

Appendix D: Ephesus-Fordham Mobility and Connectivity

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Developing a District Mobility Plan through Coordinated Efforts

In developing the Ephesus-Fordham Small Area Plan, the Town of Chapel Hill placed heavy emphasis on connectivity and mobility. Because of that emphasis, the Town requested that special attention be paid to the Ephesus-Fordham District in the development of the Mobility Plan, resulting in a specific task to assess mobility and connectivity issues. The goal of this study is to recommend mobility improvements based on previous work on form-based codes, network improvements, affordable housing, watershed, and transit planning.

Ephesus-Fordham District in Context

The Ephesus-Fordham District is 190 acres and comprises some of the oldest shopping hubs in Chapel Hill. Between 1958 and 1982, Eastgate Shopping Center, Village Plaza, and Rams Plaza were developed for commercial opportunities. Of the 130 acres developed in these hubs, there is little green/open space, large expanses of paved parking lots, limited connectivity between developments, and a complex and difficult environment for people who visit the area on bicycle or on foot. Most of the 190 acres is under commercial use and there has been limited redevelopment in the district over the past ten years.

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While some properties continue to operate at or near their peak performance, there is underutilized commercial capacity with low density strip development and aging businesses. Fordham Boulevard through the District is regularly congested during peak periods, resulting in NCDOT’s construction of a “super street” north of the study area to increase capacity on the boulevard without major widening. But the area still faces access and circulation challenges for all modes of transportation, particularly at key intersections.

The Existing Land Use Map in Figure 2 shows limited commercial and mixed-use development within the Town, indicated on the map in red and purple. Shops, offices, and apartment complexes only provide about 18.5% percent of Chapel Hill’s property tax revenue (2014). While Orange County consistently ranks 1st or 2nd in average income per person in North Carolina, the County ranked 81st out of 100 counties in retail sales tax per person (2012) as Orange County and Chapel Hill residents frequently spend money in surrounding counties. A retail market analysis of Chapel Hill in 2011 found leakage of retail dollars in virtually all categories except for Food & Beverage Stores, Miscellaneous Store Retailers, and Food Services and Drinking Places. Further, there are numerous retail options right outside of Chapel Hill, including commercial centers along Fordham Boulevard and in Durham, Southpoint just down I-40 to the east, and Chatham County retail just across the county line to the south.



Figure 1. The Ephesus-Fordham District (bottom) is anchored by three major single-story shopping centers, car dealerships and low-rise office uses. Recently, denser development projects have taken place in the District (top left), trending away from auto-oriented patterns typical to the eras in which the properties developed (top center). Some infrastructure improvements have coincided with these developments (top right).

