TOWN OF CARRBORO

NORTH CAROLINA

TRANSMITTAL **PLANNING DEPARTMENT**

DELIVERED VIA: ☒ *HAND* ☐ *MAIL* ☐ *FAX* ☐ *EMAIL*

To: **Steve Stewart, Town Manager**
Mayor and Board of Aldermen

From: **Patricia J. McGuire, Planning Administrator**

Date: **September 16, 2005**

Subject: **Evaluation of Recommended Architectural Standards for Major Subdivisions**

The Vernacular Architectural Standards (VAS) Review committee has reviewed the Vernacular Architectural standards that were incorporated into the Land Use Ordinance in 1999 as part of the implementation of the *Facilitated Small Area Plan for Carrboro's Northern Study Area.* The committee's recommendation modifies the Carrboro vernacular established in the original VAS provision, adds a site planning component and provides for the development of project-specific architectural standards. The existing Vernacular Architectural Standards are required for bonus units provided under Section 15-182.4 Residential Density Bonus for Affordable Housing and Section 15-176.2 Village Mixed Use Development standards.

Should the Board of Aldermen be interested in adopting the recommendations in their current form, staff would recommend that they be used as guidelines or non-binding policy.

The body of the committee's recommendation statement is excerpted in this memo, with staff comments included in italic text. These comments either

1) note limitations to the proposed approach, or
2) suggest modifications to the document if it is adopted as guidelines, or
3) present modified language that would be needed for some of the recommended standards to be specific and enforceable.

The staff comments, especially in relation to developing enforceable standards, are not exhaustive. The lack of any comment is neither intended to endorse nor discourage a proposed provision.

If the Board of Aldermen seeks to establish mandatory architectural and site design standards for residential developments, staff would suggest that an optional voluntary procedure also be established. This is the approach that was reported on during the Board's recent consideration of architectural guidelines for downtown development. When a developer chooses not to meet the specified architectural standards, such a process would allow for subjective review of the proposed alternative site design and architecture in conjunction with specified guidelines, such as those proposed by the VAS Review Subcommittee.

ARCHITECTURAL STANDARDS FOR MAJOR SUBDIVISIONS – VAS Review Subcommittee Proposed Revisions

Prologue

The intent of the Architectural Standards for Major Subdivisions is to ensure that the Town's newest neighborhoods meet a required level of quality and reflect and enhance Carrboro's unique appeal. To that end, architectural design criteria for new residential subdivisions are included in the review process for new subdivisions. These standards are not intended to dampen architectural creativity or diversity but rather to provide a framework within which to work.

Housing developed by nonprofit organizations intended for first-time homebuyers earning less than 80% of our area's median income is exempt from these provisions.

Comment: Staff is concerned that this provision runs counter to the original intent of architectural standards. As expressed by Randall Arendt during the facilitation of the NSA Plan, architectural standards are especially important for affordable housing so that it will fit into existing and new neighborhoods in a manner that is harmonious and acceptable to the community. This provision may seek to address one of the difficulties with the applicability of the VAS in relation to affordable housing since the standards currently apply only to the bonus affordable units.

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1. Procedure
2. Definitions
3. General Design Standards for all major subdivisions
4. Vernacular Architectural Standards
5. Alternative Architectural Standards

Appendix: Glossary

A glossary of architectural terms and illustrations can be found in the Appendix. It is available for use by architects and developers in their interpretation of these standards.

1. Procedure

The applicant shall address the architectural design of houses in the proposed subdivision according to the General Residential Design Standards (GDS), and then shall meet either the Vernacular Architectural Standards (VAS) or Alternative Architectural Standards (AAS).

The Town's administrative staff and the Appearance Commission may consult a licensed architect to help them determine whether the plans submitted meet the intent of the General Design Standards, and whether they meet either the Vernacular Architectural Standards or Alternative Architectural Standards.

Comment: Overall, staff notes that the VAS Review committee recommendations are typical of architectural 'guidelines,' rather than standards. Many of the proposed standards are open-ended statements that will result in subjective review, a point that is reflected in the committee's recommendations. This issue was noted by staff in the Board's recent review of possible architectural requirements for downtown development, and is copied below. The Board of Aldermen may also wish to consider adopting the Townwide design guidelines prepared by staff in 1993 or a similar document, as was recommended in the NSA Plan as an alternative to the modified VAS provisions, particularly the "General Design Standards."

Excerpt from June 21, 2005 Staff memo on Architectural Guidelines: Typically, the term 'guidelines' refers to principles or provisions that are recommended, but not required and the term 'standards' is used to describe requirements. There are exceptions to this, such as when design manuals or guidelines are used to illustrate certain desired building or site design elements and a local government includes a step in its development review process to require a demonstration of compliance with specific elements. When challenged, these actions have been deemed an acceptable exercise of police powers so long as they meet two principal tests:

1) Reasonableness of the regulation – Does the aesthetic purpose to which the regulation is reasonably related outweigh the burden imposed on private property owner? A clear statement of purpose and findings associated with the proposed standards would be needed to demonstrate this.
2) Non-delegation of authority – Is the regulation specific enough to be applied uniformly to everyone or does it rely upon subjective assessments of aesthetic issues?

Town Attorney, Mike Brough, has noted that architectural requirements need to be clearly stated to meet these tests. The existing Vernacular Architectural Standards (Section 15-177) of the Land Use Ordinance, though recommended at present, are an example of the level of specificity that would be legally defensible. It was the lack of comparable specificity within the Carrboro Downtown Business District Guidelines for Design (DDG) that led to the adoption of that document as "non-binding." Mr. Brough has further noted that the Board of Aldermen could adopt specific mandatory standards, and then allow an applicant who was interested in an alternative design to volunteer to participate in a review process with the Appearance Commission or some other entity.

2. Definitions

Contemporary Architecture: describes a building that is derived from current ideas of architectural form, construction and detailing.

Context: the surrounding buildings and land forms, the social and the built history of the location.

Massing: the relationship of solids to voids, and the relationship of major components of the building such as roof, wall planes, and porches to one another, to surrounding buildings, and to the landscape in general.

Proportion: the relationship between the vertical and horizontal elements of the building.

Scale: the relationship of the size of the building, its components, and its architectural details to people as users and observers.

Vernacular: a building style that is historical and typical of a region and surrounding area. The predominant residential vernacular style in Carrboro and the surrounding area is the mill-era housing.

Comment: The document also includes an extensive glossary, which if finalized is to be supplemented with illustrations. It would be best to include all of the definitions in one location in the document. Some other definitions are needed for terms such as 'monolithic,' 'unarticulated,' and 'human scale.'

3. General Design Standards (GDS)

The GDS address three components of residential design: landscape, context, and building. The following criteria must be addressed by developers in the design of buildings and will be used by the Town's administrative staff and the Appearance Commission in their review of major subdivision applications. The applicant's design narrative and plans must address and show compliance with each item (whether using the VAS or the AAS approach).

Landscape and site:

- Site buildings in a manner sensitive to the existing natural environment and land forms. Minimize clearing and alteration of existing topography.

Comment: This recommendation is addressed by site planning, tree protection, stormwater management, open space and stream buffer provisions of the Land Use Ordinance.

- Site buildings or provide screening to avoid the visibility of buildings' rear facades from public streets.

- Avoid monolithic and unarticulated walls and buildings facing the public realm.

Comment: The situation that the previous two elements seek to resolve may be better addressed by a prohibition of the rear of buildings facing rights-of-way for collector and arterial streets. 'Facing' would include situations where the lot was separated from the designated street by common open space or similar features. There could be an exception for buildings on lots that face more than one street.

- Mechanical, communication, and electrical equipment shall be screened from neighbors and public ways through the use of landscaping or by fences/screens made of materials that complement the design of the house.

Comment: A screening requirement for the noted equipment could be added. Current ordinance provisions address height and screening of such equipment when placed on rooftops.

- Garage entries should not visually dominate the house's primary entrance, and shall have visual separation from the main façade.

Comment: A measurable standard is needed, such as "garages to be set back from the main façade 5 feet if the garage is equal to or less than ½ the width of the main façade, 7feet if the façade measures between ½ and 3/4th the width of main façade and 10 feet if the façade measures more than 3/4th the width of the main façade."

- Locate and specify exterior and street lighting to minimize the impact on neighbors. Fixtures shall not project light above the horizontal plane.

Comment: Lighting ordinance provisions should address these desired conditions. Changes to the LUO per the recommendations of the Northern Transition Area Advisory Committee are in preparation.

- Address the transition between street and primary entrance through pathways that consider changes of light, sound, direction, surface, or grade level, i.e. through the use of benches, fencing, or low walls connected to the building.

- Use variable setbacks and modulate the streetscape.

Context:

- Address the overall plan of the subdivision in terms of rhythm, building heights, patterns, spacing, form, scale, massing, materials, and proportion.

- Address the placement of buildings in relationship to one another; their height, orientation, and spacing.

- Address the vertical-to-horizontal proportions of the elements of each individual house, and the relationship of these proportions from one house to another.

- Address the relationship of the roof of one building to the next in rhythm, form, texture, detail, and shelter, with attention to color, materials, and pitch and to features such as soffits, rafter ends, vaults, overhangs, dormers, cornices, vents, fascias, gutters, and eaves.

- Provide human scale in massing and building elements.

Comment: The provisions included in this section specify detailed site plan submittal requirements. Currently, illustrations and plans of all homes are not needed for subdivision approval, although illustrations of typical homes are usually provided for architecturally-integrated subdivisions. It will be necessary for elevations of all homes to be submitted in order to evaluate compliance with this section of the recommended standards. The addition of this requirement would add time and complexity to the subdivision review process. It would be also be difficult to require a developer who is simply selling lots to submit multiple sets of architectural drawings. Such a requirement may also prove problematic to the applicant, subsequent home builders and owners if modifications, including alternative designs and future additions, are later proposed.

Building Design Elements:

- Provide a minimum of four significantly different sets of elevations if the subdivision contains five or six houses, five sets if seven or eight houses, six sets if nine or ten houses, and seven sets if eleven or twelve houses, and eight sets if thirteen or fourteen houses, to ensure variability of design. Subdivisions of fifteen or more houses must have a minimum of nine differing elevations.

- Create recognizable primary entrances, using, for example, entry placement, front and side porches, trellises, hedges, fences, and walls.

- Address the architectural rhythm of solids to voids in front façades, exterior walls, buildings on the streets, and entrance and/or porch projection.

- Address façade relief as provided by corner trim, porch trim, window and door trim, door panels, transoms, frames, surrounds, shutters, muntins, moldings, corbelling, cornices, gables, columns, casings, vents, fabric awnings, and roofs. Specify materials and dimensions.

- Specify the design of doors and windows, and their spacing, placement, proportion, scale, orientation, and size.

- Address the design and character of all exterior walls and foundations, including their functional and decorative features, materials, details, and proportions in relation to the entire building.

- The design of auxiliary buildings, fences, and privacy screens, and the materials used in their construction, should complement the design of the primary structure.

Comment: This section appears to reflect a desire to avoid homogeneity and uniformity in the newly constructed homes. With the exception of the first bulleted item, however, the provisions are open-ended and broadly descriptive and do not represent criteria that can be clearly administered. More specific descriptions of the desired architectural features are needed in order to enforce standards for these aspects of building design.

4. Vernacular Architectural Standards (VAS)

The goal of the VAS approach is to maintain and enhance Carrboro's historic mill-era architecture, which distinguishes it and is a primary element in defining Carrboro's unique sense of place. New subdivisions using the VAS approach should recognize and reflect the local architectural vernacular. This approach notes the defining elements of the vernacular and requires that those elements be used in conjunction with appropriate scale, proportion, massing, and texture. Proposed plans need not be copies of historic Carrboro houses; successful contextual design combines current design ideas with sensitivity and reference to the defining architecture of the locale.

Following is a list of the minimum criteria necessary to meet the Vernacular Architectural Standards and its goal of maintaining an architectural connection to Carrboro's past.

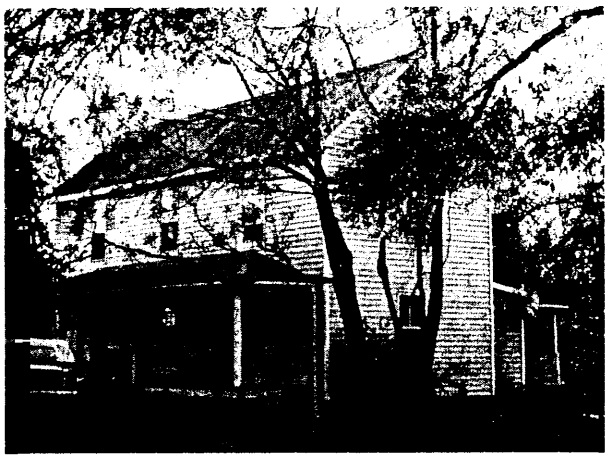
- Roof characteristics: 10-12 /12 upper roofs, 3/12 lower roofs, 16-24" eaves at all roof edges.
- Porches with a minimum depth of 6', across at least 80% of the primary street façade
- Windows must be rectangular; at least 90% must have a minimum vertical-to-horizontal proportion of two-to-one.
- Clapboard or shingle siding with 4½" reveal.
- Paired 4" corner boards.
- Garage, if any, to be detached and located behind the house's rear façade
- Chimney, if any, to be faced with brick or stone, interior to the building or located exterior, on a gable end
- Details such as columns, trim, vents, dormers, and eaves reflective of the character of the vernacular (see building types, below)

Four building types display most of the primary architectural elements characteristic of residences built in Carrboro's mill era. All photos are from Carrboro's Historic Inventory.

One-story Mill House

The one-story mill house is modest in scale, with simple massing defined by a one-room deep "L"-shaped plan, gable roof, generous front porch, and moderate roof overhangs. It is characterized by symmetry in the gable ends and front and has windows of a vertical proportion placed singly in the wall plane. The exterior details generally consist of a false dormer, clapboard siding, 4" trim and corner boards, diamond gable vents, plain square porch posts with simple brackets, and simple pickets in porch rails. Garages were single-car gable-roofed buildings set behind the house.

Two-story "I" House



The two-story "I" house is defined by its moderate massing, a one-room deep plan, two-story front and one-story "L", gable roof, generous front porch, and moderate roof overhangs. It is symmetrical in its front elevation and gable ends and has windows of a vertical proportion placed singly in the wall plane. The exterior details generally consist

of a false dormer, clapboard siding, 4" trim and corner boards, diamond gable vents, plain square porch posts with simple brackets, and simple pickets in the porch rail. Garages were single-car, gable-roofed, and set behind the house.

The Bungalow

The bungalow style house is a medium scale building with a solid massing defined by its square floor plan, gable roof, generous front porch, moderate roof overhangs, and large dormers. It is characterized by large articulated gable ends, windows of a vertical proportion spaced doubly or triply in the wall plane, and a porch roof contiguous with the main roof. The exterior details generally consist of clapboard siding or shakes, 4" trim and corner boards, generous two-part square porch posts, and large gable end brackets, rake, and eave boards.

The Four-Square House

This is another medium-scale building type with a solid straight-forward massing defined by its square two-room deep plan, hip roof, moderate roof overhangs, dormers, and

generous front porch. The defining characteristics are a symmetrical front elevation, windows of a vertical proportion placed singly in the wall plane, and a porch roof that is distinct from the main roof. The exterior details generally consist of clapboard siding, 4' trim and corner boards, modest brackets, and simple square porch pickets.

5. Alternative Architectural Standards (AAS)

The AAS approach recognizes that architecture is constantly evolving and that changing needs, tastes, and technologies generate new styles. Carrboro welcomes new and varied architecture but does not want to open the door to developments that neglect thoughtful design. Applicants may therefore choose to submit plans to be evaluated using Alternative Architectural Standards. As with the Vernacular Architectural Standards, plans must be in compliance with the General Design Standards. The applicant shall submit as part of the application a detailed narrative describing compliance with the GDS and shall provide, in addition, a set of architectural standards for proposed and future construction within the subdivision.

Comment: If no architectural parameters are established in this section other than those included in the General Design Standards, the alternative approach appears to be one in which an applicant must demonstrate only compliance with the GDS. Under the scenario described in the introductory staff comments, an applicant could choose to comply with the VAS or could voluntarily participate in a subjective review in which a proposed alternative architectural standard would be evaluated using the GDS.

NOW, THEREFORE BE IT RESOLVED by the Carrboro Board of Aldermen that the Aldermen establishes a VAS Review Committee and charges this committee to:

1) Examine and comment on the manner in which the Vernacular Architectural Standards would satisfy general community interests, specifically:
   a) The appropriateness and content of the standards individually and as a whole.
   b) The compatibility of the standards with environmentally-friendly, innovative, cost-effective construction techniques and materials, as well as the town's goal of housing affordability.
   c) The desired degree of flexibility and/or rigidity in the nature and application of the criteria.

2) Examine the extent to which any standards should be recommended or required in 1) Village mixed use, conditional use developments, 2) major subdivisions (90% of the units), and 3) affordable housing, density bonus situations.

3) Examine options for incentives to encourage and offset the application of the standards.

4) Complete and present a report within five months of the formation of the committee.

5) The committee will include a maximum of 15 members including a representative from the Planning Board, the Appearance Commission, the Northern Transition Area Advisory Committee, the Environmental Advisory Board, and up to 11 citizen members. In addition, the Board of Aldermen will appoint one of its members to serve as a liaison with the committee.

6) In conducting its evaluation the VAS Review Committee will consider comments and correspondence previously received by the Town.

Executive summary

The VAS Review committee Made up of Alex Zaffron Giles Blunden Susan Rodemeir Chris Potter Jay Bryan, Tom High, Chris Potter, Robert Dowling, Jack Haggerty, Stan Babbis and Chuck Morton a cross section of proponents and opponents of the of the original VAS document. Through a consensus building process facilitated by Giles Blunden over a period of two years the group produced a document that they feel represents and addresses the broader communities interests. This document requires developers to establish an architectural design intent for his subdivision and provides reviewers a set of standards by which to judge that intent.

Architectural Standards for Major Subdivisions is a document that satisfies the general community interest by describing and defining a high quality of architecture in general terms without limiting personal expression.

This objective was achieved by a thorough compilation and careful filtering of similar documents from other ordinances and resources as well as the personal interpretations of those on the committee.

The result is a document that establishes standards for a high quality of architectural cohesiveness in future Subdivisions. The committee concluded that there were general design standards that regardless of style or type were important in defining architectural quality. These are the General Design Standards and should be applied to every new subdivision.

While applying the General Design Standards the developer would have a choice of either using a relatively specific set of guidelines based on Carrboro vernacular architecture using the VAS or he could present an architecture of his own choosing using the AAS. In either case he would be expected to produce and present a carefully thought through set of design principles to be reviewed and approved by the ??????.

ARCHITECTURAL STANDARDS FOR MAJOR SUBDIVISIONS

Prologue

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Appendix

A GLOSSARY OF ARCHITECTURAL TERMS

ACCENT BLOCK A masonry element, usually square or diamond shaped, used as a decorative element in Craftsman-style domestic and commercial architecture
ARCH A curved structural element that spans an opening. There are many varieties, which take their basic form from the arc of a circle.

AWNINGS Usually of fabric, can also be plastic or metal. Used primarily to give shade to windows. Usually adjustable. As a rule.
BALANCE Achieved by the assembly of separate elements to create the whole.
BALCONY A narrow platform projecting from and supported by the face of a building above ground.
BAY A division of the elevation of a building. For example, a house with a front door flanked by two windows would be described as having a three-bay façade.
BOX CONSTRUCTION A form of building that uses vertical wood boards or planks instead of studs for both structure and enclosure.
BREEZEWAY A short open-air passageway connecting a house to a area that may house an automobile, it is usually roofed.
BRICK A clay (or shale) masonry unit, solid or partly hollow, that is formed in a mold and fired until hard. When laid in a wall so it's long side is visible, referred to as a Stretcher Brick. When laid so that its short end is visible, referred to as a Header Brick. A closer brick is a partial brick used at the end of a course to even it up. A Gauged Brick is a brick is a brick that has been shaped to form part of a jack arch. (Gauged and Closer bricks are associated with early brick work.) The coursing or pattern of bricks in a wall is referred to as the Bond, and the divisions between bricks and courses are referred to as Mortar Joints. Stretcher bond is composed of Stretcher Bricks exclusively. Flemish bond is composed of alternating Stretcher and Header Bricks and is associated with early and COLONIAL REVIVAL brickwork. English Bond is composed of courses of Stretcher Bricks alternating with courses of Header Bricks. A Soldier Course is formed by Stretcher Bricks standing on end and lined up over a window or parapet. Basketweave refers to Stretcher Brick laid horizontally and vertically to form a checkerboard pattern. Houndstooth refers to bricks set at an angle, creating a sawtooth appearance. Paving refers to bricks used like pavers to cover the sloped shoulders of early chimneys. Tumbling refers to bricks laid in diagonal courses to form chimney shoulders or edge of a gable; it associated with decorative mid 1800's chimneys' and with the Tudor Revival style. Penciling refers to the painting of a line (usually white) along mortar joints.
BUNGALOW A one-story or story-and-a-half house detailed in the CRAFTSMAN Style.
CAPITAL The top section of a column, often decorative. See also ORDER.
CAS Contemporary Architectural Standards.
CHAMFER The beveled edge or corner of a beam or post.
CLASSICAL REVIVAL STYLE An Architectural style characterized by use of classic Greek and Roman forms and ornament, especially monumental porticos. See also under ORDER....
COLONIAL REVIVAL STYLE An architectural style most popular from about 1920 to the present. Characterized by the use of classical forms and detailing (or, in more academic examples, allusions to Colonial - or Early National - Period American architecture) and symmetrical composition. Also referred to as the Georgian Revival style.
COLUMNS An upright supporting part, which may be structural or purely for decorative effects.
CORBELLING A block of masonry or material such as brick or wood, which projects from a wall and supports a beam or other feature.
CORNER BLOCK A decorative block-like element used to define the corner of a door or window surround.

CORNICE RETURNS Sections of cornice appearing in a gable or on the end of a building.
CORNICES A projecting horizontal part that crowns a architectural feature.
COTTAGE A small frame one-family house.
COURSE A horizontal row of bricks, tiles, stone, building blocks, etc.
CRAFTSMAN An architectural style most popular from about 1910 to 1950. Characterized by the use of broad, spreading forms; low-pitched gable roofs, often with gable and eaves brackets, decorative windows and other details. The bungalow house form is associated with this style. A Craftsman porch is usually supported by tapered wood columns on brick bases.
CROWN MOLDING A molding used at the top of an architectural element such as a porch post or wall.
CUPOLA A small structure built on top of a roof. It may be purely decorative or may be the base for a weathervane or antenna.
DETAIL Paying particular attention to all elements of a specific project.
DOORS Front - usually the primary entry to a house. Door-Jamb - the upright piece forming the vertical surround of the door's opening.
DORMERS A window that projects from a sloping roof.
EAVES The lowest part of a roof, overhanging the top of the wall.
ELEVATION 1) The external faces or a building, e.g. front, side and back elevations. 2) Also a drawing of one side of a building, usually drawn to a specific scale. Also drawn in projection on a vertical plane.
ENGAGED Attached to or embedded in a wall (a pilaster is an engaged column), or embraced by another architectural element (as the front porch of a COTTAGE or CRAFTSMAN BUNGALOW is enclosed under the roof of the house.
ENTABLATURE In classical architecture, the section of the building elevation above columns or piers or at the top of a wall. Also used to describe the crowing element of a door or window.
ENTRANCE see DOORS.
FAÇADE Usually the front or street side of a building.
FANLIGHT A window above the head of a door. In some styles of architecture the panes are divided into a fan-like appearance, thus the name.
FASCIA BOARD Horizontal board (s) covering the joint between the top of a wall and the projecting eaves.
FEDERAL STYLE An architectural style occurring during thee early nineteenth century.
FLASHING Material, usually metal used as a protective covering to joints between the roof finish and chimneys, dormers, gable walls, etc.
FLUTING Vertical concave indentations along the length of a column, giving the surface of the column a rippled or scalloped appearance. Usually occurring as straight-edged groves on the surface of a door or window surround.
FORM To take a definitive shape or arrangement, which may be based on custom, rules or invention.
FRAMES A structural element that gives strength or a decorative appearance to doors or windows.
GABLE The triangle of wall surface formed by the meeting of two-sloping roof lines, at the end of a ridged roof.
GDS General Design Standards

GEORGIAN STYLE An architectural style dating to the early 1800's (and possibly the late 1700's). Characterized by the use of classical forms and detailing and symmetrical compositions.
GIRDER A supporting part which spans an opening and carries a load, which is subjected to transverse stress.
GOTHIC REVIVAL STYLE An architectural style characterized by allusions to medieval Gothic architecture: lancet arched openings, peaked mantel frieze profiles, vertical detailing and composition.
GREEK REVIVAL STYLE An architectural style characterized that emulated the simplicity and purity of classical Greek architecture, as typified by the Greek temple. Characterized by symmetrical composition and columnar or trabeaded detailing, seen in corner pilasters. Two-panel doors and pilaster-and-frieze mantels.
GUTTER BOARD See FACIA BOARDS
GUTTERS A small trough fixed under the eaves of a roof, to carry off rain water.
HIP The external angle formed by the meeting of two sloping roof surfaces.
LINTEL A horizontal part supported at each end, and carrying weight.
MODERNIST An architectural style most popular from the late 1930's to the present. Characterized by the use of simple, geometric forms, modern materials (concrete, aluminum, plate glass), and a general absence of ornament. The Craftsman, Art Deco, and Prairie styles may be considered precursors to Modernist architecture.
MOLDING Continuous projections or incisions used as a decorative band.
MONOLITHIC A massive structure.
MULLION The upright part dividing the lights of a window.
MUNTINS The central vertical part of a door, dividing the panels above and below the middle rail.
ORDER In classical architecture, the style or system of proportion and detail of a column and related elements. There are three principal orders of classical Greek and Roman architecture. The Doric Order is characterized by simplicity, with a molded column Capital. The Ionic Order has capitals with dominant spiraled volutes. The Corinthian Order, the most ornate, is characterized by delicate leaflike ornament and small volutes. Vernacular compositions based on the orders are used in local GREEK REVIVAL architecture.
OUTRIGGER A structural or ornamental element in a gable that supports or appears to support a roof.
OVERHANG Term used when a sloping roof is carried out beyond the top of the wall, forming an overhang.
PEDIMENT In classical architecture, the triangular end of a gable roof, defined by cornices. Used as a decorative element above a door or window opening in COLONIAL REVIVEL architecture, sometimes broken and/or scrolled at the center
PITCH The angle at which a roof slopes.
PLAT Drawing based on a Surveyors staking out a lot(s). A scale drawing of a specific piece of property.
PORCH The covered entrance to a building. Front - a covered area in the front of a house, which may share a common roof with the house of have a roof of its own. Also see WRAPAROUND PORCH .
PRAIRIE STYLE An architectural style derived from the work of Frank Lloyd Wright and others, characterized by spreading forms, low-pitched hip roofs and geometric ornament.

