BUILDING A HEALTHY AND ACTIVE LIVING COMMUNITY—CREATING WALKABLE AND CYCLE-FRIENDLY COMMUNITIES FOR OUR CHILDREN

by

ZHEN FENG

(Under the Direction of Judith Wasserman)

ABSTRACT

After the World War II, conventional subdivision planning and design method has produced low-density, auto-oriented suburbs that have created isolated and passive living space for the past half-century. These isolated and inactive communities have contributed to environmental, health, economic and social problems for our society, especially our children. By reviewing and analyzing historic examples and precedent case studies related to creating active living community for children, major patterns or similarities will be discovered and design principles will be interpreted for their contribution to creating an active living community. Finally, these principles will be applied in a design at Norcross, GA to see how it can be applied to real world

INDEX WORDS: Walkable and Cycle-friendly, Children, Active Community, New urbanism, SR2S, Children Friend City

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CHAPTER ONE

INTRODUCTION

Introduction

Grown up in Pudong, Shanghai, just before China's modernization, I enjoyed active play in my community and the surrounding areas. My favorite childhood memories are of playing hide-and-seek, running, and other games that took place in the community's streets, parks, or the school playgrounds. I can recall so many fun times playing outside with my twin brother and our friends. I felt as if I knew every tree, stone, and even the tiniest crack in a wall. I knew all my classmate's names in our neighborhood, his/her home, and where I could find the greatest fun or a sweet treat. Living only a few blocks away from my elementary school and high school, I walked to school everyday by myself or with my brother. Finding a secret path to school was always our adventure as long as we kept our roaming within the neighborhood.

Now, as China is modernizing rapidly, I can see this experience fading from the lives of our children. When I came to the Athens, Georgia, I noticed that without a car I could almost go nowhere, even as an adult! A simple thing like grocery shopping, may take me one hour, as I have to wait for a city bus to bring me miles away. Parks and other shopping places are far out of my reach unless I do not mind spending half a day to get there if I am lucky enough to catch the bus when I arrive at the bus stop. Eventually, I found I could not put up with the bus system anymore, and I bought my first car. However, like all the Americans, I gain freedom by being a

slave of my own car. I drive to school, to restaurants, to the park, and to go shopping. I even drive to the gym to get exercise. Without a car, one can hardly have a normal life.

Then, my husband and I had our daughter, Sophia. Like all the parents, we hope the best for her. We drive her to the park and the children's playground and let her enjoy the fresh air and interesting play structures there. We drive her to school and hope she will enjoy it and learn something. We take her to the grocery store and the mall to buy healthy food and beautiful clothes for her. For a while, I thought we were really good parents and that we provided a comfortable and healthy life for her. But, as time goes on, I began to realize that until she is able to drive at 16, her life will be confined to our car and her view of the world will be from a car window, and only the destinations we choose to go. How will she experience the fun and exciting things I did in my childhood? Will she be able to enjoy playing on her own or with her friends outside after she grows a little older?

This anecdote reminds me of a study did by Appleyard and his colleagues. In this study, the children were asked to map their neighborhood by their memories and their experiences of the community. (Appleyard 2003) The map they produce mostly reflects the destinations such as home, church, school, mall, and stores etc (Figure 1.1). The location and the route connecting to the destinations are either wrong or missing. This is an excellent reflection of how our children experience the world: in a parents' car seat. Because of the current urban sprawl and passive community planning and design, kids are mostly confined to the home or the places their parents bring them to. They have lost the chance to actively experience and explore the world by themselves.

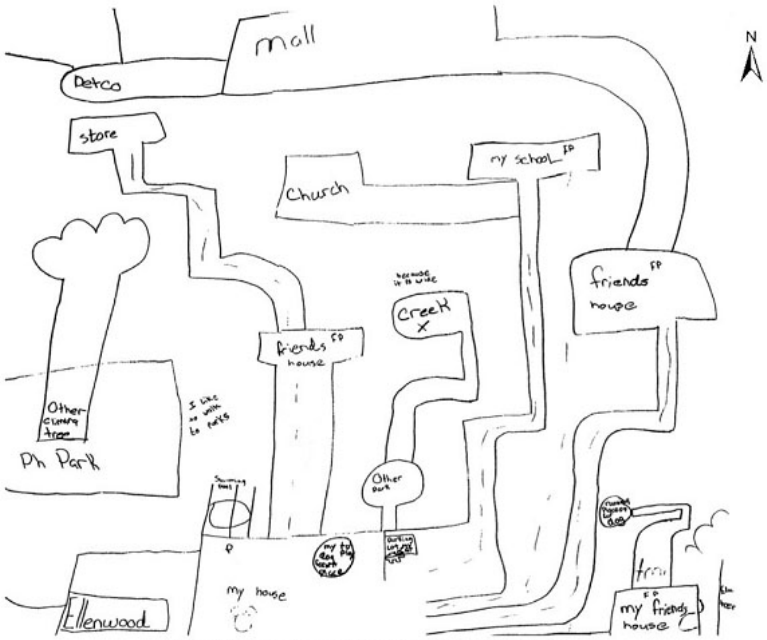


Figure 1.1 A map drawn by a 10-year old who was driven everywhere (Appleyard 2003)

Problem

After World War II, conventional community planning and design has produced low-density and auto-oriented suburbs that have created isolated and auto-oriented passive living communities for the past half-century. Our homes are separated from where we work, shop and recreate, and become isolated islands. Automobiles and massive road system are now the chief way to connect. Accordingly, the rate of walking and biking of kids has dramatically reduced in the past forty years. Almost 9 out of 10 children age 5 to 15 ride to school in a car or a bus today (McDonald, 2007).

This urban sprawl and the passive communities it created have contributed to environmental, social, and health problems. Because of the auto-oriented planning and design,

deteriorated environment quality, air pollution, and loss of farmland and wetlands are becoming more and more serious in today's world. Children have less and less chances to play outdoors and enjoy nature (Platt, Rowntree, & Muick, 1994). At the same time, the human-scale development that provided a strong sense of community and a setting where children can walk, bike, and play with each other is also gone, creating a society and lifestyle that are unhealthy and stressful for the kids who lived in. (Brown, Burton, & Sweaney, 1998). Diabetes, obesity, and other medical problems among children are a direct result of passive community planning and design. This passive community planning and design are seen as counterproductive to environmental welfare and a child's health (Benfield, Raimi & Chen, 1999; Kerr, Rosenberg, Sallis, Saelens, Frank, and Conway, 2007, McDonald, 2007).

Purpose and methodology

The main purpose of this thesis is to conduct a thorough investigation into the built environment and its impact on children's activities in order to determine how to design and plan an active living community for pedestrian and cycling use and provide more active opportunities for children.

The first step in my research process will be to examine the "passive community" and its negative influence on children. Next step will be the research on historic active communities. The main focus will be both theoretical as well as practical information about what kind of pioneering work people have done in this realm. Furthermore, different planning and design theories and movements related to creating active communities will be reviewed. There are

several main strategies in creating an active community: New Urbanism, Smart Growth, Safe Routes to School (SR2S), and children friendly cities. This thesis will examine some successful case studies from these strategies/theories to explore the ideas that build an active community for children. The design concepts in transportation, land use, and urban design in regards to creating an active living community for children/youth will be interpreted as design principles. In addition, children's participation in community planning and design will be discussed.

These principles will be used in one conceptual design case study. A site in Norcross, GA will be chosen to apply what has been concluded from above. Finally, by analyzing the findings, major patterns or similarities will be discovered and certain characters of active community design will be recognized for their contribution to create a child-friendly environment.

CHAPTER TWO

PASSIVE COMMUNITY AND ITS NEGATIVE INFLUENCE ON CHILDREN

Urban sprawl and passive community

After World War II, the nation faced an acute housing shortage as soldiers returned home. With automobile technology advancing rapidly in the twentieth century, affordable cars drove into middle class homes and asserted an important role in every aspect of people's life. This made a dramatic change to homebuilding, and large-scale standardized developments such as Levittown, first appeared at this time. These postwar suburbs were located at the edge of the cities, had very low density, and were monotonous both in architecture and landscape. During the last two decades, Americans have settled on the fringe of metropolitan regions so fast that by 2000, more Americans lived in suburbs than in the central cities and rural areas combined.

As suburban development quickly accelerated, and long distances needed to be traversed, the nation's road infrastructure developed rapidly. In 1956, the Federal Highway Act set out to "disperse our factories, our stores, our people, in short, to create a revolution in living habits."(Frumkin, Frank, Jackson, 2004). Nearly half a century later, the term "sprawl", which commonly means dispersed, auto-dependent, architecturally monotonous residential subdivisions outside of compact urban centers, along highways and in rural countryside, has entered the American vernacular. Different land uses- housing, retail, offices, industry and recreational facilities are kept separate from each other in these newly built suburbs, usually enforced by zoning laws. The residents hardly can do anything, even as simple as buy a newspaper or a

burger, without driving cars. Research shows that sprawl toward the edges of a metropolitan area is associated with more driving. For instance, in the Atlanta metropolitan area, one of the nation's leading examples of urban sprawl, the average person (including non-drivers) travels 34.1 miles in a car each day while more densely populated metropolitan area has far lower per capita daily driving figures than Atlanta, such as 16.9 mile for Philadelphia and 19.9 for Chicago (Public Health Reports, May-June 2002). The pattern also was observed at a neighborhood scale—vehicle miles traveled increase as neighborhood density decreases (Figure 2.1).

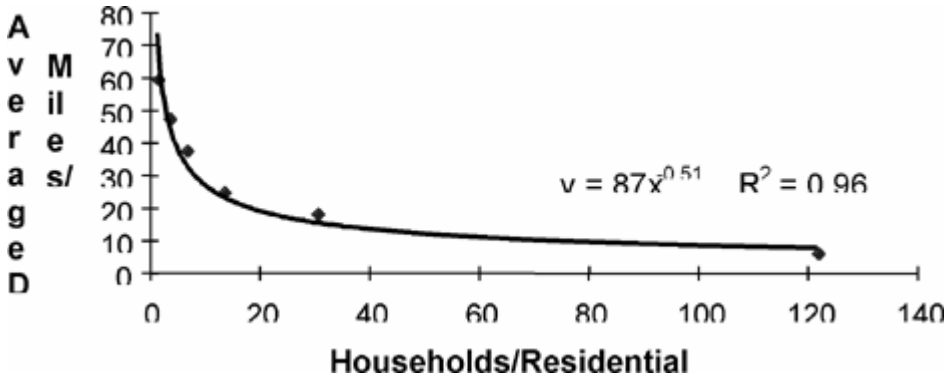


Figure 2.1 Average Daily VMT/Hh vs Density,
MTC's 1990 Household Travel Survey(www. Sierraclub.org)

There is also a clear relationship between the degree of sprawl present in a community and the amount of walking or other active transportation there. More sprawl is associated with less walking and less leisure-time exercises.

Passive Communities

Urban sprawl creates passive communities. Here, a passive community means a subdivision, which is located outside of a compact urban center and is auto-dominated, has a lack of alternative transportation, a weak connection with other surrounding communities and not enough public open space. A passive community usually has only single residential use, few

destinations for walking, and is void of continuous routes for safe walking and cycling. People who live in passive communities have a higher chance to habituate passive lifestyles than people live in the active places. To better understand the impacts of passive community on children, children's health issues, the relationship between children and nature will be studied in the next part of chapter two.

Children's Health

Safety

Traffic safety

Traffic danger is the major obstacle children face when walking or biking to school. (Figure 2.2) While adult commuting may be strongly influenced by travel time, children's travel may be more strongly influenced by traffic safety concerns. Each year, automobiles cause about 6,000 fatalities and 110,000 injuries among pedestrians nationwide. Pedestrians account for about one in eight automobile-related fatalities and 11 percent of these fatalities are children. (McCann B, DeLille B. 2000)

Despite the fact that traffic volume almost tripled from 1967 to 1990, pedestrian and bicyclist injuries and fatality rates are decreasing, not only in the United States but also in other industrialized nations. (Frumkin, Frank, Jackson 2004). The reason is that people are walking less, especially children. In 1969, according to Federal Highway Administration, about half of all children age 5 to 18 either walked or biked to schools. By 2001, 85 percent of children between 5 and 15 were chauffeured to school by either a parent or a bus driver. These changes came during

the same time period in which the rate of overweight children and adolescents has increased rapidly in America.

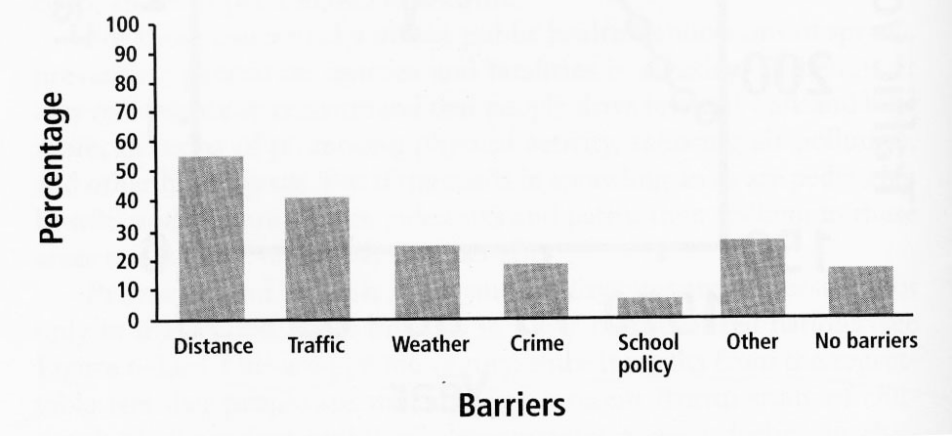


Figure 2.2 Percentage of HealthStyles Survey respondents reporting Barriers to their children walking and biking to school, 1999 (N=611)
Morbidity and Mortality Weekly Report 2002; 51(32)

Current studies have found that long distances to school, lack of safe sidewalks or bike paths, busy roads, and poor access to stoplights and street crossings were negatively associated with walking/cycling to school. In a car-dominated, passive community, streets are typically designed to be relatively wide to allow rapid, unobstructed automobile travel. The safest street width is approximately 24 feet, and the width of standard suburban streets is 30 feet, with some places even wider (Frumkin, Frank, Jackson 2004). Theses streets feature high traffic volumes and speeds, which put children pedestrian at great risk of injury and even death. It is nearly impossible to let children walk or play in this environment. Therefore, great attention should be given to infrastructure to aid safe walking and cycling, including enhancing pedestrian crossings, installing traffic-claming devices and many others which will be discussed in a later chapter.

Neighborhood safety

For neighborhood safety, crime rate is the most important factor. Surveys of parents revealed that they are more worried that children may be abducted or harmed by a stranger than if children would sustain a physical injury; this fear of abduction was a strong predictor of car travel to school (DiGuiseppi etal. 1998; Eichelberger et al. 1990).

Although actual levels of crime in the community directly affect the neighborhood safety, essentials of urban form help to create a fear of criminal danger in parents that restricts their children's travel and play boundaries (Valentine 1997; Moore 1986). Streetscapes that are run-down in appearance and empty houses along the streets may promote a sense of danger to the pedestrians, especially in children. Because low density, passive communities usually have low neighborhood surveillance, safety is a main factor of parental decision-making.

Some other minor elements which would usually be overlooked by a community, designer or planner could also become obstacles for children walking outside. For example, parents of girls could be more concerned about unleashed dogs roaming in the neighborhood than parents of boys. Playgrounds and sidewalks, which are not well lit, could deter evening walk and other activity.

Obesity

The obesity epidemic that has swept the nation during recent decades has fallen heavily on children. The ratio of overweight among children has more than tripled since the 1960s. Approximately one in ten preschoolers, and one in seven school-age children, are now overweight (Figure 2.3). Obesity in childhood is an important predictor of pediatric hypertension and increase risk of common adult health condition like coronary artery disease,

hypertension, dyslipidemia, osteoarthritis, diabetes, and some cancers (CDC 2001). From the information of Georgia Department of Human Resources; 9780 (15%) deaths were attributed to overweight and obesity in Georgia in 2002 and the annual cost of obesity in Georgia is estimated at $2.1 billion ($250 per Georgia each year), which includes direct health care costs and lost productivity from morbidity and mortality. The reason why we need to address childhood weight and obesity problems so urgently is because today's overweight and obese children will turn into tomorrow's obese adults. Their health care costs will become unbearable to the society if this trend is not halted quickly.

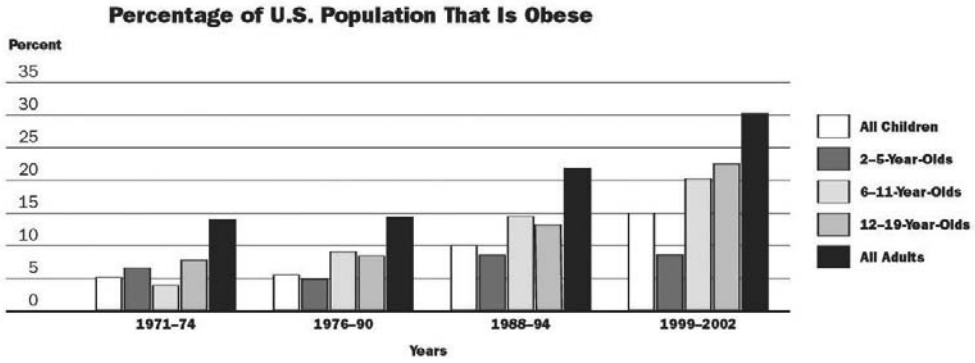


Figure 2.3 Percentage of U.S. population that is obese,
Anderson, Patricia "*Childhood obesity, trends and potential cause*"(www. Futureofchildren.org)

Weight gain occurs when food energy intake exceeds energy expenditure. Inadequate physical activity and poor nutrition are major contributing factors to this epidemic. In the past, much attention has been paid to children's medical care and diet, but little attention has been given to the potential negative effects from the built environment caused by poor community planning, land-use, and transportation. Until recently, researches have begun to examine the relationship between the environment and an active living style. The community-based, environmental approaches to promote physical activity are paid special attention because of

their potential to affect a large population and their promise to bring sustained results.

Passive communities limit physical activity in children as well as adults. In fact, children may have fewer options. Children who cannot walk or bike to school or do not have neighborhood open space do not have many opportunities for exercising, while adults can at least choose to drive to a park for exercise or join a sports club. Because of the fear of traffic danger and other safety issues from parents or children themselves, they usually choose to stay indoors, watching TV, or playing video games, which could lead to a sedentary lifestyle in their adult age.

There is clear evidence showing that children from suburban or rural areas are more likely to be obese than children from urban centers, where more pedestrian friendly places can be found (Figure 2.4). Therefore, our society should put more efforts on planning and design practice to ensure our children can enjoy an active living environment where they can run and play outside freely and safely.

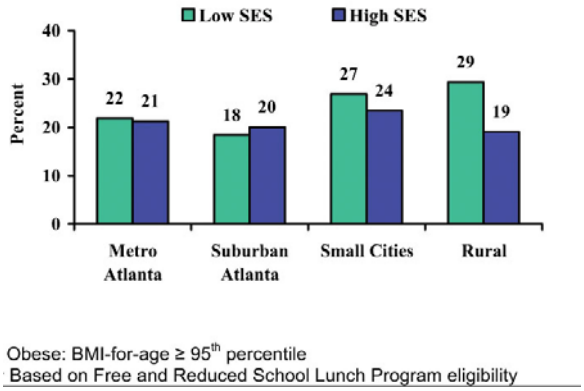


Figure 2.4 Percentage of 3rd grade children who were obese* by region and SES†, Georgia, 2005

Obesity in Georgia's 3rd grade children (http://health.state.ga.us)

Asthma

Asthma is a chronic condition involving the respiratory system in which the airway occasionally constricts, becomes inflamed, and is lined with excessive amount of mucus, often in response to one or more triggers. In severe cases, asthma attacks can be deadly. In the United States, about 20 million people have asthma. Nearly 9 million of them are children (Wikipedia). Children seem to be most vulnerable to the harmful effects of ambient air pollutants because their defense mechanisms are still evolving and they inhale a higher volume of air per body weight than adults (Salvi, Sundeep 2007). In recent years, scientists have shown that air pollution from automobile use, especially diesel vehicles, is a major cause of asthma attacks. Ozone and PM (particular matter) are the two major vehicle-related air pollution. Children playing outside where ozone and other pollutant levels are high have a higher risk of developing asthma compared to their counterparts in low-ozone communities. More study proved that children were at increased risk of asthma hospitalization if they live within 200 meters of roads with heavy truck traffic (Frumkin, Frank, Jackson 2004).

A passive community means more driving. We drive long distances that separate home, schools, work, stores, and other destinations. The disconnection between destinations forces more people to drive cars, thus creating more congestion on the main roads and worse air pollutants. Ironically, these main streets and roads are usually the only places furnishing sidewalks or bike paths in the communities and our children are afraid to use them to walk or travel to school. Metro Atlanta, which is well- known for its congested traffic, was named “Asthma Capital” in 2007 by the Asthma and Allergy Foundation of America due to high asthma fatality rates, severe air pollution, and pollen abundance. Clean outdoor air is essential in order to

get more people, particularly children, to get outdoor physical activity which will, in turn, require technical advances, behavior changes, and policy changes.

Children and Nature

One typical morning, I was driving my two year old to daycare. During the 20 minutes drive, most of the words that came from her mouth were “red light, stop, green light, go, I see a stop sign, that car is fast...” Before I tried to raise my voice to tell her to pay attention to the color of the changing leaves and the different shapes of the clouds, I realized that all she could see from the windows were cars, traffic lights and signs. I am not alone; most children today are chauffeured to school by either a parent or a bus driver. Moreover, the traffic near school districts is getting more and more congested during morning “drop-off” hour. At some places, the lines of cars connecting to the schools are backed up all the way into the main street, which means those children have to spend longer time sitting in the car, breathing the polluted air and looking out through the automobile window. I feel sorry for them and cannot help thinking how much fun it was during walking to school when I was a kid. Although hiking in a rain, searching under rocks, and climbing trees sometimes made me late for school, I appreciated what nature gave me and taught me.

Why do young kids need nature? First, children need nature for the healthy development of their senses, and therefore, for learning and creativity (Richard Louv 2005). Nature is about touching, smelling, hearing, tasting and seeing—outside. Children live through their senses and the natural environment is the principal source of sensory stimulation. One

article I read long ago told a story about an elementary school teacher who complained that her class had great difficulty on the assignment of writing feelings about snow. “Many students never walked in a snow or even in a rain”, explained the teacher. How can kids feel the cold, fluffy snow, and understand the changes of seasons by just sitting in a heated car or room?

Second, nature is often overlooked as a healing power for the emotional hardships in a child’s life. As we noticed, children’s emotional health became an alarming issue at the same time of the obesity epidemic. A 2003 survey, published in the journal *Psychiatric Services*, found the rate at which American children are prescribed antidepressants almost doubled in five years; the steepest increase—66 percent—was among preschool children. Nature experiences can relieve some of the everyday pressure that may lead to childhood depression. Research from the New York State College of Human Ecology at Cornell shows that life’s stressful events do not appear to cause as much psychological distress in children who live in high-nature conditions compared with children who live in low-nature conditions (Richard Louv 2005). When stressful events happened, children would escape in nature and seek calmness.

Other studies also found that playing in nature has positive impacts on children’s social play, concentration and motor ability. Children’s social skills and emotional development may be improved through having to deal with real world situations in the way of their independent movement through their neighborhoods (Gleeson, Brendan 2006).

Ironically, our society is teaching kids to avoid direct experience in nature. After turning countless woods into habitable places, we create large, sprawling urban areas where all

the buildings, streets, and even the landscapes look the same. How many times you see children playing outside when you are driving around your neighborhood? “Either indoor spaces have become more attractive or outdoor spaces have become less attractive- or both.” Explained in Moore reports (Richard Louv 2005). That lesson is delivered in schools, families, and codified into the legal and regulatory structures of many of our communities. As the federal and state governments and local school boards began to push for higher test scores, many states halved or canceled recess. Furthermore, our bland schoolyards and playgrounds are the only places children spend their outdoor school time. Many schools use a black asphalt bus loop as track for P.E. class, which is better than getting kids run to a fence and then run back. Even today’s “summer camp” is becoming a childcare camp, computer camp or weight-loss camp. Making nature available to our children will be a daunting yet important task for city planners and landscape architects.

Children’s social outdoor play

“The freedom to walk around is a guide to the civilized quality of an urban area. But for these young people, the freedom to walk around defines the limits of their world.”

---------Colin Buchanan

When parents think of outdoor play, fresh air and exercise probably come to mind, but outdoor play introduces opportunities for the children’s social development as well. Children build up confidence as they see their physical skills grow and they develop cooperation and leadership skills when they engage in active play with peers.

We all can remember the time when we reached the top of a mound or a tree and shouted to our parents:" Watch me, watch me!" We developed confidence as we saw our physical skills grow. This self-confidence translates into social confidence: Children who feel good about their physical abilities tend to view themselves more positively (Strickland, Eric 2003). With this confidence, children find themselves able to approach other kids to play more easily and they actively solve problems or conflicts on their own.

Outdoor play also provides children with a much wider range of choices. They can practice overcoming challenges and develop friendships with other kids. As toddlers pass two, they become true social partners with each other for the first time; thus peer play and interaction become progressively more central as a context for socialization (Brownell, Celia 2002). Outdoor play offers opportunities to let kids meet people, make new friends, and learn to be more empathetic and less egocentric through social play. They develop more skills for coping with conflict (from playing). I have one child and I know how happy she is when she goes to school every Monday after the weekend. Although she is only two now, she can learn from her older classmates and set a proud example to someone who is several months younger than her. She may feel dismayed when other kids grab her toys; but next time she will learn to protect all her belongings under her arms.

