception, offices, showroom, retail space, etc. **(A)**

2.2 Less public areas such as warehouses, storage and manufacturing spaces can be shielded from view in the rear. This often allows for warehouse/utilitarian style construction to be hidden behind the smaller scale public spaces that are in front. **(B)**

2.3 The building mass near the front of the site should be articulated with design features which give it a more pedestrian scale appearance. Natural, smaller scale materials should be used near the front of the site and pedestrian areas whenever possible **(C)**

2.4 Large scale features such as long, uninterrupted picture windows are discouraged. They should instead be separated into smaller groups to help reduce their scale, and give them a more **vertical** orientation. **(D)** The scale of these large windows can be further divided with the use of mullions and muntins.

2.5 Larger scale design features such as garage doors should be reserved for the rear of the facility whenever possible and out of sight from the street. **(E)**

2.6 Different massing at the entry to the building helps to further define a reduced scale appearance and improves visibility from many directions.

2.7 In this example, the utility area in the rear is only one story, **(F)** but this could instead be a two or three story area which is still shielded from view behind the front portion of the building.

2.8 Large areas of blank wall should be avoided, or should be reserved for the side or rear of the facility whenever possible. If they cannot be avoided, design accents such as pilasters or other façade articulations can help to reduce the overall scale appearance.**(G)**

2.9 Special design elements which help to articulate the façade help to further reduce the overall building scale. Articulations of the facade or breaks in the roofline help to define different masses and reduce the scale. **See Also 'Fenestration'.**

2.10 The use of covered porches and similar recessed front entry areas is encouraged to help create a more human scale appearance to the building. These also help to draw attention to the point of entry and provide shelter from the rain and sun.

2.11 In lieu of a formal porch entry, a small canopy or awning over the main entry also helps to provide a pedestrian scale appearance.