PRISM GLASS Small squares of textured and often tinted glass used to form a transom over a store front.
PURLIN A horizontal roof member, either one that spans between the gables or one that spans between the gables or one supported by rafters. Also used historically to describe a horizontal member in a crib.
RAFTER ENDS Covering for the parallel beams that support the roof.
RETAINING WALL A wall which supports and retains a mass of earth or water.
REVEAL Part of a vertical surface, or jamb of a window, or door opening, which is not covered by the frame.
RHYTHM An ordered recurrent order or flow of related elements.
ROOF Flat - having a pitch of less than 20 degrees. Hipped - a roof in which the end is formed by a sloping surface face enclosed by hips. Lean to Roof - having one sloping surface only, built against the side of another building.
ROSETTE A circular ornament
RUSTIC STYLE An architectural style popular from the 1920's to the present. Characterized by the use of traditional, "pioneer;" or natural forms, materials, and building techniques such as log construction, rubble masonry, and unfinished surfaces.
RUSTICATED Used to describe horizontally banded masonry.
SCALE 1) As the building or project under consideration relates to neighboring buildings and/or the area around it. 2) in the drawing of plans, reducing measurements to fit on paper capable of viewing. e.g. 1/8 inch = 1foot. Written as 1/8" = 1'.
SENSE OF SHELTER An awareness of belonging, a home that feels and looks right, and is welcoming.
SHOULDER The point at which the body of a chimney narrows, usually at the level of the eaves. Most chimney shoulders are stepped, some paved. Some early chimneys are double-shouldered, with shoulders above the fireplaces at the first and second-story levels.
SHUTTERS A covering for an external window, can be made of various materials, and may be purely non-functioning as decoration.
SIDINGS The material used to forming the outside wall of framed buildings. Usually so pitched as to throw off rainwater.
SOFFITS The under surface of a building feature, such as roof, cornice, window of door head
SPECIFICATION A statement containing exact details of and precise instructions for carrying out a piece of building work.
SPLAYED Having sloped or canterd surfaces. The sides of door or window openings are sometimes splayed to emphasize the thickness of the wall penetrated by the opening.
STUCCO Material of cement or a plastic compound applied to a n exterior wall, to provide a smooth or rustic surface, which may be painted.
STYLE Is a term used to define a whole body of work with certain common characteristics
SURROUNDS Encircling trims, decorative or structural.
TEXTURE Visual or tactile surface characteristics.
TRANSOMS The window over a door, usually the front door, which may or may not be functional. See Fanlight
TRELLISES A frame of lattice used generally as a screen or to support climbing plants.
TRIMS Materials used for ornament, that may also be used for minor structural supports.
UNARTICULATED Not carefully planned, reasoned or analyzed.

VAS ARCHITECTURAL STANDARDS
VAULTS An arched structure
VENTS An opening (usually covered by a grid) which allows the escape of gases or hot air for example.
VERNACULAR 1) Relating to a common building style. 2) Relating to a common phraseology (jargon).
VICTORIAN Used to describe buildings constructed during the late 1800's and early 1900's that usually exhibit combinations of the following: asymmetrical composition, complex massing and roof lines, architectural details that distantly reflect medieval prototypes, and the liberal use of machined ornament. Typical Victorian features include hip-and-gable roofs, bay windows, porches supported by chamfered or turned posts with sawn brackets, wood-shingle sheathing, decorative roof vents, and intricate mantles. The Queen Anne style is a form of Victorian styling. Masonry commercial buildings that are Victorian in inspiration often feature decorative parapet brickwork and segmental-arched windows.
WEATHERING A canted surface on a buttress wall, or chimney shoulder designed to shed water.
WINDOW An opening in a building to admit light and/or air that may be opened and closed. Various architectural styles include, Bay, Bow, Casement (window hinged vertically, which may open inward or outward), Double-hung and etc.
WRAP AROUND PORCH A porch that extends to two or more sides of a building.

February 22, 2005

Dear Mike, Diana, Alex, Jacqui, John, Joel and Mark:

It is my understanding that as part of your review of the town's comprehensive plan, you will be discussing the idea of architecture standards for subdivisions of five or more residential structures. In the hopes that it would helpful, I would like to share with you my recollection of the history of the development of those standards.

In 1995, I believe, the Board and County Commissioners sponsored a two-day facilitated workshop for citizens interested in planning for the Northern Transition Area. Randall Arendt of the National Lands Trust was hired as consultant for the facilitated workshop which took place over two days and involved a great number of people who lived in town and in the Northern Transition Area.

In May of 1997, Randall submitted a report to the Board of Aldermen entitled "Preliminary Recommendations on the Draft Small Area Plan". The report included numerous illustrated architectural and site design standards for traditional neighborhoods that have been used in other communities to promote and maintain small town character.

In May of 1998 the Board adopted the Facilitated Small Area Plan for Carrboro's Northern Study Area. The Plan contained the implementation measure that the Board adopt town wide design standards relating to parking, tree preservation, site design and architectural character to preserve the visual qualities and pedestrian-scale orientation of Carrboro and to ensure that new development is harmonious with the attractive features of existing development.

As a result of the workshop and Randall Arendt's report, the Board appointed the Ordinance Drafting Committee (ODC) to make recommendations regarding changes to the Land Use Ordinance in keeping with the adopted Small Area Plan. Appointed to the ODC were Alex Zaffron (Board of Aldermen), Giles Blunden, Jean Earnhardt, Kathy Kaufman, Jay Bryan and Tom High.

The ODC met numerous times and had extensive debate which included good faith compromise about what should be the extent and nature

The ODC met numerous times and had extensive debate which included good faith compromise about what should be the extent and nature of its recommendations regarding the Northern Study Area Small Area Plan.

In May of 19998, the ODC submitted thirty-four (34) pages of recommended amendments to the Land Use Ordinance in keeping with the Small Area Plan and the intent and desires of the attendees at the two-day workshop. Among the Committee's recommendations was that residential structures be designed to reflect Carrboro's vernacular architecture building tradition in accordance with design standards developed and recommended by the entire Committee.

In November 1998, the ODC submitted to the Board a specific set of design standards entitled Vernacular Architectural Standards for Village Mixed Use and Affordable Housing. Randall Arendt, wrote to Roy Williford that the "draft Vernacular Architectural Standards ....are quite impressive and would in my view need relatively little change in order to become a first-class working document..."

After a public hearing on the Ordinance Committee's proposed design standards (in 2000 I believe), the Board approved including in the Land Use Ordinance certain of the Committee's architectural standards as "recommended".

At the same time, the Board also appointed the Vernacular Architecture Standards Review Committee (VASRC). Members of the VASRC included Jack Haggerty (architect), Robert Dowling (Orange County Community Housing and Land Trust, Inc.), Calvin Melott (local builder), Susan Rodemier (owner, Redstone Realty), Giles Blunden (architect), Tom High (Extra Territorial Jurisdiction representative), Alex Zaffron (Board of Aldermen), Chris Potter (Northern Transition Area resident), Stan Babbis (Carrboro Planning Board representative), Chuck Morton (Carrboro Appearance Commission), and Jay Bryan (Northern Transition Area Advisory Committee representative). *Attached to this letter is the charge of the Committee.*

The VASRC met as a whole for at least twenty-four (24) meetings and consumed approximately one hundred hours of staff liaison, Jeff Kleaveland's, time. Giles was chosen by the group to act as facilitator, and Catherine Devine was hired as a consultant. The group's discussions

were spirited, challenging and represented both sides of the debate, and through persistence and continuous negotiation, the group reached consensus. The Committee learned how to describe architectural ideas and approaches in language that I believe is accurate, objective and comprehensive.

From its discussions and over two years of research and consulting with outside sources, the Committee's final Report makes the consensus recommendation that the Town adopt certain specific architectural standards for residential development of major subdivisions (those with five houses or more). Its proposal of a two-tiered set of standards, Vernacular Architectural Standards and Alternative Architectural Standards, offers developers and builders the opportunity for creativity and diversity in architectural design that is necessary to maintain the vernacular of Carrboro and the high quality architecture that Carrboro deserves while allowing flexibility of style and type.

Its specific design standards will also help ensure that residential development in major subdivisions avoids the "any place" USA, lowest common denominator housing being built across the nation, and that Carrboro's neighborhoods and homes achieve a standard of visual quality that is an ongoing asset to its residents.

The Committee's recommendation is that there be a mandatory review process using this two-tiered set of standards because such mandatory review is much more likely to have its intended positive effect on the quality of major subdivision residential development than the use of "recommended guidelines".

I hope this background has been helpful. The town has a long history of caring for its visual appearance and heritage. In that spirit and history, I ask you to support the consensus work of the Vernacular Architecture Standards Review Committee appointed by the Board and approve including in the Land Use Plan its recommended architectural standards for major subdivisions and developments. Thank you.

Sincerely yours,

Jay Bryan

The following resolution was introduced by Alderman Alex Zaffron and duly seconded by Alderman Jacquelyn Gist.

A RESOLUTION ADOPTING A CHARGE FOR THE VERNACULAR ARCHITECTURAL STANDARDS (VAS) REVIEW COMMITTEE
Resolution No. 101/1999-2000

WHEREAS, the Carrboro Board of Aldermen seeks ample opportunities to review existing policy and regulations.

NOW, THEREFORE BE IT RESOLVED by the Carrboro Board of Aldermen that the Aldermen establishes a VAS Review Committee and charges this committee to:

1) Examine and comment on the manner in which the Vernacular Architectural Standards would satisfy general community interests, specifically:

   a) The appropriateness and content of the standards individually and as a whole;
   b) The compatibility of the standards with environmentally-friendly/innovative/cost-effective construction techniques and materials, as well as the town's goals of housing affordability;
   c) The desired degree of flexibility and/or rigidity in the nature and application of the criteria.

2) Examine the extent to which any standards should be recommended or required in 1) village mixed use, conditional use developments, 2) major subdivisions (90 percent of the units), and 3) affordable housing, density bonus situations.

3) Examine options for incentives to encourage and offset the application of the standards.

4) Complete and present a report within five months of the formation of the committee.

5) The committee will include a maximum of 15 members including a representative from the Planning Board, Appearance Commission, Northern Transition Area Advisory Committee, and the Environmental Advisory Board, and up to 11 citizen members. In addition, the Board of Aldermen will appoint one of its members to serve as a liaison with the committee.

6) In conducting its evaluation, the VAS Review Committee will consider comments and correspondence previously received by the Town.

BE IT FURTHER RESOLVED by the Carrboro Board of Aldermen that the Aldermen selects an Alderman liaison and directs staff to request a representative from the Planning Board, Appearance Commission, and Northern Transition Area Advisory Committee, and Environmental Advisory Board. Further, staff shall, through advertisements and a direct mailing to all who commented previously, request citizen and building/development representatives for selection and appointment by the Board of Aldermen.

The foregoing resolution having been submitted to a vote, received the following vote and was duly adopted this 8th day of February, 2000:

Ayes: Mark Dorosin, Diana McDuffee, Jacquelyn Gist, Michael Nelson, Allen Spalt, Alex Zaffron

Noes: None

Absent or Excused: Joal Hall Broun

Chronology – Development and Review
Small Area Planning for Carrboro's Northern Study Area

November 12, 1991	Staff report and recommendations regarding small area planning. Board of Aldermen referred to staff to prepare report on process and Agenda Planning Committee to schedule.
January 7, 1992	Staff report on process. Referred to 1992 retreat agenda.
August 18, 1992	Staff report on process and work group. Board of Aldermen referred to Planning Board for recommendation on the structure of the work group.
October 6, 1992	Staff report on recommended organization of work group and its proposed charge. Board of Aldermen endorsed structure and charge, with a few edits.
February 2, 1993	Appointments to the Small Area Planning Work Group (SAPWG).
April 13, 1993	Joint worksession with SAPWG.
June 1, 1993	Report from Town Attorney on options for processing development proposals during small area planning process
June 14, 1994	Update on SAPWG progress and proposed schedule for presentation of development scenarios.
September 20, 1994	Board of Aldermen requested status report on SAPWG progress.
December 6, 1994	Report on progress of SAPWG and request that the Board of Aldermen appoint a work group to review Land use Ordinance and determine what changes are needed to implement SA plan.
January 24, 1995	Staff report on proposed charge for ordinance drafting committee that would prepare ordinances necessary to implement the recommendations of the SAPWG. Board adopted charge, membership structure, meeting schedule, and designated staff support. The staff also presented information on mixed-use developments and rural villages in other towns.
November 9, 1995	Open house on draft plan – Homestead Community Center
November 21, 1995	Board of Aldermen requested that OWASA staff review SAPWG report.
December 19, 1995	Worksession on SAPWG draft plan. Board of Aldermen set a public hearing for February 6, 1996 to review a proposed text amendment that would establish a development moratorium in the Northern Study Area. Board of Aldermen also set a public hearing for review of the Northern Study Area plan.
February 6, 1996	Public hearing on plan. Twenty-one members of the public offered comments.
February 13, 1996	Continuation of hearing. Review of public comments. Board of Aldermen agreed to set up a committee of aldermen and staff to plan a facilitated meeting to address concerns about the plan.
March 19, 1996	Report from Small Area Plan Facilitation Committee. Board authorized establishment of steering committee and requested list of neighborhoods located in the small area planning area.
April 2, 1996	Report on list of neighborhoods. Board of Aldermen authorized staff to seek nominations (direct mailing, newspaper advertisement) for membership on facilitation steering committee.
May 28, 1996	Board requested Agenda Planning Committee to schedule worksession on small area plan and timeline for completion/implementation.
June 4, 1996	Board of Aldermen appointed 27 members to the Facilitation Steering Committee

June 27, 1996	Worksession on Draft Small Area Plan
September 17, 1996	Report from steering committee on facilitated meeting process.
October 1, 1996	Request that Agenda Planning Committee schedule a report from steering committee on financing and other issues.
October 8, 1996	Discussion of Planing Board to officially dissolve the SAPWG. Board requested that staff prepare a resolution of appreciation.
October 22, 1996	Board of Aldermen adopted resolution commending work of SAPWG
November 12, 1996	Request from Aldermen Bryan that Town Manager notify Chapel Hill and Orange County of tentative dates for facilitated meeting.
December 17, 1996	Report on Small Area Plan Facilitated Steering Committee
January 14, 1997	Report on proposed schedule and budget breakdown for facilitated meeting
April 19, 1997	Day one of two-day facilitated meeting. Randall Arendt serves as moderator and Andy Sachs and volunteers from the Orange County Dispute Settlement Center as facilitators
May 31, 1997	Day two of facilitated meeting.
August 19, 1997	Board of Aldermen review of draft facilitated plan, modified per comments and recommendations submitted by Randall Arendt. Board referred plan to an ordinance drafting committee and identified committee members.
August 26, 1997	Alderman Zaffron requested that Agenda Planning committee schedule a meeting to discuss duties and composition of drafting committee.
September 16, 1997	Board of Aldermen adopted charge, designated members, approved proposed time line and requested town attorney to prepare a land use ordinance amendment to institute a development moratorium in the study area. Members appointed were: Giles Blunden, Margaret Brown, Jay Bryan, Jean Earnhardt, Tom High, Kathy Kaufman, and Alex Zaffron.
October 7, 1997	Request-to-set a pubic hearing for LUO text amendment on development moratorium.
November 11, 1997	Public hearing – development moratorium. Three members of the public spoke.
January 13, 1998	Board discussed upcoming report and agreed to schedule a special meeting if report scheduled for January 20 was delayed.
January 20, 1998	Report from Ordinance Drafting Committee on progress and proposed JPA amendments. Board of Aldermen endorsed joint planning amendments and requested that they be forwarded to the county for placement on the agenda for the April 8, 1998 hearing.
February 17, 1998	Review of Chapel Hill request to add review of Northwest Area Plan to Joint Public Hearing scheduled for April 8, 1998.
March 24, 1998	Worksession on status of work of ordinance drafting committee.
April 7, 1998	Request-to-set public hearing to extend development moratorium
April 8, 1998	Joint Public Hearing on JPA amendments.
May 12, 1998	Public Hearing – extension of development moratorium. There were no comments from the public. Chapel Hill Planning Board –final decision on JPA amendments.
May 21, 1998	Carrboro Planning Board final decision on JPA amendments.
May 26, 1998	Board of Aldermen final decision on JPA amendments.
June 2, 1998	Board of Aldermen requested that Mayor contact Chairs of Board of County Commissioners and Chapel Hill Town Council and request final

	votes on small area plan.
June 8, 1998	Chapel Hill Town Council reviews JPA amendments
July 6, 1998	Chapel Hill Town Council amends resolution re: Carrboro JPA amendments.
July 15, 1998	Orange County Planning Board reviews JPA amendments.
August 18, 1998	Board of Aldermen requested report from Town Attorney on options when development moratorium expires. The Board also requested a schedule for completion of the small area plan.
August 25, 1998	Board of Aldermen to discuss development moratoria on September 8, 1998. Tentative schedule of completion distributed.
September 8, 1998	Board of Aldermen directed Town Attorney to prepare two ordinances extending the development moratorium for two and three months and set a public hearing for October 6, 1998.
September 22, 1998	The Board of Aldermen received a draft copy of ordinance to implement the recommendations of the small area plan.
October 6, 1998	Public hearing on development moratorium. Twelve members of the public made comments. Worksession to receive the first of four presentations on the draft ordinance.
October 13, 1998	Worksession to receive the second of four presentations on the ordinance. The board made specific suggestions for changes and clarifications
October 27, 1998	Worksession on parts 3 and 4 of NSA ordinance.
November 2, 1998	Worksession to review revisions, recommendations, and reviewer's comments. Three sections were referred to subcommittees for additional work.
November 10, 1998	Board of Aldermen requested that the affordable housing provision be revised to include a mechanism to ensure the long-term affordability of the housing units.
November 11, 1998	Orange County Planning Board completed final review of JPA amendments.
November 17, 1998	Board of Aldermen reviewed revised ordinance and Orange County Planning Board comments. Set a public hearing for review of the ordinance for December 15, 1998.
December 1, 1998	Board rescheduled December 15 hearing to December 16, 1998.
December 2, 1998	Public Informational Meeting on NSA Ordinance at Homestead Community Center. Six citizens attended.
December 9, 1998	Public Informational Meeting on NSA Ordinance at Homestead Community Center. Twenty-six citizens attended.
December 15, 1998	Board of County Commissioners' consideration of Joint Planning Agreement amendments related to NSA Plan.
December 16, 1998	Public hearing on NSA Plan
January 5, 1999	Board of Aldermen review staff analysis of issues from public hearing on NSA Plan.
January 11, 1999	Discussion of Draft letter to BOCC in response to Barry Jacobs' proposal to revise JPA amendments in response to citizen comments.
January 19, 1999	BOCC considered JPA amendments
January 20, 1999	Board of Aldermen discusses further action needed regarding NSA ordinance.

January 22, 1999	Joint staff meeting – discussion of outstanding issues
February 2, 1999	BOCC adopts JPA amendment incorporating NSA Plan.
February 9, 1999	Board of Aldermen considers revised JPA amendment and identifies provisions for "Final Draft" of NSA Ordinance.
February 16, 1999	Board of Aldermen worksession on Vernacular Architectural Standards
March 23, 1999	Public hearing on NSA Ordinance scheduled but delayed at request of Board of County Commissioners.
March 30, 1999	Joint meeting between Board of Aldermen and BOCC to review draft ordinance.
May 2, 1999	BOCC determined no consistency problems between draft ordinance and NSA plan/Joint Planning LU Plan.
May 11, 1999	Report on outcome of BOCC review of consistency of NSA Ordinance with NSA plan.
May 25, 1999	Public hearing on NSA Ordinance.

Meeting Schedules- Work Group, Steering and Ordinance Drafting Committees

Small Area Planning Work Group

(See attached attendance record. Please note that there were three other meetings that were not added to the attendance record. These meetings were held on September 21, 1995, November 16, 1995 and January 18, 1996.)

Facilitation Steering Committee

July 8, 1996	January 29, 1997	May 31, 1997
August 29, 1996	March 6, 1997	June 11, 1997
November 11, 1996	April 18, 1997	July 15, 1997
December 5, 1996	April 19, 1997	
January 9, 1997	May 15, 1997	

Ordinance Drafting Committee

September 30, 1997	March 12, 1998	June 10, 1998
October 27, 1997	March 18, 1998	June 17, 1998
November 24, 1997	March 25, 1998	June 24, 1998
December 11, 1997	April 1, 1998	June 29, 1998
December 17, 1998	April 22, 1998	July 7, 1998
January 8, 1998	April 29, 1998	July 22, 1998
January 14, 1998	May 6, 1998	July 29, 1998
January 28, 1998	May 13, 1998	October 24, 1998
February 4, 1998	May 20, 1998	October 28, 1998
February 17, 1998	May 24, 1998	
March 4, 1998	June 3, 1998	

Planning/pjm – 12-15-98

CHRONOLOGY OF ACTIONS RELATED TO VERNACULAR ARCHITECTURAL STANDARDS REVIEW COMMITTEE

November 17, 1997	Giles Blunden, member of the Small Area Plan Ordinance Drafting Committee, met with the Appearance Commission to discuss architectural styles of new homes in Roberson Place development
January 14, 1998	Small Area Plan Ordinance Drafting Committee began discussion of architectural requirements for new development in Carrboro's Northern Study Area.
January 13, 1998	Board discussed upcoming report and agreed to schedule a special meeting if report scheduled for January 20 was delayed.
January 20, 1998	Report from Ordinance Drafting Committee on progress and proposed JPA amendments. Board of Aldermen endorsed joint planning amendments and requested that they be forwarded to the county for placement on the agenda for the April 8, 1998 hearing.
March 24, 1998	Worksession on status of work of ordinance drafting committee.
April 8, 1998	Joint Public Hearing on JPA amendments.
May 12, 1998	Public Hearing – extension of development moratorium. There were no comments from the public. Chapel Hill Planning Board –final decision on JPA amendments.
September 22, 1998	The Board of Aldermen received a draft copy of ordinance to implement the recommendations of the small area plan.
October 6, 1998	Public hearing on development moratorium. Twelve members of the public made comments. Worksession to receive the first of four presentations on the draft ordinance.
October 13, 1998	Worksession to receive the second of four presentations on the ordinance. The board made specific suggestions for changes and clarifications
October 27, 1998	Worksession on parts 3 and 4 of NSA ordinance.
November 2, 1998	Worksession to review revisions, recommendations, and reviewer's comments. Three sections were referred to subcommittees for additional work.
December 2, 1998	Public Informational Meeting on NSA Ordinance at Homestead Community Center. Six citizens attended.
December 9, 1998	Public Informational Meeting on NSA Ordinance at Homestead Community Center. Twenty-six citizens attended.
December 15, 1998	Board of County Commissioners' consideration of Joint Planning Agreement amendments.
December 16, 1998	Public hearing on NSA Plan. Eight of eighteen speakers opposed VAS.
February 16, 1999	Board of Aldermen worksession on Vernacular Architectural Standards
April 13, 1999	Public hearing on small house requirements. Petition with 60 signatures objecting to VAS
May 25, 1999	Public hearing on NSA Ordinance. Board of Aldermen adopted VAS provisions as "recommended" and asked staff for proposal on review process. Petition with 15 signatures supporting the VAS.
September 7, 1999	Report to Board of Aldermen on possible review process involving committee made up of advisory board members and others.

October 12, 1999	Follow-up report on review process and additional considerations.
February 1, 2000	Board of Aldermen held a worksession on review process and charge for review committee.
February 8, 2000	Board of Aldermen adopted resolution establishing VAS Review Committee
April 9, 2000	Board of Aldermen appointed nine members to committee.
June 13, 2000	One additional member appointed.
June 27, 2000	One additional member appointed.

Meetings of the VAS Review Committee

1/29/00	9/27/00	1/09/02
6/20/00	10/18/00	2/13/02
7/12/00	11/29/00	3/13/02
7/26/00	1/10/01	5/15/02
8/9/00	2/7/01	6/10/02
8/23/00	9/26/01	1/22/03

Catherine Devine was hired to assist the Committee with preparation of the recommended revisions and provided this assistance from ____ to _____.

Section 15-141.2 Village Mixed Use District Established (AMENDED 05/25/99)

(a) There is hereby established a Village Mixed Use (VMU) district. This district is established to provide for the development of rural new villages at a scale intended to continue Carrboro's small town character as described in its Year 2000 Task Force Report and to promote a traditional concept of villages. The applicant for rezoning to this district must demonstrate that its planning, design and development will achieve, but not necessarily be limited to, all of the following specific objectives:

1. The preservation of open space, scenic vistas, agricultural lands and natural resources within the Town of Carrboro and its planning jurisdiction and to minimize the potential for conflict between such areas and other land uses;

2. The creation of a distinct physical settlement surrounded by a protected landscape of generally open land used for agricultural, forest, recreational and environmental protection purposes.