Some people would argue that kids could get all these experience inside the classroom without necessarily going outside. However, 25 percent of our children (<=19 years old) are under 5 years old and most of them are not in school (U.S. census bureau 2007). Playing with siblings or alone are usually the only two choices for kids if they cannot play outside to meet

other kids. Moreover, after school, children tend to watch TV or play computer games if an after school activity program is not available and outdoor access is limited. There are also studies showing that children who live in places that allow for outdoor access have twice as many friends as those who have restricted outdoor access due to traffic (Richard Louv 2005). At the same time, children feel more freedom and independence if they can walk or bike to their friends' home located in or near their own neighborhood. Thus, a walkable community would foster social interaction and promote children's social development.

Figure 2.5 Children play in nature with imagination (Zhen Feng)

CHAPTER THREE

HISTORIC ACTIVE LIVING COMMUNITIES

Before the invention of the automobile cars, people lived a much more active life than they do now. Without TV or computer games to occupy the time, they spent a lot of time working and playing outside. But, surely they had their problems; especially with the coming of industrialization. Cities got bigger and bigger, and became more congested than ever. Meanwhile, slums and poor sanitary caused many health and social problems. Scholars and planners noticed and made great efforts and contributions to create a better balance of industry and an active community for people. Among these great thinkers was Ebenezer Howard who invented the Garden City.

The Garden City

The Garden City is a concept created by Ebenezer Howard, a famous British urban planner. During his time, London was overcrowded and the city was filled with slums and many poor people. Influenced by Bellamy's Utopian novel *Looking backward*, Howard published his book *To-Morrow: A Peaceful Path to Real Reform* (1898), which was reprinted in 1902 as *Garden Cities of To-Morrow*.

In this book, he famously proposed the idea of the Garden City, and introduced his image of "The Three Magnets" (Figure 3.1). The Three Magnets are the Town, the Country, and the Town-Country, which is the basic idea of the Garden City. Howard thought the Town had the advantages of "high wages, more social opportunities, and amusement" but had a strong

drawback on “high rents and prices, excessive hours of toil, distance from work” and a disconnection from nature. Although the Country had all the natural beauty such as “beautiful vistas, Lordly parks, violent-scented woods, fresh air and sounds of rippling water”, it also is a very dull and poor place where people have to “work long hours and there are a lack of amusements”. The Town-Country was a combination of the advantages of both town and country, with “all the advantages of the most energetic and active town life” and “all the beauty and delight of the country”. (Howard 1945, 47)

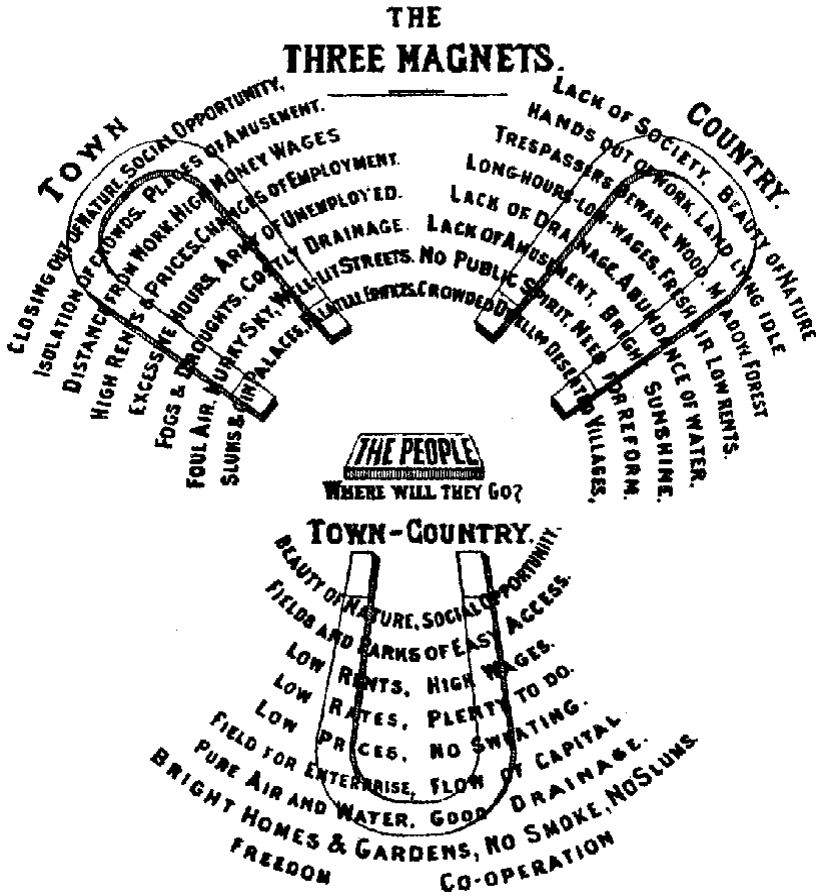


Figure 3.1 The Three Magnets (Howard 1945, 46)

Garden City was the place where the Town-Country Magnet’s lifestyle can be achieved. In Howard’s idea (Figure 3.2; Figure 3.3), Garden City was a 1000-acre city of 30,000 people. It was surrounded by a permanent 5000-acre agricultural landscape, which also served as a limit

to the city's sprawl. Garden and central parks were located in the center of the city, while houses were located outside. In the middle of the houses, another ring of green space also provided the site for public schools, churches, playgrounds and parks. Factories, warehouse, markets, etc. would be built in the exterior position of the ring. Howard's contribution did not lie in the special details, such as flood plain???which could become obsolete in time, but remained in his ability to treat both the city and the country's problem at once. The Garden City combined both the advantages of the city and country and suggested a compact, mixed-use and self sustained community. In this compact community, people could find employment, amusement, schools, and churches locally without long distance traveling.

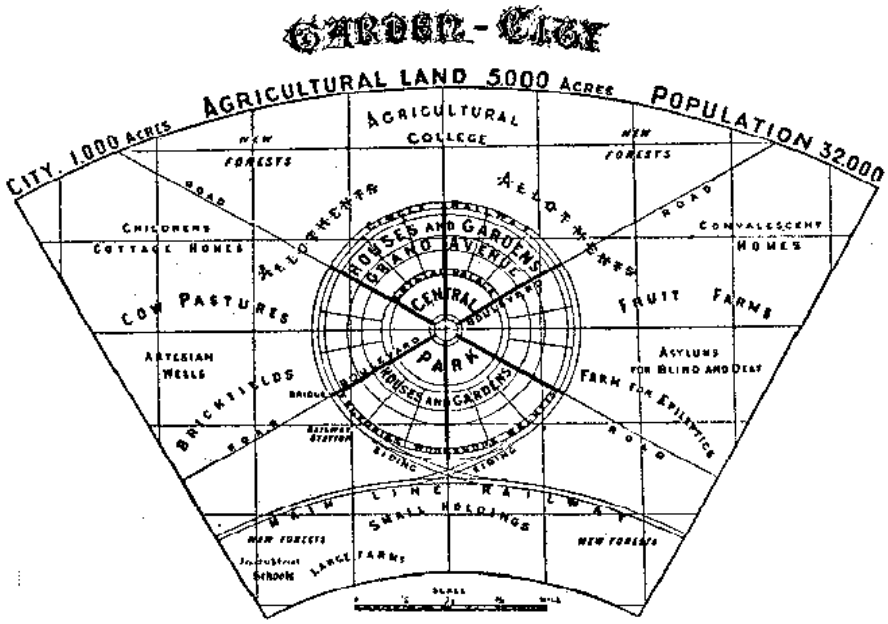


Figure 3.2 Garden City and Rural Belt (Howard 1945, 52)

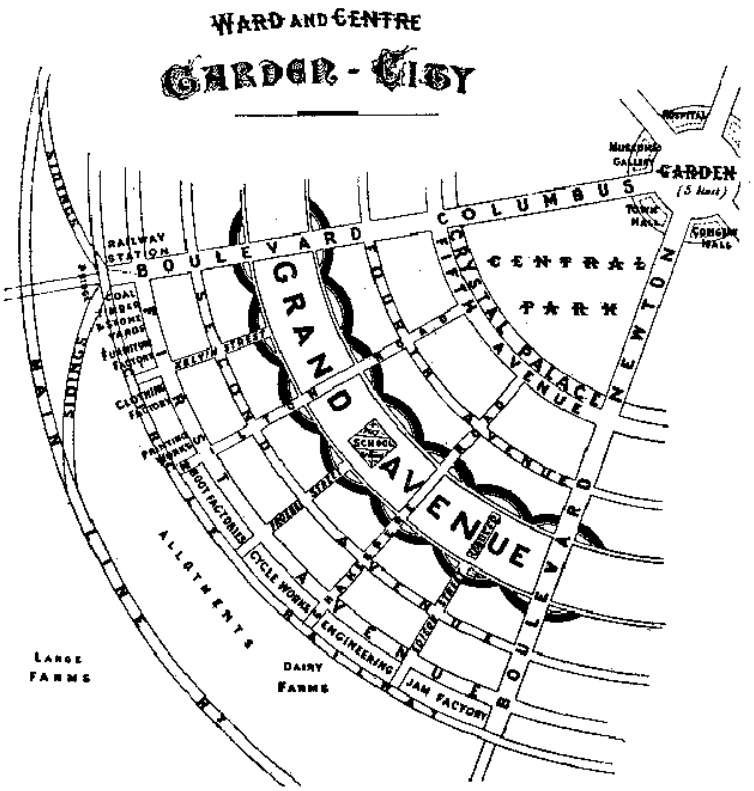


Figure 3.3 Ward and Center of Garden City (Howard 1945, 53)

Howard was not only a political theorist, but also a realist. Under his guidance and direct input, two Garden Cities were created—Letchworth and Welwyn, both located in England, Britain. Howard's first Garden City, Letchworth, has achieved huge success and world fame (Figure 3.4). Based on Howard's Garden City principles, Letchworth was designed to be a very livable city with homes, gardens, retail, and a wide range of prosperous industries. The city was surrounded by a permanent agricultural green belt. Almost all its people found their employment locally. According to Osborn (Howard 1945, 13), the town is a huge success in both its financial and health record. The housing subsidies per head from the state were negligible compared with the huge sum of money provided to intensive developments in older cities and its health record is the second best in all other new industry towns, only after the second Garden City-Welwyn. The city began making a profit in the 1970s and its latest legend is a landscape path called the

Greenway, which was built for walkers and cyclists and forms a 20 km loop around the town.

Figure 3.4: Aerial photo and Broadway of Letchworth http://web.ukonline.co.uk

The Garden City theory and Letchworth have achieved world fame and has provided very important insights into the creation of an active community on a planning level. First, the agricultural fields act as both a green belt and a way to control suburban sprawl. It has also been the origin of countryside preservation and greenway planning. Second, the central parks and gardens constructed in the city have created an open space network, which provides incentive for people to go out of their homes and enjoy the nature; the fundamental basis of an active community. Third and most importantly, the Garden City provides a balanced and compact community with houses, gardens, open spaces, civil buildings, retail and industrial development. The result is that most people's employment and entertainment and social needs can be met in a community level. The community is much more walkable and cycle friendly. Lewis Mumford thought that the invention of the Garden City was as important as the invention of the airplane. These "two great new inventions" are both "harbingers of a new age: the first

gave man wings and the second promised him a better dwelling place when he came down to earth" (Howard 1945, 29).

Stein and Radburn

Clarence Stein was an American urban planner, reformer, and an architect in the early twenty centry. He was a person who "enjoyed natural settings and rural landscape, but was most stimulated to thought and action by the richness of urban culture in which he had matured" (Parsons, 1998). Stein was very interested in urban culture, urban design, and people's relationship to urban dwelling and nature. He was intrigued by Howard's Garden City idea and successfully adapted it to the automobile-based American society and created a pedestrian-friendly and active community. Mumford said Stein did more than any other single person in America to realize in practice the ideas that Ebenezer Howard first set forth. (Parsons, 1998) In the communities Stein created, open space occupied the center of the community, and the automobile traffic is separated from the pedestrians. To realize this goal, he created the idea of super-block. In these super-blocks, houses were connected by a narrow cul-de-sac street, which then connected to the main street (Figure 3.5). The main benefit of this was that through traffic was eliminated, which helped to greatly reduce the negative impact of automobiles and make the neighborhood much safer for pedestrians, including children. Each individual lot was smaller than an average lot in a typical subdivision; a bigger tract of land could be used for creating the central green space, which could be shared by the whole community. In this central green area, sidewalks, playgrounds, sport fields, and gardens were designed to promote the idea of community space, created more community interaction, and a sense of community.

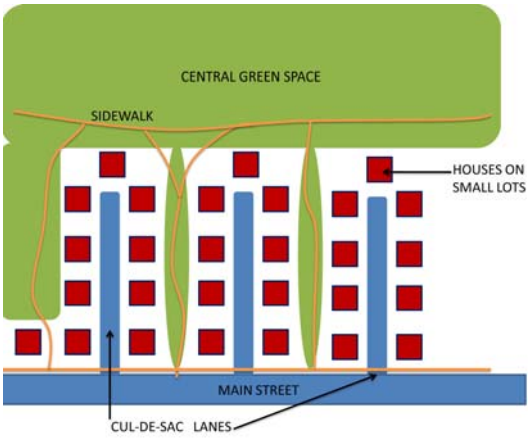


Figure 3.5: Diagram of super blocks (Zhen Feng 2008)

Stein and Henry Wright made their first exploration of super-blocks at Sunnyside Gardens, New York, which was built between 1924 and 1929. The main concept was to create affordable housing for the working class. The plan had row houses of two and a half stories, with front and rear gardens. Houses were connected to a large central green open space by sidewalks, and the residents shared the central green area together (Figure 3.6). This is a model allows for the denser development, and at the same time, provides plenty of green open space and enough sunshine for the residents to share so that they can have a happy and healthy life with strong community recognition.

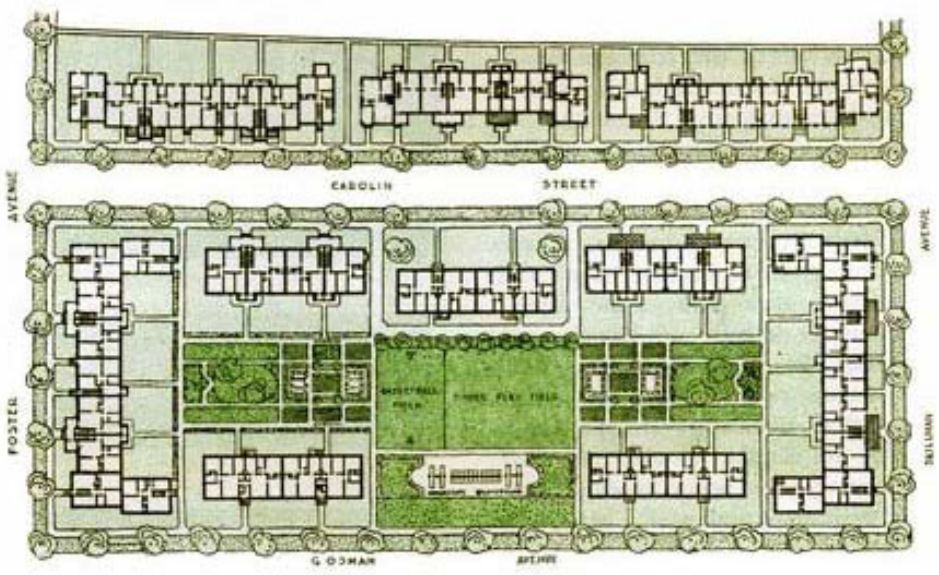


Figure 3.6: The first Unit of Sunnyside (Stein 1951, Toward New Towns of America)

After successfully designing the Sunnyside community, Stein and Wright began to design the Radburn community in 1929. This community was a 149-acre town located in Fair Lawn, New Jersey, 16 miles west of New York. The community was almost double the size of the Sunnyside. In Radburn, the super-block idea was carried out more completely and also had a more profound influence on the master-planned community. The Radburn community is designed as a group of super-blocks, each super-block about a mile or more in circumference. The super-block has a central open green space connected with sidewalks devoted entirely to pedestrians. This central open green space is surrounded by a series of cul-de-sac lanes, which are short streets for cars. They close at the interior end but connect at the outer end with the wide arterial streets so there is no through traffic inside the super-block. (Figure 3.7, Figure 3.8, and Figure 3.9). Houses are grouped around the cul-de-sacs with one side to the auto traffic and the other narrower side only for pedestrians, connecting to the central green park. Between super-blocks, there are sidewalk systems connecting to each other, with pedestrian underpasses when crossing the arterial streets. (Figure 3.10, and figure 3.11) The result is a very pedestrian-friendly community. In this community, houses are connected into the central open

spaces, which are then connected to stores, schools, and playing fields. The residents can walk to most of the destinations and meet their needs without the risk of running into a car.

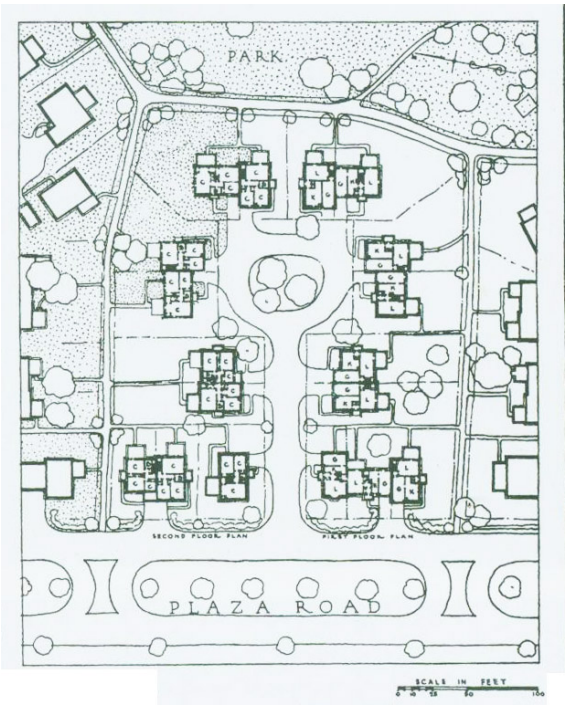


Figure 3.7 Plan of Radburn, Hudson 1934, 4
Figure 3.8 Plan of a typical superbock, Gause, 2003, 20

Figure 3.9 Aerial of Radburn (Google Earth)

Figure 3.10 and Figure 3.11 central park and pedestrian tunnel (http://www.radburn.org)

Radburn was not completed because of the Great Depression. But it is still a very successful design in terms of creating active communities. Its ideas and plans have greatly influenced community planning and design later. First, it created a strong sense of community. The super-blocks and central green open spaces provided a great place for community activities and community interaction. According to Stein, the central green open space was to be a place for "common activities in which all members of the community can do or take part, in which all

have an interest, which brings them together" (Stein, 1943) Indeed the community realized his goal. According to Hudson (Hudson, 1934, P5), Radburn is a place where "it is indeed an unusual person or family that does not grow and expand in community-mindedness in such an environment. Radburn was planned physically for comfort, for convenience, for safety, for play, and for living." Second, the Radburn concept also proved to be very successful in creating a less car dependant community. Its people can go to many places without using cars. According to a 1970 study by John Lansing, 47% of its residents shopped for groceries on foot, compared to a 23% for Reston, Virgina (a Smart Growth development) and only 8% for a nearby suburban sprawl type community (Lansing, 1970). Finally, the community is also a great place for children and the town is advertised as "safe for children." The sidewalks, the excellent facilities, and the schools all provide a perfect place for children to live a happy and active life. Hudson describes the children in Radburn: "they are outdoors great part of the year and exposed to the sun all summer. Light tans, medium tans, and dark tans, along with very scanty sun-suits or bathing suits, are the only body covering of scores of children. They are indeed a healthy, happy lot." (Hudson, 1934, 15)

Lewis Mumford

Lewis Mumford (1895-1990), an American historian of technology and science, had so many interests and talents that it is difficult to decide exactly who he was—journalist, architecture critic, novelist, literary critic, historian or sociologist (Miller 1989, 231). He is especially known for his contribution to urban planning, cities, and architecture. Influenced by Patrick Geddes' regional development theories and planning ideas, Mumford, along with Clarence Stein, Henry Wright, Benton MacKaye, and Alexander Bing, created the Regional

Planning Association of America (RPAA) and conceptualized the regional city idea. In their proposal, the regional city would "replace the 'mono-nucleated city' with a new type of 'poly-nucleated city' in which a cluster of communities, adequately spaced and bounded, do the duty of the badly organized mass city" (Mumford 1938, 489-93). Mumford thought "twenty such cities, in a region whose environment and whose resources were adequately planned would have all the benefits of a metropolis that held a million people without its ponderous disabilities" (Mumford 1938, 492). As RPAA's leading theoretician and spokesman, Mumford helped to communicate RPAA's anti-megalopolis and regional city ideas to the public. Parsons thought Mumford's "unceasing efforts to understanding the history of the cities, to explain the causes of urban changes, and to prescribe remedies for urban ills" enlarge the RPAA's vision of the future of the city. (Parsons, 1994)

Strongly opposing the suburban sprawl, Mumford argued that it was responsible for the social and environmental problems that the Western society is facing today. As a historian, he made great contributions by examining the historical suburbs, current problems they created, and provided the solutions for future development. As he rightly pointed out, most of the early suburbs, because of their dependence on the railroad development, were actually compacted developments with natural greenbelts that "insulate the small, self-contained, but closely linked suburban communities" (Mumford 1961, 504). "They're "romantic" places where the middle-class finds a private solution for the depression and disorder of the befouled metropolis" (Mumford 1961, 492).

According to Mumford, these early successful designed suburbs like Radburn have the following merits. First, because of its compact form and good transportation planning-separation of roads with pedestrian paths, it provides a good pedestrian environment. Second, by placing

schools, parks, and community centers into the center of the community, the suburban planners create a public space for the residents to play and communicate, and generate a sense of community. Third, the suburbs, as he envisioned, are a good place for children to live. Because of the surrounding woods and fields, children can “gambol safely, without supervision.” The suburban schools would also have ample play space for the kids to play tennis, baseball, football or cricket.

But as the car became a common way for transportation, the mainly developed suburbs rapidly lost the advantages mentioned above and as well their charm. Because of the mobility of the car, the suburbs lost their compactness and rural background. Instead of a refuge from the city, suburbia became a “diffused low-density mass” and part of the “inescapable metropolis area”. This new suburban sprawl depends totally on private cars, whose extension through extensive roads development has devoured the space once considered to be one of the biggest advantages for the suburbs. The other thing lost with the space is the “destruction of walking distances” and “the destruction of walking as a normal means of human circulation” (Mumford 1961, 506). As a result, the sense of community and its benefits for children were also lost. The suburbs became increasingly inactive and a dangerous and unhealthy place for children (Figure 3.12).

Mumford’s solution mainly concentrates on the following three ideas. First, he thought that the city, including its suburbs as a whole system, needs “a largest number of alternative modes of transportation, at varying speeds and volumes, for different functions and purposes” (Mumford 1961, 508). The pedestrian walkway, the mass transit system, the roads for cars all need to be carefully planned and only then can function together to achieve the best effect. Second, industrial and business zones need to be carefully planned and located near residential

areas so that the majority of people can either “walk or cycle to work, or use a pubic bus, or take a railroad train.” Third, as to the suburb itself, a more porous pattern, richer in both social and esthetic variety, needs to be created to reclaim the advantages existed in the earlier communities. “Usable private gardens” and “inner public parks” for meeting and relaxing need to be arranged in the residential areas. These ideas helped build a concrete theoretical foundation to create an active community for the later New Urbanism and Smart Growth movements, which will be discussed in Chapter four.

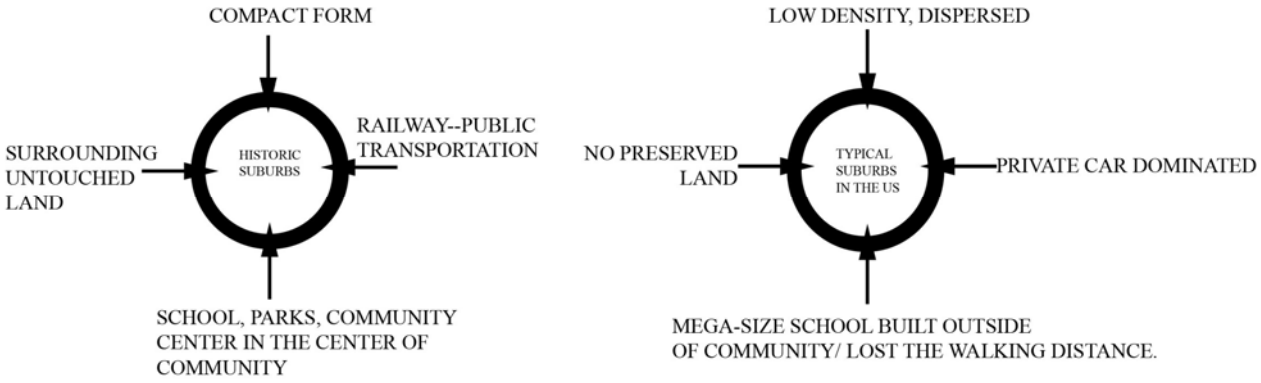


Figure 3.12: Diagram of suburb changes in the U.S. (Zhen Feng, 2008)

CHAPTER FOUR
PRECEDENT CASE STUDIES

As discussed in the last chapter, suburban sprawl is responsible for the worsening social, economic, and environmental problems western society is facing today. Scholars, planners, designers, and government officials are beginning to research this issue in greater depth, and have achieved some level of success through new research. New Urbanism and Smart Growth are two leading movements in the planning and design fields that help to create an active living community. Another very effective approach to managing sprawl is by solving aspects of community one at a time in a more comprehensive approach, which means not only from planning and design point, but also from social and cultural perspectives. Among these comprehensive approaches, ideas of Safety Route to School (SR2S) and Children Friendly Cities, are both very useful to create walkable and cycle-friendly communities for children. In this chapter, all four strategies will be explored and one or two case studies from each theory will be examined.

