transportation analysis 5

The transportation analysis for Midtown Lynchburg was performed by Hall Planning & Engineering (HPE). The analysis included interviews during the April 2005 charrette with various stakeholders to identify transportation issues, as well as an examination by HPE of the area's transportation context. In addition, HPE studied traffic speeds and street designs in a sample of Lynchburg locations, conducted interviews with City Officials in Public Works, the Fire Department, the Police Department, and the Virginia Department of Transportation (VDOT), and prepared a Synchro computer analysis of the traffic system. This chapter includes information on specific analysis techniques and initial conclusions in regards to improving the Midtown transportation system.

THE TRANSPORTATION CHALLENGE

The City of Lynchburg possesses a largely intact pre-World War II network of interconnected streets. The Midtown study area is almost exclusively this type of system. Late 20th century development along the outskirts of the city displays conventional auto-oriented road systems with low levels of walkability, and this is seen in the western reaches of the Midtown study area, but the bulk of Midtown and neighboring in-town areas retain a basic framework friendly to pedestrians. These areas possess sidewalks, narrower street widths, short blocks, and lower traffic speeds which are major contributors to good walkability. From a transportation planning context, the planning team recognizes four primary destinations that anchor local trip patterns in the study area: Lynchburg General Hospital, Miller Park, Lynchburg Memorial Library, and Lynchburg College. In addition, there are several roads that carry traffic through the area on the regional expressway system. Balance is essential to all Midtown planning; the goal should be to provide adequate access and circulation for the local and through motor vehicle trips while simultaneously increasing the inherent walkability and livability of the area.

The planning team has identified the following issues as relevant to meeting this challenge:

1. Specific vision for Midtown urban design patterns
2. Walkable thoroughfare design
3. Context-sensitive design of the Crosstown Connector
4. Completing the thoroughfare network
5. Providing for emergency vehicle access
6. Transit

1. MIDTOWN URBAN DESIGN VISION

Much of America's suburban land development pattern results from street and highway networks dictating its structure. Highways designated as arterials change little as they approach developed areas. Generally speeds drop from 55 to 45 or 35 miles per hour (mph), however, on-street parking is usually not allowed in emerging areas and is often removed from older areas. Arterial street designs, by definition, tend to exclude side streets of limited volume, leading to longer block size (600 to 1,000 feet) and higher speed 45 mph, both of which cause difficulty for pedestrians.

To achieve urban places that encourage (and thrive with) pedestrians as part of the mobility mix, the patterns of proposed development must be specified first, during the community planning stage. It is important to note that land use decisions should be the first priorities for cities, with suitable transportation planning to follow. Then, transportation plans for balanced mobility can be crafted with walkability considered first and vehicle mobility second. This is not to imply that motor vehicle mobility will be dramatically reduced, but that pedestrians, being exposed to the open environment are more vulnerable than when they are drivers, and solutions for their comfort are more complex. Often, greater walkability yields only small reductions in vehicle capacity, even though vehicle speeds are lower. Generally more streets per square mile result from a more open network and drivers can avoid the degree of peak hour congestion that occurs when a limited number of large streets break down.

Midtown's transportation network is based on a recommended vision enumerated by the design team, of mixed-use, walkable areas with greater diversity of pattern than currently exists. It includes new links to reduce pressure on key intersections, small blocks, central and outlying "Village Center" districts and many other features. A balance is achieved by land use patterns guiding transportation design.

Langhorne Road

Kemper Street

2. WALKABLE THOROUGHFARE DESIGN

HPE found the streets in the Midtown area, by and large, continue to have their historical walkability features. The blocks and streets are appropriately sized and designed to encourage walkability, and sidewalks are generously provided. The planning team witnessed many instances of people walking from the store, families walking together to various destinations, and people walking to church as well. The existing thoroughfare system allows for walkability, however, to improve walkability the area needs a greater variety of destinations to which to walk. While churches, a park, the library, and a school are present, there could be more commercial development to encourage greater walkability for both shopping and employment.

