

# TRAFFIC + PARKING GUIDELINES



## EXISTING CONDITIONS

### ROADWAYS

Relevant characteristics of the roads directly affected by the proposed Downtown Master Plan are summarized below. Attributes addressed include cross-sections, traffic control devices, speed limits, and sidewalks.

#### Haggard Avenue (SR 1454)

The 2010 Burlington-Graham Metropolitan Planning Organization (BGMPO) Comprehensive Transportation Plan (CTP) classifies Haggard Avenue as a Major Thoroughfare. From Manning Avenue to Williamson Avenue, it is a curb-and-gutter facility with two 12-foot travel lanes and a 12-foot two-way center turn lane (TWTL). It has a posted speed of 35-mph, and back-of-curb sidewalks on both sides. The only traffic control is a signal at Williamson Avenue. West of Manning Avenue, Haggard Avenue transitions to a 2-lane ribbon pavement cross-section with no paved shoulders or sidewalks. East of Williamson Avenue, the Haggard Avenue becomes a 2-lane street with a width of 36 feet and a 25-mph speed limit. The north side maintains a wide back-of-curb sidewalk; the intermittent sidewalk on the south side varies in width.

#### Williamson Avenue (SR 1301)

Williamson Avenue is classified as a Major Thoroughfare in the 2012 BGMPO CTP. Between Haggard Avenue and Lebanon Avenue, Williamson Avenue is a two-lane urban curb-and-gutter facility with a 20 mph speed limit. Cross section and width vary, due to on-street parking, curb bump-outs, and turn lanes. There are pedestrian crosswalks and signal heads at the Haggard Avenue intersection, and crosswalks at the North College, Lebanon, and Trollinger Avenue intersections. Immediately south of the Lebanon Avenue intersection, Williamson Avenue crosses the NCRR and Trollinger Avenue. A complex traffic signal controls both intersections, and is interconnected with the four-quadrant gate arm system at the railroad crossing. Pedestrian crossings are also heavy at this location, so in addition to creating potential safety hazards, the combination of so many conflicts in a constrained area means that delays and long vehicle queues are not uncommon.

#### Manning Avenue

Manning Avenue is identified as a Minor Thoroughfare in the 2012 BGMPO CTP. Between Haggard and Lebanon Avenues, Manning Avenue is a narrow 2-lane ribbon pavement street without paved shoulders or sidewalks. It has a posted speed limit of 25 mph.

#### Lebanon Avenue

Between Williamson Avenue and North Holt Avenue, the north side of Lebanon Avenue has on-street parallel parking, while the south side has pull-in perpendicular parking that extends about another 100 feet beyond the North Holt Avenue intersection. Beyond this point, Lebanon Avenue is a relatively narrow 2-lane street without curb-and-gutter. A sidewalk along the north side of Lebanon Avenue extends to Manning Avenue. The speed limit is 25 mph.

#### West College Avenue

West College Avenue is a typical 2-lane local street extending from Williamson Avenue to Manning Avenue. This street is approximately 24 feet wide from curb face to curb face, with sidewalk along the north side. It aligns with a major multi-use campus pathway east of Williamson Avenue, creating a significant pedestrian crossing. STOP signs control all intersection along West College Street.

#### North Holt Avenue

Extending from Haggard Avenue to Lebanon Avenue, North Holt Avenue is a typical 2-lane local street. It is approximately 24 feet wide from to curb, with sidewalk along the west side. North Holt Avenue is controlled by STOP signs at all intersections. There are three on-street parking spaces immediately north of Lebanon Avenue.

#### North Lee Avenue

North Lee Avenue is a 2-lane local street extending from Haggard Avenue to Lebanon Avenue. Its ribbon pavement cross-section is no more than 20 feet wide, with frequent driveways and pull-off perpendicular parking. It lacks sidewalks.

### TRAFFIC VOLUMES

The North Carolina Department of Transportation (NCDOT) conducts a biennial traffic count program to monitor average annual daily traffic (AADT) volumes over time at selected locations. The most recent counts available are for 2011. Haggard and Williamson Avenues carry the highest traffic volumes in the study area.