SCALE & MASSING

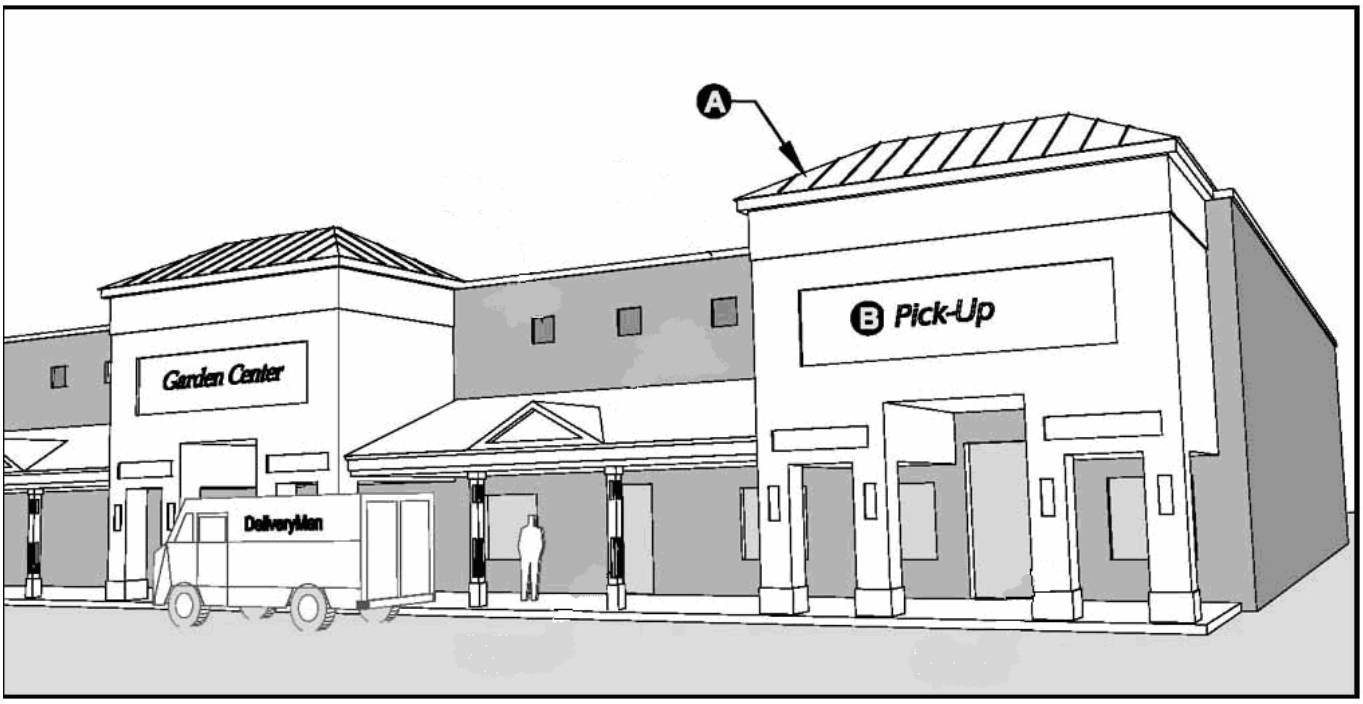


Figure 4: By articulating the façade with different massing elements, you can help to give a smaller scale appearance to an otherwise featureless mass.

2.12 Large retail structures are encouraged to articulate their primary façade(s) with various design features to help reduce the overall scale of the building with the use of roofline articulation or mass divisions. **(A)** These can be used to highlight entry points, exits, specialty areas (such as a garden/landscaping center or auto service) customer pick-up zones or separate places of business.

2.13 The Town encourages multi-story construction and discourages single story with large building footprint. Build up, not out!

2.14 The front façade or entry areas may be designed to accommodate façade lettering where appropriate. **(B)**

2.15 The use of banding designs (continuous horizontal stripes) across large areas of façade is not recommended.

2.16 Smaller scale materials should be used on these front façade massing elements whenever possible.

2.17 The size, scale, motif and use of materials for the front façade design should be kept consistent across the façade in order to tie the entire composition together. The use of a variety of design styles across the façade is not recommended.

