

THE NEW TOWN OF WILLIAMSBURG:
A STUDY OF THE NEW URBANISM

by
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(ABSTRACT)

This thesis studies New Urbanism, a movement intending to address the problems of the American suburbs and create pleasing and livable communities. The focus is on the Traditional Neighborhood Design concept (TND), one of the five types of New Urbanism developed in the late 1980's by architects Andre Duany and Elizabeth Plater-Zyberk.

The goal of this thesis is to develop the best community design concept, with a basis in the TND concept, which responds to local cultural and physical environments. The study is comprised of two approaches: a literature review and a design approach. In the first three chapters, the findings of the literature review are shown. There include (1) the history, structure, and problems of the American suburbs, (2) the theory and types of New Urbanism community structures, and (3) the characteristics of TNDs. At the end of Chapter 3 the TND concept is analyzed using four criteria comprised of, uses and activities, public space, circulation and typological characteristics of architecture, as well as a summary of the strengths and weaknesses of the TND concept are summarized. In Chapter 4 the development of a TND plan for the New Town of Williamsburg is shown, which includes the context of the site, history of Colonial Williamsburg, site inventory, site analysis, design concept, and design development. The design concept was developed from the findings of the site analysis and the improved TND concept. The conclusions in Chapter 5 provide an overview of this thesis, findings of both the research and design part, lessons from this thesis, and areas for future research.

To Chamras-Suvimol Boonyanunt

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Introduction

Background

In August 1995, James City County, Virginia and Virginia Landmark Corporation sponsored several design competitions in Williamsburg. One of the competitions called for a new town plan to be designed on a 600 acre site adjacent to Colonial Williamsburg; an innovative, high quality, lasting model for new American communities. A great opportunity for Landscape Architects and Planners interested in community design, this competition allowed a design exploration for a town plan which responds to the surrounding natural and cultural environment. The Design Competition Requirement (James City County, VA: 1995) states that “The Town Plan is expected to provide a more humanistic approach to the design of buildings, public and civic spaces, while respecting the existing neighborhoods.” In this thesis, the competition project is used as a design case study of the Traditional Neighborhood Design concept (TND), which is one of the five types of New Urbanism.

Williamsburg is a historic and important city of America’s colonial period, serving as the capitol of the Virginia colony from 1699 to 1780. While many buildings and gardens were ruined by neglect and natural forces, several buildings survived to the early 20th century. An attempt to recover this remarkable historic town was made by Dr. W. A. R. Goodwin, who proposed a plan of the Colonial Williamsburg restoration to Mr. John D. Rockefeller Jr., the principal donor to this project. From 1926 to 1957 the town was restored and reconstructed to its original form. Colonial Williamsburg today is not only a historic town representing the architectural and physical environments of the American colonial communities, it also shows the early colonist’s cultural life. Today, town buildings are used as actual commercial and residential buildings and many Colonial Williamsburg employees dress and perform as people did in the past, making Williamsburg one of the most successful living cultural museums of America.

The site of the competition project is located within rapidly growing areas surrounding the City of Williamsburg, and adjacent to the College of William and Mary. This region is well known to visitors because of many attractions including: Busch Gardens theme park, Jamestown, Yorktown, Virginia Beach, Hampton, Norfolk, and Newport News. The site is one of many areas that is threatened by development pressures spurred on by tourism. Because of the extension of Highway 199 which provides direct access to the site, this site is perceived to become a new downtown or an extension of the existing downtown for the City of Williamsburg and James City County.

New Urbanism or the Neo-traditional Neighborhood Design (NTND), the latest trend in suburban design, is preferred by the researcher as the basis of the New Town design concept. The local community supports new types of suburban design and wants to avoid the conventional suburban pattern. The basic concept of New Urbanism is a compact, mixed land use plan with a pedestrian community design. It is believed that such designs can enhance the life in the community by reducing the speed of traffic and providing alternative ways of transportation. Because, the researcher is specifically interested in the principles and practice of New Urbanism, it was chosen to be studied and analyzed in this research.

Problems

The thesis focuses on issues raised from the principles and practice of New Urbanism. What works and what does not work? What problems and debates have emerged in New Urbanism discussions? Do the residents like the designed environment? What are possible solutions for the problems? Four criteria addressed in this thesis include uses and activities, public space, circulation and typological characteristics of architecture. They are derived from a set of suburban problems uncovered through a literature review and can be found in Chapter 1.

The goal of the thesis

The purpose of the thesis is to develop a pleasing and livable American community plan which responds to the surrounding cultural and physical environments based on the New Town Competition Program. The findings from the literature review and the site analysis are used to create the town plan, with the expectation of improving the concepts of New Urbanism.

Approach

This thesis uses a case study design approach. The site information and the program of the New Town Plan design competition provided by Virginia Landmark Corporation of Williamsburg was collected by the researcher.

Method

The thesis is divided into two parts: research and design. Although these two sections will use distinct approaches, they will relate and support each other. The tasks of these two sections are described in the following paragraph:

A. Research Section

To answer the main question of the thesis, “what are the principles and practices of the New Urbanism concept that work and what does not work?”, a literature review and a case study literature review will be completed. First, the structure of the modern suburb and its problems are explained. The ideas behind each different type of New Urbanist community structure, which are alternative solutions to suburban problems, will be described. Moreover, their advantages and disadvantages will be discussed. Finally, a type of New Urbanism will be chosen as a case study to be used in the design approach.

Previous research comparing traffic behavior of the transit-oriented neighborhood with that of the auto-oriented neighborhood will be reviewed to study the relationship between the street layout of the community and commuting behavior of the residents.

Furthermore, analysis of the strengths and weaknesses of the chosen New Urbanism developments, concerning (1) uses and activities, (2) public space, (3) circulation and (4) typological characteristics of architecture, will also be presented. These criteria are derived from a set of suburban problems found from the research presented in Chapter 1. The results of the literature reviews in each topic will be analyzed and concluded.

B. Design Section

The competition package contains information on the site and its context. It is used as a primary data source, and supplemented by site visits. Additional data collection includes: photographs, maps, sketches, and fieldnotes. The tasks of the design section include:

1. Program analysis
2. Gathering basic information of the site
3. Site Inventory
4. Site Analysis
5. Conceptual Design
6. Design development
7. Design Evaluation

From the literature review, the Traditional Neighborhood Design (TND) concept is evaluated to find out its weaknesses and strengths concerning land use, public buildings and open space, transportation, and typological characteristics of architecture. These are used as guidelines for recommendations to improve the TND concept. Finally, the recommended design principles and site analysis will be used to develop the New Town Plan.

Methodology Diagram

A. Research Section

Literature review

Brief history of New Urbanism
Concept and types of New Urbanism
Summary of the characteristics of TNDs
Problems and debates of TNDs

Analysis

Analysis of areas of strength and weakness,
concerning land use, public buildings and open
space, transportation, and typological
characteristics of architecture
Implications and recommendations

B. Design Section

Program analysis
Evaluation of site's various aspects
Site analysis
Conclusion

Conceptual Design
Design development

conclusions

Chapter 1: Suburban America

1.1 Brief History of Suburban Developments

Suburban developments play an important role in American life. Suburbs are very popular places for new developments because they serve as bedroom communities for those who work in nearby cities. New couples move to the suburbs seeking a place to settle down and raise their children, believing the suburb to be a solution to avoid the problem of the cities. Are suburban developments really the better solution? To understand the situation of modern suburbs and the people who live, one needs to look at the past and examine the history of suburban development.

According to Krueckeberg (1983), during the industrial revolution in the 19th century, changes caused by the invention of machines and railroads took place in the structure of human society. The creation of machines tremendously increased production, while the creation of railroads made transportation easier and faster than it was in the past. With the construction of factories, raw materials were brought from distant locations by train. People abandoned their farmlands for new factory jobs in the cities, causing cities to grow. Several issues such as growth of the population and prosperity were a direct result of the industrial revolution. There was a lack of public facilities and services for the number of people that crowded in the cities. Moreover, there were issues of pollution, decreased quality of life, and an increasing crime rate. New town concepts such as the Garden City, the Superblock, and Greenbelt towns, which emerged during the late 19th century and the early 20th century, attempted to solve those problems. Because of the failure of the city infrastructure to meet these needs, a major expansion of planning activities occurred in the early 20th century. These activities included the federal funding of local and state planning efforts that began in the late 1920's, and a program of new town building in the mid 1930's.

There was a major suburban expansion after World War II when service men and women were discharged from the military. This period of suburban growth started from about 1950 and continues to the present (Rowe: 1991). The invention of the automobile also played a significant role in rapid suburbanization during the 20th century. Automobile ownership increased, the interstate highway system was planned and constructed, and people moved to the suburbs searching for better places to live, places that were safe, without pollution, and without traffic problems. However, rapid suburbanization caused many problems which persist to the present time. These include traffic snarls, pollution, crime, and poor quality of suburban life. These problems will be further examined in section 1.2, Suburban Structure.

Planners realized that suburban developments failed, and there were attempts to create utopian communities in the suburbs. Cristoforidis (1994) and Javis (1993) address a series of suburban planning concepts in Europe and America dating from the early 19th century including:

- Garden Cities (1890's)
- The Superblock concept (1930's)
- Greenbelt Towns (1930's)
- New Towns (1960's and 1970's)
- Planned Unit Developments (1970's and 1980's)
- Neo-Traditional Developments or New Urbanism (1990's)

Newton (1971) and Christoforidis (1994) state that the Garden City concept emerged in 1898. A young Londoner, Ebenezer Howard proposed diagrams of the Garden City in his book, *Tomorrow: A Peaceful Path to Real Reform*, which was retitled *Garden Cities of Tomorrow* in 1902. One of his diagrams showed a centralized city which was divided into several layers from the center to the outer boundary. Each layer represented a separate land use. A park was located at the center with layers of residential

The Superblock concept originated in Liverpool, England in 1908 created by the soap-manufacturing firm of Lever Brothers. They intended to build Port Sunlight, a one-industry development with a factory, offices, and a village for employees of the firm. Well known for planned residential areas, the “Superblocks” were comprised of parks and individual buildings. As Stein (1957) indicates, the Superblock concept that developed in the United States in 1928 was inspired by the Port Sunlight development and the Garden City concept. However, the greenbelts and local industry were removed from the American interpretation of the Superblock concept. The first example of the Superblock concept in America was evident in the plan of Radburn, New Jersey (See Figure 1.2). The basic idea of the Superblock focused on the separation of major traffic and residential areas by using cul-de-sac automobile accesses. On the other side of the housing units, walkways were provided throughout the communities to encourage pedestrian activities. Nevertheless, the idea did not work for residents preferred driving their cars rather than walking. The front of the housing units were designed adjacent to walkways, facing common green areas, and the back was accessed by cars. Contrary to the intended design, the back of the house became the gathering space for many activities. This was the beginning of a front/back issue; the reversal between the front and back of the house as a result of the growing car culture. Later communities separated residential uses from the other uses. One must drive to work and to retail shops because of long distances and inconvenient pedestrian connections.



Figure 1.2 Radburn, New Jersey. Designed by Clarence Stein and Henry Wright.
November 1929.

The Garden City concept also influenced the emergence of another development concept in the United States in the 1930's called the Greenbelt Town. It was constructed by the Resettlement Administration under President Roosevelt's New Deal program. According to Jarvis (1993: 13), significant features of the Greenbelt Towns included: "attached homes organized around linear parks with pedestrian pathways, town centers with stores, school, recreational facilities and offices, and external greenbelts providing buffers from surrounding development." The Greenbelt Town Concept also focused on

pedestrian orientation and attempted to create a sense of community. The three Greenbelt Towns built under the New Deal Administration were: Greenbelt, Maryland; Greenhills, Ohio; and Greendale, Wisconsin.

After World War II, New Town Developments emerged. They were inspired by many design concepts including the Garden City, the Greenbelt Towns, and traditional small towns. Jarvis (1993:16) explains the characteristics of the New Towns as the following: new towns are “large-scale communities with all uses- homes, retail, business, recreation, community services- developed 'from scratch' on raw land. They are based on clustering principles, with large percentage of land left in natural state as open space.” Examples of the New Town projects include Reston, Virginia and Columbia, Maryland.

The next type of developments, called Planned Unit Developments (PUD), has been one of the most popular suburban designs in the United States since the 1970's. According to Jarvis (1993), PUDs use the same design concept as those of the New Town Developments, however, PUDs are smaller in scale than the New Towns. They include attached single family or multi-family housing and preserved open spaces, and many PUDs are cluster developed.

The most recent type in a series of suburban design concepts in America is the Neo-Traditional Design concept (NTD) or New Urbanism. New Urbanism emerged in the 1990's intending to solve the suburbanized problems that were criticized for several decades. As Cristoforidis (1994) indicates, the New Urbanist believes that mixed land uses and pedestrian orientations are the solutions for many suburban problems of the 20th century. Because New Urbanism is a new concept, there are only a few critical studies completed on built NTDs.

1.2 Suburban Structure

There were three major events during the suburban expansion in America from the early 1950's to the 1970's. First, since 1950 a large number of people migrated to the suburbs. As the number of people increased, demand for household products also increased. This led to the second event, the movement of marketplaces from cities to the suburbs. The need to balance demands and cost considerations influenced the location of businesses, important sources of employment and wealth creation. Third, business firms moved to follow the labor force in an attempt to maximize their expected profits. The function and characteristics of the suburbs gradually changed from bedroom communities to new towns. Some suburbs were composed in large portion of commercial and recreation areas and a few residential areas. These commercial and recreational areas in the suburbs became sources for jobs, shopping, and entertainment for the suburbanites. These suburbs are called an "edge city" (Sala: 1995). On the other hand, some suburban communities still serve as the bedroom communities for the nearby edge cities or cities. This kind of community is comprised of mostly residential and rural areas. Duany and Plater-Zyberk (1992) point out that the number of commuters between suburbs and suburbs (or the edge cities) are twice as many as those commuting between suburbs and city centers.

Three major planning concepts influenced American suburban physical planning since the 1920's, the Decentralization concept, the Broadacre City concept, and the Utopian Radiant City concept. These three concepts attempted to solve the problems of big cities, but created the problems of suburban planning. First, the Decentralization concept was developed by a group of regional planners including Lewis Mumford, Clarence Stein, Henry Wright, and Catherine Bauer. According to Jacobs (1961: 20), the "Decentrists" criticized the failure of city planning as the following; "...The great city was Megalopolis, Tyrannopolis, Nekropolis, a monstrosity, a tyranny, a living death. It must go... ." They rejected the whole idea of city planning because they believed that all

cities failed. The Decentrists' solution to the problems was to decentralize the cities; instead of one large city, they proposed to separate cities into groups of small towns with lower densities. Jacobs (1961: 20) points out the Decentralization ideas that have affected today's suburban planning:

...The street is bad as an environment for humans; [the] house should be turned away from it and faced inward toward shelter greens. Frequent streets are wasteful, of advantage only to real estate speculators who measure value by the front foot. The basic unit of city design is not the street, but the block and more particularly the super-block. Commerce should be segregate from the residences and greens... . The presence of many other people is, at best, a necessary evil, and good city planning must aim for at least an illusion of isolation and suburban privacy... .

The Decentralization concept resulted in mixed uses and low density planning as found in most suburban areas today.

As mentioned above, another concept influencing American suburban physical planning is the Broadacre City concept by Frank Lloyd Wright (1869-1959). According to Davern (1975: 121), Wright's design concept was inspired by "both his wholesome appreciation of the hygienic and domestic values of rural life, and his Jeffersonian contempt for many-sided corporate and institutional life of the city." He proposed a model for a dispersed city with a low-density of 1 dwelling unit per 1-3 acre, arranged in gridiron plan (see Figure 1.3). Each dwelling unit was intended to be self-sufficient with a subsistence garden. Although the Broadacre City was not built, its concept has harmfully influenced suburban planning. A million acres of farmlands, woodlands, and pasture lands were developed for housing. Suburbs spread out as a result of low-density planning and reliance on the car increased.

A County Seat Administration	H Small industry	R Orchards
B Airport	J Small Farms	S Houses and Apartments
C Sports	K Park	T Temple and Cemetery
D Professional Offices	L Motor Inn	U Research
E Stadium	M Industry	V Zoo
F Hotel	N Merchandising	W Schools
G Sanitorium	P Railroad	

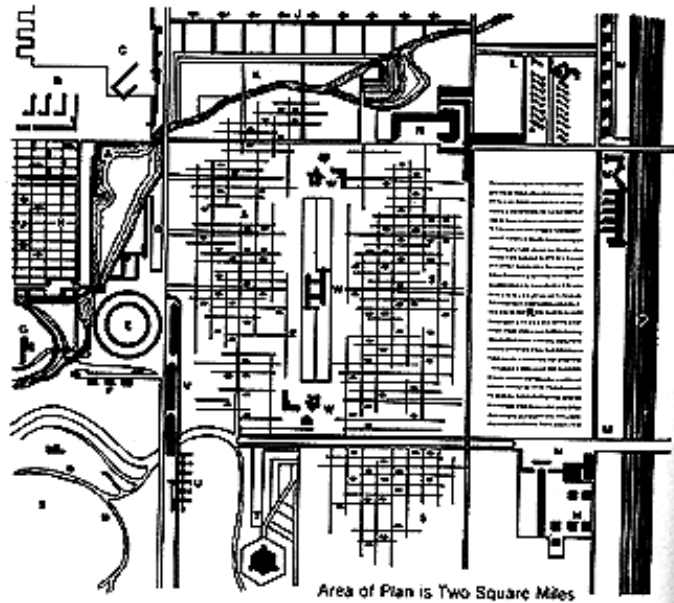


Figure 1.3 Frank Lloyd Wright's Broadacre City

Finally, the Utopian Radiant City concept by the European architect Le Corbusier was developed in the 1920's and 1930's. Corbusier believed that the solution to the city's problems was the "vertical garden city" (Jacobs: 1961). He designed the Radiant City to include groups of skyscrapers located in parks. Places were connected by arterial roads carrying one-way traffic (see Figure 1.4). In contrast to the Decentralization City, the Radiant City had very high densities up to 1,200 inhabitants per acre with about 85 percent open space areas. Corbusier's concept of skyscrapers in parks and a designed highway system were widely accepted and adapted by American planners to be used in lower density developments.

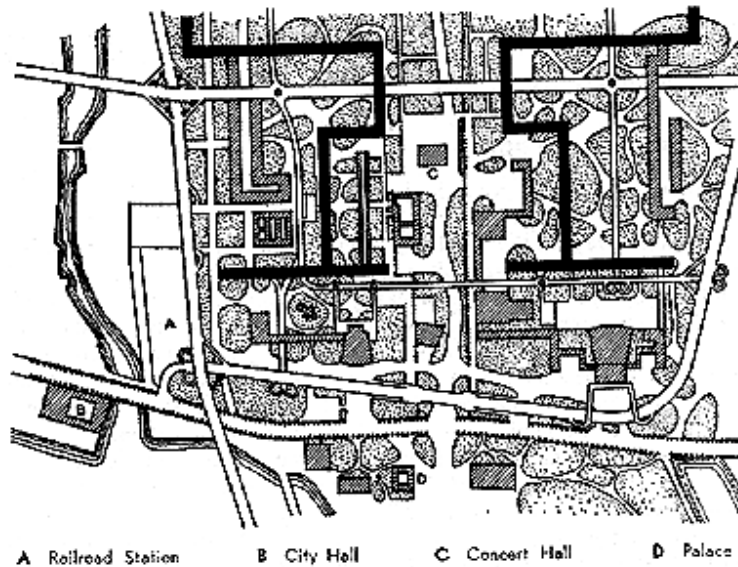


Figure 1.4 The Utopian Radiant City, Le Corbusier

These three concepts were adapted and combined, greatly influencing the structure of today's suburbs. The results are some unique characteristics described in the following topics: Streets, Pods, Housing, and Commercial Centers.

1.2.1 Streets

A: Streets as traffic arteries

The major element connecting all suburban areas are streets. There are two major types of suburban street systems, curvilinear streets and gridiron streets. Characteristics of curvilinear streets, the typical suburban streets, can be compared to the blood system in human body carrying nutrients to each organ. They are connected to one another in hierarchical sizes from large to small. Suburbanites commute through these streets from

their home to the places they work, shop, and relax. Langdon (1994) states that the hierarchy of the streets includes limited-access highways, arterial roads, collector roads, and minor streets. (See Figure 1.5)

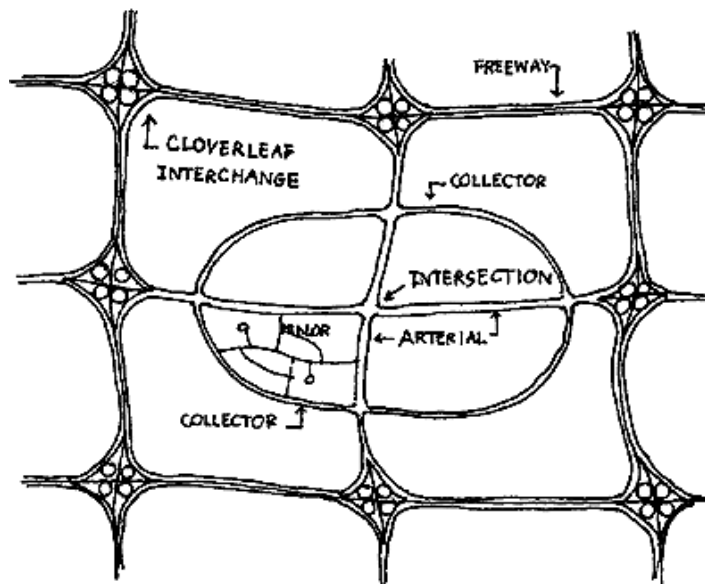


Figure 1.5 Street hierarchy in today's suburbs

Langdon (1994) explains the character of today's streets as the following: First, the limited access highways connect metropolitan areas. With at least four lanes for traffic, each highway provides a one-way route to its destination. Providing drivers with the fastest and the most convenient way to travel between cities, automobiles move through these highways with speeds of 60 to 75 miles per hour. Secondly, the arterial roads branching off the highways provide access throughout the suburban areas. Speed limits are typically 45 to 55 miles per hour. Because of the large amount of traffic on these arterial roads, they are one of the most attractive sites for mass commercial businesses such as discount department stores, suburban shopping centers, or plazas. Thirdly, the collector roads diverge from the arterial roads to residential areas. Drivers to

and from subdivisions must pass through a limited number of collector roads to get onto the arterial road, resulting in a large amount of traffic. Finally, minor streets carry the traffic within residential areas. Two popular types of minor streets include loops and cul-de-sacs (See Figure 1.6).

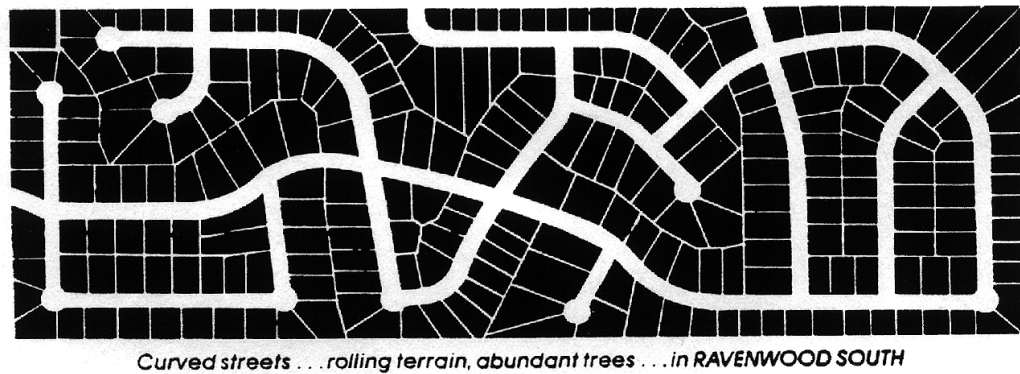


Figure 1.6 Loop and cul-de-sac streets

Typical street systems in the suburbs were created by mixing of many ideas. First, as Marsh (1991) indicates, the idea of curvilinear street first appeared in America during the 1850's. The original concept came from the Romantic movement in England; nature held the true meaning of beauty, pleasure, and quality of life. Therefore, designed environments should look natural, and curved lines look more natural than straight lines. In America, the romantic style was found early in the walkway design of new cemeteries (Langdon: 1994), then was widely used in the design of gardens, as well as the curved streets of community developments. One of the first and most famous romantic style communities is Riverside, Illinois, a Chicago suburb planned by Frederick Law Olmsted and Calvert Vaux (See Figure 1.7). Secondly, the idea of the hierarchical street system with no crossing streets was adapted from the Radiant City concept by Le Corbusier. Finally, the idea of loop and cluster roads within subdivisions, which emerged during the 1930's, was influenced by the Greenbelt towns and Federal Housing Administration (FHA) community design principles (Girling: 1994). After World War II, these concepts have been widely practiced in suburban developments, resulting in today's hierarchical curvilinear street system with loop and cul-de-sac streets.