3. Dwellings, shops, and workplaces generally located in close proximity to each other, the scale of which accommodates and promotes pedestrian travel for trips within the village.

4. Modestly sized buildings fronting on, and aligned with, streets in a disciplined manner.

5. A generally rectilinear pattern of streets, alleys and blocks reflecting the street network in existing small villages which provides for a balanced mix of pedestrians and automobiles.

6. Squares greens, landscaped streets and parks woven into street and block patterns to provide space for social activity, parks and visual enjoyment.

7. Provision of buildings for civic assembly or for other common purposes that act as visual landmarks and symbols of identity within the community.

8. A recognizable, functionally diverse, but visually unified village focused on a village green or square.

9. Development of a size and scale, which accommodates and promotes pedestrian travel rather than motor vehicle trips within the village.

10. Compliance with the policies embodied in this chapter for the development of a village mixed use.

(b) The VMU district shall be a conditional use district authorized under N.C.G.S. 160A-382. As such, property may be placed within this district only in response to a petition by the owners of all the property to be included.

(c) As indicated in the Table of Permissible Uses, the only permissible use within a VMU district is a village mixed use development, and a village mixed use development is only permissible within a VMU district.

(d) Property may be rezoned to the VMU district only when the property proposed for such rezoning:

1. Comprises at least fifty, but not more than two hundred, contiguous acres. For purposes of this subsection, acreage is not "contiguous" to other acreage if separated by a public street or connected only at a point less than one hundred feet in width; and

2. Is so located in relationship to existing or proposed public streets that traffic generated by the development of the tract proposed for rezoning can be accommodated without endangering the public health, safety, or welfare; and

3. Will be served by OWASA water and sewer lines when developed;

(e) No more than 350 gross acres may be rezoned to the VMU district and no more than three villages may be approved.

(f) Nothing in this section is intended to limit the discretion of the Board of Aldermen to deny an application to rezone property to a VMU district if it determines that the proposed rezoning is not in the public interest.

(g) When a VMU rezoning application is submitted (in accordance with Article XX of this ordinance), the applicant shall simultaneously submit an application for approval of a master plan for the proposed village mixed use development, in accordance with the following provisions.

1. The master plan shall show, through a combination of graphic means and text (including without limitation proposed conditions to be included in the conditional use permit for the proposed development):

   a. The location, types, and densities of residential uses;

   b. The location, types, and maximum floor areas and impervious surface areas for non-residential uses;

   c. The location and orientation of buildings, parking areas, recreational facilities, and open spaces;

   d. Access and circulation systems for vehicles and pedestrians;

e. How the development proposes to satisfy the objectives of and comply with the regulations applicable to a village mixed use development as set forth in Section 15-176.2 of this chapter;

f. How the development proposes to minimize or mitigate any adverse impacts on neighboring properties and the environment, including without limitation impacts from traffic and stormwater runoff; and

g. How the development proposes to substantially comply with the town's recommended "Village Mixed Use and Affordable Housing Vernacular Architectural Standards."

2. The planning board, Northern Transition Advisory Committee, Appearance Commission, Environmental Advisory Board, Transportation Advisory Board (and other advisory boards to which the Board of Aldermen may refer the application) shall review the proposed master plan at the same time it considers the applicant's rezoning request. In response to suggestions made by the planning board (or other advisory boards), the applicant may revise the master plan before it is submitted to the Board of Aldermen.

3. If the applicant submits a proposed master plan with a VMU rezoning application, then:

   a. Applicants for VMU districts that are located within the Transition Area portion of the Carrboro Joint Development Area as defined within the Joint Planning Agreement should meet with Carrboro Town and Orange County Planning staff prior to the formal submittal of an application to informally discuss the preliminary rezoning development plan.

   b. The rezoning application and master plan proposal shall be reviewed concurrently by the Board of Aldermen according to the same procedures and in accordance with the same standards applicable to other zoning amendments; and

   c. The Board may not approve the VMU rezoning application unless it simultaneously approves the master plan for the development of the property, subject to such reasonable modifications and conditions as the Board may impose in the exercise of its legislative discretion.

4. Approval of a VMU rezoning application with a master plan under this section does not obviate the need to obtain a conditional use permit for the village mixed use development in accordance with the provisions of Section 15-176.2 of this chapter.

(8) Each vehicle is allocated one (1) square foot of sign area to be displayed on the interior of a side window of the vehicle only.

(9) A vehicle sales operation must be an annex of a pre-existing vehicle sales business located within 800 feet.

(10) A vehicle sales operation is allowed in those portions of the B-1(g) district that are not adjacent to residentially zoned property (primary zoning classification only).

Section 15-177 Architectural Standards for Major Subdivisions (AMENDED 05/25/99)

(a) The following standards are recommended for all subdivisions of 5 or more units and shall pertain to 50% of the dwelling units in the subdivision.

(1) Porches shall span 80 percent of the front façade.

(2) Roofs shall be as follows:

a. Main roof pitch – 8/12 to 12/12
b. Lower roof pitches – 3/12 to 5/12
c. Roofs shall have a minimum overhang of sixteen (16) inches on all eaves and gables.

(3) Clapboard or shingle siding shall have a four to five and a half-inch exposure.

(4) Windows shall have a vertical to horizontal proportion of not less than two to one.

(5) Trim details – Columns, vents, gables, and other details should reflect details in the recommended "Village Mixed Use and Affordable Housing Vernacular Architectural Standards." (Section 15-141.2).

(6) Any chimney must be located within the body of the house unless it is an all-masonry chimney.

(7) Garage doors shall be nine (9) feet wide or under. Door shall not face the street unless the garage is placed at least 10 feet behind the principal dwelling.

Section 15-178 through 15-180 Reserved.

accordance with the provisions of this chapter. Although the yield plan must be drawn to scale, it need not reflect any great degree of site engineering. However, it must be a realistic layout reflecting a development pattern that could reasonably be expected to be implemented, taking into account the topography of the land and natural constraints, existing easements and encumbrances, and the applicable provisions of this chapter, particularly those relating to open space, recreational facilities, and street rights of way. In addition, the yield plan shall be prepared under the assumption that each lot will be served with an individual septic tank located on the same lot as the house it serves. The applicant shall submit evidence (in the form of a preliminary soils evaluation from Orange County or comparable information from a qualified source) that there appears to be sufficient suitable soil within each of the proposed lots to support a septic tank system serving at least a three-bedroom house. When a yield plan meeting the requirements of this subsection has been submitted, the zoning administrator shall confirm this in a letter to the developer, which letter shall indicate the maximum number of dwelling units that can be developed on the tract in accordance with this subsection.

Section 15-182.4 Residential Density Bonuses for Affordable Housing (AMENDED 05/25/99)

(a) For purposes of this section, an affordable housing unit means a dwelling unit (i) that is offered for sale at a price that does not exceed two and a half times an amount equal to eighty percent of the annual median income level for a family of four in the Raleigh-Durham-Chapel Hill Metropolitan Statistical Area or is offered for rent at a monthly rate that does not exceed an amount equal to 12 percent of the monthly median income level for a family of four in the Raleigh-Durham-Chapel Hill Metropolitan Statistical Area, and (ii) with respect to which the developer has arranged for the affordable housing units to remain affordable as descried herein for a period of not less than 100 years, commencing from the date of initial occupancy of the units, by including provisions to ensure such continued affordability in legally binding agreements (including but not limited to a ground lease, a deed restriction or other covenant) running with the unit. Such agreements shall be reviewed and approved by the Town of Carrboro prior to initial occupancy of the units. The units may not be occupied and the agreements may not be recorded or filed until such agreements are reviewed and approved by the Town of Carrboro, and (iii) that conforms to the town's recommended "Village Mixed Use and Affordable Housing Vernacular Architectural Standards." For the purposes of determining whether the subdivision requires a zoning permit, special use permit, or conditional use permit under Subsection 15-147(a), the number of units shall exclude the bonus units associated with this Section.

(b) The maximum residential density permissible within a development whose maximum density would otherwise be determined in accordance with the provisions of subsection 15-182, 15-182.1, or 15-182.3(b) shall be increased by two dwelling units for every one affordable housing unit included within the development, up to a maximum of 150% of the density otherwise allowable. To illustrate, if the maximum

TOWN OF CARRBORO

VILLAGE MIXED USE & AFFORDABLE HOUSING VERNACULAR STANDARDS

referenced in:
SECTIONS 15-141.2, 15-177, 15-182.4
of the:
TOWN OF CARRBORO LAND USE ORDINANCE

Adopted by:
BOARD OF ALDERMEN
on:
MAY 25, 1999

ATTACHMENT B- 30

I N T R O D U C T I O N

This booklet has been prepared to illustrate the architectural principles specified in the Town of Carrboro's Land Use Ordinance, Sections 15-141.2, 15-182.4, and15-177. This document presents Carrboro's vernacular architecture and its detail and is to be used as a set of guidelines for new residential construction. The information that follows is not meant to be copied, but to provide an architectural language to ensure that the new residential structures in Carrboro have reference to Carrboro's history. This in turn will continue to provide Carrboro with an architecturally unique sense of place that distinguishes it from "anyplace U.S.A."

PURPOSE OF THE GUIDELINES

This booklet serves as a companion to the architectural and site design elements included in the town's Land Use Ordinance, and illustrates the architectural standards that are to be executed in new residential construction in villages, major subdivisions, or affordable housing units in Carrboro. The booklet provides the visual and written text to give structure to the concept of a village vernacular. The guidelines themselves have been selected to achieve several purposes, including:

1. Celebrating the historical events that defined the Town of Carrboro and are reflected in the built environment.
2. Provide a diversity of housing types, sizes, within a range of styles characteristic of mill-era architecture.
3. Maintain the scale of residential development in keeping with the historical precedent.
4. Reference traditional building forms and materials.
5. Provide a sense of place.

SUMMARY OF FOUR BUILDING STYLES

The illustrations represent the vernacular architecture of the Town of Carrboro and its environs during the period when mills were the defining features of the Town. It was in this era, roughly from 1890 to 1950, that the form of the community was established. These forms resulted from economics, topography, convention, craftsmanship and materials.

In Carrboro, four building styles comprise most of the architectural form for that period. These styles are presented below in chronological order. A brief commentary concerning their function in the community follows.

MILL HOUSE, ***one-story*** – These wood frame structures date to the earliest period of occupation that is directly associated with the mill operation in the Carrboro vicinity. These buildings are truly representative of Carrboro's earliest rental housing, built as they were to house the many individuals and families who migrated into this small town from outlying areas. As is typical of early industrial housing throughout the state, the houses are one-room deep, usually with a rear ell. The houses

ATTACHMENT B- 3(

were placed on lots large enough to include a garden plot, approximately 7,000 square feet. Simple, gable roofs, minimal decoration, and full, or nearly full, front porches, are typical features. Slightly more decorative elements are also found, including triple-A gables with shingles and vents, and sawn spandrels and chamfered porch posts. The main block usually contains a center hall and two rooms, although one type does have a separate entry for each of the two rooms.

MILL HOUSE, *two-story* – Dating to the same era are the two-story, mill houses. Including both the L-shaped houses, and the one-room deep versions, which typically included a one-story, rear ell. These structures are also of wood frame construction and served both as rental housing and private residences. Some of the larger structures were operated as boarding houses for unmarried laborers. The one-room deep variety can be seen with or without the dormer.

FOURSQUARE – The large spaces in the attics of these handsome houses provided extra space, primarily for families, and most were privately built. Dating to the earliest decades of the twentieth century, these two- or three-room deep, center hall plan, houses provide some variety in the Carrboro vernacular. These houses are found plain, or with gables or dormers. Most have three-quarter, or full, front porches.

CRAFTSMAN – The first of the four building types that can be considered to represent a national style, rather than the local vernacular, these structures are found in wood, as well as brick and stone. The one to one-and-a-half story structures were usually built as private residences.

SHARED OR COMMON ELEMENTS

Although the construction era for the four building styles spans nearly five decades, a number of characteristics are common to all. These characteristics include construction materials and practices, such as the use of wood for framing, sheathing, and decoration. The structures were almost always balloon framed and supported on masonry piers.

Finished floor elevations are usually minimal, ranging from 18 to 24 inches. The building facades are characterized by balanced or ordered fenestration; with window and door openings placed symmetrically and regularly spaced. Entry porches are commonly found with the main façade porch spanning between 80 and 100 percent of the main façade. Exterior lighting is minimal. Garages and other accessory structures are detached and usually set back behind the lot's principal building.

Of the many architectural features, seven elements have been identified as necessary in order to achieve the objectives noted above. These elements include:

1. Porches that span 80 percent of the front façade.
2. Roof characteristics, as follows:
   - Main roof pitch between 10/12 and 12/12
   - Lower roof pitch between 3/12 and 4/12
   - Minimum roof overhang of 16 inches on all eaves and gables.
3. Clapboard or shingle siding with a four and a half to a five and a half-inch exposure.
4. Windows shall have a vertical to horizontal proportion of not less than two to one.

5. Columns, vents, gables and other details shall reflect those presented in this booklet.
6. Chimneys are to be located within the body of the house.
7. Garage doors shall be nine feet wide or under. Garage doors shall not face the street.

HOW TO USE THE MANUAL

This guide contains photographs, sketches, and text that depict residential structures from the four building styles. The information presented here is organized along four principal topic areas. Some repetition, in light of the shared elements among the building styles, may be noted.

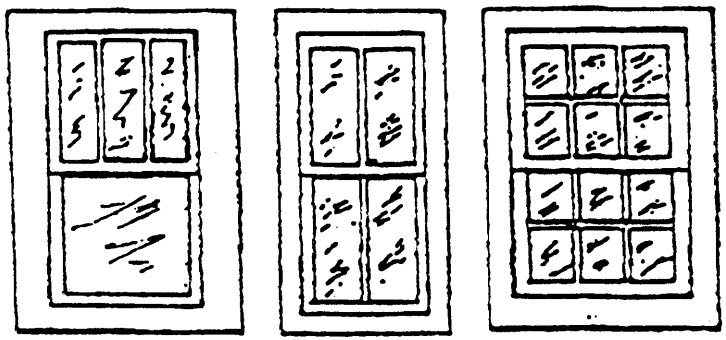
Construction materials are to reflect antecedents. Metal roofs, brick foundations, and wood siding are to be used, wherever appropriate. Other materials may be acceptable if designed to maintain traditional proportions.

Information on the structure of the four building styles is presented in seven categories, building form, exterior materials, façade treatment, fenestration, gables and vents, porch trim and eaves. General descriptions are included for each category. There are exceptions or variations within each category, and even some architectural examples that are not included. The illustrations have been selected as they highlight the most common, or signature, elements of each building style.

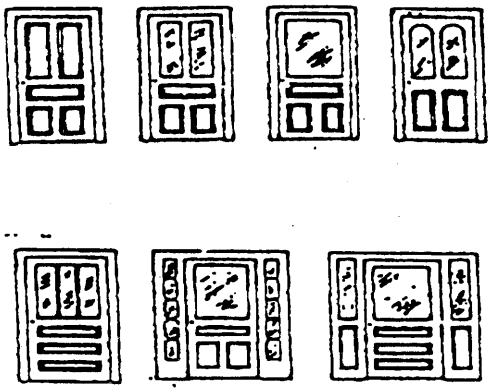
The descriptions and details presented here will assist an applicant or designer to conform with the seven architectural elements described above as acceptable features and proportions are noted. The array of elements selected, however, should occur within a particular style, with the exception of shared or common elements.

GUIDE TO TRIM AND FINISHING DETAILS

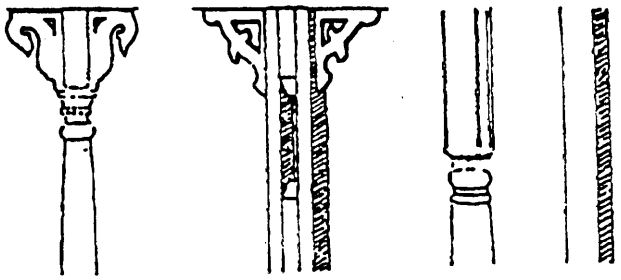
Sketches of five trim and finishing details, including windows, doors, columns, gables and vents, presented below provide simple illustrations of these building details.



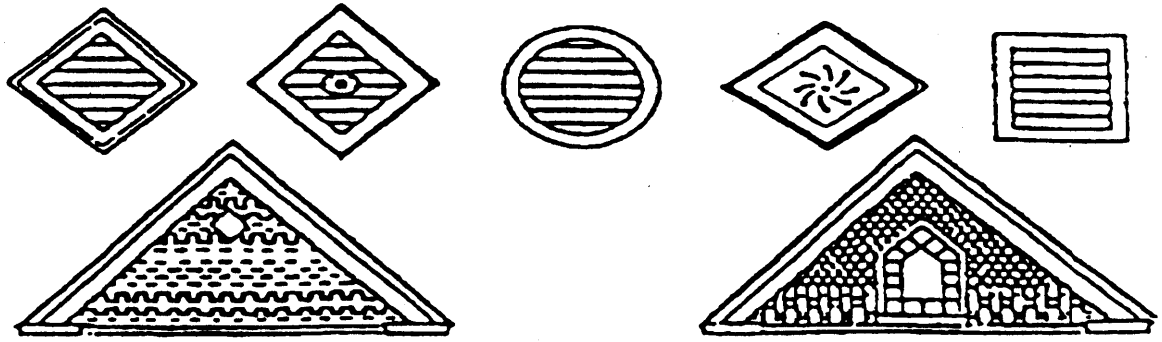
WINDOWS



DOORS



COLUMNS



GABLES & VENTS

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BUILDING FORM

MILL HOUSE: ONE-STORY

MASSING

- One- to One-and a-half story
- One room deep with rear ell
- 800 – 1,000 square feet

ROOF

- Side gable
- Triple 'A' or cross-gable
- Porch roof – shed or hipped
- Boxed eave and gable end returns or open eave

MILL HOUSE: TWO-STORY

MASSING

- Two stories
- One room deep with rear ell
- I-house or Gable-and-wing
- 1,400 – 1,700 square feet

ROOF

- Side gable
- Triple 'A' or Cross gable
- Porch roof – shed or hipped
- Boxed eave and gable end returns or open eave

BUILDING FORM

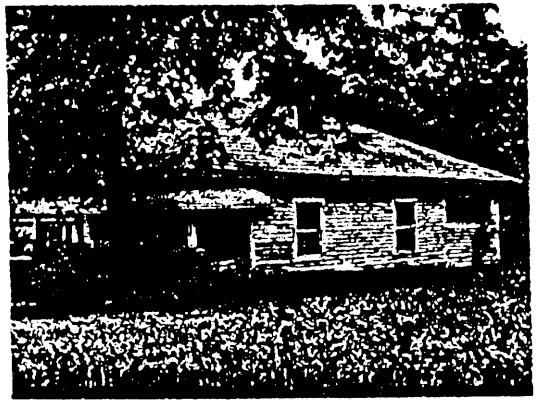
FOURSQUARE

MASSING

- One- to One-and a-half story
- Two rooms deep with center hall
- 1,200 – 1,600 square feet

ROOF

- High hipped
- Plain, or Triple 'A' with dormer
- Porch roof –hipped or recessed



CRAFTSMAN

MASSING

- One- to One-and a-half story
- Two or three rooms deep
- Center hall or modified L-plan
- 1,200 – 1,800 square feet

ROOF

- Front gable
- Side gable with dormer(s)
- Porch roof –shed and integrated with main roof or recessed

EXTERIOR MATERIALS

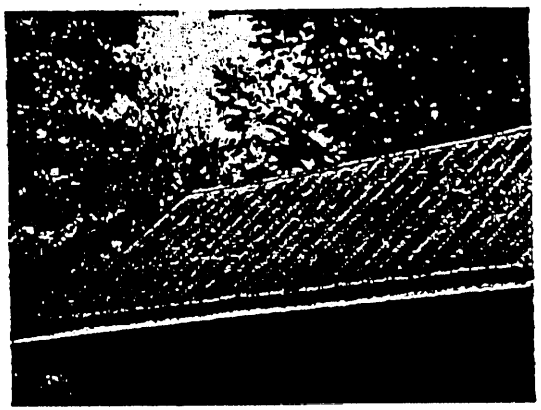
MILL HOUSE: ONE-STORY

WALLS

- Lapped siding with 4 - 5-inch reveal
- Plain trim boards, 4 to 6 inches in width surround doors and windows
- Wood

ROOF

- Moderate overhang (10 – 18 inches)
- Tin or shingle
- Open eave with fascia, but no soffit



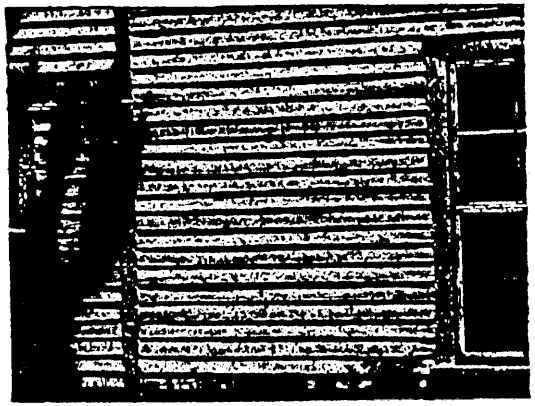
MILL HOUSE: TWO-STORY

WALLS

- Lapped siding with 4 – 5-inch reveal
- Plain boards, 4 to 6 inches in width surround doors and windows
- Wood

ROOF

- Moderate overhang (10- 18 inches)
- Boxed eave
- Tin or shingle



ATTACHMENT B-38

EXTERIOR MATERIALS

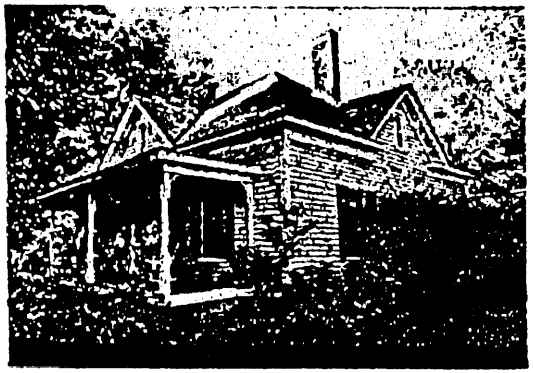
FOURSQUARE

WALLS

- Lapped siding with 4 – 5-inch reveal
- Plain boards, 4 to 6 inches wide surround doors and windows
- Wood

ROOF

- Moderate overhang (10 –18 inches)
- Boxed eave
- Tin or shingle



CRAFTSMAN

WALLS

- Lapped siding with 4 – 5-inch reveal
- Occasionally german siding, novelty board, or brick.
- Plain boards, 4 to 6 inches in width surround doors and windows
- Wood

ROOF

- Wide overhang (24 – 28 inches deep)
- Rafter ends exposed or false rafter ends
- Tin or shingle

FAÇADE TREATMENT

MILL HOUSE: ONE-STORY

FENESTRATION

- Double-hung windows
- Symmetrical, three- or four-bay façade
- One or two front doors centered on façade

PORCH

- Centered on main façade
- At least 80 percent of the length of the façade
- Six to eight feet deep

MILL HOUSE: TWO-STORY

FENESTRATION

- Double-hung windows
- Symmetrical, one window per bay

PORCH

- Porches on I-house same as one-story
- Porches on L-plan are either wrap-around or corner porches at entry
- Six to eight feet deep

FAÇADE TREATMENT

FOURSQUARE

FENESTRATION

- Double-hung windows
- Symmetrical, one window per bay
- Multiple in dormers and occasionally in front

PORCH

- Porches are centered and run about 80 percent of the façade. Entry porches are also found.
- Six to eight feet deep

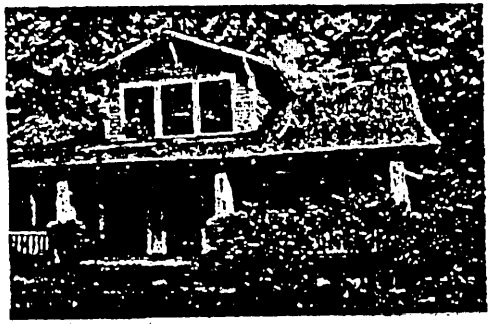
CRAFTSMAN

FENESTRATION

- Double-hung,
- Usually two or more windows per bay,

PORCH

- Continuous porch found on bungalow style. Recessed or hip (centered) on front-gable type. Wraparound also found.
- Porch railings commonly found.
- Six to eight feet deep



ATTACHMENT B-41

FENESTRATION

MILL HOUSE: ONE-STORY

WINDOWS

- Double-hung
- Light pattern, 2/2, 4/4,6/6
- Minimum vertical to horizontal proportion of two to one

DOORS

- Single entry doors
- Multi-paneled, wood
- With or without glazing in upper half of door

MILL HOUSE: TWO-STORY

WINDOWS

- Double-hung
- Light pattern, 2/2, 4/4,6/6
- Minimum vertical to horizontal proportion of two to one

DOORS

- Single entry doors
- Multi-paneled, wood
- With or without glazing in upper half of door

FENESTRATION

FOURSQUARE

WINDOWS

- Double-hung
- Light pattern, 2/2, 4/4,6/6
- Minimum vertical to horizontal proportion of two to one

DOORS

- Single entry doors
- Multi-paneled, wood
- With or without glazing in upper half of door
- Sidelights and transoms

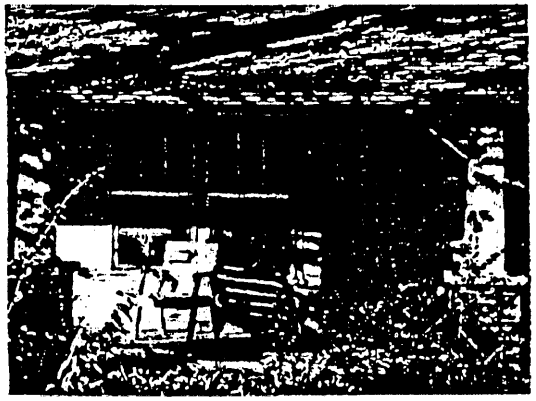
CRAFTSMAN

WINDOWS

- Double-hung
- Light pattern, 3/1, 4/1
- Minimum vertical to horizontal proportion of two to one