The 2011 AADT for Haggard Avenue between Manning and Williamson Avenues is 5,400 vehicles per day (vpd). Volumes are lower west of Manning Avenue (4,700 vpd), and higher east of Williamson Avenue (6,800 vpd). All of these volumes are well below the capacity of this street in its current configuration.

Williamson Avenue had a 2011 AADT of 8,200 vpd between Haggard Avenue and Lebanon Avenue. North of Haggard Avenue, volumes drop to 6,300 vpd; south of Lebanon Avenue, they increase to 9,700 vpd. These volumes are lower than the capacity of Williamson Avenue at each of those locations.

In the immediate vicinity of the study area the only other streets with 2011 AADT data are Manning Avenue (1,200 vpd or less) and Lebanon Avenue (1,500 vpd east of Manning Avenue, and 3,400 vpd west of Williamson Avenue). These volumes are well below the capacities of these streets. Comparable conditions appear to exist on North Holt, North Lee, and West College Avenues.

While Haggard Avenue once served a more important role as an east-west route between Burlington and Guilford County, over time this function has been supplanted by US 70, I-40, and most recently by University Drive. Land use patterns have also shifted in response to these changes. As a result, traffic on Haggard Avenue west of Williamson Avenue has dropped 37% from a high of 8,600 vpd in 1996.

Similarly, the completion of University Drive, with its higher speed and capacity (and grade-separated rail crossing), has diverted traffic from Williamson Avenue, once the main north-south route in the area. AADTs on Williamson Avenue south of Haggard Avenue fallen 25% from a high of 11,000 vpd in 2005, just prior to the completion of University Drive.

## EXISTING CONDITIONS

### PARKING

While the supplies of on-street, off-street public, and private parking in the study area appear adequate, there is heavy demand for public spaces in the southeastern portion of the study area. This free, minimally regulated parking is the most convenient to retail activity in the northwest quadrant of Williamson and Lebanon Avenues, as well as providing relatively easy access to the Elon University campus.