BUILDING HEIGHT & ROOF DESIGN

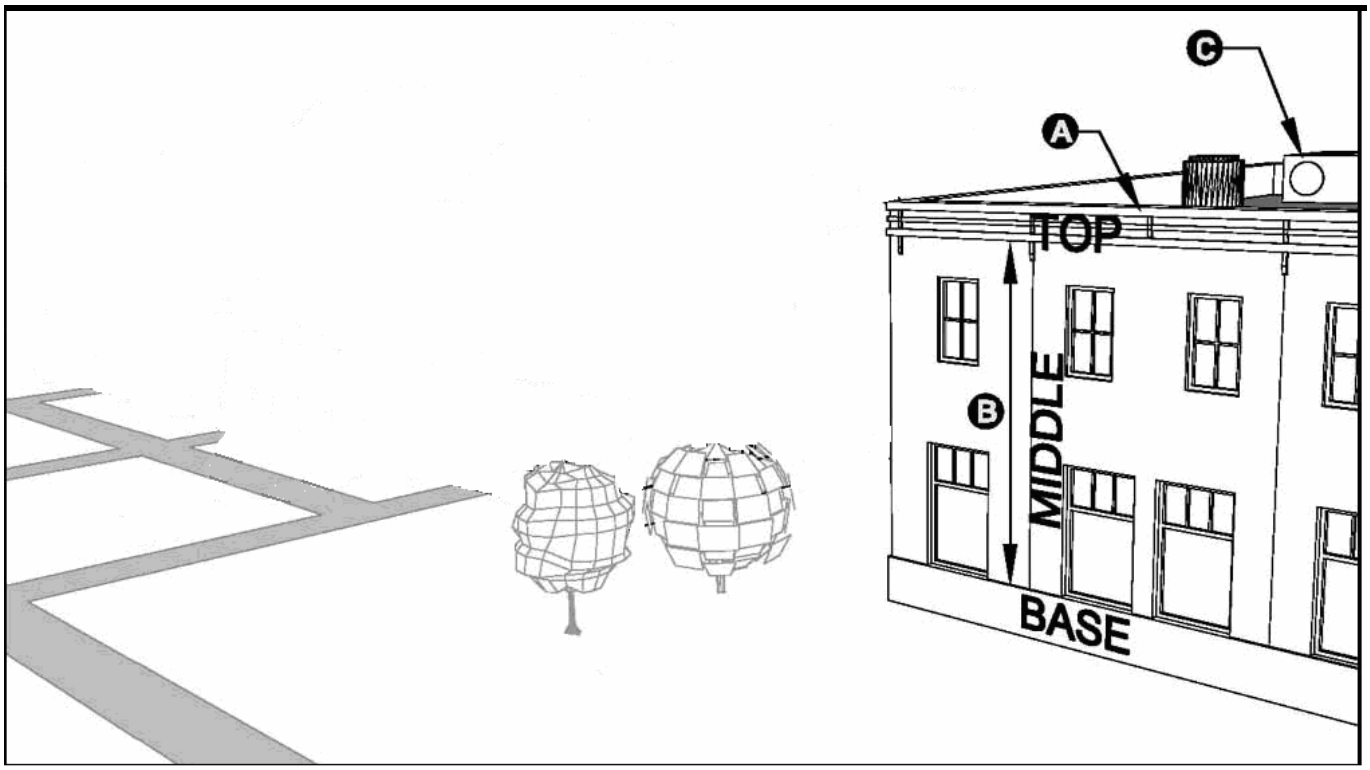


Figure 5: Different Roof Configurations. A well designed building roof provides screening, reduces the building scale, diverts the fall of rainwater, highlights important areas and creates a graceful "cap" to the structure, among other things.

3.1 The tallest façade of the building should face the street, stepping down in back if necessary.

3.2 The roof of the building should be in keeping with the scale of the structure itself.

3.3 Flat roof structures should be capped by an articulated parapet design which acts as a structural expression of the building façade and its materials. **(A)** Fake roof fronts and similar applied designs are discouraged.

3.4 Subtle variations which help to differentiate the 'base', 'middle' and 'top' of the structure are encouraged. **(B)**

3.5 Exposed roof structures are encouraged to maintain a pitch between ¼ :12 minimum and 6:12 maximum slope on all primary roof areas. (Not including dormers, entry canopies or similar elements.) Shed roofs should have minimum slope of 3:12. Mansard roof designs are discouraged.

3.6 Buildings with sloped roofs are encouraged to employ the use of dormers and gables of a commercial/industrial style along the front to help maintain a prominent façade when feasible. These also help to divert rainwater away from doorways.

3.7 Buildings with sloped roofs (except sheds) shall provide roof overhangs not less than 12 inches horizontal dimension on exposed eaves.

3.8 Breaks and fluctuations in the roofline are encouraged to highlight important areas of the building (such as the entry) and break up longer runs of façade/roof area.

3.9 Air handling units, condensers, satellite dishes and other equipment placed on the roof should not be visible from the street, and instead should be screened by building elements so they are shielded from sight. **(C)** In addition, roof mounted equipment shall be visually minimized with painted colors and finish complementary to the overall building design.

3.10 The roof of a structure should be designed so as to divert the fall of rain away from pedestrian areas such as walkways and doors. The use of canopies, awnings or similar protective designs is also encouraged at entry locations.