DOORS

- Single entry doors
- Multi-paneled, wood
- With or without glazing in upper half of door
- Sidelights



ATTACHMENT B-43

GABLES AND VENTS

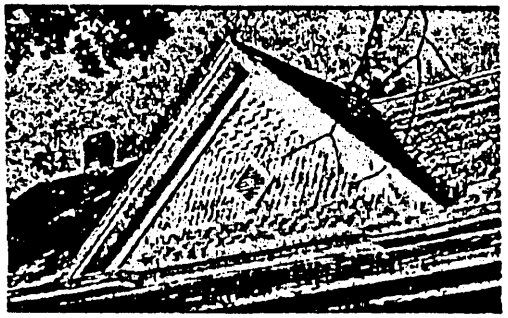
MILL HOUSE: ONE-STORY

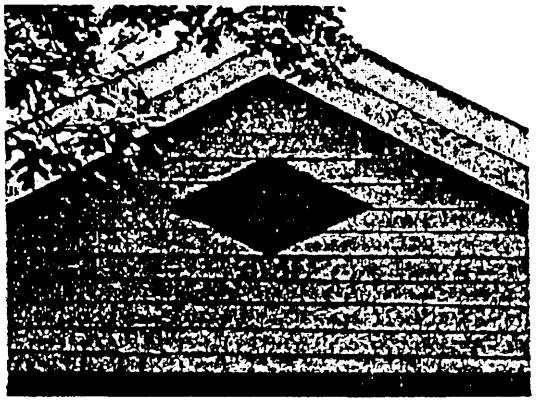
GABLES

- Triple – 'A' or cross gable on main façade, centered above door
- Often decorated with scalloped, sawtooth, or split shakes

VENTS

- Used in triple-A gable or gable ends
- Diamond-shaped
- Horizontal louvers or pinwheel cutout





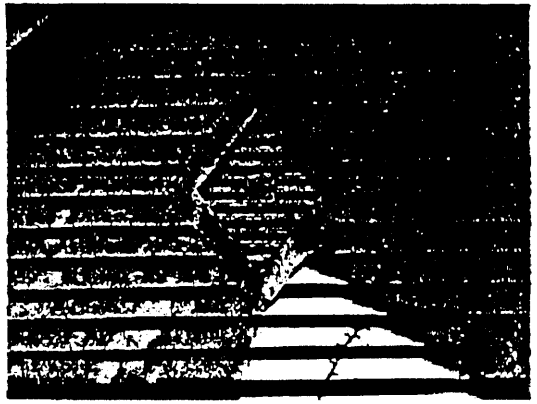
MILL HOUSE: TWO-STORY

GABLES

- Triple – 'A' or cross gable on main façade
- Cross gable often decorated with scalloped, sawtooth, or split shakes

VENTS

- Used in triple-A gable or gable ends
- Diamond-shaped
- Horizontal louvers or pinwheel cutout



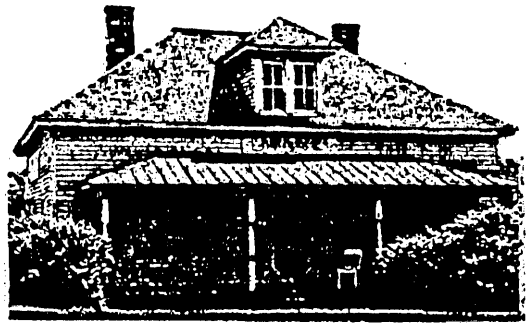
ATTACHMENT B- 44

GABLES AND VENTS

FOURSQUARE

GABLES

- Cross gable on front or side
- Small, functional windows



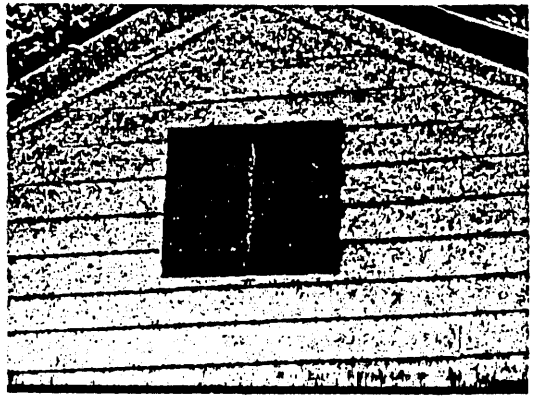
CRAFTSMAN

GABLES

- No true gables but large, projecting dormers typically found

VENTS

- Half-circle, diamond, or square vents with louvers in front gable type.



ATTACHMENT B-45

PORCH TRIM

MILL HOUSE: ONE-STORY

SPANDRELS AND COLUMNS

- Turned spindles with decorative spandrels or chamfered post
- Porch railings

MILL HOUSE: TWO-STORY

SPANDRELS AND COLUMNS

- Turned spindles with decorative spandrels or chamfered post
- Porch railings

ATTACHMENT B- 46 ,

PORCH TRIM

FOURSQUARE

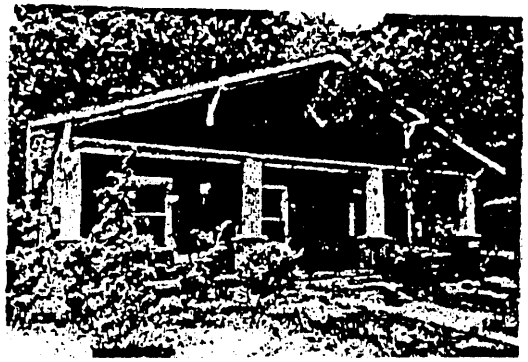
SPANDRELS AND COLUMNS

- Turned spindles with decorative spandrels
- Chamfered posts
- Square or tapered posts on brick piers

CRAFTSMAN

SPANDRELS AND COLUMNS

- Paired box posts on brick plinths
- Chamfered posts
- Square or tapered posts on brick piers

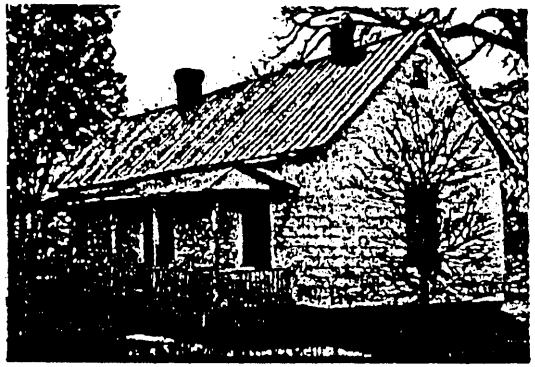


EAVES

MILL HOUSE: ONE-STORY

16" – 18" wide, in two designs:

- Boxed eave with horizontal soffits, frieze board, mitered eave returns on gable end.
- Exposed rafter with visible rafter tails and minimal trim.



MILL HOUSE: TWO-STORY

16" – 18" wide, in two designs:

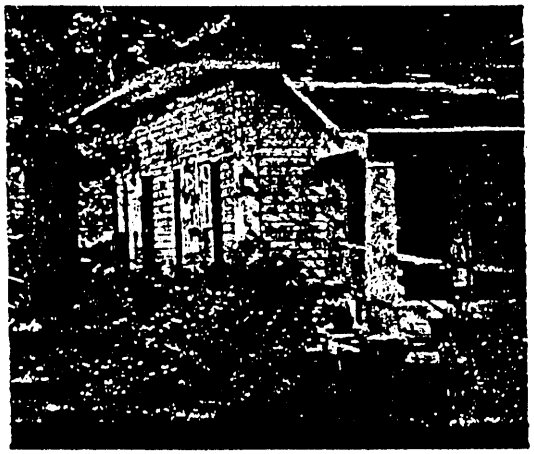
- Boxed eave with horizontal soffits, frieze board, mitered eave returns on gable end.. Contains rake and frieze board
- Exposed rafter with visible rafter tails and minimal trim.

EAVES

FOURSQUARE

18" – 24" overhang

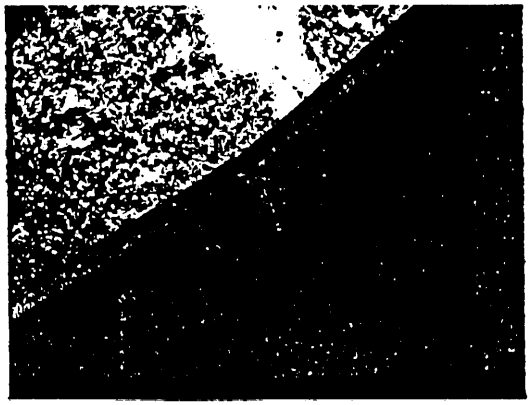
- Boxed eave
- 8" – 10" rake and frieze board



CRAFTSMAN

18" 24" overhang

- Open eaves
- Exposed rafters
- Decorative brackets added under eaves



ATTACHMENT B- 69

1.H. Prohibit land uses and activities which would use large quantities of water; include stringent performance standards.

GOAL 2. PATTERNS OF GROWTH WHICH ALLOW FOR THE EFFICIENT PROVISION OF TOWN SERVICES.

OBJECTIVES:

2.A. Restructure impact fees to reflect true current and future costs of new development to the community, with the exception of assessing impact fees which conflict with Goal 4.

2.B. Investigate and implement various mechanisms for the acquisition of land for the purposes of providing open space, creating trail and bikeway linkages, and preserving environmentally sensitive areas.

2.C. Encourage development in patterns described under Goal 1.

2.D. Begin the process of land acquisition for a fire substation, a public works service center, and other needed public facilities in the Study Area.

GOAL 3. CONSERVATION OF NATURAL AND ENVIRONMENTALLY SENSITIVE AREAS, AND THE PROTECTION OF ENVIRONMENTAL QUALITY.

OBJECTIVES:

3.A. Use conservation overlay zone standards to determine appropriate streamway buffer widths for new development.

3.B. Prohibit development of natural and environmentally sensitive areas through the creation of a resource conservation district or open space conservation district.

3.C. Identify strategies for various types of acquisition or dedication that would protect important natural areas, including Bolin Creek.

3.D. Mitigate potential impacts of development on streams and creeks. (e.g. erosion, sedimentation, pollution)

3.E. Identify Primary Conservation Areas (wetlands, floodplains, & Slopes >25 percent) and Secondary Conservation Areas (mature deciduous woodland, prime farmland in fields, meadows, pastures, wildlife habitats/travel corridors, historic/cultural features, scenic viewsheds from public roads across existing fields/meadows/pastures, etc.).

GOAL 4. A VARIETY OF HOUSING TYPES AND PRICE LEVELS.

OBJECTIVES:

4.A. Explore options for establishing a legal basis for inclusionary zoning.

4.B. Provide strong incentives for new development to dedicate a proportion of new housing units to renters or prospective home buyers in specified income levels.

4.C. Explore community land trust options for the provision of affordable housing.

4.D. Promote village development patterns as described under Goal 1.

4.E. Increase density incentives not only to reduce land cost per dwelling but also to offset additional cost of designing, building, and landscaping new affordable housing so that it looks like a market-rate product rather than a government project. Such housing should be integrated physically into new subdivisions through design standards for building design and for neighborhood layout.

closer to population centers in Carrboro should be considered for accessibility by the physically handicapped.

6.E. CONNECT HOMESTEAD ROAD AT LAKE HOGAN FARMS WITH THE BOLIN CREEK GREENWAY: Implement this connection along a drainage channel or stream bed running through several existing subdivisions, as a long term goal.

6.F. SUBSIDIARY GREENWAY TRAILS: Require developers of new subdivisions to lay out and construct neighborhood trails through their new developments in such a way that they will connect with and extend the Town's more formal greenway network.

6.G. HORACE WILLIAMS TRACT: The Town should aim for more than a small 10-acre park on this large tract by proactively encouraging the owner to think more creatively and to plan to accommodate all the permitted density to be situated east of the creek, where the land is actually much more suitable for development. A defacto density bonus could be offered by agreeing to calculate the density to be transferred from west of the creek to the eastern area on the basis of gross acreage on the western bank, rather than on net developable land. (A realistically drawn "Yield Plan" for the western area would probably show that its actual developability is constrained by the numerous drainage ways that dissect it.)

6.H. EXPERIMENTAL TRAILS: New trails should be designated as "experimental" with a defined period for evaluation and abandonment, in situations where abutters register concern about litter, vandalism and privacy loss.

GOAL 7. CONTINUATION OF CARRBORO'S SMALL-TOWN CHARACTER AND PRESERVATION OF ITS EXISTING NEIGHBORHOODS.

OBJECTIVES:

7.A. Limit potential traffic, noise, lighting, and aesthetic impacts of new development on existing neighborhoods.

7.B. Through the encouragement of cluster development and village-scale development, foster the creation of new pedestrian-scaled neighborhoods to enhance the variety and character of Carrboro's neighborhoods.

GOAL 8. A PEDESTRIAN-SCALE COMMUNITY.

OBJECTIVES:

8.A. Require cluster and traditional-style village development.

8.B. Provide for adequate commercial space such that citizens are able to conduct commercial transactions within walking distance of their homes.

8.C. Provide adequate walkways, sidewalks, and pedestrian networks to enable people to walk to nearby residences, parks, schools, and neighborhood commercial centers.

GOAL 9. CONTINUATION OF THE CHARACTER AND NATURAL BEAUTY OF THE STUDY AREA.

OBJECTIVES:

9.A. Implement objectives identified under Goal 3.

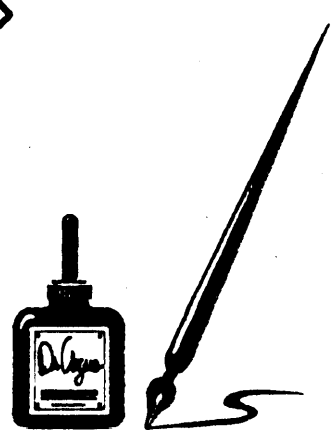
9.B. Preserve important vistas in the Study Area.

9.C. Implement town-wide design guidelines to ensure that new development does not degrade the aesthetic character of the Study Area.

TOWN OF CARRBORO

TOWNWIDE DESIGN GUIDELINES

DRAFT



JUNE 1993

ATTACHMENT C

INTRODUCTION

PURPOSE

The purpose of the TOWNWIDE DESIGN GUIDELINES is to document acceptable elements of design which respect the natural environment and can be voluntarily incorporated into the design of new developments to further enrich the liveability of the town.

APPLICATION

The TOWNWIDE DESIGN GUIDELINES generally apply throughout the town's planning jurisdiction and are supplemented by more specific criteria contained in the town's "Downtown Design Guidelines" and "Neighborhood Preservation District Guidelines". Development within the downtown or neighborhood preservation districts should follow the more specific guidelines tailored to the downtown or neighborhood preservation district.

INTENT

The townwide design guidelines presented in this document are meant to assist citizens, developers, designers, and others by providing answers to the question: "What does Carrboro consider good design?".

The intent of Carrboro's townwide design guidelines is to promote creativity in the design of new development which will complement the existing character of the town. The town welcomes new ideas particularly when aimed toward improving the built environment in harmony with the natural environment.

The townwide design guidelines are also meant to help clarify through illustration and/or example some of the many standards contained in Carrboro,s "Land Use Ordinance".

GENERAL PRINCIPALS FOR DESIGN

Before describing specific design elements a description of what Carrboro wants to be like in the form of community values would be helpful. These values or general principals may help to define what is meant by a liveable community. The town has identified in its "Year 2000 Task Force Report" the following values for development:

*The health and safety of citizens should be protected;

*The natural environment should remain a highly visible feature which enriches the lives of all town citizens, and the developed environment should be an attractive one;

*As much as possible, Carrboro's small-town character should be preserved; and the town should respond to citizen's initiatives for preserving that character;

*The community should remain a diverse one which welcomes and includes people of all races, ages, and social and

economic backgrounds;

*Growth should occur in a balanced fashion, and at a rate that can be assimilated by the community without jeopardizing the values as outlined;

*The interest of all members of the community, including property owners, neighbors, and other interested citizens, should be considered in making development decisions.

IMPLEMENTATION

Carrboro's Townwide Design Guidelines are meant to serve as a resource document by illustrating and providing an explanation of design features which are important to the Town. The design features may be implemented through voluntary compliance by the development community, through incorporation into Carrboro's Land Use Ordinance, and by modifications to associated site design policies. As such this document should be implemented as a guide or resource document to stimulate further action by the Town and its constituency.

TOWNWIDE DESIGN GUIDELINES

This section provides specific townwide design guidelines listed under several broad categories. These categories include: open space, transportation, site design, and architectural features. Carrboro's Townwide Design Guidelines are first described in terms of existing townwide principles followed by a brief definition and list of desired design elements. In some cases additional ideas or design options are provided to provoke variation in design.

PARKS AND OPEN SPACE

A variety of active and passive recreational opportunities supported by preserved open spaces are essential components to providing the quality of life needed by Carrboro's diverse population.

Open Space

Principles
The town discourages development that results in unnecessary clearing of wooded areas, and encourages the use of reasonable methods and approaches to development, including those that cause the least destruction of woodland and other natural vegetation. In particular, the town encourages the use of wooded buffers and preservation of natural vegetation as a means of ensuring a sensitivity to the blending of both the natural and developed environment.

The town encourages developers of new residential areas to set aside and dedicate areas that have potential for passive recreation and open space.

The town desires where appropriate, that a portion of the land on which new commercial development occurs be left in its natural condition or improved with landscaping using existing or introduced vegetation.

Definitions
Open Space means an area that:
1) Is not encumbered with any substantial structure;
2) Is not devoted to use as a roadway, parking area, sidewalk, or waste disposal field;
3) Is left in its natural or undisturbed state (except for access amenities, landscaping, and passive recreation facilities;
4) Can be used for passive recreation;
5) Is legally and practicably accessible to residents of the development from which it was derived.

Design Elements
1) Wooded areas should be left as open space;
2) Special vistas or viewways should be retained as open space;
3) Areas along streams classified by the Town's Land Use Ordinance as stream buffers should be designated as open space;

4) Environmentally sensitive areas identified by the Town or areas along hill sides with slopes grater than 15% should be identified as open space;

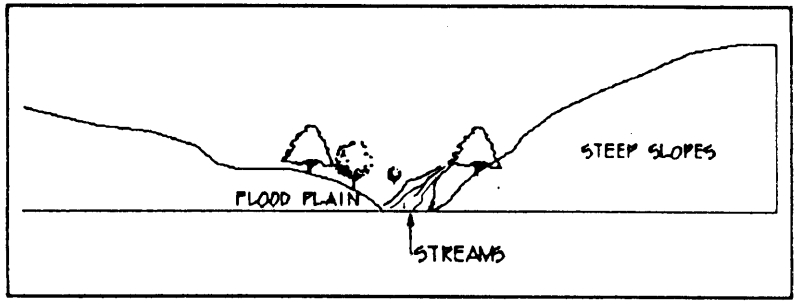


Figure 1 Open Space

5) Areas selected to buffer adjoining developments should be retained as open space.

GREENWAYS

Principles

The Town encourages the development of greenways or linear parks along major streams and the dedication of easements for public use. These areas should be preserved as much as possible in their natural state.

Definitions
Greenways are linear parks which provide trails for pedestrians, joggers, and bicyclists; and connect residential areas, parks, and other places of interest.

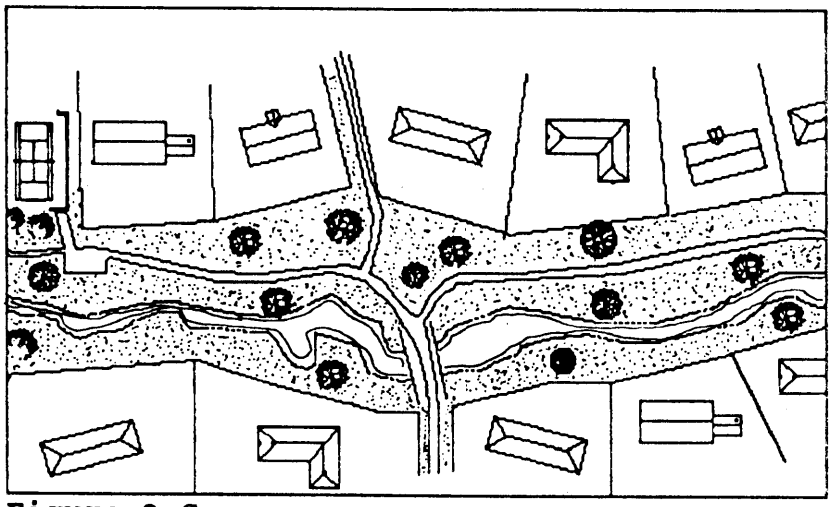


Figure 2 Greenways

Design Elements

1) Along major streams greenways should follow a minimum desired width of 50 feet on either side of the stream bank (the two major streams are Bolin Creek and Morgan Creek);
2) Along smaller streams greenways should follow a minimum desired width of 50 feet from the stream bank along one side of the stream;
3) Over a power or gas utility easement greenways should follow a desired width which coincides with the easement width;
4) Where greenways consist simply of a path to complete the network or to make an essential connection and do not follow natural features such as creeks the desired width is 50 feet.
5) Where the greenway's path is adjacent to

a unique environmental characteristic the width may be expanded to include the feature for greenway enhancement or environmental preservation. Examples of unique features are swampy areas, steep slopes, or scenic vistas.

Options
1) Provide throughout the Town common green spaces at least an acre and a half in size surrounded by older trees, walls, and/or buildings but not roads. As a part of the common green area provide a partially enclosed space such as a roofed area supported by columns without walls, or a public outdoor room placed adjacent to the intersection of pathways where neighbors can meet on occasion. These smaller areas can be improved with benches, a fountain, or a trellis.

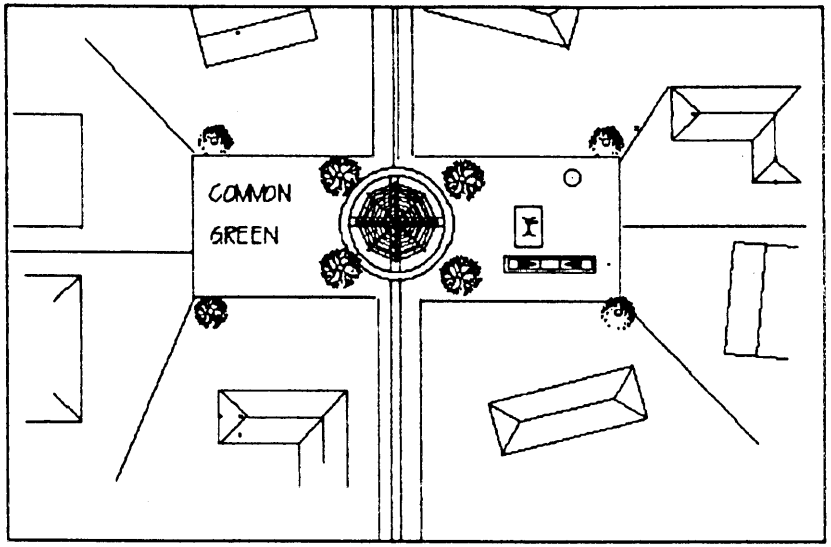


Figure 3 Common Green

2) In the common green space provide multi-purpose fields where children and young adults can play ball, etc.;
3) Link common green spaces with pedestrian and bikepaths located within the greenway system.

PARKS AND RECREATION AREAS

Principles
The Town should continue to maintain and expand the facilities of a single large community park, the Carrboro Community Park. The Town should establish a plan for land acquisition for smaller neighborhood parks and recreation space in addition to that required for development.

ATTACHMENT C-6

To support the Neighborhood Parks Plan the Town should supplement the developers' fee-in-lieu funds to provide better equipped and maintained parks.

The Town should maintain the current level of recreation programming with an appropriate fee recovery for adult programs and continue; insofar as possible, the non-recovery plan for youth programs.

Definitions
Park and recreation areas include facilities designed primarily to accommodate active rather than passive recreational activities.

DESIGN ELEMENTS
1) The different types or categories of park are defined by the following "Carrboro Park Facility Standards and Classification":

Park Type and Use	Service Area	Acres/1,000 Population	Typical Area
Urban or Mini-Park: Specialized facilities that serve specific groups or associated with downtown amenities.	Less than ¼ mile radius	Variable. Dependent upon need and circumstance.	Serve high density residential areas: playgrounds: passive open areas in downtown for sitting, reading, socializing.
Neighborhood Park: Area for intense recreation activity such as field games, crafts, playground apparatus, picnicking, ballfields, picnicking with lighted facilities/some parking.	½ mile radius	2 acres	Suited for intense development: ideal for school/park complex: recreation center/pool/sports and court complexes. Safe walking and bike access needed. 15+ acres is desirable.
Community Park: Area Providing wide array for active facilities such as athletic complexes, pools, centers. May be area of natural quality for outdoor walking, picnicking, and any combination of the above.	1 to 3 mile radius	8 acres	May include natural features, such as water bodies and suited for intense development. 25+ acres is desirable.
Linear Park: Area developed for one or more varying modes of recreational travel, such as hiking, biking, canoeing, etc. May include active play areas. Any of the above activities listed for other park types may occur in the linear park.	No Applicable standard.	Sufficient size to protect the park and provide maximum use.	Built on natural corridors, such as creeks and streams, bluff lines, and roads that should, for the most part link other components of the recreation system or other community facilities (schools, libraries, etc.)