Figure 1.7 Riverside, Illinois

In opposition to the above characteristics, some communities are laid out in a grid street system, especially the older American communities built before World War II. The gridiron is the oldest method of city planning in the world, first used by Hippodamos the Milesian, almost 2,800 years ago in Greece (Newton: 1971). One of the very well known ancient Greek cities, designed according to the Hippodamian method, is Priene (See Figure 1.8). Built on a very steep hillside near the River Meander in Greece, it is well preserved. This method superimposes the grid layout of the town upon the natural landscape, and is criticized for its lack of relationship with the sloping terrain.

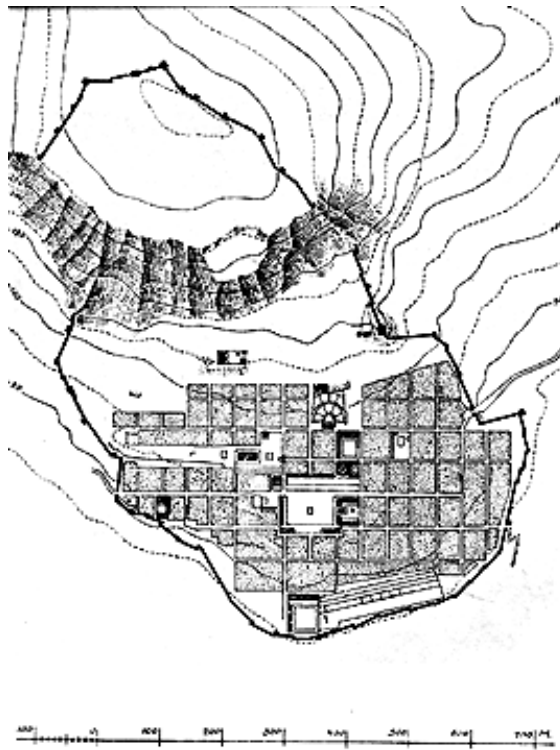


Figure 1.8 The plan of Priene, near Miletus

In America, the gridiron was the principal pattern of settlement since the beginning of colonization (Krieger: 1987). An important person influencing the expansive practice of gridiron planning was Thomas Jefferson. He used this method to define many towns and regions in America and believed that the gridiron pattern of settlement would enhance a citizen's land ownership, and in turn promoting the democracy of the nation. Jefferson was concerned about equality of land dispersement. The street grids have a square or rectangular lot layout which is standardized and, essentially, more scientific rational than irregularly shaped lots.

American gridiron communities were often located next to railways, a major source of transportation in the late 1800s. Because the grid streets were built to serve carriages and pedestrians, not cars, they were usually narrower than curvilinear streets.

For example, the minor streets of Oak Park, Illinois, which were laid out on an irregular grid in 1871, are only 30 feet wide (Langdon: 1994). This allows people to cross the streets safely. Another characteristic of grid streets of these old American communities is that blocks are within walking distance. In Oak Park, block sizes are from 500 to 600 feet long; only about a 2 minute walk. Many intersections of the grid streets provide alternate routes to destinations and are locations for important and interesting places. Although traffic can flow through every street in the grid system, there is some hierarchy of the streets which responds to their use as boulevards, principal streets, and minor streets (Langdon: 1994). Boulevards are typically in medium and high income communities built during the late 19th and the early 20th centuries. Boulevards are large streets with medians in the centers and can be two-lane or four-lane, one-way or two-way streets. Generally, trees are planted along the median and sidewalks. The boulevards are not only the main transportation routes but also the green public spaces of the communities. An example of a boulevard is Euclid Avenue in Upland, California, which was laid out in 1882 (Langdon: 1994). Because of its broad median (65 feet wide), the avenue is a popular place for public activities such as jogging, bicycling, dog-walking, and picnicking.

Principal streets or main streets are mostly located in business districts, the most dynamic places of gridiron communities where various activities occur (Langdon: 1994). Buildings along the main streets include retail shops and public buildings such as libraries, post offices, schools, and churches. The main streets are designed with two or four lanes to serve large numbers of vehicles and pedestrians and provide opportunities for regional transportation such as public transit. Lake Street in Oak Park, Illinois, is a typical example of a main street.

Finally, the minor streets serve as connections between residential neighborhoods and the commercial and/or civic districts. They are narrower and have fewer activities than boulevards and principal streets, for example, the minor streets of Oak Park, Illinois, are only 30 feet wide.

The suburban grid street system was rejected for a long time by traffic engineers and developers. Criticism on suburban streets will be shown in the next topic 1.3.

B: Streets as open spaces

Streets not only provide for vehicular circulation routes but also public space for communities. Social activities on the streets range from informal conversation between neighbors to residents organizing formal events (Girling: 1994). Street life is affected by physical street characteristics. The physical forms and functions of the streets in America have changed gradually over time.

During the colonial period, 1680 to 1862, streets were narrow, paved with brick or stone, or left unpaved. They were usually well-defined by building walls along the streets, or by street trees. These streets connected mixed use areas including residential, commercial, recreational, official, public buildings and public uses; they were rich with diverse activities, serving both pedestrians and vehicles.

The early evidence showing the formally designed streets as an important part of public space, as well as transportation routes appeared in the 1869 plan of Riverside, Illinois, the Romantic style community planned by Olmsted and Vaux (See Figure 1.7). The network of streets, enhanced by street trees, sidewalks and building setbacks served as the community's outdoor rooms. It is the first time that the setback of the building was established to enhance streetscape.

In the 1929 design of Radburn, New Jersey, there was an attempt to separate public spaces from private spaces. A cul-de-sac driveway accessed the center of each block where the service area for the housing units were located (See Figure 1.2). This entrance and service area was intended to be the private zone, in other words, the back of the house. The front of the house faced, along with the other neighborhood houses, a common green space accessed only by sidewalks. The driveway, however, became a

popular public area of the block as the reliance on cars increased, serving as a walkway, a meeting place, and a playground.

An early example of the typical neighborhood streets of today's suburb is found in the plan of Levittown, Pennsylvania, a mass production housing development built in 1950 by Levitt and Sons, Inc. It housed as many as 60,000 to 70,000 residents, and occupied more than 5,000 acres of land (Rowe: 1991). In this plan, the community's public spaces were designated as forest reserve and remained separate from the residential neighborhood. Broad streets with extensive building setbacks were designed for the convenience of the automobile, making the street public space nonexistent. Many of today's suburban streets have similar characteristics as those of Levittown, New York.

1.2.2 Pods

The next element of the suburb structure is called "pods" by developers. According to Langdon (1994), pods are sets of developments that branch off collector roads (See Figure 1.9). The way in which the developments are organized can be compared to the connection of a pea pod to its stem. For example, each development pod is often separated from each other and connected by a greenbelt. Each has its own specific function such as residential subdivisions, shopping centers, and office parks, with no direct connection between them. To get from one pod to the next, one has to drive onto the collector roads that connect them. Pod planning is widely used even in the single-use residential developments where individual pods are called "neighborhoods" or "villages". If a suburbanite wants to visit a friend living 1/2 mile from him/her but in a different neighborhood, he/she has to drive from his/her home onto a collector road, then into the neighborhood where his/her friend lives. Instead of walking to visit his/her friend, he/she may have to drive 2 miles to get there.

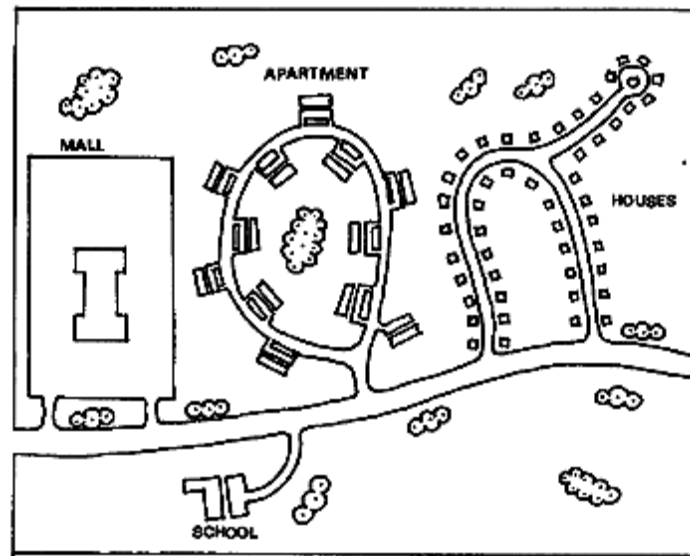


Figure 1.9 Pod zoning

1.2.3 Housing

Grouping houses along minor streets creates neighborhoods. During the post-World War II suburban growth period, large numbers of houses were constructed rapidly for the moderate-income families of returning veterans. Most suburban houses were built for a nuclear family comprised of parents and their children. As Jarvis (1993: 13) describes, their ideal living environment is “a single-family home set on the lawn, far from noisy, dirty urban centers and factories.” The houses gradually became symbols of the quality of life, success, and privacy associated with the “American Dream”. Hayden (1984: 38) describes the change in the size of the American dream house as the following: “...From 1950 to 1980, the dream houses got bigger and bigger until Americans enjoyed the largest amount of private housing space per person ever created in the history of urban civilization... .” These characteristics of suburban houses created a standard for living. Most of them are low density single-family detached houses with large lawns in the front. The houses are reached from driveways branching off the minor streets into garages

attached to the side of the houses. Because today's economic situation requires both parents to work to support their family, both need their own car. Many suburbanites depend on at least two cars per household, thus requiring large garages. Sometimes, for the sake of convenience, garages are located very close to the minor streets and dominate the view from those streets. Because the only access to the house is from the minor streets, this front area is used also as the utility service areas for such activities as mail service and garbage collection. This creates a front/back issue. This confusion between the front and back of the house occurs when service uses share or predominate the front area. The front of the house, accessible by a motorway, serves as entrance, walkway, playground, and service area. While the other side of the house, accessible by a walkway, is often neglected.

1.2.4 Suburban Commercial Centers

Suburban commercial centers are separated from the residential subdivisions as mentioned above. Rowe (1991: 110) describes four types of retail centers in today's suburb, which include: "the strip commercial centers, the roadside franchises, the shopping villages, and pedestrian malls." Strip commercial centers are sets of retail shops located along highly traveled roadsides to attract traveling customers. They are the oldest type of all the retail centers. Before the use of automobiles, stores were located as close to the streets as possible so that passersby took a good look at their window displays. Moreover, they were located only in downtown areas or near the train stations where there was easy pedestrian access. With the popularity and prominence of automobiles, retail stores no longer have to be in downtown areas. People travel by car, and go wherever they want in less time. Therefore, retail shops moved to the suburbs. The one important thing to provide was convenient parking spaces for those customers, thus resulting in the characteristics of today's strip commercial centers. Typically, these

suburban commercial centers have large spaces of parking lot in the front which is the first thing travelers see when they pass by (See Figure 1.10).

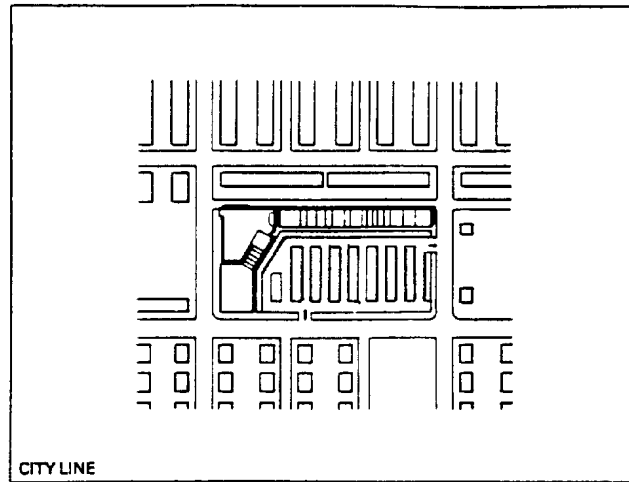


Figure 1.10 The strip commercial centers

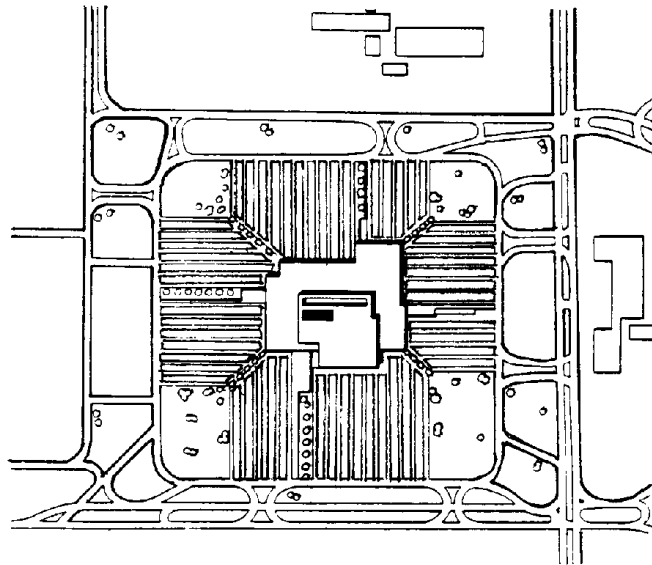
Roadside franchises are a very popular type of retail center in America today. Various kinds of roadside franchises include: fast-food restaurants such as McDonald's, Burger King, Pizza Hut, Roy Rogers, and Hardees; hotel businesses such as Comfort Inn, Holiday Inn, Marriott Hotel, and Econo Lodge; and superstores such as Wal-Mart, K-Mart, and Lowe's.

These stores aim to gain high profit by mass sales and services. To reduce costs, they use standardized in design, production, and services for their stores all over the country. McDonalds restaurants in California look exactly the same as those in Florida; Even the food tastes the same. Their physical characteristics are designed to be seen and recognized from far away.

Shopping villages are groups of retail shops compactly located in the same area. They are located typically off the arterial roads or the collector roads where these shops

share the same parking spaces. Therefore, the parking lots dominate the area. Groupings of retail shops include U-shaped, L-shaped, or H-shaped plans.

Finally, pedestrian malls are complexes of retail shops located inside very large buildings (See Figure 1.11). Occasionally parking spaces are provided inside the buildings. Microclimates within the malls are fully controlled by air conditioners or heaters, providing customers with the most convenient climatic condition. Because they are completely enclosed and internally focused, malls look like groups of gigantic solid boxes, without any voids or windows, surrounded by a sea of cars in the parking lot. Pedestrian malls are the largest scale commercial development in the suburb.



SOUTHDALE

Figure 1.11 The pedestrian mall

The number of suburban shopping centers are increasing remarkably. Rowe (1991: 109) points out that “...Between 1950 and 1960 the number increased from about 100 to around 3,000, and by 1975 it was 18,500, accounting for 25 percent of all retail sales. In the following ten years the number of centers increased to around 25,000, with over 50 percent share of total retail sales....” Characteristics and location of retail centers are also changing. In the past, they were the local community shopping and civic centers, serving both pedestrians and automobile users, and were located in downtown business areas. Because the automobile is the main transportation in America, modern retail centers are designed to be easily accessible to the automobile. Retail centers moved to the roadside with heavy traffic to accommodate and attract a large number of customers. Large parking spaces and parking buildings respond to the needs of those customers.

Now that we have a basic idea about the structures of the American suburb; the next section discusses the physical and social problems of today's suburbs.

1.3 Criticisms on Suburbs in America

As mentioned previously in the brief history of suburbs, criticism of suburban developments have occurred for a long period of time. Criticisms are categorized into two major topics: poor quality of suburban living environments, and poor quality of suburban life. These two topics are related.

1.3.1 Critique of suburban living environments

A. The failure of zoning practice s

Krueckeberg (1983) states that zoning ordinances in America were established during the late 19th century and the early 20th century (by 1920). Zoning ordinances give the local government the right to control the use of private and public property by zoning land areas for different uses. They are used to define the allowable density, height, and setback of the buildings, as well as the building uses of new development. The purpose is to separate residential areas from industrial and commercial areas and to prevent congestion in commercial areas. Because retail shops, offices, and factories cause traffic congestion, loud noise, and pollution, it was believed that they should not be anywhere near residential neighborhoods. As time passed, the zoning concept was taken into more consideration. Each zone was assigned a different use and separated from one another. This practice is called pod zoning or single use zoning. Andres Duany and Elizabeth Plater-Zyberk (Knack: 1989), proponents of New Urbanism, dislike pod zoning or single use zoning because it increases vehicle trips and trip distances. One must drive to get from one place to another to do shopping or perform various activities. Also, people spend less time walking, jogging, and bicycling outside their houses because there is nowhere to go and nothing to see except rows of houses that look the same. Low density pod zoning has resulted in a poorer quality of suburban life. It separated different uses from one another, creating traffic problem, financial problem, and the lack of social life in the suburb as explained in the next section (1.3.2).

B. The lack of public spaces

Langdon (1994) describes that people need contact with others besides their own families. They need places where they can go to meet other people in their neighborhood, such as a coffee shop, a drug store, a neighborhood park, or even a sidewalk in front of their own houses. Conversing is a way of exchanging information, both within and without the neighborhoods, and to relax from working and the household routine. Moreover, people enjoy watching other people engaged in activities such as walking a dog, talking, or bicycling. It is a form of recreation. However, a lot of these informal gathering places were zoned out of residential areas in the last 50 years because of single use zoning. Furthermore, streets lost their role as the primary public space. During this time, developers and designers abandoned gradually the design of gathering spots in the neighborhood.

C. Critiques of transportation in the suburb

1. Criticisms of the street system

As pointed out in section 1.2.1 Streets, street systems in the suburbs include hierarchical sets of curvilinear streets including limited-access highways, arterial roads, collector roads, and minor streets. They have been criticized as explained in detail below.

Kunstlers (1993) states that superhighways caused the rapid expansion of the suburbs (1950-1980) which drained the cities of their medium and high income residents and business sectors. Another critique points out that the limited-access highways acting as physical barriers discouraging social relationships between residents of suburban communities. This results in isolated, disintegrating communities in the suburbs.

Arterial roads and Collector roads, the most popular locations of suburban commercial centers, are criticized for their lack of sidewalks and bikeways as they are

mainly designed to serve motorists. To go to the nearby neighborhoods, residents must walk along busy collector roads without the provision of sidewalks.

Minor streets usually are designed as a loop and cul-de-sac systems to provide privacy to residential neighborhood. Loop streets are more preferable than a dead-end street or cul-de-sac, because they provide more choices of movement within the neighborhoods (Girling: 1994). Moreover, cul-de-sac street residents can not choose an alternative way to go to their destination; Every resident living on a cul-de-sac has to take the same route to get into or get out of their houses. Another disadvantage of cul-de-sac streets is that they discourage walking and biking because they lack choices of routes to the destination. As Langdon (1994) says, people usually walk when there are some interesting things for them to look at. If they have to take the same route every time they leave their houses, in time, they do not want to go out unless it is necessary. Cul-de-sacs have disadvantages also for children when it comes to learning and exploring their own neighborhood or those adjacent because they have to walk along busy collector road to go to other cul-de-sac. The minor streets usually are very wide due to a legal requirement. Because they usually are one-way streets with only a few cross roads, the cars often move along them at a very high rate of speed, and it is unsafe for persons trying to cross these streets. Conventional developments were designed to make it convenient for cars, but not for the pedestrian; If streets look offensive then nobody will walk on them. Curvilinear streets are criticized as being disorienting, for it is difficult for people to find their way among them.

2. Traffic issues

There is some misunderstanding about traffic issues among some people. According to Nationwide Personal Transportation Study (Bookout:1992), “nearly two-thirds of the traffic growth in highway travel from 1983-1990 can be attributed to increases in the number of vehicle trips and increased trip distances. The growing reliance on cars for daily travel needs accounted for over 25% of the growth in travel” (See

Figure 1.12) As Andres Duany (Knack:1989) states, it is the pattern of growth not the growth that is to be blamed. Victor Mirontschuk, president of Houston based EDI Planning and Architecture (Bookout;1992) states that Americans prefer traveling by cars more than other types of transportation because they do not have better choices. Low-density planning makes public transit prohibitively expensive. Hierarchical street systems, single use zoning, and low-density planning in suburban are factors that increase the number of vehicle trips and, ultimately, trip distances. People have to drive through the hierarchy of streets to get from one place to another. They are unable to choose the shortest and the best way for their trips. Duany and Plater-Zyberk (1992) say that traffic congestion is prominent on the collector roads due to traffic from many minor streets; When several minor streets filter into a few collector roads, the increase in the concentration of traffic is dramatic.

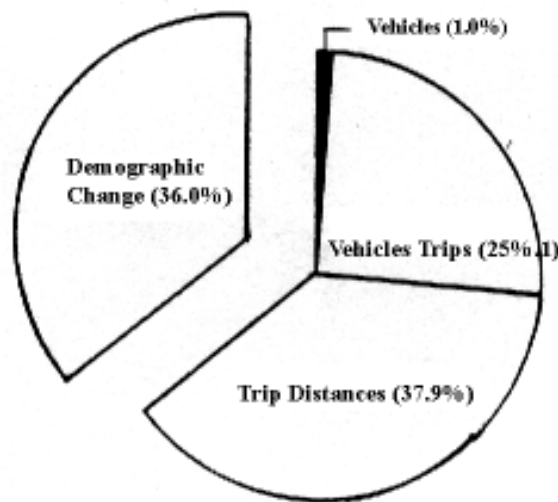


Figure 1.12 Components of growth in Highway travel, 1983-1990

D. Poor quality of architecture

Building architecture is one the most noticeable elements in the landscape. Quality of the buildings affects visual quality as well as quality of life of those who live or work in them. Most of the building construction in American suburbs is driven by commercial operations that have a goal of gaining the highest profit. As a result, many buildings were built hurriedly to reduce costs, and design features usually were the last thing to be considered by the developers. James Howard Kunstler (Hochstein,1993: 79) criticizes suburban architecture in his book, *The Geography of Nowhere*:

...80% of everything ever built in America has been built in the last fifty years, and most of it is depressing, brutal, ugly, unhealthy, and spiritually degrading- the jive- plastic commuter tract home wasteland...the Lego block hotel complexes... the Orwellian office 'parks' featuring buildings sheathed in the same reflective glass as the sunglasses worn by chain-gang guards...the freeway loops around every big and little city with their clusters of discount merchandise marts, the whole destructive, wasteful, toxic, agoraphobia inducing spectacle that politicians proudly call 'growth'...