New Urbanism

Lewis Mumford, Jane Jacobs, and Christopher Alexander are some of the forthright thinkers who realized the problems of suburban sprawl and its negative influence on both inner-cities and the environment (Mumford, 1961; Jacobs, 1961; Alexander 1977). They laid the foundation for the birth of a new type of community design that has less dependence on cars, is pedestrian-friendly, and has a better sense of community identity. In the early 1980s, New Urbanism developed as a new movement in community planning. In 1993, Duany,

Plater-Zyberk, Calthorpe, and several other prominent architects and planners founded the Congress for New Urbanism. In the charter of New Urbanism, the founders defined their goal:

> "We advocate the restructuring of public policy and development practices to support the following principles: neighborhoods should be diverse in use and population; communities should be designed for the pedestrian and transit as well as the car; cities and towns should be shaped by physically defined and universally accessible public spaces and community institutions; urban places should be framed by architecture and landscape design that celebrate local history, climate, ecology, and building practice." (Charter of the New Urbanism)

Advocates of New Urbanism are a loose group of designers and planners that work on several types of projects. Some concentrate their efforts on urban infill and transit oriented type projects, while others work on creating pedestrian-friendly suburban communities. Together, they have created some of the most successful communities. Among them, Celebration, Florida is a very successful example and will be analyzed later in this chapter.

Generally speaking, most of the New Urbanism projects are most successful in creating pedestrian-friendly communities and achieving a greater sense of community and social sustainability. In some cases, mixed land uses and housing types, higher density, and support of a public transit system, are preferred. These are more environmentally sustainable forms of development than the conventional low-density sprawl. (Leccese and McCormick 2000; Boarnet and Crane 1997; Raudin 1999). However, some critics charge that a gap exists between New Urbanism theory and reality. Some critics argue that New Urbanism projects do not put enough attention on reducing ecological impacts or promoting ecologically sustainable lifestyles. Others think most New Urbanism developments are not dense enough to support mixed-use development, not to mention public transportation, thus creating more subdivisions that are only designed marginally better than typical suburbs (Beatley 1997; Kreiger 1998). Some reasons for this criticism are the drawbacks of New Urbanism itself, while others are beyond New Urbanists control such as the lack of clustered employment destinations and inadequate provision of transit

services. Based on New Urbanism's foundation, Smart Growth is the next movement in community development. It has a much broader support and has greater potential to be successful in creating active communities for children.

Celebration, Florida

Celebration is a community developed by the Disney Company. The overall site is 10,000 acres and seventy percent of the site's natural habitat has been preserved. Cooper Robertson & Partners and Robert A. M. Stern developed its master plan, which includes offices, hotels, a town center, and several villages. Celebration Village, the community's largest village, includes the town center, a golf course, as well as several residential communities. (Figure 4.1).

Figure 4.1: Master plan of Celebration Village (Gause 2003, 52)

The town center is compact, pedestrian-friendly, and employs mixed-use development (Figure 4.2, Figure 4.3). Signature civil and commercial buildings are located in the town center area, which includes the town hall, school, post office, hospital, and a main street flanked by three to four story buildings with retail on the ground floor and office and residential above. This successfully creates a viable town center and a strong sense of community.

Several residential neighborhoods surround the town center with a variety in types of housing, ranging from mansions to rental apartments. All the houses are connected to the town center by narrow, tree line streets and sidewalks, and they are all located within a 10 minute walking distance. Alley access and front porches are used to keep a continuous sidewalk and provide a great walking experience. Numerous pocket parks, squares, streets, and common spaces are distributed throughout the entire community (Figure 4.4: Residential Community of Celebration). The Celebration school is located near the town center so most of the kids can walk to school. Together, these features create a very walkable and active community for children. "The entire focus of our lives has changed," says homeowner Ray Chiaramonte. "Instead of doing everything some place other than close to home, we now can eat, do errands, celebrate special occasions and just hang out near our own home. The changes are most dramatic for our children, who now have a freedom they never had in our old neighborhood." (Steuteville 1998)

Celebration is very environmental friendly. More than half of the site has been preserved as natural habitat, including wetlands, tree groves, and water bodies. Development is concentrated in the remaining, environmentally less-sensitive areas. There is some criticism about Celebration's town center because it is said to cater more to the tourist than to its residents and therefore creates a lack of privacy. However, considering all its achievements: mixed-use development, walkable and cycle-friendly streets and sidewalks, environmentally friendly practices, and a strong sense of community, (Gause, 2003), Celebration is a very successfully designed active community.

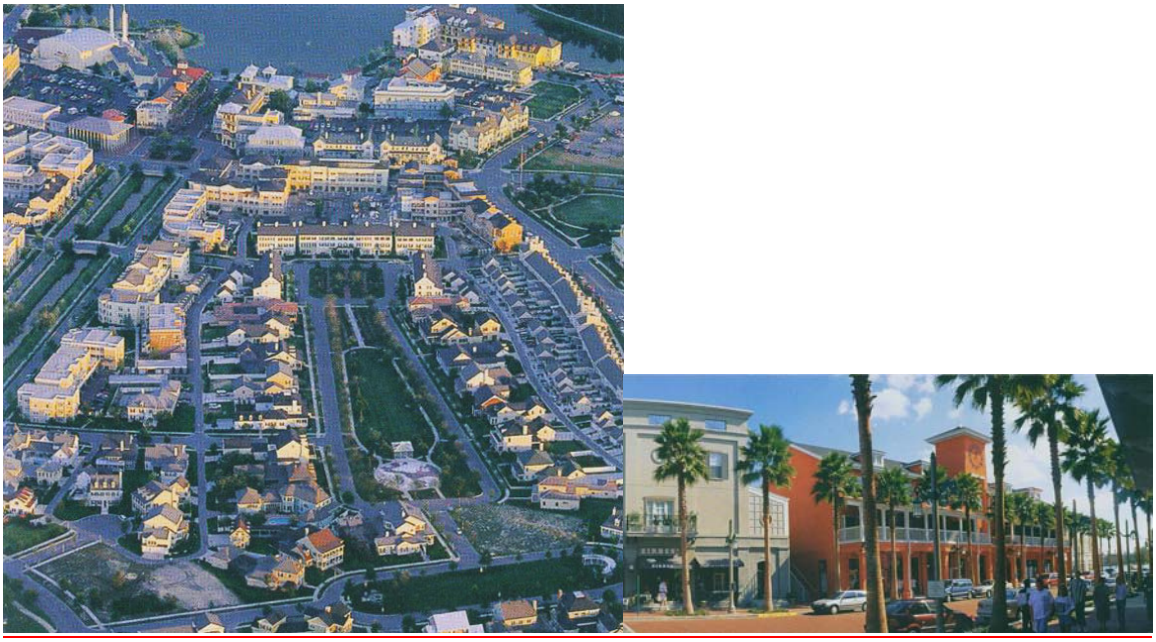


Figure 4.2, Figure 4.3: Town center of Celebration Village (Gause 2003, 55)

Figure 4.4: Residential Community of Celebration Village (Gause 2003, 56)

Smart Growth

Smart Growth is the latest movement regarding the problem of urban sprawl that provides new ways of creating a vibrant and livable community. It adopted most of New Urbanism's successful ideas but has had a much bigger influence. Unlike New Urbanism, which is primarily a movement affecting the design and planning field, Smart Growth includes a much

larger supporting group: design and planning professionals, elected officials, and enthusiastic individuals. Its goal is to create a well-planned development that protects open space and farmland, revitalize communities, keep housing affordable, and provide more transportation choices. The Environment Protection Agency (EPA) has became a strong supporter and advocate of this movement and provides the following guidelines for planning a Smart Growth development. (www.epa.gov.)

1. Mix land uses
2. Take advantage of compact building design
3. Create housing opportunities and choices for a range of household types, family size and incomes
4. Create walkable neighborhoods
5. Foster distinctive, attractive communities with a strong sense of place
6. Preserve open space, farmland, natural beauty, and critical environmental areas
7. Reinvest in and strengthen existing communities & achieve more balanced regional development
8. Provide a variety of transportation choices
9. Make development decisions predictable, fair, and cost-effective
10. Encourage citizen and stakeholder participation in development decisions

The American Planning Association and 60 other public interest groups created Smart Growth America in 2000. Smart Growth is widely recognized as a superior alternative to sprawl development. More and more communities are created based on its principles. The East Lake Commons, Decatur, GA, and Atlanta Station, Atlanta, GA are two successful examples.

East Lake Commons

Located in Decatur, Georgia, East Lake Commons is an urban infill development community. Developer Jack Morse began to work on this project with a group of 17 households who were seeking a place with a strong sense of community and co-housing, which would allow homeowners to enjoy privately owned homes as well as shared community services and amenities.

In the final plan, 67 homes were clustered at the southwest corner of the site while more

than half of the site was dedicated to a community garden, a village green, stream buffers, and woodland areas (Figure 4.5). To create a pedestrian-friendly community, parking areas are designed along the perimeter of the site to have less impact on the community. Because of its density, everything is within a 5 minute walking range even from the furthest home to a parking spot. Sidewalks link the homes to each other and also to community amenities such as community buildings, community gardens, the village green, and the woodlands. Benches are designed along the sidewalk to give maximum interaction between residents and guests.

Conservation and sustainability also play a big role in the community. More than half of the site has been preserved and designed as green open spaces, such as the community farm, village green, stream corridor, and woodland area. The community farm is leased to a local farmer free of charge and residents can participate in a "farmshare" program and get a 30-week of supply of organic foods for only $360 per year. (O'Neal et. all 2000) The residents proudly call East Lake Commons an "Ecovillage" because of its commitment to the environment.

Figure 4.5 East Lake Commons aerial view (Live Search Map 2008)

The project is also very successful in creating a strong sense of community. Residents share their food regularly and volunteer to prepare meals several times each month. The

arrangement of parking outside of the community makes “East Lake Commons feel like a European community before cars. You're a lot closer to people and it's easier to have conversations when you have to walk through the neighborhood to get to your house.” (Cameron, 2007) The community support is so strong that “when one of our residents is sick, everyone pitches in to be sure meals are made, and fund-raisers are held. It applies to simple things, too. If I don't have an ingredient for dinner, I can send my son to the neighbors.” (Cameron, 2007)

Atlantic Station

Located at the old site of the Atlantic Steel Mill, Atlantic Station is a 138-acre brownfield redevelopment project and a model for Smart Growth. The Atlantic Steel Mill had deteriorated and its employment dropped from 1,400 in 1979 to 400 in 1997. It looked like the industry was in ruins, but fortunately, AIG Global Real Estate Corp., and Jacoby Development, Inc. founded a joint venture called Atlantic Station, L.L.C. in order to purchase the site in 1997 and redevelop it to be a place to live, work and play (Figure 4.6).

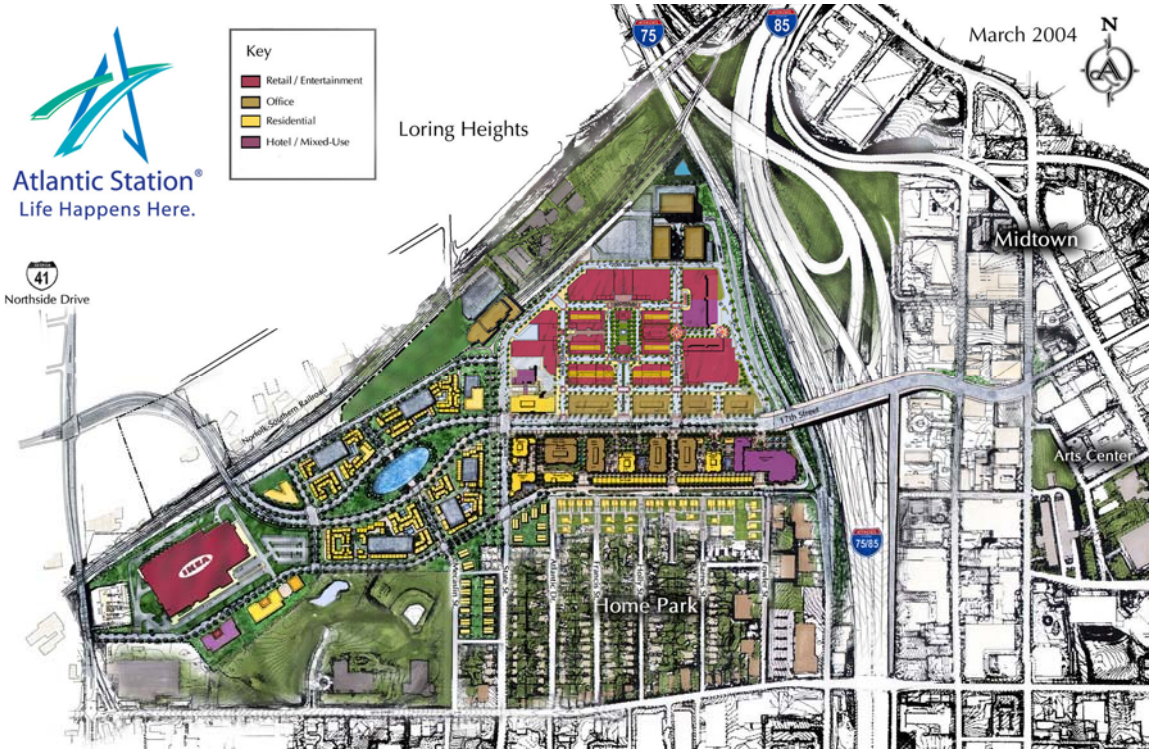


Figure 4.6 Atlanta Station site plan (www.atlanticstation.com)

The site was developed into three areas: the District, the Commons, and the Village (Figure 4.7). The District is located at the Southeast corner of the site and is the core of Atlantic Station and offers retail, entertainment, office, and residential uses. It is a very lively live-work-play environment. The Commons is primarily a residential area and is located at the center of the site, within a half-mile walking distance of the District and the Village. Anchored by the IKEA store located in the Southwest of the site, the Village also includes residential areas. By mixing retail, office, residential, entertainment in one area, Atlantic Station provides a great place for people to shop, live and work.

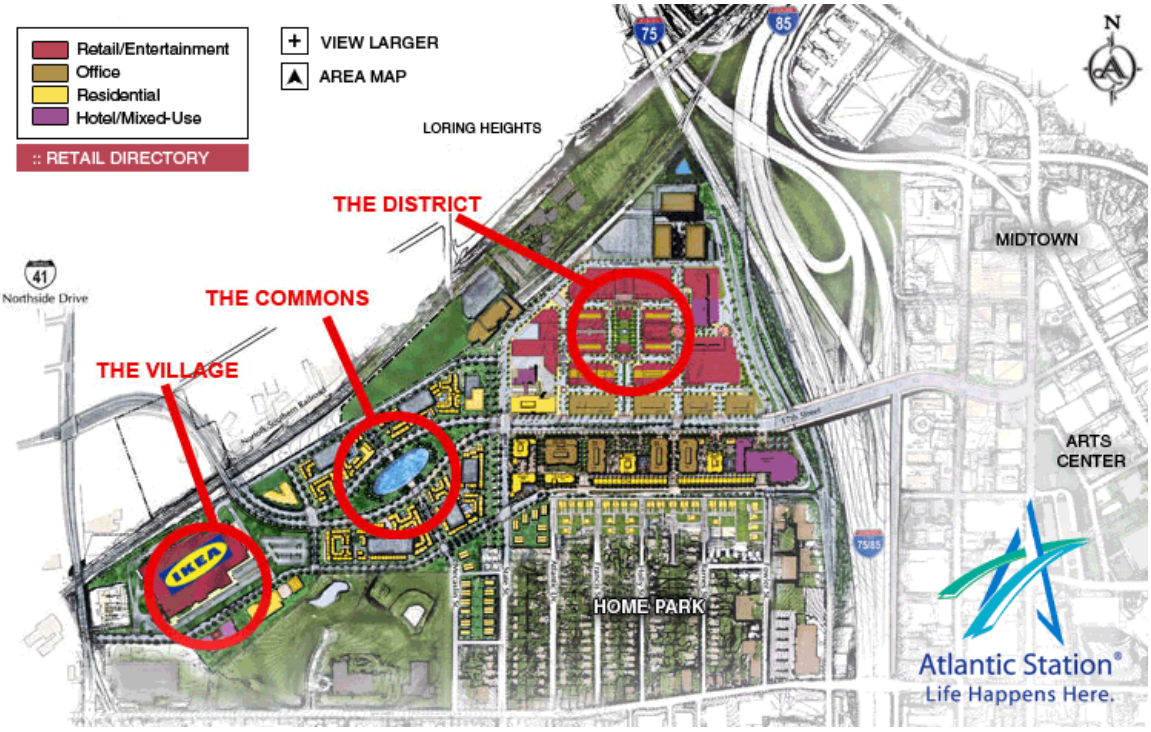


Figure 4.7 Atlanta Station district plan (www.atlanticstation.com)

Remaining pedestrian-friendly is a very important aspect of Atlantic Station (Figure 4.8, 4.9). The entire site is within a one-mile walking distance and sidewalks are provided to connect the site together with various destinations such as plazas, parks, shops, and restaurants. Residents have many opportunities to interact with their neighbors and partake in the social life of the community. In addition, because of the integration of life, work, and play, families can spend more time with each other rather than on the road commuting. According to Brian Leary, Vice President of Design and Development for Atlantic Station, L.L.C., "Atlantic Station is a place where you can live, work and play. You can walk from your loft, grab a coffee and a bagel here on foot, walk to the office, meet friends for drinks after work, pick up a new shirt or blouse, see a movie and go home, all with no time spent in a car stuck in traffic. Instead you can spend that time with your kids, friends and neighbors." (Fenley 2003)

Being environmentally sustainable and financially successful are two other important

characteristics of the Atlantic Station project. By developing on a brownfield site in a center location of the city, it saves greenfield and also helps improve the regional air quality since less people need drive long distance to work. The project received the Environmental Protection Agency Region 4 2004 Phoenix Award for its emphasis on environmental sustainability. Financially speaking, the project is expected to generate approximately 20,000 new jobs and several million dollars in tax revenues. Additionally, retailers on site will contribute $10 to $20 million a year in Special Interest Local Option Sales Taxes, which helps to fund local education and transportation initiatives. (http://www.mactec.com/Projects/Atlantic_Station.aspx)

There still remain areas in which the development can improve, such as more thoroughly designed pedestrian-friendly sidewalks, additional green space, a stronger emphasis on natural beauty, and a respect for the site's history of steel. (Mealor 2007) However, considering all its achievements in creating a mixed-used, viable, walkable, and environmentally responsible design, Atlantic Station is a very successful model for creating an active community.

Figure 4.8, 4.9 Wide sidewalks and pedestrian zone make the space walkable (Zhen Feng 2008)

Safe Route to School

Another effective approach in creating active communities for children is to solve important aspects of community planning regarding children one at a time. For example, how

can a playground be planned and designed to be more interesting and encourage exercise or how can a safe route to school, which the kids do everyday, be implemented? One successful exploration regarding these questions is the Safety Route to School (SR2S) program. SR2S is a program originating from Denmark, where it is proves to be very successful in supporting students to walk or bike through encouragement, education and planning (Clifton and Kreamer-Fults, 2007). Another very similar program is the "Walking School Bus" which took place in Columbia, Missouri and Auckland, Australia. (Gleeson and Sipe 2006). These approaches try to solve the passive community issue in a comprehensive approach, which means not only from a planning and design aspect, but also from social and cultural angles. In the following section, the SR2S program will be discussed in detail.

The rate of walking and biking to school has dramatically decreased in the past forty years in the United States and most developed countries. Scholars and researchers have done extensive research to discover the reason for the decline. It is generally agreed that an increase in distance between home and school and the longer journey account for most of the decline (Appleyard, 2003, Kerr et. all, 2006, McDonald, 2007). Traffic danger is cited as the second major barrier to allow children to walk or bike to school by parents (Appleyard, 2003, McDonald, 2007). Due to decades of auto-oriented suburban sprawl, sidewalks, bike paths, and crosswalks are scarce and the traffic system is often poorly planned, particularly for bicyclists and pedestrians. Other factors may be equally important, such as perceptions of neighborhood and traffic safety, household transport options, and social/cultural norms (Kerr et. all, 2006. McDonald, 2007).

Based on the above findings, many of solutions have been suggested. Some emphasize urban design solutions such as installing traffic calming devices or increasing the width of the

sidewalk and making streets more pedestrian-friendly, (Mcmillan, 2005, Kerr et. all, 2006) while other areas of focus include social and educational solutions. To promote these solutions, interested parents, community meetings, workshops, and all kinds of possible advertisement can be used. In addition, through education children can be equipped with correct skills to walk or bike to school. Finally, legislation and government support is very important. Changing ordinances about minimum school lot size so that schools can be built closer to residential areas or requiring the government to provide safer routes to school are a few examples. (Timperio, Ball, Salmon, Roberts, Giles-Corti, Simmons, Baur, Crawford, 2006)

Marin County, CA is an example of how the SR2S program can work. Located north of San Francisco, Marin County is a suburban community that has traffic congestion problems. Supported by National Highway Traffic Safety Administration, California Department of Health Services and some foundations and organizations, 9 pilot schools were chosen for the demonstration of the benefits of the SR2S program. By revamping crosswalks, installing high visibility signage and traffic-calming devices, modifying traffic signal phasing, encouraging citizens to report speeding, and creating new sidewalks and paths, a safer and much more pedestrian-friendly environment has been created. These efforts have shown dramatic behavior changes. A countywide student survey revealed that walking and bilking to school has increased by 80% in two years. (Timperio, et al 2006).

Figure 4.10 Marin County Safe Routes to School (www.saferoutestoschools.org)

The Child Friendly City

Child Friendly City is a program dealing with the city scale and thus has a much greater influence on children's activities than New Urbanism, Smart growth, or SR2S. According to UNICEF, a Child Friendly City is a city, or a system of good local governance, committed to the fullest implementation of the Convention on the Rights of the Child (CRC) (UNICEF 2004A:1). UNICEF and UN-Habitat launched the initiative at Habitat II in Istanbul in 1996. It includes children's rights to a healthy, caring, protective, educative, stimulation, non-discriminatory, inclusive, culturally rich environment. It also addresses children's rights to participate and contribute in creating a sustainable urban future. According to the CFCI website (UNICEF 2004b), "A Child Friendly City" would actively engage in fulfilling the right of every child to:

- influence decisions about their city;
- express their opinion on the city they want;
- participate in family, community and social life;

- □ received basic services such as health care and education;
- □ drink safe water and have access to proper sanitation;
- □ be protected from exploitation, violence and abuse;
- □ walk safely in the streets on their own;
- □ meet friends and play;
- □ have green space for plants and animals;
- □ live in an unpolluted environment;
- □ participate in cultural and social events;
- □ be an equal citizen of their city with access to every service, regardless of ethnic origin, religion, income, gender or disability. (Gleeson, Brendan 2006)

To support cities in working toward achieving Child Friendly Cities, the UNICF developed a tool kit, which was built by nine building blocks (Figure 4.11). They act as guidelines to be used by local governments, especially through engaging children in a participatory process. Such as let children all levels of relevant decision-making forums, particularly in terms of the equitable distribution of basic services.

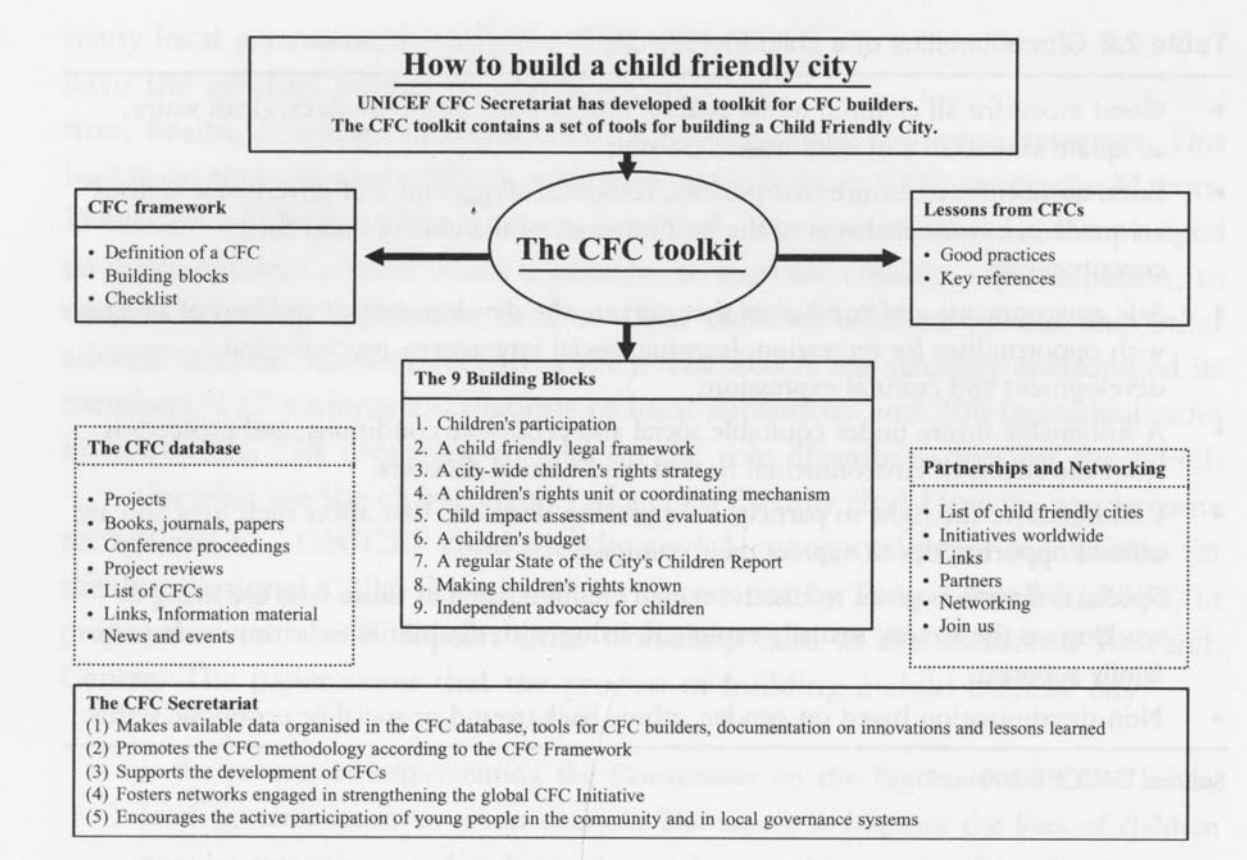


Figure 4.11 How to build a child friendly city UNICEF

The Child-Friendly City Initiative has progressed in developing countries and has been adopted in a number of industrialized countries as well. Italy, the most prominent example, shows how schools, NGOs, and municipal governments can work together by analyzing a city's situation, envisioning their dream city, and implementing concrete projects to improve local conditions and services (UNICEF 2002). In most cities of the United States, children who are threatened by traffic, pollution, and a shortage of green open space feel increasingly imprisoned and isolated. Creating a child-friendly city not only means developing a social and physical environment which allows children to feel a sense of belonging, to be respected and valued, and to have opportunities to become increasingly independent (Gleenson, Brendan 2006), but also includes letting children have easy access to safe areas for socializing and playing with their friends, as well as obtaining green or "wild" spaces to connect with nature.