2) Private park sites required as part of a land use permit or public park sites should contain a sufficient amount of relatively flat land (slopes of 5% or less) to accommodate active recreational facilities.
3) Parks should be centrally located in relation to its intended service area.
4) Park sites should be safe from traffic and other hazards.
5) Park sites should be well drained.
6) Park sites should be located on tracts of no less than ¼ acre.
7) Adopt land use features to the terrain

instead of altering the terrain to suite the use.
8) Blend manmade features with existing features.
9) Consider sun orientation and climatic conditions when locating facilities.
10) Consider including public safety features such as emergency telephones and adequate lighting.
11) Park activity areas should be located so as not to disrupt adjacent residential uses with glare from lighting or noise generated by certain recreational events.

Options
1) Open play fields - Scatter places for team and individual sports throughout the community and make them visible to the passers-by as an invitation to participate.
2) Play areas - Set up a relatively unfinished playground area equipped with raw materials such as boxes, trees, barrels, frames, grass and water where children can create and recreate their own playground.
3) Backyard play - Connect common land around clusters of at least 64 houses where no roads cross and where children are free to play.

TRANSPORTATION

Provide for the adequate flow of bus, auto, bicycle, and pedestrian movement within and around town.

STREETS

Principles

-The town's intent is to be very selective in its choice of widening existing roads and may consider widening existing roads only after all other alternatives have been fully explored and in a manner which will maintain and protect existing neighborhoods.
-New streets provided as part of new development should interconnect new neighborhoods with existing neighborhoods so as to disperse traffic over a more extensive and integrated roadway system.

Definitions
Existing and new streets are defined accordingly:
(1) Arterial: A major street in the town's street system that serves as an avenue for the circulation of traffic into, out, or around the town and carries high volumes of traffic. The following streets are arterial streets:

Culbreth Road	Main Street
Dairyland Road	Merritt Mill Road
Damascus Church Road	N.C. Hwy 54
Estes Drive	Old Greensboro Rd
Eubanks Road	Old Hwy 86
Greensboro St	Old Fay'ville Rd.
Hillsborough Road	Rogers Road
Homestead Road	Smith Level Road
Jones Ferry Road	Weaver Street

(2) Marginal Access Street: A street that is parallel to and adjacent to an arterial street and that is designed to provide access to abutting properties so that these properties are somewhat sheltered from the effects of the through traffic on the arterial street and so that the flow of traffic on the

arterial street is not impeded by direct driveway access from a large number of abutting properties.
(3) Collector: A street whose principle function is to carry traffic between minor, local, and subcollector streets and arterial streets but that may also provide direct access to abutting properties. It serves or is designed to serve, directly or indirectly, more than one hundred dwelling units and is designed to be used or is used to carry more than eight hundred trips per day.
(4) Subcollector: A street whose principal function is to provide access to abutting properties but is also designed to be used or is used to connect minor and local streets with collector or arterial streets. Including residences indirectly served through connecting streets, it serves or is designed to serve at least twenty-six but not more than one hundred dwelling units and is expected to or does handle between two hundred and eight hundred trips per day.
(5) Local: A street whose sole function is to provide access to abutting properties. It serves or is designed to serve at least ten but not more than twenty-five dwelling units and is expected to or does handle between seventy-five and two hundred trips per day.
(6) Minor: A street whose sole function is to provide access to abutting properties. It serves or is designed to serve not more than nine dwelling units and is expected to or does handle up to seventy- five trips per day.
(7) Cul-de-sac: A street that terminates in a vehicular turn-around.

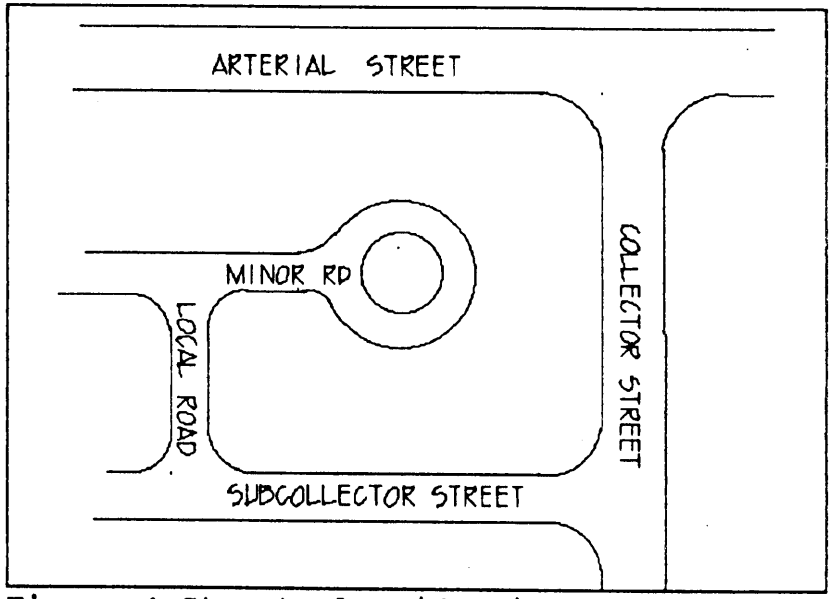


Figure 4 Street Classifaction

Design Elements
General Design Elements
-Avoid steep grades in excess of 8% slope (An 8' vertical changes over every 100' in horizontal distance).
-When constructing street in hilly areas place them more or less parallel with contours.
-Avoid unnecessary stream crossings.
-Provide roadway designs that to the greatest extent possible reduces negative environmental impacts and promotes the retention of existing trees outside of roadway shoulders or within wide medians.

-Major developments (over 25 units) should provide for at least two points of access.
-Residential streets should be designed to discourage excessive speeds by including curves, changes in alignment, short lengths, keep street widths to a minimum within the town's functional classification system.
-Design street to accommodate the efficient delivery of community services such as fire, sanitation, and police.
-Street systems should be configured so as to include utility easements, particularly sanitary sewer and drainage easements and thereby reduce an excessive number of easements.
-Consider the efficient delivery of transit services as part of the street system design.
-Keep the number of 4-way intersections to a minimum and encourage "T" intersections.
-Streets should be well constructed to minimize maintenance, repair, and resurfacing cost to the general public.
-Minimize points of pedestrian, bike, and motorized vehicle conflict.
-Street intersection designs should accommodate pedestrian crossings so as to minimize travel distance across the roadway.
-All street designs should incorporate the Americans with Disabilities Act (ADA) requirements.
-Discourage through traffic on residential streets.
-Subcollector, local, and minor streets should be designed for low traffic use while collectors and arterials should be designed to accommodate peak traffic demands.
-The number of access points and/or driveways should be kept to a minimum along arterial and collector streets.
-Parking associated with housing should be provided for on private property off of the street in driveways, carports, garages, or in parking lots for multi-family developments.
-On-street parking for visitors should be considered in designing local, minor, and subcollector streets but should not be considered or allowed on collector and arterial streets.
-Alleys constructed to provide rear year service may be an effective alternative to providing numerous driveway cuts.
-Driveway access should be at least 250' away from the intersection of existing or planned arterial roads.

Specific Design Elements
-Street cross sections should be designed according to the intended function of the street.
1)Arterial cross sections will vary according to projected traffic flow analysis and will be determined through the thoroughfare planning and transportation improvement program process. The following cross sections provide examples of roadways approved in the recent past:

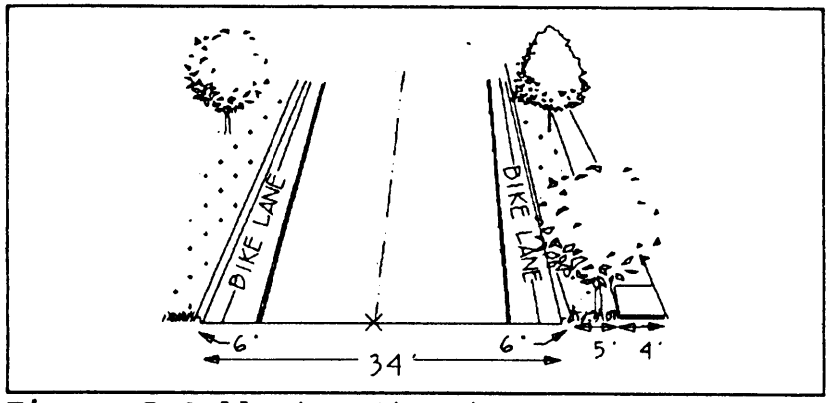


Figure 5 Collector Street

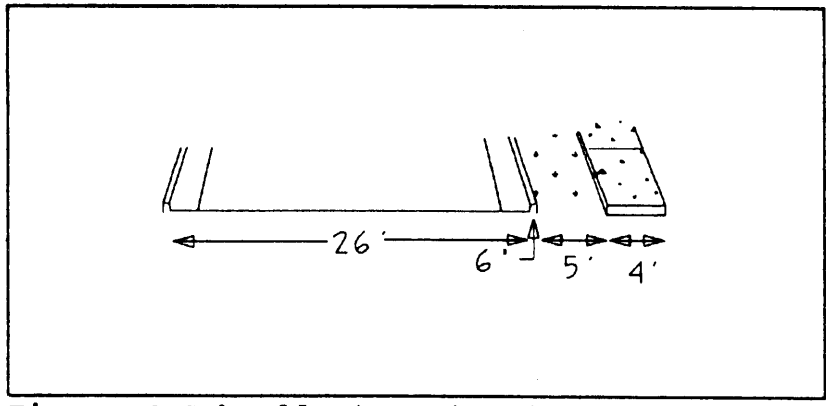


Figure 6 Subcollector Street

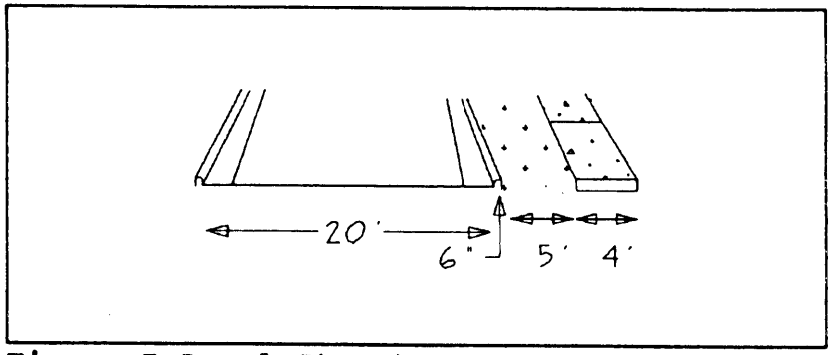


Figure 7 Local Street

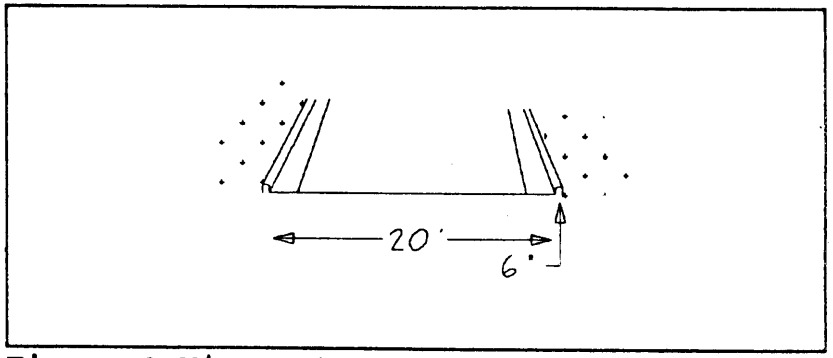


Figure 8 Minor Street

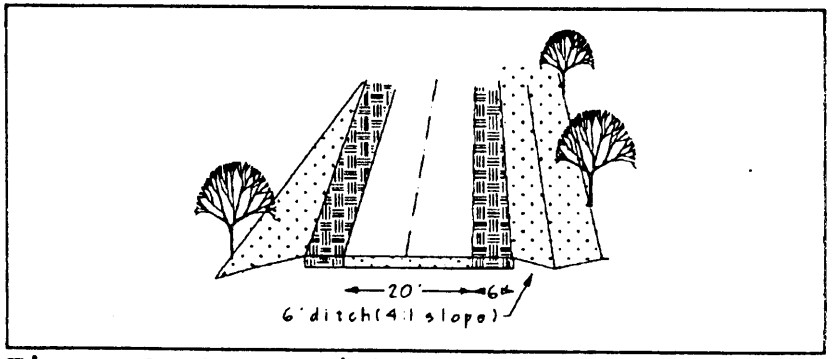


Figure 9 Street With a Swale & Shoulder

Street Grades

The grade refers to the steepness of street as it travels over the land. For example a 1% grade would be a one foot vertical rise or fall of a road over a 100' horizontal distance and would be considered flat whereas an 8% grade is consider steep with an 8' change in elevation over 100' and a 12% grade with a 12' change over 100' is considered very steep. The following maximum street grade should be considered as a guide:

	MAXIMUM	DESIRABLE	INTERSECTIONS
Collector	8%	< 7%	≤ 3% within 100'
Subcollector	10%	< 8%	≤ 3% within 100'
Local/Minor	12%	< 8%	≤ 5% within 50'

Minimum grade ½%

Pavement cross slope ¼" per foot

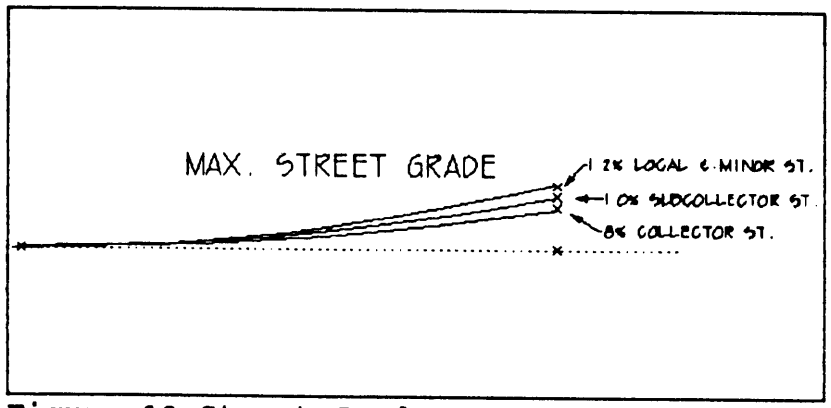


Figure 10 Street Grade

Vertical Alignment

Vertical alignment refers to the length of the vertical curve as the road approaches the top of a hill or sags towards the bottom of a hill. Vertical curve alignments are important for ensuring that drivers can safely negotiate hills and valleys especially driving in adverse weather and at night. If the length from the bottom to the top of a hill is too short then the driver's field of vision over the hill is limited likewise if the road sags abruptly at the bottom of a hill a driver's night time field of vision is limited. Vertical curves should be designed to allow a driver with an eye level of 3¾' to see an object ½ foot above the road surface on a hill or at night while located in the valley approaching a hill to be able to see adequately up the surface of a hill.

Minimum Lengths for Vertical Curves (feet)

	LOCAL ROAD		COLLECTOR ROAD	
% Grade	Crest	Sag	Crest	Sag
3	50	60	85	105
5	75	100	140	175
7	105	140	200	25

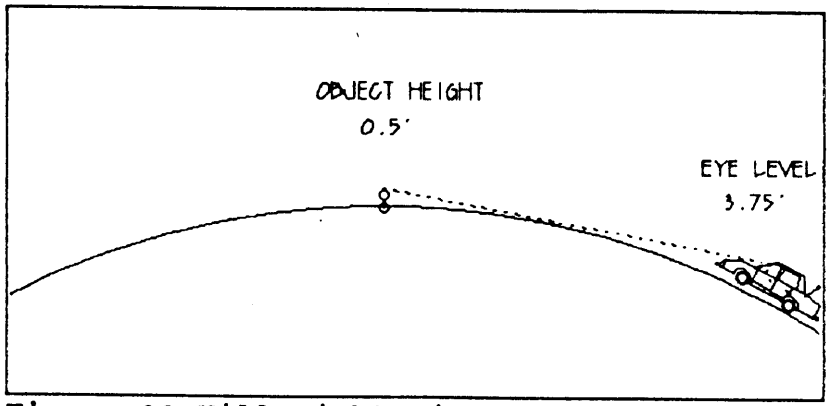


Figure 11 Hill Sight Distance

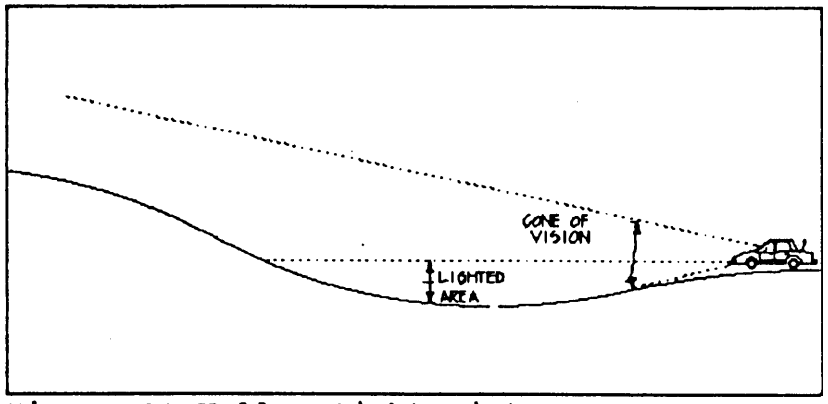


Figure 12 Valley Sight Distance

Horizontal Alignment
Horizontal alignment refers to the length of the radius of a curve measured along the centerline of the road. The shorter the length of the radius the sharper the curve. Residential streets should be designed with horizontal curves that provide the driver with a adequate view of the road so that a vehicle can be safely stopped to avoid collisions in the curve. Since safe stopping distances increase with speed the curve should be increased with higher heirchy roads.
Horizontal Curve (Radius measured in feet from the centerline)

Street	Curve Radius
Collector	300 to 500 feet
Subcollector	150 to 300 feet
Minor/Local	100 to 150 feet

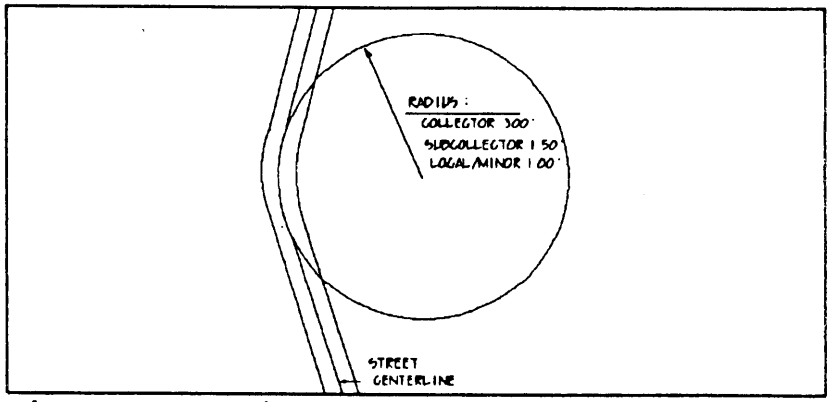


Figure 13 Horizontal Curve

Intersections
Street intersections should be designed to minimize conflict and to provide drivers with an unobstructed view of bike, auto, and pedestrian traffic. Intersections should join at right angles (90°) and should occur where the land is as flat as practical. The number of intersecting streets should be kept to a minimum with no more than four streets intersecting at one location. Where four or more streets intersect, a traffic circle or rotary may provide a solution for providing better traffic management. A rotary should have an inside curb radius of at least 40 feet where four streets meet and 50 feet where five streets meet and 60 feet for 6 intersecting streets.

The spacing of intersecting streets should be far enough apart to prevent "street jogs" which encourage corner cutting and do not allow for safe 90° approaches. Enough

distance should be provided so that traffic stopped to make left turns at one intersection will not interfere with traffic moving through the next intersection. Local and minor street intersections should be separated by a minimum distance of 125 feet from the nearest edge of each street.

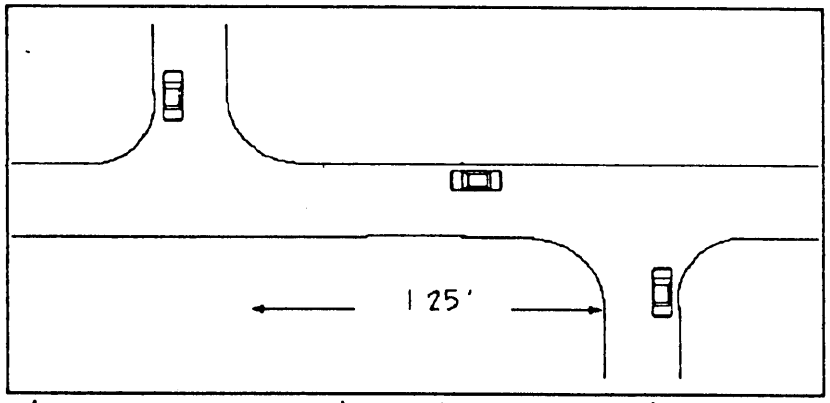


Figure 14 Seperation of Intersections

Collector and subcollector streets should be separated by a distance of at least 250 feet when intersecting along opposite sides and 400 feet on the same side of an intersecting road. Streets along arterials should intersect at least 1000 feet apart.

The "T" intersection provides the highest level of safety and is encouraged for intersecting subcollector, local, and minor streets.

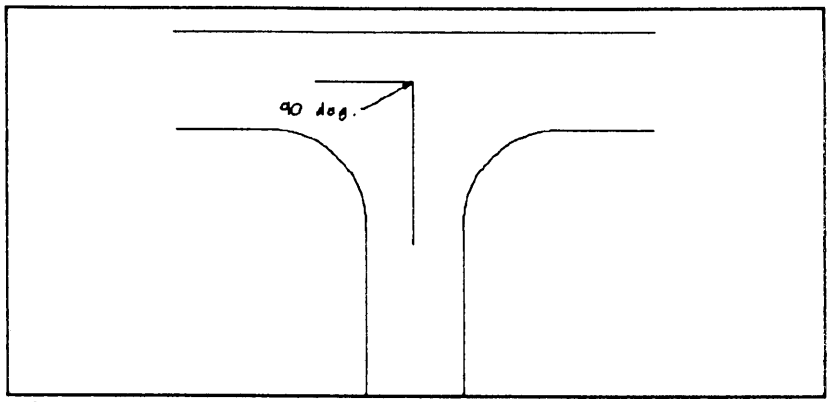


Figure 15 T-Intersection

In cases where streets do not meet at right angles the sharper angles can be altered by realigning a 50-foot section of street at a 90° angle or by providing a landing area using a traffic island. Streets should not be allowed to intersect at angle of less than 60°.

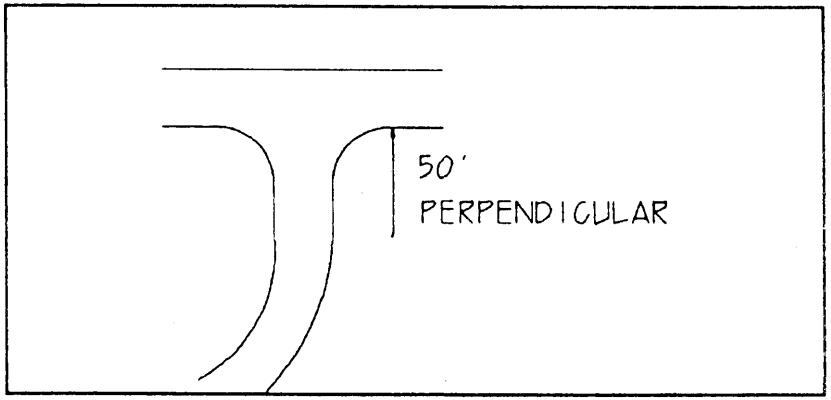


Figure 16 Intersection Realignment

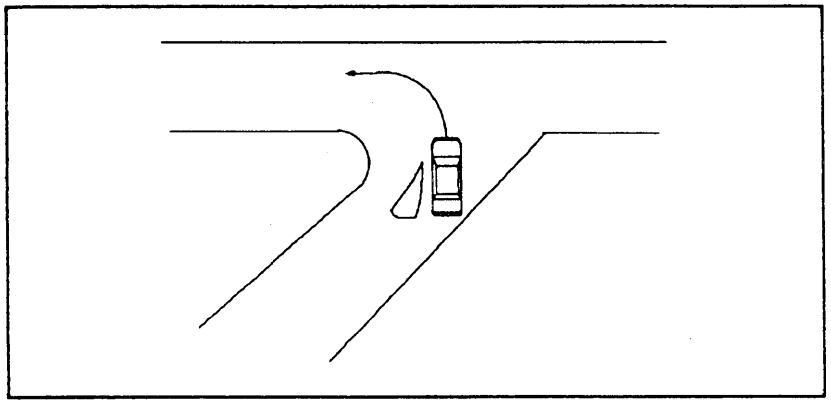


Figure 17 Traffic Island

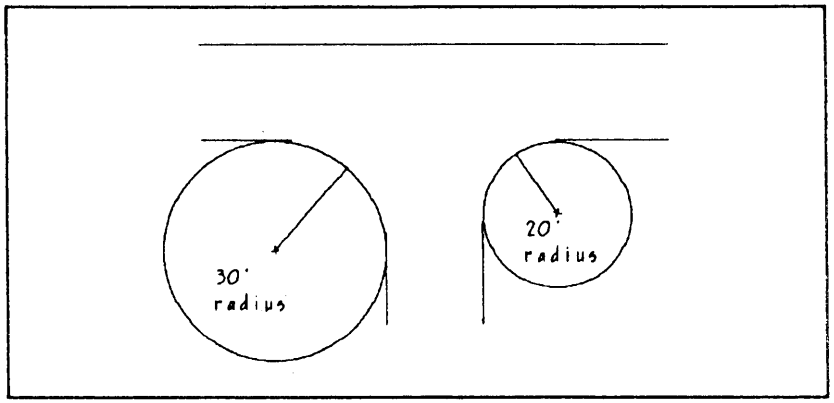


Figure 18 Curb Radius

Curb Radius

A curb radius is the radius of the circle formed by the curve of the curb at the corner. The greater the curb radius the greater the distance between the opposing curbs which make it easier for vehicles to go around the curves and make the distance across the street greater for pedestrians. The curb radius for less traveled subcollector, local, and minor streets should be smaller than the curb radius for more heavily travelled collector and arterial streets. The following curb radii should be employed for the corresponding street classification.