As Midtown undergoes a revitalization process, the most important consideration is to preserve the existing levels of walkability. Next is to increase the walkable destinations in the area, which thereby lessens traffic.

As new streets are added or existing streets are improved, walkability can be maintained through careful application of walkable street sections. Figure 1 is the recommended street section that Hall Planning & Engineering (HPE) has designed to address some of the unique needs of the Midtown area. This street section includes walkable features such as narrow lanes and wide sidewalks, but also provides for emergency access (described in greater detail below.) This is the walkable street section that should be used whenever street improvements are made in the Midtown area.

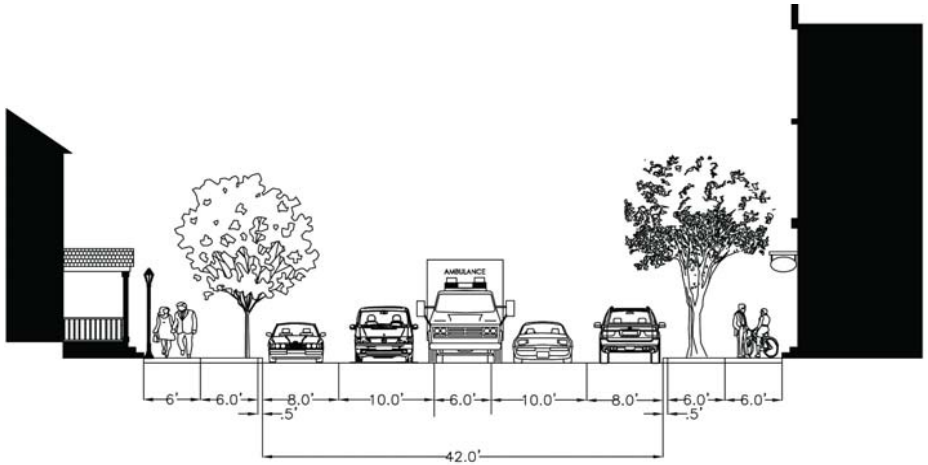


Figure 1: Proposed New Street Section for Midtown

This street section is based on an existing street design along Rivermont Avenue in Lynchburg. This street was tested for speeds and walkability by HPE and found to be very effective, with a few recommended changes to reduce travel speeds. The proposed street sections are based on the Right-Of-Way and lane configurations of the Rivermont Avenue street section.

Creating Walkable Streets

Transportation facilities and systems provide excellent tools to support the future vision for Midtown, as set by the community. Many components of the urban fabric, including transportation, combine to yield that special "sense of place" - that qualitative sense of comfort and value one feels in a given urban setting. The street is central to this experience as it forms the public realm within which we move, live and play out our daily lives.

Pedestrians are especially sensitive to the quality of public space, since they move through it without the usual protection afforded by home or auto. Due to the sometimes challenging urban and suburban environment for pedestrians, the automobile is perceived as the safe mode of travel for many. The down side is the limited potential for healthy exercise, interaction with friends, enjoyment of nature, freedom from parking and other benefits central to the pedestrian experience.

Travelers with a choice of riding or walking therefore must have an excellent "street" experience to encourage them to venture forth from modern automotive comfort. Captive walkers, those unable to afford a car or operate a vehicle, although less sensitive to street walkability, deserve the best experience the public can provide. Walkers at the workplace can accomplish many daily tasks on foot if the setting and scale are right. The classic walk to work is rare today and is considered icing on the cake for walkable communities; i.e. the last component to evolve for mature pedestrian places.

What factors contribute to an excellent pedestrian experience? Observations and design experience suggest the following prioritized features.

1. Small Block Size!
2. Buildings Fronting the Street
3. Mixed Land Use
4. Lower Traffic Speeds
5. On-street Parking
6. Interconnected Streets
7. Sidewalks
8. Lower Traffic Volumes
9. Street Trees
10. Narrower Streets

These parameters have proven themselves successful in the field. When a majority of these are combined in one location, pedestrians are routinely seen. Midtown's walkable streets are no exception to this experience. Therefore, these concepts are applied to support walkability in Midtown.