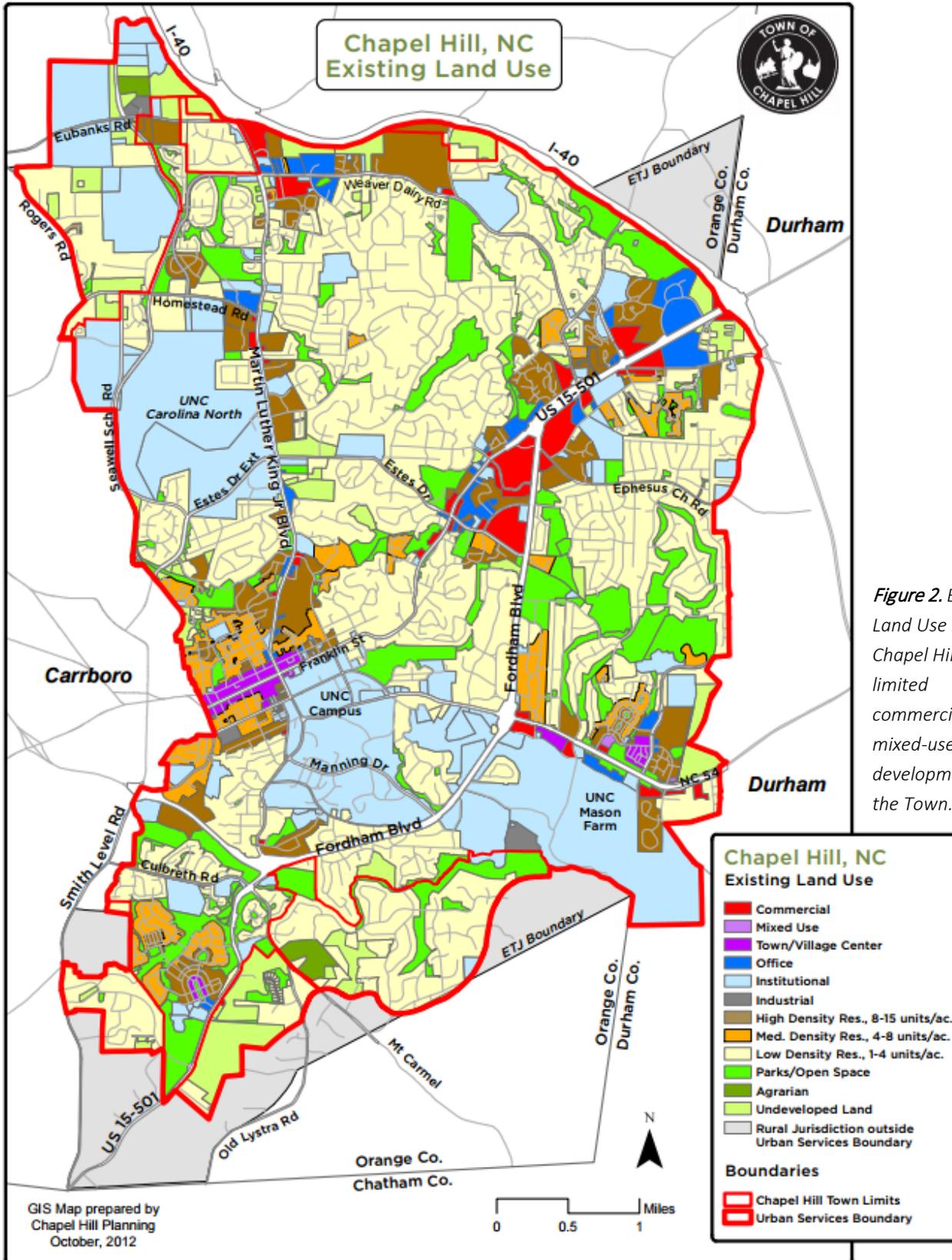


Figure 2. Existing Land Use map in Chapel Hill shows limited commercial and mixed-use development in the Town.

Purpose, Vision Statement, and Fundamental Principles

The purpose of the 2011 Ephesus Church/Fordham Small Area planning initiative was to consider current transportation conditions, define future land uses, and determine solutions for the existing transportation network in order to encourage reinvestment in properties within the study area.

The vision of that small area plan was for the area to be a part of an active and vivacious neighborhood where residents can walk for basic services and utilize public transit to other destinations. The premise is to see this area redeveloped, reconnected, more accessible, and more supportive of transit and the surrounding neighborhoods. That is the vision of the Mobility Plan as well, understanding the important interaction between transportation and land use.

The following fundamental principles were developed to guide the planning effort:

- Respect Chapel Hill's unique environment and values;
- Assist in meeting market demands for mixed-use development with retail, offices, and residences;
- Support the preservation of adjacent neighborhoods;
- Develop in a manner which is supportive of public transit;
- Improve existing level-of-service (LOS) for district roadways and intersections; and
- Improve the quality of the existing suburban fabric of the planning area through better building design, connected street networks, and accessibility.

Existing Plans and Studies

Through efforts conducted by the Town, Chapel Hill has set goals to encourage investment, increase density, and improve transportation conditions in the Ephesus-Fordham District. Ultimately, the efforts are directed to transform an area characterized by retail space surrounded by expanses of parking into a walkable, mixed-use district.

To achieve this, the Town has completed the following efforts since 2010, each moving planning for the District closer to the ultimate vision and principles set forth by Town Council:

- [Town of Chapel Hill Retail Market Study \(2011\)](#);
- [Ephesus Church Road/Fordham Boulevard Small Area Planning Traffic Analysis \(2011\)](#), including a recommended transportation framework; and,
- [Ephesus-Fordham Zoning District \(2014\)](#).

Public input during these efforts included visioning workshops with residents and business owners, public meetings, and review with the various Town boards, committees, and Council.

