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# Complete Streets Study Broadway Corridor in Fountain City

Knoxville, Tennessee

July 2009



Prepared for:



by:



G R E S H A M  
S M I T H   A N D  
P A R T N E R S

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# EXECUTIVE SUMMARY

This report documents a Complete Streets Study completed by Gresham, Smith and Partners in the Fall of 2008 and Winter of 2009. The purpose of the study is to make recommendations for transforming the Broadway corridor in Knoxville's Fountain City neighborhood into a complete street, with accommodations for all users. The study process was highlighted by a weeklong planning studio and workshop series in October 2008.

## What is a Complete Street?

According to the National Complete Streets Coalition, complete streets:

*...are designed and operated to enable safe access for all users. Pedestrians, bicyclists, motorists and bus riders of all ages and abilities are able to move safely along and across a complete street.*

Complete streets are a new way of thinking about how streets are designed, and may be put together a number of different ways, so long as they are intentionally designed around all potential users.

## The Broadway Corridor

The section of Broadway that is the focus of this study begins just north of I-640 at Old Broadway and ends at Colonial Circle. This stretch, which also known as US 441 and SR 33, runs through the heart of the Fountain City neighborhood and is considered the community's Main Street. One of Knoxville's first streetcar suburbs at the turn of the twentieth century, Fountain City and Broadway were once predominantly pedestrian-oriented places.

Broadway eventually expanded to accommodate a growing demand for automobiles both in Fountain City and growing communities to the north, such as Halls. Today, Broadway is a busy suburban corridor, carrying almost 45,000 cars per day. Complementary land uses in the corridor, including commercial/retail, parks, residences, schools and a library, however, mean that people still walk to accomplish daily tasks.

## Issues and Opportunities

An analysis of existing conditions on Broadway revealed several issues to be addressed by this study:

- Building safe, continuous bicycle and pedestrian facilities;
- Making intersections safe and accommodating for bicycles and pedestrians;





- Improving access to transit;
- Access to parks;
- Identifying more opportunities for crossing;
- Integrating with existing and future development; and
- Balancing multi-modal needs with vehicular mobility.

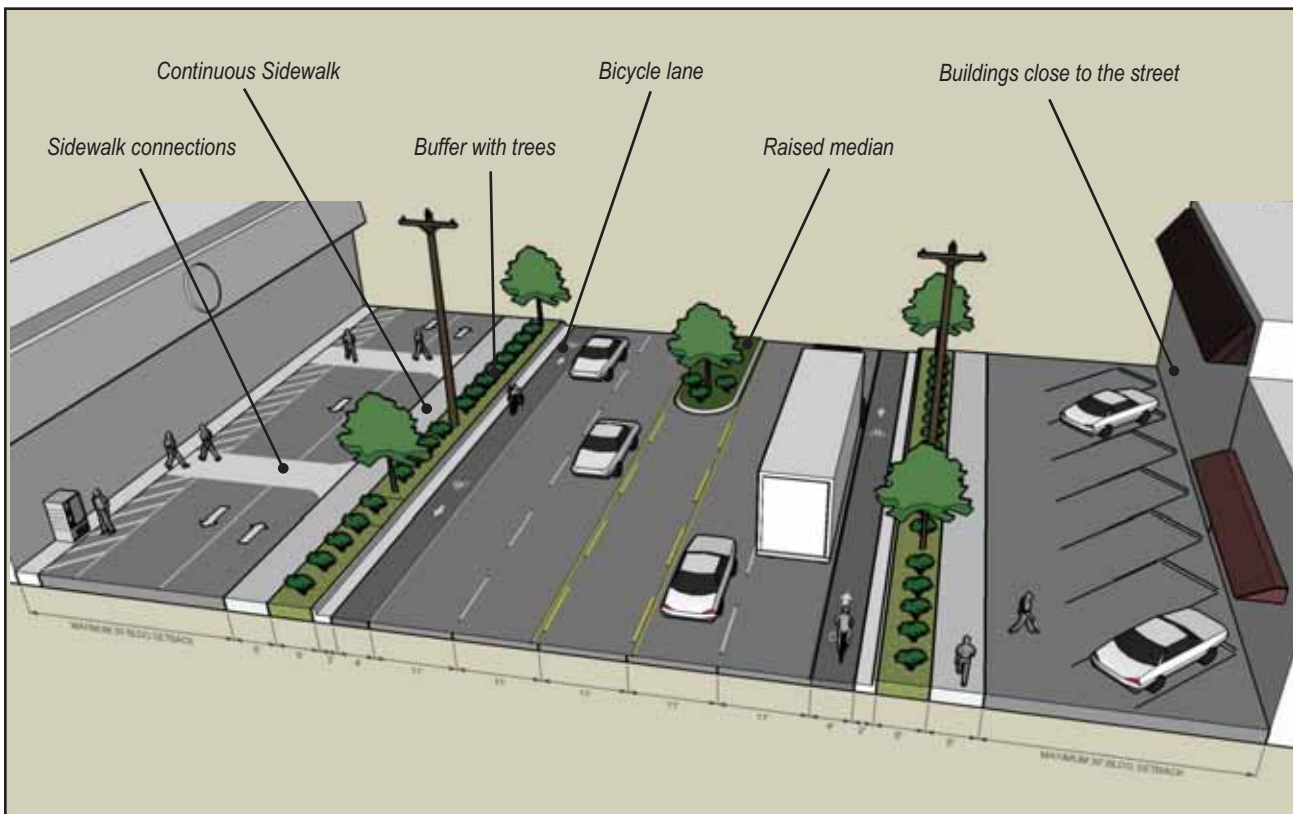
This issues were confirmed during an interactive public workshop in October involving residents, business owners and other stakeholders. Workshop participants identified three priority goals for Broadway:

1. Safe, comfortable environment for walking.
2. Safe bicycle and pedestrian access to parks and schools.
3. Safe, comfortable environment for bicycling.

## Corridor Vision Plan

The consulting team took into consideration the results of the existing conditions analysis plus feedback received at the opening workshop to make specific recommendations. The ultimate vision for Broadway results in the creation of a safe place for bicycles, pedestrians and transit riders,

## Elements of a Complete Street



while maintaining the corridor's motor vehicle mobility function. The vision includes a raised median, bicycle lanes, sidewalks, a planting strip with street trees and reorientation of buildings to make them more pedestrian friendly.

The recommended vision for Broadway, if implemented as a single project, would be very costly and potentially disruptive. Rather than try to implement the vision at once, the study recommends a toolkit of strategies, that will show immediate results and incrementally achieve the vision over time. The strategies begin with lower-cost options that can be implemented relatively quickly and progresses toward more costly strategies that will require more time. Public workshop participants were able to view the strategies and indicate their preference.

## Implementation

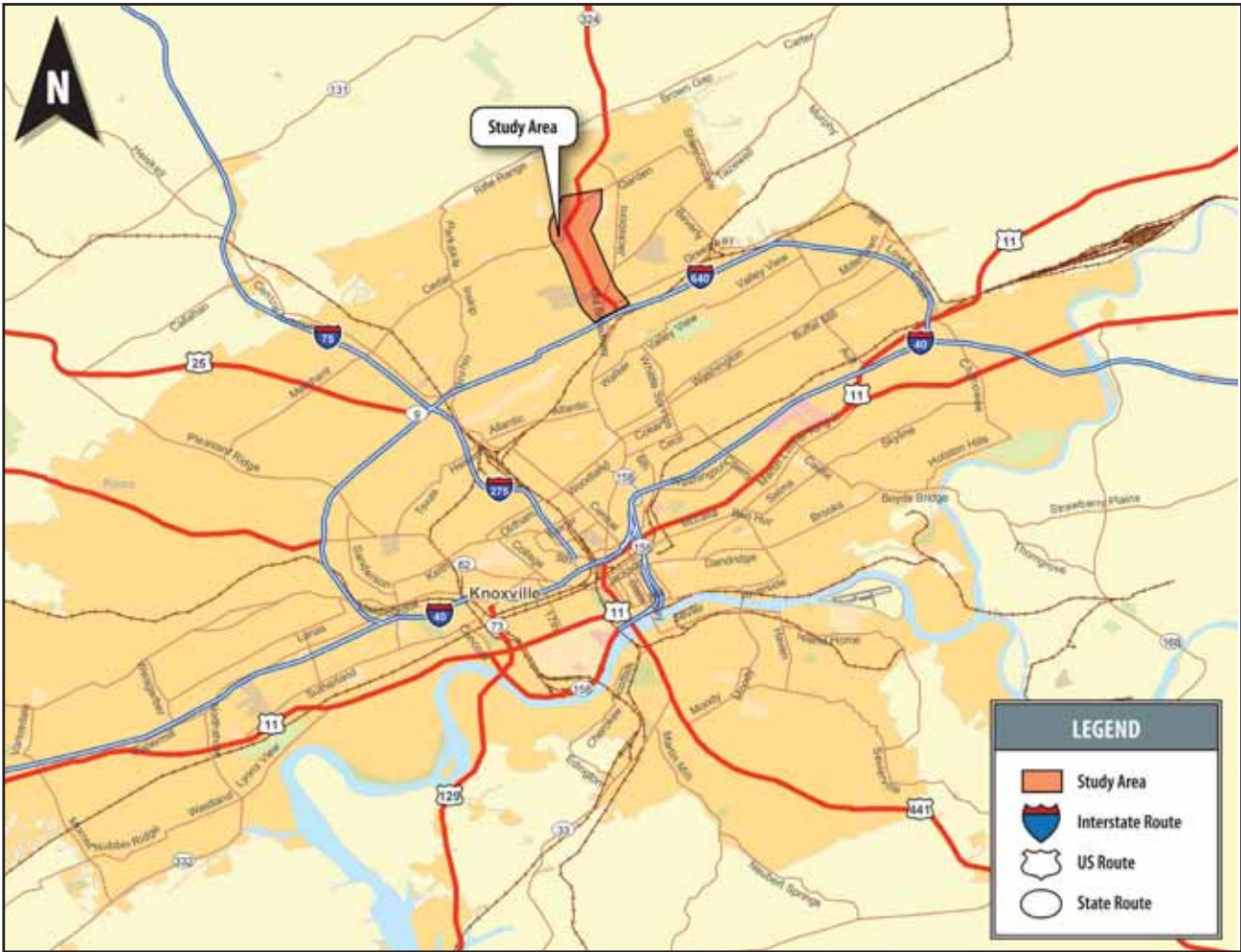
In sum, the total cost of the projects included in the toolkit of strategies is likely several million dollars. There is no specific pool of money set aside for funding the recommendations of this Plan. However, the important thing is that there be a plan and specific, tangible projects in place, so that funding vehicles can be actively pursued. This Broadway Complete Streets Plan meets that objective. A more practical and creative way to get some of the projects implemented is by tagging along with an already programmed project.

A long-term, continual approach to implementing the vision and strategies is through policy changes. Policies would take effect as land uses change or buildings are rebuilt or renovated (i.e. redevelopment). Policies could take the form of:

- Sidewalk ordinance;
- Adequate public facility ordinance;
- Urban design overlay;
- Form-based code; or
- Private-sector incentives.

Strategy	Rank
Sidewalk Links	1
Mid-block Islands and Curb Extensions	2
Intersection Crossing Enhancements	3
Intersection Improvements	4
Bicycle Lanes	5
Streetscape In Spot Locations	6
Access Management in Spot Locations	7
Transit Facilities	8
Total Responses:	23

Figure 1.1 Study Area — Regional





# 1. BACKGROUND & INTRODUCTION

In the Fall of 2008, Gresham, Smith and Partners (GS&P) was contracted by the Knoxville Regional Transportation Planning Organization (TPO) to perform a Complete Streets Study. As part of the study process, the consulting team developed a plan for transforming the Broadway corridor in Knoxville's Fountain City neighborhood into a complete street.

This report documents the Broadway Complete Streets Plan, which was highlighted by a weeklong planning studio and workshop series held during October of 2008. The recommendations consist of a long-term vision plan for the corridor as well as a toolkit of strategies that can be implemented gradually over time.

## What is a Complete Street?

The National Complete Streets Coalition says that complete streets:

*... are designed and operated to enable safe access for all users. Pedestrians, bicyclists, motorists and bus riders of all ages and abilities are able to safely move along and across a complete street.*

Simply stated, a complete street reflects a new way of thinking about how streets are designed. A complete street may be put together a number of different ways, so long as it is intentionally designed around all potential users.

Complete the Streets is a national movement that includes the Federal Highway Administration (FHWA), state departments of transportation, metropolitan planning organizations (MPOs), cities, counties, nonprofits and others. The movement is gathering momentum as more communities see complete streets as a valuable approach to making places more livable, reducing environmental impacts, providing alternatives to traffic congestion and a host of other benefits.

## The Broadway Corridor

### Study Area Defined

The section of Broadway that is the focus of this study is located in Knoxville's historic Fountain City neighborhood, from Old Broadway just north of I-640 to Colonial Circle. This approximately 1.1-mile-long corridor located north of downtown Knoxville was selected because of its mix of complementary land uses and associated users,



Complete streets are intentionally designed . . .

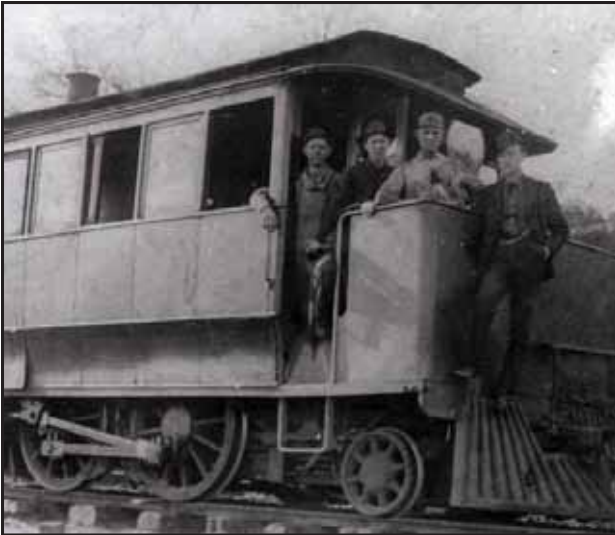


. . . around all potential users.

(Photos courtesy of the Complete the Streets Coalition)



*Broadway began as a small, people-oriented street.*  
(source: [www.fountaincityhistory.info](http://www.fountaincityhistory.info))



*Fountain City began as a walking place and streetcar suburb.*  
(source: [www.fountaincityhistory.info](http://www.fountaincityhistory.info))



*Today, Broadway is designed to accommodate automobiles, although evidence of its history as a people-oriented street still remains.*

coupled with the lack of accommodations for pedestrians, bicyclists and transit riders.

### A Brief History

Fountain City began as a supply depot for trade routes in the 1800s. In 1885, the Fountain Head Hotel was built adjacent to what is now Fountain City Park on Broadway. In 1890, a steam rail line, and later a trolley car, provided service between Fountain City and downtown Knoxville. Fountain City continued to evolve around the rail line, functioning as a streetcar suburb with Broadway as its Main Street. Broadway was primarily a walking place, although cars and carriages also shared the street with people.

In 1934, the trolley line was replaced in favor of diesel buses, and Broadway was eventually widened to accommodate a growing demand for automobiles both in Fountain City and in communities to the north, such as Halls. Today, Broadway is designed to accommodate automobiles, although evidence of its history as a people-oriented Main Street still remains.