CURB RADIUS (IN FEET)

Intersection Type

Local/Local	Local/Subcollector	Collector
15' to 20'	25' to 30'	25' to 30'

Loop Streets

Loop streets which intersect on and off the same street provides privacy, safety and good traffic circulation. Loop streets can be used effectively for providing direct access to residences without creating numerous driveway cuts along collector and subcollector streets. Loop streets should conform to minor and/or local road standards. Pavement widths should vary according to selected design options including one-way or two-way street designs and/or on-street or off-street parking designs. Landscaping of interior islands is desirable from an aesthetic and privacy point of view provided that they are privately maintained.

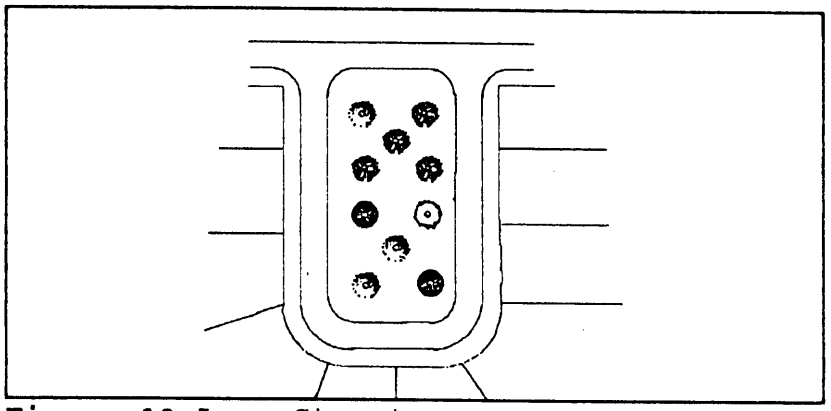


Figure 19 Loop Street

Turn Arounds

Turn around streets are dead end streets which by their nature disallow through traffic. Like loop streets, turn arounds provide privacy and safety for adjoining residential uses. Following are examples of the variety of turn around streets:

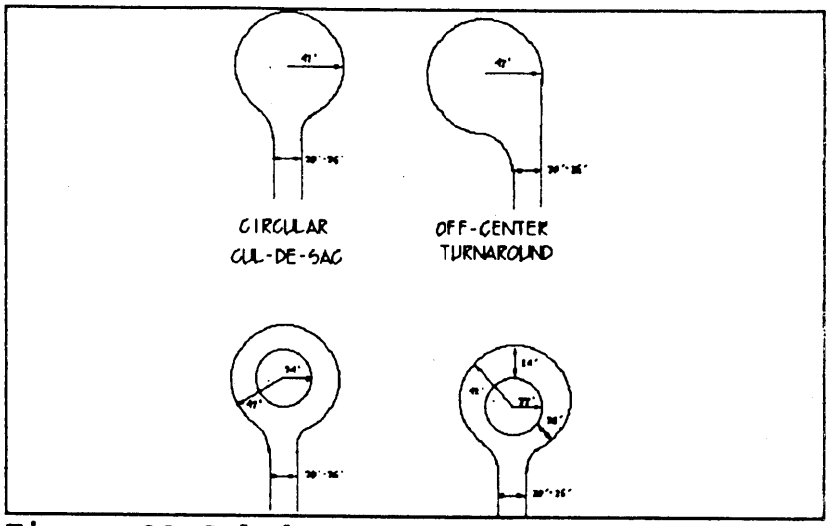


Figure 20 Cul de Sacs

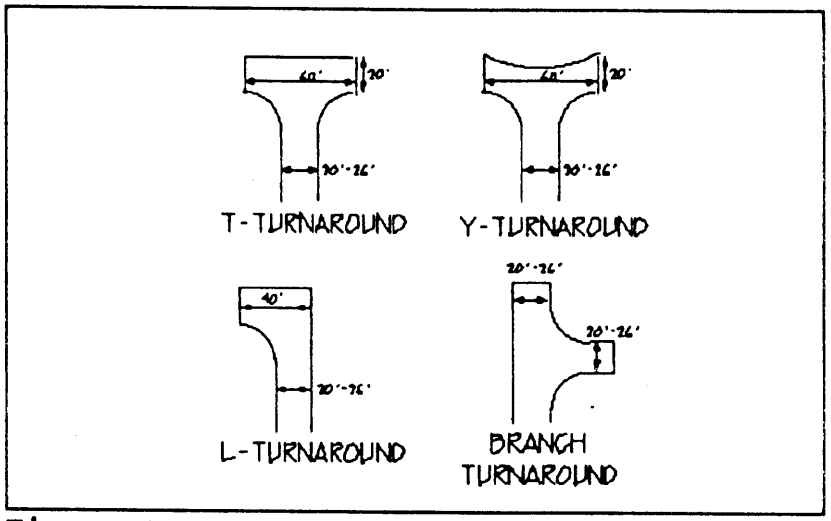


Figure 21 Turnarounds

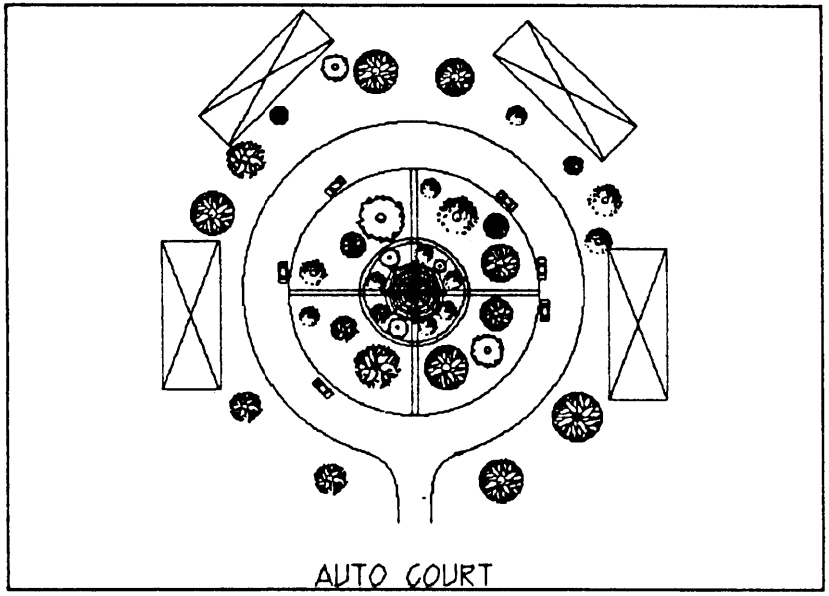


Figure 22 Auto Court

Alleys

Alleys are an effective way of reducing numerous drive cuts onto a street and for providing direct service and access to the rear of the lot. Alleys eliminate driveways across front yards, removes the automobile as a predominate front year feature, and makes the entrance to homes more pedestrian friendly. Alleys also provide good rear yard service access for refuse and garbage pick-up and can accommodate other utility easements such as drainage water, sewer, power, telephone, and cable TV. Alleys are most practical in higher density residential areas with at least three to four units an acre. A right-of-way width of 16 feet with a 12 foot one-way traffic pavement width is adequate. Curb and gutter cross sections need more right-of-way and pavement width and should be discouraged in favor of a 2-inch invert profile which will facilitate drainage needs.

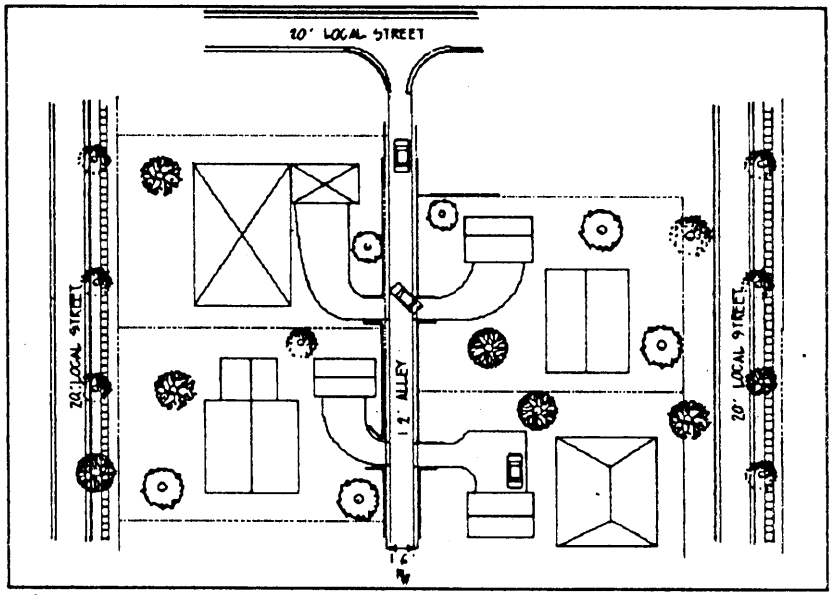


Figure 23 Alley

Streetscape

The appearance of a neighborhood depends to a great extent upon the landscaping provided along the street right-of-way. The streetscape along with the road curvature over hills and valleys, and around curves give definition to the aesthetic character of a neighborhood. The framework for the street scape is also defined by design elements such

as landscaped medians, underground utility placement, lighting fixtures, traffic control signs, wide landscape or grass strips between the road edge and the sidewalk, and the retention of mature trees, especially deciduous trees.

Consideration should be given to the following street scape design elements:
Trees and shrub selection should consider:
-low plat maintenance
-root systems that will not damage sidewalks, pavement, and underground utilities
-plants tolerate to pruning
-adaptability to street environment
-spread of branches should not interfere with vehicle and pedestrian movement
-shrubs should be low growing
-proximity to street lights should be considered for plants that may not grow well due to photosensitivity
-consider amount of leaf and litter produced
-at intersections locate trees and shrubs to provide a clear view with a 2 to 4 foot area above the street
-plant at least 3 feet behind the curb
-Preserve existing trees along rights-of-way, curve around them or create an island that divides the street into one way pairs

SIDEWALKS

Principles
A major objective of the Town is to provide safe pedestrian access throughout the town limits. Pedestrian access will be improved by creating a system of sidewalks and pathways linking appropriate areas of the community. The town's sidewalk and/or pedestrian path system should be developed as prioritized below:
1. Connect the existing pedestrian system with major community facilities such as schools, town hall, and the downtown;
2. Expand the system to connect high density areas;
3. Connect lower density development with the existing system.

Definitions
Sidewalk - A paved surfaced, or leveled area (at least 4 feet wide) paralleling and usually separated from the street, used as a pedestrian walkway.
Pedestrian Path - A paved or improved surface approximately 5 feet wide located outside of the street right-of-way that generally runs perpendicular to the street, winding through neighborhoods and/or within greenways.

Design Element
1. Sidewalks should be provided at least along one side of public streets except for minor streets serving nine (9) or less housing units.
2. Curb and gutter should be used along streets with sidewalks to provide separation from the roadway edge, to discourage parking on sidewalks, to provide for proper drainage, and to introduced a barrier from automobile traffic.
3. A 3 to 5 foot wide grass strip or boulevard should be provided between the curb and the sidewalk to (1) increase the distance or

safety factor between automobiles and pedestrian, (2) to provide an adequate space for planting small deciduous trees between the road and sidewalk which will provide shade in the summer for the pedestrian and bicyclist, (3) to provide a sloped transition area for driveway access to the public street, and (4) a wider boulevard brings the sidewalk in from the turn radius of an intersection and decreases the crosswalk distance by 25 to 30% of the distance for a sidewalk constructed directly behind the curb.

4. Curb cuts with ramps and warning surfaces for the blind should be provided at intersections in accordance with the American with Disabilities Act requirements.

5. Bend and/or meander a pedestrian path or sidewalk to add variation and in some cases to avoid the removal of existing trees.

6. Parking, particularly in high traffic volume areas, may serve as an additional barrier and measure of safety.

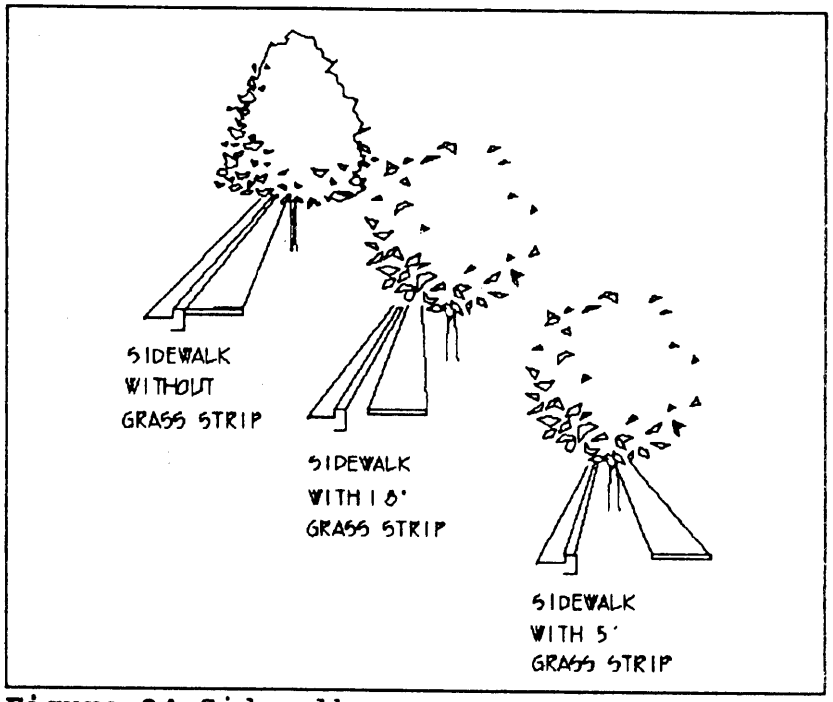


Figure 24 Sidewalk

BIKEWAYS

Principles

An extensive bikeway system encourages the use of bicycles as a major mode of transportation which reduces traffic congestion, pollution, and the demand for automobile parking lots. The Town's bikeway system should be developed as prioritized below:

1. Connect the existing bikeway system with major community facilities such as schools, town hall, and the downtown, as well as providing access to important points outside

the town such as the University of North Carolina;
2. The system should connect relatively high density residential developments with primary destination points;
3. The bikeway system should be designed to reduce points of conflict among bicycles, automobiles, and pedestrians;
4. The bikeway system should be extended to connect the Town's lower density residential neighborhoods.

Definitions
Bikeway - An all-weather surfaced facility designed to carry bicycle traffic and includes both bikelanes and bikepaths.
Bikelanes - Lanes painted on the street surface designated exclusively for bicycle traffic with a general width of five to six feet measured from the face of the curb toward the street centerline.
Bikepaths - Separate off road facilities designated for bicycle traffic with a minimum width of 8 feet plus 2 footwide shoulders on each side.

Design Elements
1. Bikelanes should be constructed on all new or upgraded arterial and collector streets;
2. Bikepaths should be provided along with pedestrian paths as part of the Town's greenway system;
3. Bikepaths should be provided to avoid areas with high bike/automobile conflict;
4. Bikeways should have a smooth surface, free of bumps and holes and utility covers and drainage grates should be at grade and outside of the main travelway if possible.
5. Bikeways should be designed to comply with the "Guide for the Development of Bicycle Facilities", August 1991 by the American Association of State Highway and Transportation Official (AASHTO).
6. Employers are encouraged to provide shower and locker facilities for their employees to encourage biking to and from work.

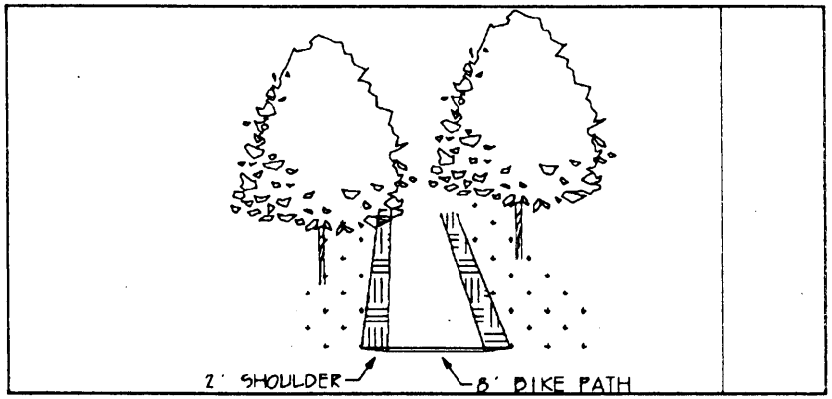


Figure 25 Bikepath

TRANSIT

Principles
The bus system provides a necessary service and should be continued at its present level in order to encourage non-auto travel and to reduce congestion on existing roads. The Town should continue to locate new higher density development near bus routes to facilitate the use of the system by the greatest number of people.

Definition
Transit includes public transportation services such as bus or fixed routes, E-Z Rider services for the handicapped, and Shared-Ride taxi service. Design considerations pertain to fixed route services since the E-Z Rider and Shared Ride services do not necessarily depend on fixed boarding and alighting locations.

Design Elements
1. Bus "pull-offs" should be provided for heavily used bus stops usually servicing larger (50 or more units) multi-family or densely developed single family or townhouse developments located off of arterial streets without adequate pull-off room.
2. Bus pull-off should be provided on the right-hand side of intersecting streets.

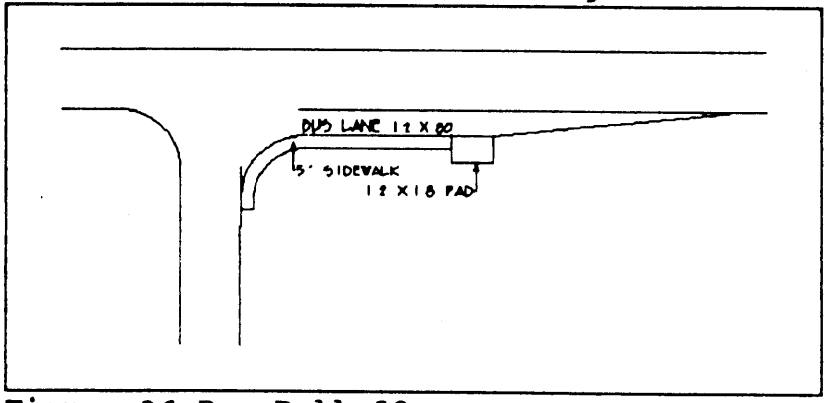


Figure 26 Bus Pulloff

3. Streets serving the fixed route system should allow for the free flow of traffic to allow buses to operate within scheduled.

4. Bus shelter should be provided where the right-of-way is available to serve bus stops with relatively high passenger use.

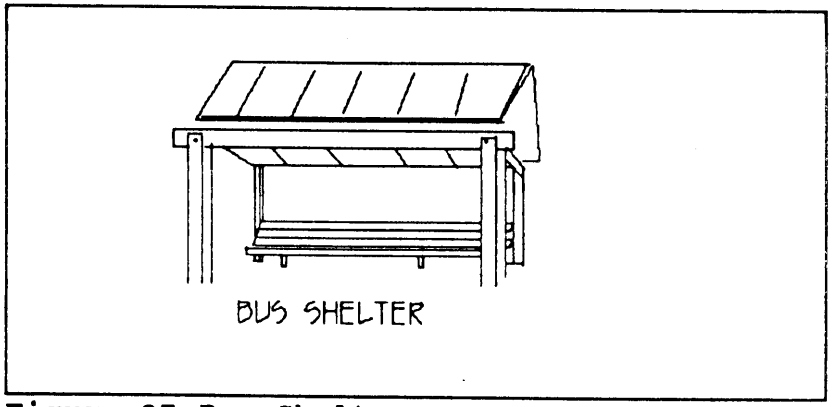


Figure 27 Bus Shelter

5. Benches should be used where the right-of-way is available for bus stops with low passenger use.
6. Bus stops serving high density residential areas or commercial areas should be connected with a sidewalk system.
7. All bus stop improvements should meet ADA standards.
8. Consider an arrangement of activity in association with bus stops such as newspaper stands, special road crossings, tree places, small public squares to form centers of public activity and to create a gateway for the neighborhood.
9. Consider providing public phones and adequate lighting at each bus shelter location.

Parking

Principles
All developments shall provide a sufficient number of parking spaces to accommodate the number of vehicles that ordinarily are likely to be attracted to the development.

Definitions
On-Site Parking - off-street parking accommodated on the same site as the development or use.
Satellite Parking - off-street parking accommodated on an adjacent or nearby site.
On-Street Parking - parking provided on minor, local, and subcollector streets which is usually accommodated by increasing the street width by an additional 8 feet for each side that parking is provided for.

Design Elements
1. Parking associated with housing should be provided for on private property off of the street in driveways, carports, garages, or in parking lots for multi-family developments.
2. On-street parking for visitors should be considered in designing local, minor, and subcollector streets but should not be considered or allowed on collector or arterial streets.
3. Alternative to traditional on-street parking such as the use of loop or "eye brow" streets and auto courts should be considered.
4. Commercial and multi-family residential development should provide bicycle racks or lockers to accommodate bicycle parking needs.

5. Parking lots should be designed to: a) Prevent vehicles from backing out onto a public street. b) Keep parked vehicles from extending beyond the parking area perimeter onto adjacent properties, over sidewalks, into walks, vegetation, etc. c) Complement the existing site conditions such as topography, drainage, and natural amenities. d) Be located behind the building wherever practical. e) Accommodate shade trees internally as well as around the perimeter. f) Provide adequate pedestrian access to buildings and adjacent walkway systems.
6. On-site parking lots should be placed behind buildings on the downhill side of properties and in front of buildings on the uphill side.

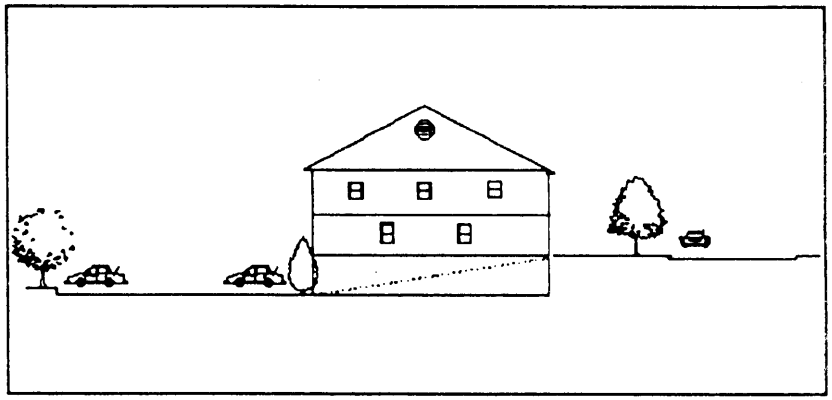


Figure 28 Parking on Downhill Portion of Property

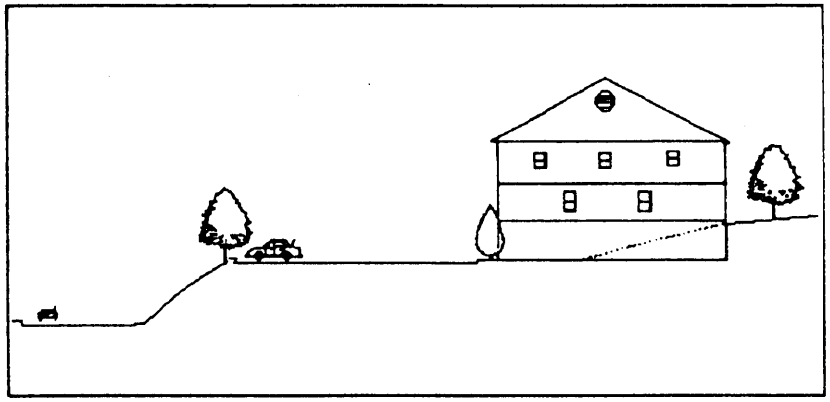


Figure 29 Parking on Uphill Portion of the Property

7. Consideration should be given to parking area that wraps around buildings which reduces the massing of cars and reduces site grading requirements.
8. Flat open area should be selected for parking lots to minimize grading and tree removal.
9. Commercial parking lots should be attractively screened from adjacent residential properties.
10. Paved parking areas must be shaded by deciduous trees which will provide shade for at least 20% of the parking lot.

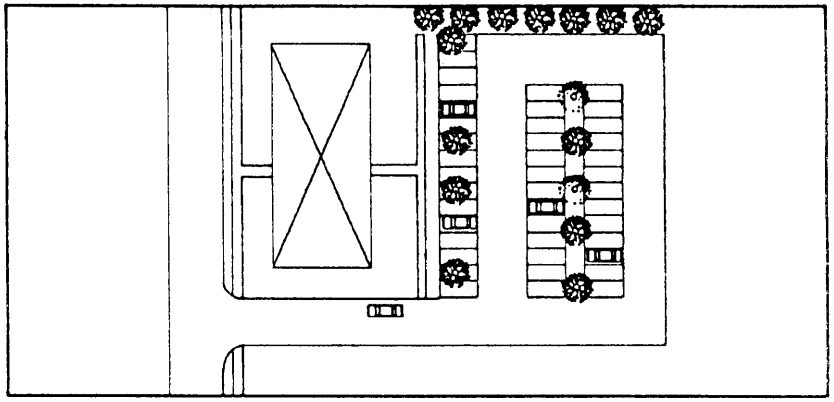


Figure 30 Shaded Parking Lot

11. Large expansive parking lots are discouraged in favor or using landscaping elements, screens, building sites and/or natural areas into smaller sections.
12. The view of parking lots adjacent to street rights-of-way should be obscured by landscaped areas or berms.