### TRANSIT

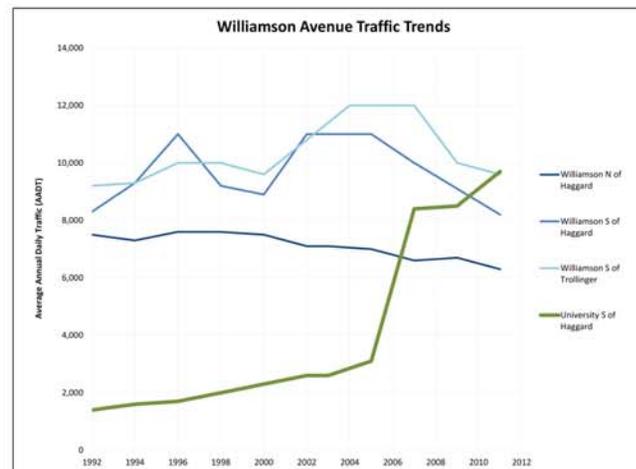
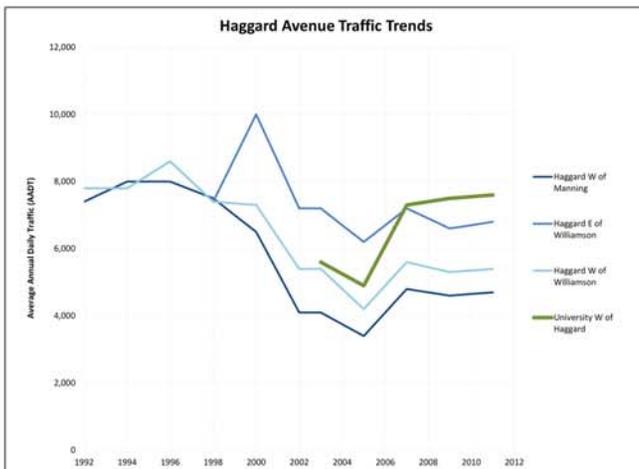
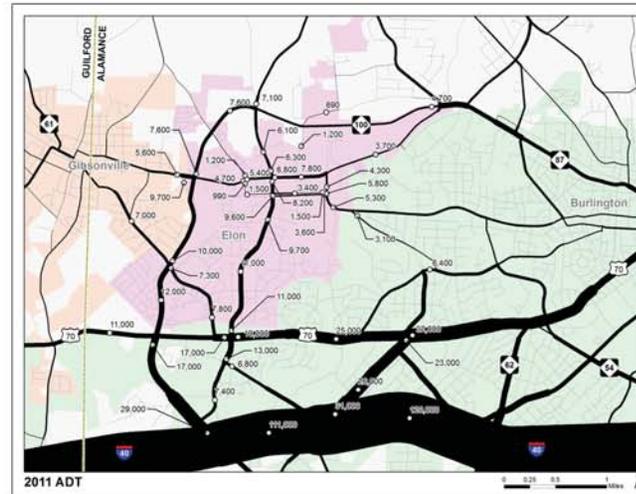
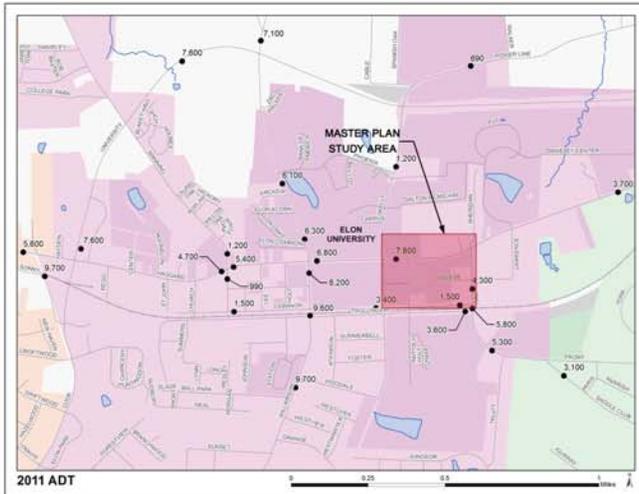
There is currently no fixed-route or scheduled public transit service in the Town of Elon. The Elon University West Line uses Haggard Avenue, but does not have stops on Haggard Avenue.

### BICYCLES

The area bounded by (and including) Haggard, Williamson, Lebanon, and Manning Avenues includes no dedicated bicycle facilities, such as bike lanes, shared lane markings (sharrows), side paths, or multi-use pathways. The nearest multi-use facility is an east-west connection running about 300 feet north of Haggard Avenue between Elon Commons Drive (The Oaks) and the Arts West facility west of Manning Avenue.

### PEDESTRIANS

the sidewalks and crosswalks described in the Roadways section above are the only pedestrian facilities in the study area; there are no off-street facilities.



## CONSISTENCY WITH OTHER PLANS AND STUDIES

### OVERVIEW

A number transportation plans and studies relevant to the Downtown Elon Master Plan have been undertaken in recent years. Most of these are associated with the Burlington-Graham Metropolitan Planning Organization (BGMP). Available documents were reviewed, and information pertinent to the Downtown Elon Master Plan used in developing and assessing the transportation elements of the Master Plan. Key findings are summarized below.