Taking a closer look at suburban commercial centers, one can see the so called production buildings. One design plan can be used for every roadside franchise in the country regardless of different sites and surroundings. Kunstler (1993) says that the buildings themselves are not important anymore to developers or owners. The main goals are to advertise, communicate, and attract customers. Bright colored buildings with various types of signs, such as free-standing commercial signs, banners, and signs posted on the buildings, compete with each other along commercial streets. The size of the shopping malls are bigger and bigger. Their empty walls make them look like huge concrete boxes with no signs of life. Some housing developers build rows of houses that look exactly the same, thus contributing to the loss of regional identity. Langdon (1995) criticizes expensive new tract houses in the suburbs saying they can be compared to the 4,700-pound behemoth Cadillacs of 1959. The proportion of the houses are too large. To reduce construction

costs, many exterior details are eliminated, thus resulting in houses of awkward scale, which usually are box-like in shape with unbalanced window settings and huge attached garages. American homebuyers accept these housing designs since their lifestyles have changed to be inward orientation. Because of the fear of crime, the financial problems and the lack of public open spaces in the suburbs, suburbanites prefer spending spare time inside rather than outside of their houses. Convenience and luxurious interiors are emphasized in housing designs. Designers pay attention to each feature of the house such as luxurious bathrooms and kitchens, but ignore the overall living spaces. House design is not about designing good quality spaces to live anymore, rather it is about designing “features”. Each feature of the house is carefully designed to impress visitors, while expressing the success of the owners. Wentling (1995: 35) points out that “...the obsessive focus on these parts of the house is further evidence of an unhealthy trend toward internalization and isolation.” Overall interior spaces as well as buildings’ relationships to their lots, neighborhood and community should be considered in housing design. Moreover, the design of their exterior and interior spaces should be balanced with equal attention.

1.3.2 Critique of quality of suburban life

One of the reasons that contributes to the poor quality of suburban life is the poor quality of the designed environment. Besides the poor environment, there are several problems of suburban life that also relate to one another. These include loss of time, affordable housing issues, financial problems, lack of social life and the unbalanced growth between housing and employment.

A. The loss of time

This issue is mostly due to traffic problems and the street system in the suburb. Because of the single use zoning and the lack of transportation choices, suburbanites

depend on automobiles as their main transportation. According to Girling (1994), average commutes among the outer suburbs are about 8 to 20 miles per day. In addition, suburbanites spend 1 to 2 hours a day traveling between their houses and offices. Duany and Plater-Zyberk (1992) write that a family in Orlando, Florida generates about 13 trips per day. Much time is spent on the street driving instead of doing more useful activities. Children and the elderly are helpless in this kind of environment because they can not drive. Many stresses are put on parents who spend at least 8 hours per day working, 1 to 2 hours a day driving to and from work, 1/2 to 1 hour for grocery shopping, and 1/2 to 1 hour taking their kids to and from schools, including the children to special classes outside of school such as swimming, music, or ballet. Parents then provide elderly family members rides to wherever they want to go, for it is almost impossible for them to walk, and public transportation is provided rarely in the suburbs because of low density planning. What happens to the elderly who live alone and are unable to drive themselves? Obviously, they can not live alone in the suburbs without help from others, without assistance they are isolated. This is not a problem specific to the elderly but to anyone who is unable to drive, does not have convenient access to an automobile, or can not afford to purchase a car.

B. Affordable housing issues

Housing opportunities for low income families are restricted in the suburbs primarily because of the lack of mixture of housing types. Homeowners still prefer large lot and single homes located in low density communities over the less expensive small lot size homes in higher density communities; and zoning supports this. As a result, lower income residents are excluded from the suburbs. Moreover, suburban housing sprawl rapidly results in inefficient use of land and infrastructure services. Developers pay for the proposed roads, water and sewer systems, and other important public services, thus affecting the cost of new homes. Finally, residential developments today are managed by

market segmentation (Langdon: 1994). Each community is designed for a specific market with a certain type of customer in mind. The developed communities have a limited number of house styles to choose from. Duany and Plater-Zyberk (Knack:1989) state that “encouraging single-income neighborhoods . . . contributes to the economic fragmentation of American society” Moreover, there are rarely new developments for low-income people. If one looks at middle or high-income neighborhoods, few affordable houses are found.

Another cause of affordable housing issues is single use zoning. This type of zoning prohibits commercial stores with apartments built above them. Apartments above stores are among a few of the affordable housing sources for those with a low income.

C. Financial problems

Suburban life is a very expensive one. In many families both parents work and children depend a lot on them, so each family needs at least 2 cars. If there are teenagers in the family, they may also need their own vehicles to be independent. If this is the case, the number of cars increase from 2 to 3 cars per family. Langdon (1994) indicates that owning a car can cost each family about 24.6 percent of their income (not including taxes). It makes little sense for people to live in the suburbs if they pay this much money just to maintain their vehicles. Why do most prefer to live in the suburb than move to the cities or to the rural areas? There is more convenient and effective public transportation provided in some cities, and in the rural area living expenses are even cheaper. The answers are very simple, people want to live at lower densities, near where they work, and much of the work is provided in the cities or in the edge cities but not in the rural areas. These are several reasons why people move to the single family detached houses in the suburb, as well as to seek a better quality of life. They still pay dearly for this.

D. The lack of social life

Lack of social life is caused by (1) the poor quality of the designed environment such as the declination of the streets as public open space and pod zoning developments, (2) the lack of time, and (3) financial problems associated with suburban life. According to Langdon (1994), suburbanites' leisure time is limited; they spend most of their time at work, in their automobiles and with their own families. They carefully manage their budget in order to live in the suburb. Moreover, as crime rates increase around neighborhoods, fear of crime and pod zoning limit opportunities to meet people from outside their communities. The American lifestyle gradually changed to be more inwardly oriented than in the past. Watching television is the most popular way to relax. Fewer people go out to walk, bike, or meet their neighbors in the evening, for it is not convenient, not interesting, and not satisfying to do that; There are no sidewalks provided, no parks within 5 to 10 minute walking distance, no coffee shops or ice-cream shops. Nothing is there except rows of houses that look the same as their own houses. Fromm (1991) points out that a good community needs good relationships among residents, interaction within the neighborhoods, and the willingness to help one another. These characteristics are hardly found in suburban life today. To solve this problem, the suburban community design has to be reconsidered. Suburbs need public places for social interaction such as neighborhood's parks, local stores, and civic centers. More activities among residents should be encouraged.

E. The unbalanced growth between housing and employment

According to Javis (1993), another criticism on the suburban growth is the lack of balanced growth between housing and employment. Most suburban areas are used as bedroom communities; people commute to employment and to retail shops located in other towns or districts. As a result, the local tax base is not adequate to support the public service needs of the residents.

1.4 Options for Suburban Growth

Suburban growth causes many serious problems as already described. The next question is how should those problems be solved. How should we deal with the suburban growth dilemma? Every possible way to deal with these problem needs to be examined. Caltorpe (Katz: 1994) indicates that there are 4 options for dealing with regional growth. They are to : (1) limit overall growth, (2) allow growth until it becomes a continuous developed area, (3) redevelop and infill in the growth area, and (4) plan new towns with effective design concepts.

The first two options do not seem to work. If we limit the overall growth, new developments expand into the rural areas beyond the existing suburbs. This causes more sprawl and starts the problems all over again. For the same reason, if the growth is left uncontrolled, it will result in sprawl, congested traffic, and cover the regional identity of the place. Calthorpe's last two options are effective and currently practiced. Actually, New Urbanism is one of the suburban design theories concerned with these options. Both have advantages and disadvantages. For example, the infill and redevelopment will help preserve open space but may be obstructed by the current buildings' owners who reject any growth in their neighborhood. New towns are easy to develop with well designed plans but they will affect regional environments. (The program of Williamsburg town design uses the last option of new growth which will be explained in details in Chapter 2 "The New Urbanism".)

1.5 Conclusion

In this chapter, the overall picture of today's suburbs and their problems are described. Suburban America has a long history. There are several design theories behind its designed environments such as the Garden City concept, the Decentralization concept, the Broadacre City concept, the Radiant City concept, and the Romantic Movement. All of these theories attempt to create better places to live. However, nobody expected the coming of the automobile era to powerfully impact the human lifestyle. All of these factors gradually molded the suburban environment with its unique characteristics as well as the problems. There are many critics on both the quality of suburban designed environments and the quality of suburban life. Criticisms about suburban living environments include: (1) failure of single use zoning, (2) lack of public spaces, (3) curvilinear streets with cul-de-sacs, (4) traffic issues, and (5) poor quality of architecture. Criticisms about the poor quality of suburban life include: (1) loss of time, (2) affordable housing issues, (3) financial problems, (4) lack of social life, and (5) unbalanced growth between housing and employment. These issues are interrelated, impacting one another. The New Urbanism movement is an attempt to solve these problems. In the next chapter, the New Urbanism concept is explored in detail to present solutions for these suburban problems.

Chapter 2: The New Urbanism

2.1 The New Urbanism Concept

2.1.1 Background

The New Urbanism or the Neo-Traditional Neighborhood Design (NTND) is the latest movement of suburban planning in American history that emerged during the 1980's and the 1990's. It is one of several attempts to solve the problems of suburbia discussed in Chapter 1. According to Christoforidis (1995:1), the objective of this new design concept is “to create an environment suited to human scale and responsive to contemporary transportation, developmental, legal, and sustainability issues”. The first famous project developed by Robert Davis in 1981 under this design concept is Seaside in Walton County, Florida. Miami architects Andres Duany and Elizabeth Plater-Zyberk were hired to design a new and better community. They explored old southern American towns to see how they work, then developed design principles based on what they found and used those principles to design a new community.

In 1989, Seaside got much attention from planners and architects both in America and in Europe. It inspired and encouraged movements to redesign suburban communities, and for that reason this movement is well known to the public as Neo-Traditional Neighborhood Design (NTND). It means that this new community design concept adapts ideas from traditional, older town design principles and uses them in modern communities. This term, however, may give a very narrow view of the new suburban design movement. One may understand it to be nothing more than the redesigning of traditional old towns. Actually, learning from the past is just one of several approaches of this concept which will be explained in the next section, 2.2 Types and Principles of the New Urbanism/NTND. There are many types of this design movement which are different in detail but based on the same theory. Some of them do not mention traditional town planning at all, and that is why the term the “New Urbanism” is now used now to

represent this concept of suburban planning. As Calthorpe (1994) points out in the book called *The New Urbanism*, the concept is not a new idea. It was addressed in urban planning theory by such city planners as Jane Jacobs, Vincent Scully, and others. However, New Urbanists apply this concept when designing suburban towns and communities. Before explaining the definition and principles of the New Urbanism, it is important to know the concepts which were their inspiration.

As American cities grew, there were many problems such as traffic congestion, air pollution, poverty, and crime. Many studies are done on the growth of American cities and how they affect people's lives. Several theories concerned with urban design, called "Urbanism", were developed (Katz: 1994). One of the most famous theories is presented by Jacobs (1961) in her book called *The Death and Life of the Great American Cities*. She points out how the fundamental components that create the cities work. These fundamental components include streets and sidewalks, neighborhood parks, and city neighborhoods. In the book, she suggests that the healthy city needs diversity which is achieved by mixed primary uses, small blocks, various age buildings, and a sufficiently dense concentration of the city.

2.1.2 Theory of the New Urbanism

New Urbanists address the fact that suburban areas grow dramatically until they begin to function as cities themselves. They become bedroom communities, as well as sources for employment and entertainment. However, suburban growth spreads horizontally because of low density zoning ordinances. This is where suburban planning starts to fail. Congestion, pollution, long drives to work, financial problems, crime, and the poor quality of architecture in the suburbs, as well as in the cities, are some of these failures. According to Calthorpe (Katz: 1994), New Urbanists believe that the suburb should be considered and planned using urbanism theory because of its high population rate, and its ultimate function as a city. To make the suburbs work, they need diversity as

well as a hierarchy of balanced mixed land uses, a pedestrian scale circulation network, appropriate concentration of building density, and good neighborhood structure.

A. Basic Organizing Elements of the New Urbanism

Duany and Plater-Zyberk (Katz: 1994) address three basic elements forming human community: the neighborhood, the district, and the corridor. They are essential pieces which can be combined in any size of human community from a small village to a big city. According to Duany and Plater-Zyberk (Katz, 1994: xvii), “neighborhoods are urbanized areas with a balanced mix of human activity; districts are areas dominated by a single activity; corridors are connectors and separators of neighborhoods and districts.” The neighborhood is a place where residents spend most of their time. They dwell, shop, relax, study, work, worship, watch movies, and converse with one another in the neighborhood. Moreover, the neighborhood should be a place where many residents know their neighbors and they help one another. Children in the neighborhood can play freely on the sidewalks under watchful eyes of adults living in the nearby houses, making sure no harm comes to them. The neighborhood is a balanced mix of uses, including housing, retail centers, public parks and plazas, and civic centers. This encourages a variety of activities among residents. Diversity of use is a fundamental component of urbanism at both the neighborhood and regional scale. The neighborhood is an appropriate size for the residents to get to know their own community and their neighbors. New Urbanists agree that the maximum distance between the edges of the neighborhood is about 1/2 mile, which is a reasonable walking distance. Public buildings, public spaces, retail shops, office buildings, and public transit are located in the center of the neighborhood, so there is convenient access to every resident.

The second element forming the human community is the district, an area dominated by single activity. However, there are other activities that support the main one. The district provides residents from nearby neighborhoods with specific services that can not be found elsewhere such as a theater district, college campus, and airports. The reasons why these services and activities can not be included in the neighborhood are that they occupy large amounts of space and because they service more than a

single neighborhood they increase traffic congestion. Successful districts fit within the greater region and link with other neighborhoods and districts via transit networks and circulation corridors.

The last element forming the human community is a corridor. The corridor can be either natural, such as greenbelts, rivers, and wetlands, or it can be man-made such as railways, roads, and walkways. The corridor has several functions which allow the development of communities. It separates, as well as, connects districts and neighborhoods, and provides entry to them. Natural corridors also serve as recreation areas for the residents and wildlife habitats, while man-made corridors are used usually as circulation route for residents.

B. Physical Elements Creating New Urbanism 's Designed Environments

Moule and Polyzoides (Katz: 1994) present three structures of the New Urbanism's communities: streets, blocks, and buildings. Another element to be included is public open space. These elements are interrelated; changing one element affects the others for they are mutually defined. To create a better living environment, these physical elements are carefully designed at human scale, which means they respond to human activities. First, the streets are laid out in a web or networking system. All streets are connected to one another to increase alternative routes for traffic. Streets layered in a hierarchy reduce through traffic in the neighborhood areas (Calthorpe: 1991). Streets are designed to serve all kinds of circulation: vehicle, bicycle, and pedestrian. For that reason, networked streets enhance diversity, an ingredient of a healthy community (Jacobs: 1989) However, one kind of circulation can dominate over the others, depending on the location of the streets. Details of the streets such as trees, furniture, curves, and sidewalks are designed for the sake of the pedestrians as well as the motorists. Streets and sidewalks are not only transportation routes but also public spaces of communities.

The next structure is the blocks. Successfully designed blocks respond to human scale, therefore, enhancing a person's relationship with his/her living environment. One

of the most important elements of the blocks are their edges. Buildings and public open spaces are located at the edges of the blocks where many outdoor activities happen. The built edges of the block also act as a street wall, providing a sense of enclosure to the passersby. Blocks with an appropriate walking length of 250 to 600 feet make it easy for residents to reach the block edges from anywhere around or inside the blocks (Moule and Polyzoides, Katz: 1994). Blocks with an appropriate walking length, a fine grain of buildings, and a mix of uses encourage diverse activities among residents, creating community life. Other important elements of the blocks are the height and mandated setbacks of buildings that impact the scale of the street. Appropriate ratios between the height of the buildings and the street's right of way, about 1: 3-4, create charming streetscapes. Finally, landscaping is also important. Landscape design helps create friendly and comfortable environments within the blocks.

The third physical element creating New Urbanism designed environments is the buildings. New Urbanists argue that buildings should not only be designed for their function, but also by their type. Harmony, as well as diversity is the quality of a desirable living environment (Javis: 1993). If buildings are designed only by their functions, those with different functions look absolutely different. This happens in the suburbs. On a suburban commercial strip, you find banks, retail shops, gas stations, restaurants, office buildings, and shopping centers with their own identities, size, shape, and color. Groups of buildings with absolutely different characteristics create unattractive scenes in the landscape. Consideration of building types when designing communities can solve this problem. Another advantage of designing buildings by type is the building flexibility and adaptation to different uses when necessary. This provides an economic benefit to building owners. Moule and Polyzoides (Katz: 1994) point out two types of buildings,

fabric and monumental buildings. “Fabric buildings are to conform to all street and block-related rules and are consistent in their form with all other buildings of their kind.

Monumental buildings are to be free of all formal constraints. They can be unique and idiosyncratic, the points of concentrated social meaning in the city” (Katz, 1994: xxiii).

The final element of public open space is often neglected. People usually think of public open space as the space leftover after building development, spaces that are not occupied by buildings. Actually, they are the public rooms of the community, which are important ingredients in the community fabric. Public open spaces serve as recreational areas, public assembled places, vehicular circulation, playgrounds for children, and wildlife habitats. They range from small lanes at the center of residential blocks to large community parks. These spaces are open or enclosed depending on the surrounding blocks, buildings, and streets.

The balanced mix of streets, blocks, buildings, and open space create good designed environments, which enhance the quality of community life. To achieve this goal, a specific code is designed and presented for each development. This code is used to control the overall scheme of the project and at the same time allow for some flexibility of the design. A code is usually the result of an agreement between parties concerned about the designed community, such as designers, contractors, and residents. This is often accomplished via the process called “design charette” (Javis: 1993). These details will be discussed in the next section, 2.2.

2.2 Types of New Urbanism/NTND

There is some confusion about what New Urbanism is and what it is not. There are many terms that refer to this concept, for example, Neo-Traditional Neighborhood Design, Urban Villages, Compact Cities, Compact Urban Development, and Pedestrian Pockets (Handy: 1991). The most widely used terms right now are “New Urbanism” and “Neo-Traditional Neighborhood Design (NTND)”. However, the term NTND tends to give a wrong idea about this design concept as already explained in section 2.1.1. Even though confusing, New Urbanism is the preferable term. According to Christoforidis (1994), five types of related development concepts emerged in the 1990’s: Transit Oriented Development (TOD), Rural Hamlets and Villages, Metropolitan Purlieu, Preservationist’s Neo-Traditionalism, and Traditional Neighborhood Development (TND). They have very similar characteristics but differ in details and emphases. Overall they share the same purposes, which include solving traffic problems and suburban growth, encouraging more activities in the community, and providing residents alternative for transportation. Peter Calthorpe (1993) points out that these conceptual developments were shaped using three general principles; “first, that the regional structure of growth should be guided by the expansion of transit and a more compact urban form; second, that our ubiquitous single-use zoning should be replaced with standards for mixed use, walkable neighborhoods; and third, that our urban design policies should create an architecture oriented toward the public domain and human dimension rather than the private domain and auto scale”. According to Bookout (January 1992), New Urbanism communities are small, compact towns no larger than the walkable radius, and are composed of many housing types, retail shops, public facilities, public squares, and parks. The New Urbanists tend to create pleasing and livable towns by encouraging pedestrian activities and social intimacy between residents in the communities.

2.2.1 Transit Oriented Developments or Pedestrian Pockets (TOD)

Pedestrian Pockets, gradually developed under the term Transit Oriented Development (TOD), is the creation of Danial Solomon and Peter Calthorpe. This concept is influenced by the Radburn ideas, the Garden City concepts, and the Urban Quarter theory (Girling: 1994, Bressi: 1990). The Radburn idea is the result of residential development at Radburn, New Jersey, in the late 1920's by Clarence Stein and Henry Wright. The details of the Radburn idea are presented in Chapter 1. The second concept, the Garden City, was developed by Ebenezer Howard, the London urban design theorist, in 1898. This is also presented in Chapter 1. The last concept influencing the TOD model is the Urban Quarter theory of Leon Krier. Krier presents an ideal community that returns to the form of the pre-industrial city (Audirac, Shermeyen: 1994). His community is mixed-use, with traditional streets and squares, and with a network of public spaces as the primary structural element. Moreover, it has a maximum radius of about a quarter-mile, which is accessible by foot. The Pedestrian Pocket/TODs are the mix of all of those ideas. The Pedestrian Pocket is the correction and the reorientation of the Radburn idea (Calthorpe: 1989). From the Radburn idea, traffic circulation and pedestrian circulation are separate. In the Radburn community one side of the dwellings are connected to a driveway for automobile accesses, while, the opposite side is connected to common open spaces with pedestrian walkways. This separate circulation system failed to serve the residents as the design intended (for further explanation see Chapter 1). Caltrope (Girling: 1993) argues that the social lives of the community streets were destroyed by removing the pedestrian and recreation from them. The Pedestrian Pocket still allows for the Superblock neighborhoods of the Radburn ideas. Automobile accesses are limited to the edges of the community, and transit stations connecting one Pedestrian Pocket to the other are located at the center (See Figure 2.1 and 2.2). The ideas of communities networked to one another by public transit and of complementary uses in neighboring pockets are adapted from the Garden City concept of Ebenezer Howard (See Figure 1.1).

One of the most important features of the Pedestrian Pocket is the open space network. It is designed to be the backbone of the community in the same way as that of Radburn. In the Pedestrian Pocket, private front yards are reduced and replaced with larger public spaces. The hierarchy of public spaces is carefully designed to serve and encourage outdoor activities of the residents. Private yards are designed to face semi-public open spaces, which are linked to the central park and public spaces of the community by public streets (See Figure 2.3).

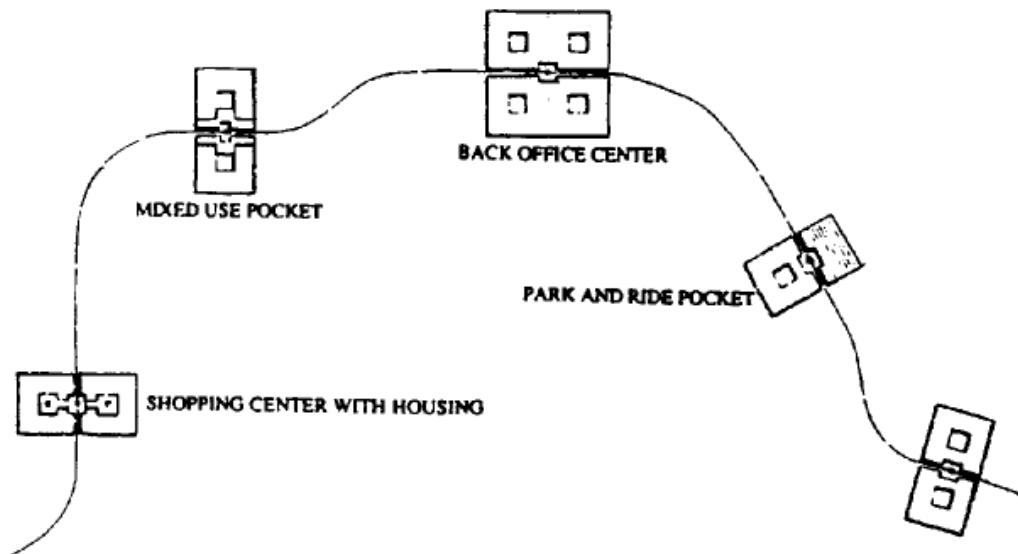


Figure 2.1 The Pedestrian Pocket network

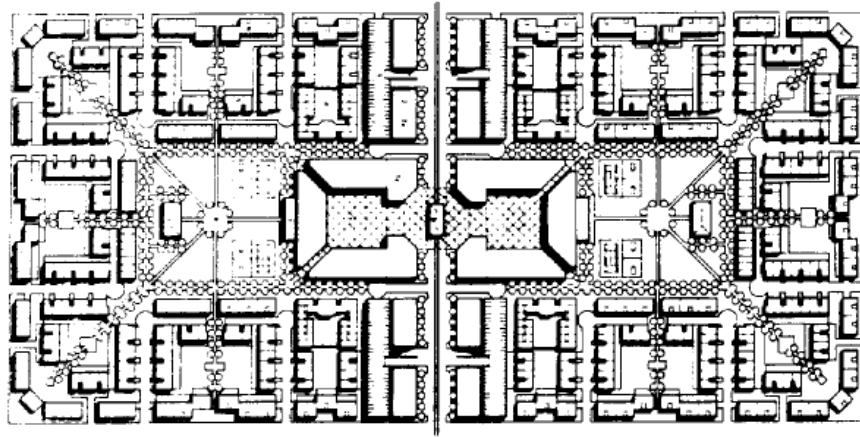


Figure 2.2 The Pedestrian Pocket in detail (area 100 acres), including a transit station in the middle, surrounded by office space, daycare, parks, housing units, and recreation facilities. Note that automobile accesses are limited to the edges of the community.