PROPORTIONS

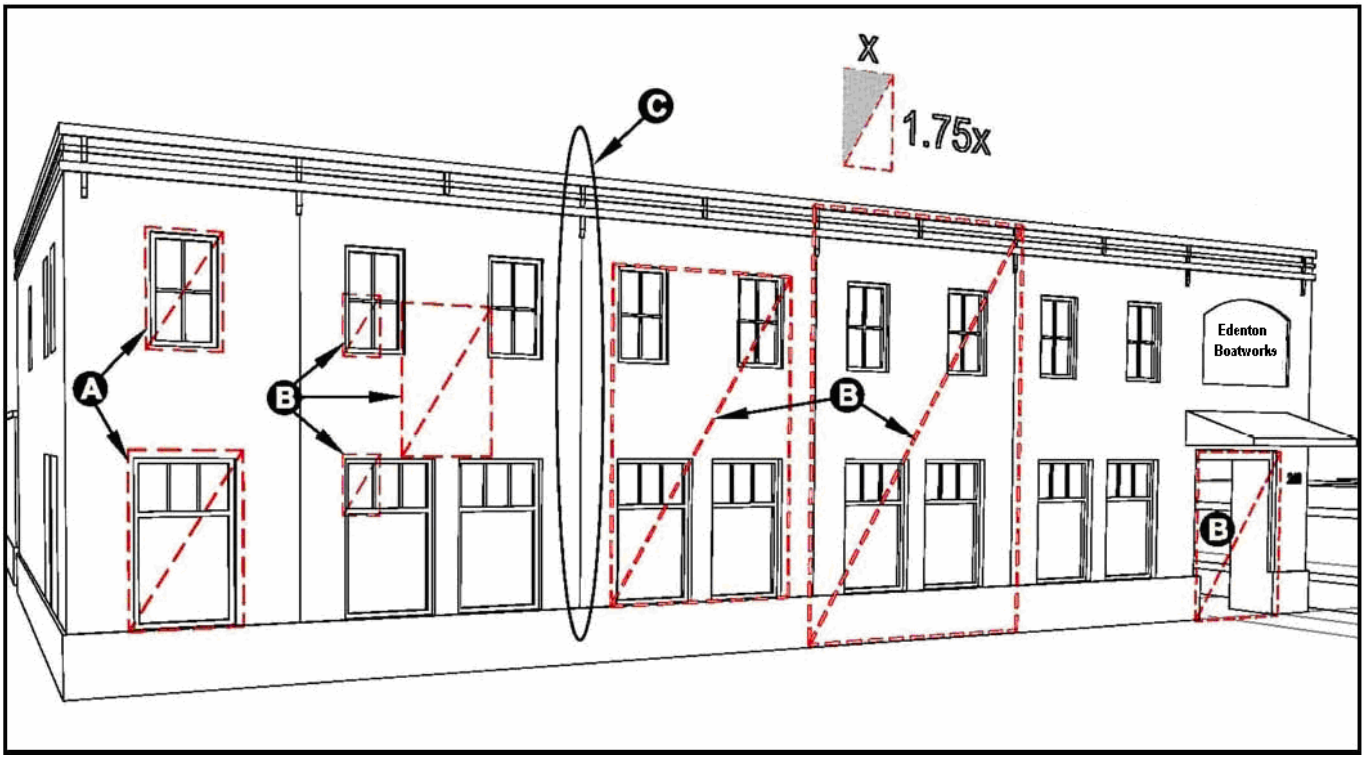


Figure 6: A Consistent Proportioning System. Many of the façade characteristics of this building are determined by the same width to height proportioning ratio (1:1.75). This can help to visually balance and tie the building together.

4.1 The proportions of design elements such as windows, columns or bay spacing should be consistent on the façade. In this example, the windows on the second floor have the same width to height ratio as the windows on the first floor. **(A)**

4.2 Proportioning systems also can be very effective in guiding other design characteristics of the façade. Here, the same width to height ratio of the windows was used to determine the proportions of many other features. **(B)**

4.3 The use of vertically proportioned elements (elements which are generally taller then they are wide) is encouraged to help give the building a taller, lighter and more stately appearance. Strong horizontal influences such as large fascias or banding designs are discouraged, or should be adequately balanced with vertical elements. **(C)**

4.4 The proportion of structural elements such as posts or columns should be appropriate to the weight they appear to be carrying. Columns which support larger masses, such as upper floors, generally have a low width to height ratio (For example 1:5). Columns supporting lighter elements such as a porch roof generally have larger ratio (For example 1:15). These relative proportions help balance a façade visually.