Figure 1.2 Study Area Detail

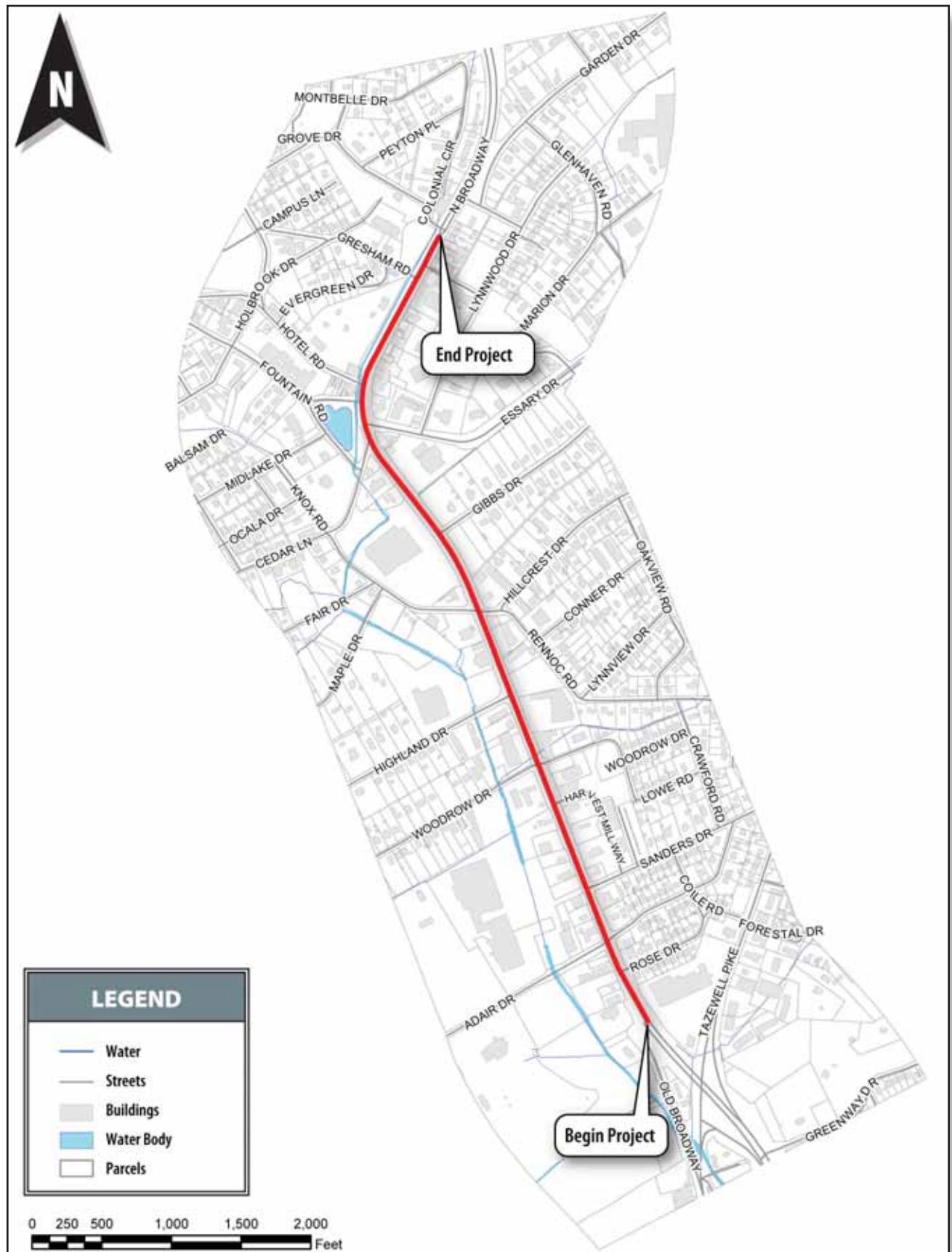
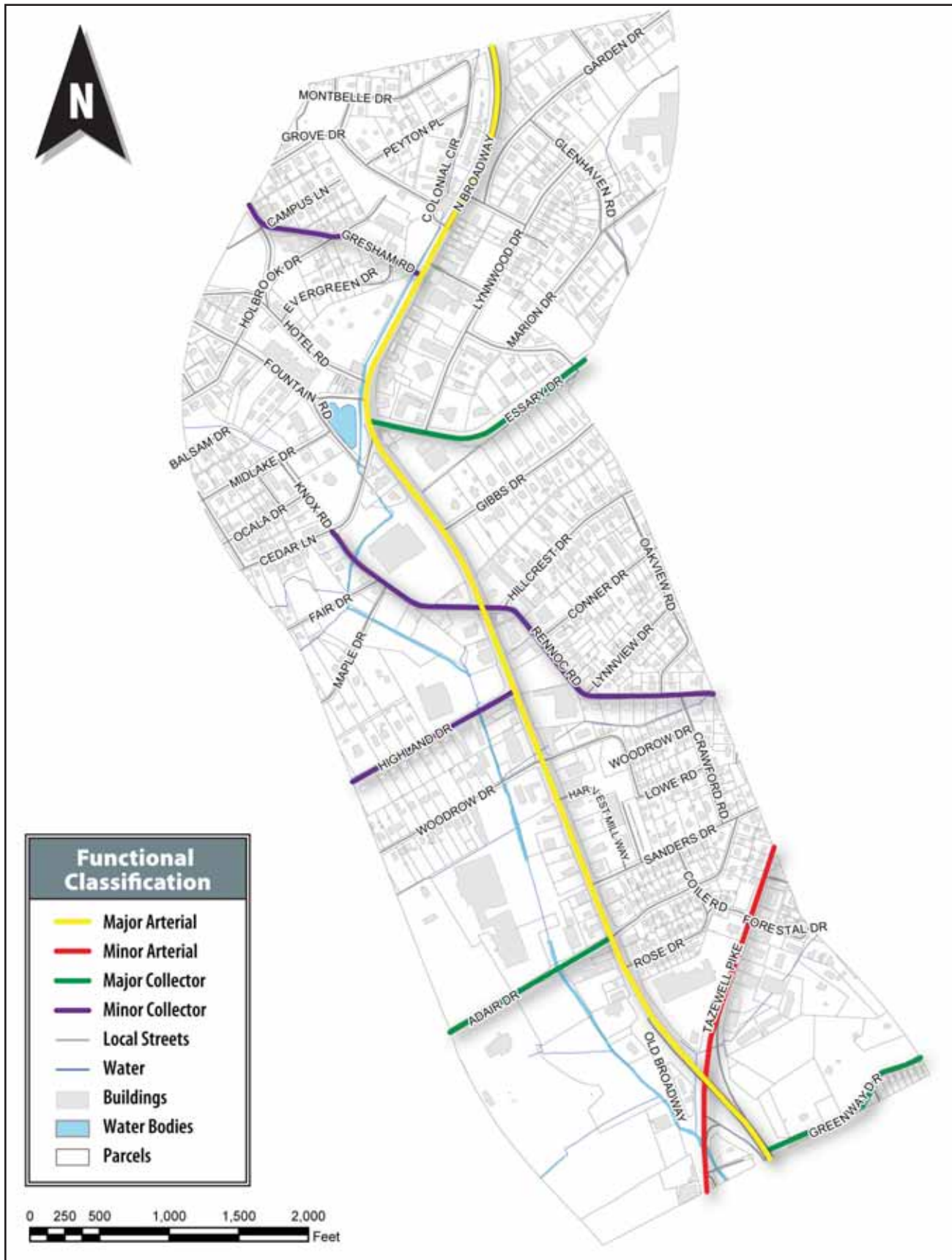




Figure 2.1 Functional Classification





## 2. Corridor Context

In order to make recommendations on how to make the Broadway corridor a more complete street, it is first necessary to have an understanding of the current context. This includes an understanding of the corridor's role in the transportation system (mobility context), the people and places that surround it (land use and demographic context) and how the corridor is put together (design context).

### Mobility Context

Broadway, also known as SR 33 and US 441, serves as a major mobility corridor for the region. It is one of a few radial roads connecting to the Knoxville core, and is the only north-south connection for Fountain City and places further north, such as Halls.

#### Daily Traffic

Broadway carries a heavy amount of motor vehicle traffic, ranging from approximately 40,000 to 45,000 cars per day. This is toward the upper end of what a five-lane road in an urbanized area would typically carry.

For comparison purposes, most other similar roadways in the region carry fewer than 35,000 motor vehicles per day. Broadway's significant mobility function, in terms of the number of motor vehicles it carries on a daily basis, must be taken into consideration when considering proposed changes to the corridor.

By contrast, cross streets along the study corridor do not carry a significant amount of traffic. All cross streets carry less than 10,000 motor vehicles per day, most less than 5,000 motor vehicles per day.

These data suggest that most trips on Broadway originate from outside of the study corridor, further indicating the road's regional significance. The fact that most intersections in the corridor do not experience heavy cross traffic provides additional flexibility in design.

#### Functional Classification

Broadway is classified a major arterial, further underscoring its regional significance. All cross streets are classified as collectors or local streets, indicating that they serve a local mobility function.



*Heavy traffic on Broadway poses challenges to pedestrians.*



View of the intersection at Colonial Circle and Broadway in Fountain City (northbound).

### Intersection Function

Of the 16 intersections in the corridor, eight are controlled by a traffic signal, for a total of between seven and eight signalized intersections per mile on the study corridor. This is a relatively high signal density for a street outside of a downtown/central business district. Generally speaking, the more signalized intersections on a street, the greater the amount of delay (i.e. congestion).



Drivers turn quickly and do not look for pedestrians.



Many intersections have long crossing distances with few crossing treatments.



Most intersections on Broadway have large curb radii; the paved shoulder makes them effectively larger.



Figure 2.2 Major & Minor Intersections

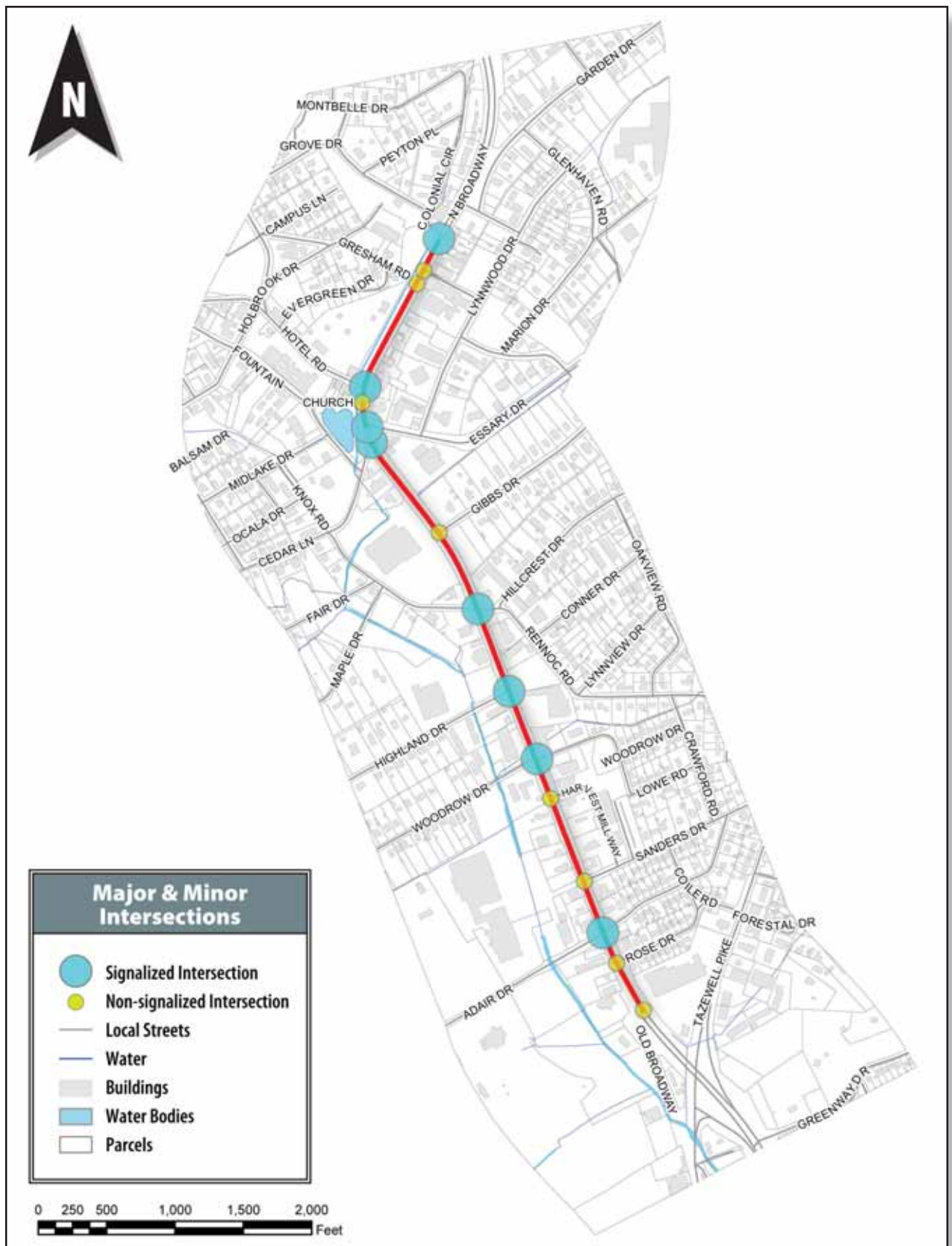
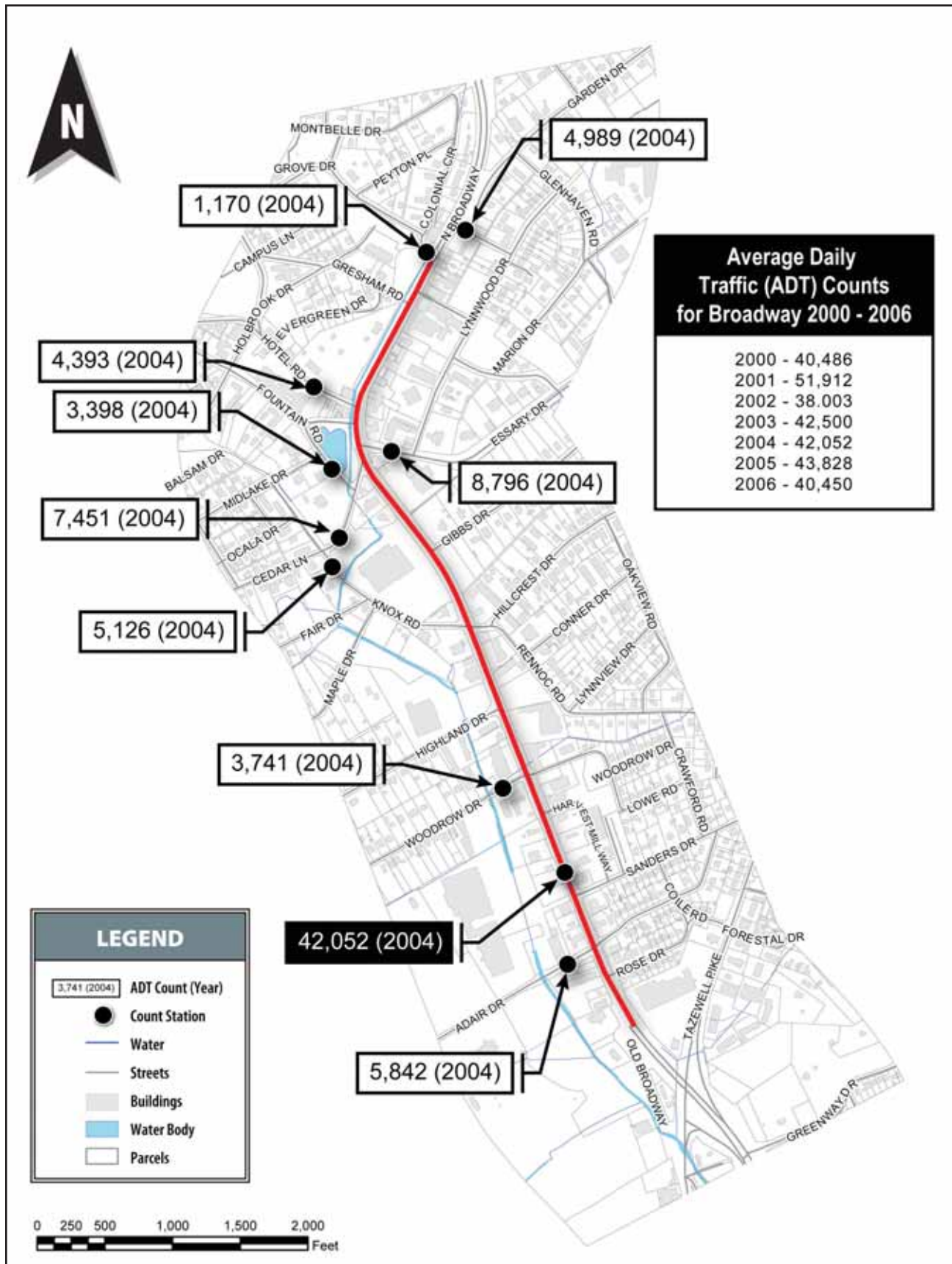




Figure 2.3 Average Daily Traffic Counts



### Average Speed and Levels of Service

Heavy traffic volumes and relatively close signal spacing both contribute to slower travel speeds on Broadway. The posted speed within the study area is 40 miles per hour (mph), yet the average speed during peak travel periods is less than 25 mph, and the average speed during midday is approximately 30 mph. The difference between the posted speed and the actual speed is attributed to delay at traffic signals.

**Table 2.1 Average Motor Vehicle Speed on Broadway (miles per hour)**

Time of Day	Northbound	Southbound
AM Peak*	n/a	15.3 mph
PM Peak*	23.0 mph	n/a
Midday**	30.7mph	18.0 mph

\*City of Knoxville Traffic Signal Study (2007)

\*\*Field measurement (2008)

In some locations along the corridor, signals are clustered close together, leaving large gaps, sometimes as long as a quarter of a mile. The net effect is that motor vehicles obtain high speeds at long signal gaps and then stop abruptly at intersections. This creates safety and operational issues for motor vehicles as well as bicycles and pedestrians.



Vehicles increase speed at mid-block locations along the corridor . . .



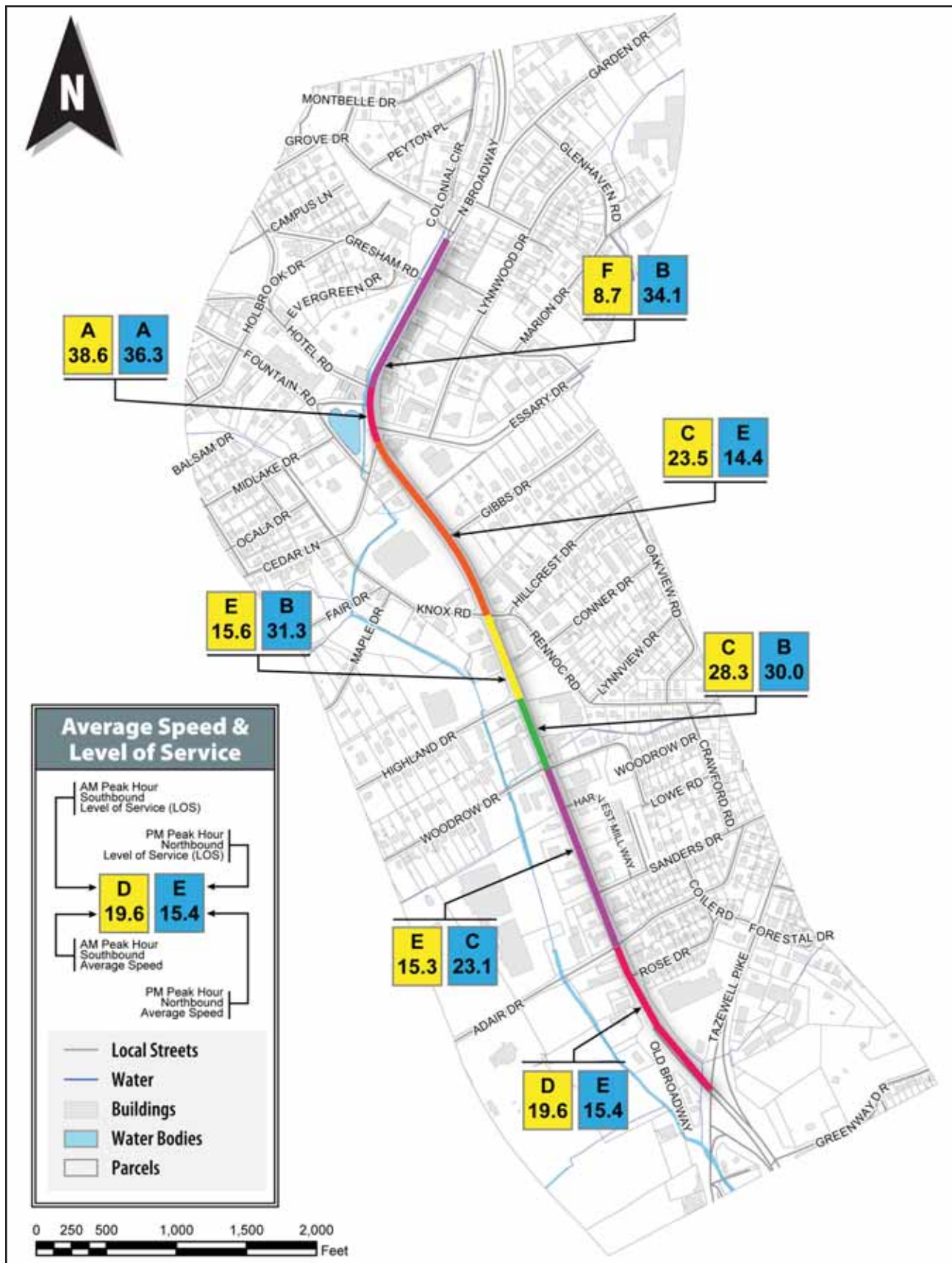
. . . only to stop abruptly at the next intersection.