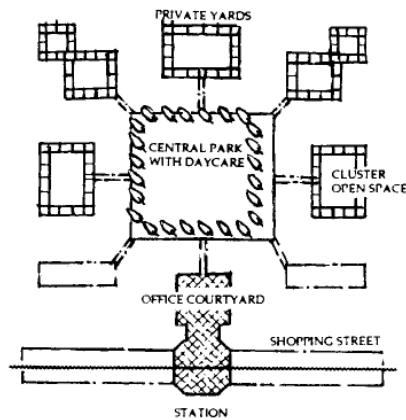


Figure 2.3 Pedestrian Pocket open spaces

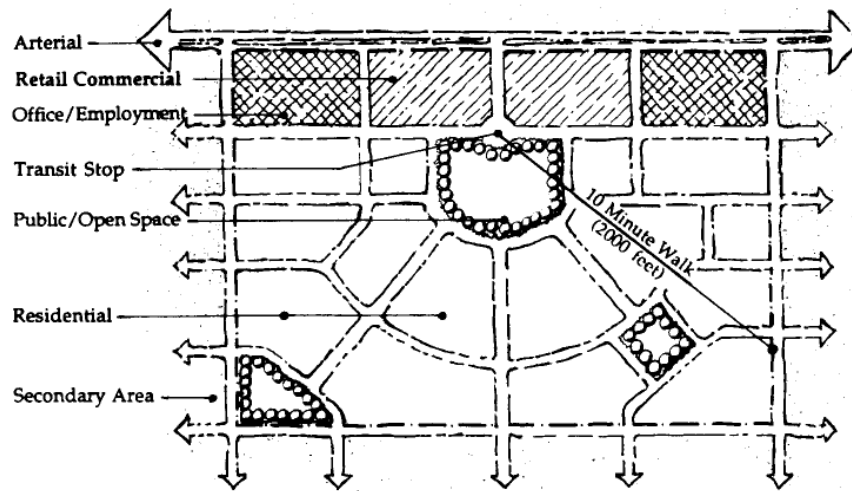


Figure 2.4 Transit-Oriented Developments (TODs), 20-160 acre.

Calthorpe (1993) states the definitions of the TODs in his book, *The Next American Metropolis: Ecology, Community, and the American Dream*, as the following: “A Transit-Oriented Development (TOD) is a mixed use community within an average 2,000-foot walking distance of transit stop and core commercial area. TODs mix residential, office, open space, and public uses in walkable environment, making it convenient for residents and employees to travel by transit, bicycle, foot, or car” (See Figure 2.4).

From these definitions, one can see New Urbanism is inspired by the Urban Quarter theory of Leon Krier. Public transit is an important feature in the TODs. It provides transportation for residents who commute to work elsewhere, and as a result, automobile use is reduced and pedestrian activities are encouraged. The TODs are concerned about natural factors of the landscape as well. Sensitive areas such as wetland, riparian zones, wildlife habitat, and open space are preserved in the design. The TODs are the developed ideas of the Pedestrian Pockets, but they have a finer traffic system. Automobile accesses are allowed throughout the TODs and are coordinated with pedestrian and bicycle paths. Calthorpe (1990) states that the separation of automobiles and pedestrians confuse the residents about the primary orientation to the buildings,

moreover, isolated sidewalks without auto accesses can turn out to be very dangerous places at night. One of the first TOD communities is Laguna West in Sacramento, California, built in 1989, by Riverwest Developments

Although the TOD concept focuses on the design of public transit as an alternative for transportation, in reality, the public transit is inefficient to serve new developments. Moreover, it costs much money and time to build a new one. According to Bookout (Feb.1992: 14), “urban TODs would be located at primary transit points oriented to commercial and job development. Neighborhood TODs would be located close to the primary transit system and oriented to housing, retail, and services...” (See Figure 2.5). A study from the University of Wisconsin at Milwaukee (Bookout: Feb.:1992) points out that mixed use, high density TOD communities with appropriate size of walking distance are supportive of transit. (Audirac and Shermeyen: 1994, Girling: 1993-4, Handy: 1991, Bressi: 1990, Pergine: 1988)

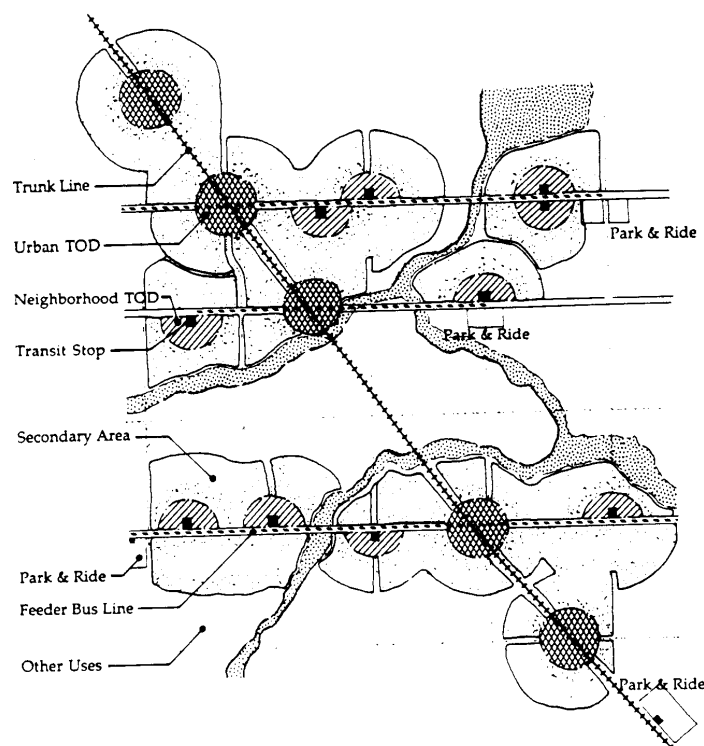


Figure 2.5 Transit system of the TODs

2.2.2 Rural Hamlets and Rural Villages

Rural hamlets and villages are the result of an attempt to protect the rural landscape from rapid suburban growth. These concepts emerged in Loudoun County, 30 miles west of Washington, DC and adjacent to Fairfax County. Fairfax County faces many problems due to its suburban sprawl during the 1970's and 1980's. Loudoun County, is threatened by development pressures from the expansion of the Washington metropolitan area. Planners and elected officials are aware of these tremendous pressures, and are concerned this growth may lead to traffic congestion and urban problems similar to Fairfax County. In 1987 the county's zoning ordinances were updated in order to protect the regional landscape. Rural hamlets and rural villages are the most important parts of the new ordinances that focus on future rural development. Jarvis (1993) addresses that the rural hamlet and village are based on the same design concepts, however, the hamlet is smaller in both population and geographic size than the rural village. According to Jarvis(1993), the rural hamlet and village concepts are based on the ideas of Neo Traditional Town Planning but adapted to rural settings. Various in size, their densities are higher than those typically allowed by rural zoning ordinances. Furthermore, they are pedestrian oriented and often coupled with agricultural or scenic lands preservation efforts. These two ordinances are intended to be an alternative to the typical 5-acre lot subdivisions of this area. The Maximum size of a rural hamlet is about 40 acres. Each contains 5 to 25 residential lots clustered together, and a building footprint of 1/6 to 1/3 acre for each lot. Along the edges of the rural hamlet, large lots with a minimum size of 30 acres are preserved as open space. Only one dwelling unit is built in each large lot. Most of the hamlet lot's area is left as open spaces (See Figure 2.6).

The rural village is larger in size than the hamlet. Each village is comprised of 100 to 300 dwelling units. At the center, the "village proper" is a high density mixed use area consisting of housing units, retail shops, and office spaces. Beyond this village proper most of the areas are preserved as open space as the average lot size is about 50 acres

(See Figure 2.7). Examples of rural hamlets and villages are found in Loudoun County, Virginia.

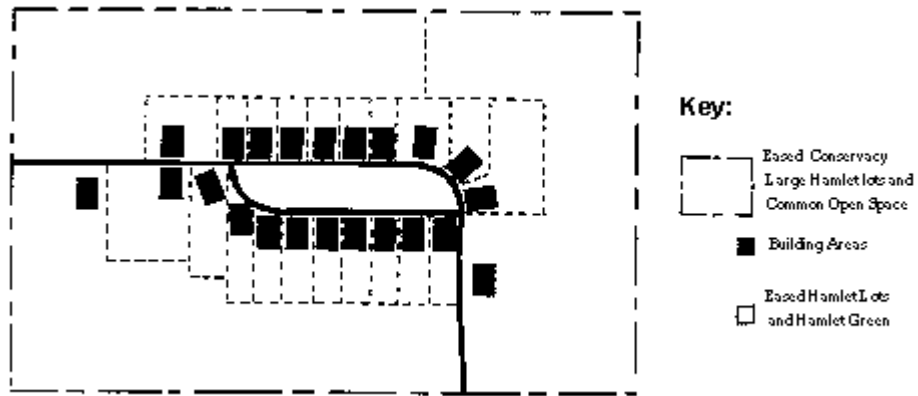


Figure 2.6 Rural Hamlet

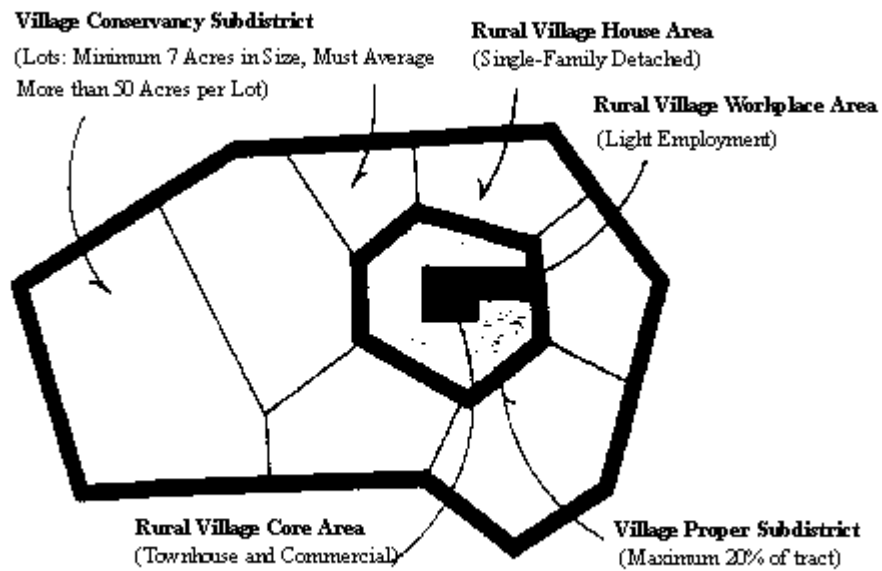


Figure 2.7 Rural Village

2.2.3 The Metropolitan Purlieu

The concept of the Metropolitan Purlieu is that of Canadian planner, Ian Macburnie. Christoforidis (1994) explains that Macburnie's concept is based on many concepts including: TNDs, TODs, and the Garden Cities. The Metropolitan Purlieu is a regional-scale development concept in which each community is about 150 acres with 7,000 residents. It is composed of sets of communities with mixed land uses and public transit nodes. Each community provides 3,000 to 4,000 jobs. In order to control the size and population of the community each is surrounded by a greenbelt. A variety of housing choices are provided, as well as an overall scheme of a grid transportation system which includes public transit, bike paths, and taxi routes (See Figure 2.8). Mixed use communities are located within this grid system. This concept is more flexible than the other NTND concepts. For the reason that, its guidelines focus on building design and placement characteristics such as the height, footprint, setback, and overlooking of buildings rather than land use zoning. Lot owners are not restricted by land use regulations of a new town. This type of a development is planned to be built near the city of Mississauga, Ontario. However, none of these communities are constructed.

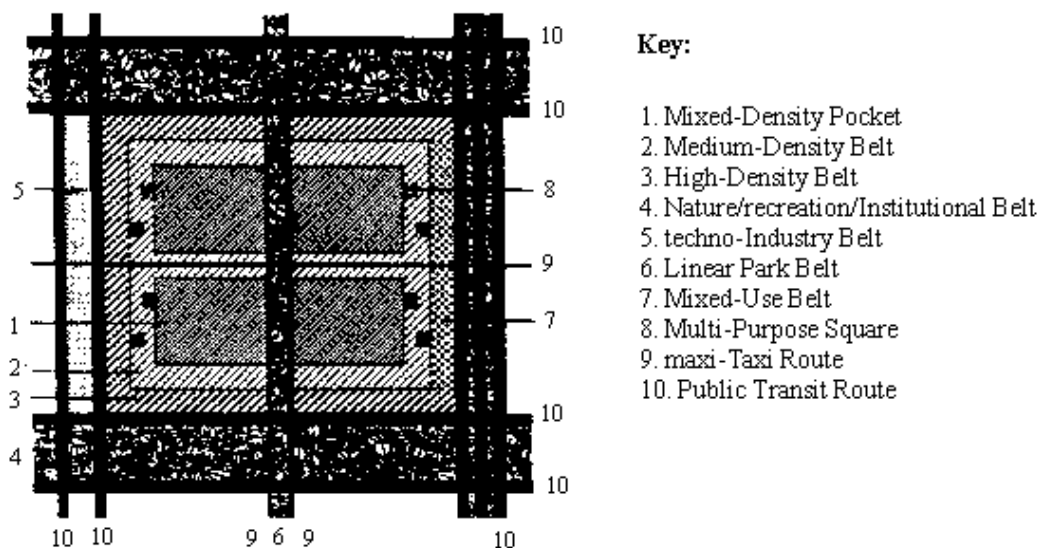


Figure 2.8 The Metropolitan Purlieu plan

2.2.4 The Preservationist's Neo-traditionalism

According to Skelcher (1992), the concept of the Preservationist's Neo-Traditionalism is based on an attempt to preserve and revive the existing small towns in the United States and Canada since the 1970's. Downtown areas used to be the center of businesses and socialization. Since tremendous suburban growth, these activities shifted to periphery areas, and suburbanites now spend most of their time outside the town in which they live. Many downtowns both in America and Canada are losing their businesses, and subsequently, the center of the cities are declining. Planners, developers, and elected officials are aware of these problems. The U.S. National Main Street program and the Main Street Canada Programs are focusing on revitalization of the traditional downtown commercial areas. The programs are enhancing the esthetic appearance of the historic downtown and the economic condition as well. There are hundreds of these projects both in Canada and America, which include small towns and several metropolitan areas. Christoforidis (1994: 435) presents 4 processes organized by the U.S. National Main Street program since 1977. Those processes include:

- (1.) hiring a project manager to coordinate the activities of preservationists and downtown businesses;
- (2.) promotion, or advancing a sense of common purpose toward revitalization;
- (3.) design of the aesthetic enhancement of the town and its historical qualities;
- (4.) and economic restructuring.

To make things work, both private and public sectors are involved. An effective downtown is a place with numerous and diverse activities, that is easily accessible, and where information exchange, monetary flows, and social interaction occur. Mixed-uses are accommodated as well in downtown areas. The major disadvantage of these programs is that better employment opportunities are usually in the larger metropolitan areas far from the small towns, making it difficult for traditional downtowns to attract enough people to maintain their economic status.

2.2.5 Traditional Neighborhood Development (TND)

The last type of NTNDs is well known through the works of Andres Duany and Elizabeth Plater-Zyberk, a husband and wife design team. Both are architects graduated from Yale University, and now operate DPZ, an architecture firm in Miami, Florida. Their main idea of TND is inspired by Krier's the Urban Quarter concept (previously explained in section 2.3.1). In the Urban Quarter, communities are developed according to the characteristics of the traditional small town in United States and Europe of the early 19th century. Andres Duany states that "our suburbs are a traffic-plagued mess that can only be set right by developments that emulate the traditional American small town" (Knack:1989). These TND communities are mixed use, compact towns, with a community center located within a walkable distance of 1/4 mile from most residential areas (See Figure 2.9). TNDs are comprised of one or several neighborhoods; Each neighborhood has its own community center and public facilities. Grid street systems are preferable since they provide alternative routes for the residents. The buildings are designed to be compatible in their size and location with one another. Public buildings and public spaces are considered early in the design, and they are usually placed on squares or at the corners of the streets to serve as landmarks. Pedestrian activities are one of the important elements of TNDs, and networks of open space and pedestrian circulation are systematically arranged throughout the community. Audirac and Shermeyen (1994: 162) present social the following objectives of the TND:

1. By reducing the number and length of necessary automobile trips, traffic congestion is minimized and commuters are granted increased personal time.
2. By bringing more of the needs of daily living within walking distance, the elderly and the young gain independence of movement.
3. By walking in defined public spaces, citizens come to know each other, and to watch over their collective security.
4. By producing a full range of housing types and work places, age and economic classes are integrated and the bonds of an authentic community* are formed.

5. By promoting suitable civic buildings, democratic initiatives are encouraged and the organic evolution of the society is secured.

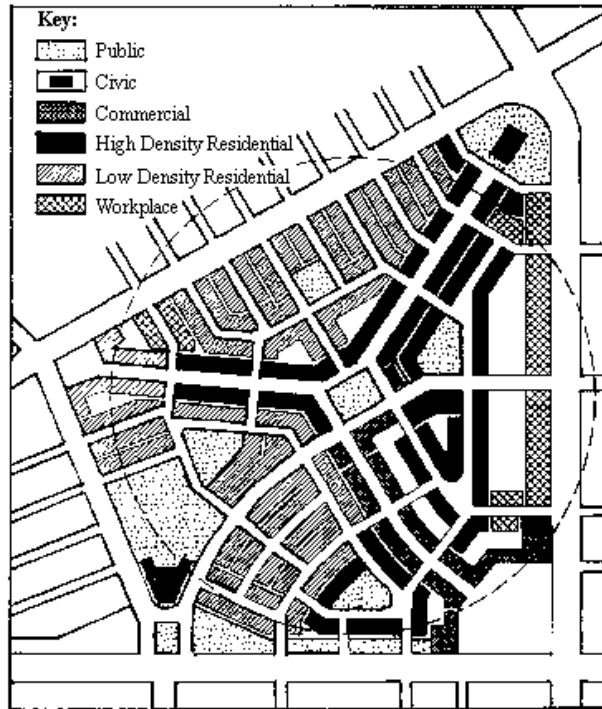


Figure 2.9 Traditional Neighborhood Design

About 50 projects over the entire country are based on the TND concept, the most famous TND project being Seaside, Florida. TNDs are the most restrained and the most inclusive of New Urbanism models nowadays. One of the most important elements of TNDs is a code created for the design community. The code expresses plans, zoning ordinances, and design guidelines derived from typologies of building and public spaces for specific projects.

The first suburban TND project, constructed in 1990 was Kentlands in Gaithersburg, Maryland (See Figure 2.11), designed by Andres Duany and Elizabeth Plater-Zyberk. The site is the 356-acre Kent Farm tract with a significant historic mansion

and several farm buildings dating back to the 19th century. All four sides of the area are adjacent to collector roads. The site is rich with natural features, with lakes and wetland corridors dividing the site into 2 halves. This community has mixed uses with “1,600 housing units, a 120,000 square foot mall, 900,000 square of commercial and office space, a library, a school, day care centers, churches, and recreation clubs” (Girling and Helphand, 1994: 184). The neighborhoods are separated from one another by a greenbelt of the wetlands and lakes, The neighborhoods include Old Farm District, Gatehouse District, Hill District, Lake District, Midtown, and Downtown. Major streets connect the center of each neighborhood to another. The streets in each neighborhood are laid out in a grid system, which is coordinated with the pedestrian sidewalks. Broad sidewalks provide comfort to pedestrians and the buildings located adjacent to them act as street walls. The streets, with carefully designed furniture and details, provide a friendly atmosphere to the passers by. Moreover, consistent building form along the streets and street furniture creates the public character of the streets.

Even though, the architectural design is inspired by the historic mansion and buildings located in the Old Farm District (See Figure 2.10), a wide variety of building types are allowed in each neighborhood. As a result, the overall scheme of Kentlands looks harmonious as well as diverse. The streets, squares, and parks form the systematic open space network of the community. However, some critics say that the Kentlands community design did not apply the New Urbanism’s five minute walking rule. The Gate House District and the Hill District, two main residential neighborhoods, are a ten minute walk from downtown. Another critic points out the lack of relationship between Kentlands community and the existing commercial areas; Residents of Kentlands still drive to the adjacent commercial streets. Finally, the design guidelines are criticized for the lack of information dealing with the management of the wetland areas (Katz: 1994, Girling and Helphand: 1994).



Figure 2.10 The Old Farm Neighborhood, Kentlands

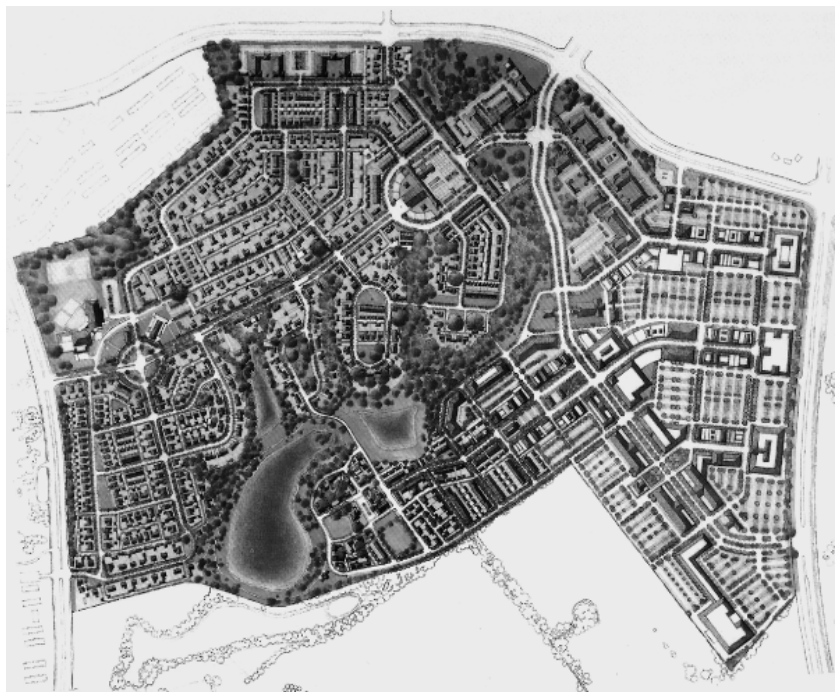


Figure 2.11 The Plan of Kentland

2.3 Conclusion

New Urbanism is the latest theory of suburban design concepts. Its objective is to address the problems of suburban life and the designed environment due to the rapid expansion of the metropolitan areas. Those problems include the failure of zoning practice and street system, the lack of public spaces and affordable housing units, poor quality of architecture, the loss of time, financial problems, the lack of social life, and the unbalanced growth between housing and employment. It is believed that suburban areas grow until they function as towns, and a suburban community should be designed as a town not a bedroom community. The New Urbanism concept focuses on the diversity and hierarchy of the community, the variety of transportation choices, the higher density neighborhoods, and the systematic open space network. The three organizing elements of a New Urbanism community are the neighborhood, the district, and the corridor. Streets, blocks, and buildings are major elements used by New Urbanists to create the designed environments. The five types of New Urbanism concepts are: the Transit Oriented Development or Pedestrian Pockets (TOD), the Rural Hamlets and Villages, the Metropolitan Purlieu, the Preservationist's Neo-traditionalism, and the Traditional Neighborhood Development (TND).

From the five types of New Urbanism, the TND model by Andres Duany and Elizabeth Plater-Zyberk is the most suitable for the design study of the Williamsburg New Town plan in this thesis. The first reason is that social objectives of the TNDs clearly address the solutions of suburban problems as shown in Table 2.1.