#### BGMPO LONG-RANGE TRANSPORTATION PLAN (LRTP) (2012 Draft Update)

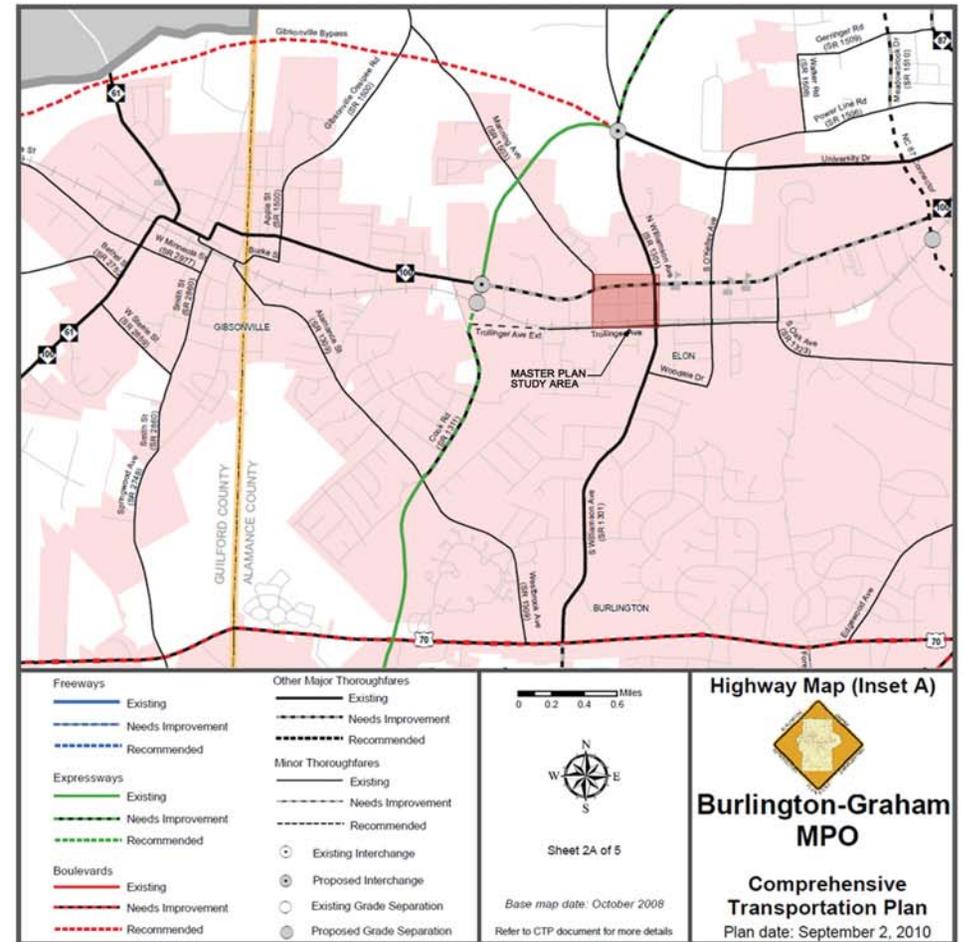
The most recent update of the BGMP LRTP does not contain any recommendations for 2015, 2025, or 2035 that directly affect Downtown Elon or the proposed Master Plan. The recommendations most relevant to this study relate to widening and other enhancements to US 70. The LRTP also identifies recently completed improvements to University Drive as a priority for 2015.

The LRTP report also discusses potential long-term changes in rail service that could affect the line between Lebanon and Trollingen Avenues. Increasing freight and passenger demand, combined with the proposed Piedmont High-Speed Rail Corridor and potential regional commuter rail service, could have significant impacts on Downtown Elon. Additional tracks could be required, widening the footprint of the railroad, with impacts on at least the perpendicular parking along the south side of Lebanon Avenue. The at-grade rail crossing of Williamson Avenue would obviously be affected negatively. Even in the absence of additional rail lines, longer, faster, or more frequent trains will also impact this crossing, as well as many land uses close to the tracks. On the other hand, commuter rail service that stopped in Elon could provide substantial benefits, and would be highly-compatible with the changes proposed in the Downtown Master Plan.

#### BGMPO COMPREHENSIVE TRANSPORTATION PLAN (CTP) (Adopted 2010)

All projects advanced in the LRTP are supposed to be drawn from the CTP. Unlike the LRTP, the CTP is not required to be fiscally constrained, and contains a number of "vision" projects for which no reasonable funding source or implementation schedule have been identified. Among these projects are two that affect the Elon Downtown Master Plan.