According to the 2004 Kid-Friendly Cities reported by Population Connection, Seattle and Des Moines ranked the best cities for American children in 100 metropolitan areas and cities on community, health, and education criteria (kid friendly cities 2004). Atlanta scored below and was positioned 13th of total 20 metro areas. Although health and population rates are the most important factors, many citizens care about more prominent kid-friendly items like safe streets, playgrounds, and parks. Seattle, as one of the most successful examples, will be analyzed in the following paragraphs.

Seattle—A walkable city

Seattle is the nation's sixth most walkable city among the 30 largest U.S. cities surveyed by the Brookings Institute. Located at the northwest coast of the United States, Seattle's mild weather brings people outdoors year round. The port city is developing one of the best bicycle

trail systems in the nation. The “Urban Trail” system provides off-road paths or sidewalks for pedestrians (separated from motor vehicles) and off-road shared use paths or on-street bike lanes for bicyclists. Currently, the project is 71% completed and the city aims to finish the entire system by 2012. Below is the West Seattle pedestrian walking map (Figure 4.12 West Seattle Walking Trail). The West Seattle Walking Trails is a network that uses existing streets, sidewalks, and staircases to connect diverse neighborhoods, businesses, natural resources, recreational facilities, educational and institutional facilities, neighborhood service center, and two shorelines of the West Seattle Peninsula. The whole project includes: producing a baseline set of trails, working on the design and approach to the wayfinding stations, signage, and maps along 45 miles of proposed trails.

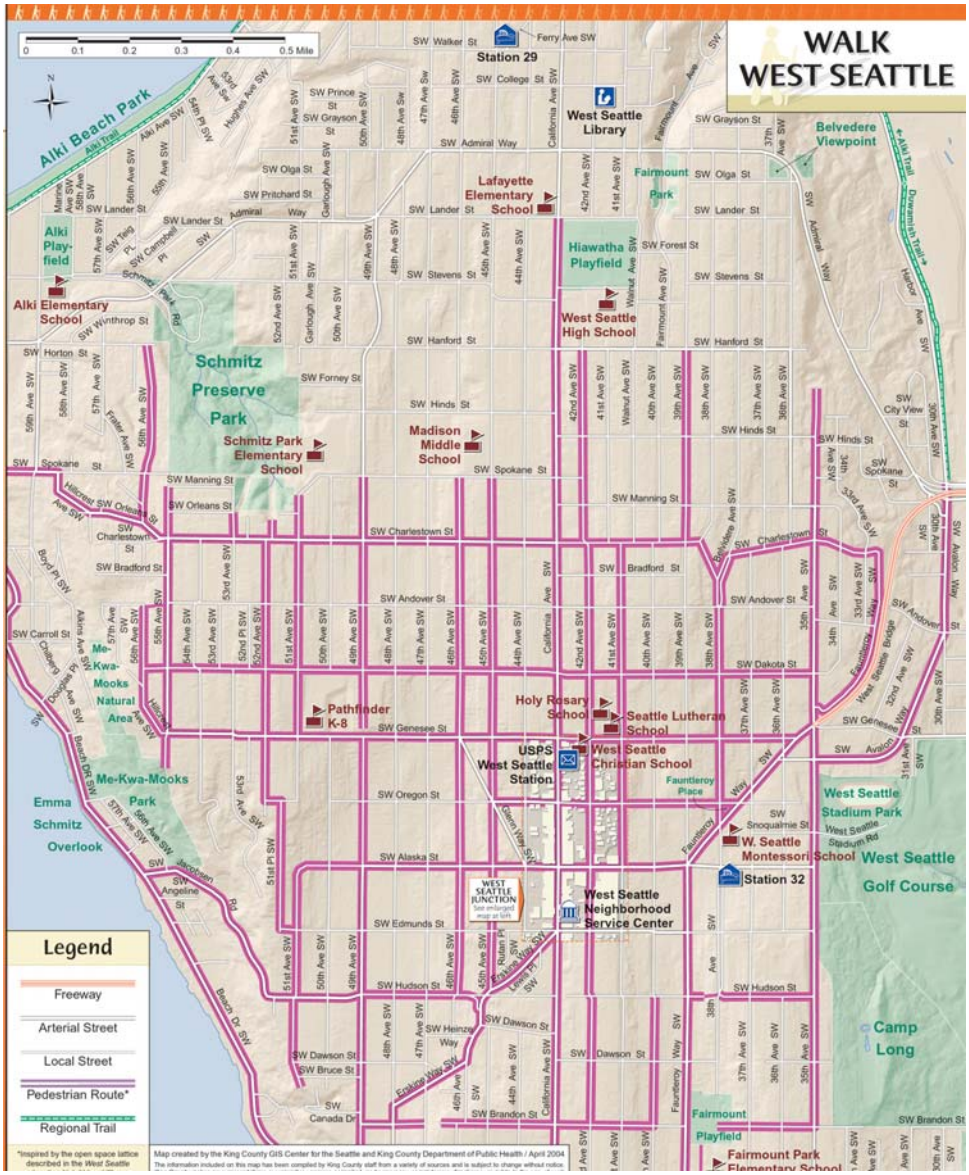


Figure 4.12 West Seattle Walking Trail http://www.seattle.gov/transportation

Meanwhile, the city passed the “Complete Streets” ordinance to direct transportation projects that support and encourage walking, bicycling, and transit use while promoting safe operations for all users. Components of the “Complete Streets” design include: street and sidewalk lighting, pedestrian and bicycle safety improvements, public transit facilities accommodation, street trees, and more. “Complete Streets” will foster sustainability and balance the needs of all users of the streets while offering to navigate the city without cars. In addition, the Seattle Department of Transportation (SDOT) launched the pedestrian master plan to

improve a walking environment. The program focus is on “sidewalks, crossing improvements, curb ramps and school safety” and been executed under the principle of “5 E’s” (Education, Engineering, Enforcement, Encouragement and Evaluation) to create safer environment to get more people walking.

One of the most outstanding outcomes of building the trail system is its accomplishment in connecting Seattle parks, which will bring the city greater beauty, more usable open space, and healthier activities for people. Seattle has over 400 parks and open space areas that total over 6,200 acres of park land throughout the city. These parks serve as both green filters for cleaning street pollution as well as public recreation facilities for neighborhoods to exercise and gather socially. The city uses Pro Parks Levy, a park tax program that provides an opportunity to leverage matching grants and donations for open space, to acquire and preserve green space. By March 2007, Seattle parks have acquired 42 acres for future park projects (Seattlegov 2008).

Besides numerous city projects, Seattle has many non-profit organizations that aim to promote the rights of active transportation. The active transportation means human-powered methods of transportation, like walking, cycling. Among them, Feet First and The Bicycle Alliance of Washington are two popular organizations for walkers and cyclists to seek support, information, and help. Feet First was founded in 1996 and is known around the region for its long history of innovation and volunteer activities. One of them is the “Neighborhoods on Foot” mapping program. In Washington State, schools are required to develop walking route maps around elementary schools. Feet First organized volunteers to develop maps for schools and neighborhoods, thus promoting walking to school as well as safety (see Figure 4.13, Fairmount Elementary School walking map). With these detailed, marked maps, parents would have a clear idea of the physical streets condition within their community and take further action to guide and

support their kids walking to school.

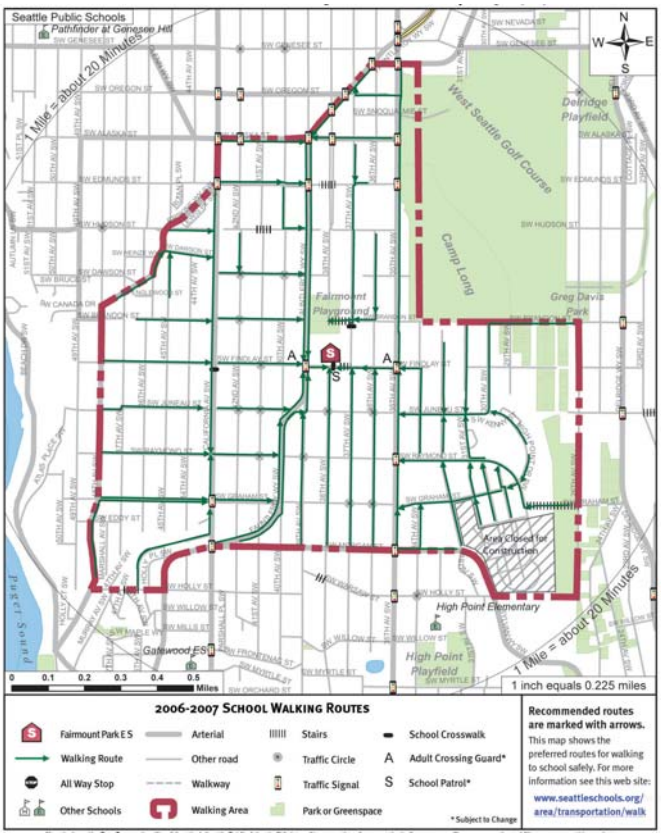


Figure 4.11 Fairmount Elementary School walking map
http://www.feetfirst.info/mapping

Bicycle Alliance of Washington works for bike clubs and bicyclists across the state to make Washington more bike-friendly. One of the notable programs is Bike Buddy Program. It matches a cyclist with a trained volunteer familiar with the commute between a neighborhood and workplace and helps in choosing a suitable route, buddy and provides safety tips and techniques. This mentorship can be a great support for new bicycle commuters to get started. Under adult supervision, children who ride to school can also adopt a similar program by letting older, knowledgeable kids help the new, younger ones, until they will eventually be allowed to ride unaccompanied in the neighborhood.

CHAPTER FIVE

DESIGN PRINCIPLES FOR CREATING AN ACTIVE COMMUNITY FOR CHILDREN

Active Living Community Definition

What is an active community? A broad definition of an active community includes a place that provides exercise and recreational activities, household and occupational activities, and active recreation (Sallis, et. all 2006, Tolley et. all, 2003). In other words, for children, an active living community is a place where they can walk, bike, and play with each other without having to use cars. They can walk or bike to school, playgrounds, sports fields, parks and other amenities, or just enjoy walking and cycling in a safe and inviting environment without being concerned about safety.

Active Living Community and Its Values

The active community can bring tremendous values to our society. Compared with a passive living community, an active living community provides the following values for the society and our kids:

a) **Environmental values:** It can decrease the use of cars, thus creating less air pollution and less consumption of energy. It uses less land for development, which results in the preservation of more open space and wildlife habitat**.**

b) **Social values:** In an active living community, walking and cycling provide additional opportunities for kids to interact with one another. This creates a greater sense of community, helping children to build the essential communication and social skills they need in life. An active living community can also expand a child's

world by letting him or her freely walk or bike to their favorite destination in the neighborhood on their own.

c) **Health values:** Walking and cycling contribute to higher levels of total physical activity. This is helpful in improving health issues such as child obesity, diabetes etc. More importantly, it encourages and helps kids to develop a healthier lifestyle.

d) **Economic values:** By letting people live in a more active environment, the burden of medical care and insurance bills will be relieved. The creation of safe and attractive pedestrian and cycling in communities, towns, and cities is a necessary condition for success; improved circulation is vital for shoppers, visitors, workers, residents alike. It also reduces the cost of energy consumption, traffic congestion, and collision.

Active Living Community Design Principles

Based on the research of the historic active community and analysis of current active community case studies (figure 5.1), it can be concluded that design elements, program elements, and children's participation are three main aspects in creating an active community for children. The following principles and a detailed analysis on how to achieve them are outlined below:

Design and Planning Elements

1. Connectivity and Continuity

There should be a clear and organized sidewalk, street, trail or bike path, and land-use system consistent with the scale and function of the surrounding context. The pedestrian or cycle system links different interests and activities such as schools and playgrounds and shall be well interconnected. It is necessary to provide pedestrian connections between dead-end streets or cul-de-sacs, or short-cuts through open spaces. A well-connected pedestrian and cycle system

ATTRIBUTES	CASE STUDY				
	Garden City	Sunnyside	Radburn	Celebration	East Lake Commons
Connectivity&Continuity	✦	✦	✦	✦	✦
Variety of Destinations	✦	✦	✦	✦	✦
Accesse to Local Transit	✦				
Small blocks& Interconnected streets				✦	
Easy to Use for Children	_	✦	✦	✦	✦
Continuous seperate from Auto Traffic		✦	✦	_	✦
Wide,Continuous sidewalk		✦	✦	✦	✦
Human Scale	✦	✦	✦	✦	✦
Attractiveness	✦	✦	✦	✦	✦

Figure 5.1 Case study attributes table (Zhen Feng, 2008)

will increase the rate of walking and cycling in children and make their experience much more interesting and safer.

2. Variety of Destinations

An active community shall provide mixed land uses such as housing, community centers (church, neighborhood library, etc.), local stores, schools, small parks and recreations spaces, that are linked to transit stops, or pedestrian and bike circulation systems. Make public spaces the focus of building orientation and neighborhood activity and ensure the mixed land uses are within walking distance of the community. With variety destinations, kids will have a greater desire to walk or bike. At the same time, a choice of destinations can inspire more people walk, thus increasing the “people watching” effect and make the community a safer place for kids to enjoy.

3. Accessibility

a) Accessible and appropriately located transit: Situate transit facilities close to office, residential, shopping, civic areas, and recreational facilities to encourage pedestrian trips.

Provide adequate pedestrian and bike facilities with access to transit - it is essential as an alternative travel mode.

b) Small blocks and short trips: Interconnected streets and small block patterns enhance pedestrian access and mobility. See diagram

c) Accessible to all: Sidewalks, walkways and crosswalks should be designed to accommodate the needs of all users regardless of age or ability.

d) Easy to use: The pedestrian and bike path system should be designed so people, especially young children, can easily find a direct route to a destination without delays or getting lost. These include properly designed and located signage, landscape, hardscape, and crosswalk design.

e) Site location: School sites, playgrounds, and community open spaces should not be located on high speed or high volume arterial streets, and only within low traffic locations nearby neighborhoods so they can serve as a community focal point. Parking should be minimized and walking and cycling should be encouraged. Pedestrian and bicycle access should be available from all directions. Entrances of buildings also need be carefully designed to encourage walking and cycling.

4. Safety and Comfort

a) Continuous separation from traffic: Walking trails and bike paths for children should be continuously separated from vehicle traffic. Minimize or eliminate street and driveway crossings. Always provide buffers from motor vehicles. When the space is limited to provide off-street bike path, a well-designed bikeway need be provide with strong visible paving/painting, adequate width, places for parking bikes, and traffic

signage and traffic lights for bikes (Figure 5.2).

Figure 5.2 highly visible bike paths with different surface color (www.pedbikeimages.org)

b) Security and visibility: Design walkways to ensure a secure environment for pedestrians. Make a “public watch” a key tool to increase protection and prevention. Others elements such as lighting, increased visibility, open sight-lines, and access to police and emergency vehicles are also important considerations.

c) Wide, continuous, and well-maintained sidewalk: Sidewalks should be wide enough to accommodate pedestrian traffic without crowding, yet not be so wide as to appear empty. For light pedestrian traffic, a minimum of 5 feet sidewalk with a 2 feet or more planting strip is recommended for off curb and 7 feet for an on curb sidewalk. If street furniture (benches, street lights, trash cans, newspaper boxes, etc.) is plentiful or if buildings run up to the sidewalk, an additional 1-2.5 feet of width is desirable.

d) Street enclosure and human scale: Currently, buildings have spread outward rather than upward, they step back from the streets, and are designed with fewer windows or doors facing streets. These characteristics force the poor pedestrian, who has nothing to look at, feel more isolated by having to walk further to reach any destination. The open wide “street-space” also creates a message that the streets are for speeding cars instead of

pedestrian or cyclist use. By giving the street more enclosure and a human scale, we can create a pedestrian-oriented environment. According to different experts, height-to-width ratios for street enclosure range from 1:1 (ideal) to 1:4 (minimum) (C. Alexander 1977; K. Lynch, 1984; A. Jacobs, 1993) (Figure 5.3). The most convenient rule says buildings should be set back no farther than 25 feet from the street edge. Ideally, a building will be flush with the sidewalk or set back just far enough for a modest landscape area in the front. Add closely spaced shade trees and street furniture to further enclose and define space. Allow on-street parking and put off-street parking in the back.

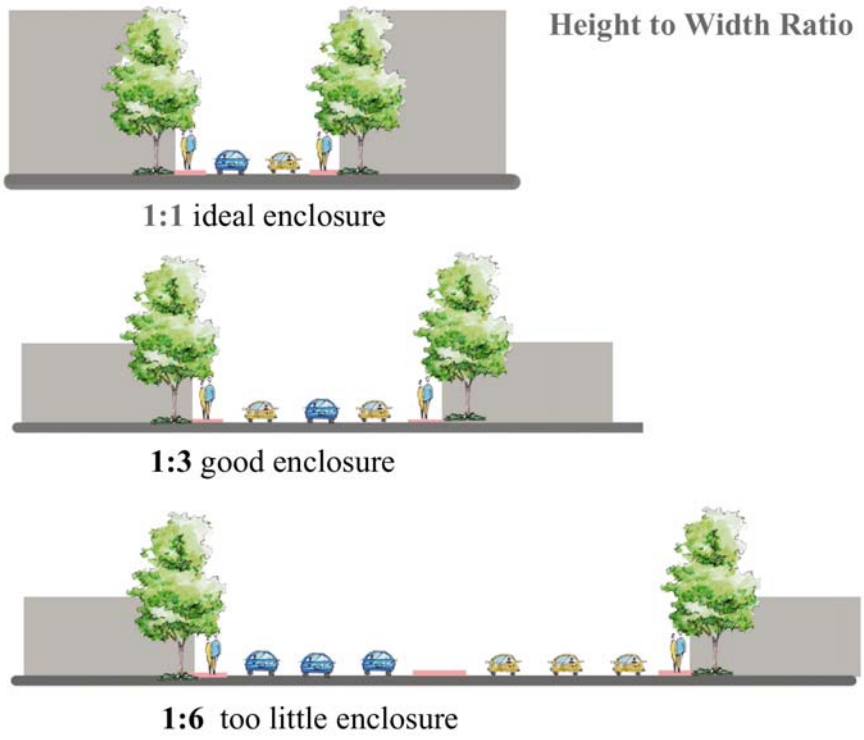


Figure 5.3 Different street enclosure comparison
(Zhen Feng, 2008)

e) Safe intersection crossing: Because children lack experience to make good decisions, a greater potential of pedestrian accidents that involve children may occur. Therefore, a well-designed intersection is a key element to promote walking behavior

when the crossing is necessary. The basic idea to design a safe crossing environment is to compact the intersection, significantly reduce traffic speed, make all directions available to crossing, and minimize the potential confliction of pedestrian exposure to motor vehicles. Most common techniques are: 1) reducing the turning radius 2) highlighting the crosswalk by changing paving material or color 3) providing medians and mid-block islands 4) raising crossing at mid-block 5) improving lighting at the crossing 6) designing pedestrian-priority signalization.

f) Neighborhood Traffic Calming: To create a safer and more comfortable environment for children to walk, traffic calming is one of the most effective methods for local streets in residential areas. Traffic calming involves the use of various roadway design treatments to reduce motor vehicle speeds and traffic volume (non-local, through-traffic) (figure 5.4). Although people may think lowering the posted speed limit is the easiest way to slow traffic, research has shown that it is the design of the street that determines how fast people drive. Traffic calming was developed as a way of "re-engineering" streets and highways to reduce the operating speeds of motor vehicles (MARC.org 1998). Some examples of traffic calming include: traffic circles, chicanes, bulb-outs, narrow streets, on-street parking, trees, and landscaping along the right-of-way. Speed enforcement and speed watch programs are also good methods for claming the traffic.

Traffic Calming Design Treatments

Source: City of Seattle Engineering Department, Making Streets that Work (Seattle,WA, 1996).

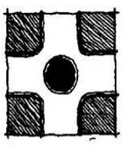
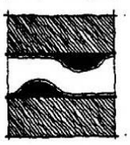
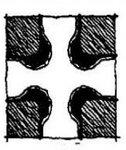
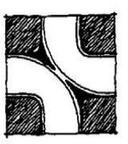
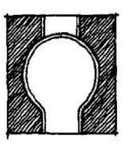
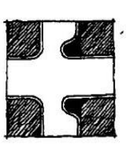
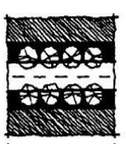
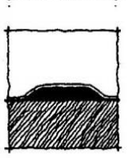
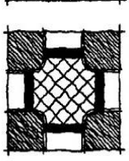
DRAWING	TECHNIQUE	DESCRIPTION
	TRAFFIC	Circular raised islands centered within intersections. Circles can be landscaped or surfaced with special paving. Landscaping can be maintained by the local jurisdiction or by neighborhood volunteers.
	CHICANES	Alternately placed curb extensions into the street that foce motorists to drive in a serpentine pattern. Chicanes are offset from each other in mid-block locations and can be used to keep through-trucks versus local delivery off residential streets.
	CURB BULB-OUTS. CHOKERS/ NECKDOWNS	Curb extensions placed at mid-block locations or intersections which narrow the street to provide visual distinction to and reduce pedestrian crossing distances. Bulb-outs help to provide a clear visual signal to drivers that a crossing is approaching and makes waiting pedestrians more visible.
	DIAGONAL DIVERTERS	Eliminates through traffic while providing partial access in opposite directions; island can become amenity and provide reuge for pedestrians.
	FORCED TURNS AND PARTIAL DIVERTERS	Truncated diagonal diverters (one end remains open) and other types of partial diverters discourage commuter traffic by forcing turns but provides local access opportunities.
	CUL-DE-SAC/ STREET CLOSURES	Street is closed and turned into a cul-de-sac; end of street becomes a neighborhood amenity and focal point (landscaped mini park); the ongoing provision of pedestrian and bicycle access is important.
	ONE-WAY ENTRY AND EXIT	Curb bulbs/ extensions are used to close one lane of traffic at intersections; stops through traffic but allows ingress or egress depending on the direction and location of thenclosure.
	NARROWER STREETS	Narrower streets limit the expanse of pavement visible to the driver and can be effective in slowing traffic, especially when lined with trees or on-street parking.
	SPEED HUMPS/ TABLES	A speed hump is wider and smoother than a speed bump, and effective in slowing cars as they approach pedestrian zones. These are most appropriately used on neighborhood streets.
	SIGNS AND NEIGHBORHOOD GATEWAYS	Signs such as "Residential Street," "Local Access Only," or monuments that identify neighborhood districts can be effective, especially when used in conjunction with other techniques, including those listed above and others, such as pavement markings and textured warning strips.
	SPECIAL PAVING	Alternative road surfaces, such as brick, colored concrete or special pavers, can be used at crossings, intersections or along the sides of the street to break up the visual expanse of pavement and define areas of pedestrian travel.
	SPEED WATCH PROGRAMS	Citizens and organizations can utilize a radar device and electronic sign board to measure speeds of passing vehicles in their neighborhoods. Letters of warning can be sent to the registered owners of offending vehicles. These programs promote neighborhood cooperation.

Figure 5.4 Traffic calming design treatments (MRAC.ORG 1998)

5. Attractiveness

a) Beautiful pedestrian and cycle routes: To attract children to walk or bike, a beautifully designed pedestrian and cycle route is very important. Nicely designed buildings, functional street furniture, and lovely objects, especially public art, all contribute to a happy walking or cycling experience for children.

b) Natural beauty: Whenever possible, natural woods, streams, and vegetation should be preserved in active community planning and design for kids to experience, explore, and enjoy. Reconnecting with the beauty of nature will greatly help kids in their learning, creativity, and health.

c) Maintenance: Provide frequent clean-up and repair on a regular basis to ensure continued safe use by pedestrians. Create more identifiable areas that encourage citizens to take responsibility for maintenance.

Program Elements

1. Develop Safe Route to School program

Walking to school is the most important way for children to incorporate physical activity into their daily lives. Schools, local governments, and jurisdictions should adapt state SR2S program and incorporate a school receiving zone area evaluation to carry out physical improvements to the infrastructure of the surrounding schools and neighborhoods. A school walking route map will need to be developed with the help of communities to give parents and teachers assurance that these routes will be safe for children's travel.

2. Educational tools and promotional programs

Schools should provide pedestrian and bicycle safety skills training along with

curriculum materials to help students understand modal choices and the impact of their choices on the environment. To meet its own needs, each school could tailor events such as Walk and Bike to School Day. These events can be scheduled once a week or once a month to gradually allow more family become familiar with the program and actively participate in helping children walk or cycle to school.

3. Neighborhood support program

Neighborhoods can organize volunteers to conduct a Neighborhood Mapping Program to develop walking maps and discover green space around neighborhood. This free information will be very valuable to schools and the residents, especially those new the neighborhood. The volunteers can also help guide and protect walk-to-school children at important traffic points during “rush hour” in school days. The neighborhood association can also set up online web sites to organize or promote family events such as Discovering Our Neighborhood and Neighborhood Cleaning Day. Through these web sites, children can organize after-school activities as well.

Children’s participation in the community planning and design process

We often hear that “children and youth are our future,” but their options and needs are rarely considered in the decisions affecting the future of our communities. There are a variety of reasons for this, but most people falsely believe that young people lake the knowledge required for building communities.