Table 2.1: The social objectives of the TNDs, the solutions of suburban problems

The social objectives of the TND(Audirac and Shermeyen, 1994: 162)	Suburban problems that can be solved
1. By reducing the number and length of necessary automobile trips, traffic congestion is minimized and commuters are granted increased personal time.	-The failure of the transportation system -The loss of time

2. By bringing more of the needs of daily living within walking distance, the elderly and the young gain independence of movement.	-The lack of social life
3. By walking in defined public spaces, citizens come to know each other, and watch over their collective security.	-The failure of zoning practice -The loss of time -Financial problems
4. By producing a full range of housing types and work places, age and economic classes are integrated and the bonds of an authentic community are formed.	-The lack of public spaces -The lack of social life
5. By promoting suitable civic buildings, democratic initiatives are encouraged and the organic evolution of the society is secured.	-Affordable housing issues -Financial problems -The unbalanced growth between housing and employment
	-The lack of public spaces -The lack of social life

The second reason is that this concept is compatible with the context of the site. The site is located near the historic colonial town of Williamsburg and architectural consideration is important to the New Town design. Although the site is still undeveloped and generally consisting of woodland areas, it is perceived as a part of the suburbs of Williamsburg. From the reaserch, the TND concept is used to develop new communities in the suburban row lands. It also focuses on the architectural control of the designed community.

Finally, the TND is chosen as a model of study in this thesis. In the next chapter, the characteristics, problems, debates, and strength and weaknesses of the TND concept are examined and discussed.

Chapter 3: The Study of the TND

3.1 Summary of the Characteristics of the Traditional Neighborhood Development (TND)

3.1.1 Land Use and Density

Land use of a TND is mixed and includes residential, commercial, public facilities, and public spaces. Neighborhood size ranges from 40 to 200 acres; If a site is larger than 200 acres, it will be divided into several neighborhoods. As Duany and Plater-Zyberk (1994) point out in the Traditional Neighborhood Ordinance, there are six types of uses included in a TND community: public, civic, commercial, high density residential, low density residential, and workplaces.

Public facilities, public spaces, and transit stops are often located in the core areas to serve all the people in the communities. Moving away from the core, land use changes to workplace, commercial, and high density residential use. However, low density residential use is usually located at the edges of the communities. Large scale recreation areas, such as game fields, are placed outside the boundaries of the neighborhoods.

Residential uses include various types of housing, such as small-lot single family houses, townhouses, duplexes, and apartments. Outbuildings on residential properties are encouraged in the design since they may serve as affordable housing units. Moreover, a minimum of 25 percent of the floor area of commercial buildings are designated for residential uses such as apartments. Mixed use planning makes it easy for residents to walk between their houses, jobs, and commercial services. To create a walkable environment, the distances between each building and each use is reduced. This is possible due to smaller lot sizes, about 1/4 acre or less, than that of a typical development. As a result, a high density community is created, with residential densities varying in size

from 7 to 10 units per acre. This density rate is greater if the community is located in an urban area.

3.1.2 Block Types

TND blocks are categorized into three types: the square block, the organic block, and the elongated block (See Figure 3.1, 3.2, 3.3), each has a different shape and organization, as well as different weaknesses and strengths. Square blocks provide a variety of lot and building organizations within them. The square block design, however, is effective only in a relatively flat landscape because it does not have the ability to negotiate slopes. When it comes to sloping terrain, the organic blocks are the most suitable block type to be used in the design; variations and irregularities provide unlimited flexibility. Disadvantages of these blocks is that lot size is not standardized, providing sufficient vehicle access to the rear lot line of the organic blocks is difficult. Finally, the elongated block is the most popular and practical block type used in a TND community design. The first reason is that they can bend along their length, adapting to the shape of the natural landscape (See Figure 3.3). Secondly, the elongated block is more efficient and more standardized than the other TND's block types.

The block shape provides a framework for economical double-loaded alleys with short utility runs (Duany and Plater-Zyberk: 1994). Interior uses of the blocks vary from type to type. Large parking lots, open spaces, gardens, and playgrounds are common in square blocks. Organic blocks can be developed as closes, a space shared by buildings inside the block. Closes may be pedestrian oriented, or have a roadway loop around a green area. (See Figure 3.2). In addition, the center of the elongated blocks are usually designed with alleys and parking spaces, small playgrounds, and easement areas. According to Duany and Plater-Zyberk (1994:145), "the average perimeter of all blocks within the neighborhood does not exceed 1,300 ft. For block faces longer than 500 feet., an alley or pedestrian path provides through access." A lot size should be about 1/4 acre

or less because it suitably accommodates a middle size single house (Wentling: 1995). Lot shapes vary as squares, rectangles, parallelograms, and triangles, based on block shapes.

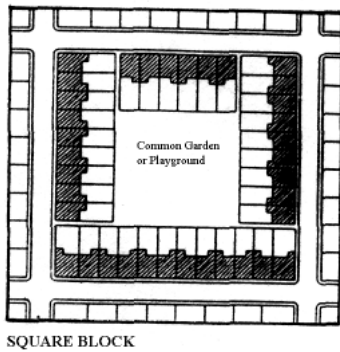


Figure 3.1 Square block



Figure 3.2 Organic block

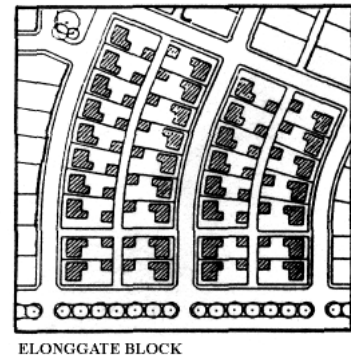


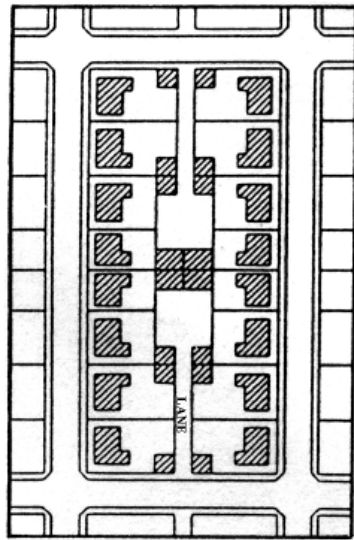
Figure 3.3 Elongated block

3.1.3 Public Buildings and Open Space

At least 2 percent of a community's areas will be reserved for civic use (Duany and Plater-Zyberk: 1994). Public buildings of TNDs are located at dominant locations in a community, adjacent to public open spaces or at the corner of important streets. They are within walking distance from most residential areas serving as places for assembly and community landmarks. Examples of public buildings in a TND include schools, civic centers, libraries, daycares, museums, meeting halls, post offices, courthouses, and clubhouses.

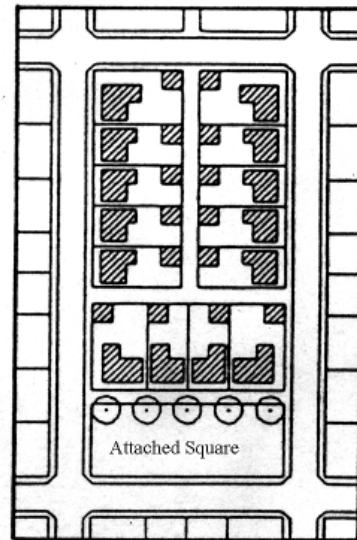
Open space in TNDs is formally treated as village squares, town greens, designed parks, streets, and promenades. Usually located in the core area of the community, an open space is within a 5 minute walk (2,000 feet) from each neighborhood. They overcome the drawbacks of typical suburban open spaces which are often neglected and separated from residential areas. Duany and Plater-Zyberk (1994) discuss eleven types of TND open spaces in The Traditional Neighborhood Ordinance. They include the lane, playground, nursery, close, attached square, detached square, market plaza, civic plaza, green, park, and buffer. Some examples of these open spaces are shown in Figure 3.4-6.

They are designed to fit both neighborhood squares and organic blocks, where at least 5 percent of the neighborhood is designated as public area. Sensitive areas such as those with steep slopes, floodplains, riparian areas, and wildlife habitats on the site are preserved and used as the recreational open spaces. These public open spaces provide places for both formal and informal social activities and recreation in various scales: block, neighborhood, community, and regional scale.



LANE

Figure 3.4 Lane



ATTACHED SQUARE

Figure 3.5 Attached Squares

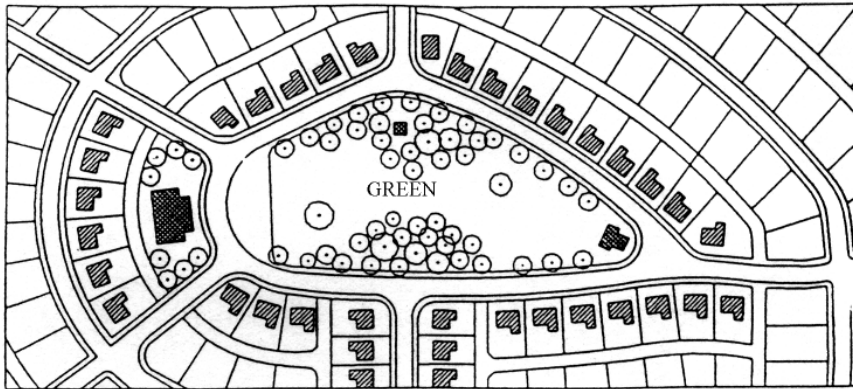


Figure 3.6 Green

3.1.4 Transportation

A. Vehicular Circulation

Traffic growth is often considered a major issue of suburbanization, and a decrease in traffic volume is a goal of TNDs. To reduce traffic growth, TND planners understand that the cause of traffic growth is the increase in the number of vehicle trips and trip distances. More importantly, the core problems are single zoning and the lack of mixed land use. For example, traffic growth on the highway can be reduced by adding direct connections between uses or buildings within the community. In addition, the growing reliance on cars must be reduced by building other means of transportation that are convenient and comfortable.

The characteristics of the TND street system emphasizes the grid system, providing drivers with alternate routes between two points. Streets are arranged in a hierarchy; boulevard, main street, street, minor street, alley, and passage (Duany and Plater-Zyberk: 1994). The physical dimensions of the streets are shown in Figure 3.7. In the conventional cluster street system, all cars travel along the same collector streets, no matter where they are going. Furthermore, Alan Ward, a principal of Sasaki Associates in Watertown, Massachusetts (Knack:1989) points out that “grid street systems were more democratic. There’s greater opportunity to participate in a sense of community when you

have through streets.” As Victor Mirontschuk (Bookout: 1992), president of the Houston-based EDI Planning and Architecture, addresses the fact that, a neo-traditional community does not have to be laid out on a grid, it can be the combination of grid streets and curving streets. Because the grid layout has smaller lots and subsequently higher density planning, the total number of streets in the TNDs are 1 1/4 times as many as those of the conventional PUDs (Planned Unit Developments). To reduce traffic speeds, narrower streets are used commonly in the TNDs. Lam (1992) states that the design speed in the TNDs is about 20 mph., while it is 25 to 30 mph. in the PUDs.

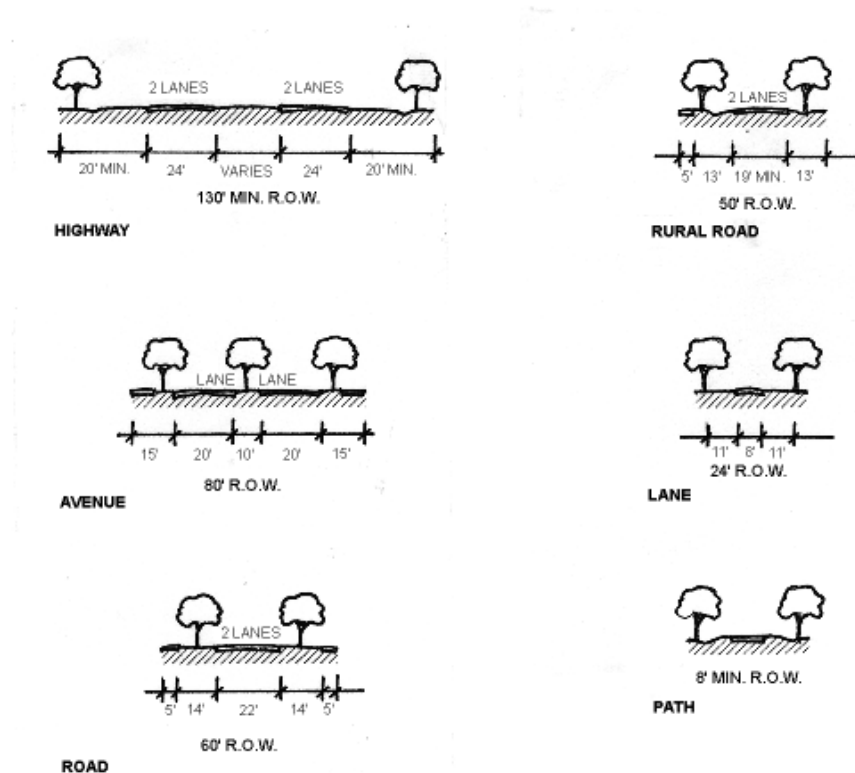


Figure 3.7 The physical dimensions of TND streets

Other elements that separate vehicle circulation from pedestrian circulation are alleys or lanes (See Figure 3.8). The alleys are designed to provide access to parking garages at the back of the buildings. Moreover, they serve as easement areas for public facility services such as gas, electric, and telephone. Providing services and vehicular access in the rear allows for uninterrupted pedestrian sidewalks at the front yard. Taking the services off the streets and placing them in the alleys provides opportunities for the street to function as a public space. Trees are encouraged to be planted along both sides of the streets to define the street spaces and to provide shade as well as to enhance the aesthetic qualities of the suburb. Parking along the street is permitted for the cars act as barriers between pedestrians and traffic. Business uses with different service peak hours are encouraged to share parking spaces. As a result, there is a reduction in parking lot size in downtown areas. 75 percent of the parking spaces are located behind the buildings to maintain continuous building facades.



Figure 3.8 TNDs' alleys and theirs outbuildings

B. Pedestrian and Bicycle Circulation

Pedestrian walkways and bicycle paths are provided throughout the town connecting residential and core commercial uses, and public facilities. Pedestrian walkways in the TNDs are at least 5 feet wide. (In conventional design they are only about 4 feet wide.) Usually, they are parallel to the streets and lead to destinations such as retail shops, community parks, or the town square. Each of these intend to encourage pedestrian activities. Cars are allowed to park on the streets, and act as barriers between moving cars and the pedestrians. The details and furniture of the streets and sidewalks are carefully designed in order to provide pedestrian friendly environments.

3.1.5 Typological Characteristics of Architecture

As mentioned in the concept of New Urbanism, architecture is one of the most important features of a New Urbanism community. Groups of buildings form neighborhood blocks, and their facades create street walls. The buildings in TNDs are aligned along the streets and plazas defining public open spaces. Most of the buildings are built out to at least 70 percent of the lot frontage except in the low density residential area (which can be at least 40 percent). The maximum setback in the high density residential areas, as well as in the workplaces, is 10 feet from the front property line. In low density residential areas, the setback is 30 feet. Furthermore, in the commercial areas, no setback is permitted. The maximum building coverage is half of its lot area (Duany and Plater-Zyberk: 1994).

Building characteristics of a TND are often modeled after the architecture of small American towns particular to the development region. For example, the building design of the Old Farm Neighborhood in Kentlands, is influenced by the 19th century mansion and garden of the old Kent Farm. The TNDs' outdoor architectural elements provide the mediation between public and private realms with such elements as front porches, stoops, and low fences

Typological characteristics of buildings are an operative tool for generating a community's building code. During the design process, drawings of various building types are developed and used to determine the criteria for the code. Examples of the TND building types include townhouses, attached houses, courtyard houses, sideyard houses, detached houses, offices/apartments, shopfronts/apartments, and standard offices. Typological characteristic control of the buildings include a set of design guidelines for each building type in a community. The guidelines address important design rules such as primary and secondary building use, building placement, building height, permitted encroachment, and parking spaces. However, different styles of architectural design are allowed in a TND project as long as they do not conflict with the specific code for that project. For instance, in the Seaside project in Florida, the town code requires specific kinds of construction materials, setbacks, and heights of buildings. Individual buildings are designed by different architects, resulting in a variety within the town. Some of the significant buildings, such as churches and civic centers, are located and carefully designed to serve as landmarks of the town.

3.1.6 Sense of Place

As indicated, a sense of place is created by the physical design of the environment. Jarvis (1993:70) states five principles creating a sense of place or a feeling of destination, the principles are to: "create a theme, carefully locate artificial amenities, design a unique landscape, use dominant architecture, and design distinctive site graphics". Planners believe that communities with easily perceptible, recognizable places provide more sense of place (Jarvis: 1993). According to Stringer (1975), "basic to understanding any environment is an ability to find one's way around. ... At the same time a clearly imageable environment is expected to provide a socially important collective consciousness of the home town, and emotional security to the individual." Calthorpe (1993) supports street grid systems, for as one moves through spaces, the straight streets in the grid patterns provide long vistas and focal points. One easily recognizes spaces

while moving through straight streets. In contrast, people have a difficult time memorizing spaces while moving through a curvilinear street pattern. In a grid system, civic centers or neighborhood centers are located in the core of the communities and are emphasized as important buildings, essentially focal points in the community. These are located within walking distance from the other uses so that everybody in the neighborhood can easily access them.

Another way to create a sense of place is to create socioeconomic diversification. According to Christoforidis (1994), this objective can be achieved by providing housing for all income levels. TNDs are mixed use communities including various types of housing such as small-lot single family houses, townhouses, duplexes, and apartments. They also have higher density lots than those of conventional PUDs. TND supporters believe these housing types will encourage social relationships between residents in the communities.

3.1.7 Marketing

Builder Magazine's 1989 consumer survey (Bookout: 1992) states that more than 60% of those who buy houses prefer conventional, homogenous, large lot communities to high density, mixed use communities. What are the factors consumers consider when they want to buy new houses? As Jarvis (1993) states, the primary concerns of the consumers are convenience to work, commercial areas, community facilities, and the overall quality of the community; house design was their secondary concern. However, a survey for Professional Builder and Remodeler (1991) points out that consumers consider size and cost of houses when they decide whether the house is worth buying. From the five types of New Urbanism, only TNDs are surveyed for the preferences of housing consumers. According to a survey conducted in 1989 by Fulton Research, Inc., of Virginia, 34 % of all home shoppers preferred TNDs. About 44% of singles and single parents prefer TNDs, while 34% of couples with or without children, chose the TNDs. Consumers who are looking for townhouses or mid and high-rise apartments prefer the TNDs more than those who are looking for single houses or patio houses (See Figure 3.9).

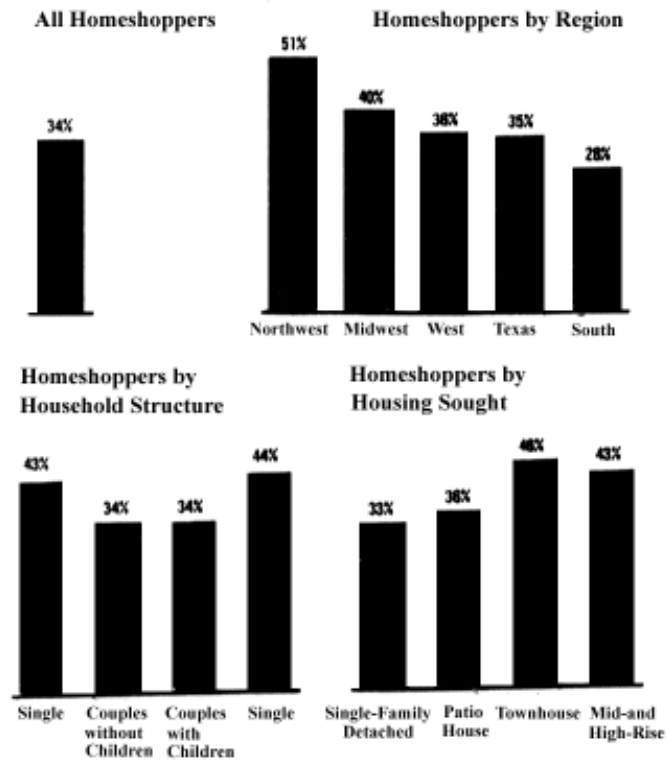


Figure 3.9 Percent of home shoppers preferring a community of neighborhoods with mixed housing types and mixed uses to a community of homogenous neighborhoods.

3.2 Problems and debates of the TND

TND concepts have been widely accepted and practiced for almost 20 years. It is one of the most popular New Urbanism concepts used to solve suburban problems. However, there are many problems and debates arising from the TNDs. These include the regional vs. local issue, gridiron vs. curvilinear streets with cul-de-sacs, tradition vs. nostalgia, the debate about affordable housing, and socioeconomic segregation issues.

3.2.1 The Regional Vs. Local issue

According to Handy (1991), the relationships between the neo-traditional developments and larger regional settlement patterns, both in functional and planning aspect, is still unclear; more research is needed. The TNDs are mixed use communities which include dwelling units, workplaces, retail shops, and public facilities, all within a walkable distance. Essentially, they are more independent than typical suburban developments. The design is an effort to decrease the number of vehicle trips and trip distances by encouraging activities within the communities. On the other hand, the TND concept promotes gridiron planning which allows for through traffic. Public transit such as buses, car pools, rail lines, etc., is also an important part of this concept. The new town should be integrated with the existing communities both at the local and regional scale. However, in reality many gridiron planned communities are surrounded by contemporary cul-de-sac developments. There are few social relationships between residents of these two different community types due to the lack of street connections. Achieving both goals remains doubtful.

3.2.3. Gridiron Vs. Curvilinear streets with cul-de-sacs

In order to better understand the comparison of these two types of street layout, one should review the critique on the curvilinear streets which is described in details in

section 1.3.1, Critics on street system in the suburb, and also section 3.1.3, Transportation (of the TNDs). In this section, the disadvantages and advantages of both the gridiron and the curvilinear streets with cul-de-sacs are summarized in the following topics:

1. Traffic Problems. It is believed that the gridiron can solve traffic congestion in the suburb since its intersections give drivers alternate routes between two points. Drivers can choose the most direct route to their destination, resulting in shorter trip distances. Moreover, the gridiron with many intersections reduces the speed of the vehicles, resulting in an increase in the safety of the street environment. On the other hand, the hierarchical curvilinear streets are believed to cause traffic congestion, for every vehicle must travel the same collector roads. Some curvilinear streets with limited accesses are very dangerous places for pedestrians since automobiles move through them at a very high rate of speed.

2. Community and Privacy. As Pillorge (1988) points out in the article, “Designing New Towns”, the cul-de-sac and curvilinear planning provides much privacy to the residents. Outsiders will not enter into the neighborhood if they are not invited. However, for insiders the streets are the common places to be shared by everyone in the neighborhood. The gridiron streets, on the contrary, allow for through traffic in the neighborhood and have more interactions between residents and outsiders. In turn, those living in the neighborhoods have multiple routes of travel for their daily trips. The streets are for sharing with not only the residents of that neighborhood, but also the general community.

3. Sense of Orientation; In the article, “Designing New Towns”, Warner, Jr. (1988) states that gridiron planning provides a greater sense of orientation than curvilinear streets. The areas at the corner of gridiron streets are ideal as a location for landmark buildings as they are enhanced by the controlled vistas of straight streets and the building facades. One can get around the community without getting lost. Conversely, it

is difficult for visitors and residents, to find their way in the meandering and bending streets in today's suburb.

4. Compatibility to Topography; Curvilinear streets are more adaptable to the topography than gridiron street plans. This is a weak point of the grid streets. However, gridiron streets comprised of elongated blocks allowing some designed curves can overcome this drawback of the gridiron planning.