3. CONTEXT SENSITIVE DESIGN OF THE CROSSTOWN CONNECTOR

The Crosstown Connector is a Virginia Department of Transportation (VDOT) transportation project designed to provide greater speed and capacity for vehicles traveling through the Midtown area. The first official mention of the Crosstown Connector was in the "General Land Use Plan for the Langhorne Road Area" by the City of Lynchburg Planning Commission in 1954. The proposed Crosstown Connector is shown in plan (map #4) and identified as a dotted line called "CROSSTOWN THOROFARES & CONNECTORS". While the plan for the connector has been studied and designed for decades, portions of the project remain in the planning stages. The current proposal for the Crosstown Connector would widen key roadways in Midtown in an attempt to reduce travel times and congestion levels along key corridors. Specifically, the plans call for the four and five-laning of Kemper Street, Park Avenue, and Lakeside Drive as these streets pass through Midtown.

The roadway design featured in the VDOT proposed Crosstown Connector plan is appropriate for a rural or suburban context, in which there is no existing street system or urban fabric to disrupt and the fast transport of automobiles is the only goal to be accomplished. However, this road design is not optimal when other factors are considered, such as walkability and the prosperity of the areas surrounding the roadway.

Experience with these types of roadway designs in other cities throughout the 20th century has generally supported the notion that these designs are harmful to neighborhoods and urban areas. This is especially the case when the new roads disrupt an existing grid pattern such as that in Midtown. Past experience has been that this road design often brings blight when it passes through existing urban areas because residents and businesses which rely on a calmer street network cannot suceed on highway design roads. Wide, fast roads of the type proposed for the Crosstown Connector invariably divide neighborhoods and ultimately create as much or more congestion than they initially alleviate. Widening roads does not typically reduce traffic congestion; more cars fill the roadway and congestion continues. What is preferred is to have multiple routes and multiple modes of transportation so that people have a choice in getting from here to there.

In addition, existing traffic counts and projections provide at best weak support for the need for this type of road from a capacity standpoint. Figure 2 indicates the most recent traffic counts available at the time of the charrette (April 2005). These counts were loaded into a Synchro computer traffic analysis program and "grown" by 10% to match projected traffic levels. Under this scenario, the existing traffic system continued to operate during the peak hour, though with some additional delay along the Crosstown Connector Corridor. The same scenarios were also conducted for a modified traffic network based on the proposed new street connections from the Midtown Plan. The traffic system worked as well or better than the existing system under that analysis. The Synchro analysis is covered in greater detail in the Appendix C.

For these reasons, HPE recommends that the Crosstown Connector be constructed not as a high-speed, rural-style highway, but instead be constructed in a context-sensitive design as an urban Boulevard. By improving and increasing the existing street network, additional traffic can be moved through the Midtown area efficiently without also destroying the existing and vital urban fabric (see Figure 2). The following key modifications to the current Crosstown Connector plans would be necessary under the Midtown Plan:

- Due to past City commitments and expectations of stakeholders, it was agreed to proceed with the four and five laning of Kemper Street to Fort Avenue, and Park Avenue from Fort Avenue to Langhorne Road. There is still the opportunity for the widened street to provide for pedestrian comfort and mobility. The design team identified several redevelopment opportunities for this corridor that could provide a walkable location, if the four / five laned street is appropriately designed (street trees, sidewalks, and narrower travel lanes).

- On the remaining sections of the Crosstown Connector – Park Avenue (west of Langhorne Road) and Lakeside Drive (between Memorial Avenue and Old Forrest Road) – reconstruct the street using the recommended street section. HPE's Synchro traffic analysis (described in greater detail in Appendix C) indicates that a two lane section on these streets will provide for automobile conditions comparable to the proposed Crosstown Connector four lane sections, and no worse than the existing conditions.