Second, young people have much more detailed information about their community than adults do. Since they spent a lot of time wandering around community, they know what is wrong and what is right about the community. Their body of knowledge has the potential to be very useful in the planning process by surveying, interviewing or cognitive mapping neighborhood.

Children may know a short cut or where old trees are located and provide important information on where the barriers of walking or biking are located.

Finally, children can be a catalyst for change in the whole community. How do you make kids active if parents do not set a good example? “The message” spread from classroom to home, from school to city hall, could become a campaign for fundraisers for trails, sidewalks, and parks.

Conclusion

This chapter examines the definition, values, and design techniques of an active community for children. In the next chapter, a community in Norcross is chosen as a site to be improved as an active community for children by applying the design and planning principles listed above.

CHAPTER SIX

THE APPLICATION OF DESIGN PRINCIPLES TO THE NEIGHBORHOOD OF PEACHTREE ELEMENTARY SCHOOL IN NORCROSS, GA

This chapter examines the usefulness of the design principles toward the goal of creating active communities for children. The selected site is Peachtree Elementary School and its surrounding neighborhoods. The current site condition will be examined first and then recommendations will be made for planning and infrastructure improvements to make the neighborhood more walkable and cycle-friendly for children.

Background Information

The site is located in beautiful Peachtree Corner of Norcross, Gwinnett County, Georgia (Figure 6.1). Located at about 30 miles from downtown Atlanta, Gwinnett County is one of the America's fastest growing counties for the past 20 years with its population continuous grow to 751,693 by 2006 (Figure 6.2). This fast growth during the 1970's and 1980's is one of the results of sprawl in Atlanta metropolitan area and now Gwinnett County, where more than half of total land area has been developed, looking like "Anywhere, USA" with strip malls, attractive but isolated parks, low-density single family housing subdivisions.

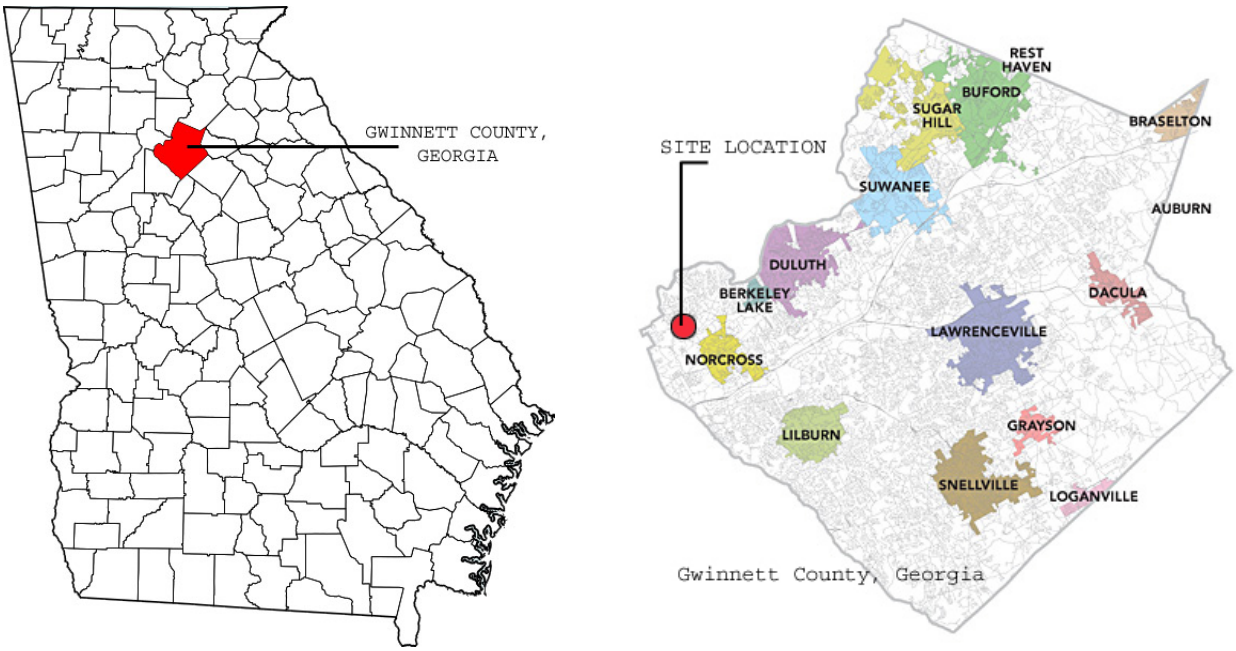


Figure 6.1 Site Location within Georgia and Gwinnett County
(Gwinnett Chamber, 2007)

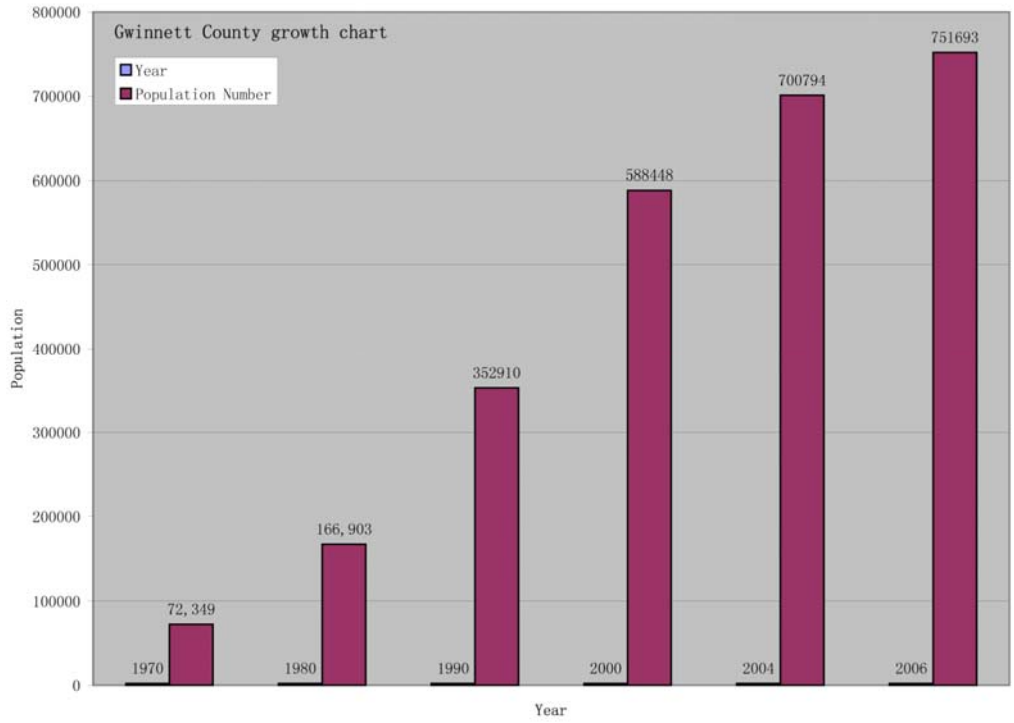


Figure 6.2 Gwinnett County population growth chart
(Data from Gwinnett County Govement, 2007)

Because of its affordable housing price, large lot and house size, and fairly acceptable commute time to downtown Atlanta compared with other cities in Gwinnett County, Norcross area attracts many families and businesses. Since the study area is located in the zip code 30092, US Census Bureau data was analyzed to look at the general demographic and housing characteristics.

The total population in zip 30092 area is 35,145 and within which, 28% of people are under 18 year old. Households with individuals under 18 years constitute 37.5% of the population. The average family size is 3.13. Only 3.1% housing units are vacant and 40.6% housing units are 1-unit, detached house (Figure 6.3).

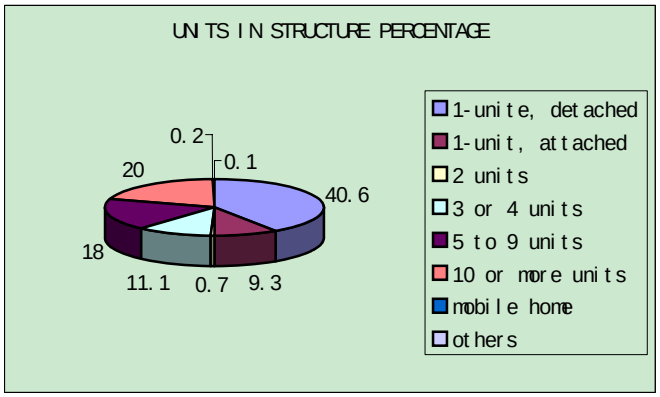


Figure 6.3 Housing units type chart, data from census.org

Other data shows the majority of workers (81%) 16 years and over drive alone as a way to commute every day. Only 1% workers walk to work (Figure 6.4). The mean travel time to work is 27.2 minutes one-way.

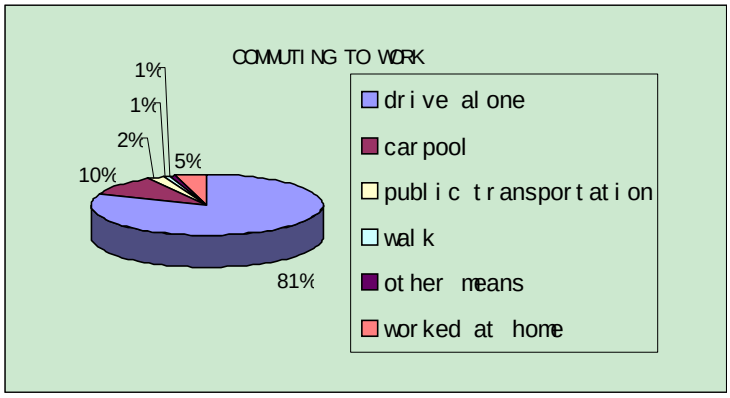


Figure 6.4 commuting to work chart, data from census.org

Site Inventory

Site location and boundary map

The site is a part of the Peachtree Corner area of Norcross in Gwinnett County, Georgia. It includes one elementary school, one daycare facility, one sports/recreation facility, several surrounding housing subdivisions and office parks (Figure 6.5, Figure 6.6, and Figure 6.7). The reason I choose this community is because first, the elementary school is currently functioning as a community center to provide not only education but also public open space and community identity. Moreover, the elementary school is an important destination in children's daily activities especially when the majority surrounding land use is residential. While a half-mile is a common number for most people acceptance as walking distance, a quarter-mile will be ideal distance for elementary students to walk to school on their own if other environmental factors are appropriate. The site inventory includes: places of interest, types and condition of neighborhood community, walkability of whole site, and green space. The code of each feature discussed below marches the

code used on Site Inventory Map (Figure 6.8).

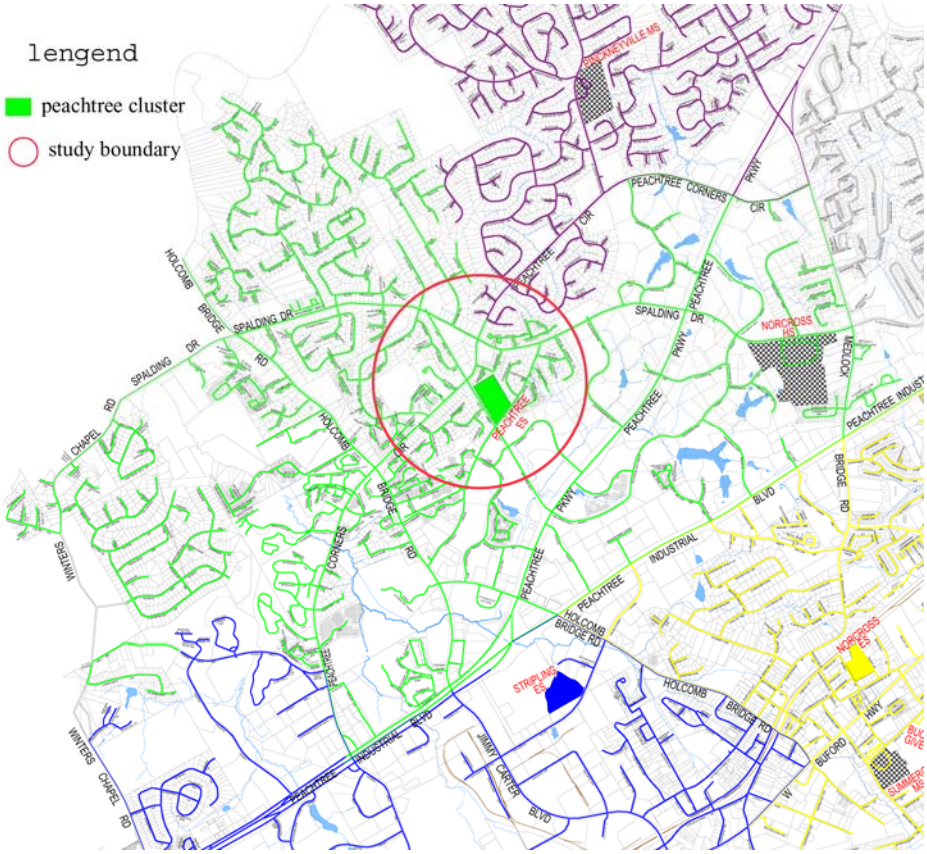


Figure 6.5 Peachtree Elementary School Cluster Map
within half mile study boundary

Places of interest

A. Peachtree Elementary School

Peachtree Elementary school was established in 1971 at a site along a Native American trail called Peachtree Path that was a trading route in the early 1800's from north Georgia to what is now the Atlanta area. The school is located at the intersection of Crooked Creek Road and Jay Bird Alley. The school day runs from 8 am to 3 pm and currently has more than 1300 students from K to 5th Grade. The population includes students from more than 40 countries with over 30

different languages spoken. Peachtree Elementary is a unit of the Gwinnett County Public schools and belongs to Norcross cluster.

The school has separate drop off locations for buses and parents. The bus loop, which accommodates teacher and guest parking, is located in the front of school at the Crooked Creek Road. Additional parking spaces are provided at the Jay Bird Alley side adjacent to a parent's one-way drop off. Parents are not allowed to use the bus loop as a drop off route and the traffic congestion is concentrated on Jay Bird Alley near or at school zone. During a Monday morning site visit, from 7:50 to 8:15, left turn traffic in or out of parents-drop-off loop on Jay Bird Alley was significantly delayed because there is no left turn lane (Figure 6.9).

Currently, the whole school area is not walking or cycle-friendly. There is no sidewalk and no bike path on either side of the school. Traffic moves at high speeds through school site when there is no congestion. Although there is visible crosswalk marking at the 4-way-stop intersection on all four sides of the juncture, there are no other signs or infrastructure to improve pedestrian safety. Currently, only two students of Peachtree Elementary School walk to school everyday and most of the students are either transported by school bus or by parents' private cars. The school doesn't have SR2S program.

Peachtree Elementary school has a nice school yard which features playground, a soccer ball field, a baseball field, several basketball hoops and an outdoor classroom. The schoolyard is opened to public during non-school hours. However, when I visited the site on a Saturday and Sunday morning, I observed only one adult jogging on the soccer ball field track and three children playing in the playground even though it was a sunny day with a temperature of 65F at that time. Since there is no other public park in the community and nearby, the low usage of the schoolyard could be due to the poor visibility and lack of physical connections with surrounding neighborhoods. There is very little signage to indicated that there is a school in the area.

B. The Sunshine House

The Sunshine House is an early childhood education facility just across the street from Peachtree Elementary School. It has education programs for infants to 4 year-olds and additional after-school programs. Currently, it sits between one vacant lot and two office buildings with parking in the front and a fenced play-yard at the side. Most parents were observed dropping off their children around 8:00 and picking them up around 5:00. There is no traffic congestion because of the small size of the facility.

C & D. Peachtree Corners Presbyterian Church & Shiloh Baptist Church

The two churches serve the surrounding community. Peachtree Corners Presbyterian Church is at the corner of Spalding Drive and Peachtree Corner Circle and has a huge parking lot, which is empty most of the week. Some elderly residents use the parking lot as a safe place to walk or jog during the weekdays. Although the parking lot is relatively safe compared with unprotected sidewalks along the streets, it is not easy for people to access it without a car and the

large area of asphalt is not attractive to users. There is no pedestrian entry from sidewalk and the sidewalks are missing on the Spalding Drive side.

The Shiloh Baptist Church is a smaller church sitting at the junction of Spalding Drive and Jay Bird Alley. It has a small parking lot and a big lawn and a large area of woods on its property. Because there is no sidewalk connecting to this church and poor maintenance of the lawn and woods area, there was no sign of people using this open space during the site visit.

E. Racquet Club of the South

The Racquet Club of the South is a tennis club at the center of Peachtree Forest Neighborhoods. Currently, this membership club has 20 tennis courts and one outdoor swimming pool and one clubhouse with indoor tennis courts and a swimming pool. Although the membership fee is relatively expensive, it is still popular in the community. This could be explained by the lack of public recreation parks in the community.

F. Landmark Christian Elementary

It is a small size school out of my study area. However, the walkable study and active community design will benefit this school as well.

Surrounding Communities

Type 1. This type of community is a typical suburban subdivision (Figure 6.10). It has one main road connected with several dead-end streets. Because of the street layout, the through traffic is minimum and most of the time the communities are quiet and peaceful with lots of open space. However, since they don't have sidewalks, there is almost no outdoor activity and children

I have seen during the site visits either stay in their own back yards or at home. Since each house has a large parking space in front of the house and a long driveway, there is no on-street parking on the 30 feet wide neighborhood streets and the streets look deserted. Moreover, although the large amount of cul-de-sacs provide a safe place for the end-unit families, it discourages walking since they need to walk much longer distances to destinations.

Type 2 Peachtree Forest community is a picturesque subdivision with well-designed housing units and established landscape. There are no sidewalks in the community and the streets are wide (around 40 feet) and deserted. The lake is a very beautiful feature in this low-density residential area. However, the whole lake is hidden behind the huge houses and all of the lake is divided into private lots. This makes the natural beauty an experience only enjoyed by a dozen families. (Figure 6.10)

Type 3 The medium to high density in both communities creates a human scale pedestrian experience. The town houses are very close to streets and on street parking fill the empty streets to slow traffic. However, sidewalks are also missing here and no one likes to walk outside between cars (Figure 6.10)

Type 4 This is the most dense residential area in the study area. Both areas are condominiums and they feature swimming pools, clubhouses and abundant sidewalks. There are also some pocket greens inside the communities, which also connect with sidewalk. Children play ball

outside and some residents walk dogs on the sidewalks during on site observation. The sidewalks also connected to the sidewalks at major streets at Peachtree Corners Circle (Figure 6.10).

Type 5 This type of subdivision is a good example of suburban residential design. It has been developed in recent years with very well designed streets layout and public spaces. The sidewalk is at least 10 feet apart from the drive way and the green buffer features a lawn, trees and flowering shrubs. Pocket greens, picnic pavilions and community parks are well designed for outdoor activities. However, the over wide streets and driveway curb-cuts create an uncomfortable walking environment, especially for children. (Figure 6.10)

Green Space

There are several undeveloped green spaces in the study area that could be transformed into transform neighborhood parks. These new open spaces could connect to existing green to create an interconnected green space network. Please see figure 6.11 Open/green space analysis for detail information.

Office Park

There are a total three office parks at the south part of the study area. They function as the connection between the commercial districts alone the Peachtree Parkway and the neighborhoods. With lots of green and well-maintained landscape, the office parks are pleasant places for the walker and bicyclist---if they include the sidewalks or bike paths. In the absence of any

alternative transportation infrastructure, people who live within one mile of the community still have to drive cars to get to the office park. Employees experience the landscape through the windows of cars and buildings. It is necessary to provide sidewalks or trails, which link the office parks with surrounding communities and commercial streets to encourage more walking and biking.

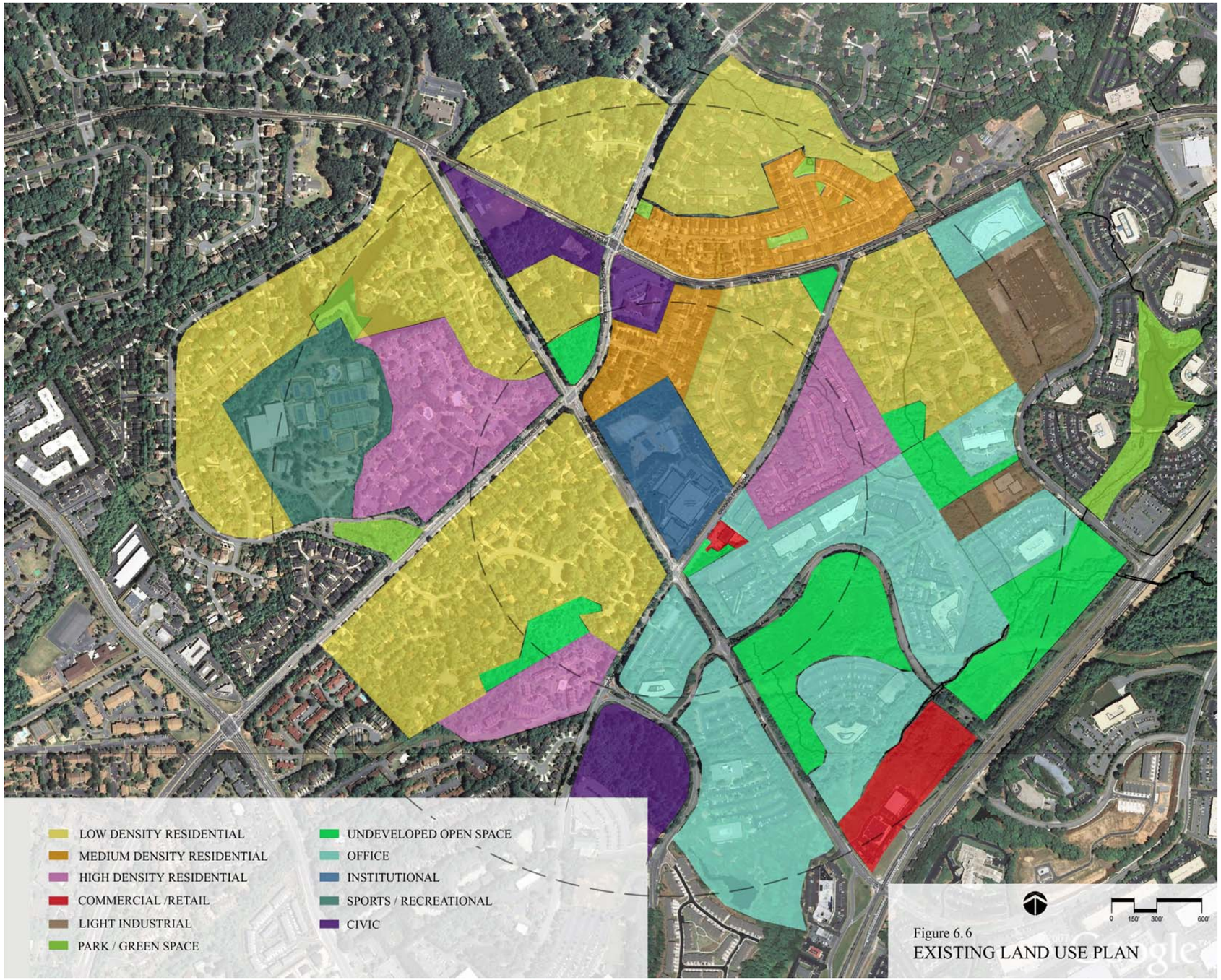


Figure 6.6
EXISTING LAND USE PLAN

Figure 6.7

PEDESTRIAN SHED ANALYSIS

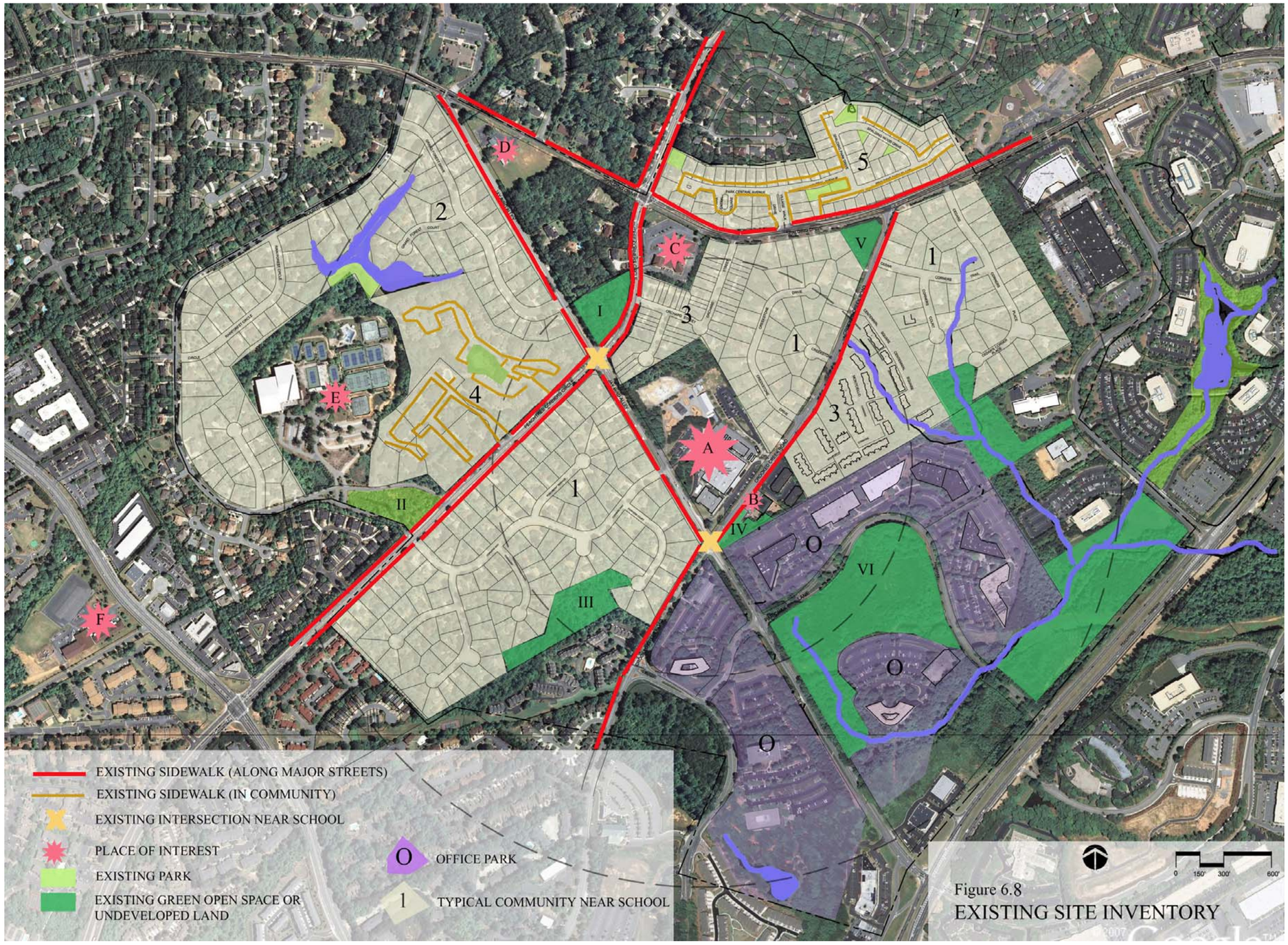
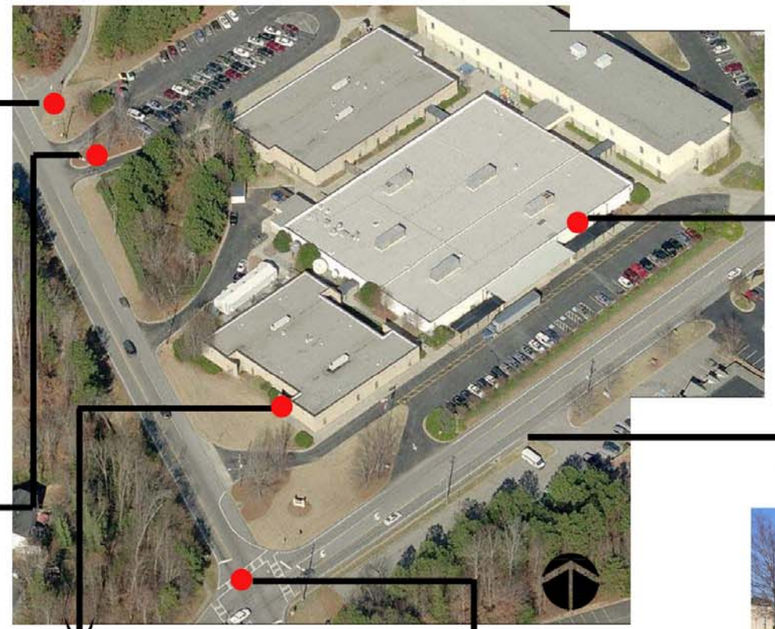


Figure 6.8
EXISTING SITE INVENTORY

There is no sidewalk or bike path at the side entrance of school yard and parents drop off.