5. Monotony vs. Variety; Because the blocks usually look the same, gridiron planning tends to provide monotonous scenes as one moves through its landscape, especially if there aren't any landmarks or other distinguishing features. On the other hand, the curvilinear streets provide more variety of views.

C: Traffic behavior studies

A study done by the Middlesex-Somerset-Mercer Regional Council in New Jersey (1991) states that mixed use planning reduces the amount of automobile trips caused by development in suburban area up to 60%. However, there is no record of such a study in an urban area. The study of commuting characteristics of transit-oriented and auto-oriented suburban neighborhoods in the San Francisco Bay Area and in southern California, done by Cervero and Gorham (1995: 210), points out that the layout of the community influences commuting behavior. "For both metropolitan areas, pedestrian modal shares and trip generation rate tended to be considerably higher in the transit than in auto-oriented neighborhoods. Transit neighborhoods had decidedly higher rates of bus commuting only in the Bay Area. Islands of transit-oriented neighborhoods in a sea of freeway-oriented suburb seem to have negligible effects on transit commuting." From this study, it is pointed out that the TNDs' public transit would succeed only if it links to the public transit of that region.

3.2.4 Tradition Vs. Nostalgia

There is some concern that developers may pick up the imagery of a small historic town and ignore the philosophy of New Urbanism. The fundamental objective of the TND concept is to create a pleasing and liveable community based on the design of the traditional old town. However, it may be neglected, if the priority is given to marketing. Peter Eisenman (Fisher, 1993: 37) criticizes this design movement as “a paradigm of retrenchment”. The TND development allows for higher density than the traditional suburban development. It reduces new infrastructure investment, while requiring less land than conventional suburban developments. Some developers see TNDs as a new opportunity within the suburban housing markets. These developers may build new communities with high density and traditional style architecture, but ignore other important components such as mixed use and the network of public building and open spaces. TNDs may be just a marketing gimmick that addresses the current trend for nostalgia, and one that will fade in the future (Bookout: June, 1992). Other critics point out that some of the traditional, architectural designs do not fit with the contemporary American lifestyle. An example is the design of front porches in Seaside, Florida (Audirac and Shermeyen: 1994). They were to be places where residents interact with their neighbors, in order to enhance social life in the community. However, as mentioned in section 1.3.2, Critics on quality of suburban life, the American lifestyle became more inwardly oriented. Essentially, the front porches were neglected, and rear porches were requested by new residents. This issue occurs because the traditional architectural style was used carelessly without adaptation to suit the specific cultural, natural, and social environment of each area. The TNDs are not just redesigning the traditional towns as most people think they are. They adapt many concepts of traditional town design to create livable communities with a mix of uses that encourage social interaction, basing on a theory which intends to solve suburban problems. Architects, planners, and developers should carefully study this theory before planning towns or communities.

3.2.5 Debate about affordable housing

Duany (1992) claims that TNDs solve the problem of insufficient affordable housing in suburbs by provide outbuildings and apartments above stores. Owning outbuildings is forbidden by most zoning ordinances, for it will increase and overload the density of the suburb. However, in the TND concept, the outbuilding is provided for the elderly in the family or one who can not afford a single house. According to Audirac and Shermeyen (1994: 168) there are three related issues about affordable housing in TNDs.

The first is “ the issue of miniaturization of space to make housing affordable.” Audirac and Shermeyen (1994) criticized that outbuildings in TNDs are not the real answer to the affordable issues in the suburbs. Because designers try to reduce the cost of outbuildings by decreasing the square footage, they are creating dwellings too small for low-income households. Generally, these are efficiencies with 450 square feet per unit, which is not suitable for more than one person. This addresses a growing demographic group of single people who would benefit from a more appropriate housing choice.

The second issue is “ the reluctance and often stout opposition by middle-and upper-middle-class individuals to live in close proximity to higher-density development.” Most suburbanites still prefer large lot single houses more than other types of housing units. They believe this type of house provides more privacy which then brings happiness and peacefulness. As a result, they do not want to live in small lot houses in high density communities such as TNDs. This attitude can be changed if the importance of public realm is promoted. The issue of individual privacy can be addressed more effectively in smaller lot housing developments.

The last issue involves “the correspondence between high density, affordability, and residential transience.” The TNDs’ high density planning reduces development costs, thus resulting in affordable housing units. These units do not only attract low and medium income families but also transient residents such as college students and those who can afford second houses. As a result, the number of transient residents in TNDs tend to

increase and the number that of permanent residents decrease. Residential permanence is an important ingredient of a healthy community because it supports the community's commercial sector and enhances public life. Therefore, an appropriate ratio of permanent and transient residents should be maintained.

3.2.6 Socioeconomic Segregation Issues

The creation of a socioeconomically integrated community is one of the social objectives of the TND concept. As mentioned in section 2.2.5, “by producing a full range of housing types and work places, age and economic class are integrated and the bonds of an authentic community are formed” (Audirac and Shermeyen, 1994: 162). However, Christoforidis (1994) points out that economic successes of some TNDs may oppose this goal. A good example of this issue is the success of Seaside, Florida which resulted in an increase in housing cost, and more high income families. TNDs may become developments with homogeneity in socioeconomic status. However, Duany argues that one can not judge from only looking at Seaside. Its location in an isolated area adjacent to the beach makes it a resort town. There are many TND communities elsewhere, located inland among other developments. Creating socioeconomically integration within these communities has been successful. Examples of these communities include Kentlands, Maryland, South Brentwood Village, California, and Mashpee Commons, Massachusetts (Katz: 1994). However, most of the TNDs are less than 10 years old, and further research must be done on this subject.

3.3 Analysis of the TNDs

Analysis of TNDs is done using the criteria outlined to critique the quality of suburban living environments in Chapter 1. This criteria includes uses and activities, public space, circulation, and typological characteristics of architecture. Areas of strengths and weaknesses of TNDs in each topic are described below.

3.3.1 Uses and Activities

A. Areas of Strengths

1. Because TNDs are mixed use communities with vehicle, pedestrian and bicycle networks, a diverse range of activities within communities are encouraged. Moreover, retail and institutional developments are within walking distance (about 1/4 mile) from the neighborhoods. Residents can walk or bike from their houses to retail shops, schools, libraries, parks, or workplaces.

2. Housing units in TNDs provide a mixture of types, sizes, and prices including single family detached houses, single family attached houses, townhouses, outbuildings, apartments, and apartments above commercial business. This brings a variety of people and households together and creates an integration of age and economic class, which are important factors of good communities. Examples of housing types in Kentlands, Maryland are shown in Figure 3.10-3.12 below.



Figure 3.10 Large single-family houses



Figure 3.11 Courtyard apartment



Figure 3.12 Townhouses

3. The TND is an option to solve the problem of suburban sprawl for they are high density compact communities with well-defined boundaries.

B. Areas of Weaknesses

1. The TND concept does not clearly address the issues of environmental impact caused by high density developments. Lands are developed much more intensively than those of cluster developments. Although critical natural areas such as wetlands, steep

slope areas, river corridors, or wildlife habitats are usually designated as preservation areas, there is no guidance showing how to maintain these areas in their present natural state or to maintain their connections to off-site natural systems.

2. TND commercial centers may not be able to compete with larger commercial centers outside the TND. If residents have convenient access to those areas, they may prefer using services outside their communities over local services. However, there are many factors affecting their decision such as price, quality of service, and location. Local services will succeed only if they are supported by large populations.

3. Local facilities provided for residents of the TNDs may be insufficient in the future as the size and character of the population changes. The TND concept does not address change of land use mix in the future.

4. Compared to conventional low-density development, the TND lot provides less control over one's territory. The TNDs are high-density compact communities with common areas. Outdoor activities are encouraged by networks of walkways, bike ways, public spaces, and open spaces throughout the communities. Interaction between insiders and outsiders of the community is also encouraged. Safety is one of the main concerns since residents can not control who enters their neighborhoods.

5. Although the TNDs provide workplaces within walking distance from residences, it is difficult for residents to find suitable jobs in the communities in which they live. Constraints include residents' inability to match their qualifications with employer needs, and job security. In most cases, few previously unemployed people find new jobs created in their communities (Summers:1976). According to Summer (1976), the quality of the local labor market usually does not suit available new jobs. The largest group obtaining these jobs is the skilled worker who immigrates from other areas.

3.3.2 Public Space

A. Areas of Strengths

1. Carefully designed networks of civic institutional and open space are one of the greatest advantages of TNDs that begin to solve the problems of conventional suburban developments. They encourage public responsibilities among residents while enhancing their social life. The network of public spaces and open spaces forms the backbone of TNDs. They have various types, sizes, and organization, all within a hierarchy. The small scale open spaces, which are parts of blocks, include lanes, playgrounds, nurseries, and closes. They are designed as common green areas serving residents within the blocks. The medium scale open spaces include attached squares, detached squares, market plazas, and civic plazas, to serve the residents of the community. The large scale open spaces, the main public spaces of the TNDs, are comprised of parks, greens, and buffers. These networked spaces are connected to one another by well defined streets, serving as outdoor public rooms and providing the main structure of a TND.

2. Civic institutions are primarily considered in the TND design process. They are located at the center of communities and at intersections of important streets. They serve as landmarks, as well as providing public services. Planned open space associated with dominant civic buildings solve the problem of dullness caused by gridiron planning.

3. Public buildings associated with public spaces are arranged in networks, creating a series of well-defined outdoor spaces. Furthermore, the design of civic buildings are usually based on local architectural characteristics having a unique style. These help to bring coherence and sense of place to the community.

B. Areas of Weaknesses

1. There is a conflict between private and public spaces. This conflict happens in two major areas. First, at the large scale, it occurs at the connection between residential neighborhoods and the community's public spaces. Secondly, at smaller scales, it occurs at the connection between housing units and the adjacent streets. In traditional suburban developments, the front lawn provides a semi-private space to buffer between private and public areas. However, reduced setbacks and use of front porches in TNDs conflict with

the desire for privacy of the residents; There are no semi-public areas creating a buffer zone between private and public spaces. These problems can be solved at the design stage and is explained in the next chapter.

2. Usually, the TNDs are surrounded by collector roads and existing auto-oriented neighborhoods. Networks of public and open spaces in the TNDs do not relate to those neighborhoods outside the development.

3.3.3 Circulation

A. Areas of Strengths

1. TNDs offer the potential to reduce traffic growth. The 1990 ASCE study suggests that a TND design could produce 57 % less overall vehicle miles traveled (VMT) than a PUD design. Gridiron streets provide alternative routes for drivers, decreasing trip distances. Moreover, the TND circulation network provides alternative opportunities for transportation including walking, biking, and transit commuting; The reliance on cars is reduced.

2. Streets in TNDs are designed as a friendly and inviting environment. They are treated as important public rooms, not leftovers. The narrow streets, the facades of buildings along them, and wide sidewalks with carefully designed street furniture create quality outdoor public spaces.

3. The hierarchy of street characteristics within the TND encourages interaction between residents, as well as between residents and outsiders from nearby neighborhoods. Residents have easy access to other parts of their community.

4. The gridiron planning provides a stronger sense of orientation than curvilinear streets.

B. Areas of Weaknesses

1. The gridiron streets are less adaptable to the topography than the curvilinear streets.

2. Existing auto-oriented neighborhoods surround many TND projects. Although gridiron streets provide effective circulation networks within the TND communities, the relationship between TND communities and their surrounding auto-oriented communities remains unclear.

3. If gridiron planning is not well designed it tends to be dull, and the overall design scheme may look the same throughout the community.

3.3.4 Typological Characteristics of Architecture

A. Areas of Strengths

The TND concepts allow for a higher degree of typological characteristic control of architecture by using a specific code for each development. This helps to eliminate poor quality buildings and enhance the street as public rooms. Examples of a typological characteristic control include the establishment of a uniform setback, parking area, and building height to define the public space of the streets.

B. Areas of Weaknesses

Some physical design concepts of TNDs are not practicable because they are not compatible with the lifestyle of today. A critical issue is the conflict between private and public spaces, for example the design of the front porch and the narrower grid street were intended to encourage the interaction among residents. This design, however, did not serve the needs of residents living in the town of Seaside, Florida (Audirac and Shermeyen: 1994); front porches are rarely used, bushes grow and screen windows along the streets, and signs are put at the edges of the neighborhood to limit through traffic. The message is clear; residents desire a greater level of privacy around their houses. Another critic points out that aesthetic controls restrict design creativity and produce monotonous, poor quality architecture (Audirac and Shermeyen: 1994).

3.4 Conclusion

New Urbanism is well known all over the country and also in Europe, and much of this is due to the TND concept. More than 50 projects have been built to date by Miami architects, Andres Duany and Elizabeth Plater-Zyberk. The TNDs are mixed use, compact towns with a network of streets and sidewalks that provide a variety of transportation choices. Civic buildings are located on squares, or at other important locations, and are designated landmarks. Public open spaces are designed in a traditionally formal way, such as squares, lanes, and parks. The buildings are diverse in their use, but harmonious in their appearances. Problems and debates about TNDs include gridiron versus curvilinear streets with cul-de-sacs, tradition versus nostalgia, regional versus local issues, affordable housing, and socioeconomic segregation. However, this design concept is an alternative approach to current suburban growth problems that are receiving attention from the American public.

Critique of TND land use, public spaces and open spaces, transportation, and typological characteristic of architecture discusses the strengths and weaknesses of TNDs. Strengths include such issues as mixed use, variation of housing types, networks of civic, institutional, and open spaces, hierarchical gridiron streets, and a higher degree of typological characteristic control of architecture. Weakness of the TND concept are environmental impact issues, survival of the TNDs' commercial centers, conflicts between public and private areas, incompatibility of the qualities of the local labor force and the requirements of employers, relationships between TNDs and larger regional environments, and inflexibility of gridiron street system.

In the next chapter, the case design of the Williamsburg New Town is presented to study the implications of the TND planning practice. The results of the analysis are reviewed, adapted and used to develop the best design concepts for the New Town of Williamsburg, Virginia.

Chapter 4: The Design of the Williamsburg New Town

4.1 Basic Information

4.1.1 The Context of the Site

The 600 acre site known as the Casey Property was chosen by James City County and the C.C. Casey Limited Company for the development of a new town plan. It is located along Ironbound Road in James City County, adjacent to the City of Williamsburg, Virginia (See Figures 4.1 - 4.3). This region is well known for tourism due to many attractive places including Colonial Williamsburg, the Busch Gardens theme park, Jamestown, Yorktown, Virginia Beach, Hampton, Norfolk, and Newport News. They attract thousands of tourists yearly from all over the country.

The topography of the area is typical of the east-central Coastal Plain of Virginia on the Chesapeake Bay which is locally called the “Peninsula” (United States Department of Agriculture: 1980). Connections to other national and state transportation routes are provided by Interstate Highway 64 and U.S. Highway 60. Highway 199 will be extended by the year 2010 to respond to the county’s future transportation needs, and will provide direct access to the site. For that reason, this site is perceived as a new downtown or an extension of the existing downtown for the City of Williamsburg and James City County.

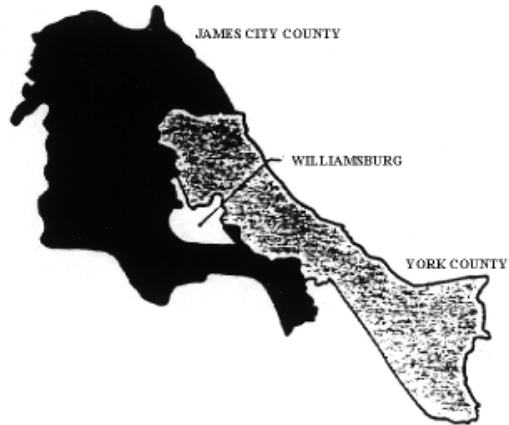


Figure 4.1 The City of Williamsburg and its surrounding counties



Figure 4.2 East Coast Accessibility



Figure 4.3 The location of the Casey Property

4.1.2 History of Williamsburg

Williamsburg is a famous historic colonial town of America located on high terrain between the James and York Rivers, adjacent to James City County and upper York County, in southeastern Virginia. Thanner (1992) points out that Williamsburg, first known as Middle Plantation, was settled in 1633. It served as an outpost providing protection for Jamestown, the Virginia Colony's seat of government during that time, located further south next to the James River. By 1690 Middle Plantation grew to be a small community including various types of houses, stores, mills, a tavern, and a church (Bruno and Cease: 1995). In 1693, it was selected as the location of the College of William and Mary. Six years later, in 1699, the General Assembly of Virginia established Middle Plantation as the colony's capitol, changing its name to Williamsburg in honor of King William III of England. As Bruno and Cease (1995) indicated, the new capitol was carefully planned in gridiron fashion with three main streets laid out from east to west connecting the Capitol building to the College of William and Mary (See Figure 4.4). Williamsburg became a center of government and business, housing almost 2,000 people by the mid 18th century. The City of Williamsburg played an important role in American history as capitol of Virginia until 1780 when the state government moved to Richmond. Afterwards, Williamsburg returned to a quiet college town. From the late 18th century to the early 20th century, some original buildings and gardens of the city were ruined by neglect and natural forces, but many other survived. During the mid 1920s, Dr. W.A.R. Goodwin, the rector of Bruton Parish Church, supported by John D. Rockefeller, Jr., began Williamsburg's 18th century heritage restoration. This is continued today by the Colonial Williamsburg Foundation.

The City of Williamsburg has changed dramatically during the past twenty years. The city grew to 9 square miles and houses about 12,000 resident (Thanner: 1992). Hotels, restaurants, shopping centers, and the Busch Gardens theme park was built to serve the large amount of tourists that visit the area.

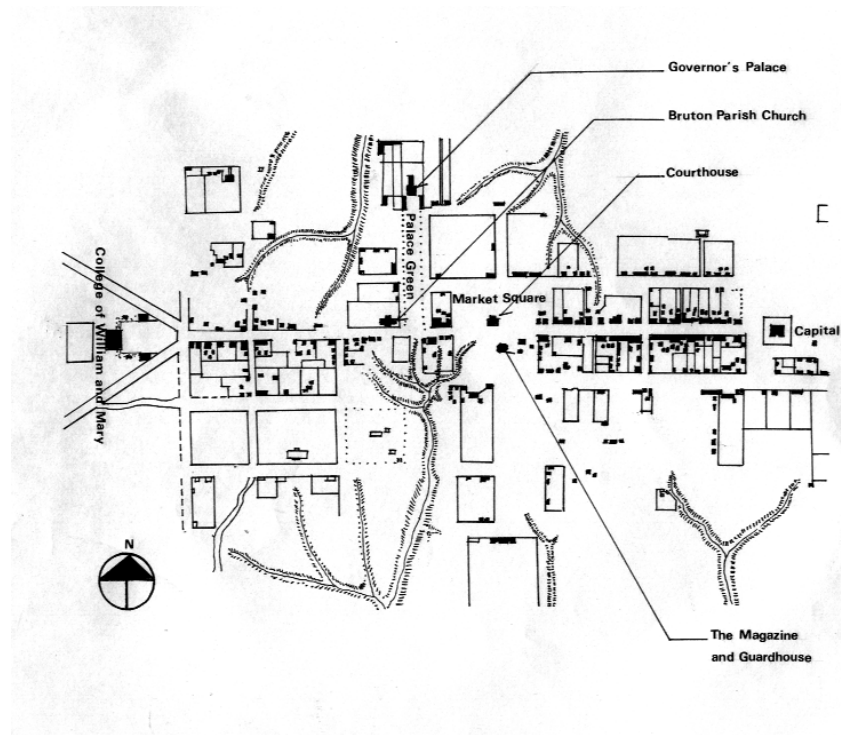


Figure 4.4 The Frenchman's Map of the City of Williamsburg in the 18th century

4.1.3 Demographics

Population ratio and components of the City of Williamsburg and the surrounding counties are shown in Figures 4.5 and 4.6 below.

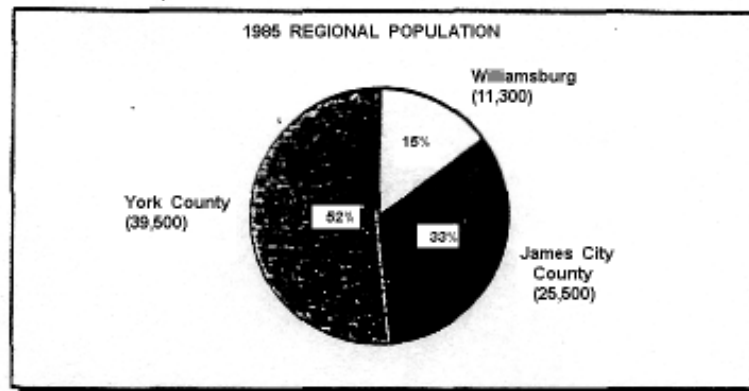


Figure 4.5 1985 Regional Population

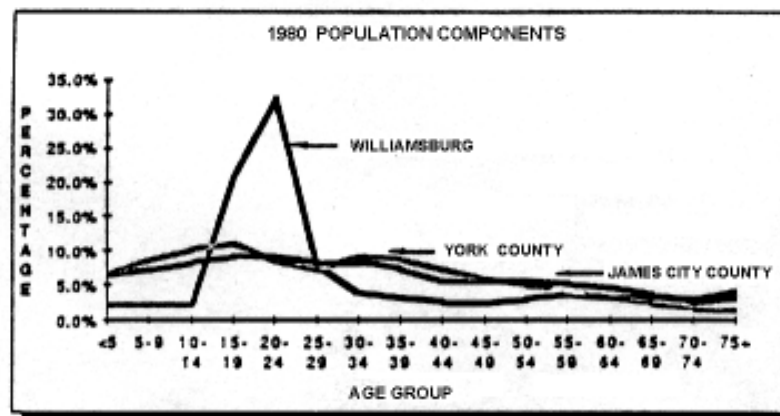


Figure 4.6 1980 Population Components

Demographic characteristics of the City of Williamsburg are unique and different from James City County and York County. From Figures 4.11 and 4.12, some interesting information can be summarized. First, the majority of Williamsburg's total population (53.3 %) is the student-age group between the ages of 15 to 24 years old. However, this population is not considered as a main factor in the city planning because it is transient. Moreover, the college has its own independent planning to serve its students and faculty. Secondly, 20% to 25% of the city's non-college student population is 65 years old or older. This is much higher than that of the Commonwealth which is about 7.4%. This group includes retirees who are attracted to this area because of its good environment and good quality of life. Their needs are important factors to be considered in town planning. Finally, the population of student-age groups between the ages of 0 to 15 years old is only 6.8% of the overall city population. While in James City County and York County, the population of the same age group is 22.2% and 25.5%. This difference is due to the City of Williamsburg's lack of affordable housing units for young families with small children.

In James City County and York County, the proportion of each age group population is not remarkably different when compared to that of the city of Williamsburg. These Counties have the proportionate shares of families with children, college students, and retirees.

From the above information, it is shown that there are needs for (1) affordable housing options in the city of Williamsburg and its surrounding areas, and (2) mix of housing types to serve different groups of the city's population with different social status and household income. These two issues are important factors to be considered in designing the New Town.

4.1.4 Economy

Because thousands of tourists are attracted to this region each year, tourism is the most important economic base. The City of Williamsburg's employment rate is 41% of the overall employment rate in this region (see Figure 4.7), which is the highest rate compared to those of James City County (31%) and York County (28%). Significant employment sectors of these areas include retail trade (24.8%), services (45.9%), and government sectors (23.7%). According to the Comprehensive Plan (City of Williamsburg: 1989): "tourism related services account for most of this employment. Restaurant employees comprise over 2,000 of the 3,567 retail jobs (56% of total), while motels and lodging constitute over three-quarters, or 5,000 of the 6,602 jobs in the services category." The tourism business index, which shows the average of all business sectors' sale, and the Williamsburg's employment rate change every month reflecting the change in tourism volume (See Figures 4.8 and 4.9). The city's economic is obviously based on tourism.

The New Town's commercial center should be designed to expand regional employment and revenue rate by supporting the existing tourist business as well as exploring other business opportunities in this areas.