- The Gibsonville Bypass would extend westward from University Drive in the vicinity of its intersection with Williamson Avenue, eventually tying into NC 61 west of Gibsonville. Classified as a Boulevard, this facility would be expected to divert even more east-west traffic from Haggard Avenue, while possibly increasing traffic on Williamson Avenue, primarily north of Haggard Avenue.
- According to the CTP Project Problem Statements, Haggard Avenue should be widened to a "four-lane major thoroughfare with curb and gutter" between Williamson Avenue and NC 87/NC 100 to the east. (The adopted CTP Highway Map, however, defines the entire segment from University Drive to NC 87/NC 100 as "Needs Improvement.") This project does not seem consistent with anticipated travel trends and needs, nor with the land use and transportation plans of the Town of Elon and Elon University. It also seems problematic in light of the CTP's designation of Haggard Avenue as an on-street bicycle route in need of improvement. Given the expense and disruption associated with such a major widening project, the minimal benefits provided, and the conflicts with other plans and policies, this project does not seem likely, even in the long term.



## CONSISTENCY WITH OTHER PLANS AND STUDIES

As mentioned above, the BGMPO CTP Bicycle Map identifies Haggard Avenue as an on-street bicycle facility needing improvement. Manning Avenue and Lebanon Avenue are also placed in this category. The proposed Downtown Master Plan advances these objectives.

### BGMPO UNFUNDED PROJECT REQUESTS

The BGMPO website links to a listing of unfunded transportation projects submitted by MPO members. , including the Projects submitted by the Town of Elon that are relevant to this study are listed in prioritized order:

- Sidewalk project on West Haggard Avenue from Manning Avenue going west to University Drive
- Sidewalk along Manning Avenue from University Drive to West Haggard Avenue
- Pedestrian Crossing Improvements for the Williamson Avenue/Trollinger/Lebanon Avenue intersection

### TOWN OF ELON BICYCLE, PEDESTRIAN, AND LIGHTING PLAN (2008)

The Town of Elon, Elon University, and Twin Lakes Retirement community collaborated in creating a bicycle and pedestrian plan that was adopted by the Town in 2008. Several of the recommendations identified in that plan have been at least partially implemented, and others are echoed in other plans cited previously. The Downtown Master Plan recapitulates many recommendations from the Bicycle, Pedestrian, and Lighting Plan, and as indicated by the following excerpt, is consistent with its Vision Statement:

In the year 2030 the Town of Elon will have a pedestrian, bicycle and lighting system that will tie major residential areas together, providing students and residents safe and well-lit access from residential areas to campus academic and recreational facilities and the downtown....Spacious bicycle and pedestrian paths will exist downtown and will also connect with Burlington and Gibsonville encouraging walking, running and biking throughout Elon and neighboring communities. Facilities will be safe, functional, innovative, well-used and maintained. Elon will provide connectivity between residences and grocery shopping, restaurants and other destinations, providing key access points to destinations and anchors of activity in the Town and University.

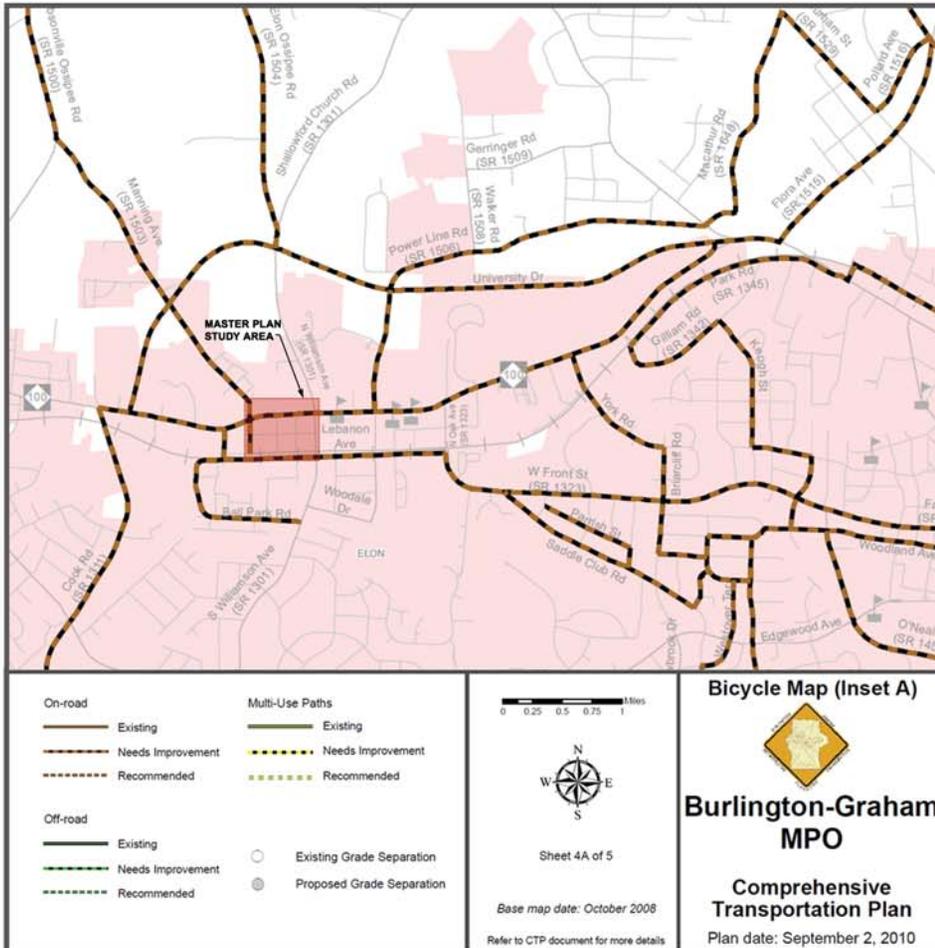
Proposed sidewalk improvements relevant to the Downtown Master Plan include:

- Extend sidewalk on north side of Lebanon Avenue from Manning Avenue west to Church Street (by 2014).
- Extend sidewalk on north side of Haggard Avenue from Manning Avenue west to University Drive (by 2014).
- Provide sidewalk on east side Manning Avenue, north from Haggard Avenue (by 2019).

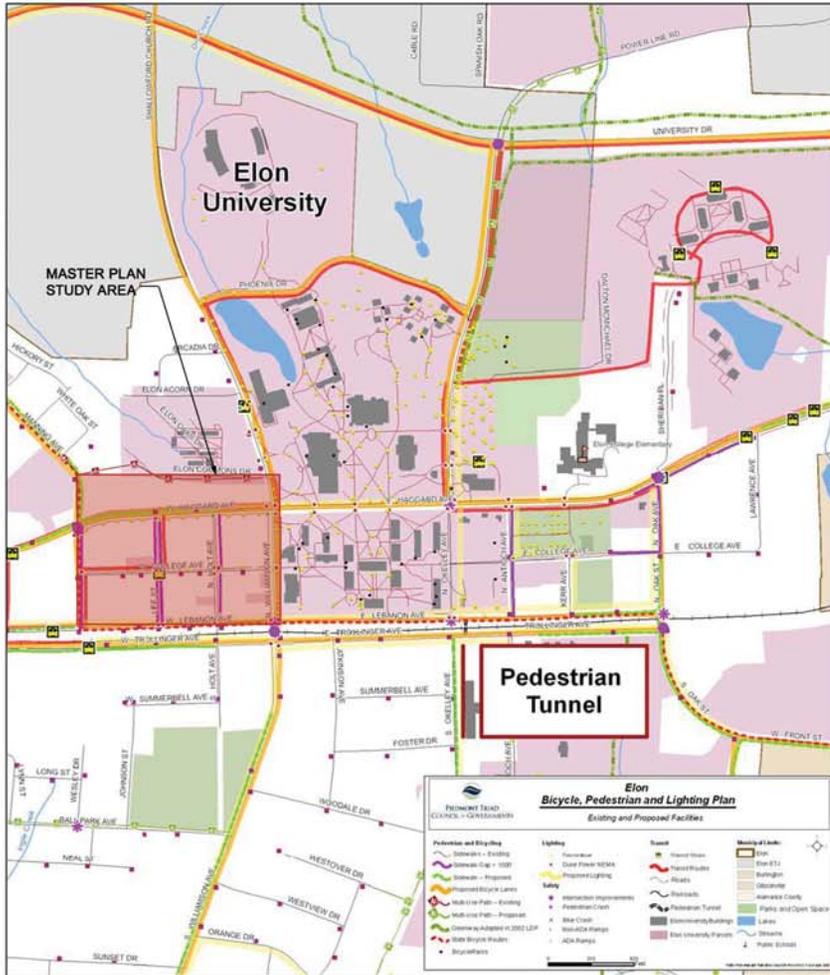
A variety of short-range and long-range pedestrian intersection and rail crossing improvements were identified as needed at the intersection of Williamson Avenue with Lebanon Avenue, the NCRR, and Trollinger Avenue.