FENESTRATION

Figure 8: Fenestration Is A Measure Of The 3-Dimensional Depth Of A Façade Created By Fluctuations Or Openings In A Wall. Recesses such as archways or deep windows are two examples of fenestration. They help to give a façade a more 3-dimensional appearance by casting shadows and creating a visual contrast.

5.1 Variations and breaks in the plane of the façade are encouraged to create an interesting design, reinforce rhythms and cast shadows. **(A)** Flat façade designs are discouraged.

5.2 Typically, the most fenestration is found at the first floor level near pedestrian areas. Here, the use of larger openings and increased depth is encouraged. **(B)** This creates a more open and inviting area**.**

5.3 Openings in masonry buildings should express a structural lintel or arch to express how it is carrying the weight above. **(D)** Likewise, door and window frames can also use a wider trim at the head than is used on the sides to achieve the same visual effect.

5.4 The primary entry to a building is one of the best places to be creative with the use of depth in a façade. The added depth and articulation help to draw attention to the entry and highlight it as an important place. **(E)**

5.5 The use of façade articulation such as expressing the structural bays of the building with pilasters or other detailing can be useful in animating an otherwise blank area of wall. **(F)** The Town strongly discourages false, tower-like entrances that are not reflective of the architecture of the building.

5.6 The use of porches, colonnades, canopies or awnings is a great way to introduce shadows on a façade, and are encouraged. **(G)**