The school yard is spacious and has many interesting points like the outdoor classroom, a small garden, a small woods and nice soccer ball and base ball field. It is underused during off school hours.

The curren school yard entrance is invisible from street. No sign or any other character provide information to the neighborhood.



School front entry with bus loop. Students are safely delivered to walkway in front of the building when they take off the bus.

During the "school rush hour", traffic are back up from this parents drop off loop entry all the way to both sides of intersection.

The walkway in front of the school building is dead-end at the side, and doesn't have any connection to the back part of the school include playyard and drop off area.

The four-way stop intersection create traffic back up during rush hour. It also make the intersection unsafe for pedestrian since the driver put more attention on othere three side traffic. A better solution need come up to improve this intersection.

Figure 6.9 SCHOOL SITE INVENTORY

Typical streets in type 1 community

Typical streets in type 2 community

Lake behind the houses in type 2 community

Medium density townhouse in type 3 communtiy. Buildings are close to streets

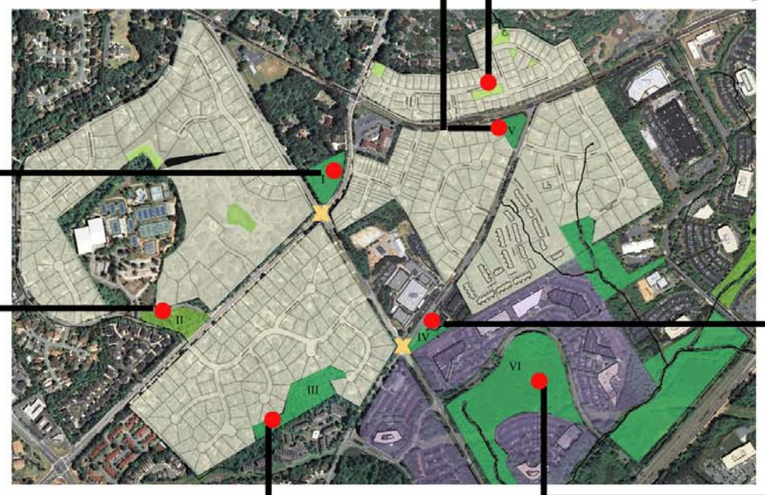
Condominiums in type 4 community. Highly densed and very walkable.

Typical streets in type 5 community.

Figure 6.10 Existing community type

This undeveloped land at the corner of this intersection has large woods and quite flat topography. It is close to churches and elementary school. Traffic volumn is relative low during the day at this intersection.

Current condition in this corner is underveloped land with heavy woods. It has many improvement potential since it sits in the center of surrounding communities.

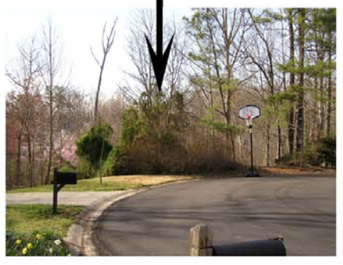


A typical neighborhood park in this well designed community. Sidewalk connected to every corner of this subdivision with pocket parks in the middle. A very good example for designing neighborhood's pocket park.

Currently, this piece of public woods has been use as stormwater diverter from the street. There are several swales been built in the woods with bare dirty and rocks. It also be part of the gateway to enter the tennis club.

This corner parcel just across the elementary school is empty with an abandoned parking lot in the front and small woods in the back. As a gateway to the office park, traffic in this intersection is busy.

As a nature green space in this community, this part of the land is overgrown and shows no maintenance. Beginning at the one empty lot at the cul-de-sac, the green space is a left over place with no one can acturally use but has lot of potential to improve.



This big area of green space is in the center of the office park. The place is relatively flat with heavy covered woods. The lowest spot is used as storm water detension basin. There shows some maintenance and the understory tree is cleaned.

Figure 6.11 OPEN/GREEN SPACE ANALYSIS

Design Recommendations

Base on the active community design principles and the existing site condition, there are several suggestions that could be implemented to encourage active transportation and active outdoor activities for children in the neighborhoods and Peachtree Elementary School. See figure 6.13 Site Plan for details.

Design Elements

Connectivity and Continuity

Every street within a half-mile of Peachtree Elementary School should have sidewalks and on-street bike paths on both sides. At the connections with intersections or curb cuts, sidewalks should have a ramp to accommodate disabled people and children on bicycles. Paved or unpaved trails or path need be provided to make connections at the cul-de-sac to encourage walking and cycling by using the short cut.

Variety of Destinations

Besides the neighborhoods' parks, school, schoolyard playground, recreation facility and office park, a proposed corner grocery store with parking and a well designed public space in the front will add more mixed land use and serve as one of the community destinations. The store will be located at the corner of intersection across the street of the elementary school. Improved crossing and traffic speed control will be provided at the intersection to ensure a safe environment for pedestrians. The corner grocery would not only provide convenient for local residents, it could be a charming outdoor meeting space for the neighborhood. People go to them

when they feel like a walk as well as when they need a carton of milk. The school across the street provides stable customers if the store is favored by children.

Figure 6.12 Corner Store with lots of fresh products and colors (www.villagemarketsf.com)

1. **Accessibility**

Proposed trails in the communities (Figure 6.13) connect the dead end cul-de-sac with community green space or major streets' sidewalk system. A way-finding signage system needs be installed at each intersection and along major roads, which lead children to school, parks, and home. The system should different from the one for drivers, which means they need a special design to accommodate children's heights, interests and understandings. The entry of the schoolyard needs be redesigned to be a highlight of the area to welcome neighborhoods uses instead of the current chain-link fence.

2. **Safety**

More parents may be encouraged to let their children walk along sidewalk if there is effective planting buffer installed to protect children from passing traffic. So wide planting buffers need be provided where it is possible. It is highly recommended that planting buffer of 5 feet or wider with street trees and shrubs be used along major streets, such as Peachtree Corner Circle and Jay Bird Alley, within a half mile radius of Peachtree Elementary School (Figure 6.19 streets design).

Children would prefer using sidewalk with safe landscape buffer as a bike path to bike to school because it is extremely dangerous for young children to bike on an on-street bike lane. Thus, the sidewalk need be spacious too to accommodate this and groups of children walking together safely. A 6 to 10 foot sidewalk is recommended along major streets within a half-mile radius of Peachtree Elementary School. Sufficient grass space adjacent to the sidewalk needs be provided to the bikers.

Bike lanes should be painted a different color than surrounding pavement. Although this approach is not wide-used, it is becoming more popular in the Untied States and other countries to prevent vehicles from using bike lanes.

To discourage congestion and speeding, several traffic calming solutions should be implemented around the school and throughout the community (Figure 6.14, 6.15, 6.16, 6.17, 6.18). First, a traffic circle is recommended to replace the 4-way-stop at the intersection of Jay Bird Alley and Crooked Creek Road to relieve the morning traffic jam. A landscape median with pedestrian crossing should be installed on Jay Bird Alley at the entrance of schoolyard. Special

paving such as bricks or colored concrete pavers should be used at crossing at the intersection and at the median-block crossing.

Second, the community streets could be narrowed and speed bumps need be installed. This would slow traffic and create space for wider sidewalks and landscape strips. In addition, the turning radius at the intersection of Peachtree Corner Circle and Jay Bird Alley should be reduced to help easy crossing and reduce the traffic speed. The speed limit should be lowered from the current 40mph to 30mph along with the school zone signage improvement around the school zone area.

Third, there is very little signage in the area indicating that there is a school zone nearby, and few visible pedestrian signs in front of school entrances is installed. It is very important to add more signs and flashing lights along the routes that children walk to school. Solar powered signs are recommended to ensure high visibility in some situation. Moreover, human-scale streetlights should be provided along sidewalks at suitable intervals.

Finally, to improve connectivity, walking trails and road connection are proposed on the school site (Figure 6.14, 6.15). This could not only relieve some of the morning traffic congestion by dividing the traffic volume, it also encourages students who live next to the school take the short cut to walk to school.

5. Attractiveness

Street furniture like benches, streets lights, and drink fountains should be provided along with some public art to attract kids to walk or bike (Figure 6.20, Figure 6.21). Some “rest-points” or neighborhoods green spaces should have shelters or picnic tables to function as gathering space. The neighborhood green network is created by using existing parks, green space and undeveloped lands (Figure 6.13). Within the walking distance from school and churches, the neighborhood park (green space No. I) at the corner of Jay Bird Alley and Peachtree Corner Circle will be a major new public green space at the center of this area. Two more small green spaces will be built or improved to connect the park with a safe sidewalk system. These three public open spaces will be important places for neighborhood children to meet, play and explore together. The No. II green space, which is a well-maintained woodland at the entry to the tennis club, will be enhanced by just adding some simple raw play materials like wood trunks, nets, ropes, and wood furniture—where children can create and re-create playground of their own. The swale could be improved with the addition of river rocks and a diversity of plants along the bank. It will be a place to let children explore freely by imagination (Figure 6.22).

Figure 6.20, 6.21 Before and after for streetscape design.
Rock-wood benches give children more imaginations.

Figure 6.22 Example of a simple designed play area by using raw material (www.glenlivetestate.co.uk)

Program Elements

1. SRTS

Peachtree Elementary School should adopt "KidsWalk"—a Safe Route to School program for metro Atlanta. The program now includes 16 elementary schools in Cobb, Coweta, Dekalb, Fayette, Fulton, Gwinnett, Henry and Rockdale counties. KidsWalk incorporates education, encouragement, enforcement, and engineering to increase the safety and frequency of walking to school. Fun activities and contests have been developed to motivate children to keep walking. (Georgia Department of Transportation 2008)

2. **Neighborhood support program**

Communities around school should develop a volunteer organization to deploy crossing guards at every intersection within half-mile radius around school at morning and afternoon. An adult supervised walk-to-school is also recommended, like the Walking-School-Bus mentioned in the chapter four. A walk to school map should be prepared by both volunteers and students to

encourage children's participation in design and planning process. In addition, there is a great opportunity for the neighborhood work with the school to develop active after school programs for kids. A simple neighborhood field trip could help kids know more about their own living place and encourage them to walk outside and explore the environment. By using the community resources, both parents and children would be more connected to their neighborhood and thus increase the sense of community.

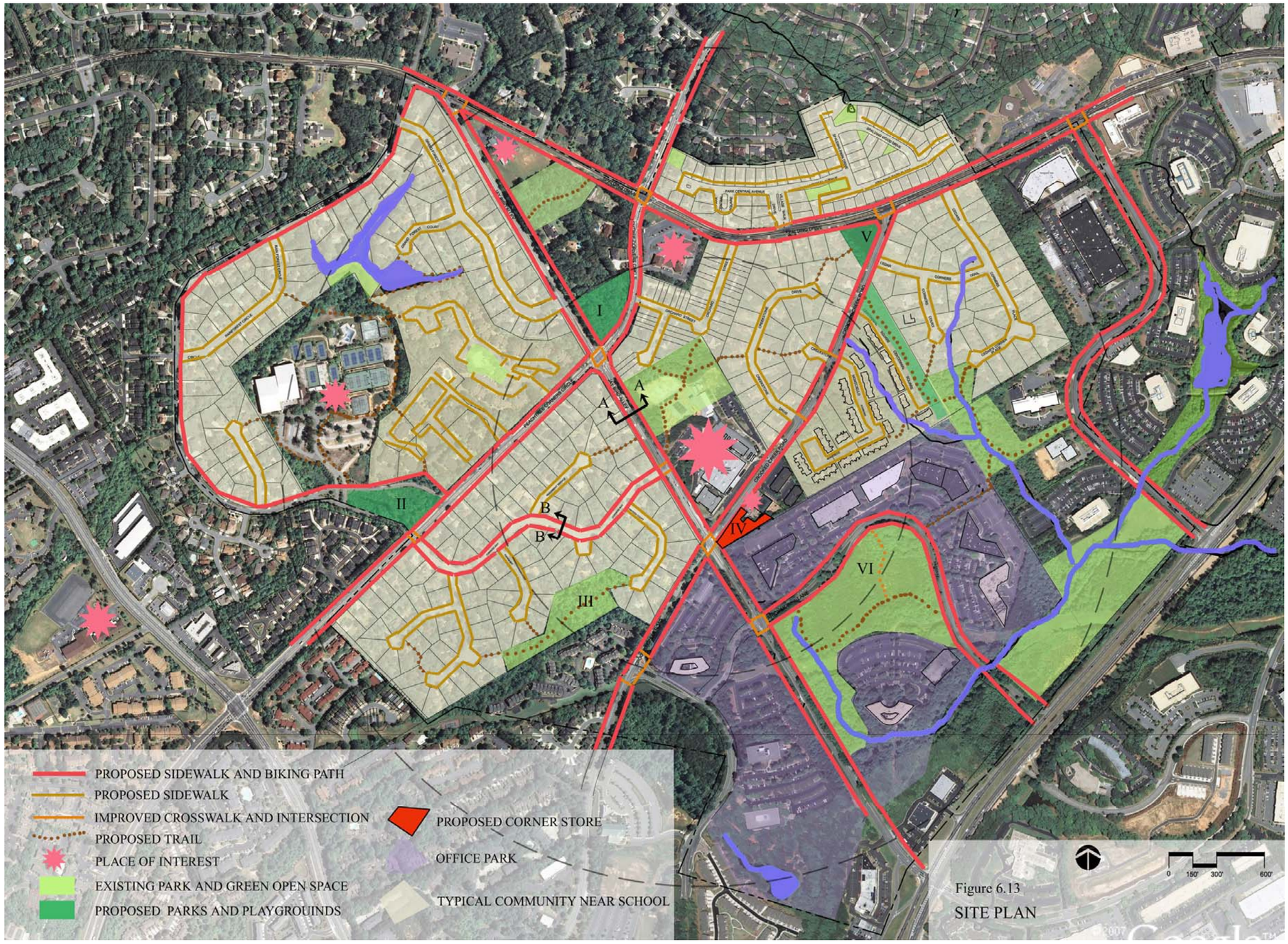
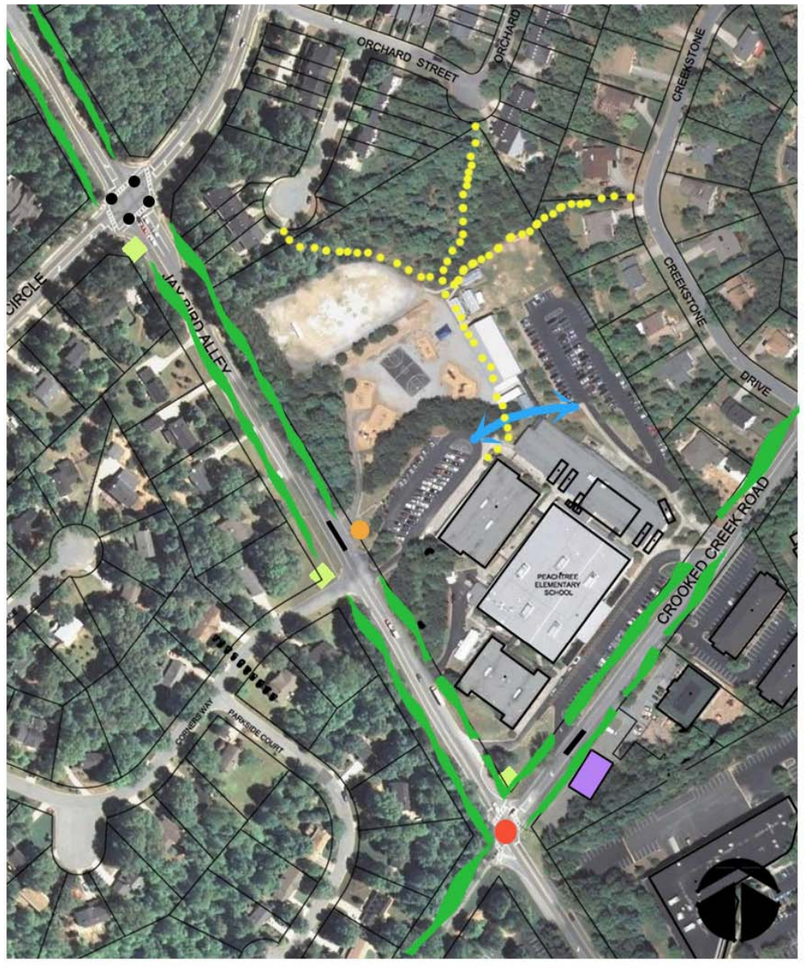


Figure 6.13
SITE PLAN

MAP KEY

- EXISTING PARENTS DROP OFF ENTRY
- EXISTING SERVICE ENTRY
- EXISTING BUS ENTRY
- 4 WAY STOP INTERSECTION
- BACKUP TRAFFIC
- PEDESTRIAN ACCESS
- EXISTING SIDEWALK

Figure 6.14 Existing School Zone Analysis



MAP KEY

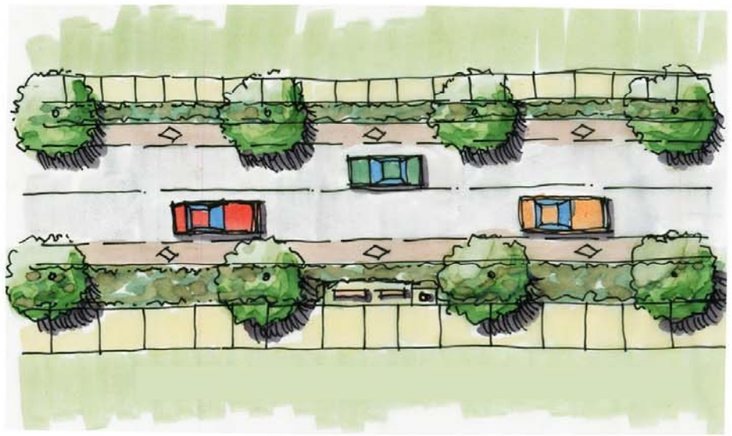
- TRAFFIC CIRCLE
- REDUCED TURNING RADIUS
- PROPOSED CORNER STORE
- IMPROVED SCHOOL YARD ENTRY
- IIMPROVED SCHOOL ZONE SIGN
- PROPOSED SIDEWALK
- MID-BLOCK CROSSING
- PROPOSEDL ROAD CONNECTION
- SPEED BUMP
- PROPOSED TRAIL

Figure 6.15 Design Recommendations for School Zone Area

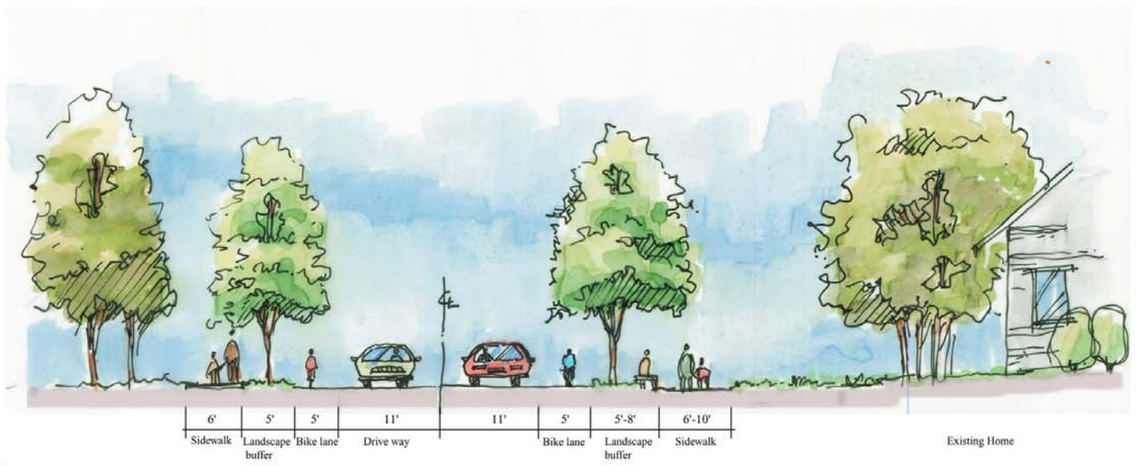
Figure 6.16 Existing 4-way-stop intersection in front of school

Figure 6.18 Photograph of a typical mid-block crossing island (www.pedbikeimages.org/danburden)

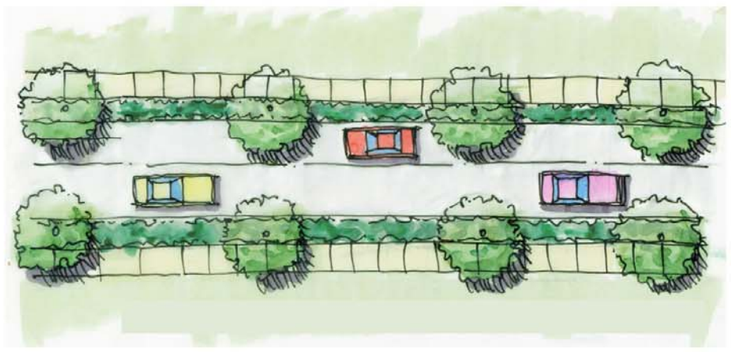
Figure 6.17 Example of traffic calming by installing a traffic circle at the intersection of Jay Bird Alley and Crooked Creek Road



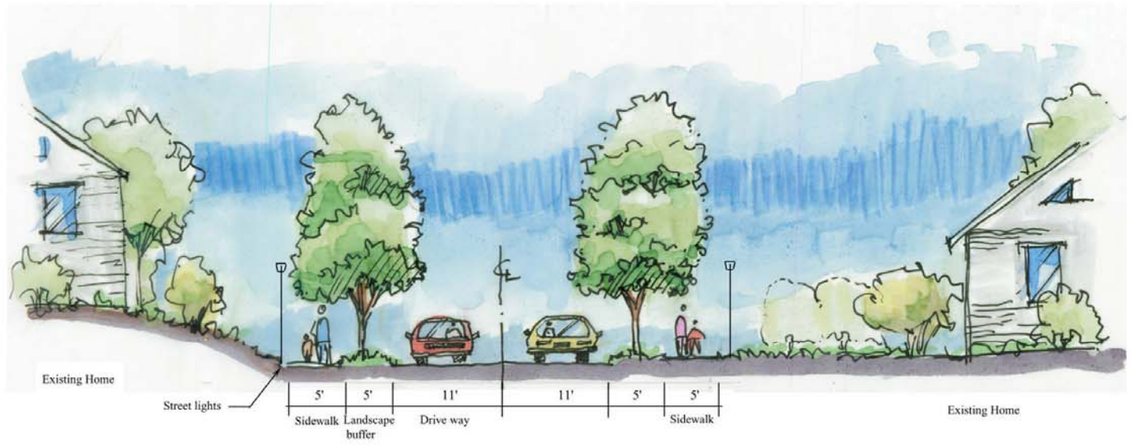
Proposed streets with sidewalk and bike lane plan A-A (NTS)



Proposed streets with sidewalk and bike lane section A-A (NTS)



Proposed community streets with sidewalk plan B-B (NTS)



Proposed community streets with sidewalk B-B (NTS)

Figure 6.19 Design recommendations for typical streets design

CHAPTER SEVEN

CONCLUSION

The purpose of this thesis is to examine how the built environment in our community can have a greater impact on children's activities and focuses on how to encourage children to participate in outdoor activities, and how to provide accessible active transportation. First, through literature review, the thesis discusses the strong relationship between children's health and their community's physical environment. Next, through case studies of historic communities and precedent movements in the planning and design fields, the thesis explores general design principles to guide designers and planners to create active communities through the design of the physical environment as well as program elements for neighborhoods to adopt.