Some signals are clustered close together, while others are more than a quarter-mile apart. (Pictured: Cars line up at the signalized intersection at Hotel Road and Broadway, which is spaced more than 1,300 feet from the next signal at Colonial Circle.)



Figure 2.4 Average Speed and Level of Service



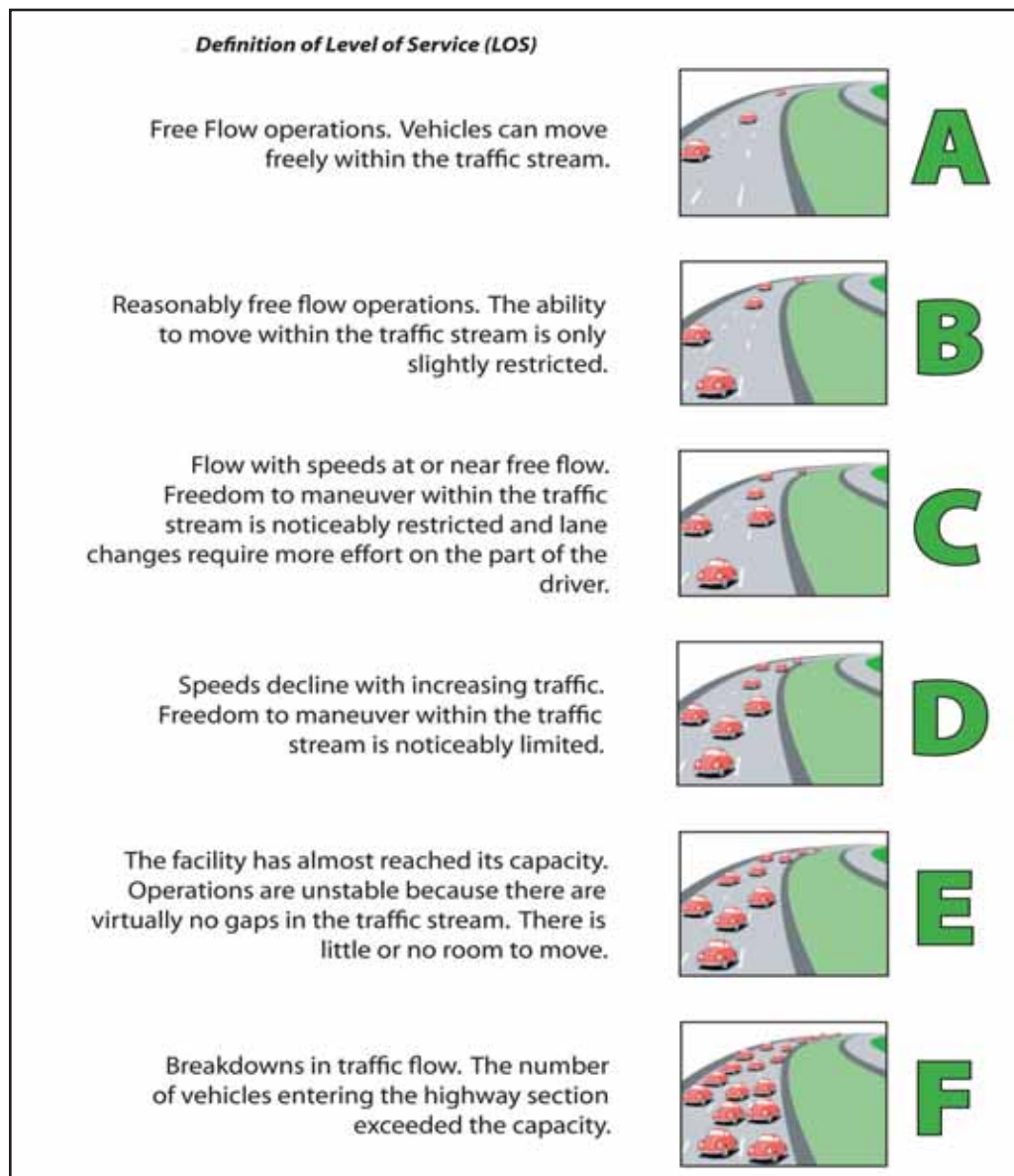
## Truck Traffic

Broadway is not designated by the TPO as an official freight route, although significant truck traffic is observed in the corridor. According to the 2030 Long Range Transportation Plan, between 500 and 999 trucks use the corridor. There is no significant truck traffic on cross streets and no major truck turn movements are observed in the corridor.



Truck traffic is primarily along the Broadway corridor.

**Figure 2.5 Level of Service Descriptions**





*Few signalized intersections include crosswalks and/or pedestrian indications similar to the intersection at Broadway and Woodrow Drive NE.*



*Many locations on Broadway include a paved shoulder that disappears at intersections/driveways, as is the case at Cedar Lane (southbound).*



*Greenway at Fountain City Park.*

### Bicycle and Pedestrian Facilities

There are very few bicycle and pedestrian facilities in the Broadway corridor. North of Hotel Road, there is a sidewalk on the east side of the street; on the west side, the Fountain City Park greenway runs parallel to Broadway, effectively serving as a sidewalk. One segment along a parcel south of Essary Drive also includes a sidewalk. Beyond these locations, there are no sidewalks in the corridor. Very few connecting cross streets have sidewalks, with the exception of Gibbs Drive and Hotel Road.

Of the eight signalized intersections in the corridor, only three include pedestrian indications (signals that indicate when pedestrians are permitted to enter the crosswalk) – Highland Drive, Hotel Road and Colonial Circle; for all of these, indications exist at only one or two legs of the intersection. The additional signalized intersections – Woodrow Drive, Knox Road and Church Street – include marked crosswalks (but no pedestrian indications) on one leg of the intersection. There are no crossing treatments elsewhere on the corridor.

Many locations on the corridor contain a wide (six plus feet) outside shoulder, but it is not a designated facility for bicycles. Additionally, the shoulder disappears at many intersections and driveways.

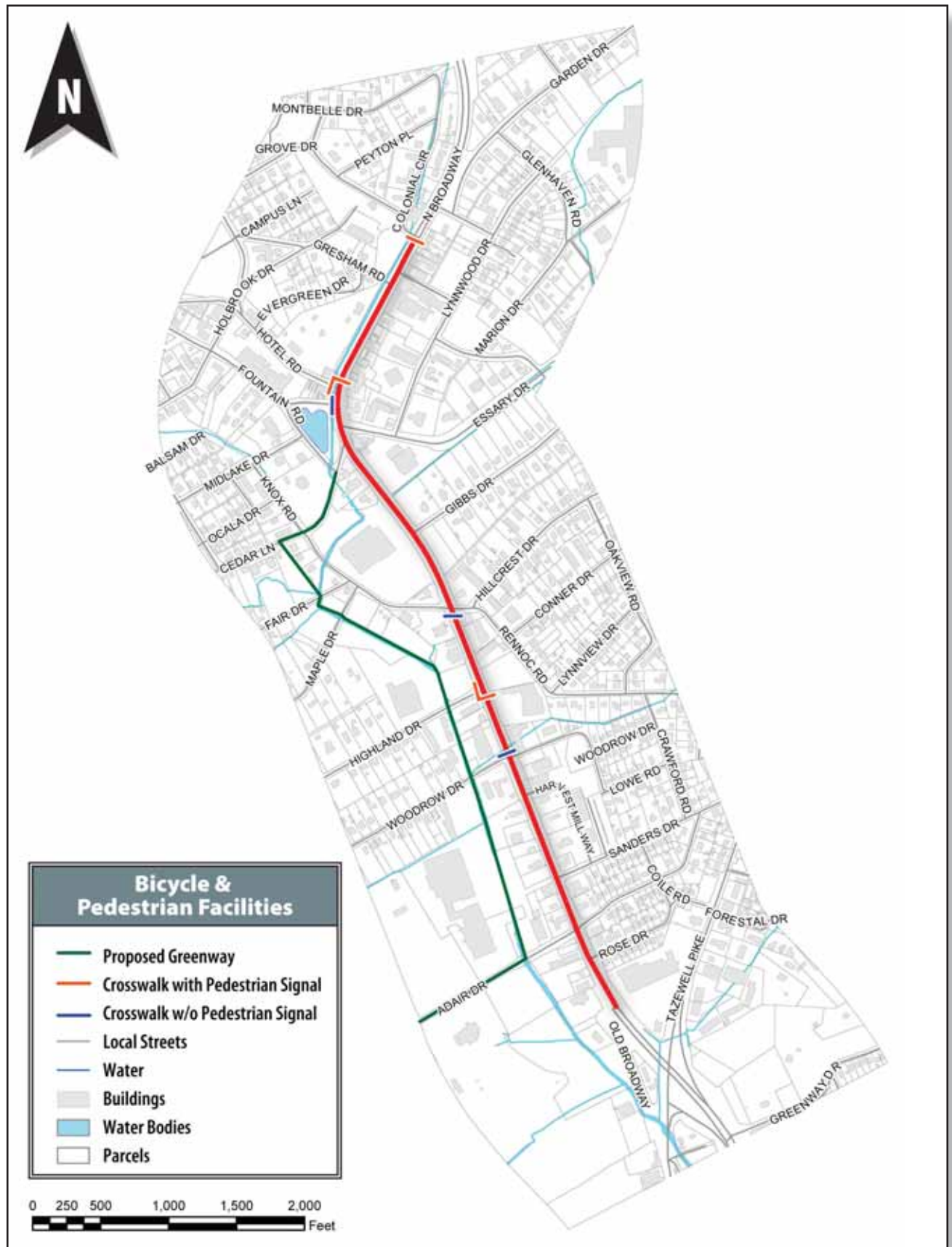
A greenway circles Fountain City Park. A linear greenway is proposed parallel to Broadway on the west side of the corridor south of the park.



*Most locations along Broadway do not have sidewalks.*



Figure 2.6 Bicycle and Pedestrian Facilities





*Four bus routes serve the study area.*

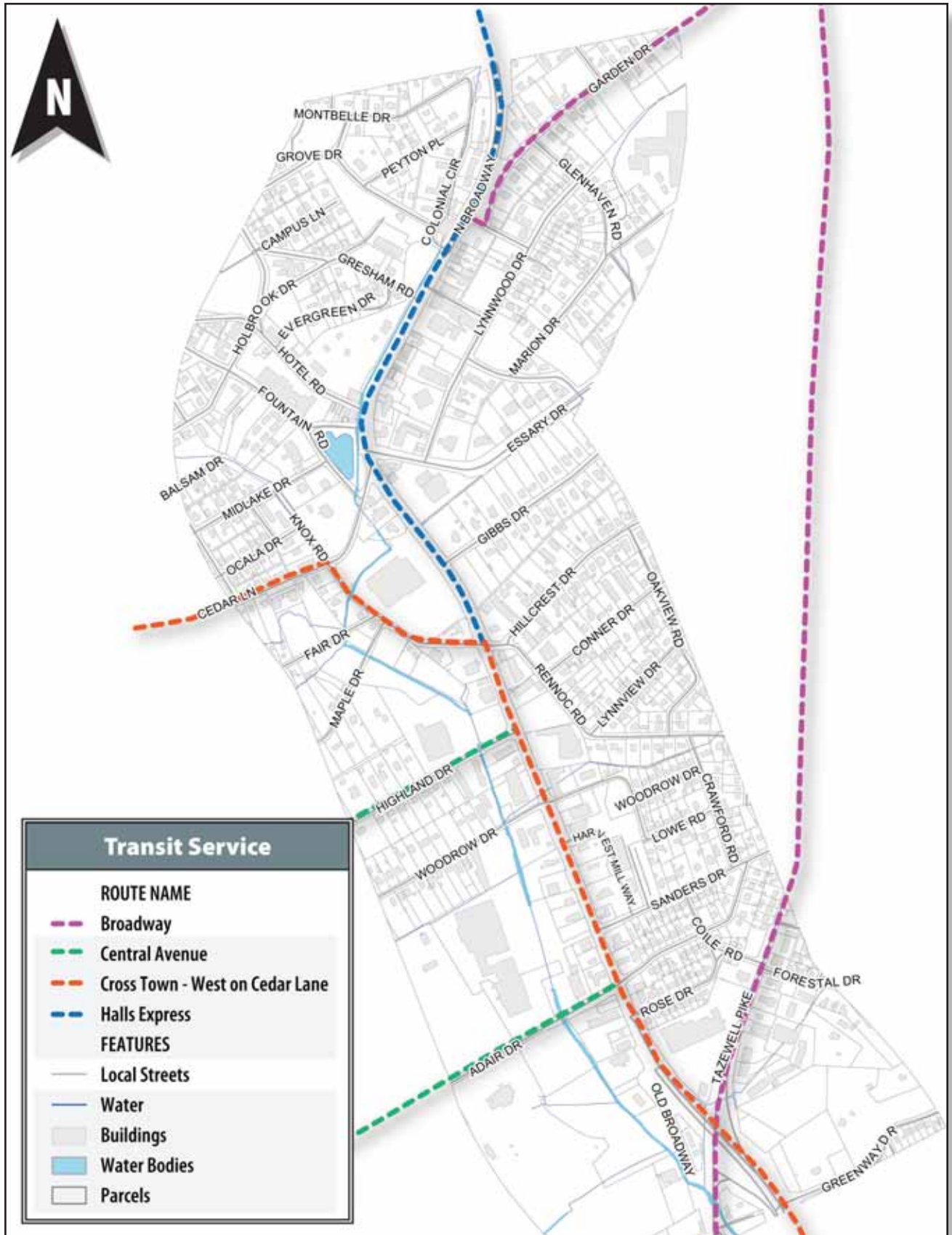
### **Transit**

Broadway and the Fountain City community experience relatively good transit service. Four total routes serve a portion of the study corridor with a combination of local, cross-town and express routes, resulting in multiple trips per hour during peak periods. There are no dedicated transit facilities in the corridor (i.e. benches, shelters, pull-outs, etc.).



*There are no benches, shelters or pullouts along the corridor.*

Figure 2.7 Transit Service







*Land Use: Strip Commercial Zone*



*Land Use: Village/Civic Center Zone*



*Land Use: Residential Zone*

## Land Use and Demographic Context

### Land Use and Character

Existing land uses in the corridor can be described in terms of three distinct types of character zones:

- **Strip commercial** – these are the parcels with direct access to Broadway from Essary Drive to Old Broadway. This zone includes single-use retail, restaurants, strip commercial centers and some service/professional establishments that are primarily automobile-oriented.
- **Village/civic center** – this section of the corridor, north of Essary, contains a combination of schools, parks, a library and post office and smaller scale retail/professional establishments.
- **Residential** – the neighborhoods surrounding are primarily single-family bungalow homes built during the first half of the last century, but also include some duplexes and apartments.

All three of the character zones contain compatible land uses and are located in close proximity to each other. This results in an environment that is naturally conducive to walking and bicycling.

### North City Sector Plan

The Knoxville Metropolitan Planning Commission recently completed the North City Sector Plan. The plan reinforces many of the existing land uses with two exceptions: two sites prime for redevelopment – the old Target location and the shopping center located north of Adair Road.