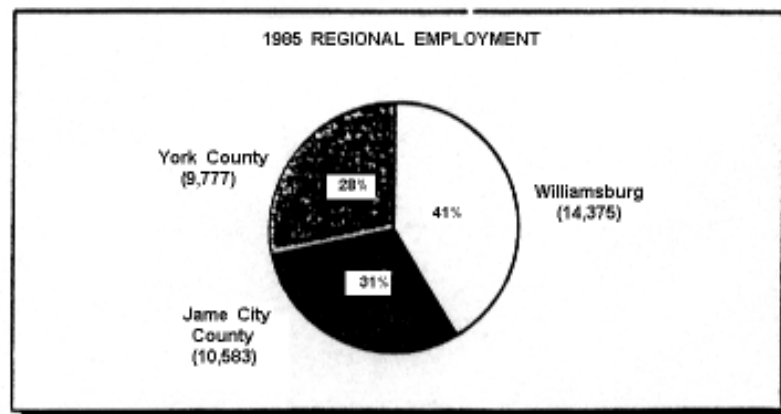


Figure 4.7 Regional Employment

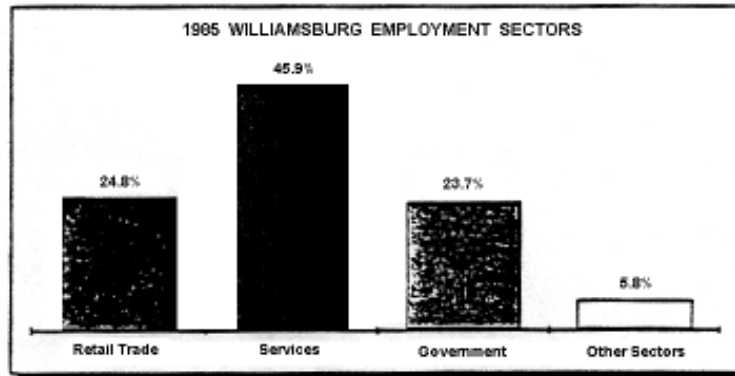


Figure 4.8 1985 Williamsburg Employment

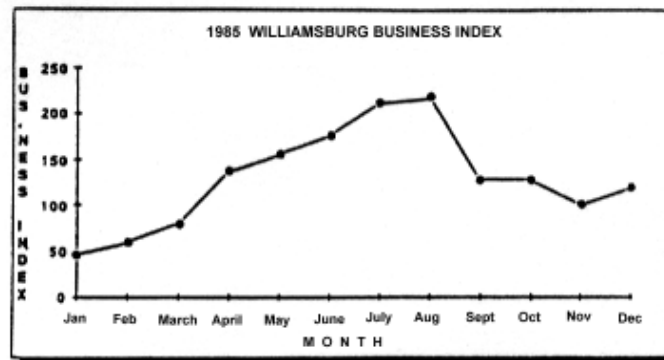


Figure 4.9 1985 Williamsburg Business Index

4.1.5 General Characteristics of the Site and its Surrounding Area

Vegetation in the general area is comprised of woodlands including mixed hardwood forest and planted loblolly pines. However, several small areas on the east side of the Casey property, along Ironbound Road is farmland. The detail of land use, topography, and transportation of this area is explained in the next several section.

There are many typical residential developments surrounding the Casey property, including an upper income residential development known as Ford's Colony, located to the northwest; middle and low income housing known as Ironbound Square, located east of the site and along Ironbound Road; Brookhaven along the south side; and low density residential development along the western boundary of the site. Eastern State Hospital, a public mental hospital, is adjacent to the north of the property (and east of proposed Highway 199). There are two industrial development areas adjacent to the Casey property including some older unattractive developments located in the northeast corner of the site. Another known as New Quarter Industrial Park is south of the site next to land owned by the Virginia Power Company.



Figure 4.10 Casey property's farmland, east portion of the site



Figure 4.11 Looking west toward the Casey property, taken at Monticello Avenue



Figure 4.12 Virginia Power at New Quarter Industrial Park



Figure 4.13 WPTG Radio Station, looking northwest



Figure 4.14 Northeast corner of the Casey property, taken at the end of Tewing Road



Figure 4.15 Example of typical house along Ironbound Road

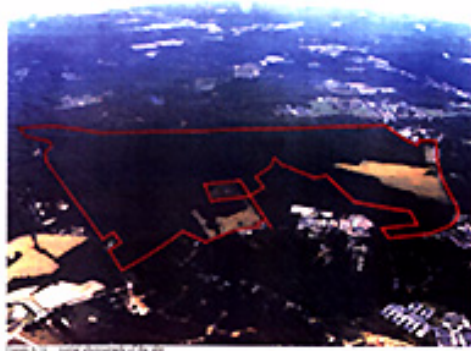


Figure 4.16 Aerial photograph of the site

4.1.6 Land Use

The Land Use Plan map was prepared by James City County as a part of its 1991 Comprehensive Plan, providing development guidelines for 1992-1996. The Land Use Plan map of the site and the surrounding areas are shown in Figure 4.17. The main part of the site, located to the east of Route 199, is designated as a mixed use area. According to James City County (1991), the recommended priorities of land use within this area is “For the undeveloped land in the vicinity of and including the proposed Route 199/Monticello Avenue Extension (Casey property) [to be]... a mixture of commercial, office, and light industrial with some residential development as a secondary use. Future development in this area will be primarily conditioned on the construction of Route 199, the extension of Monticello Avenue, and the probability of an interchange at the intersection of Route 199 and the proposed extension of Monticello Avenue.”

The other portion of the site located west of proposed Route 199, is designated as low density residential area. The overall densities allowed in this area are up to 2 dwelling units per acre. However, if the site is developed in cluster patterns, its overall densities may be maximum 4 dwelling units per acre. James City County (1991) states that “example of acceptable land uses within this designation include single-family homes, duplexes, cluster housing, recreation areas, schools, churches, community-oriented public facilities, and very limited commercial establishments.”

Most of the surrounding areas of the site on the west side of proposed Route 199 are designated as low density residential areas. There is a small park called “Mid County Park” located at the corner of Ironbound Road and News Road, and serves as an area for public recreation and enjoyment. Two creeks that flow from the edges of the site are preserved as conservation areas; they are branches of Powhatan Creek, which run south toward James River. These areas are intended to remain in their natural state because any development activities would cause damage to these critical environmental areas.



Figure 4.17 Land Use Map

East of proposed Route 199 and adjacent to the site, there are two designated low density residential areas; Ironbound Square residential development located east of the site and Ironbound Road, and a residential area known as Brookhaven along the south side. An area designated as moderate density residential is located to the south of Brookhaven, along Strawberry Plains Road and proposed Route 199.

Three major Commonwealth and county lands include, (1) Eastern State Hospital at the north boundary of the site, (2) lands belonging to the College of William and Mary along the east side of Ironbound Road, and (3) Berkeley Middle School at the intersection of Ironbound Road and Strawberry Plains Road.

Industrial development areas, located at the northeast corner of the site, are designated as limited industry. Primary land uses accepted in this area include “warehousing, office, service industries, light manufacturing plants, and public facilities that have moderate impacts on the surrounding area”(James City County: 1991).

4.1.7 Topography and Natural Features

The topography of the Casey property and it surrounding areas is relatively flat (0-3% slope) with many significant wetlands (See Figure 4.19 4.26). However, the terrain slopes abruptly at the banks of those wetlands. Slopes of the site are mapped and analyzed to determine what areas are suitable for development and what areas are not (See Figure 4.18). Slopes over 15% are unsuitable for building development. About 85% of the land falls between 0-15% which is suitable for development. The areas on the east

side and at the center of the property, are mostly flat with a slope of 0% to 3%. While most of the areas on the west side have hilly slopes of 3%-25%, only about 1% of the land has slopes greater than 25%; these are scattered throughout the areas along wetlands. There are habitats for an endangered vegetation called Small Whorled Pogonia located at the center and the north border of the site.



Figure 4.18 Slope Map

4.1.8 Transportation

Interstate 64 provides convenient access from Western and Central Virginia to this region. Existing roads around the Casey property include: (1) Ironbound Road running along the east and south, north from Longhill Connector to John Tyler Highway to the south, (2) Monticello Avenue connecting the existing downtown with Ironbound Road, and (3) Strawberry Plains Road running north-south from Ironbound Road to John Tyler Highway. There are two proposed roads which will have a great impact on this area in the future. First, limited access Route 199 running from Interstate 64 across the Casey property, will serve as the major access to the site. Secondly, Alternate Route 5 extending about 5 miles from the Monticello Avenue and Highway 199 interchange to Route 614, will serve as a major arterial highway from western James City County linking with Highway 199, the Casey property, and the City of Williamsburg. Data of future traffic counts and road widths provided in Town Plan Competition Program by Design Competition Services (1995) are shown in Table 4.1.

Table 4.1 Traffic count and road widths

ROAD LANES	FROM	TO	DAILY COUNTS				
			1992	1994	2010	1995	2010
Interstate I-64	Proposed 199	Route 43	34,930	N/A	64,500	4	6
Proposed 199	Ironbound Rd.	Longhill	0	0	25,000	0	4
Ironbound Rd.	Strawberry Plains Rd.	Proposed 199	10,025	10,737	N/A	2	2
	Proposed 199	John Tyler Hwy.	NA	9,844	15,000	2	4
	Strawberry Plains Rd.	Longhill Connector	NA	16,983	16,000	2	4
Monticello Ave.	Ironbound	Compton Drive	11,234	N/A	15,000	2	4
Monticello Ext.	Monticello Ave.	Proposed 199	0	0	16,000	0	4
Hwy. 60	Monticello Hwy.	60 Bypass	22,486	N/A	18,000	2	4
	Monticello Ave.	Bacon St.	13,476	14,217	27,000	2	4
Alternate Route	Route 614	Monticello Ext.	0	0	13,000	0	2
Strawberry Plains Rd.	John Tyler Hwy.	Ironbound Rd.	N/A	14,309	N/A	2	2

The Williamsburg, James City and York 2010 regional Bikeway System Plan (Design Competition Services: 1995) requires a series of bikeways incorporated into the new town plan as shown in Table 4.2.

Table 4.2 Bikeway system around Casey property

ROAD	TYPE OF REQUIRED BIKEWAY
Alternate Route 5	Class I Bikeway (paved path separate from road)
Monticello Avenue	Class II Bikeway (paved shoulder along road)
Monticello Avenue Extension	Class II Bikeway
Ironbound Road	Class II Bikeway from the longhill Connector Road to Strawberry Plain Road

The major public transportation in this region is a railroad linking James City County and the City of Williamsburg to other parts of Virginia and to other states. A railroad station is located in downtown Williamsburg, about 2 miles to the east of the Casey property. There is an opportunity that bus service will be provided to link the new town area to existing downtown Williamsburg and the bus system of Colonial Williamsburg.

4.1.9 General Requirements of the New Town Planning

To achieve the goals of the New Town Design, various land uses are accommodated. The Design Competition Service's (1995) definitions of land use requirements for the New Town are summarized in Table 4.3.

Table 4.3 The land use requirement of the New Town

LAND USE	REQUIRED UNIT	
1. Housing Unit	1,000-3,000	unit
Single Family Detached		
Townhouses, Apartments		
Apartments Above Stores		
2. Retail Uses	50-60	ac.
	500,000	sq.ft.
Major Anchors	40,000-150,000	sq.ft.
Community Retail Uses	100,000	sq.ft.
Supermarket		
Drugstore		
Small shops		
3. Parking for Retail uses	5.5	spaces/1,000 sq.
4. Courthouse Complex	71,000	sq.ft.
Courthouse Footprint	15,000	sq.ft.
parking	300	spaces
public offices	17,000	sq.ft.

	(located outside the new courthouse)		
	related office uses	1,000-3,000	sq.ft.
	(for lawyer and other professionals)		
5. General Office Uses	(long term)	200,000-400,000	sq. ft.
	(short term)	10,000-20,000	sq.ft.
6. Hotel or Motel		1	unit
7. Civic or Institutional uses			
	Civic Auditorium	1,000	seats
	Churches (for 500-1,000-1,500 persons)	3	
	Day Care Center (for 150 children)	3,750	sq.
	Post Office	1	unit
	Library	1	unit
	Museum or exhibit areas	1	unit
	Local market	1	unit
14. Industrial and Research Activities			

4.2 Site Analysis

4.2.1 Constraints

There are three major natural constraints for development on the site including steep slopes of more than 25%, wetlands, and endangerment of vegetative habitats (See Figure 4.19). First, about 1% of the site has slopes greater than 25% which is unsuitable for development. These areas, which are shown in black, are scattered adjacent to wetlands on the site. Secondly, the areas at the center and the north of the site (next to proposed Route 199) are habitats for an endangered plant called Small Whorled Pogonia. These critical areas must be preserved in the New Town planning. Thirdly, there are 4 major wetlands on the site running in a north-south direction, and they divide the site into smaller subareas. The wetlands are very important because they serve as natural drainageways, as well as wildlife habitats. Moreover, the drainage patterns that feed these wetlands are one of the main factors that should be considered in the design because they impact the wetland systems. Changing drainage patterns is acceptable only when an effective strategy is planned to prevent those impacts.

Built constraints include proposed Route 199 and the old industrial development located on the northeast corner of the site. The proposed Route 199 divides the site into 2 separate areas. Linkage between them becomes a very important issues. The unattractive view of the industrial development must also be considered in the design.

4.2.2 Opportunities

Areas with slopes between 0-15 %, which is about 85% of the site, is suitable for developments. However, the flat areas on the east side and the center of the site with a slope of 0-3% has more opportunities to be developed in greater density than the hilly areas with slope of 3-25% on the west side.

Although, the wetland areas and the Small Whorled Pogonia habitats should be preserved in their natural state, they can also serve as the community's open spaces. Large amounts of land would be preserved at the center of the site, where the Small Whorled Pogonia Colony and one of the major wetlands are located. Therefore, it has a potential to become a neighborhood park which is easily accessed from other parts of the community. The wetlands and the highway separate the Casey property into 7 sub-areas (See Figure 4.20). The areas that provide the easiest access from the roads to the main part of the adjacent subareas have potential to be entrances to the site. These areas are along Ironbound Road, News Road, and proposed Monticello Avenue. The potential connections between sub-areas ,which are shown in Figure 4.19, are developed as the fundamental structure of the New Town Plan.

Three major proposed roads provide accesses to the areas. First, the proposed Route 199 will bring visitors from Interstate 64 into the site. Secondly, the proposed Monticello Avenue will link the new development with the existing downtown. Finally, the proposed Alternate Route 5 will connect this development with western James City County. Besides these three proposed roads, access is provided by the existing Ironbound Road which passes to the east and south of the site, and by Strawberry Plains Road which connects Ironbound Road with John Tyler Highway to the south. Traffic will move to and from the site on these roads and through many important intersections around the site, which include: (1) the intersection between proposed Route 199 and proposed Monticello Avenue, (2) the intersection between proposed Route 199 and Alternate Route 5, (3) the intersection between proposed Monticello Avenue and Ironbound Road, and (4) the intersection between proposed Alternative Route 5 and News Road. These intersections are future critical traffic nodes. For a reason that, the intersected streets link the site with the nearby important areas such as the downtown of Williamsburg, James City County, and Interstate I-64. The other reason is that they will carry significant traffic volumes which will affect traffic inside the New Town in the future (see Table 4.1).



Figure 4.19 Site Analysis Map showing constraints and opportunities for development

4.3 Design Concept

4.3.1 The Objectives of the New Town Design

From the Town Plan Competition Program (Design Competition Services, 1995:

6), the New Town Plan of Williamsburg should achieve five goals:

1. The Town Plan should become a landmark development and a national model of the highest quality of the visual, social and economic aspects of town planning.
2. The Town Plan should accommodate a range of different market scenarios, options, and constraints for long term use of the site.
3. The Town Plan should be practical from the standpoint of the physical constraints and needs of new development.
4. The Town Plan should be responsive to, and compatible with local traditions, history, culture, and neighboring land uses.
5. The Town Plan should demonstrate a humanistic approach to the integration and mixture of land uses, social and economic activities, and environmental concerns.

To achieve these five goals, the Traditional Neighborhood Design Concepts, which are examined in Chapter 3, are used and adapted in the New Town Design. These design concepts will attempt to eliminate the weaknesses of the TND concepts while maintain the strengths, in order to improve the TND concepts to suit the goals of the New Town Design.

4.3.2 The Fundamental Structure of the New Town Plan

The arrangement of the main streets, the public open spaces, and the public buildings that create the structure of the New Town is inspired by the plan of Colonial Williamsburg (See Figure 4.4). In Colonial Williamsburg, three main streets run in an east-west direction serving as the lifeline of the community. Two important public buildings are located at both east and west ends of the central main street called Gloucester Street, the College of William and Mary to the west and the Capitol to the east. The buildings also serve as landmarks as they are placed at dominant locations. The group of formal green spaces is located at the center of the community in a north-south direction, including the Palace Green, the Market Square, and some multi-use green open space. They accompany such public buildings

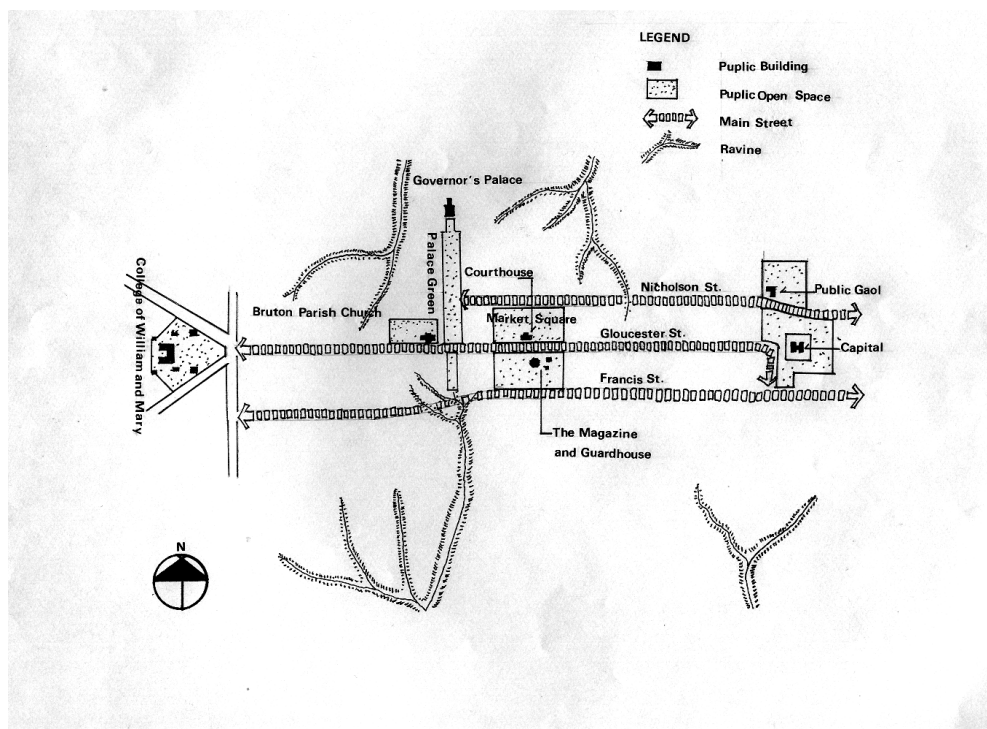


Figure 4.20 The network of public building and public open space in Colonial Williamsburg

as the Governor's Palace, the Courthouse, the Magazine and Guardhouse, and the Bruton Parish Church. (See Figure 4.20) Most of the buildings, which are located along Gloucester Street, are mixed used and of harmonious size, materials, and proportions.

Colonial Williamsburg's planning concepts, and their response to the site context, are adapted to the design of the New Town Plan. The following explains the process used to design the fundamental structure of the New Town.

1. Select the location of the main entrance: From the site analysis, the potential main entrances are located along Ironbound Road, proposed Monticello Avenue, and News Road. Most people will access the site by Route 199 at the interchange on Monticello Avenue. Monticello Avenue extension will become the busiest street serving traffic both to and from the existing downtown and traffic to and from Interstate 64. Access from this street is very important to the New Town for it will support the new commercial center which needs large amounts of customers from other areas. For this reason, the potential access from Monticello Avenue was selected as the main entrance to the site.

2. Layout the main streets, the important public buildings and public space, and the open space: Because the main streets of the New Town will serve as commercial streets with various activities, they are designed as boulevards providing comfort to all types of users. The layout of the New Town's boulevards are derived from the plan of Colonial Williamsburg (See Figure 4.4 and 4.20), potential connections between sub-areas (See Figure 4.19), and compatibility to the topography and the drainage patterns of the site. The boulevards run from the entrance at Monticello Avenue extension in a north-south direction passing the main part of sub-area 3, then in an east-west direction passing the main part of sub-areas 3, 4, and 5. From this area, the boulevard becomes the principal street running north-south, linking sub-area 5, 6, 7, and connecting to News Road at the southwest boundary of the site. (See Figure 4.21) The important public buildings and public spaces are placed in prominent locations along the boulevard, which will be explained in detail in topic 4.3.3.

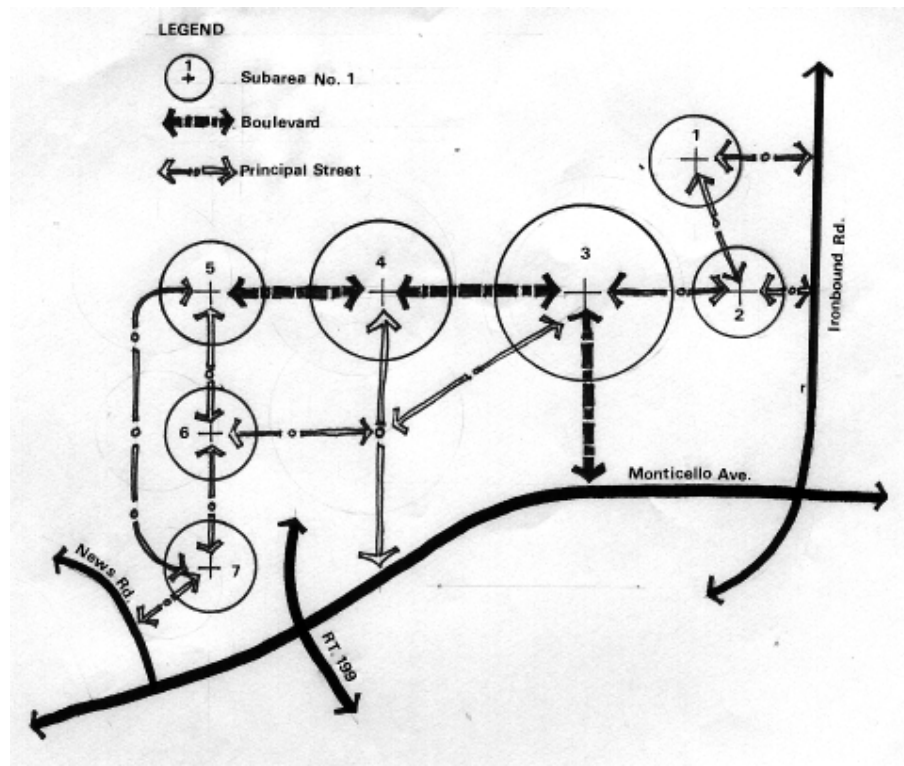


Figure 4.21 Connections between subareas within the site

3. Layout the minor streets and land uses: Finally, the minor streets are compatible with the existing topography. Distances between each street is based on the size of a walking block (about 200 to 600 feet). At the same time, land uses of the New Town are determined. Uses include low, medium, and high density residential, multiple, green space or squares, office, light industrial, civic institutional, retail or commercial, and recreational.

After designing the fundamental structure of the New Town, the plan is developed in more detail with specific consideration of uses and activities, public space, circulation and typological characteristic control of architectural.