The establishment of the Ephesus-Fordham zoning district in 2014 specifically defines the area targeted for redevelopment. The new zoning district is a form-based code that set the rules for how the district will be built in order to change over time from a suburban style shopping center into the mix of uses proposed by the small area plan. The Town has continued to make progress on the planning efforts through a number of initiatives and studies aimed at implementing and refining the earlier plans, including those listed below:

- **Form-Based Code Revisions (Fall 2016 - Spring 2017)** – With the implementation of the most recent revision to the Ephesus-Fordham form-based code, Council asked for refinements to the new standards to establish clearer guidance and expectations for property owners looking to redevelop. In fall 2016, Town staff presented a series of revisions to the form-based code based on recommendations by land use planning consultants. On March 6, 2017, the Town Council adopted a series of text amendments designed to improve walkability and publicly accessible space within the District, as well as a companion zoning atlas amendment that applies to District frontages.
- **Ephesus Church/Rams Plaza Improvements (in progress)** – Based on the recommendations and findings of the 2011 Small Area Planning Traffic Analysis, the Town and developers in the Ephesus-Fordham area are currently working on three roadway improvement projects to improve circulation and safety:
 - Fordham Superstreet U-turn: This Town of Chapel Hill project will allow motorists to cross Fordham Boulevard and access Rams Plaza from the north.
 - Ephesus Church-Fordham Intersection Improvements: This project aligns Ephesus Church Road with the entrance to Eastgate Shopping Center. The project not only improves vehicular flow but non-motorized transportation as well with the inclusion of new bike lanes, bike detection loops, sidewalks, and crosswalks.
 - Rams Plaza Access Improvements: This project will provide additional ways to enter and exit the plaza (Figure 3). Private development projects will fund a future multi-use bicycle and pedestrian path.
- **Affordable Housing Goals (Town project / with development)** – Partnering with non-profit housing providers like DHIC to develop a low-income housing tax credit project on Town-owned land was the top recommendation identified in the Affordable Rental Housing Strategy adopted by the Council in February 2014. Twenty percent or a minimum of 300 housing units in the Ephesus-Fordham District will be



Figure 3. Mobility Improvements Near Ram’s Plaza

classified as “affordable housing.” The creation of affordable housing increases the likelihood of a residential population in the District that will be more reliant on transit and non-motorized transportation to reach jobs and/or educational institutions as well as to conduct everyday errands.

- [Subwatershed Study and Plan for the Lower Booker Creek \(January 2017\)](#) – This plan is part of an initiative set forth by Town Council to address stormwater quantity (flooding) and quality as well as protect and restore natural stream corridors. The study looks at current stormwater management and the potential effects of future development to develop recommendations for capital projects. The plans call for three improvements that affect existing and future mobility improvements in the District:
 - Elliott Road Storage Area and Passive Green Space: The plan proposes a 5.5-acre project to increase stormwater storage capacity. This could impact greenway connections and the pedestrian/bicycle facilities planned in and around Eastgate and Village Plaza shopping centers.
 - Two stormwater BMPs (Best Management Practices) to control water pollution along the east side of Fordham Boulevard just south of Cosgrove Avenue and Ephesus Church Road. Both recommended sites limit options to include pedestrian/bicycle facilities along the corridor between Booker Creek Greenway and Old Durham Road.
- [Ephesus Church Road/Fordham Boulevard Planning District Traffic Impact Analysis \(TIA\)](#) – A multimodal TIA was developed to determine whether the impact of future development in the District will require additional improvements to Fordham Boulevard corridor. The study found that some improvements to Fordham Boulevard may be needed to manage vehicular congestion that could occur outside of the District. The study also found that with some minor improvements, the current planned roadway network that came out of the initial 2011 traffic study can accommodate the projected growth for the year 2030 within the E-F District.

Public Input

As part of the public input process for the Chapel Hill Mobility Plan, citizens were asked to identify current transportation-related issues, problems and concerns around Town. Of the over 850 comments collected, over 150 were related specifically to the Ephesus-Fordham District.