*Land Use: Strip Commercial Zone*

Figure 2.8 Character Zones

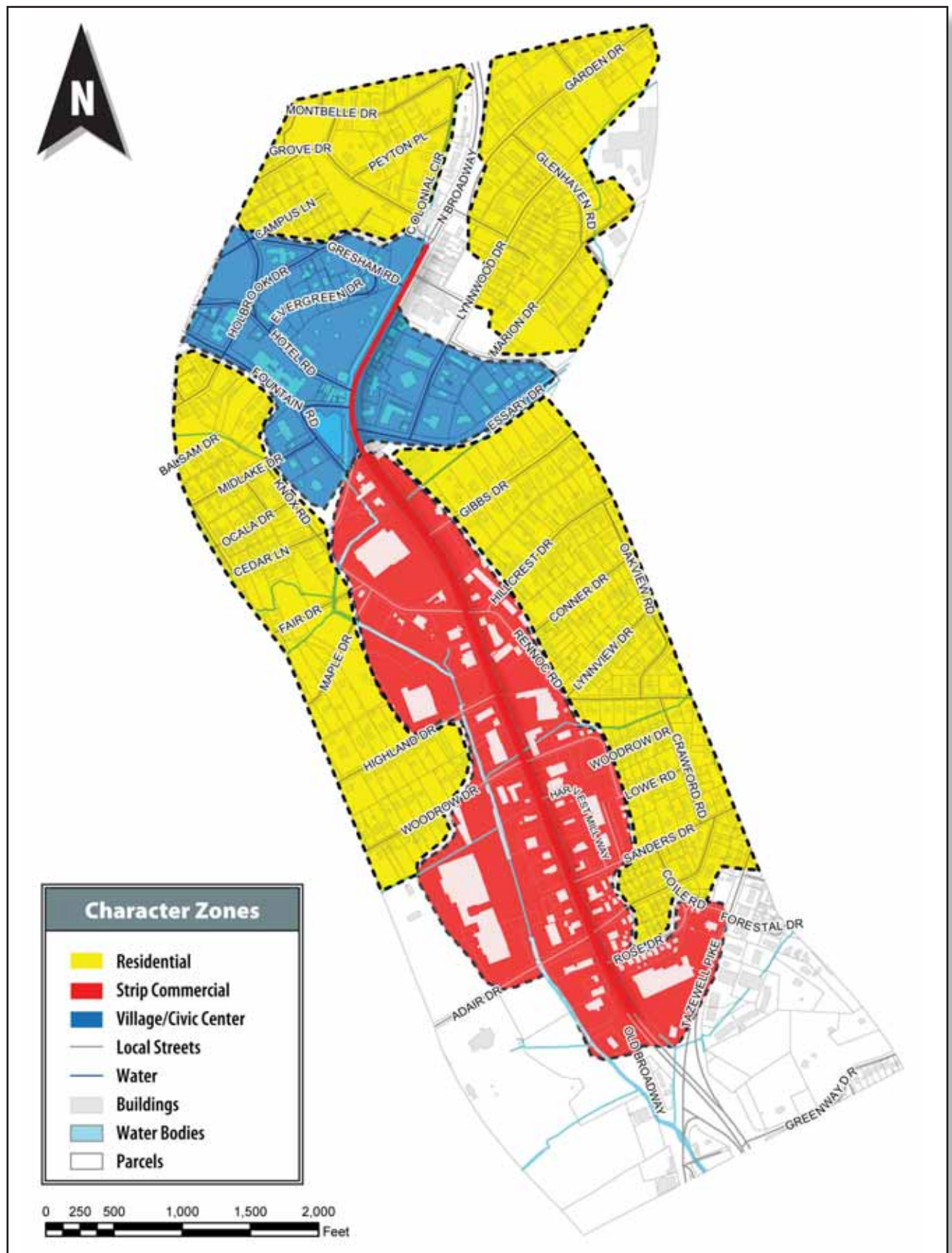
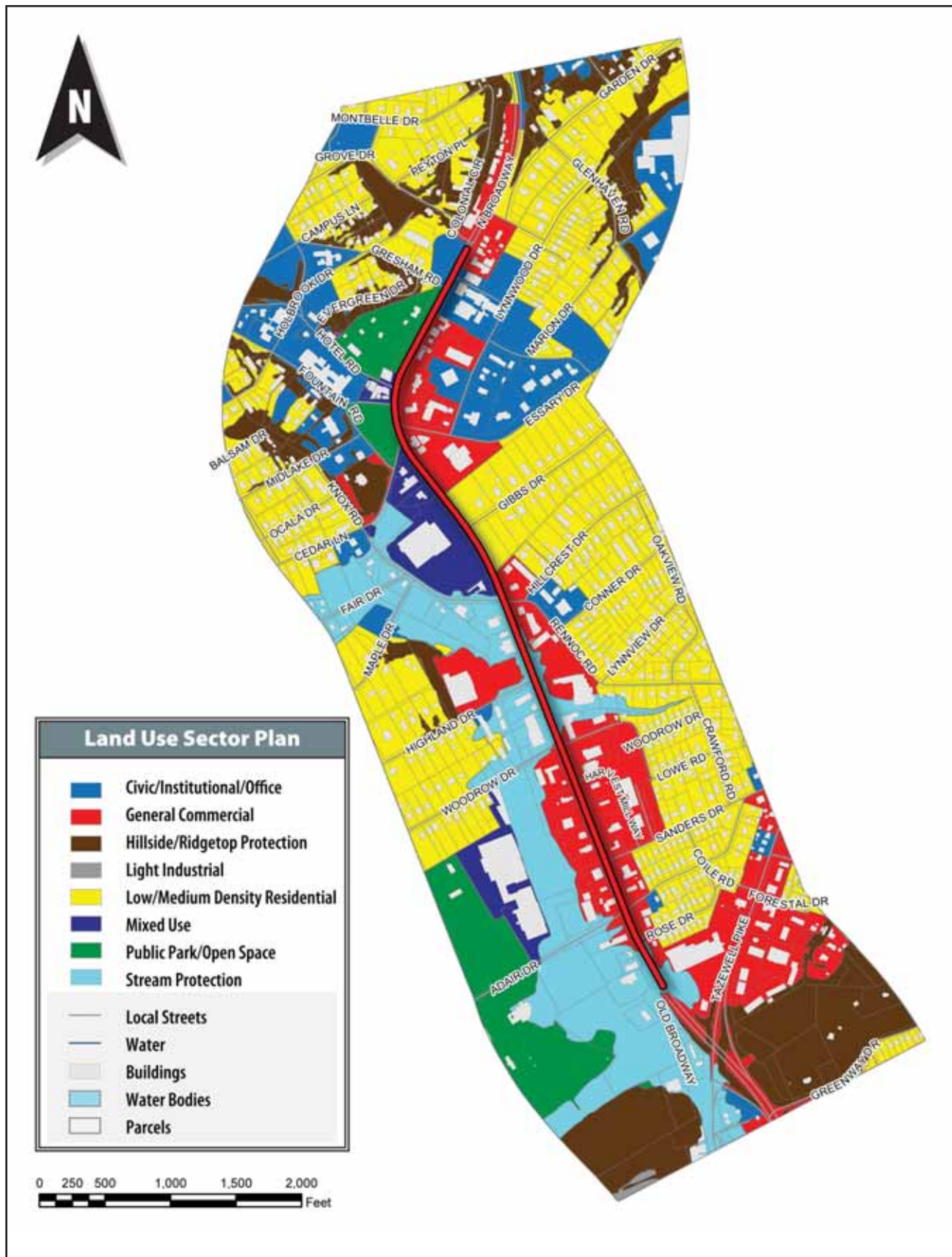




Figure 2.9 North City Sector Plan Land Use Recommendations



## **Community Facilities**

Community facilities are places that exist for the good of the surrounding community; special emphasis is placed on access at these locations. There are a number of community facilities in the north end of the corridor, including schools, parks, churches, a library and post office.

It should be noted that each school has a “parental responsibility zone.” Households located within these zones are responsible for transporting their children to school (school bus transportation is not provided).



*Fountain City Park on the west side of North Broadway.*



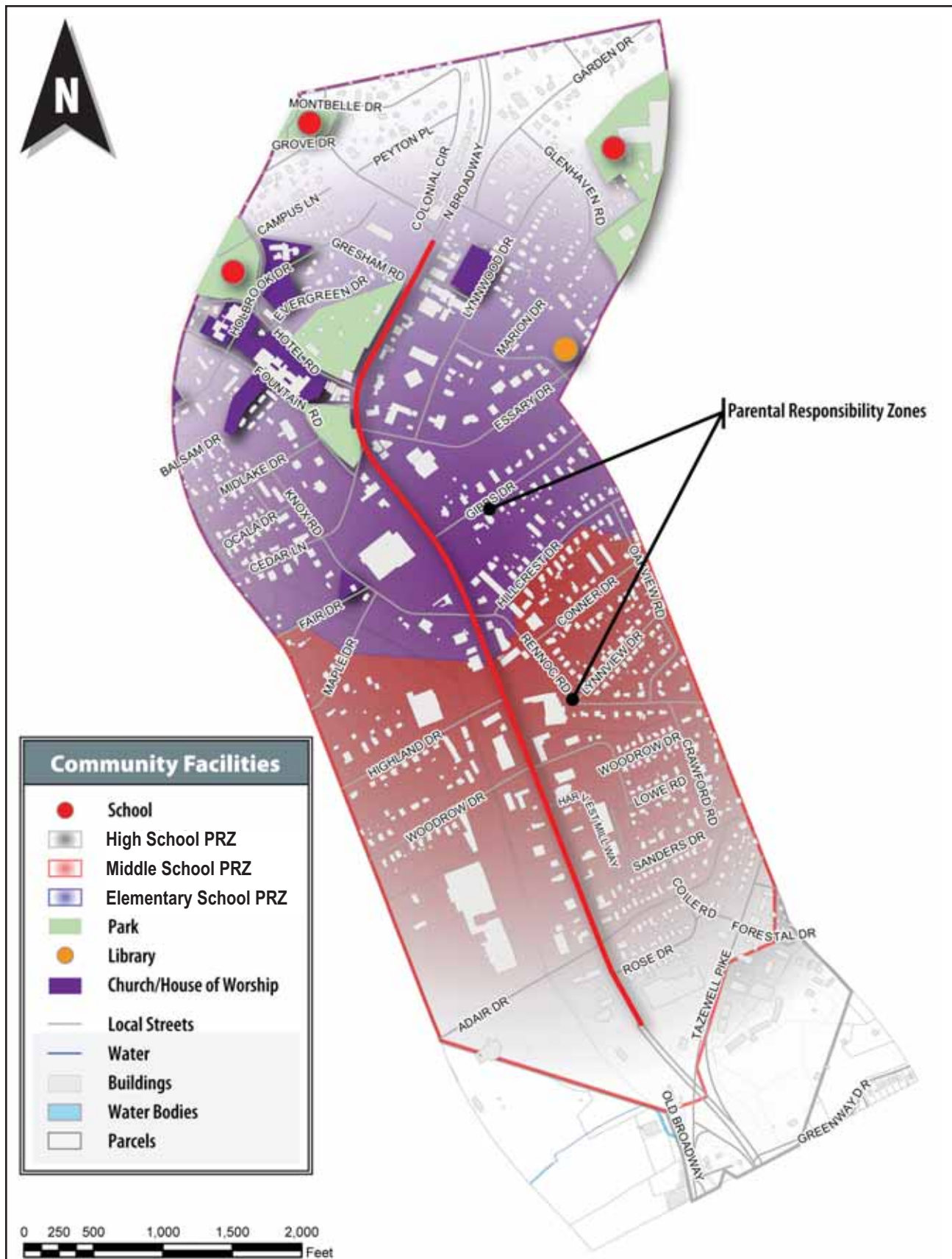
*Central Baptist Church on Broadway, north of Hotel Road.*



*The Lions Club building near Fountain City Park.*



Figure 2.10 Community Facilities





### Zoning

Existing zoning designations in the corridor essentially reinforce existing land use patterns.

### Demographic

Data collected during the most recent US Census (2000) was analyzed for demographic factors that bear a strong relationship to mobility needs. Key findings include:

- 20% of residents are under the age of 18;
- 18% are over the age of 65;
- 43% of households have one or no car, and
- 4 out of 5 tracts are at or below the County median income.

These findings suggest that there is significant demand for alternatives to driving, either because of age, income or otherwise lack of access to an automobile.



*Twenty percent of the local population is under the age of 18.*

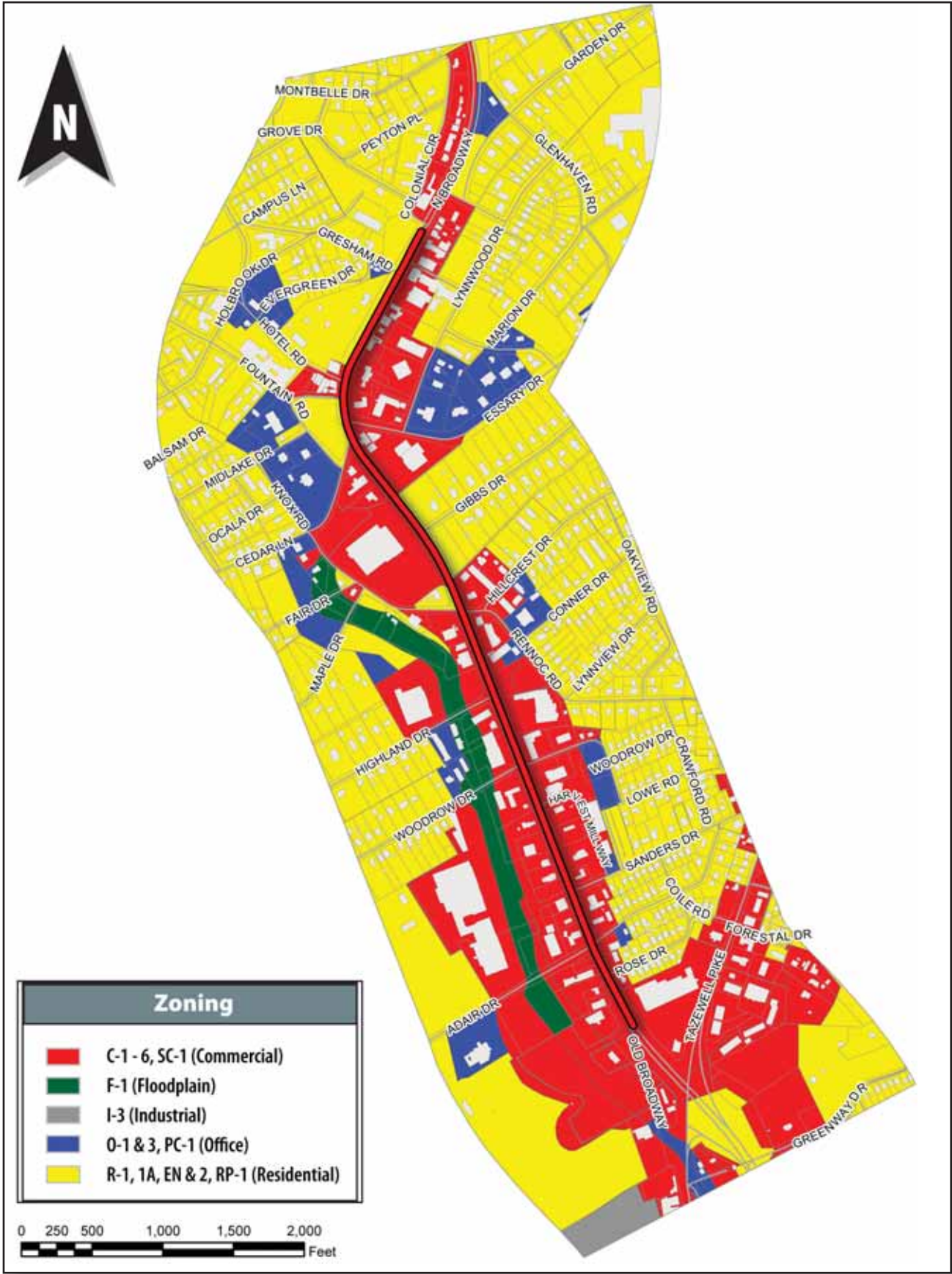


*Eighteen percent of the local population is over the age of 65.*



*Four out of five tracts have households with incomes at or below the County median.*

Figure 2.11 Zoning



## **Design Context**

### **Typical Sections**

North Broadway within the study area is configured as a five lane roadway – two motor vehicle travel lanes in each direction and a two-way center turn lane. The elements that make up this cross section – shoulders, total right-of-way width (ROW), etc. – however, vary. The corridor can generally be described in terms of four unique sections:

1. Old Broadway to Knox Road – This section includes 11-foot travel lanes, paved shoulders that vary up to 15 feet in width, and curb and gutter. Roadside elements at the edge of the curb consist of parking, landscaping and driveways. The total width of ROW varies from 76 to 150 feet.
2. Knox Road to south of Cedar Lane – This section includes 11-foot travel lanes. On the west side of the road, there is a paved shoulder which varies from eight to 14 feet in width, curb and gutter and a wide grass buffer. On the east side of the road, the paved shoulder varies from eight to 20 feet in width; there is no curb or gutter. The roadside consists of a undeveloped parcel and a large front yard (greater than 50 feet). The total ROW varies from 90 to 95 feet.
3. South of Cedar Lane to Hotel Street – This section of the corridor includes 11-foot travel lanes, but the other elements differ beyond the outside edge of the travel lanes. Various elements include curb and gutter, sidewalk, paved shoulders and a grass swale.
4. Hotel Road to Colonial Circle – This section includes 11-foot travel lanes with paved shoulders on both sides of the street that vary in width from six to 10 feet. On the east side, there is a four-foot sidewalk; in some locations, the sidewalk is located flush against the shoulder, in others there is a grass strip up to four feet wide. On the west side, there is a 10-foot grass swale that slopes down to an open drainage duct; park-goers use this section of shoulder for parking.