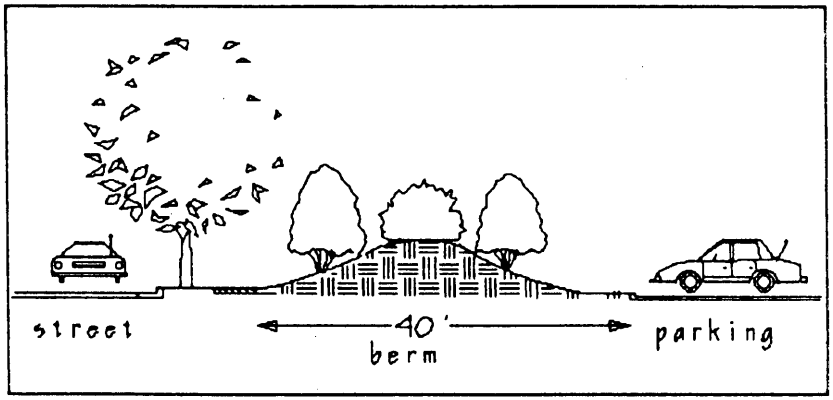


Figure 31 Parking Lot Berm

13. Innovative screening such as portals, porticoes, overhead screens and/or trellises incorporated with vines, trees, and shrubs should be considered in an attempt to break the monotony of parking lot appearance and to add human scale.
14. Parking lot lighting should be arranged to prevent the creation of dark spots or areas between the light patterns produced by each fixture.
15. Relatively low level lighting is preferred over the mast and/or tower lighting fixture in parking lots.
16. Parking lot lighting should be arranged to welcome the patron and create an entranceway to the facility.
17. Parking lot lighting should be designed to produce adequate lighting in concert with the maturity of parking lot shade trees.
18. Solar powered lighting should be considered as a viable source of lighting for parking lots.

SITE DESIGN

Principles
The Town encourages site design which avoids the unnecessary disturbance of land, retains wooded areas, is sensitive to steep slopes, floodplains, watersupply watersheds, wetlands and other environmentally significant areas. Developments throughout town should be consistent with the preservation of a small-town atmosphere, for example, by reflecting policies that limit roads to two lanes, encourages plantings along roads preserves historic areas and buildings, and retains unspoiled greenspaces and other natural resources.

The Town encourages developers to meet with neighboring property owners during the site design process. A meeting with neighboring property owners, early in the site design process, will help define site design components which should make the development proposal more acceptable to the existing neighborhood environment.

Definitions
Site Suitability - The suitability of a parcel of land for development as constrained by its topography and other environmentally sensitive features such as floodplains, drainage areas, wetlands, significant flora and fauna, adjacent land uses, and etc. For the purposes of design, the initial factors to consider in determining site suitability or the potential for building on a parcel of land are represented by the following ranges of suitability:
-Suitable: Land with little or no building restrictions associated with topography having slopes of less than 8 percent.
-Constrained: Land with restricted building conditions requiring site preparation techniques designed to minimize grading and site disturbance. These areas have slopes of 8 to 15 percent.
-Conserved: Land with slopes from 15 to 25 percent where buildings and site preparation can occur but only under severe restrictions requiring customized architectural solutions and specialized site design techniques and

approaches. Building in conserved areas is generally discouraged.
-Preserved: Land with slopes greater than 25 percent which should, if at all possible, remain undisturbed. Buildings proposed for these areas require a detailed "site analysis" of soil conditions, hydrology, bedrock conditions, and other engineering and environmental considerations to determine acceptable building and site engineering techniques. The relatively high cost of building on these locations is generally prohibitive.

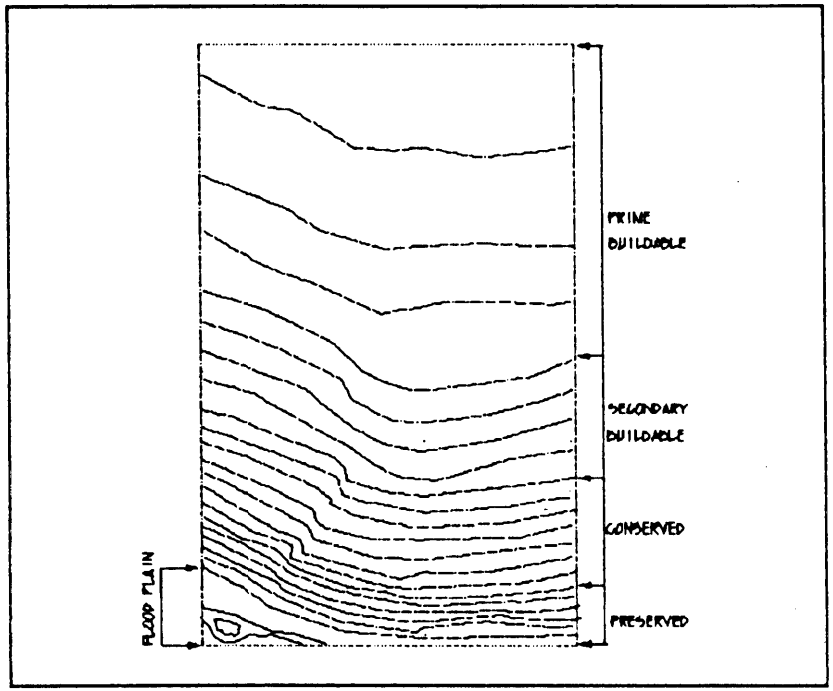


Figure 32 Development Limitations Due to Slope

Slope - The vertical deviation of the land surface over a horizontal distance usually expressed in percent or degrees. Slope percent is computed by dividing the vertical distance by the horizontal distance times one hundred.

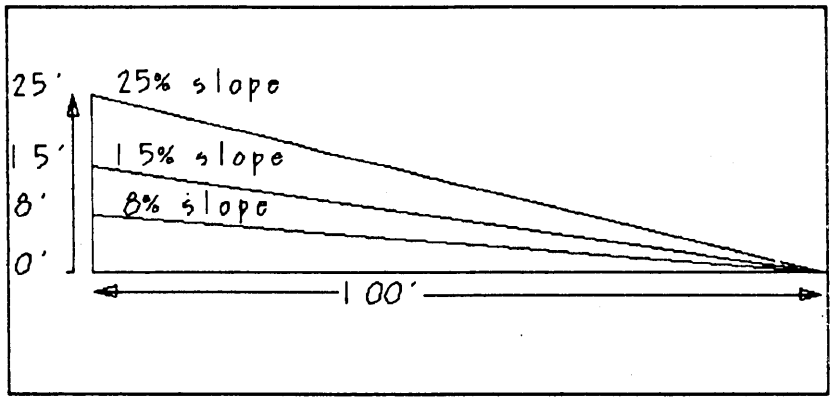


Figure 33 Slope

Grading - The stripping, cutting, filling, or stockpiling of earth or land, including the land in its cut or filled condition, to create new grades.

Design Elements
1. Siting of Buildings
-Buildings, particularly those on wooded or steeply sloped sites, should be carefully situated to take advantage of aesthetic features and views.
-Buildings should create pleasant and special views following the natural morphology of the area.
-Buildings or groups of buildings should be

in harmony with neighboring areas; achieved through careful attention to elements like size, style, form, color, and materials.
-Stepping back (terracing of buildings on hillsides) should follow the slope in order to complement natural contours.
-In hilly terrain, clustering of buildings is encouraged as a strategy for avoiding development on steep slopes and other sensitive natural areas.
-As slope or the steepness of the hill increases, conventional development opportunity decreases.
-Building design should relate to the natural contours of the site and take advantage of natural drainage systems.
-Panoramic views and incorporation of building volumes with the natural morphology of the site suggest using taller and more massive buildings on the higher elevation with lower and less pretentious buildings terracing down the slope.
-Orient buildings on a lot to take advantage of available passive solar energy. For example, a glassed southern exposure with a deciduous tree canopy will provide passive solar heat during the winter and shade for cooling during the summer.
-Consider Building Height/Setback Ratios
The flexibility in designing building setbacks from the internal street system allowed in architecturally integrated subdivisions and in unified development should be considered as a means for creating village-like street settings. The village-like relationship of building heights to street setbacks has been expressed as a ratio of 1:6, meaning that for every foot in building height (from ground to lowest part of the roof) there should be no more than six feet of space in front of the building. For example, the space between two 15 feet high, one story buildings located across the street form one another will result in a 90-foot separation. Since the purpose of the spacing is to create a view of the streetscape, a ratio can also be calculated using the distance between the heights of street trees.
-Locate garages so that they are located to the rear of the house or are entered from the side in order to keep the house as the dominate feature on the lot.

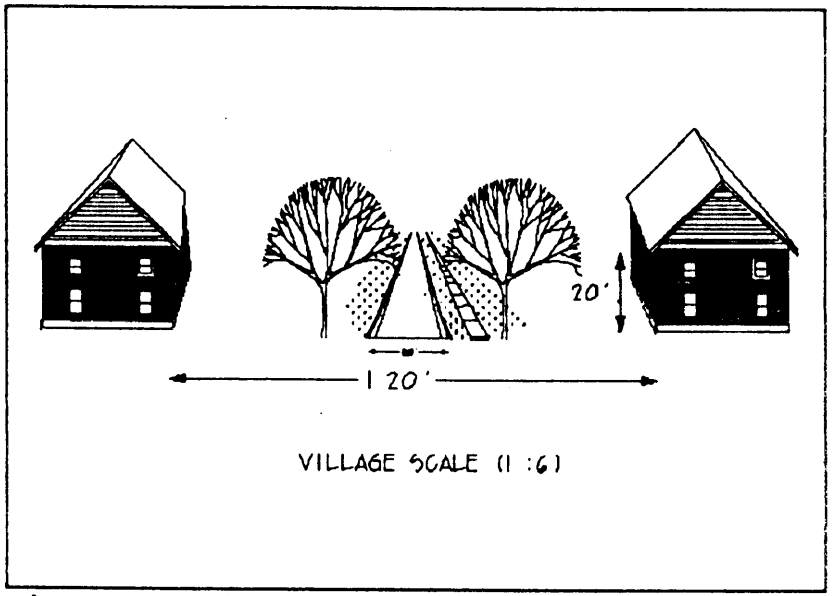


Figure 34 Village Scale

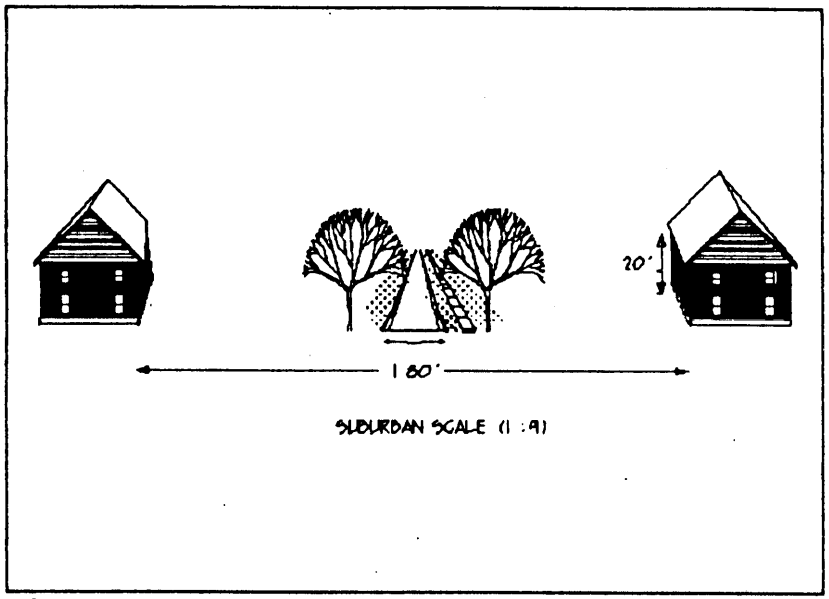


Figure 35 Suburb Scale

2. Grading

-Buildings and landscape structures should be designed in harmony with the existing topography, thereby minimizing land disruption.

-Grading should be held to a minimum and should complement natural forms.

-Developments should fit the capacity of existing topography, natural drainageways, soils, geology and other natural site conditions.

-Grading should blend gently with contours of adjacent properties, with smooth gradations around all proposed cut-and-fill slopes, both horizontally and vertically.

-All sites should be developed according to their natural characteristics. Flat open areas on the site are the most desirable for parking and large building masses, thus minimizing disruption to site contours and vegetation.

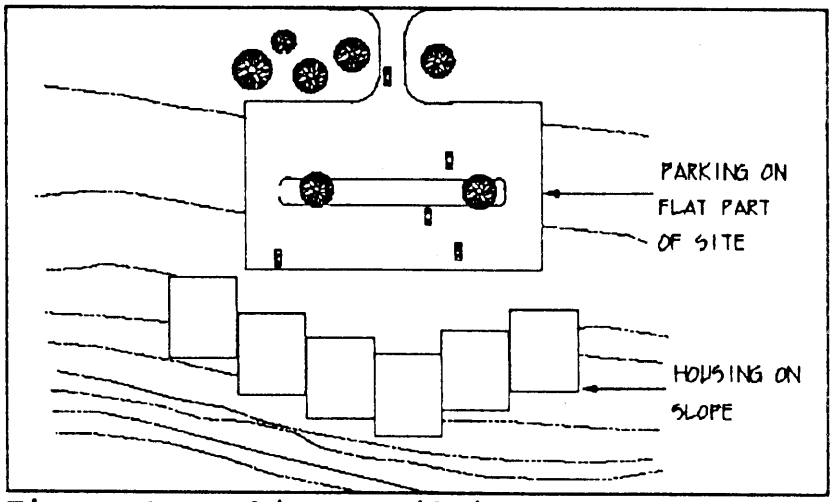


Figure 36 Parking & Building on Flat Open Areas

-Wherever possible, slab-on-grade construction is to be avoided in areas where the slope exceeds 5 percent.

-On sites containing slopes in excess of 12 percent, mass grading approaches are to be avoided. Special architectural applications and specialized building techniques should be primary factors in designs for such sites.

-Buildings should be placed on cut slopes which are in general more stable than fill slopes along hillsides.

-Roadway shoulders should be graded to provide a gentle slope 3:1 or 4:1 needed to

match the adjacent existing grade or lay of the land wherever practical.
-Building sites should be graded to allow stormwater to flow away from the buildings into nearby drainageways or onto street or alley drainage systems.

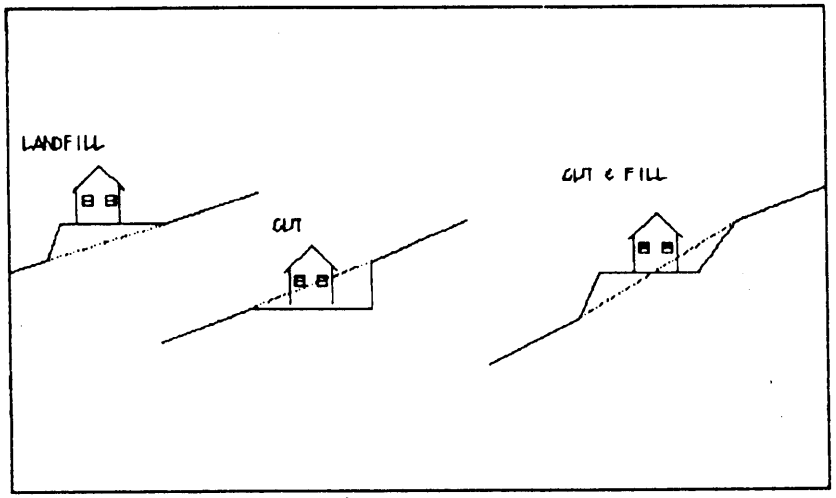


Figure 37 Cut & Fill Slopes

3. Drainage
-Sites should be developed to conform with the natural contours of the land and natural drainageways should remain undisturbed.
-Lot boundaries should be configured to conform with natural drainageways to avoid creating lots that can only be built upon by altering the drainageway.
-Private drainage facilities should be designed to accommodate a 10-year storm.
-Public drainage facilities crossing public streets etc. should be designed to accommodate the 25-year storm.
-Stormwater should be properly managed as defined by the Town's stormwater management policies so that adjacent properties are not unreasonably burdened with surface waters running off of the new development.
-Proper sedimentation and erosion control techniques should be employed as required by current regulations to stabilize the site during and after construction.
-Sites should be designed to protect floodplains and to keep them in their natural condition by creating buffers as required by the Town's Land Use Ordinance along streams and by not proposing any building sites within the buffer areas.

4. Utilities
-Utility lines such as water, sewer, gas, telephone, cable T.V., and electricity shall be placed underground.
-Consideration should be given to the placement of utility vaults within street rights-of-way to consolidate utility lines within one housing, to make lines more accessible for routine maintenance, and to shield or protect lines from tree roots and other natural elements.

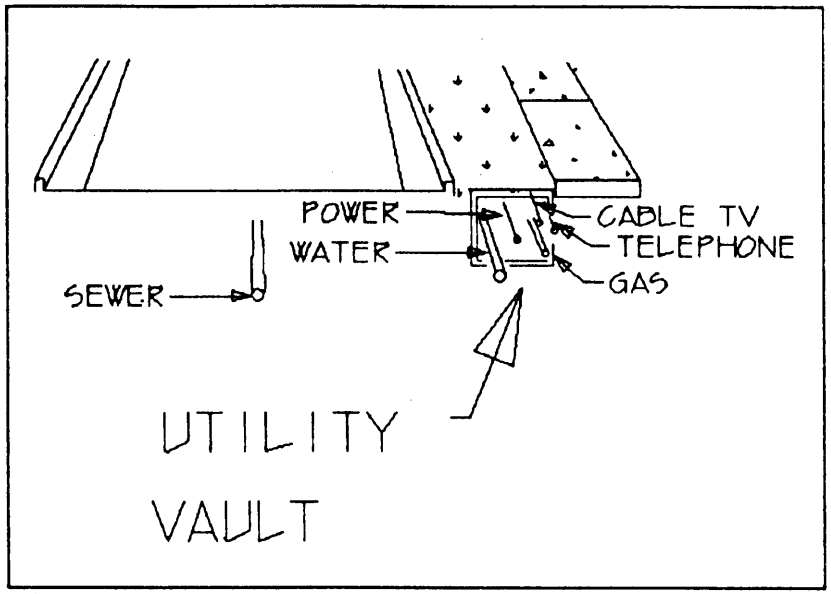


Figure 38 Utility Vault

-Above ground utility apparatus such as transformers, junction boxes, switches, meters, etc. should be standardized in regard to color, shape, and location.
-Utilities should be located within existing street right-of-way and within a confined area on each parcel to reduce the clearing of or possible damage to existing trees.
-Low growing trees within utility easements are encouraged as allowed by the utility companies. Trees, flowers and shrubs can help to enhance the appearance of straight lined, clear cut easements and reduce the domination of the landscape by overhead utilities.
-Developers should provide official site plans in a prominent, public, location such as a kiosk, protected from the elements which clearly shows all utility easements or rights-of-way .
-Easements and rights-of-way should be located on site with signage as approved by the Town as part of the land use permitting or subdivision approval process.
-Landscaping around above ground utility apparatus, such as electrical transformers, should provide adequate room for maintenance by the utility companies (for instance Duke Power Company requires 10 feet of clearance in front of its transformers.)

5. Tree Protection
-As part of the site planning process, an inventory of significant trees should be made especially trees 18 inches or greater in diameter and rare or endangered species trees.
-The site plan should retain existing trees to provide natural areas along the roadway, to shield the view of parking lots, and to add character to individual building sites, to protect natural drainage areas from erosion.
-Individual trees or groups of trees selected to remain on site should be protected during construction by placing a fence or other physical barrier along the dripline of each tree or group of trees. The area within the tree protection barrier should not be disturbed nor should material be stored nor vehicles or equipment parked within the tree protection area.
-Large and rare species trees should be

further protected by wrapping their trunks with sections of "snow fence" or boards wired together from the ground to a height of six feet.

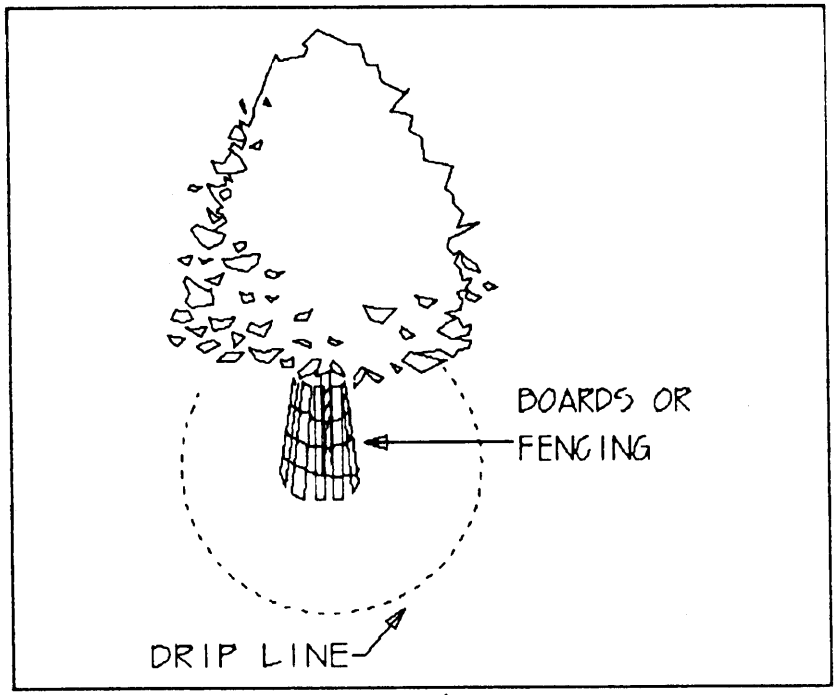


Figure 39 Tree Protection

-Site design features such as sidewalks, bikepaths, roadway medians should be laid out in a manner that will retain existing trees such as constructing a sidewalk around a tree rather than removing the tree.
-When it is necessary to construct within the dripline of a tree, such as the construction of a sidewalk, special techniques should be employed as advised by a professional arborist to minimize damage to the tree's root system.

ARCHITECTURAL CHARACTER

Principles
The Town wishes to retain its small-town atmosphere by encouraging development which is compatible in form, scale, and proportion to neighboring areas. Building design should be harmonically integrated with the natural terrain with minimal disturbance to the natural environment.

Definitions
Proportion is the relationship of elements to one another.
Scale is the relation of a building to a person.
Scale of development - the relationship of a particular project or development in terms of size, height, bulk, intensity, and aesthetics, to its surroundings.
Neighborhood - an area of Town with characteristics that distinguish it from other areas and that may include ethnic or economic characteristics, housing types, schools, or boundaries defined by physical barriers, such as major streets and railroads or natural features such as creeks or rivers.
Small Town Character - a town of neighborhoods interacting with a common sense of community where people frequently come in contact with one another and collectively work for the common good of their town and their neighbors. Neighborhoods and citizens

are usually linked by common community facilities such as a system of smaller two-lane streets, bikeways, walkways, public transportation, community and neighborhood parks, community centers, and libraries.

Design Elements

1. Neighborhood Design

-Emphasis on the human scale is placed on the design, layout, and pattern of the neighborhood.

-Streets are designed to be livable, intimate in scale and encourage slow traffic, walking, and bicycling.

-Communication and neighborliness is facilitated by ensuring a balance between public space and private space by creating places to meet, making streets livable, and by establishing a hierarchy of focal points in the public realm.

-Encourage gateways at major entrances to the neighborhood.

-Use natural features to enhance the neighborhoods' identity.

-Encourage a variety and diversity of housing types, design, and density.

-Incorporate open space planning into each neighborhood which is inviting to neighbors and promotes informal gatherings.

-Provide a focal place for pedestrians such as small neighborhood shopping spaces oriented for pedestrian and bicycle use.

2. Buildings

-The design of the building should take into consideration the existing good architectural character of the surrounding area and the balanced blending of new buildings among the existing architectural environment in order to provide an undisturbed and beautiful setting for the sake of residents and visitors to Carrboro.

-Extreme contrasts in architectural design should be avoided. In special cases of exceptional architectural creativity, the design should comply with the universal architectural principles of morphology and scale.

Design Goals

-Buildings should be designed so as to relate to the proportions of architectural forms, plains, and details within the existing physical context.

-All physical elements of a building are used to create the proper proportions.

-Designs should incorporate architectural elements that give scale to buildings such as windows or door openings of the right proportion where feasible since these and other construction elements create the sense of scale.

3. Architectural Details

-Entrances should clearly identify important access points.

-Entrances should provide an introductory statement for a building and should be landscaped with plants complementary to the building's architecture .

-They should be of compatible scale and their coloring within the same range of shades.

-All elevations of a building should be coordinated within the same architectural

scale.
-The variety of materials used on the facades should limited.
-When a portion of a building faces onto a greenway or a park or any other public space, it should be designed similarly with the other front elevation.
-Building setback (distance from the street) should be compatible with the positioning of existing buildings on the block or the street.
-Roof shape, color and texture should be coordinated with treatment of the building's perimeter walls.
-Roof design should minimize the negative impact of roof protrusions by grouping plumbing vents, ducts and other utility structures together.
-All rooftop mechanical and electrical equipment should be screened from view of people on the street or adjacent properties.
-On hillside sites, a stepped roofline helps relate/affix the building with the natural ground.

4. Exterior Building Materials
-Some nonresidential recommended facing materials are the following: stone; unglazed and unpatterned brick in soft colors; painted, stained or weathered wood product siding or shingles; textured concrete; and aluminum siding in soft colors and fine textures.

5. Color and Texture
-Color and texture for architectural finishes should be selected to
provide visual unity and within the same range of colors.
-Entries are transition areas and may be reinforced by special paving, planting and lighting treatment. Architecturally, they should be expressed by simple changes in form, line, color or texture.
-Plain buildings can be made interesting by having their openings and entryways clearly expressed with offsets, outsets and with changes of texture or color.