Nevertheless, there are still many challenges to implement these ideas. One challenge Peachtree Elementary School faces is how to successfully incorporate a Safe Route to School program after the physical environmental condition is improved. What will make parents believe that their children are safe to walk or bike to school? What can we do if children do not want to get up early and prefer to be chaffered to school? How much extra work and money will the school have to pay to incorporate the program, and what will make teachers support it? All these questions need to be answered through additional research, as well as onsite testing. While some suggest that monthly parent meetings are necessary, others may favor more aggressive methods such as reducing the school bus routes and schedules, or implementing

stricter rules in the drop off zone to encourage students to use alternative transport to get to and from school instead of motor vehicles. Since the school has not started the program, this thesis provided important information to help them initiate a proposal and plan.

Another challenge the thesis brings up, which is usually neglected by landscape architects and planners, is how designers can work with different disciplines to create healthy, active living places. Many key areas were identified as having positive effects on active living. In addition to "physical environment," which the thesis mainly focuses on, "social and cultural environment" and "policy environment" are two other major factors it addresses. Here, the "social and cultural environment" areas deal with creating and maintaining social and cultural environments that are conducive to walking in daily life and foster positive attitudes to walking and pedestrians. The "policy environment" area focuses on offering provision and implementation of consistent and integrated policies to support walking. Thus, a successful plan includes a comprehensive approach and collaboration between disciplines to address issues in order to multiply benefits. The "Active Living by Design (ALbD) Community Action Model" is a good example how active living supports can be incorporated into a community and should ultimately result in increased physical activity (ALbD 2008).

Active Living by Design Community Action Mode

Active Living by Design is a national program of the Robert Wood Johnson Foundation and is a part of the North Carolina Institute for Public Health. The ALbD Model includes Supports, Strategies, Short Term and Intermediate Changes and Health & lifestyle Changes (Figure7.1).

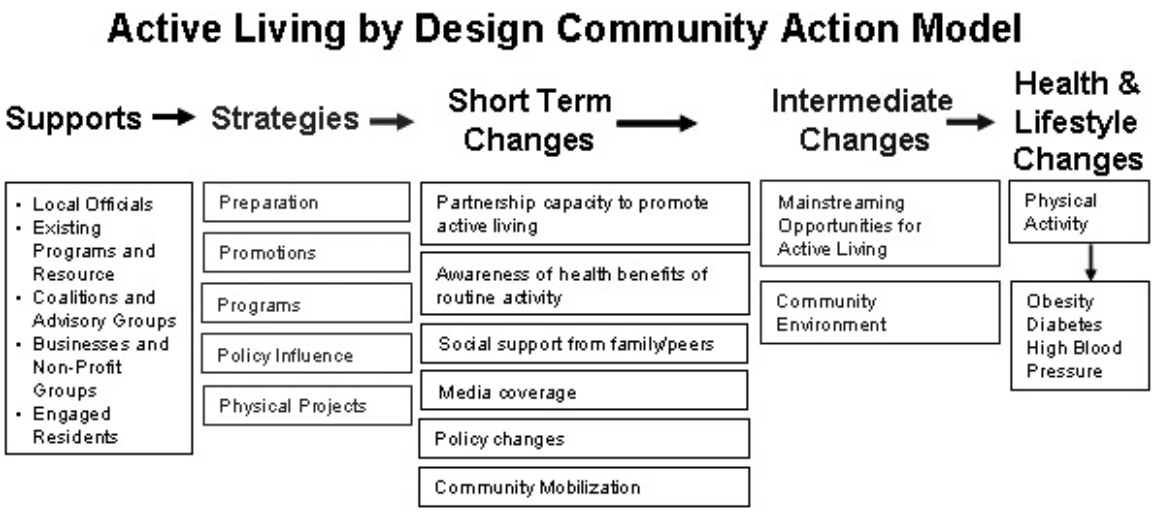


Figure 7.1 ALbD Community Action Model (ALbD 2008)

Supports

Every community has existing assets that can contribute to creating a more active living style. Local departments of public health, planning, transportation, public works, and parks/recreation have expertise to offer an active living movement and they are essential organizations to work with in order to create health-promoting environments. Businesses and non-profit organizations may also play a significant role in building active communities.

Strategies

AlbD has created 5 “P” strategies: Preparation, Promotion, Programs, Policy, and Physical Project. These strategies represent a comprehensive approach to increasing physical activity in a community. Preparation usually includes collecting relevant data, pursuing financial supports and developing a community partnership. Effective promotion or communication efforts are vital to the active living community program. Usually by local physical activity campaign, the projects

can send specific messages including the benefits of active living and the importance of community environments in promoting healthy living. Safe Routes to School is one of the many great programs to engage individuals to physical activity directly. Some cities also have Commuter Alternatives Programs to encourage employee to use active transportation to work. Moreover, educating policy makers - as well as citizens, professionals and advocates - about the need for local environments that support active living -- is an essential component of policy influence strategy. Finally, physical projects have to be done to improve built environments, remove barriers to physical activity and enhance safety (e.g., trails, pedestrian improvements at intersections).

Changes

After successful implementation of 5 “P” strategies, short term changes will come out like greater awareness of active living, increased media coverage on active living issue, policy changes to favor healthy and active living community, etc. (See figure 7.1) However, the goal of ALbD is to help create environments with comprehensive supports for active living and people who can benefit from increased physical activity are able to lead active and healthy lives in environments that support those lifestyles.

Based on this model, great work has been done. For example, numerous studies on social and cultural areas provide useful information about the advantages and disadvantages of active transportation, such as attitudes toward walking and cycling, car culture, and lifestyle changes in modern living. Many creative policies are being introduced to support active living environments. For instance, Missouri State initiated the Complete Streets Bill that will require the Department

of Transportation's plans, programs, and projects provide full consideration for the safety and contiguous routes for all users (Centerlines 2008). Other cities are looking at youth as a valuable resource and are working to get them more engaged in policymaking process. In the city Flint, the project called "It's Our Neighborhood Too!" established a Youth Action Council to make meaningful contribution to the city (Center lines 2008).

Creating an active living community is a complex process and needs further multi-discipline collaboration. As a student in landscape architecture, my goal in this thesis is to contribute from planning and design perspective. I believe with more social attention and efforts working toward a common goal, we will definitely be able to create a healthy and active community for our children to live and explore.

BIBLIOGRAPHY

Alexander, Christopher., Ishikawa, Sara., Silverstein, Murray., Jacobson. Max., A pattern language: towns, buildings, construction 1977 New York: Oxford University Press

ALbD (2005). Active Living by Design Community Action Model
Retrieved from website April 17th, 2008:
http://www.activelivingbydesign.org

Appleyard, Bruce (2003). Planning Safe Routes to school. Planning, May 2003.

A.B.Jacobs. Great Streets, MIT Press 1993

Beatley, Timothy, and Kristy Manning. 1997. Ecology of place: Planning for environment, economy, and community. Washington, DC: Island Press.

Benfield, K. F., Raimi, M. D., & Chen, D. D. (1999). Once there were greenfields: How urban sprawl is undermining America's environment, economy, and social fabric. NewYork: Natural Resource Defense Council.

Boarnet, Marlon, and Randall Crane. 1997. L.A. story: A reality check for transit-based housing. Journal of the American Planning Association 63 (2): 189-204.

Brown, B. B., Burton, J. R.,& Sweaney, A. L. (1998). Neighbors, households and front porches:
New Urbanist community tool or mere nostalgia? Environment and Behavior, 30, 579-601.

Brownell, Celia A., Stephanie Zerwas, and Geetha Balaram. "Peers, Cooperative Play, and the Development of Empathy in Children." Behavioral & Brain Sciences 25.1 (2002): 28.

CDC (2001). The built environment and children's health
Retrieved from website Jan 25, 2008:
http://www.cdc.gov/healthyplaces/articles/The%20Built%20Environment%20and%20Children%20Health.pdf

C.W. Cameron Making it easy to be green-More communities built around conservation, parks, sharing resources. Atlanta Journal Constitution, 9/30/2007

Clifton, KellyJ, and Kandice Kreamer-Fults. "An Examination of the Environmental Attributes Associated with pedestrian–vehicular Crashes Near Public Schools." Accident Analysis & Prevention 39.4 (2007): 708-15.

DiGuiseppi, C., Roberts, I., & Li L. (1998). Influence of changing travel patterns on child death rates from injury: Trend analysis. British Medical Journal
Fenley, Gareth. 2003, Reinventing the mall. Publication: Display and Design Ideas http://www.allbusiness.com

Gause , Jo Allen: Great Planned Communities, Urban land Institute, 2003

Gleeson, Brendan, and Neil G. Sipe. Creating Child Friendly Cities : Reinstating Kids in the City. London ;; New York: Routledge, 2006.

GHR Georgia (2005). Obesity in Georgia's 3rd grade children
Retrieved from website Jan 25, 2008:
http://health.state.ga.us/pdfs/epi/3rdGradeBMISummary.pdf

Jacobs, Jane. The life and death of great American cities New York: Random House 1961

Howard, Ebenezer 1945 Garden Cities of To-morrow. Faber and Faber LTD, London

Hudson, Robert 1934. Radburn, a plan of living. American Association for Adult Education

K. Lynch and G. Hack. Site Planning. MIT press, Cambridge, 1984

Kerr, Jacqueline, et al. "Urban Form Correlates of Pedestrian Travel in Youth: Differences by Gender, Race-Ethnicity and Household Attributes." Transportation Research: Part D 12.3 (2007): 177-82.

Kerr, Jacqueline, et al. "Active Commuting to School: Associations with Environment and Parental Concerns." Medicine & Science in Sports & Exercise 38.4 (2006): 787-94.

Frumkin, Howard, Lawrence Frank, and Richard Jackson. Urban Sprawl and Public Health
Designing, Planning, and Building for Healthy Communities. Washington; Covelo, London: Island Press, 2004

Kreiger, Alex. 1998. Whose urbanism? Architecture Magazine, November, pp. 73-76.

Kid friendly Cities, 2004
Retrieved from website Feb 11, 2008: http://www.kidfriendlycities.org/2004/article12.html

Lansing, John, Robert W. Marans and Robert B. Zehner, Planned Residential Environments (Ann Arbor: University of Michigan, 1970), p. 213

Leccese, Michael, and Kathleen McCormick. 2000. Charter of the new urbanism. New York: McGraw-Hill.
MARC.ORG (1998). Traffic calming design treatment

Retrieved from website Feb 27, 2008: http://www.marc.org/Community/cdpubs.htm

Mealor, Alicia. 2007. New Urbanism or not? A critical analysis of Atlantic Station

McDonald, Noreen C. "Active Transportation to School: Trends among U.S. Schoolchildren, 1969–2001." American Journal of Preventive Medicine 32.6 (2007): 509-16.

Miller, Donald L. 1989. Lewis Mumford A Life. New York: Weidenfeld and Nicolson.

Mumford, Lewis. 1938. The Culture of Cities. New York: Harcourt, Brace and Company.

Mumford, Lewis. 1961. The city in history: Its origins, its transformations, and its prospects. Harcourt, Brace & World, Inc. New York

Parsons, Kermit C. 1994 Collaborative genius: the Regional Planning Association of America. Journal of the American Planning Association

Parsons, Kermit C. 1998. Clarence Stein's variations on the Garden City theme by Ebenezer Howard. Journal of the American Planning Association

Platt, R. H., Rowntree, R. A., & Muick, P. C. (Eds.). (1994). The ecological city. Amherst: University of Massachusetts Press.

Raudin, D. (1999). Building the 21st century home: the sustainable urban neighborhood.

Sallis, James. et al. (2006). An ecological approach to creating active living communities. Annual Reviews Public Health 2006

Salvi, Sundeep (2007). "Health Effects of Ambient Air Pollution in Children." Paediatric Respiratory Reviews, 8.4 (2007): 275-80.

Richard Louv. Last child in the woods: saving our children from nature-deficit disorder. Algonquin Books, 2005.

Stein, Clarence, “the Nature of Communities” (1943), reprinted in Kermit Carlyle Parsons, ed., The writings of Clarence Stein (Baltimore: The John Hopkins University Press, 1998), p442.

Stein, Clarence, 1951. Toward new Towns of America. University Press of Liverpool
Steuteville, Robert. 1998. The New Urbanism Challenges Modern Automobile-Oriented Planning and Development. Terrain.org: A Journal of the Built & Natural Environments

Strickland, Eric. "Let's Play Outside!" Scholastic Parent & Child 10.6 (2003): 60.

Timperio, Anna, et al. "Personal, Family, Social, and Environmental Correlates of Active Commuting to School." American Journal of Preventive Medicine 30.1 (2006): 45-51.

UNICEF. Child-friendly cities: working to fulfill the rights of children
Retrieved from website Feb 11, 2008:
http://www.unicef.org/specialsession/docs_new/documents/events_child_friendly_cities.pdf

David O'Neil, Steven Ducham, Oliver Jerschow, Douglas Porter, and Laura Reblitz The Smart Growth Tool Kit, Urban land Institute, 2000

Google Earth

www.atlanticstation.com

http://web.ukonline.co.uk

http://www.epa.gov

http://www.cnu.org/charter

http://www.radburn.org

http://www.saferoutestoschools.org

http://www.mactec.com/Projects/Atlantic_Station.aspx

http://www.wikipedia.com

http://www.census.gov

http://www.unicef.org

http://www.seattle.gov

http://www.feetfirst.info

http://www.pedbikeimages.org

http://www.gwinnettcounty.com

http://www.activelivingbydesign.org

APPENDIX: ORAL DEFENSE PRESENTATION POWERPOINT

BUILDING A HEALTHY AND ACTIVE LIVING COMMUNITY

CREATING WALKABLE AND CYCLE-FRIENDLY COMMUNITIES FOR OUR CHILDREN

ZHEN FENG
MASTER OF LANDSCAPE ARCHITECTURE

Major Professor: Judith Wasserman

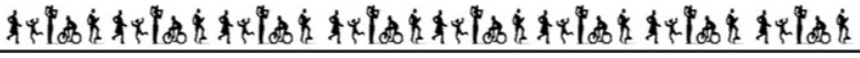
Committee: Marianne Cramer
Marsha Davis
Patrick Peters

Grocery Store
where I can find my favorite treat once a week

School
where the parking lot is twice the size of our play area and school building

Playground
where I know nobody

Mall
where I can run as free as I can



PASSIVE COMMUNITY AND CHILDREN'S HEALTH

PASSIVE COMMUNITY: located outside of compact urban center
auto-dominated
lack of alternative transportation
weak connection with surrounding communities
does not have enough public open space
single use---residential

PASSIVE COMMUNITY AND CHILDREN'S HEALTH

- **OBESITY**

  Overweight rate among children tripled since 1960s. Now, approximately one in ten preschoolers and one in seven school-age children are overweight. (www.futureofchildren.org)

- **ASTHMA**

  In the United States, about 20 million people have asthma, and nearly 9 million of them are children.

  Study shows that air pollution from automobile use is a major cause of asthma attacks.

- **TRAFFIC INJURY**

  Traffic danger rank the second obstacle for children when they walking or biking to school.

  Nearly one-third of all children between the ages of 5 and 9 years who were killed in traffic crashes were pedestrians. (MARC 1998)

PASSIVE COMMUNITY AND CHILDREN'S HEALTH

TRAFFIC INJURY

Typical limitations of Children age 5 to 9

- Children are shorter than adults: typical eye height is 3 feet above ground.
- Children have one-third narrower side vision than adults and are less able to determine the direction of sound.
- Children have trouble judging speeds and distances of moving cars.
- Children are sometimes too small to be seen by fast-moving cars.
- The movements of children are unpredictable.
- Easily get impatient when waiting to cross the street.
- Children have less experience as pedestrians than adults and may not be fully aware of dangerous conditions.

PASSIVE COMMUNITY AND CHILDREN'S HEALTH

OTHER HEALTH PROBLEMS IN CHILDREN

Exploring is a part of child development. Children benefit from diverse and varied experiences in daily life and while exploring.

- Passive community offers children less freedom to roam in the neighborhood.
- Passive community has less destinations for children to explore.

"It takes a village to raise a child"

- Communities with high levels of social capital are good places for children to grow up. Passive community usually features low social capital.
- Friendship among children.

Barriers

Personal Barriers

- Distance
- Traffic safety
- Valuation of time
- Lack of motivation
- Lack of social support
- Lack of health knowledge

Environmental Barriers

- Distance
- Traffic safety
- Weather
- Infrastructure features:

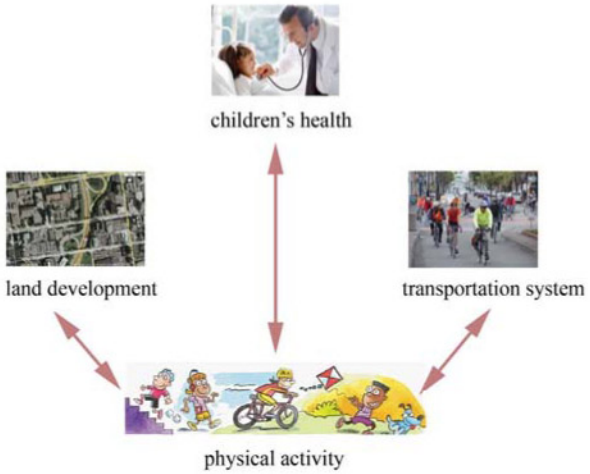
  Pedestrian/Bike facilities

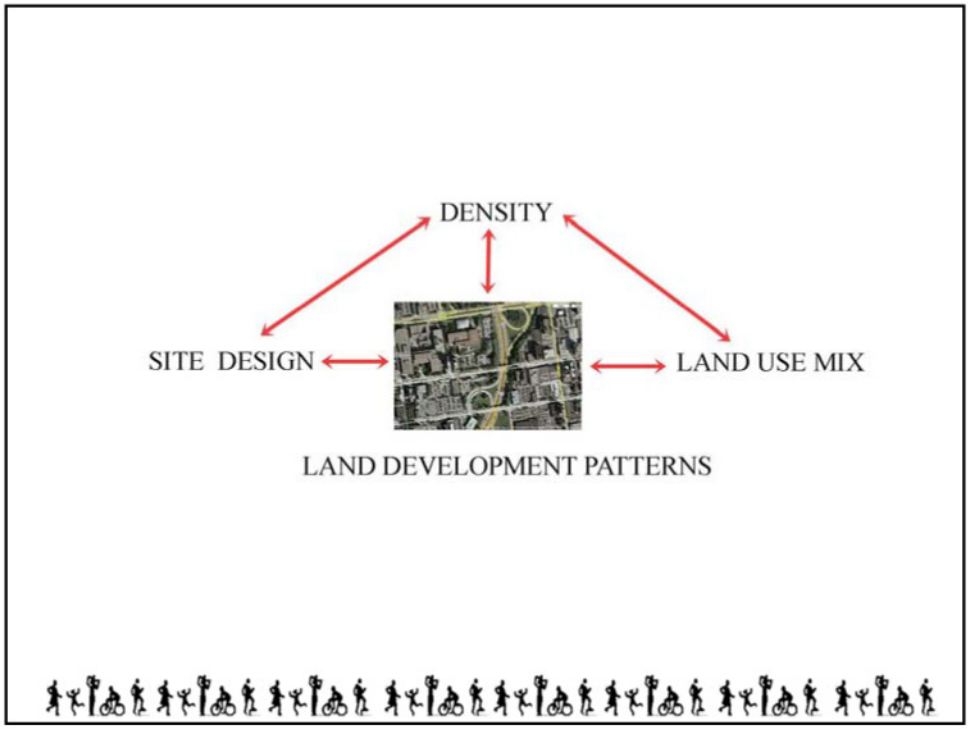
  Access and linkage of pedestrian/bicycle facilities to destinations

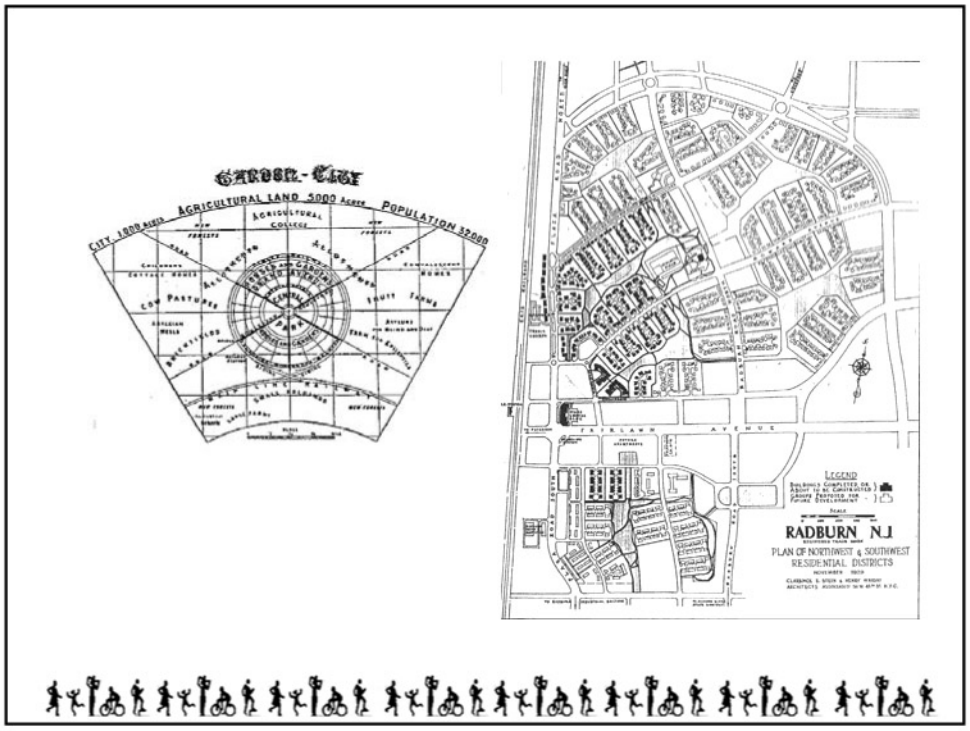
  Existence of competitive transportation alternatives

Source: Federal Highway Administration, National Bicycling and Walking Study: Case Study No.1 (1994)

Relationship Between Built Environment, Physical Activity and Health



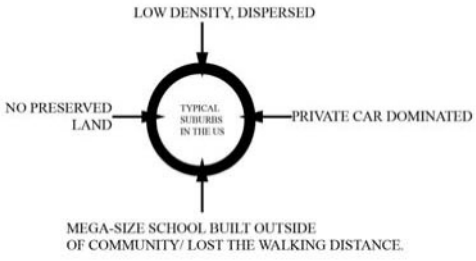

DENSITY
SITE DESIGN
LAND USE MIX
LAND DEVELOPMENT PATTERNS

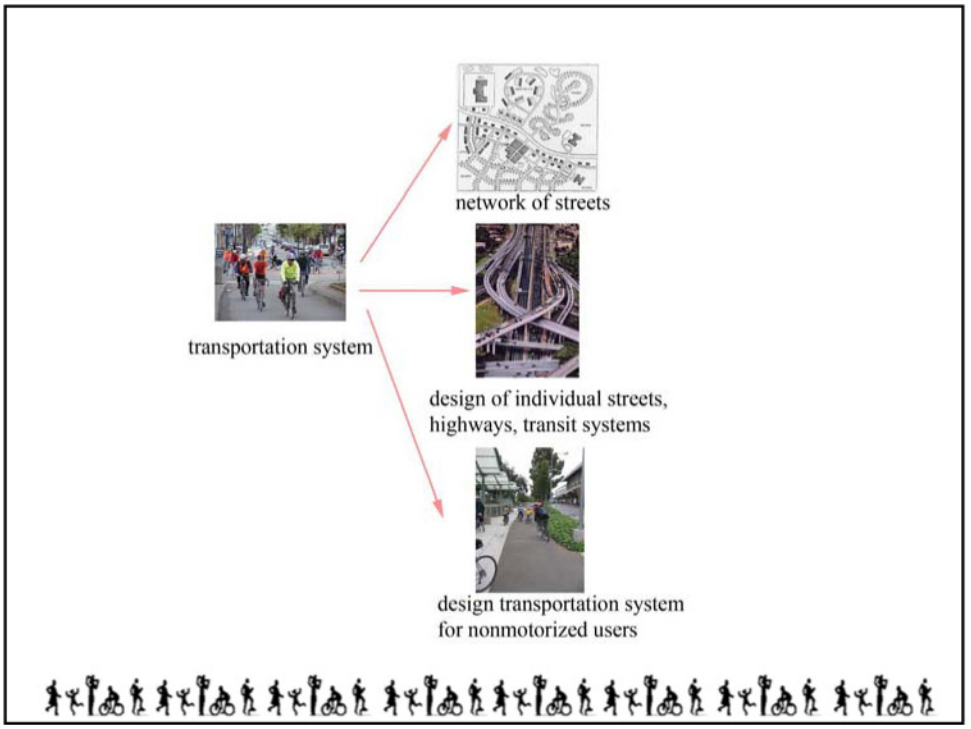

GARDEN CITY
AGRICULTURAL LAND 5000 Acres
POPULATION 32000
RADBURN N.J.
PLAN OF NORTHWEST & SOUTHWEST
RESIDENTIAL DISTRICTS

- EAST LAKE COMMONS, GA

- •COMMUNITY BUILDING, COMMUNITY GARDENS, VILLAGE GREEN, WOODLAND
- • TOTAL SEPARATE FOOT TRAFFIC FROM MOTOR TRAFFIC
- • WALKABILITY: 5 MINUTES WALK FROM HOME TO PARKING
- •CONSERVATION AND SUSTAINABILITY
- •SENSE OF COMMUNITY