Figure 2.12 Key to Typical Section Maps



Figure 2.12a Typical Section: Old Broadway to Knox Road — Existing Conditions



Figure 2.12b Typical Section: Knox Road to Cedar Lane — Existing Conditions

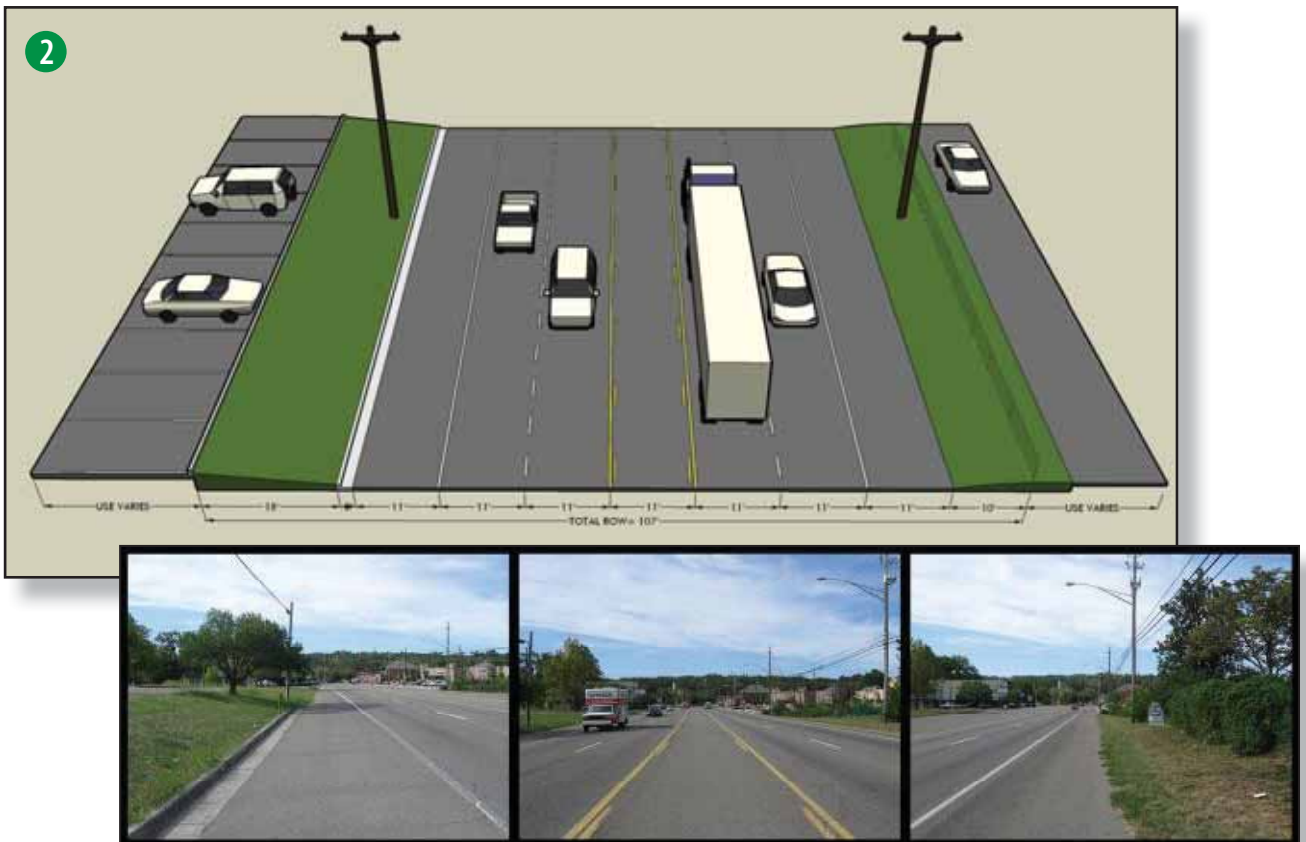




Figure 2.12c Typical Section: Cedar Lane to Hotel Road — Existing Conditions



Figure 2.12d Typical Section: Hotel Road to Colonial Circle — Existing Conditions



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**Figure 2.13a**  
**Building Orientation: South of Knox Road**



### Building Orientation

Broadway's shift from a pedestrian-oriented corridor to an automobile-oriented corridor is evident in the buildings that have been constructed over the last several decades. South of Church Street, buildings are set back from the road and are separated by parking lots. There are few pedestrian connections between the street and places of business.

Even so, historically small and shallow lot sizes keep buildings set back and spaced at manageable distances (50 to 100 feet), as opposed to the more conventional mega-parcel developments that put setbacks and spacing to several hundred feet. In effect, the buildings in the corridor are still close enough to each other and the surrounding neighborhoods to be reasonably walkable for a large segment of the population.

North of Church Street, the lot sizes become even smaller, and many of them remain oriented toward the street with little or no setbacks and minimal spacing. Buildings on Church and Hotel Streets are oriented toward both Broadway and Church and Hotel themselves, creating a small, very walkable place.



**Table 2.2 Minimum Setback Requirements**

Category	Minimum Front Setback Requirement	Minimum Side Setback Requirement
General Commercial	25 feet	None (25 feet if adjacent to a residential zone)
Retail & Office Park District	50 feet	None (25 feet if adjacent to a residential zone)
Low Density Residential	25 feet	8 feet (20 feet total between structures)
General Residential	25 feet	8 feet (20 feet total between structures)

Source: City of Knoxville Municipal Zoning Code



**Figure 2.13b**  
**Building Orientation:**  
**Between Knox Road and Essary Drive**



**Figure 2.13c**  
**Building Orientation:**  
**North of Essary Drive**





Minimum setback requirements reinforce current building patterns.



Many historic structures could not be built the same way under the current zoning regulations.



The lack of a local street network means that all trips, whether local or regional, must use Broadway.

## Zoning

A majority of the parcels adjacent to Broadway are zoned for *general commercial* (C-3), with the exception of the old Target parcel, which is zoned for *retail* and *office park district* (PC-1), and the residential parcels on Gibbs Drive and parcels associated with Fountain City Park, which are zoned *low density residential* (R-1) and *general residential* (R-2).

The zoning regulations establish *minimum* setback requirements for buildings, which in most cases is 25 feet, with the exception of the PC-1 district, which is 50 feet. For the non-residential districts, there is no side setback requirement. For residential districts, it is eight feet. There are no requirements for landscaping, buffering or provisions for bicycles or pedestrians.

The current zoning reinforces existing building patterns on Broadway south of Church Street. North of Church Street, many of the existing structures are not consistent with and could not be built today under the current code. That is to say, they do not meet the minimum setback requirements.

## Network Quality

While there are numerous cross streets that intersect Broadway, the overall network quality is relatively poor, due to the lack of parallel streets. This is a topography issue, as the east-west ridge lines make it very difficult to build north-south streets. The lack of network is true for all users – motorists, bicycles and pedestrians. The net effect is that all trips, whether local or regional, must use Broadway.



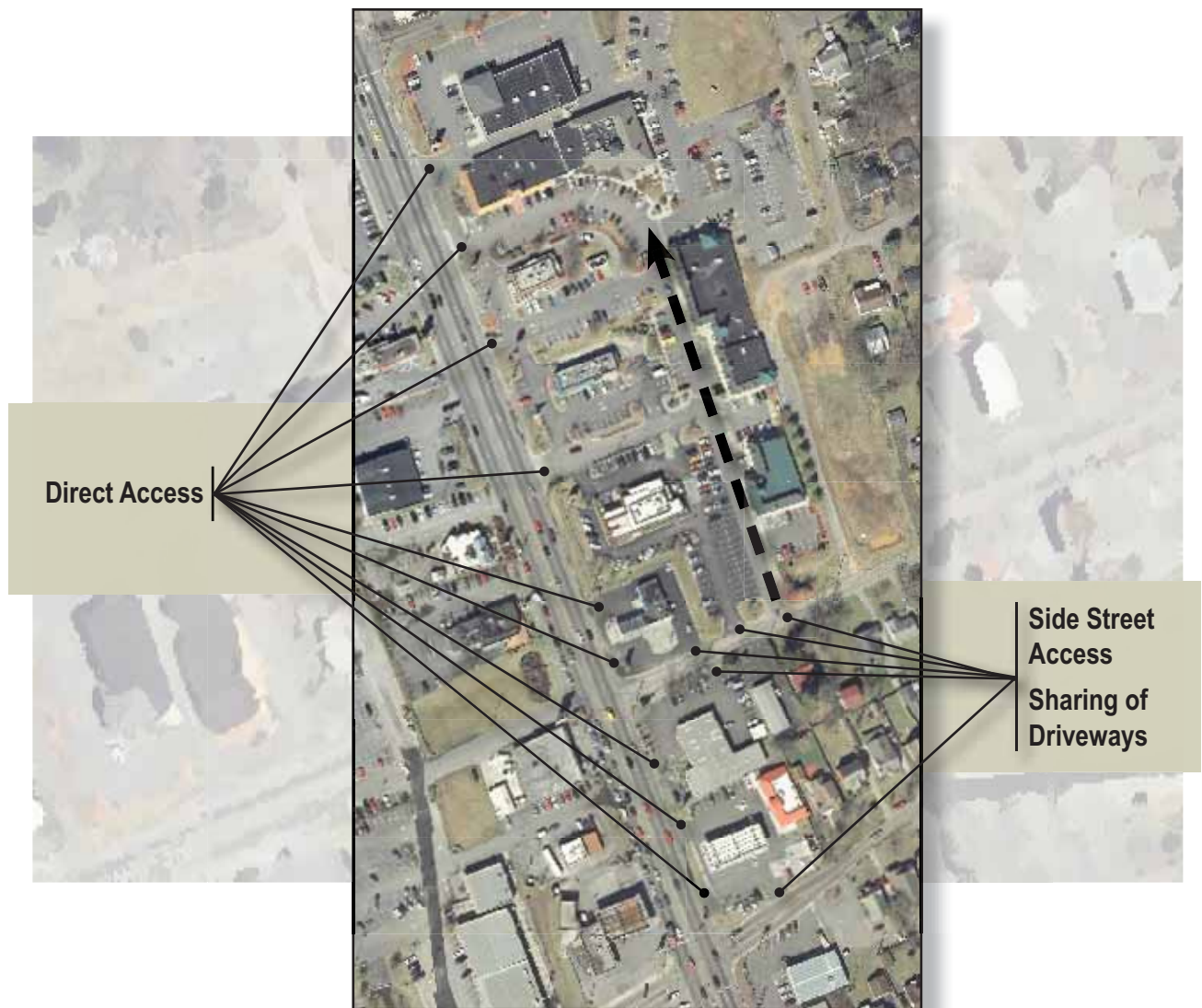


## Access

Virtually all parcels in the corridor have driveway access to Broadway, and in many cases more than one driveway. This results in numerous curb cuts and vehicular turn movements in the corridor, creating a much greater potential for conflict.

Despite the prevalence of driveway access on Broadway, there are still numerous existing opportunities for alternative access. A majority of parcels on the corridor have access on side streets as well. For parcels not located directly on a side street, there are shared driveways where cross-access is provided.

**Figure 2.14 Driveway Access**





*The lack of good, frequent crossing opportunities for pedestrians on Broadway is evident in the number of mid-block crossings in the flush median.*



*Where there are no sidewalks, pedestrians must walk on the shoulder.*



*Pedestrians must cross at their own risk.*

### Intersections and Pedestrian Crossing

Intersections in the corridor are designed with relatively large (30 to 50 feet) turn radii intended for high-speed turn movements. The presence of a paved shoulder on Broadway effectively increases the turn radius and vehicular turning speeds. The result of this design is that drivers look at oncoming traffic and quickly enter the stream and do not see pedestrians crossing. The large turn radii create long stretches of pavement for pedestrians to cross, sometimes approaching 100 feet.

As discussed previously, intersection spacing and an overall lack of pedestrian treatments at intersections results in long stretches on Broadway where there are no adequate pedestrian crossing opportunities. This is evident in the numerous observations of pedestrians crossing in the flush median at mid-block locations.

## Summary and Assessment

Based on a review of the existing context on Broadway, several observations can be made for the quality of the environment for pedestrians, bicyclists and transit riders.

### Pedestrians

- Virtually no sidewalks – for the most part the only way for pedestrians to get north and south through the corridor is to walk through parking lots, in the paved shoulder or in the grass buffer where it exists.
- Many curb cuts – this results in several potential conflict points with motorists.
- No safe crossing opportunities – pedestrians must cross at their own risk at large, untreated intersections or use the flush median at mid-block locations.
- Intersections are barriers – the long crossing distances, high-speed vehicular turn movements and the absence of pedestrian treatments make many intersections barriers to walking in the corridor.
- Walkable potential – the placement of buildings and activities along Broadway give it a potential for walking, but there are no intentional pedestrian connections.

### Bicycles

- There is a shoulder – however, it is not a designated space for bicycles, and motorists use it as a deceleration/acceleration lane.



- Intersections – the shoulder disappears at some intersections and driveways, which can result in bicyclists getting cut off. Additionally, large turn radii result in high-speed motor vehicle turn movements and long crossing distances for pedestrians.
- Mid-block – at mid-block locations, a prevalence of curb cuts create many potential conflict points
- No continuous parallel corridor – most bicyclists use Broadway.

### Transit

- Lack of adequate facilities – there are no facilities – concrete pads, benches, etc. – in the corridor for accessing transit.
- Riders feel exposed – transit riders must stand in the grass strip or paved shoulder to wait for a bus.
- Transit riders are pedestrians – many of the same issues that affect pedestrians are valid for transit riders.

## Challenges to be Addressed by this Study

The existing context analysis and assessment yields several challenges to be addressed by this study:

- Building safe, continuous bicycle and pedestrian facilities;
- Making intersections safe and accommodating for bicyclists and pedestrians;
- Improving access to transit;
- Improving access to the parks;
- Identifying opportunities for safer and more frequent crossing;
- Integrating multi-modal treatments with existing and future development; and
- Balancing multi-modal needs with motor vehicle mobility.



*There is a lack of adequate transit facilities along the corridor.*



*Intersections are barriers to walking and biking in the corridor.*



*There is no designated bike lane and motorists use the shoulder as a deceleration and turning lane.*

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### 3. Issues and Opportunities

At the core of the Complete Streets Study for the Broadway corridor is a week long corridor studio held from October 20 to 23 focused on engaging the community and stakeholders on issues, opportunities and solutions. The studio process began with a public workshop on the evening of October 20. The purpose of the meeting was to give participants a chance to sound off on issues and opportunities for making Broadway a complete street and to identify their top goals for the corridor.

#### Issues and Opportunities

Workshop participants were given an opportunity to work over detailed aerial maps of Broadway and surrounding neighborhoods. Hundreds of useful written and verbal comments were received during the course of the workshops. The study team was able to summarize those comments into a concise set of issues and opportunities for the corridor.

**Table 3.1 Summary of Comments**

Issues	Opportunities
<ul style="list-style-type: none"> <li>• Lack of sidewalks</li> <li>• Unsafe intersections</li> <li>• Too many curb cuts</li> <li>• Long gaps with no safe crossing</li> <li>• Safety conflicts for bicyclists</li> <li>• Cut-through traffic on residential streets</li> <li>• I-640 is a bottleneck/barrier for bicyclists and pedestrians</li> </ul>	<ul style="list-style-type: none"> <li>• Fill in critical sidewalk gaps on Broadway and connecting neighborhoods</li> <li>• Bicycle lanes on Broadway</li> <li>• Street trees</li> <li>• Greenway parallel to Broadway</li> </ul>

#### Origins and Destinations

Workshop participants were also given the chance to identify origins and destinations that they traveled between most often in the corridor, whether it was via car, bicycle, walking or public transit.

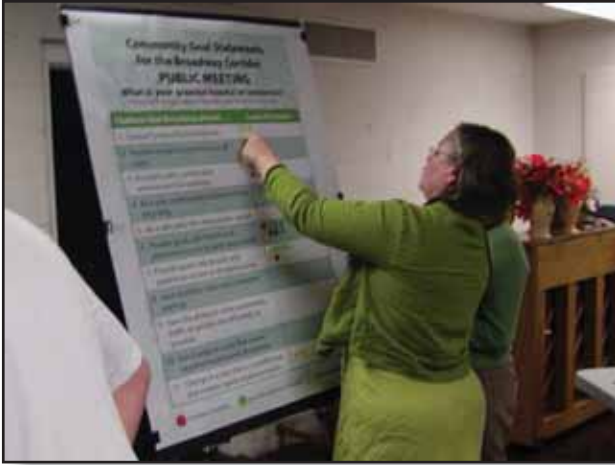


*Public workshops give an opportunity for the community to be heard.*



*Workshop participants review an aerial map of the corridor.*





Participants identify issues that they feel are most important.

**Community Goal Statements  
for the Broadway Corridor  
PUBLIC MEETING**

**What is your greatest issue(s) or concern(s)?**  
(Please place the appropriate sticker next to your top three choices below.)

I believe that Broadway should ...	Level of Concern
1. Support economic development.	
2. Provide access to businesses for all users.	
3. Provide a safe, comfortable environment for walking.	
4. Be a safe, comfortable environment for bicycling.	
5. Be a safe place for riding public transit.	
6. Provide good, safe bicycle and pedestrian access to parks and schools.	
7. Provide good, safe bicycle and pedestrian access to shopping areas.	
8. Have plentiful, close and convenient parking.	
9. Have the ability to move automobile traffic as quickly and efficiently as possible.	
10. Not change in a way that causes negative impacts and disruptions.	
11. Change in a way that is cost effective and enables quick implementation.	

● Greatest concern   
 ● Second greatest concern   
 ● Third greatest concern

### Major Destinations

- Kroger
- Hotel shops/Fountain City Park

### Secondary

- Library
- Schools
- Businesses around Woodrow Drive

### Origins

- Neighborhoods
- East of the corridor (corridor-wide)
- West of Park (lesser extent)

## Community Goals

Finally, participants had the opportunity to indicate the most important goals for the Broadway Corridor. The top three goals identified for the corridor centered on making the corridor as a whole a more safe, comfortable place for walking and bicycling. An additional priority is focused on improving bicycle and pedestrian access to parks and schools.

1. Safe, comfortable environment for walking.
2. Safe bicycle and pedestrian access to parks and schools.
3. Safe, comfortable environment for bicycling.

## IV. Corridor Vision Plan

After the opening workshop on October 20, the remainder of the corridor studio week was spent developing solutions to help transform Broadway into a complete street. The consulting team took into consideration the results of the existing context analysis plus feedback received at the opening workshop to make specific recommendations.

### Design Parameters

Prior to making design recommendations for Broadway, it was first necessary to come to an agreement on key design parameters for the corridor. While there are several different types of parameters to be considered in roadway design, this effort focused on two of the most relevant and critical: target speed and design speed.