On-street bicycle projects include:

- Bike lanes and share-the-road signs on Haggard Avenue from Oak Street to University Drive (by 2014). Existing roadway width allows for restriping.
- Share-the-road signs on Manning and Lebanon Avenues, from Haggard Avenue east to Oak Street (by 2014).
- Improvements to Manning Avenue north of Haggard Avenue (by 2019). Add 4-foot shoulders with resurfacing project.



## CONSISTENCY WITH OTHER PLANS AND STUDIES



## OVERVIEW

The transportation objectives of the Downtown Master Plan seek to provide an equitable range of travel choices that are economically and environmentally sustainable for the community as a whole. Although additional details about the magnitude, type, intensity, and location of land uses are needed to determine design specifics and fully analyze impacts, the framework established in this Plan appears flexible and resilient enough to accomplish these goals. The Downtown Master Plan is compatible with other approved or adopted plans reviewed, and is consistent with relevant guidelines and standards with respect to design and operation of safe, cost-effective transportation facilities. The following section discusses individual Plan elements related to external access and internal circulation, and describes how the Mater Plan integrates these components.

## SITE ACCESS

### Haggard Avenue

Haggard Avenue will be the primary access route for traffic approaching from the east and west, as well as most trips from the north (via Williamson or Manning Avenues). From either direction, this approach route provides multiple, highly visible opportunities for access to convenient parking on either side of the street. Having identified Haggard Avenue as the principal access route, the proposed elimination of its center two-way left-turn lane may seem counterintuitive. However, the following factors support this recommendation:

- The availability of alternative routes, including recent and planned improvements (University Drive and US 70).
- Multiple planning proposals for on-street bicycle facilities along this route.
- The expressed desire to suppress speeds and reduce through traffic in this corridor, and to encourage walking by enhancing pedestrian comfort and safety. The proposed slower, 2-lane street is both appropriate and necessary to achieve the desired urban, walkable setting.
- A persistent trend of decreasing traffic volumes on this facility. Volumes are substantially lower than on Williamson Avenue to the south, which has a narrower 2-lane cross-section.
- Rather than concentrating traffic at a few locations, the proposed design provides multiple routes for accessing or traversing the site, allowing drivers to optimize their travel, dissipating traffic throughout the network to balance supply and demand.
- Adequate space is available to provide dedicated left-turn lanes at major intersections, if warranted.

Although the proposed design for Haggard Avenue incorporates both on-street parking and bike lanes, there is no consensus on the preferred design for accomplishing this. More detailed analysis will be required; fortunately, the existing cross-section and right-of-way provide flexibility for a range of options.

One aspect of the proposed plan for Haggard Avenue is a raised intersection or speed table extending from existing North Elm Avenue to the new Park Avenue. This treatment, which can also be colored and textured, is intended to slow traffic in the vicinity of heavy pedestrian crossing volumes. Although two separate speed tables could be used (one at each intersection), the close proximity of two such features could be less desirable and effective than a single, longer version. Speed tables and raised intersections are typically more gradual than speed humps, and because

both front and rear axles are on the elevated surface together, the ride is less jarring. This configuration also has the potential to work well as a bus stop, given its high visibility, good pedestrian connections, and proximity to trip destinations.

While raised intersection treatments are not recommended at Manning Avenue or Williamson Avenue intersections, they could be considered. Additional pedestrian enhancements, such as enhanced crosswalks, signage, and signals may be desirable at the Manning Avenue intersection, which could eventually warrant a traffic signal.