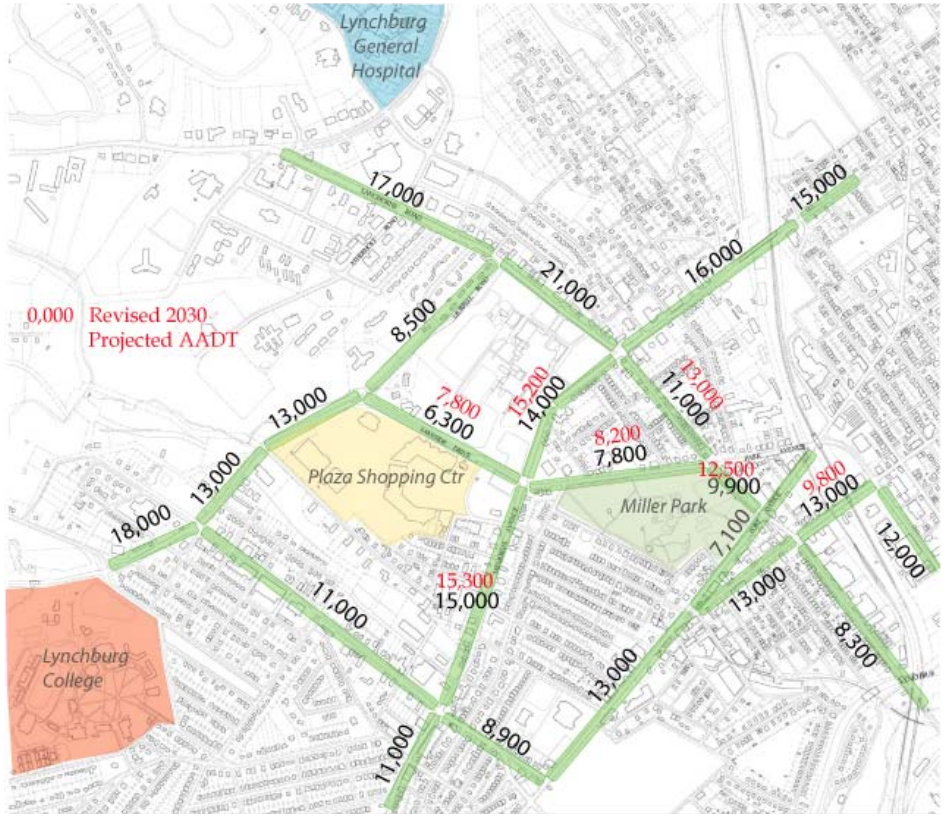


Figure 2: Traffic Counts along Major Corridors in Midtown Study Area (in black). Numbers in red represent the average annual daily traffic for the year 2030.

Proposed design for Lakeside Drive at the Plaza

For more information on Context Sensitive Design, please refer to “A Walkable Community”, FHWA-SA-00-010 or visit www.fhwa.dot.gov.

- Continue the thoroughfare network by connecting Allegheny Avenue with Atherholt Road and extending Lakeside Drive north from the intersection with Murrell Road to also connect with Atherholt Road. These connections will relieve pressure on the Crosstown Connector and will allow traffic to flow through Midtown on a small street cross section.