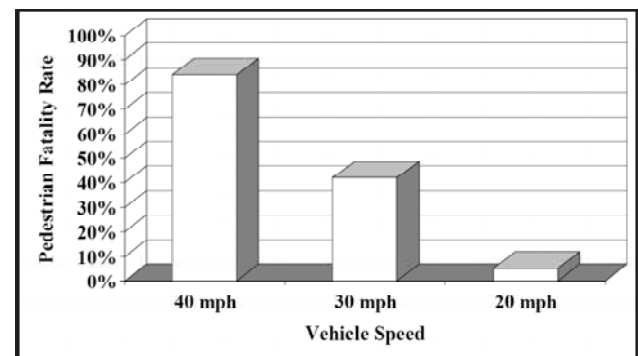
#### Target and Design Speed

Research demonstrates a clear relationship between motor vehicle speeds and pedestrian safety. Further, lower design speeds enable more bicycle- and pedestrian-friendly design – narrower lanes, tighter curb radii, etc. The objective in setting the target speed for Broadway is to enable the creation of safe, walkable, pedestrian-friendly place while not compromising motor vehicle safety or mobility.

- **TARGET SPEED** is the speed at which vehicles should operate, consistent with the level of multimodal activity generated by adjacent land uses to provide both mobility for motor vehicles and a safe environment for pedestrians and bicyclists.
- **DESIGN SPEED** is the speed that governs certain geometric features of the road.
- Target speed is equal to design speed.

Existing Posted Speed	Recommended Target and Design Speed
40 mph	30 - 35 mph

This study recommends a proposed target speed of 30 to 35 mph for Broadway. This is consistent with observed average motor vehicle operating speeds (15 to 23 mph in the peak and 18 to 30 mph in the off-peak), and will permit a design commensurate with the anticipated level of pedestrian activity in the corridor. The study used a 30 mph design speed as the parameter for design recommendations.



Speed vs. Pedestrian Safety (Source: New Jersey DOT)

The application of a lower design speed on Broadway will have no significant affect on automobile mobility during peak periods (including morning, mid-day and afternoon). During these times, delay at signalized intersections determines the speed at which automobiles can progress through the corridor. At off-peak periods (late night and early morning), there may be some delay for automobiles. However, this will impact a relatively small number of motorists, and will actually result in improved safety for bicyclists and pedestrians at time when darkness creates visibility concerns for these users.

### Design Vehicle

The design vehicle influences the design of roadway components such as lane width and curb radii. A significant amount of truck traffic is observed moving through the corridor. Therefore, the tractor trailer (WB-40) is recommended as the design vehicle for through movements on Broadway. For intersections and other turn movements a smaller design vehicle was assumed: passenger car (P), single unit truck (SUT) and KAT transit fixed-route transit vehicles (CITY-BUS).

Design Vehicle Assumptions	
Through Movement	Intersection Design
Tractor Trailer (WB-40)	Passenger car (P) Single Unit Truck (SUT) KAT Transit Vehicle (CITY-BUS)



## Ultimate Vision

The ultimate vision for Broadway is in the creation of a safe place for bicyclists, pedestrians and transit riders, while maintaining the corridor's motor vehicle mobility function. Generally speaking, the vision includes the following elements:

- **Travel lanes** – remain at 11 feet.
- **Raised landscaped median island** – alternating with turn lanes.
- **Bicycle lane** – four-foot striped lanes on both sides of the street.
- **Sidewalks** – six feet wide on both sides of the street; (wider in some locations to accommodate transit facilities).
- **Planting strip with street trees** – to provide a buffer between sidewalks and adjacent traffic and to change the character of the roadway.
- **Buildings** – moved closer to the street through *maximum* 30-foot setbacks.

The recommended vision can be achieved without acquiring additional ROW, with a few minor exceptions.

**Figure 4.1 Elements of a Complete Street**

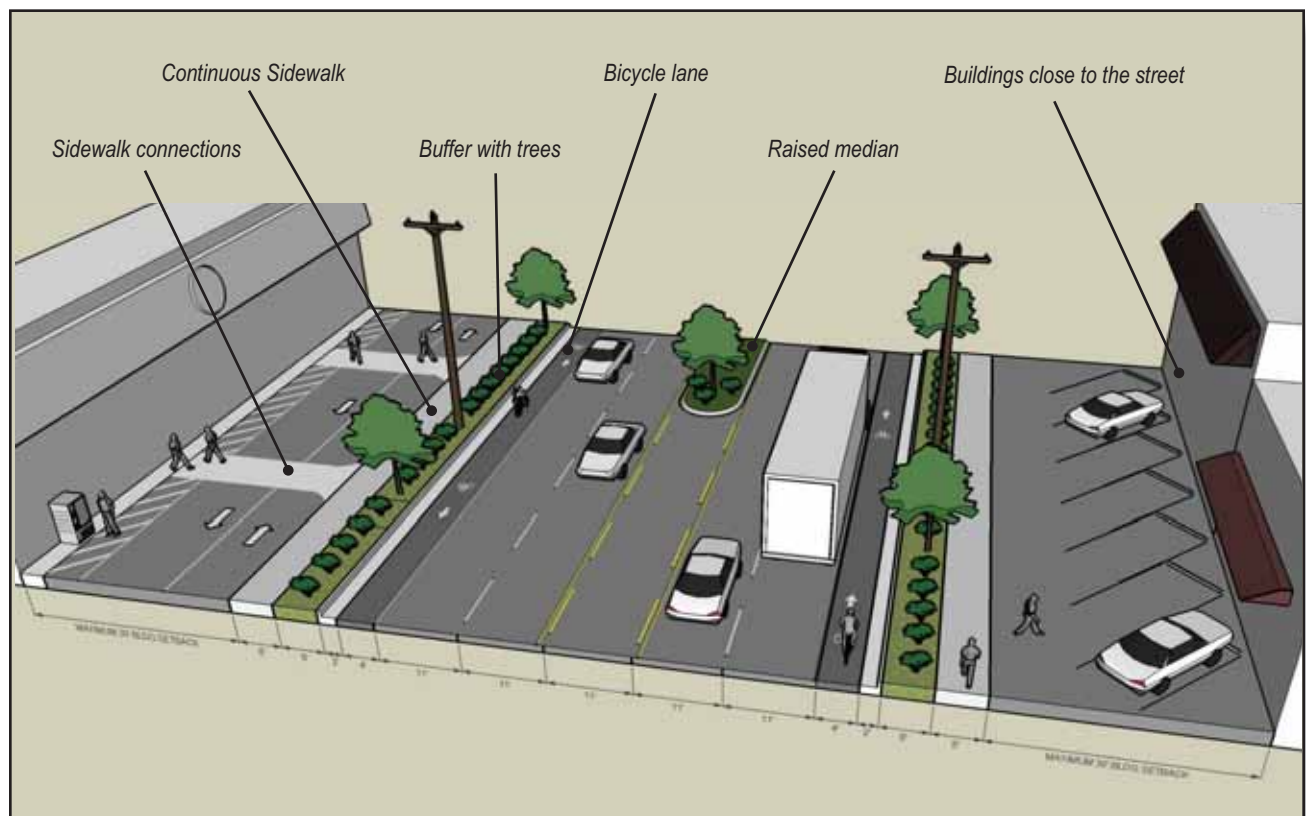


Figure 4.2a Hotel Road to Colonial Circle — Existing Conditions



Figure 4.2a Hotel Road to Colonial Circle — Long-Term Vision



Figure 4.2b Old Broadway to Knox Road — Existing Conditions



Figure 4.2b Old Broadway to Knox Road — Long-Term Vision





Figure 4.2c Knox Road to Cedar Road — Existing Conditions

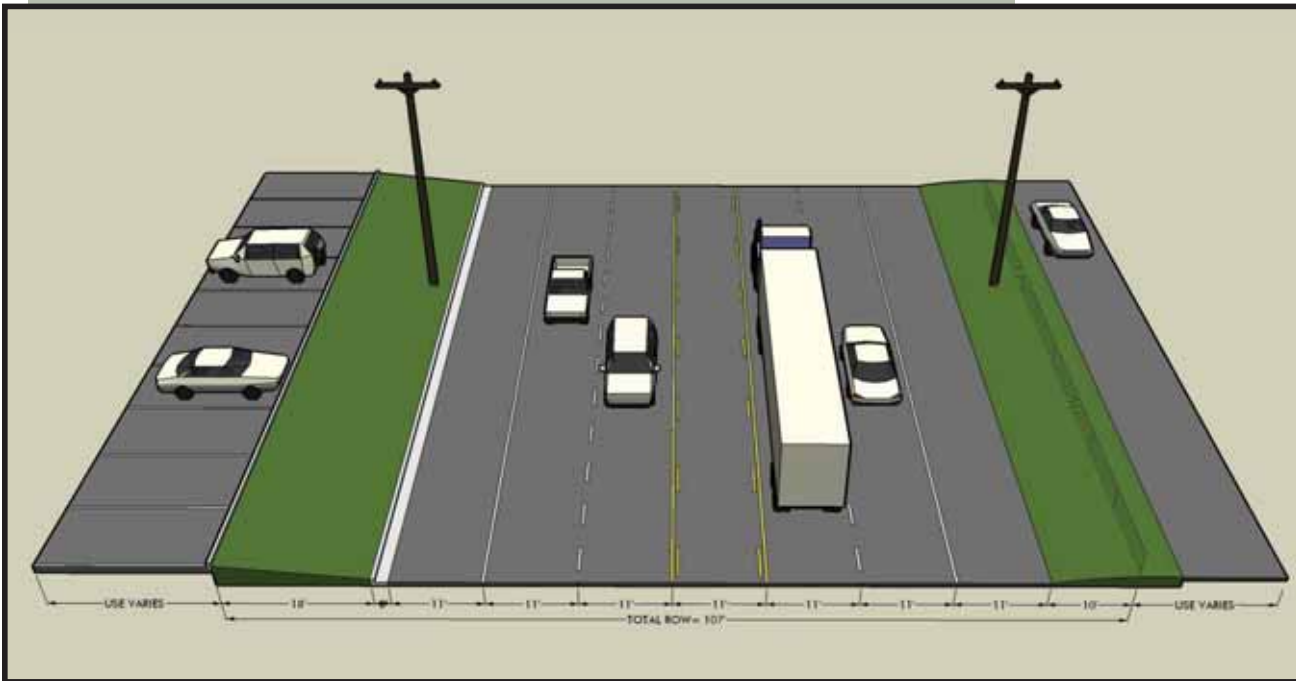


Figure 4.2c Knox Road to Cedar Road — Long-Term Vision



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## Toolkit of Strategies

The recommended vision for Broadway, if implemented as a single project, would entail reconstruction of the road to accommodate the raised median, extended curb, sidewalks and trees. This is a very costly and potentially disruptive proposition.

Rather than attempt to implement the vision all at once, the study recommends a toolkit of strategies, that will show immediate results and incrementally achieve the vision over time. The strategies begin with lower cost options that can be implemented relatively quickly and progress toward more costly strategies that require more time.

### Intersection Crossing Enhancements

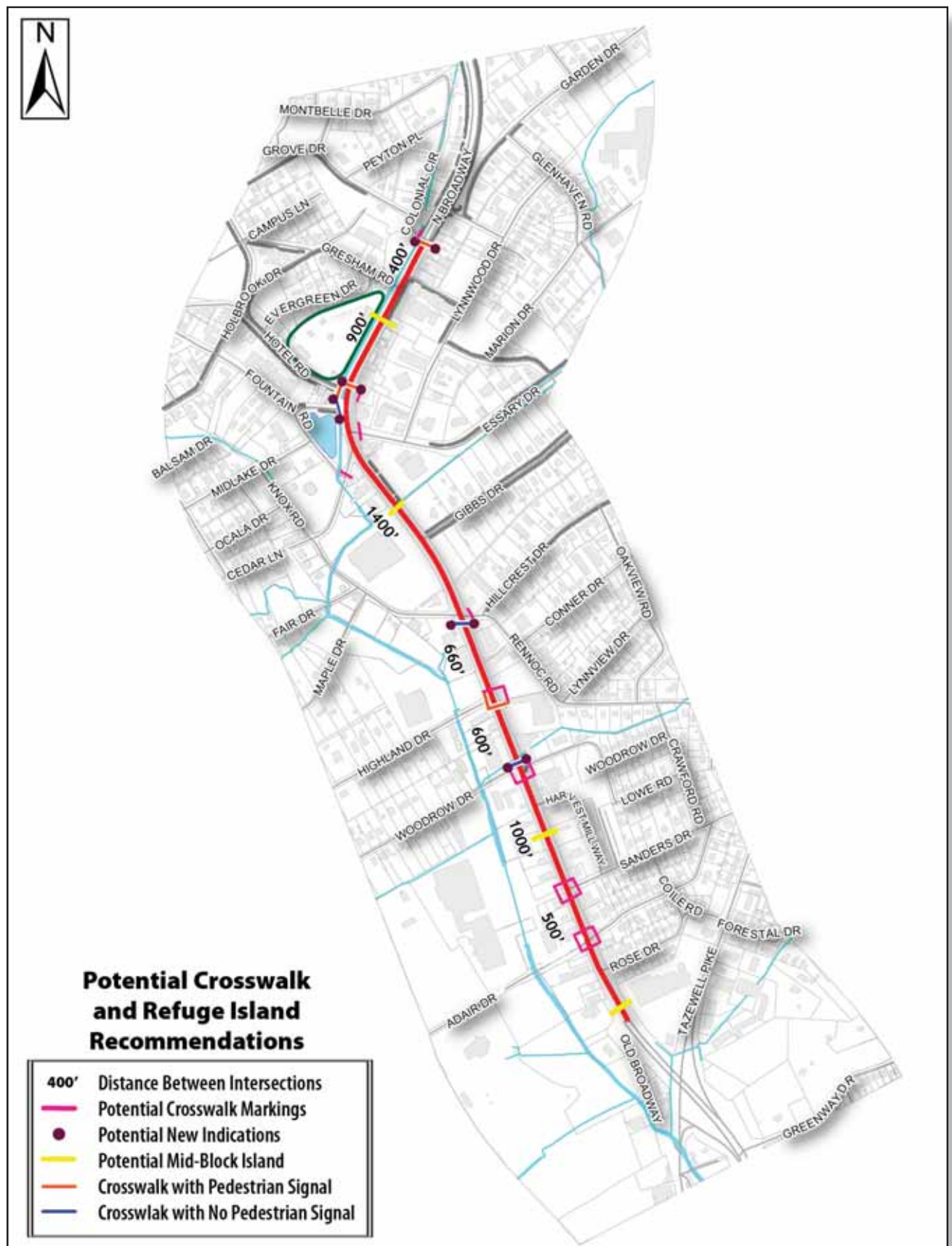
The existing context analysis noted the lack of pedestrian treatments at signalized intersections in the corridor. A basic, low-cost strategy for making Broadway more pedestrian-friendly is adding marked crosswalks and pedestrian indications to existing signalized intersections, and adding pedestrian indications at marked crosswalks that currently do not have them. Marked crosswalks and pedestrian indications provide safe, designated locations for crossing intersections.

Adding pedestrian indications could potentially have an impact on traffic signal timing at intersections on Broadway. Any potential impact of signal timing on vehicle delay should be carefully weighed against the benefits provided to other users.





Figure 4.3 Strategies: Intersection Crossing Enhancements





*Transit pads and shelters, integrated with intersection improvements, create a safe and comfortable place for accessing transit.*

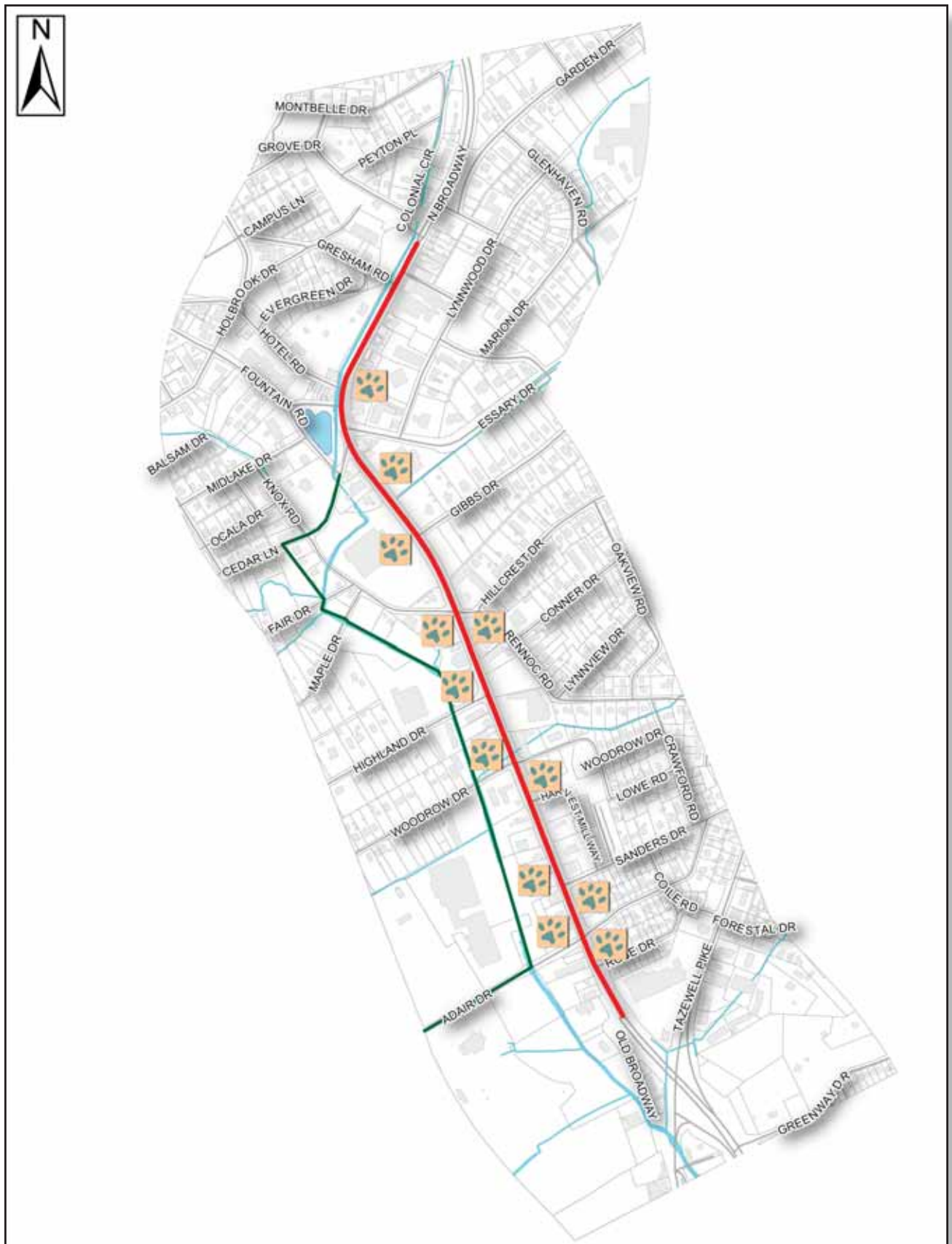


*Transit facilities would be developed in accordance with Knoxville Area Transit standards, if developed. All transit stops should have pads and seating. Shelters should be considered where ridership volumes or conditions warrant.*

### **Transit Facilities**

Despite relatively high levels of service and demand, there are currently no facilities for transit in the corridor, leaving riders to stand and wait for a bus in the paved shoulder or landscaping areas. Dedicated transit stops, which provide a safe, comfortable and convenient place for riders to access transit, are recommended at strategic locations in the corridor where transit riders are likely to want to go. Transit facilities consist of concrete pads with benches and/or shelters and signage that serve as dedicated locations for accessing transit.