MATERIALS & COLORS

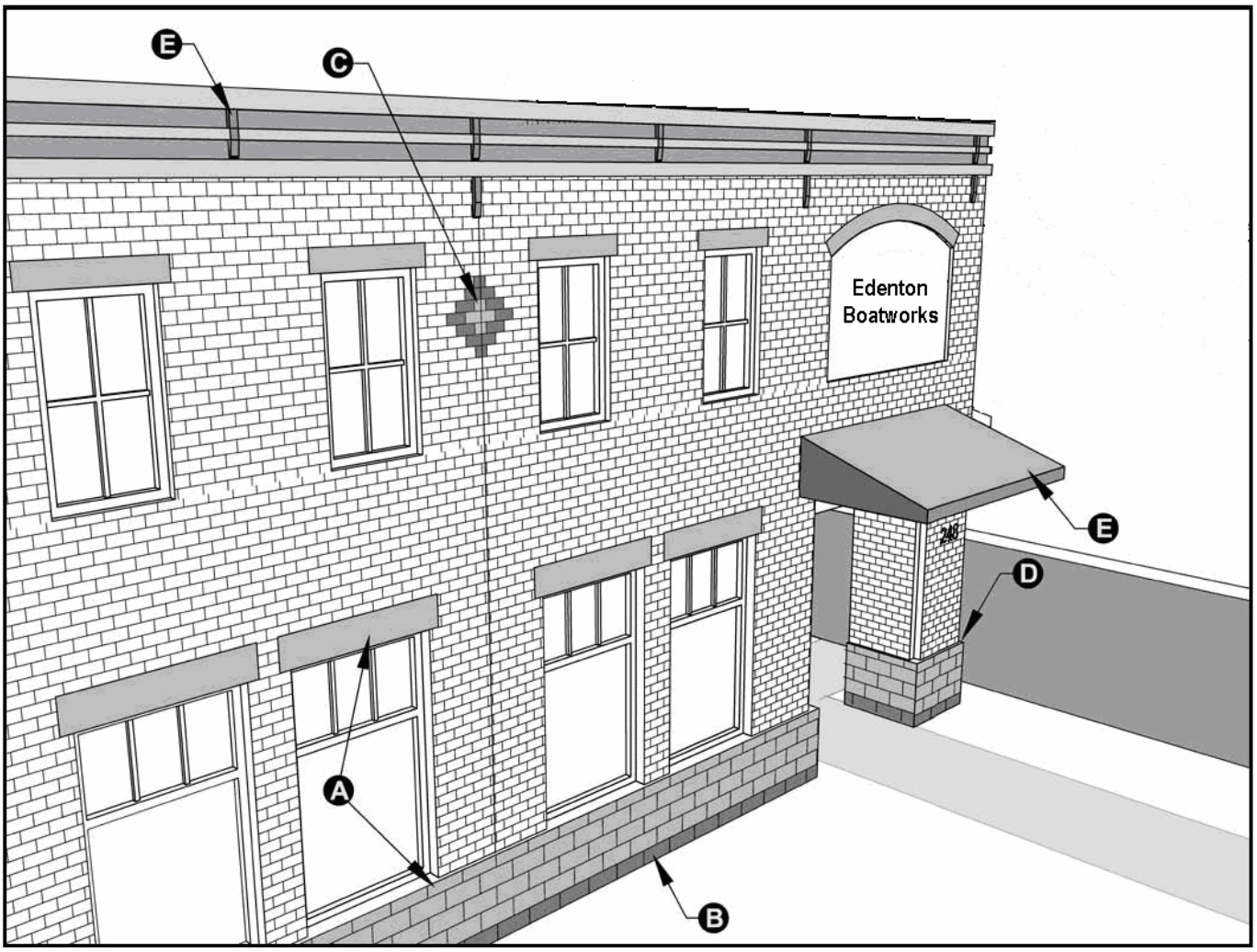


Figure 9: Smaller Scale Materials. The use of smaller building materials is recommended to help give the structure a more pedestrian scale.

6.1 Smaller scale, natural materials are encouraged.

6.2 When using more then one material on a façade, it is recommended to have one as the dominant theme with the others acting only to compliment or accentuate the design. In this example, the main brick façade is accented with the use of a special concrete block at the base, with matching concrete lintels. **(A)& (B)** This helps to tie the design together and provides a visual base for the building to rest on.

6.3 When making a transition from one material to the next, it is recommended that the change occur at a hard vertical edge or "bump-out" in the façade. This helps to create a surface for the first material to terminate into before the second one begins. **(C)**

6.4 When using multiple colors on the exterior of the building only one color should be used as the main theme, with the other colors used more sparingly to create accents. **(D)**

6.5 The main color theme should typically be of a natural, muted shade. Brighter, more vibrant colors such as red or yellow should generally be reserved for minor accents and highlights only, and should be used sparingly.

6.6 The Town strongly encourages different store front detailing for multi-tenant retail buildings.

MATERIALS & COLORS

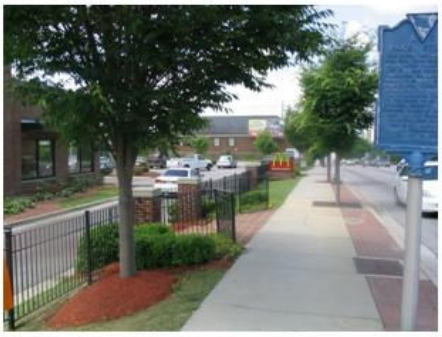
Table 1: Recommended Materials Chart. The following chart is intended as a general guide to the materials most and least preferred for use within the Commercial District. It is not intended to be comprehensive. Actual exterior materials and colors should be approved by the Town. Materials not specifically listed in this chart, may be permitted, but are subject to review and approval by the Administrator to ensure appropriateness.