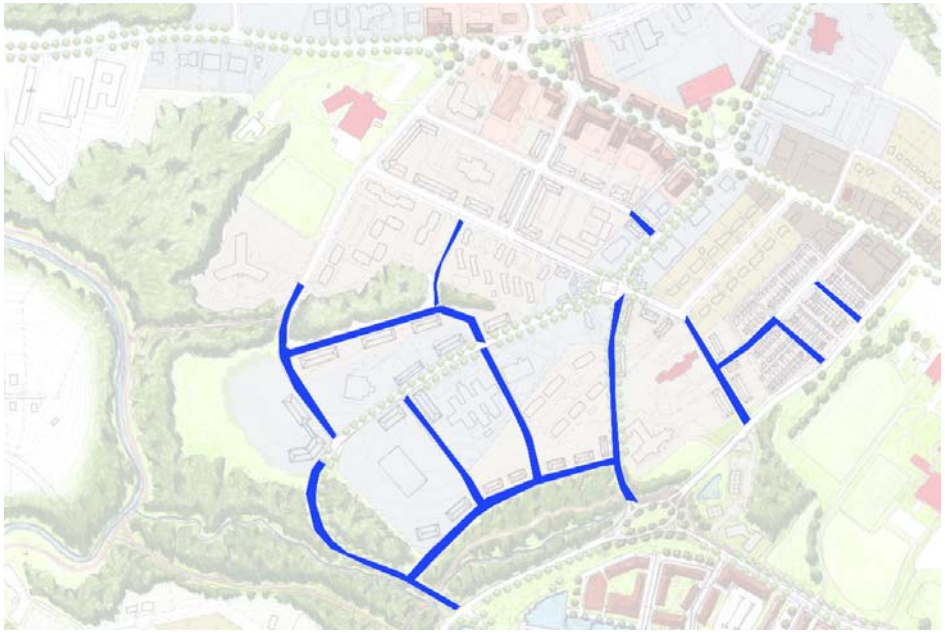
These concepts can be collectively considered "context sensitive design". Context sensitive design, as defined by the Federal Highway Administration, is an engineering approach that recognizes a wider variety of requirements for roadway design than simply providing for automobile capacity. By recognizing the surrounding street environment and designing the street to augment that environment, context sensitive design allows the construction of streets that enhance a community's quality of life. This is especially important when re-designing a street in an urban setting where a community has already been established around an existing street design. Although any street construction is disruptive, context sensitive design allows a balance between providing for additional automobile capacity and minimizing the long-term negative impacts to the surrounding community. HPE recommends that a context sensitive design approach be used for the Crosstown Connector.

Figure 3: Proposed Thoroughfare System for Midtown

4. COMPLETING THE THOROUGHFARE NETWORK

Although the Plaza is now located in the center of the Midtown area, at the time of construction following WWII it was "on the edge of town". Development patterns since the 1950's have been more automobile-oriented, with longer blocks, lower density, and faster roadway design speeds. Consequently, the newer street network to the north and west of the Plaza is generally less connected and less walkable than the older areas to the east and south. The design team identified two possible new streets that could be used to improve the connectivity to the northern portion of Midtown (especially in the direction of the hospital.)

These connections are important for two reasons. First, they provide a finer network of streets with greater options for automobile travel. This reduces the need for wider arterial streets by maximizing the alternative route choices for automobile drivers. Second, the finer network of streets increases the walkability of the thoroughfare network by providing shorter routes for pedestrians and bicyclists.



A new roundabout has been created at the intersection of Murrell Road and Lakeside Drive. The extension of Atherholt Road and the creation of several new streets directly link the Plaza site to the Medical Arts District. With the expansion of the street network, the door is opened for several redevelopment and infill opportunities in the area. Another additional benefit is improved circulation in the area. As the existing apartment and medical office buildings in the neighborhood become obsolete, these sites could be redeveloped with buildings oriented to the street.

The recommended connections go from Allegheny Avenue and Lakeside Drive north to connect to Atherholt Road (shown in Figure 3 as dashed lines). These new connections would provide additional access opportunities to and from the hospital. At the intersection of Lakeside Drive, Murrell Road, and the new Atherholt Road extension, an elliptical roundabout pattern could be constructed to improve the traffic flow at the existing intersection. The street section shown in Figure 1, with appropriate modifications for on-street parking, is recommended for these new streets. These connections are critical for access to Lynchburg General Hospital, particularly for those traveling from the west.