4.3.3 Uses and Activities

A: Maintain the TND's Areas of Strengths

1. Mixed Use: The New Town Plan is mixed use. Retail and institutional uses are located within walking distance of residential uses. The location of land uses within the New Town Plan are shown in Figure 4.25. After laying out the main streets, the main public buildings, and public spaces, other land uses of the New Town are located.

First, the areas adjacent to the main boulevard are designated as multiple use areas, a mix of commercial, residential, and official use. Functioning as the commercial center of the New Town, the boulevards are convenient to the surrounding areas. The major anchors of the New Town Plan are the commercial areas. These are placed at the ends of a pedestrian axis at the center of the New Town so as to draw shoppers along the commercial strip. Industrial use is located in the northeast corner of the site, adjacent to the existing industrial areas, and is separated from other uses by a wetland corridor. Finally, lower density residential use is placed away from the commercial streets to avoid annoying noise and activities.

2. Mixed Housing Types: The New Town Plan has a mixture of housing types within the same area, including single houses, duplexes, townhouses, apartments, outbuildings, and apartments above stores. A criterion used to locate these housing units throughout the town plan is density not housing type. For example, on a street located in a medium density residential area, one may find a townhouse next to a duplex and a triplex. Densities of the New Town's residential areas are divided into 3 categories, basing on the Comprehensive Plan of James City County (1991). They are high (7-12 units per acre), medium (4-6 units per acre), and low (2-4 units per acre) density residential areas. Housing types that fall into these categories are shown in Table 4.4. However, typological characteristic controls of architecture are used to coordinate these different housing types and create comfort and pleasing environments in the New Town.

B: Eliminate the TND's Areas of Weaknesses

1. Decrease the environmental impact by design: Environmental issues are one of the main concerns in the New Town Design. Blocks and lots are organized to be compatible with the topography and the drainage patterns of the site in order to lessen the environmental impact (See Figure 4.26). Major swale areas are preserved as open space. To save building energy, the direction of seasonal wind and sunlight pattern are considered in the design of building organization (See Figure 4.27). Lynch and Hack (1984: 267) point out their basic concepts of building design concerning energy saving:

“in temperate climates, principal daytime living spaces should face south; outdoor decks or patios should not be on the north, opening on north faces should be reduced, especially where winter winds are from that direction; westerly openings should be protected from the late summer sun by deciduous vegetation or other form of screen; winds should be broken near entrances and openings; cross-ventilation should be provided to all living and sleeping spaces. By varying interior plans, these criteria can usually be met regardless of street orientation.”

Most of the areas adjacent to the major wetlands are designated as low-density residential use which has the least impact to the environment of all the uses. Accesses to the wetland areas are limited to controlled locations. To minimize disturbed wetland areas, the selected accesses are at the areas where the bridges across the wetlands are located. These areas are the narrow part of the wetland corridors with less slope. On the other hand, the areas prevented from any disturbance are those of the main parts of wetland corridors. For the reason that, they contain large areas of wildlife habitats and function as drainage basins of the town. The other areas that should not be accessible are those with slope greater than 25% because its soil is easily eroded.

Community programs and activities that enhance public awareness about the environmental issues, both in local and regional scale, should be promoted. Educating residents about the importance of critical natural features in their community will enhance

the stewardship to maintain them. Physical layout is designed to enhance these relationships as explained at the following.

Some of the areas between developments and wetlands are assigned to a passive recreational activities such as birdwatching, painting, and photography. These areas are 20 feet wide corridors covered with groundcover vegetation. The small nature trails are established along these passive corridors as well as through the watershed. The habitats for endangered plant called Small Whorled Pogonia are preserved both in a community's park and in wetland areas. Moreover, an information center holding exhibition about the natural features of this area, their importance, and management are provided in the community's park.

2. Enhance the cooperation between the New Town's commercial center and the existing downtown to promote business in both areas: Because the New Town's commercial center can not survive from the support of residents alone, it needs to serve visitors from other regions as well. It is perceived as a part of the larger urbanized area of the City of Williamsburg, comprised of Colonial Williamsburg, the existing downtown, the College of William and Mary, and other nearby developments. The New Town commercial center has unique characteristics which differentiate from but enhance the existing downtown. For example, it features a new entertainment and restaurant center mixed with some retail shops and hotels. Programs and activities to enhance cooperation of business sectors in both areas should be created, for example, the cooperation between the hotels and the restaurants for advertisement, promotion, services, and other activities. A greenway corridor accompanied with pedestrain walkways is established along Monticello Avenue to link the New Town commercial center with the existing downtown.

3. Design for land use flexibility in the future: The TNDs' land use planning is criticized because the areas of different land uses may not be feasible or desireable with future population changes. This issue occurs in most planned communities. To solve this problem, flexible use areas are designated in the New Town Plan (See Figure 4.24). Land

uses in the flexible use areas are allowed to change in the future in order to respond to the change in the community's population. Most of them are high, medium-density residential uses, adjacent to the mixed use areas. When the population increases, retail centers will be expanded. The need for housing units will also increase. Flexible use areas may be changed to more mixed use and higher-density residential use than currently designated uses.

4. Reduce conflicts between residential use and other uses: Mixed use, high-density, compact development may cause conflicts between different activities which need different levels of privacy. In residential areas, residents need a greater level of privacy than those in other areas. To solve this problem, land uses are laid out in hierarchical order from the highest-density use to the lowest one (See Figure 4.22 and 4.28). The layer of different density areas start from the axis of the community (the boulevard) to the edge of each sub-area (the open space). The areas with low-density tend to have fewer activities going on, than those with high-density, and are designated as residential areas. On the other hand, the areas with high-density are designated as mixed use, which is comprised of retail, offices, and apartments. Categories of land use densities and their corresponded building types are shown in Table 4.4. In the areas of denser and more mixed development such as the apartments above stores, privacy is created by the design of decks, vegetation, walls and the controlled entrances. The decks serve as transition between the outside busy commercial streets and the inside private apartment areas. Vegetation boxes on the apartments' decks and windows help mitigate the view from the streets to the apartments. The thick apartments' walls eliminate annoying noise. Finally, to limit accesses to residential areas the apartments' entrances are set away from the commercial entrances.

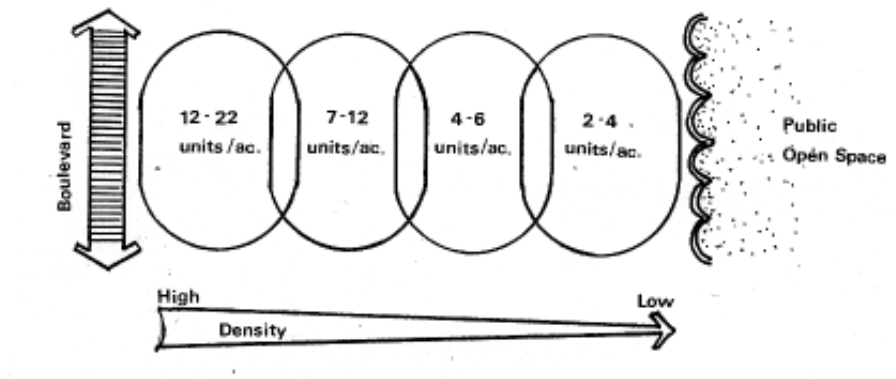


Figure 4.22 The hierarchy of different density areas in the New Town

Table 4.4: Hierarchy of land use densities and their corresponding building types from the axis of the community to the outer open spaces

Density (unit per acre)	Building type
12-22	storefronts, offices, apartments, offices with apartments
7-12	above
4-6	offices, townhouses, apartment
2-4	townhouse, duplex, triplex
<2	detached house, duplex civic buildings, schools, major anchors

To create greater diversity, different lot widths are mixed along the same streets. This results in buildings of different sizes and character to enhance the street environments.

5. Balance the qualities of the local labor force with the requirements of employers: Some critics say that it is difficult for residents to find suitable jobs in the communities in which they live, even though the TNDs provide workplaces within a walking distance from residences. A professional organization may be needed to help increase the local employment rate. It can be either the government or a private, local economic development agency. Appropriate approaches for a local development program are human resource development strategies which directly improve the individual's access to jobs or skill development.

The increasing of the local employment rate will affect the New Town in 2 ways. First, it will reduce the average trip distance generated by the New Town's residents because many of them will work within their own community. This will help encourage the residents to use other types of transportation such as riding buses, bicycling, and walking rather than just driving. Secondly, it will increase the New Town tax payer residents and its revenues that are important for the maintenance and redevelopment of the New Town's facilities.

4.3.4 Public Space

A: Maintain the TND's Areas of Strengths

1. Systematically design the network of public buildings and public open space: Various types of public open space are included in the New Town plan. They are categorized into two types: (1) the natural open space such as the preserved wetland areas and the community's park, and (2) the built open space such as the street squares, the plazas, the playfields, the village green, and the lanes. Public spaces are designed to accompany public buildings. The boulevards act as the axes linking them together in a well-defined network.

2. Locate civic institutions and public space on dominant areas of the site: Public buildings are located on high terrain of the sub-areas and also serve as landmarks at the end of the boulevards and the principal streets. These buildings include a civic center, courthouse, school, library, museum, and churches.

B: Eliminate the TND's Areas of Weaknesses

1. Eliminate the conflict between private areas and public areas: This task can be done by designing layers of public open spaces that serve different users ranging from the residential neighborhood park, the community park, to the downtown boulevard (See Figure 4.29). By using appropriate materials, scales, and proportion in the design, these layers of public space help control the number of users and provide the buffers between private and public areas. For example, a lane or a playground within a block is a public common area for the block's residents. Convenient access from adjacent houses should be provided, while limiting through traffic to block residents. This can be achieved by differentiation between floor level within the block and the street level, changing the lane's or playground's pavement materials, using brick or stone, and landscaping those common areas within the block by planting shrubs and small trees to indicate privacy areas. (See Figure 4.23)

2. Design the network of public open space in context with the regional scale: The network of the New Town's open space is designed as a part of the larger network of regional open space (See Figure 4.30). The preserved wetlands of the New Town are linked with the conservation wetland areas along Powhatan Creek which connect to Jamestown Historical Park. The areas along Route 199, Monticello Avenue, News Road, and Ironbound Road are proposed as parts of a greenbelt network as shown in Figure 4.30. The continuous wetland and greenbelt corridors serve as the effective wildlife habitats and natural drainage systems of the region. They are also connections between Berkeley Middle School, the main entrances to the New Town, Mid County Park and the west parts of James City County.



Figure 4.23 Using appropriate materials, scale, and proportion in the design to eliminate the conflict between private areas and public areas

4.3.5 Circulation

A: Maintain the TND's Areas of Strengths

1. Layout gridiron streets as the main structure of the New Town: Streets in the New Town are laid out in a gridiron system to provide alternate routes between two points (See Figure 4.31).

2. Design streets that have a friendly and inviting environment: Narrow streets with a continuous building fabric are typical in the New Town (See Figure 4.32 and 4.37). Details of street pavements, furniture, trees, and proportion are carefully designed to promote a pleasing environment.

3. Provide a network of sidewalks and bikeways accompanied with streets throughout the community: The scale, materials, and details of the sidewalks and bikeways are carefully designed to provide convenience for users. The minimum width of

the sidewalk is 5 feet, which is wider than that of the typical developments. Ten-foot wide sidewalks are provided in areas with the most active pedestrian activities, such as along the axis boulevard of the New Town's commercial center (See Figure 4.33 and 4.34). Bikeways of the New Town are divided into two categories. First, Class I Bikeways, paved paths separate from roads, are provided along the New Town's boulevard and the Alternate Route 5. Secondly, Class II Bikeways, paved shoulder along the roads, are provided along the New Town's principal streets, Monticello Avenue, and Ironbound Road.

4. Provide public transit that links the New Town with other regions: A public bus station is located at the intersection between Monticello Avenue Extension and the New Town's principal street adjacent to the radio station. This location is chosen because it is conveniently accessed by Proposed Route 199, an entrance to the New Town's commercial center, and Monticello Avenue. A network of bus routes link important places within the New Town to other community areas and with those outside the community (See Figure 4.35).

B: Eliminate the TND's Areas of Weaknesses

1. Mix the concepts of gridiron streets with those of curvilinear streets to be more compatible with the topography: Gridiron streets of the New Town are encouraged to curve in order to respond to the topography. When it is necessary, a street is allowed to run perpendicular to the topography with appropriate slopes for automobile use (<17% slope). However, at the areas where slopes are greater than 17%, stairs and ramps for pedestrian are used to remain continuous circulation network.

2. Design the network of streets with more consideration of its relationship with the surrounding areas: Connections between the existing streets and the proposed streets are considered important in the design. They provide convenient access from existing development to the New Town's commercial center (See Figure 4.36).

Moreover, the streets of the New Town provide connections between other uses of the town and their adjacent context. For example, they link the new town's residential uses to the existing residential neighborhoods which surround them such as Ford's Colony to the north, Ironbound Square to the east, Brook Haven to the south, and a low density residential development to the west. These street connections enhance social relationship between their residents and provide continuous circulation network within these areas. Another sample is the street linkage between industrial uses of the New Town and the existing ones located to the northeast and the south of the site.

4.3.6 Typological Characteristic Control of Architecture

A: Maintain the TND's Areas of Strengths

Allow for typological characteristic control of architecture to some appropriate degree: Architectural design guidelines are established to suggest typological characteristic alternatives and to exclude poor quality architecture. The guidelines are simple and basic which allow for a great variety of building styles. They are developed by involved parties such as land owners, developers, planners, architects, landscape architects, historians, preservationist, and public officials. The guidelines or codes are comprised of simple diagrams and captions written on 1-2 sheets of paper. They suggest forms of different building types in the New Town such as their required height, uses, placement, and specifications. Some examples of the design guidelines are shown at the following.

To make the houses look related to one another and form a coherent street wall, distances between houses should not exceed 50% of the typical house width. The front of the houses should be close to the streets, about 15-20 feet from the property lines. Moreover, the garages should not be placed at those front areas. Rear yards should be at least 30-40 feet deep to provide privacy for residents. The requirements will differ from one building type to another.

Besides the standards to control the characteristic of building types, the codes suggest material and configuration standards for some architectural elements such as roofs, walls, fences, external building walls, windows, doors, and landscape.

B: Eliminate the TND's Areas of Weaknesses

Reduce the conflict between private and public space around housing units: The balance between public and private space around housing units is addressed in the New Town design. This issue is solved by the well-designed space between the front of a house and its adjacent public street. A plentiful area is provided in front of the entry door acting as a buffer zone between indoor and outdoor space. It may be treated as a porch, a stoop, or a court. Landscaping also helps to create a semi-public area in front of a house, such as the use of hedgerows, foundation plantings, large trees, and shrubs (See Figure 4.37).

Outdoor rooms can be designed as transitions between public and private spaces in the middle of the blocks and on the service side of the buildings. They can be treated as decks, patios, pools, gardens, or sidewalks. The other elements used to reduce conflict between private spaces in these areas are fences and walls. Their design can be used to develop privacy of the residential areas, at the same time, enhance public rooms in the middle of the blocks. The materials, height, and location of the outdoor walls and fences should be controlled as addressed in the community's design guidelines. They must be considered as a part of the overall architectural theme. However, they should not predominate over the landscape.



Figure 4.24 Flexible Use Map



Figure 4.25 Land Use Map of the New Town Williamsburg



Figure 4.26 Drainage Pattern Map



Figure 4.27 Building orientation



Figure 4.28 Lot Pattern Map



Figure 4.29 Open space network of the New Town Williamsburg



Figure 4.30 Regional open space network

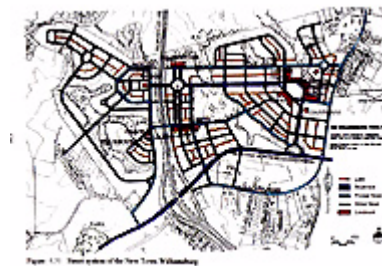


Figure 4.31 Street system of the New Town Williamsburg

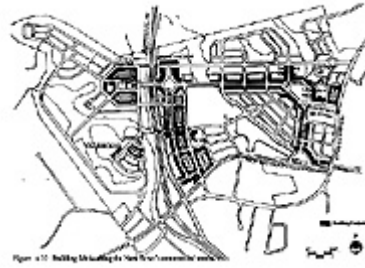


Figure 4.32 Building fabric along the New Town's commercial streets

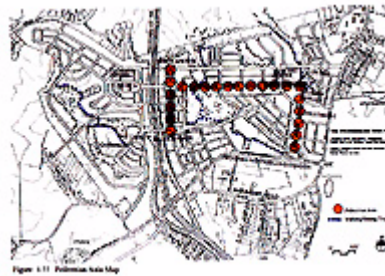


Figure 4.33 Pedestrian Axis Map

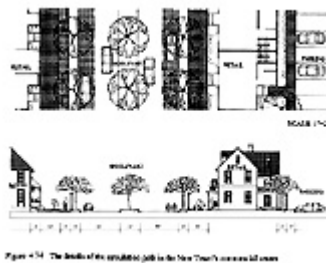


Figure 4.34 The details of the circulation path in the New Town's commercial center



Figure 4.35 Public Transit Map

Chapter 5: Conclusions

The objective of this thesis is to develop the best design concept for creating a pleasing and livable American suburban community which responds to the cultural and physical environments of the setting.

For a long time suburban developments in America were criticized for the poor quality of their designed environments, resulting in a poor quality of suburban life. Two major causes are low-density single use zoning and hierarchical street systems which value convenient automobile circulation. The single-use zoning separates each land uses into different zones. These zones are connected to one another by hierarchical street systems with limited intersections. One has to rely on a car to get from one place to another. Suburban environments are designed to provide convenience for vehicles, not for humans. These typical low-density developments cause suburban sprawl and traffic problems, and have a lack of public space. Moreover, a great amount of time and money is needed in order to live in the suburbs. Planners, architects, landscape architects, and designers in America are attempting to solve these problems. One of these attempts is the design theory called the New Urbanism in the late 1980's.

New Urbanism proposes that the solution for suburban problems is higher-density, mixed-use, compact development with networks of open space, streets, sidewalks, and bikeways. The size of a neighborhood is within walking distance, about 1/2 mile in diameter. Public transit connects one community to another. Outdoor environments are designed with pleasing materials, details and proportions, and serve as public rooms of the community. The purpose behind New Urbanism is to create better living environments for people by reducing the reliance on cars, and creating alternate modes of transportation.

To achieve the objectives of the thesis, one type of the New Urbanism design concepts was chosen as a case study, and a literature review uncovered the strengths and weaknesses of that concept. The development of a design for a new community was helpful in understanding and eliminating the weaknesses.

The important steps were to choose a design site and a type of New Urbanism design concept as a case study. To develop the best community, the chosen site and design concept must be compatible with one another. The site of the New Town Williamsburg competition was chosen for two reasons. (1) The site is located near Colonial Williamsburg, which is one of the most important historic cities in Virginia; studying the impact it would have on a new development and learning to corresponding between the old and new town are very useful. And, (2) This site was the competition site for the New Town Plan, and the information of the site was easily accessible from the design competition service.

After the site was chosen, the next step was to choose the appropriate New Urbanism design concept. The Traditional Neighborhood Design (TND) concept, one of the five types of New Urbanism, is intended to develop new towns from undeveloped suburban areas. It also stresses that careful attention be paid to local tradition, history, and culture, so that the community design will be compatible with the area and the people who live there. The TND concept was chosen as a case study because it was the most suitable concept to the design of the New Town Williamsburg.

The literature review studied the characteristics of the TNDs, and its problems. The results were analyzed to uncover the strengths and weakness of the TNDs. These were then used to develop the improved TND concepts. The set of criteria used to analyze the TND concept included land use, public building and public open space, transportation, and architectural characteristics. They were the same criteria used to analyze the suburban problems in the first stage of the thesis. The summaries of the strength and the weaknesses of the TNDs are shown as follows:

A. Land Use

- Strength points:
1. Mixed-use development within walking distance
 2. A mixture of housing types

- Weak points:
1. Environmental impacts caused by high-density developments
 2. Commercial centers in the new community needs support from large population in order to survive
 3. Designated land uses may not be appropriate in the future
 4. Conflicts between activities of different use areas
 5. Inability to match the quality of the local labor force with the needs of employers

B. Public Building and Public Open Space

- Strength points:
1. Systematic design of public buildings and public open space networks.
 2. Dominance of civic institutions over private buildings

- Weak points:
1. Conflict between public areas and private areas both in community scale and in neighborhood scale
 2. Lack of relationship between the community's public open space and the regional one

C. Transportation

- Strength points:
1. Gridiron streets accompanied with networks of sidewalks, bikeways, and public transit
 2. Streets that have friendly and pleasing environments

- Weak points:
1. Disregard of topography
 2. Lack of relationship with the surrounding neighborhoods

D. Architectural Characteristics

- Strength point:
1. Typological characteristic control of architecture

- Weak point:
1. Conflict between public space and private space around housing units

The next step was the design approach. Basic information of the site was collected and analyzed. From the site analysis and the summaries of the strengths and the weaknesses of the TNDs, the design concept was developed. The strengths were maintained while the weaknesses were eliminated. The approach to eliminate the TNDs' weaknesses are as follows:

A: Land Use

1. Decrease the environmental impact by design
2. Enhance the cooperation between the New Town's commercial center and the existing downtown to enhance business in both areas
3. Design for land use flexibility in the future
4. Reduce the conflict between residential use and other use by laying out land uses in a hierarchy from high-density use to low-density use
5. Balance the qualities of the local labor force with the needs of employers

B. Public Building and Public Open Space

1. Eliminate the conflict between private areas and public areas by designing layers of public open space that serve different scopes users
2. Design the network of public open space in regional scale

C. Transportation

1. Mix the concepts of gridiron streets with those of curvilinear streets to be more compatible to the topography
2. Design the network of streets in consideration of the surrounding areas

D. Architectural Characteristics

1. Reduce the conflict between private and public space around housing units by the well-designed space between the front of a house and its adjacent public street

From these design concepts, the New Town Plan of Williamsburg was developed. The problem found in the design is that proposed Route 199 divides the site into two parts, and the connections between them are limited.

The objective of the design of the New Town Williamsburg is to show an example of the improved TND concepts. However, the evaluation of this improved concept is not a part of this thesis, for it is a major issue that can be elaborated on and discussed separately.

Lessons From This Thesis

In this thesis an attempt has been made to provide a framework for bettering the American suburb. Creating a better place to live requires many different disciplines including planning, architecture, landscape architecture, art, sociology, environmental science, energy, engineering, management, land development, history, finance, and business. The TND concepts were originated by planners and architects, therefore, it mainly focuses on planning and the typological characteristics of architecture that are needed to create a healthy community as pointed out above. Although most of the expert in planning and design are concerned about society, their perceptions of people's lives are limited by their experiences. This results in the weaknesses of many famous design concepts such as the Decentralized concept, the Radburn concept, the Broadacre City concept, and also the TND concept. It is suggested that in order to eliminate the weaknesses, coordination among involved parties must be made before, during and after the design process. The major contribution that landscape architects can make to the society is to educate and promote the ideals of New Urbanism to the public. Landscape architects have a better understanding about the design of living environments compared

to other professions. The existing suburban problems, their causes, and their potential solutions should be pointed out to suburbanites. The important message is that healthy and peaceful communities can be achieved by giving priority to community over privacy.

New Urbanism is not a new idea. It reminds and brings back a community's social life that has been in decline because of a growing reliance on cars. Evidence showing the descent of a community's social life is shown in the changing role of the street as public open spaces in four different communities built in different periods. They include a colonial town, Riverside, Radburn, and Levitt Town (explained in Chapter 1). People today depend much more on cars and have forgotten the basic social needs. Close relationships between the community's streets and public realm is an important factor that should not be neglected in the design.

The findings of this thesis can provide useful tools for any designer who is interested in community design. Interesting questions for future research include (1) how to develop a high-density, mixed-use, compact community while having the least amount of impact on an environment, (2) how to incorporate energy savings into the community design, and (3) how the coming period of global communication technology would affect people's social lives and the design of the community.

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