ELEMENT	ALLOWED	NOT ALLOWED
Façade	Brick	Multi-colored Brick
	Bare (natural hue consistent tone)	Imitation Brick Siding
	Painted (approved color)	
	Natural Simulated Slate	Rubble or Field Stone
	Wood Clapboard	Plain (bare) Concrete Masonry Units
	Wood Shingle	Metal Siding
	Stucco, EIFS (Simulated Stucco)	Vinyl Siding
	Cementitious Siding (Clapboard)	Asphalt Siding
Trim	Wood (Painted or Stained)	Bare Wood
	Finished Grade	Lumber Grade
	Aluminum (approved color)	Clear Anodized Aluminum
Windows	Anodized Aluminum Frame	Clear Anodized Aluminum
	Approved Color	
	Wood Frame	Tinted Glass (Non code driven)
	Painted or Stained Approved Color	
	Vinyl Clad	
	Expressed Lintels (over openings)	Steel Plate or Angle
	Brick	
	Limestone	
	Colored Concrete	
	Clear Glass	Mirrored Glass
Roof	Natural Slate (or simulated)	
	Standing Seam Metal	
	Small Seam Width, Approved Color	
	Architectural Shingles (on accent features only)	
	Parapet Caps / Chimney Caps	
	Stone, Pre-Cast Concrete or Limestone	
	Wood, simulated wood shakes (on accent features only)	
Other	Canvas Awnings	Plastic Awnings
	3 color maximum, approved colors	
	Walkway Pavers /sidewalk	Asphalt walkways
	Stamped or Poured Concrete	Long Bubble awnings that exceeds 1.5 width of door opening
	Brick or Colored Paving Stone	
Accents	Special Masonry Units	
	Etched or Frosted Windows	
	Textured Concrete Block	
	Colored Concrete Block	
	Split – Faced Block	
	Stucco or EIFS (simulated stucco)	

Chapel Hill, NC

Charlotte Photos

Columbia, SC



Davidson, NC

Mt. Pleasant, SC

Downtown Commercial
Edenton, NC

Large, Heavy Commercial
Edenton, NC

Commercial Properties
Edenton, NC

	Building Placement	Parking Requirements	Landscaping	Scale & Massing	Building Height and Roof Design	Proportions	Fenestration	Material and Colors
Parking Area Modification								
Minor: 12-24 spaces		✓	✓					
Major: 25 or more spaces		✓	✓					
Existing Development								
Renovation Due to Disaster (Fire, Flood, etcetera)	*For existing buildings that are damaged due to flood, fire, or other disaster, the property owner/ developers, may opt out of the requirements of this article but must comply with this existing underlying zoning district requirements*							
Reoccupation after extended Vacancy	*An existing building that may be vacant for any length of time does not have to come into compliance with the provisions of the design standards before it may become reoccupied*							
Exterior Renovation (≤ 25% of surface area) without expansion								✓
Exterior Renovation (> 25% of surface area) without expansion				✓		✓	✓	✓
Minor Expansion (≤ 25% of total floor area)		✓	✓			✓	✓	✓
Major expansion (> 25% of total floor area)	✓	✓	✓	✓	✓	✓	✓	✓
New Construction								
New Construction on an undeveloped site *(Including out parcels)*	✓	✓	✓	✓	✓	✓	✓	✓

Exemptions:
The following development activities are exempt from the provisions of this article

1. Modifications to parking areas that consist only of routine maintenance or repair that do not involve a change of design and do not significantly change the outward appearance of the parking lot.
2. Modifications of parking areas with the modification being less than 12 spaces.
3. For existing buildings that are damaged due to flood, fire, or other disaster, the property owner/ developers, may opt out of the requirements of this article but must comply with this existing underlying zoning district requirements.
4. Modifications to facades that consist only of routine maintenance, or repair that do not involve a change of design.
5. Reoccupation of an existing building after any period of vacancy.
6. Interior renovations that do not add square footage to an existing structure.