In addition to the walkable thoroughfare streets, Lynchburg has an opportunity to create greater walkability through the non-motorized thoroughfare system. The design team identified a way to connect the existing Blackwater Creek trail system through the redeveloped Midtown area using a multiuse path along the west side of the Plaza. The bike trail would connect the Blackwater Creek Trail System to the Kemper Street Station. With the urban area, this system would be used for transportation as well as recreation. The path connection provides an even finer level of walkability and bikeability for the Midtown area.

5. EMERGENCY VEHICLE ACCESS

The proximity of Lynchburg General Hospital provides an important stimulus for economic investment and redevelopment in Midtown. In designing the thoroughfare system for the area, the presence of the hospital presents two requirements: first, the system must account for the common presence of emergency vehicles such as ambulances. Second, the system must provide clear travel direction for visitors and residents seeking the hospital.

Walkable streets provided in a traditional neighborhood design context are invariably narrow streets, with parking on one or both sides. This design is safe and appropriate for areas where emergency vehicle access is infrequent. In such neighborhood areas, traffic is expected to be light and emergency vehicle passage can take place with little or no interference. On a busier city street, however, and with the proximity of a hospital that will generate routine and relatively frequent emergency vehicle passage, the narrow Traditional Neighborhood Development (TND) walkable street design can be modified to further accommodate safe travel of emergency vehicles.

Figure 4: Rivermont Avenue Street Section is the Model for the Proposed Midtown Street Section

The street section that HPE has recommended, shown in Figure 1, provides for safe and routine passage of emergency vehicles while maintaining the traffic-calming effects of narrow lanes and on-street parking, using the 45' street pavement width that already exists on Rivermont Avenue, one of Lynchburg's premier streets (Figure 4). The proposed section incorporates 8' parking lanes, one 10' travel lane in each direction, and a 6' foot center area that can be traversed by emergency vehicles. This area will be either cobbled or equipped with a contrasting pavement color to discourage regular use as a travel lane, but the area can be straddled by an emergency services vehicles. Automobiles will pull to the side to provide room for the emergency services vehicle to pass safely at speed.

HPE also interviewed the Lynchburg Fire Department and took measurements and turn radius dimensions from the Department's vehicles (Figure 5). The Fire Department indicated that they routinely use the existing Lynchburg street system and do not regard the street widths as particularly difficult. They also indicated their general agreement with the proposed street sections.

In addition to providing emergency services vehicle passage, this street section will also assist in orienting visitors and patients to the hospital. Streets that lead to and from the hospital will be designated to receive the new street treatment. In addition, signage will be provided indicating hospital direction. But most importantly, for this purpose, the general character, attractive appearance, and directional clarity of the redesigned

Figure 5: HPE staff measured Lynchburg Fire Department vehicles to create accurate turning specifications.

thoroughfare system will help create a "corridor of confidence" to direct visitors and patients to the hospital.

While Lakeside Drive, Langhorne Road, and Park Avenue represent three of the primary streets in Midtown Lynchburg, there is little visual indication of their importance. The borders between public and private space are ill-defined, and a number of properties are in disrepair or are vacant lots. This has resulted in a negative image of certain sections of Midtown for those who travel these streets on their way to the hospital or points beyond. The industrial image of Kemper Street and parts of Park Street can be confusing to first time visitors who think they have made a wrong turn to get to the hospital.

Citizens and City officials expressed concern over the physical appearance of VDOT's redesigned streets. In response to these concerns, the design team produced alternative design concepts at several key locations. In each case, an equal amount of attention was paid to the design of the public and private realms revealing how these streets can become a "corridor of confidence" for Midtown.

6. TRANSIT

Hall Planning & Engineering (HPE) studied the transit system in Lynchburg and met with transit patrons and the Director of the Greater Lynchburg Transit Company (GLTC). The following items were identified by GLTC and the planning team as most important to the study:

1. The main transfer center is located at the Plaza, adjacent to the public library. The current design of the transfer center, as shown in Figure 6, requires patrons to cross an active street in order to transfer between buses and walk to surrounding businesses and residences. This presents a safety hazard for patrons. However, the City currently rents the space for the transfer center from the Plaza owners, which makes the construction of a more suitable facility financially challenging. Federal Transit Administration (FTA) funds that could be used to build a new facility cannot be secured for rental property.