6. Lighting
-Exterior lighting and site furniture should be architecturally integrated with the building's style, material and color.
-Lighting intensities should be controlled to assure that excessive light spillage and glare are not directed toward neighboring areas and motorists.
-Down lighting should be used to reinforce the circulation corridor. Uplighting is better suited for highlighting transition points
-Incandescent fixtures, on light posts of appropriate size, should be used to indicate the onsite pedestrian circulation system.
-Lights should be located along driveways and other internal site corridors to provide continuous illumination of the pavement.
-Low angle lighting of buildings generally is not encouraged. However, such lighting can be attractive if it is incorporated carefully into the architectural design.

7. Fencing
-Fencing is a strong physical feature of the Town's environment. Thus, the use of this

feature should be carefully considered in order to blend in with the natural and manmade environment.
-Fencing uses and needs in Carrboro are usually for protection, property line definition, entrance definition and/or for the creation of an outdoor space.
-All types of fencing should follow the natural contours of the land and specifically be blended with the rest of the site and with surrounding man-made structures.
-The use of locally found materials is essential for blending with the environment and the creation of harmonious views.
-Long solid fences should contain offsets or other architectural features to break up the appearance of a continuous mass.

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ATTACHMENT D-1

TOWN OF CARRBORO

NORTH CAROLINA

TRANSMITTAL **PLANNING DEPARTMENT**

DELIVERED VIA: ☒ *HAND* ☐ *MAIL* ☐ *FAX* ☐ *EMAIL*

To: **Steve Stewart, Town Manager**
Mayor and Board of Aldermen

From: **Patricia J. McGuire, Planning Administrator**

Date: **October 7, 2005**

Subject: **Development Process and Developer's Margins**

In discussing the possibility of revising the Vernacular Architectural Standards and expanding their scope and applicability, members of the Board of Aldermen requested information on the land/real estate development process and on the profit margins of developers. Staff has compiled some resources on these topics and has contacted Nick Tennyson, Executive Vice President of the Home Builders Association of Durham and Orange Counties regarding the costs of regulations such as those under review. This transmittal describes the information that has been compiled and reports on the discussion with Mr. Tennyson.

Dr. James Burton, Professor of Business Administration at the University of West Georgia, in a web-published article "Residential Real Estate Development" summarizes the land development process in the following 11 steps:

1. Create the development idea
2. Control the vacant site or undeveloped land
3. Complete a preliminary market feasibility study
4. Have the preliminary plans and specifications drawn
5. Obtain a mortgage financing commitment
6. Cause the final market feasibility study to be completed

7. Complete the engineering final plans and specifications
8. Estimate the final total costs, direct and indirect
9. Complete a Discounted Cash Flow analysis of inflows and outflows
10. Analyze various risks associated with the proposed development
11. Begin actual construction of the streets, utilities, and lots

A full copy of Professor Burton's article is attached (*Attachment E*). An article on different capital structures and how they affect a builder's strategy is also attached (*Attachment F*). The national average cost breakdown for a single-family home (2002) obtained from the National Association of Home Builders is attached (*Attachment G*).

Mr. Tennyson provided insights into the regional experience of homebuilding. The following is a summary of his comments.

The rule of thumb for land development costs is reflective of Dr. Burton's percentage – in fact, it has been stated as "1/3 1/3 1/3", as in 1/3 for the raw land, 1/3 for the cost of development and 1/3 for profit and overhead of the development company. The other numbers (in the NAHB attachment and below) are for the builder – not the developer. All regulations add cost to the development process. In a business that is full of details, any additional regulation must be considered and addressed, and if a mistake is made, there are consequences. While building construction requirements have been extensively standardized, there are almost innumerable jurisdictional differences in relation to the horizontal improvements that are part of the creation of new house lots. Any additional requirements increase the up-front costs to a developer/builder and make it more difficult for small entities, family businesses or otherwise, to participate. Such requirements will also limit the number of choices in the market and consequently narrow the pool of prospective residents.

In more absolute terms, the builder is seeking to constrain the land costs to no more than 20 percent of the total cost of the home as this is a generally accepted ratio among buyers and lenders. Exceeding that percentage may make/runs the risk of making the house less desirable, because a developer will have built a house that is too small, or does not have competitive amenities with another house that has succeeded in keeping its land ratio to 20 percent. If you have to pay more for land than 20 percent, to preserve the hard cost budget for the house, savings must be found elsewhere – which may include lower profit. If lower profit is presumed, however, the probability is that the house will not be built.

One of the specific difficulties of the regulation of the appearance of homes is due to the time frame between planning a development and conveying the home and lot to a new owner. Pre-selection of the desired house on a particular lot years in advance of the property exchange requires the developer/builder to guess what the market will prefer. What if a bunch of Craftsman-style homes have been designed and the market is looking for more colonial by that time? This will further limit the pool of folks who can join a

community and increases the risk for a successful project since there are other factors that may affect house size and style (e.g. interest rates, job opportunities).

This limitation may not be of primary concern since Carrboro represents a fairly small share of the regional market. Actually, I see this as a bigger problem for Carrboro – as a niche market already you have a whole lot going against affordability. Adding more regulation just sends you that much farther down the curve. As an example, in 2004, the 68 permits for new construction in Carrboro represented .45 percent of the 15,000 permits for single-family detached units in the Triangle.

Attachments

Residential Real Estate Development

by James H. Burton

James H. Burton jburton@westga.edu is Professor of Business Administration in the Marketing and Real Estate Department at the University of West Georgia. He has taught university level courses in real estate development, and market feasibility analysis. He has also been a practicing real estate developer, having developed a 160 acre subdivision and a 2,000 acre subdivision.

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The central purpose of this article is to describe the research, procedures, steps, and

processes involved in successfully developing a vacant residential real estate parcel. The most typical real estate development procedure may be outlined as follows:

Create the development idea

Control the vacant site or undeveloped land

Complete a **preliminary** market feasibility study

Have the **preliminary plans** and specifications drawn

Obtain a mortgage **financing** commitment

Cause the final market feasibility study to be completed

Complete the engineering **final plans** and specifications

Estimate the **final total costs**, direct and indirect

Complete a **Discounted Cash Flow** analysis of inflows and outflows

Analyze various **risks** associated with the proposed development

Begin actual **construction** of the streets, utilities, and lots

Marketing and Selling

The reader should realize that each of these development steps is interrelated. While they are listed in a specific order, these steps cannot always be treated in this exact order or in isolation. For example, a real estate developer may already own the land, and then proceed to determine its highest and best use.

Development Idea

The real estate developer must have an idea, usually based on experience in the market place, or intuition, about a residential real estate development that he/she believes the market demand for exceeds market supply. For example, if the population and number of households in a local market are growing, and the developer believes that he has an idea for a residential subdivision with innovative amenities and attractions, and if the developer has a strong desire for creating that type of development, then the developer should pursue the creation of that development. The two key factors about having an idea for a real estate development are: (1) strong market demand for that type of development or a market niche, and (2) a strong emotional and financial commitment by the developer to create that type of residential development.

Purchase an Option on the Site

After the developer has a clear development idea in mind, he should review the number of available appropriate sites in the market area. Hence, the first step in selecting the vacant site

is to define the market area. The market area could be a city, county, or a specific neighborhood in a city or county. Obviously, the market area should be located in a high demand area, typically indicated by a growing population and number of households. The development example used in this article will be a single-family residential subdivision; however, the real estate development procedure would be similar for various types of real estate developments.

Once the market area is clearly defined, with boundaries and limits, a simple way to locate available potential sites is to tour the market area and review the listings of local real estate firms. Once potential sites are located, the developer should select the optimum site based on location, access, topography, zoning potential of highest and best use, and available utilities. When the optimum site is selected, the developer should purchase an option on the land, or negotiate a contract for purchase subject to zoning, final market feasibility, and specific financing terms and conditions. The key to negotiating an option agreement on the land is to minimize the cost of controlling the site during the period of preliminary market feasibility and arranging financing and zoning.

Preliminary Market Feasibility Study

When the developer has executed an option agreement or a contract to purchase the site, he/she must complete a preliminary market feasibility study. An independent real estate expert usually completes it. The study involves the research and analysis of **demand** based on population demographics and supply based on an investigation of competing single-family residential developments in the market area. An accurate preliminary analysis of demand is critical to the market feasibility of any proposed development. For a proposed single-family subdivision, the number of existing households in the market area should be estimated and the expected or forecasted growth of the number of households during the next five years should be estimated. This data is readily available from local planning agencies, "Sales and Marketing Management's Survey of Current Buying Power" for counties and MSA areas in the United States, and national demographic data services, like Claritas.

In addition to the number of existing and forecasted households in the market area, the annual income distribution within the market area per household is important. Such information reveals the income available for housing expenses, and hence, the likely price ranges of lots and homes in the proposed subdivision

The data available annually from "Sales and Marketing Management's Survey of Current Buying Power" is categorized by states, counties, and metropolitan areas. The reported data includes current total population and population by age groups, the number of households, total retail sales by store groups, total and median effective buying income by percentage of households, and buying power index. The "Survey of Current Buying Power" also includes five-year data projections for major urban areas by counties; this data includes population, households, effective buying income, retail sales, and buying power index. Household demand can be categorized by income levels, which can be used to estimate the prices of lots and homes demanded. For example, if the market area is expected to increase by 2,400 households each year, and 25% of those households have incomes in the $50,000 to $75,000 range, house prices should range from $156,000 to $235,000. This analysis assumes that typical housing costs are 25% of income, and a mortgage interest rate of 7% that is amortized over a 30-year term.

In addition to estimating the demand side, the market analyst must consider the existing and planned **competition** for the proposed development in the market area. The analyst must tour the market area to inspect the competing subdivisions in the trade area. The local planning authorities should be contacted to discover any proposed subdivisions that have been approved for development. Then the analyst must compare the total existing competing developments plus the proposed subdivision developments with the forecasted demand for single-family lots and homes within the market area. If the forecasted quantity of demand exceeds the projected quantity supplied, the preliminary market feasibility study would indicate potential success for the proposed development. Of course, if the existing competing developments that are available exceed the forecasted demand, then the developer should not pursue the development of this new single-family subdivision.

Preliminary Plans and Specifications

If the market feasibility study indicates sufficient demand, the developer must contact an engineering and/or architectural firm to draw preliminary plans and generate specifications for the subdivision development. In the case of a single-family residential subdivision, the plans should include the road layout, the preliminary lot designs (including the number of lots and typical size and frontage), the layout of electric lines (either overhead or underground), the layout of the water lines, and the layout of any sewer and drainage systems. Typically, the preliminary plans and specifications are sketches with preliminary cost estimates. As a general rule of thumb, the cost of the development should be allocated 33% for the raw land or site cost, 33% for development costs, and 34% for profit to the developer. Although many developers use these figures as a general rule, a discounted cash flow analysis should be completed. This analysis will be discussed later in this article.

When the preliminary plans and specifications are completed, the developer should coordinate his plans with the appropriate zoning and planning authority. If a zoning change is needed, it should be reviewed and evaluated early in the development process.

Financing Commitment

After the preliminary plans and specifications are completed, the developer may apply for a development mortgage loan. Because of the riskiness of such loans, the normal loan-to-value ratio may be in the range of 60-66% of the total retail prices of the lots. The developer should shop for a development loan as he/she would in shopping for a car or a home. He/she may contact many mortgage lenders and actually present a loan submission to two or three lenders. The information furnished in the loan submission should include the preliminary market feasibility study, the preliminary plans and specifications, a description of the proposed development, the proposed mortgage loan terms and conditions, a financial statement, and a resume showing the developer's experience.

Typically, the development loan provides sufficient funds to pay for the site acquisition and the development costs. The term of the loan would normally be a short-term loan, one to three years, depending on the absorption forecast of lot sales. Because of the short term of the development loan, the interest rate is usually fixed. The loan is repaid as a percentage of each lot sale, for example 50% to 75% of each lot sale would be deducted at each lot closing to repay the development loan as the lots are sold. The mortgage lender will require that the development loan be repaid faster or more proportionally than 100% of the lot sales. For example, the lender may want 100% payback within 75% or 80% of the lot sales. This would,

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of course, require that the developer receive most of his/her profit during the later stages of lot sales.

Final Market Feasibility Study

Once the developer receives a mortgage loan commitment, the developer should have the final market feasibility study completed. This study should include a detailed analysis of the population demographics including the number of households, income per household, typical expenditures per household, and an estimate of housing costs by income levels per household, or housing expenditures by income levels per household. The final market feasibility study should describe in detail all existing and proposed, competing residential developments in the defined market area. It should also include an informed estimate of lot absorption and prices, or how many lots are expected to be sold each month and the suggested prices of those lots to fit with the supply and demand analysis.

Final Plans and Specifications

Concomitantly with the final market feasibility study, the developer should work with the engineering firm to finish the final working drawings for the proposed subdivision development. This would include final engineering drawings for the roads, exact legal descriptions of each lot, the plating and staking of the lots, as well as any engineering drawings regarding earth moving, and utility layouts. These final plans and specifications should be coordinated with the construction contractor and the appropriate utility companies. Once the final market study and the final construction working plans and specifications are completed, the developer can close the development loan, acquire the property, and begin construction of the roads, utilities, and lots.

Cost Estimates

Cost estimates are categorized as direct and indirect costs. Direct costs are land acquisition costs, engineering costs, construction costs, and marketing costs. Indirect costs include professional fees for market feasibility analysis and appraisal, legal and accounting fees, and financing costs. Based on the author's development experiences, cost overruns can be disastrous to expected profits; hence, development costs must be estimated accurately and include a contingency fund to pay for unexpected additional costs.

Discounted Cash Flow Analysis

A Discounted Cash Flow analysis should be completed to calculate the present values of the cash outflows and the present values of the cash inflows for financial purposes. An example of a Discounted Cash Flow analysis for a residential subdivision appears below. The assumptions used in this example are:

16% Discount Rate

48 Total Lots

6 Lot Sales per quarter

$36,000 Average Lot Price

$600,000 Development Costs ($12,500/Lot)

$500,000 Land Cost

$600,000 Loan Amount at 9% Interest & 50% Lot Releases

The discount rate of 16% is assumed in this example because of the relatively high risks in residential development. The Cushman & Wakefield National Investor Survey (Spring, 1998) reported internal rates of return expected by real estate investors to range from 12% to 13.8% for seasoned, income-producing properties. The DCF shows the present value of the outflows to be $71,000, the present value of the inflows to be $426,000, and the net present value to be $355,000. Under these assumptions, the residential development example appears to be quite attractive.

Risk Analysis

The primary risk in developing a residential subdivision is the marketing risk, or the risk of selling six lots per quarter at the average price per lot. Of course, there are additional risks: development costs overruns, bad weather, increased interest rates, labor strikes, and others. However, given the assumptions in the development example, the breakeven point is relatively low at 66% of lot sales, and the net present value is attractive. (See below.)

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Discounted Cash Flow
Residential Subdivision DCF
Example (000)

	16.0%	Discount Rate*							
	48	Total Lots							
	6	Lots Absorption/Quarter							
$	36,000	Average Price/Lot							
$	1,728,000	Total Lot Sales							
$	600,000	Development Costs							
$	500,000	Land Costs							
$	600,000	Loan Amount	35% LTV Ratio			9% Interest		50% Lot Relea	

YEAR	1999	1999	1999	2000	2000	2000	2000	2001	2001
Quarter	2	3	4	1	2	3	4	1	2
Number of Lots Sold		6	6	6	6	6	6	6	6
Gross Sales Income		$216	$216	$216	$216	$216	$216	$216	$216
Less Outflows:									
Land Costs	$ 500								
Sales Commissions		$ 15	$ 15	$ 15	$ 15	$ 15	$ 15	$ 15	$ 15
Development Costs	$ 100	$100	$100	$100	$100	$100	$ -	$ -	$ -
Total Expenses	$ 600	$115	$115	$115	$115	$115	$ 15	$ 15	$ 15
Net Operating Income	$(600)	$101	$101	$101	$101	$101	$201	$201	$201
Loan Draws	$ 600								
Loan Balance-EOQ		$492	$384	$276	$168	$ 60	$ -		
Loan Interest		$ 14	$ 11	$ 9	$ 6	$ 4	$ 1		
Loan Payments		$108	$108	$108	$108	$108	$ 60	$ -	$ -
Outflows*	$ -	$ (21)	$ (18)	$ (16)	$ (13)	$ (11)			
Inflows*							$140	$201	$201
Present Value Outflows		**$ (71)**							
Present Value Intflows		**$426**				$498			
Net Present Value @ 16%		**$355**							

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If you have Excel on your computer, click here to download the above table as a spreadsheet.

Construction

All during the initial phases of the development, the developer should coordinate with a construction contractor for the building of roads and installation of utilities. For marketing purposes, the developer may want to build a single-family model home and some amenities. Frequently subdivision construction is done in stages so that finished lots may come on line for sale as quickly as possible. Also, during construction the developer will initiate advertising and other promotion to stimulate presale of some lots. The developer may even sell packages of lots with favorable financing to local homebuilders so that construction of speculative homes in the subdivision can begin promptly.

Marketing

The most critical stage of development is marketing and selling of the finished lots. Marketing includes promotion, advertising, and sales. A marketing plan must be planned and implemented that meets the sales goals based on the absorption and prices forecasted in the final market feasibility study. Promotion activities may include announcements in local newspapers, radio, and television, locating directional signs to the new subdivision, holding open houses, and creating brochures. Advertising can be classified according to the most effective medium. It may be specific, name, or institutional advertising. The advertising media should be selected based the results of the market feasibility study and it may include billboards, newspaper, magazines, radio, television, home shows, or other appropriate media. The developer should measure advertising results to insure the cost effectiveness of advertising expenditures.

An employee sales person or a local real estate brokerage firm can conduct the sale of lots. In either case, the sales commissions are a marginal expense and should be considered in the financial forecasts.

Conclusions

Real estate development can be very exciting, creative, and profitable. An experienced developer may have the opportunity to borrow all of the development costs. However, there are real risks associated with real estate development because risks and returns are directly related, and expected high returns usually indicate high risks. Some common subdivision development risks are cost overruns, bad weather, too few sales per month, lower prices, higher marketing costs, and labor strikes. Larger developments that require large initial development costs and longer absorption periods are considerably more risky than smaller developments. The trick is to sell lots much faster than interest accrues on the development mortgage loan and before economic conditions change.

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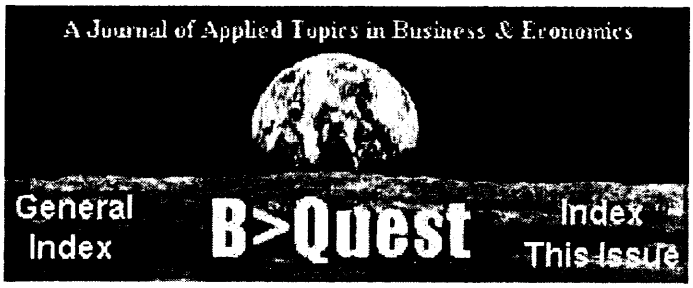

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HousingZone

Capital Structures Determine Builder Strategies

John Burns -- 6/7/2004

All builders are not created equally. The capital structure of a builder usually dictates its strategy, including the types of land the builder prefers to acquire. I believe it will help builders accomplish their goals if they can explain to their investors, employees, suppliers, subcontractors, land brokers and others how they are different from other builders.

John Burns' Editorial Archives

To help you distinguish your firm, here are what I have found to be the three primary categories of medium- and large-sized builders:

1. IRR-Driven: Many of the larger privately owned builders work with investment advisors, especially if they do land development. Investment advisors are companies that raise money from institutional investors such as pension funds. These institutional investors expect a return on their money that is commensurate with their risk. They look at home building and land development as a means of diversifying their investments.

For builders driven by IRR (internal rate of return), each deal needs to stand on its own. Timing is also critical. Builders with IRR-driven investors frequently need to prove to their investors that the market is likely to appreciate over the next few years, and that the revenues can be achieved in a short time period. When recent appreciation has been strong, the capital is easy to raise. When recent appreciation has been weak, the funds are more difficult to raise. I like working with IRR-driven clients because their investors usually ask the tough questions and need someone who understands economics, finance and marketing.

2. Wealth-builders: Most of the smaller privately owned builders -- and some of the very large land development companies -- have a long-term perspective. While these builders and developers manage cash flow very carefully, they are more concerned with building wealth over time than meeting monthly goals. If they have already accumulated wealth, these builders can buy land and hold it for a long time if the market dictates. If they are lucky, they have found investors with the same goals. Wealth-builders are some of my favorite clients because they have long-term strategies and do not have to respond to the whims of outside investors, newspaper reporters or stock market analysts.

3. Predictable, Growth Companies: Publicly traded home builders are the only home building companies that need to behave like other industries. Shareholders of publicly traded home builders want predictable, growing earnings, just as they expect from their investments in companies such as Microsoft and General Electric. Their goals are as follows:

a. Grow: These builders need to increase the number of homes sold, which they accomplish by entering new markets and increasing their market share in existing markets. If it makes economic sense to reduce the number of homes sold in a particular market, investors typically won't understand and their stock values will decline. The best builders find ways to grow without taking significant risks. This might include building in submarkets all over the region and targeting a wide variety of consumers, from entry-level buyers to urban mid-rise buyers to active adult buyers.

b. Increase profits: In addition to growing revenues, public builders need to focus on increasing profit margins on each home sold. They reduce costs by perfecting and then reusing floor plans and taking advantage of purchasing economies of scale. If market area home prices appreciate between the date

of land acquisition and home sales, these additional profits are just "icing on the cake." The best builders reinvest the "icing on the cake" back into the company to streamline operations, improve future profit margins and position the company for success in the event of a housing market slowdown.

c. Be Predictable: Public builders also need geographic diversification so their earnings are not significantly impacted by changing market conditions in a few regions. Diversification poses many challenges, however, including managing a large, diverse business and consolidating financial statements. For medium-sized companies, the additional overhead needed to manage the company can sometimes offset the economies of scale, which is why these builders don't always like to compete with small builders in areas such as Atlanta. Predictable, public builders are growing into new markets, allocating land acquisition capital to the markets most likely to appreciate, and increasing their diversity within markets. They are generally less willing to take significant risks. For example, unentitled land is usually not a large percentage of their balance sheet and debt is usually less than 60% of the balance sheet.

The publicly traded home builders are also very creative, so their individual deals may have IRR-driven or wealth-building structures.

I enjoy working with these clients because their management teams usually include some of the brightest individuals in the business.

Conclusions
In summary, it is important to articulate your capital structure. If you are IRR-driven, emphasize the importance of generating profits as quickly as possible.

If you are wealth-driven, emphasize your willingness to take risk as long as it is a good long-term strategy. If you are publicly traded, emphasize your need for growth and predictability. By articulating your capital structure, investors, employees, suppliers, subcontractors, land brokers and others can help you achieve success.

John Burns publishes three free Building Market Intelligence e-mails each month: U.S., Local and Strategic. He helps real estate executives develop and execute strategic plans, conduct market research and maximize profitability.

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COST BREAKDOWN FOR SINGLE FAMILY HOMES

NATIONAL - 2002

I. Sale Price Breakdown		% of Total
1. Finished Lot Cost	$70,061	23.48
2. Total Construction Cost	$151,672	50.83
3. Financing Cost	$6,360	2.13
4. Overhead and General Expenses	$16,505	5.53
5. Marketing Cost	$7,139	2.39
6. Sales Commission	$10,958	3.67
7. Profit	$35,717	11.97
8. Total Sales Price	**$298,412**	**100.00**

II. Lot Cost		
A. Raw Lot Cost	$18,666	26.85
B. Development Costs:		
a. cost of processing approvals	$365	0.52
b. site preparation	$938	1.35
c. site improvement	$3,766	5.42
-paving	$1,317	1.89
-water and sewer	$1,839	2.65
-erosion and sediment	$77	0.11
d. impact analysis	$9	0.01
e. water/electric hook-up	$742	1.07
f. land dedication or fee in lieu	$10	0.01
g. bonding/escrow fee	$66	0.09
h. financing cost	$1,073	1.54
i. tree preservation and planting	$266	0.38
j. wetland preservation and planting	$263	0.38
-value of unbuilt land	$85	0.12
-cost of mitigation	$139	0.20
k. value of land left unbuilt as green space or park	$218	0.31
l. other costs	$779	1.12
Total B - Development Costs (a...l)	$11,764	16.92
Undisclosed*	$27,144	39.04
Total Finished Lot A + B	**$69,526**	**100.00**

*Several builders gave an incomplete accounting of lot costs.

Total Lot Cost does not exactly match figure in Section I due to lack of lot cost data from one builder.

III. Construction Cost Breakdown		% of Total
Building Permit Fees	$2,027	1.34
Impact Fee	$2,465	1.63
Water and Sewer Inspection	$2,048	1.35
Excavation, Foundation, and Backfill	$10,512	6.93
Steel	$1,187	0.78
Framing and Trusses	$27,887	18.39
Sheathing	$1,364	0.90

Windows	$4,966	3.27
Exterior Doors	$1,143	0.75
Interior Doors and Hardware	$2,412	1.59
Stairs	$863	0.57
Roof Shingles	$3,941	2.60
Siding	$6,411	4.23
Gutters and Downspouts	$758	0.50
Plumbing	$8,229	5.43
Electrical Wiring	$5,011	3.30
Lighting Fixtures	$1,219	0.80
HVAC	$6,350	4.19
Insulation	$2,387	1.57
Drywall	$8,047	5.31
Painting	$5,475	3.61
Cabinets and Countertops	$6,568	4.33
Appliances	$1,874	1.24
Tiles and Carpet	$6,506	4.29
Trim Material	$6,283	4.14
Landscaping and Sodding	$3,835	2.53
Wood Deck or Patio	$1,089	0.72
Asphalt Driveway	$2,355	1.55
Other	$18,459	12.17
Total	**$151,671**	**100.00**

Note: Data based on a larger - but somewhat incomplete - group of survey responses (n=29). Data is complete for section (1): Sale Price Breakdown and, thus, is used for the historical table. However, data is incomplete for section (2): Lot Cost and section (3): Cost Breakdown.