### Williamson Avenue

The Downtown Master Plan proposes minimal changes to Williamson Avenue, especially with regard to vehicular traffic. The segment between Haggard and Lebanon Avenues is very constrained, and more pedestrian-oriented. It does not provide good access to the most convenient parking on the site. Most trips from the south will arrive via Williamson Avenue; these should be directed west on Lebanon Avenue to access parking. This will reduce potential pedestrian conflicts and avoid adding more traffic to Williamson, West College, or Haggard Avenues. A dedicated turn lane may be needed to handle the increased demand for left-turning northbound traffic at Lebanon Avenue.

### Manning Avenue

Traffic arriving via Manning Avenue can be expected to grow, due in part to the completion of University Drive (and possibly the Gibsonville Bypass) and the increased development and traffic that will result. Upgrades to Manning Avenue north of Haggard Avenue will eventually be needed. South of Haggard Avenue, Manning Avenue will be the main access route for the residential development at the west end of the site. Plans have identified sidewalks and on-street bicycle treatments as priorities for this roadway segment.

### Lebanon Avenue

Lebanon Avenue will provide convenient access to parking along the southern and western sides of the proposed commercial center. The existing perpendicular parking along the south side of Lebanon Avenue will be extended westward to Manning Avenue. This could create a potentially undesirable situation with respect to Lebanon Avenue's proposed status as an on-street (shared lane) bicycle route. Cars backing out of these spaces could pose a hazard to bicyclists, especially those traveling east. (Of course, this could also present a problem for automobiles, as well.) Back-in parking (probably diagonal) may be worth considering.

## TRANSPORTATION ELEMENTS

### INTERNAL CIRCULATION

The internal circulation network promotes walking in and around the “downtown core” by combining safe and comfortable pedestrian connectivity with convenient parking. The goal is to encourage “park-&-lock” behavior, in which a traveler parks their car immediately and does not need it again until departing. Pedestrian conflicts with traffic are minimized (to the benefit of both), and bicycle travel is not just accommodated, but encouraged.

#### West College Avenue

West College Avenue forms the pedestrian axis of the entire network, connecting the Elon University campus on the east with the residential concentration to the west. One aspect of West College Avenue that supports pedestrian travel is the treatment of pedestrian crossings at intersections. Raised intersections or speed tables, typically combined with tinted/textured pavements, are used to moderate traffic speeds and reinforce the presence of pedestrians. Raised intersections maintain a flush, level, continuous surface for pedestrians, while introducing minor changes in elevations and breaks in surface materials for vehicles. This subtle reversal of the typical arrangement can be surprisingly effective in reducing both speeds and cut-through traffic, while enhancing pedestrian comfort and safety. Pavement textures and transitions will not have a negative impact on bicyclists. All intersections will be STOP-controlled.

#### Park Avenue/ North Lee Avenue 1-Way Pair

The use of one-way streets in this situation provides a number of benefits:

- Conflicts with pedestrians and traffic at Haggard Avenue are greatly reduced.
- Narrower streets allow for a larger Town Commons, and reduce distances for pedestrian crossings.
- Intersections with West College Avenue are simplified and reduced in size, decreasing pedestrian/traffic conflicts.
- Cut-through trips between Lebanon and Haggard Avenues are discouraged.
- Well-suited for shared use by bicyclists.

#### North Holt Avenue and North Lee Avenue (south of West College Avenue)

These roads provide access to parking from Lebanon Avenue, while deterring cut-through traffic. Sidewalks along these streets connect parking spaces with the core area. Both Avenues are intended to be low-speed facilities well-suited for shared-lane bicycle use. All intersections are STOP-controlled.

### PARKING

Parking supplies are arranged in a rational arrival progression that should help drivers find a suitable parking space with minimal searching or backtracking. Conflicts with pedestrians are minimized, and pedestrian routes between parking spaces and destinations are intuitive and direct. On-street parking provides convenience, as well as helping suppress vehicle speeds while providing a buffer between pedestrians and traffic.

The balanced distribution of parking and its logical access and circulation routes provide considerable flexibility in the management of parking supplies for employees, customers, visitors, and residents, whether on-street, off-street, public, or private.