Figure 4.4 Strategies: Transit Facilities



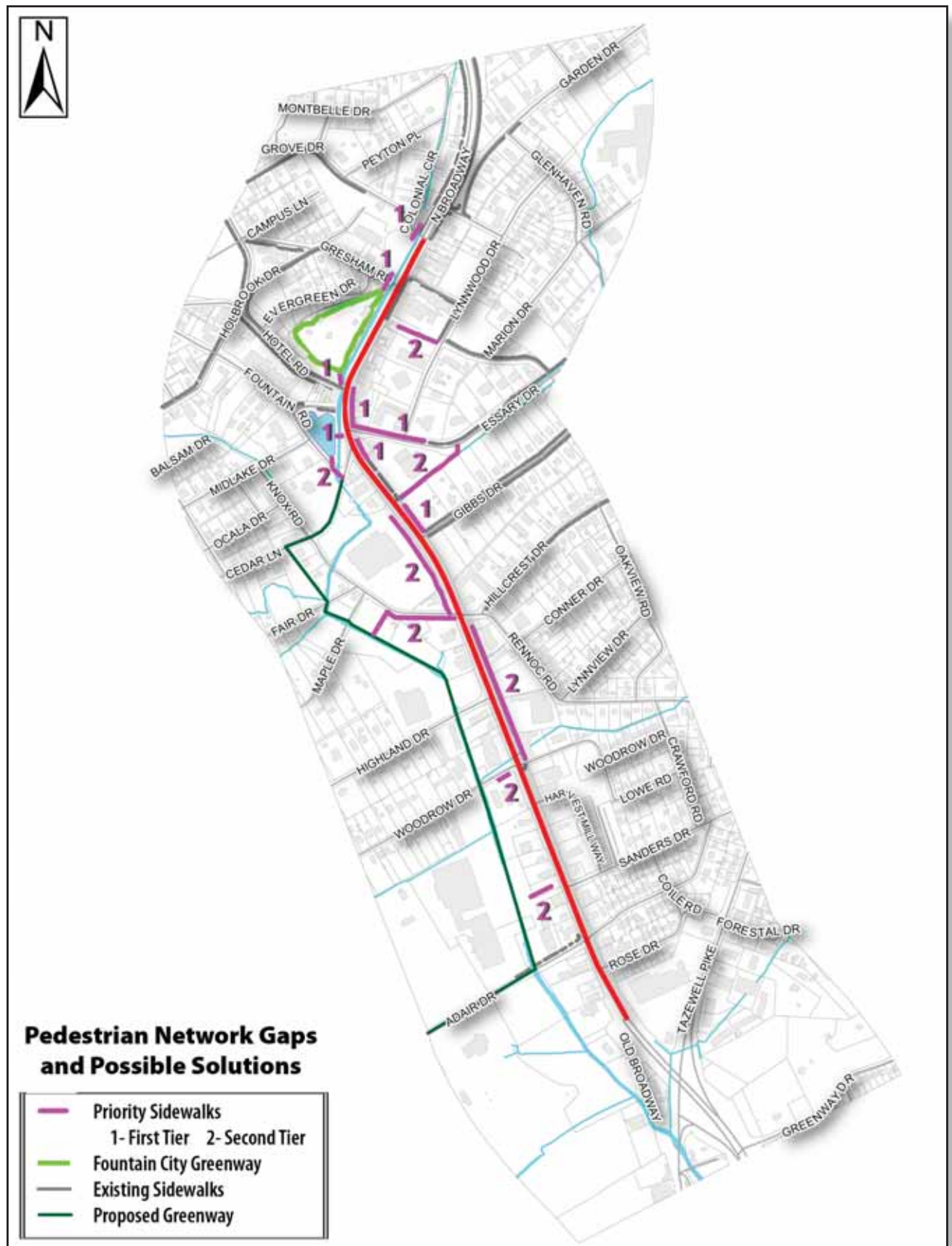




### **Sidewalk Links**

While it would be desirable to build sidewalks throughout the entire length of the Broadway corridor and connecting side streets, it is far too costly to take on as a single project. Instead, completing the most critical links first is a good way to achieve basic levels of walkability in the corridor. Field observations by the study team, as well as feedback received from workshop participants, led to the identification of critical sidewalk links ranging in length from approximately 100 feet to 500 feet. The links have been divided into two tiers to aid in implementation: the first tier, representing the highest priority, and the second tier, representing the lower priority.

Figure 4.5 Strategies: Sidewalk Links



### Mid-block Island and Curb Extensions

The current configuration of Broadway includes a two-way center turn lane, otherwise known as a flush median. It is recommended that raised concrete islands be constructed at strategic mid-block locations along the corridor. The placement of islands serves several purposes:

**Lower operating speeds** — the raised islands will reduce the overall pavement width in the corridor, making drivers more perceptive of their operating speed and causing them to drive at more appropriate speeds.

**Access Management** — the islands will restrict turn movements at inappropriate locations, which will improve safety and vehicular capacity on Broadway.

**Aesthetics** — the island will provide opportunities for landscaping and gateway treatments.

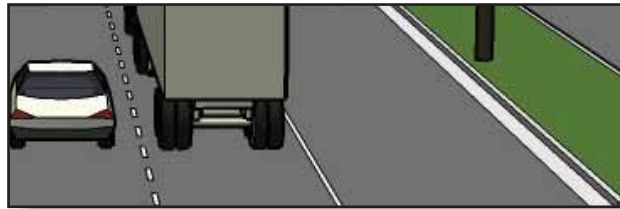
Finally, even with the placement of crosswalks and pedestrian indications at all signalized intersections in the corridor, there will still be long gaps on Broadway with no crossing treatments, forcing pedestrians to use the flush median to cross the street. Carefully placed mid-block raised islands are a safer option than the flush median for crossing the street. The island breaks one, complex crossing into two shorter ones.

Current research suggests that it is safer on high-volume, multilane roads (such as Broadway) not to mark a mid-block crossing where a refuge island is installed. The placement of islands depends upon consideration of several factors, including vehicular approach speeds and visibility. Further research and analysis is needed prior to installation.

They may be brick or concrete and include trees and/or landscaping. The raised islands may be aligned with curb extensions to further reduce the crossing distance for pedestrians.

### Bicycle Lanes

The existing paved shoulder on Broadway provides ample space to put a striped bicycle lane, providing a safe, designated space that is separate from motor vehicles. In locations where the shoulder disappears or there is a right turn lane, bicyclists must share the outside lane with motor vehicles. This is achieved through appropriate pavement marking and signage.



Existing paved shoulder on Broadway.



A striped bicycle lane on Broadway.



'Arrows' identify locations where bicycles share travel lanes with automobiles.

(source: [Livablestreets.com](http://Livablestreets.com))

### Figure 4.6 Mid-block Island

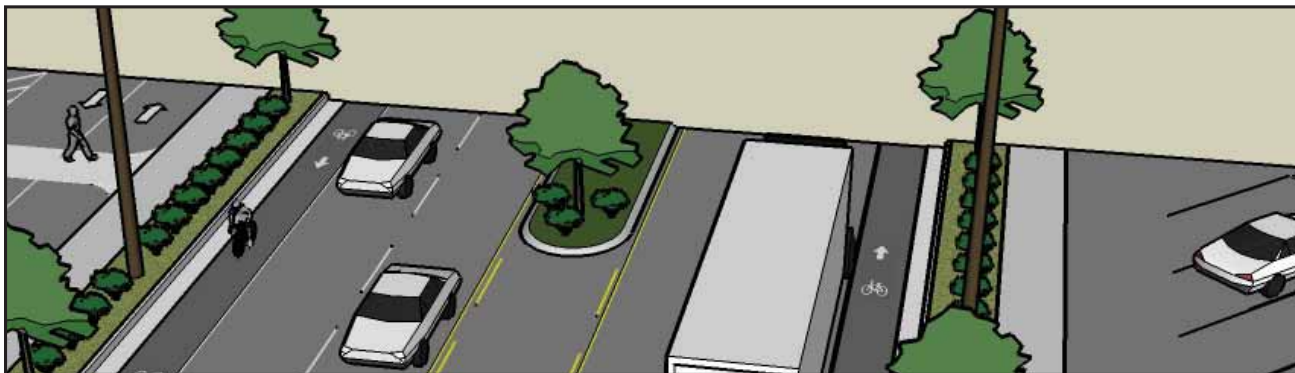
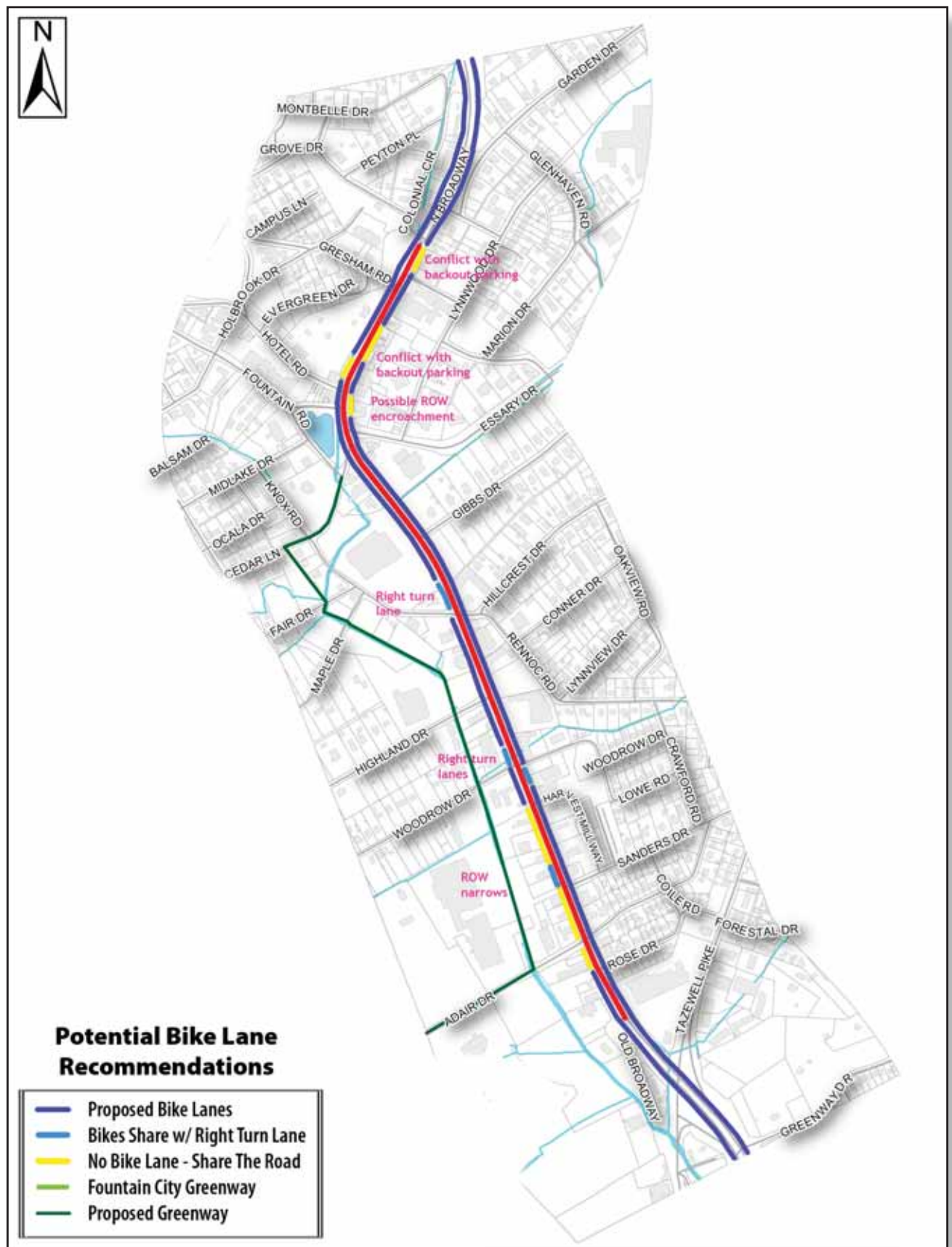




Figure 4.7 Strategies: Bicycle Lanes





*Broadway and Woodrow Drive: Existing conditions*



*Broadway and Woodrow Drive: Proposed intersection improvements include reduced curb radii, curb extensions and ramps and transit pads.*

### Intersection Improvements

While crosswalks and pedestrian indications are good quick fixes for intersections in the corridor, they don't address some of the other design issues that make them barriers for bicycles and pedestrians, including long crossing distances and high turning speeds.

A longer term strategy for Broadway is to reconfigure the intersections themselves. This may include a combination of curb extensions, ramps, raised right turn islands and transit pads. Intersection improvements can reduce cross times, provide a safe refuge for street crossing and waiting for a bus, make bicycles and pedestrians more visible to automobiles and cause automobiles to turn at an appropriate radius and rate of speed.

Further analysis is needed to determine the impacts of intersection improvements on motor vehicle mobility. While reducing pedestrian cross time will have a positive impact on signal timing, curb extensions have the potential for creating additional delay at high-traffic intersections on Broadway. Any potential impact of curb extensions on vehicle operations should be carefully weighed against the benefits provided to pedestrians and transit riders.

For larger, more complex intersections, such as Cedar and Essary, a full study should be programmed and performed prior to making final recommendations.

### Streetscape in Spot Locations

While it's not feasible to build the recommended vision all at one time, constructing streetscape improvements at spot, strategic locations along the corridor could help implement the vision incrementally. This could include curb extensions to accommodate sidewalks, planting strips/street trees and street furniture and could be done in combination with access management (see the next section).

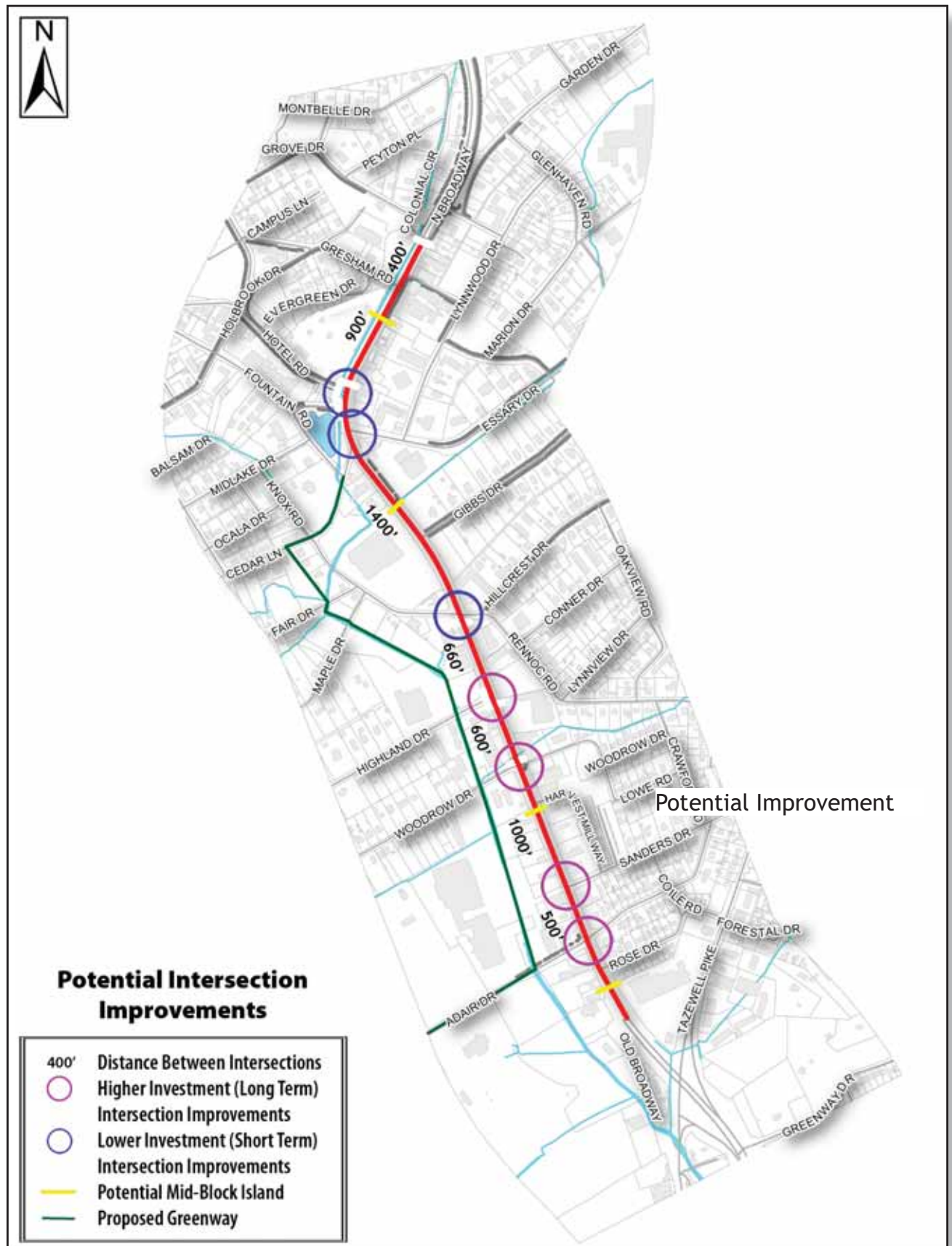
Streetscape improvements will create a safe, comfortable and attractive place for pedestrians, provide a buffer from corridor traffic, support an active street life and create a more aesthetically pleasing Broadway corridor. The striping of bicycle lanes and integration of transit facilities, where warranted, should be done concurrently with streetscape improvements.