2. GLTC patrons desire continued access to the Plaza, both in its current condition and as the future vision emerges. The Plaza is a center Midtown location which attracts patrons and this will continue regardless of the future disposition of the Plaza. A great concern of GLTC patrons and certain Midtown residents is that transit would be excluded entirely from the re-designed Plaza, thus excluding transit users from any benefits of redevelopment.

Figure 6: The current bus transfer facility, located at the Plaza, requires patrons to cross an active street to transfer between buses.

3. GLTC has decided to develop a City-wide transit study, expected to get underway in late 2005 and be completed in 2006. The study will explore every aspect of public transit including, 1) the best location for a transit center or transit centers, 2) the potential for quieter, smaller, and more fuel efficient vehicles, 3) the best accessibility features for all transit customers including those with disabilities, and 4) the potential for alternative routing.

During the charrette of the Midtown Area, a conceptual transfer center layout was studied for better safety and access. However, it was decided that the GLTC City-wide transit study would have to be completed before any transit center redesign at the Plaza site could be properly incorporated. The redesign would have to be balanced with the final conclusions of the transit study and the investment requirements for future redevelopment of the Plaza site.

In the mean time, preliminary Midtown Plan analysis and discussions with GLTC revealed the following:

- If it is determined that GLTC maintain one transit transfer facility for the entire service area at the Plaza site, then it would require close to an entire city block to be done properly. Items such as lay over facilities, bathrooms, ticket booths, supervisor office, etc. would be in this central transit center. This is more area than the current Plaza layout can accommodate. It is also more area than the design team thinks would be available to attract investment in the Plaza site.

- A transit transfer facility that takes up an entire city block would generate significant bus traffic. Therefore, it would be very important to coordinate the needs of any future investors, developers, retailers, or other businesses with the transit-user community. Noise and pollution from large buses must not deter ridership or business investment.

- To maximize FTA funds, the City would need to purchase the property for a transit facility, which would further reduce the amount of property available for private development. Property ownership and the market demands of investors are two important factors for future redevelopment.

Transit is considered important to the success of Midtown redevelopment. The walkable village center design alone will increase the usability of the Plaza area for transit patrons and ensure continued access to whatever redevelopment occurs. To insure that patrons can still reach the Plaza, at a minimum, sufficient bus lines and headways below 30 minutes are recommended by the design team. The block and street structure of the redesigned Plaza would easily accommodate bus stops throughout the location, providing safety and maximum flexibility to the transit system in terms of bus stop location.

For these reasons, the design team, in consultation with the City, determined that the main bus transfer facility would be better re-located to another place, perhaps to the alternative location indicated by the GLTC Director.

Transit is still considered important to the success of Midtown redevelopment. The walkable village center design alone will increase the usability of the Plaza area for transit patrons and ensure continued access to whatever redevelopment occurs. To insure that patrons can still reach the Plaza sufficient bus lines and headways below 30 minutes are recommended. The block and street structure of the redesigned Plaza will easily accommodate bus stops throughout the location, providing maximum flexibility to the transit system in terms of bus stop location.

SUMMARY

By designing the desired land uses first and then creating a transportation system that serves those land uses, and by making walkability a central feature of the desired future land uses and transportation system, the Midtown Plan creates a thoroughfare system that is sustainable, moves traffic, and provides internal circulation in the Midtown area. The proposed system will allow regional transportation and create greater access to key Midtown destinations. The proposed street sections will allow routine passage of emergency vehicles and provide greater legibility and navigability through the corridor of confidence concept. Finally, the proposed alternative to the Crosstown Connector will move future traffic as well as the original Crosstown Connector concept, and will have the additional advantages of context-sensitive design, greater connectivity, and maintenance of the existing community fabric and walkable character.