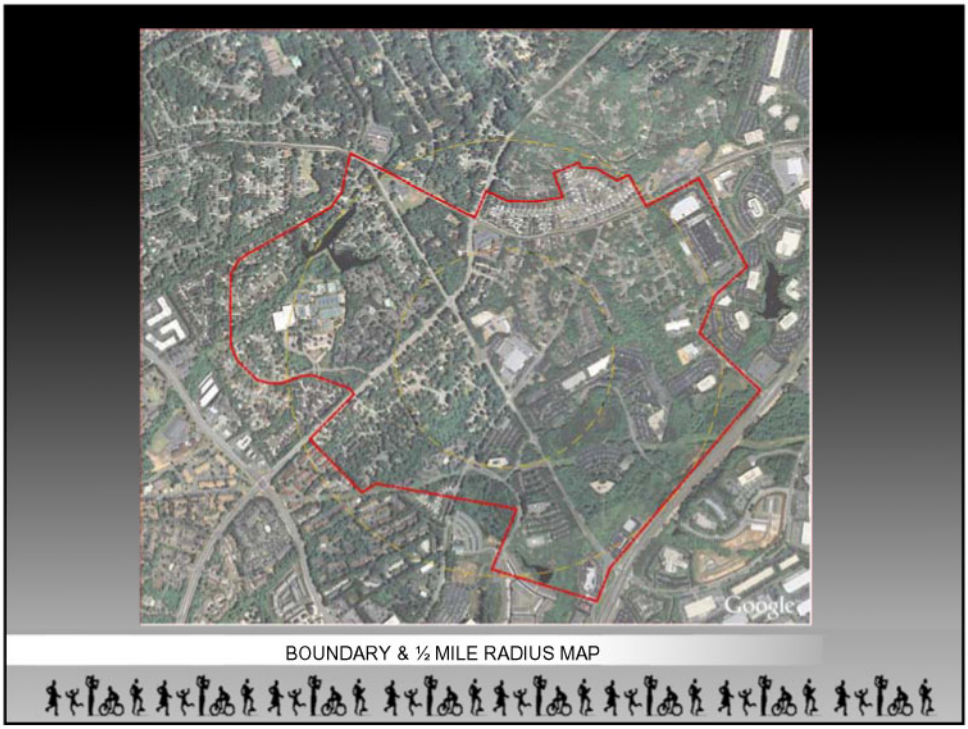
SUBURB CHANGES



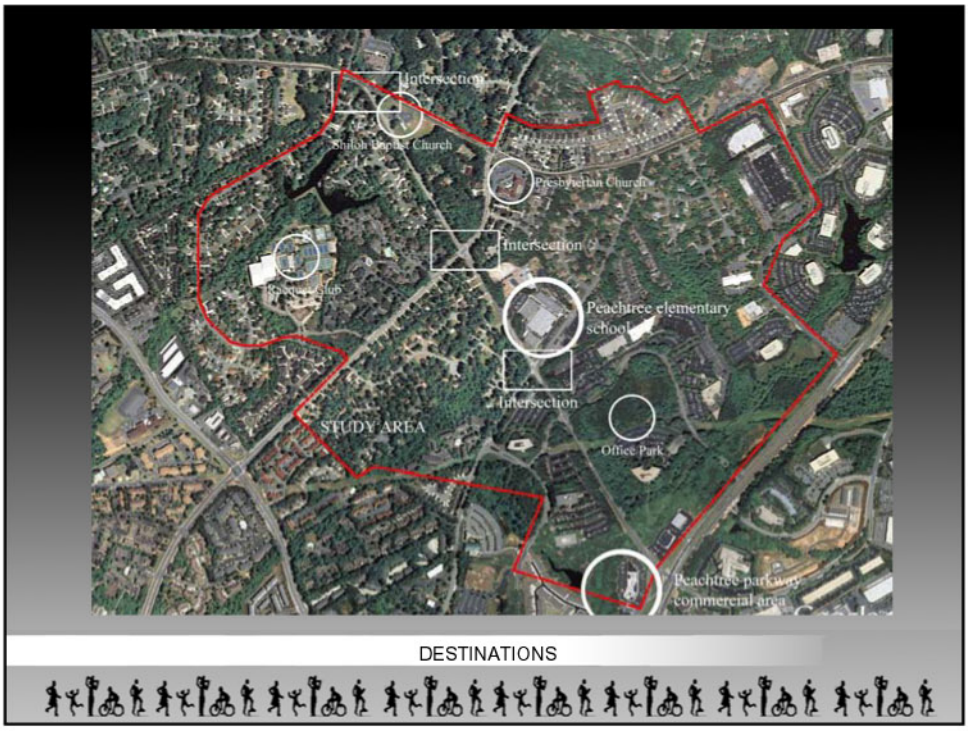


- DESIGN PRINCIPLES

1. Connectivity and Continuity
2. Variety of Destinations
3. Accessibility
   - Access to local transit
   - Small blocks and short trips
   - Accessible to all users
   - Easy to use
   - Site location
4. Safety and Comfort
   - Continuous separation from auto traffic
   - Security and visibility
   - Wide, continuous and well-maintained sidewalk
   - Street enclosure and human scale
   - Safe intersection crossing
   - Neighborhood traffic calming
5. Attractiveness

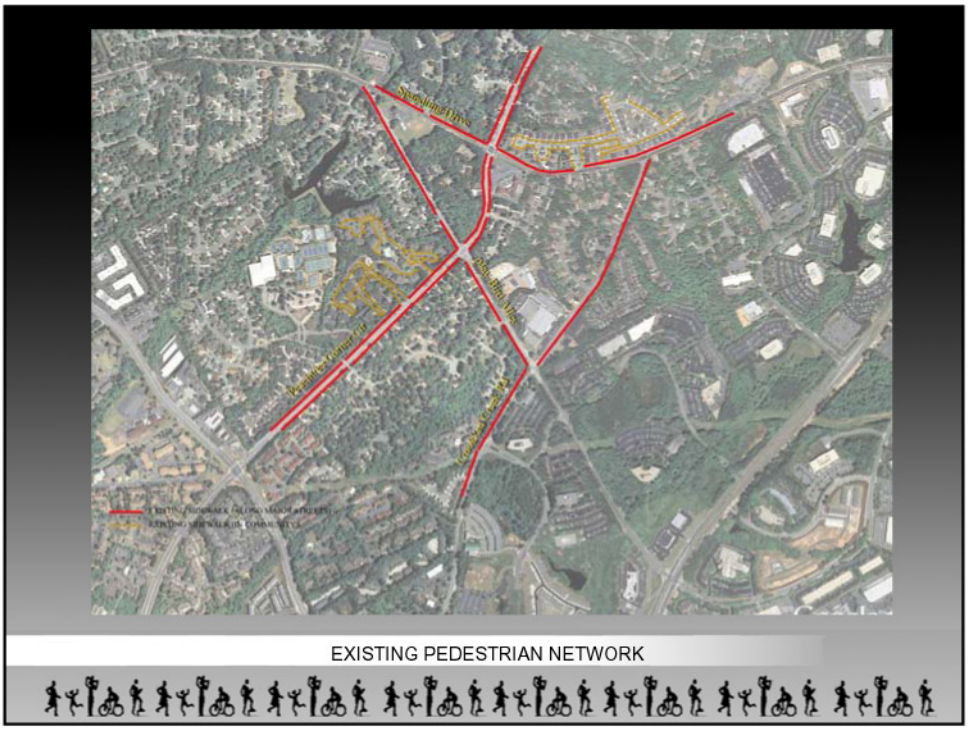


BOUNDARY & ½ MILE RADIUS MAP

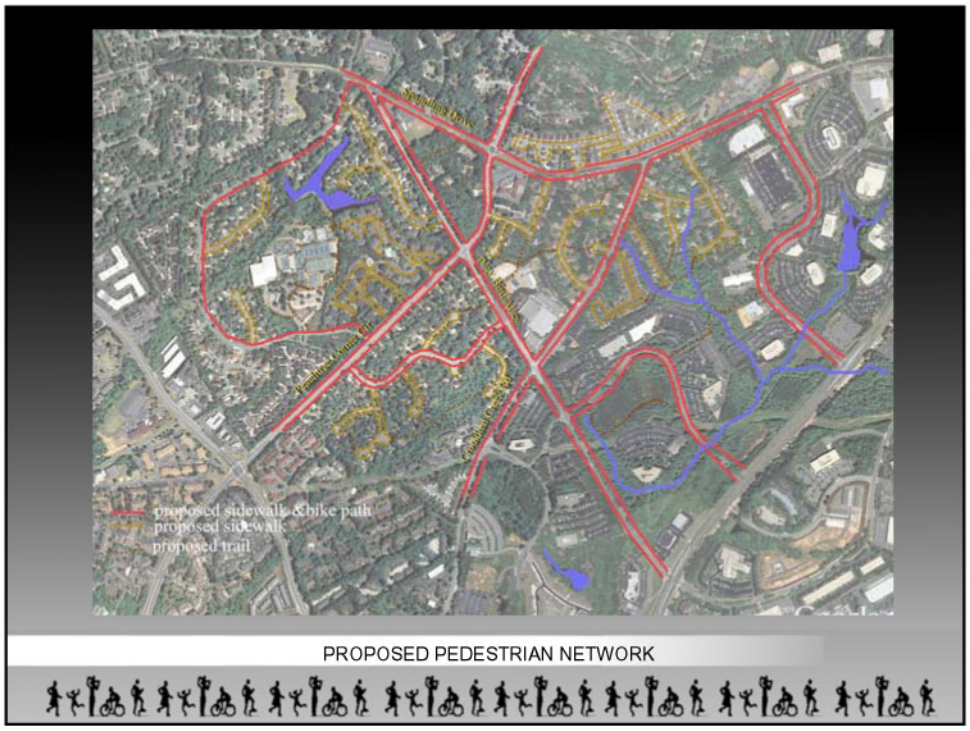


DESTINATIONS

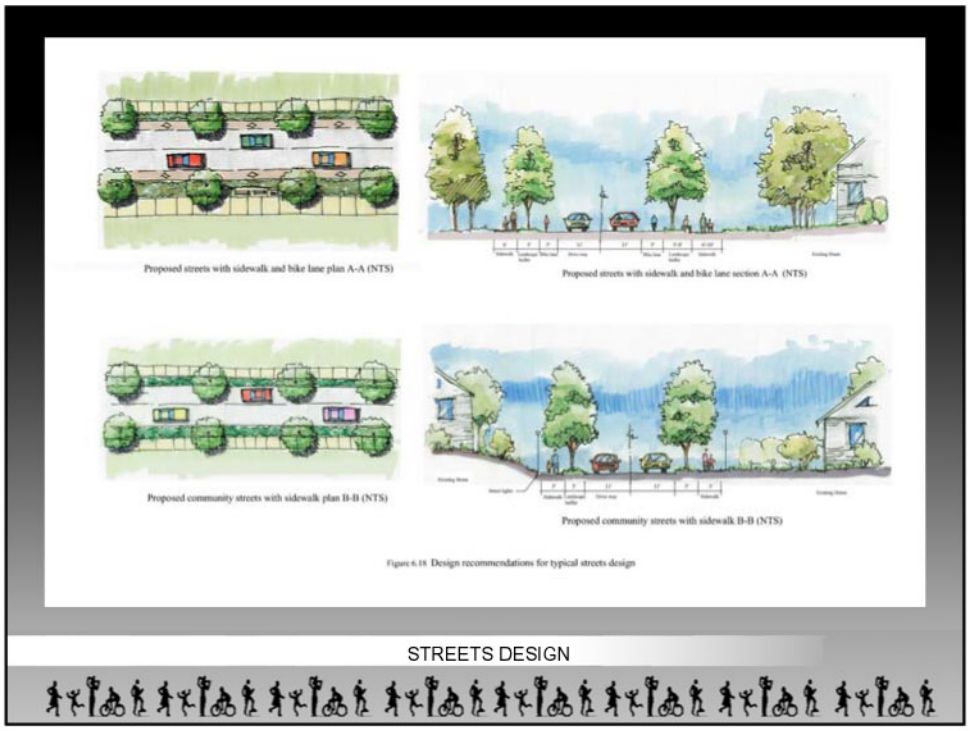
CORNER STORE



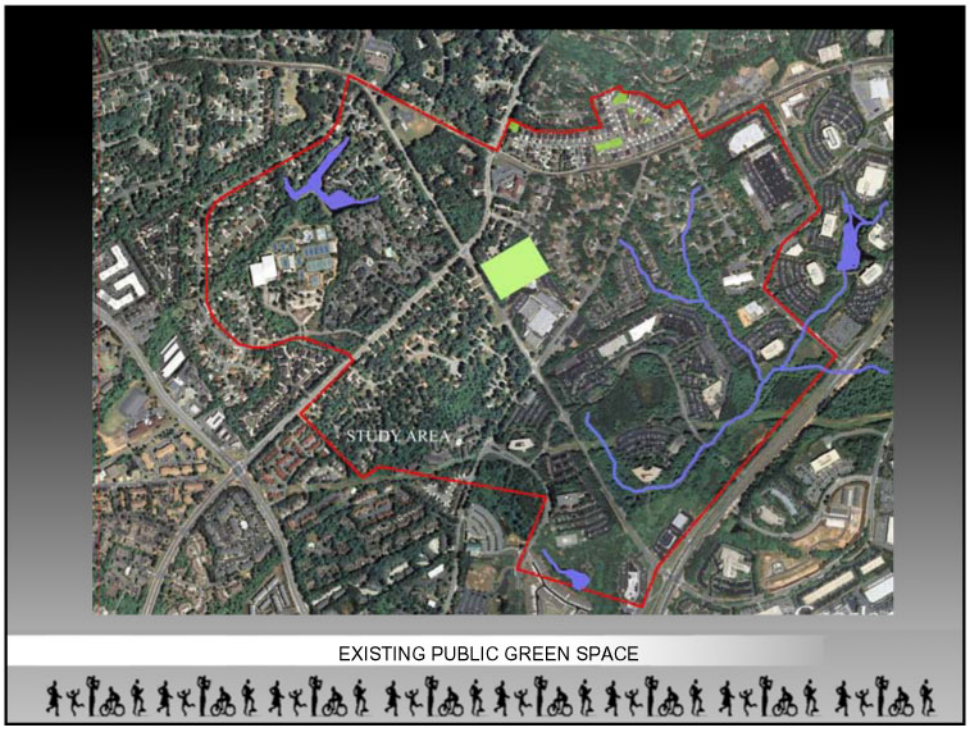
EXISTING PEDESTRIAN NETWORK



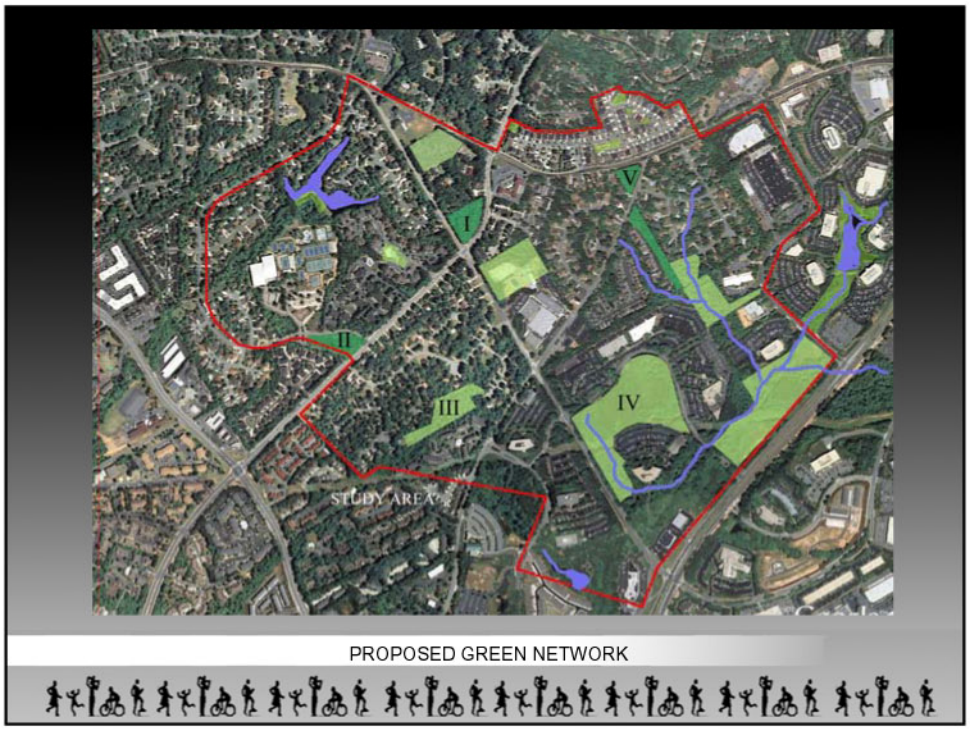
PROPOSED PEDESTRIAN NETWORK



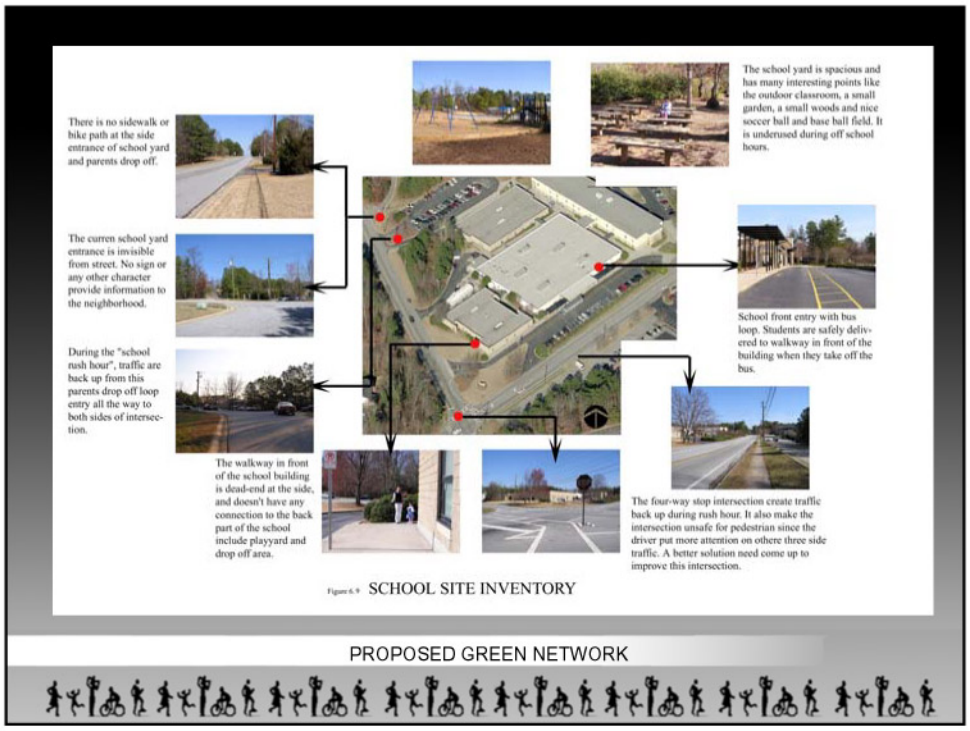
STREETS DESIGN



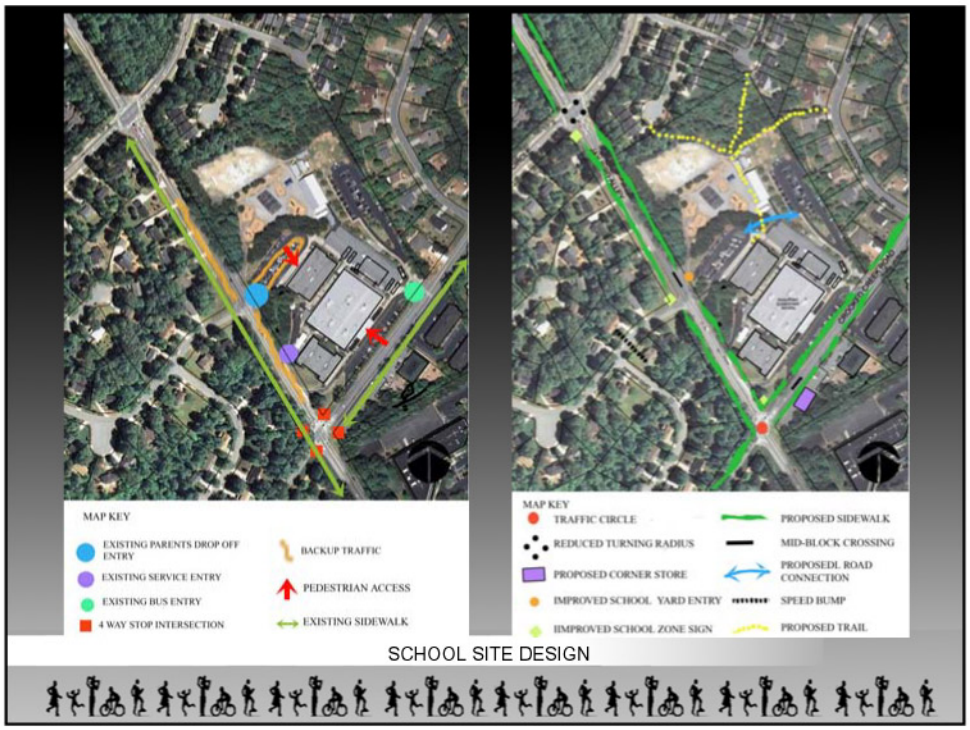
EXISTING PUBLIC GREEN SPACE



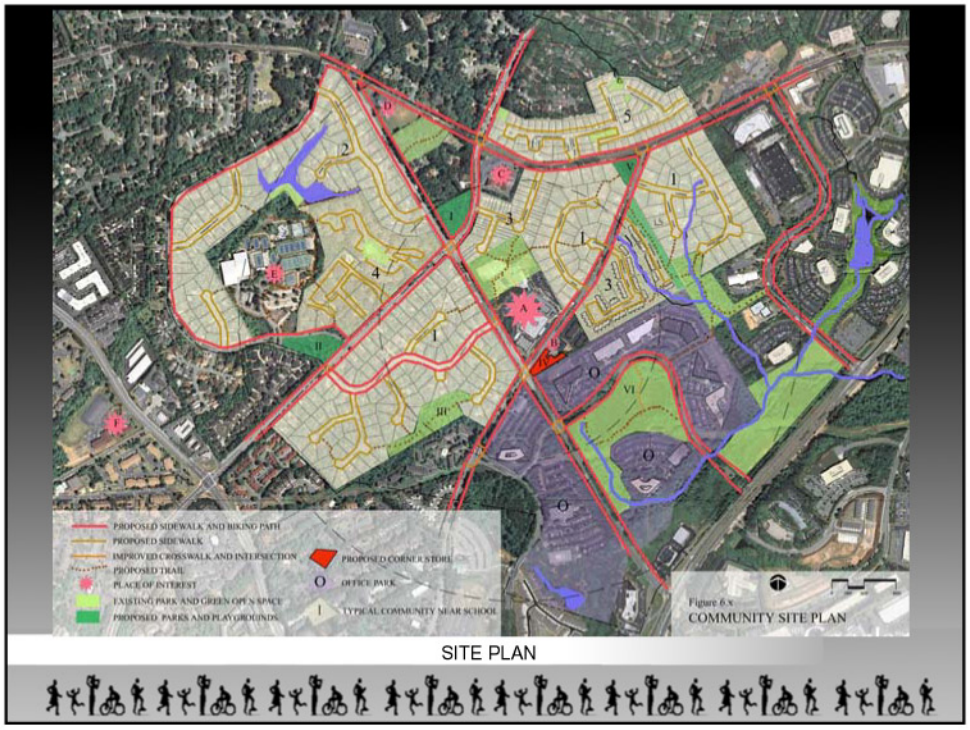
PROPOSED GREEN NETWORK



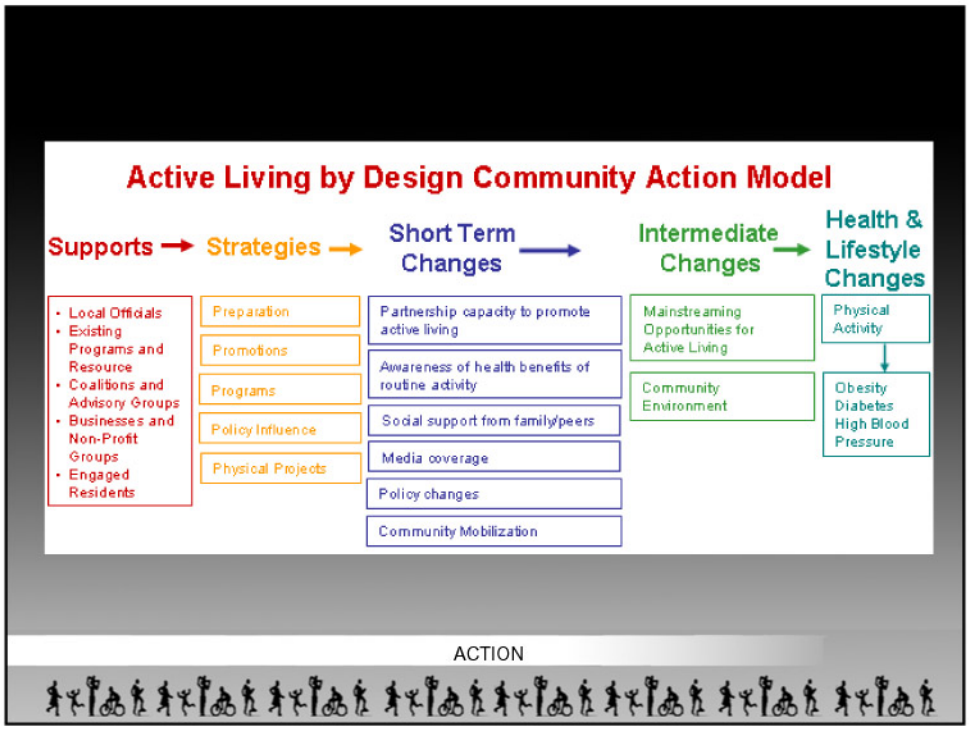
PROPOSED GREEN NETWORK



SCHOOL SITE DESIGN



SITE PLAN



ACTION


YOUR HELP CAN CHANGE FUTURE!