Streetscape improvements could be programmed and funded as public projects, or be incentivized for private development as part of an overlay.

### Access Management in Spot Locations

Multiple curb cuts on Broadway not only creates an unpredictable environment for bicycles and pedestrians, but it creates operational issues for motor vehicles as well.

Figure 4.8 Strategies: Intersection Improvements







*Cedar to Essary: Existing conditions*

Eliminating redundant access points along Broadway by consolidating (purchasing) driveways will reduce motor vehicle conflicts with pedestrians and bicycles along Broadway. Additionally, reducing curb cuts can eliminate turn movements and improve traffic flow. Special care must be taken to ensure that adjacent property access is not adversely affected. Driveway consolidation should be considered concurrent with all streetscape projects.

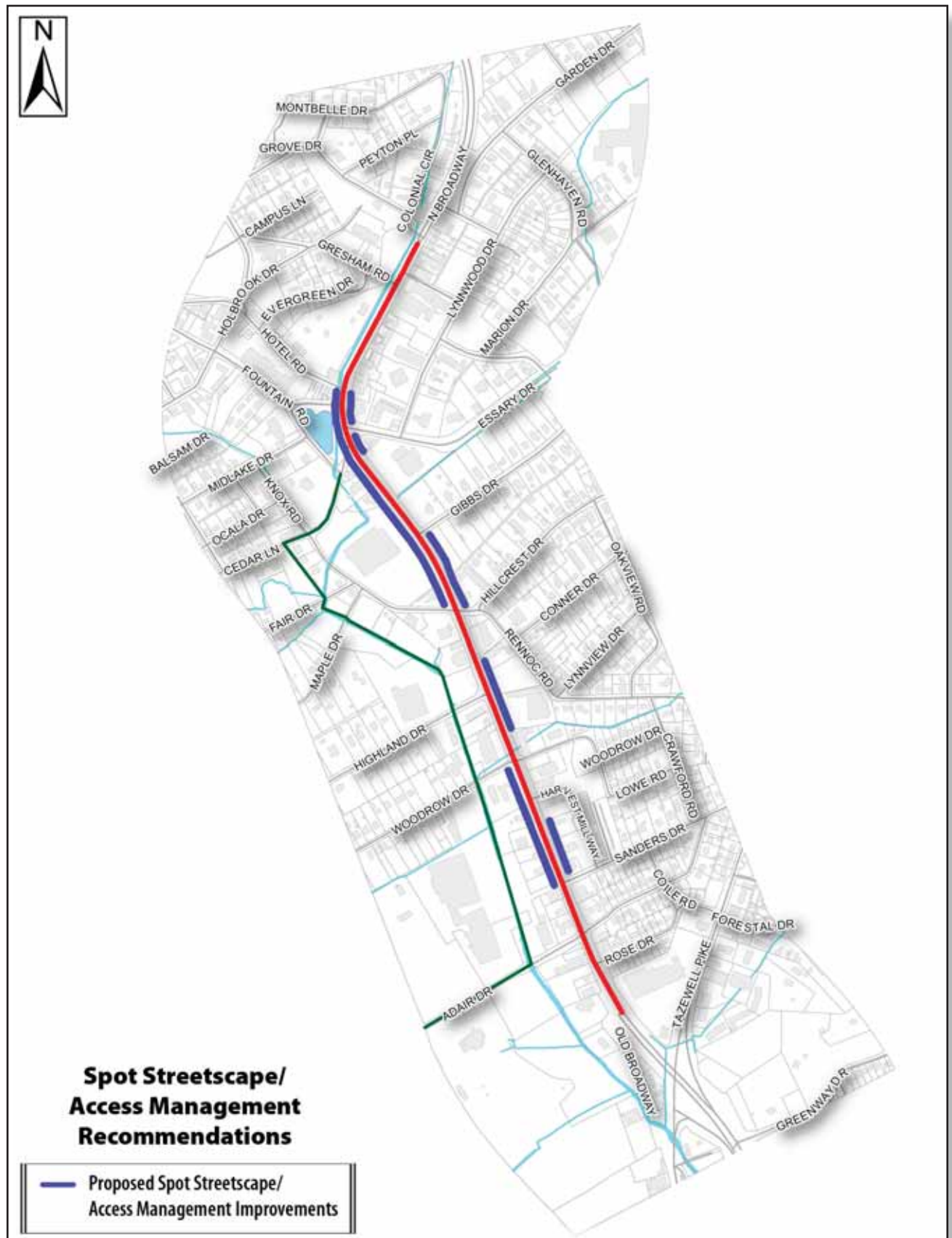


*Cedar to Essary: Proposed intersection improvements for Cedar Drive and Essary Drive include sidewalks, crosswalks/pedestrian indications and raised right turn islands with pedestrian refuges. The construction of a right turn island at Essary Drive will require that southbound left turns be prohibited.*



*Cedar to Essary: A second option for Essary Drive is to replace the right turn island with a curb extension. Southbound left turns are permitted, but northbound right turns are not.*

Figure 4.9 Strategies: Spot Streetscape & Access Management



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## V. IMPLEMENTATION

### Prioritization

The long-term vision and toolkit of strategies were presented at a second workshop on October 23. The overall response was very positive. Through a weighted selection process, workshop participants were given the opportunity to indicate their preference for each type of strategy. An online survey, attached to the TPO's web site, provided additional opportunities for individuals to learn about the strategies and indicate their preference.

The combined results of the selection process are presented below. The results are not scientific.

The survey results presented below are one factor to be taken into consideration when the TPO and its agency partners begin to implement the recommended toolkit of strategies. In addition to preference, it is proposed that the TPO and its partners consider a number of factors for implementation, including cost (particularly those projects that cost no public money), impacts to mobility for all modes, whether positive or negative, and disruptions/impacts to business in the corridor.

Strategy	Rank
Sidewalk Links	1
Mid-block Islands and Curb Extensions	2
Intersection Crossing Enhancements	3
Intersection Improvements	4
Bicycle Lanes	5
Streetscape In Spot Locations	6
Access Management in Spot Locations	7
Transit Facilities	8
Total Responses:	23

Broadway Complete Streets Toolkit of Strategies:

Proposed Framework for Implementation

- Preference
- Cost
- Impacts to mobility
- Disruption/impacts to business

### Funding

In sum, the total cost of the projects included in the toolkit of strategies is likely several million dollars. As a point of comparison, the City of Knoxville spent a total of

\$250,000 citywide in 2007 for sidewalk projects. Clearly, it will be a challenge to publicly fund the projects.

What Does It Cost?	
Crosswalks and pedestrian indications	\$6,000 to \$40,000
Transit pad/shelter	\$10,000
Sidewalk Links	\$15,000 to \$25,000 per 100 linear feet
Bicycle Lanes	\$25,000 to \$50,000 per mile
Mid-block Island & Curb Extensions	\$10,000 to \$25,000
Intersection Improvements	\$75,000 to \$250,000
Streetscape in Spot Locations	\$20,000 to \$40,000 per 100 linear feet
Access Management in Spot Locations	Varies

There is no specific pool of money set aside for funding the recommendations of this Plan. However, the important thing is that there is a plan with specific, tangible projects in place, so that funding vehicles can be actively pursued. The Broadway Complete Streets Plan meets that objective.

## ‘Tag Along’ Projects

Perhaps a more practical and creative way to get some of the projects implemented is by ‘tagging along’ with an already programmed project. For example, if there is a drainage or sewer project in the corridor that requires digging, the cost to extend the curb and/or and construct sidewalks becomes minimal. Other types of tagalong projects could include resurfacing, intersection safety projects, signal projects and property development/redevelopment.

## Policies

A long-term, continual approach to implement the vision and strategies is through policy changes. Policies, which are typically implemented through ordinances, make an impact as land use changes or as buildings are rebuilt or renovated (i.e. redevelopment). Policies could take the form of:

- **Sidewalk ordinance** – This is a basic requirement for construction of sidewalks

concurrent with new development, commonly used by municipalities. A proposed citywide sidewalk ordinance is currently under development and review; the design standards presented in the recommended vision could be used as a guideline for the ordinance.

- **Adequate public facility ordinances** – An expanded version of a sidewalk ordinance, this would require new development of certain thresholds to install new facilities commensurate with their demand. Facilities could include sidewalks, transit shelters, bicycle racks, etc.
- **Urban design overlay** – A special overlay district is created under a theme or premise. Design standards could govern a number of aspects, including signage, architectural, lighting, building placement and streetscape.
- **Form-based code** – Similar to an urban design overlay, this is a new approach to land development regulations that uses urban form guidance rather than policies to regulate development to achieve a specific urban form. Form-based code is already under development in other areas of Knoxville.
- **Incentives** – One way to achieve the policy recommendations is through incentives. For example, a new development could optionally build the streetscape recommendations of this plan, and as a result, be exempt from other development requirements – parking, maximum floor area ratio, etc.





# **APPENDIX A**

## **Project Locations**

### Broadway Complete Streets Study Project List

Segment	Improvement Type	Cost	Location	From	To	Notes
I	Crossing enhancement	\$\$	Adair Dr.			Crosswalks and pedestrian indications on all four legs.
II	Crossing enhancement	\$\$	Sanders Dr.			Crosswalks and pedestrian indications on all four legs.
II	Crossing enhancement	\$\$	Woodrow Dr.			Crosswalks and pedestrian indications at E, W & S legs.
III	Crossing enhancement	\$\$	Highland Dr.			Crosswalks and pedestrian indications at N & E legs.
III	Crossing enhancement	\$	Knox Rd.			Crosswalks E leg; pedestrian indications at E & S legs.
III	Crossing enhancement	\$	Cedar Dr.			Crosswalk and pedestrian indication at W leg.
IV	Crossing enhancement	\$	Essary Dr.			Crosswalk and pedestrian indication at E leg.
IV	Crossing enhancement	\$	Church St.			Pedestrian indication at W leg.
IV	Crossing enhancement	\$\$	Hotel Rd.			Crosswalk and pedestrian indications at E leg; replace pedestrian indications at N & W legs.
V	Crossing enhancement	\$	Colonial Cir.			Crosswalk and pedestrian indications at W leg; replace pedestrian indications at S leg.
I	Mid-block island/curb extension	\$\$		Old Broadway	Adair Dr.	Specific location subject to further study.
II	Mid-block island/curb extension	\$\$		Adair Dr.	Woodrow Dr.	Specific location subject to further study.
IV	Mid-block island/curb extension	\$\$		Knox Rd.	Cedar Dr.	Specific location subject to further study.
VI	Mid-block island/curb extension	\$\$		Hotel Rd.	Colonial Cir.	Specific location subject to further study.
I	Transit stop	\$	S of Adair Dr., E side			Concrete pad, bench and/or shelter
II	Transit stop	\$	N of Adair Dr., E side			Concrete pad, bench and/or shelter
II	Transit stop	\$	N of Adair Dr., W side			Concrete pad, bench and/or shelter
II	Transit stop	\$	N of Sanders Dr., W side			Concrete pad, bench and/or shelter
II	Transit stop	\$	S of Woodrow Dr., E side			Concrete pad, bench and/or shelter
III	Transit stop	\$	N of Woodrow Dr., W side			Concrete pad, bench and/or shelter
III	Transit stop	\$	N of Highland Dr., W side			Concrete pad, bench and/or shelter
III	Transit stop	\$	S of Knox Rd., W side			Concrete pad, bench and/or shelter
III	Transit stop	\$	S of Knox Rd., E side			Concrete pad, bench and/or shelter
IV	Transit stop	\$	At Gibbs Dr., W side			Concrete pad, bench and/or shelter
IV	Transit stop	\$	S of Cedar Ln., E side			Concrete pad, bench and/or shelter
VI	Transit stop	\$	N of Hotel Rd.			Concrete pad, bench and/or shelter
IV	Sidewalk priority 1	\$\$	E side of Broadway	Gibbs Dr.	Existing sidewalk	
IV	Sidewalk priority 1	\$\$	E side of Broadway	Existing sidewalk	Essary Dr.	
IV	Sidewalk priority 1	\$\$\$	N side of Essary Dr.	Broadway	Existing sidewalk	
V	Sidewalk priority 1	\$\$	E side of Broadway	Essary Dr.	Hotel Rd.	
V	Sidewalk priority 1	\$\$	Broadway at the lake			Off-road path to lake
VI	Sidewalk priority 1	\$\$	Hotel Rd.			Off road path to Fountain City Park greenway
VI	Sidewalk priority 1	\$	At Gresham Rd.			Link between Fountain City Park and parking area
VI	Sidewalk priority 1	\$	At Colonial Cir.			Link between N side of Colonial and crossing at S side
II	Sidewalk priority 2	\$\$	At Sanders Dr.	W of Broadway	Broadway	Link between shopping center and sidewalk.
II	Sidewalk priority 2	\$	At Woodrow Dr.	W of Broadway	Broadway	Link between neighborhood and sidewalk.

Segment	Improvement Type	Cost	Location	From	To	Notes
III	Sidewalk priority 2	\$\$\$	E side of Broadway	Woodrow Dr.	Knox Rd.	
III	Sidewalk priority 2	\$\$\$	S side of Knox Rd	Proposed Greenway	Broadway	
IV	Sidewalk priority 2	\$\$\$	W side of Broadway	Knox Rd.	N of Gibbs Dr.	
IV	Sidewalk priority 2	\$\$	E side of Broadway	Broadway	Essary Dr.	Off-road path along property lines.
V	Sidewalk priority 2	\$\$	N of Cedar Ln	Cedar Ln	Lake	Off-road link.
VI	Sidewalk priority 2	\$\$	E of Broadway	Broadway	Lynwood Dr.	Off-road link.
I-VI	Bicycle lanes	\$\$\$		Old Broadway	Colonial Cir.	Striping, marking and signage.
I	Intersection Improvement	\$\$	At Adair Dr.			Curb extensions/ramps, transit pads
II	Intersection Improvement	\$\$	At Sanders Dr.			Curb extensions/ramps, transit pads
II	Intersection Improvement	\$\$	At Woodrow Dr.			Curb extensions/ramps, transit pads
III	Intersection Improvement	\$\$	At Highland Dr.			Curb extensions/ramps, transit pads
III	Intersection Improvement	\$	At Knox Rd.			Study
III	Intersection Improvement	\$\$\$\$	At Knox Rd.			Curb extensions/ramps, transit pads, right turn island
IV	Intersection Improvement	\$	At Cedar Ln.			Study
IV	Intersection Improvement	\$\$\$\$	At Cedar Ln.			Curb extensions/ramps, transit pads, right turn island
IV	Intersection Improvement	\$	At Essary Dr.			Study
IV	Intersection Improvement	\$\$\$\$	At Essary Dr.			Curb extensions/ramps, transit pads, right turn island
II	Streetscape/access management	\$\$\$	E side of Broadway	Sanders Dr.	Harvest Mill Way	Extend curb and install sidewalk, street trees; consolidate driveways
II	Streetscape/access management	\$\$\$\$	W side of Broadway	Sanders Dr.	Woodrow Dr.	Extend curb and install sidewalk, street trees; consolidate driveways
III	Streetscape/access management	\$\$\$	E side of Broadway	N of Woodrow Dr.	S. of Rennoc Rd.	Extend curb and install sidewalk, street trees; consolidate driveways
IV	Streetscape/access management	\$\$\$	E side of Broadway	Rennoc Rd.	Gibbs Dr.	Construct curb and install sidewalk, street trees; consolidate driveways
IV	Streetscape/access management	\$\$\$\$	W side of Broadway	Knox Rd.	Cedar Ln.	Construct curb and install sidewalk, street trees; consolidate driveways
V	Streetscape/access management	\$\$\$	W side of Broadway	Cedar Ln	Hotel Rd.	Construct curb and install sidewalk, amenities.
V	Streetscape/access management	\$\$	E side of Broadway	S. of Essary Dr.	Essary Dr.	Extend curb and install sidewalk, amenities.
V	Streetscape/access management	\$\$\$	E side of Broadway	Essary Dr.	Hotel Rd.	Extend curb and install sidewalk, amenities.

**Segment Key**

ID	Segment
I	Old Broadway to Adair
II	Adair to Woodrow
III	Woodrow to Knox
IV	Knox to Cedar
V	Cedar to Hotel
VI	Hotel to Colonial