Destinations: The survey asked participants to identify the most common destinations in and around the Ephesus-Fordham District. Residents’ responses highlight desirable bicycle and pedestrian connections within the Ephesus-Fordham District and nearby, including several Town facilities. The most common responses were the following:

Destinations within Ephesus-Fordham District

- Eastgate Shopping Center (Trader Joe’s, Performance Bicycle, Starbucks)
- Village Plaza (Whole Foods, Elliott Road Shopping)
- Ram’s Plaza (Food Lion, CVS)

Nearby destinations

- Chapel Hill Library
- University Place (Silverspot Cinema, Harris Teeter)
- Chapel Hill Community Center
- US Post Office
- Town Greenways

Connectivity: Comments generally referenced US 15-501 as a major barrier to bicycling and walking. Only a few comments suggested adding bike facilities on Fordham Boulevard, which is a high-speed arterial. Most suggested connectivity around Fordham Boulevard linking low-stress side streets and creating access to destinations by expanding multi-use facilities. A number of comments suggested specific sidewalk connections, but most were focused on intersections and crossing issues at key locations.



Figure 4. The Ephesus-Fordham District is an asset-rich area with many key destinations identified by citizens during the public input process, but mobility for bicycles and pedestrians is limited.

Crossings: Fordham Boulevard is the subject of the most concern overall in the Town’s Mobility Plan input process. This corridor alone received nearly 150 individual comments. Many comments highlighted issues with bicycle and pedestrian crossings of Fordham Boulevard (Figure 5). A pedestrian overpass somewhere in the vicinity of Ephesus-Fordham was requested over 20 times, with residents citing crossing issues at specific intersections like Ephesus Church Road, Willow Drive, Eastgate Shopping Center near Booker Creek Greenway, and Franklin Street at Elliott Road. Respondents noted that motorists often disregard pedestrians and cyclists when turning in and out of driveways and intersections.

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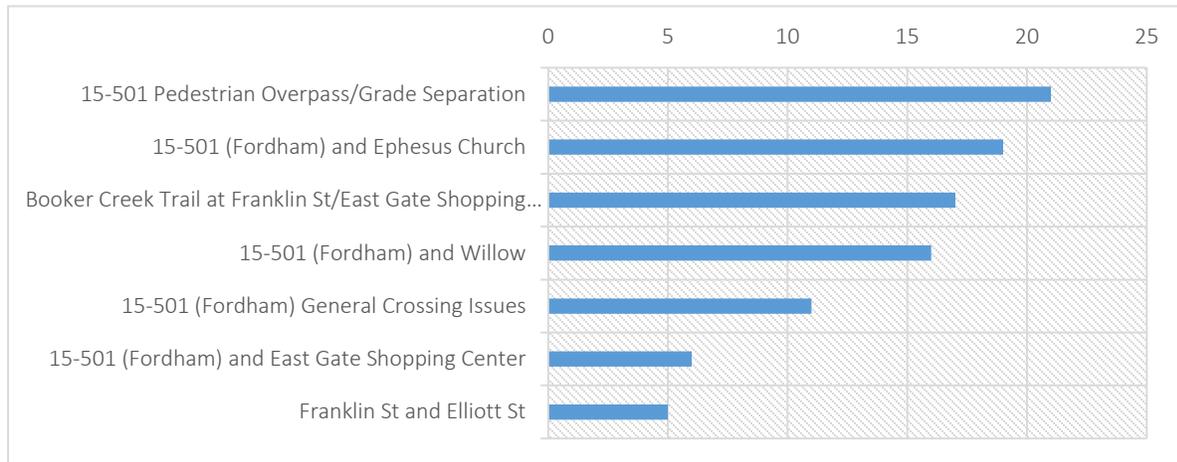


Figure 5. Crossing issues most often identified in public input specific to the Ephesus-Fordham District

Greenways: Comments from residents show that they desire safer, more direct connections to the Booker Creek and Bolin Creek Greenways. They included a desire for:

- o a safe, well-marked crossing of E Franklin Street from the Booker Creek Greenway with clear linkage through Eastgate Shopping Center to Ephesus Church Road;
- o a direct connection between Bolin Creek and Booker Creek Greenways;
- o a connection between Bolin Creek Greenway, Community Park, and the shopping areas to the north with a safe crossing of Estes Drive; and
- o an extension of the Bolin Creek Greenway across Fordham Boulevard with a connection to the existing greenway segment along the corridor to the east.

Transit Access: Of the nearly 300 respondents, 66% said they would use transit to reach the Ephesus-Fordham District if they could safely walk or ride in the area. Comments specific to transit access requested a pedestrian connection to access the transit stop at Ram's Plaza, a safe crossing of Fordham Boulevard to reach transit stops on opposite sides of the roadway, and ADA-compliant access with level landings, shelters, and shade at transit stops.

Existing Conditions

Street Network

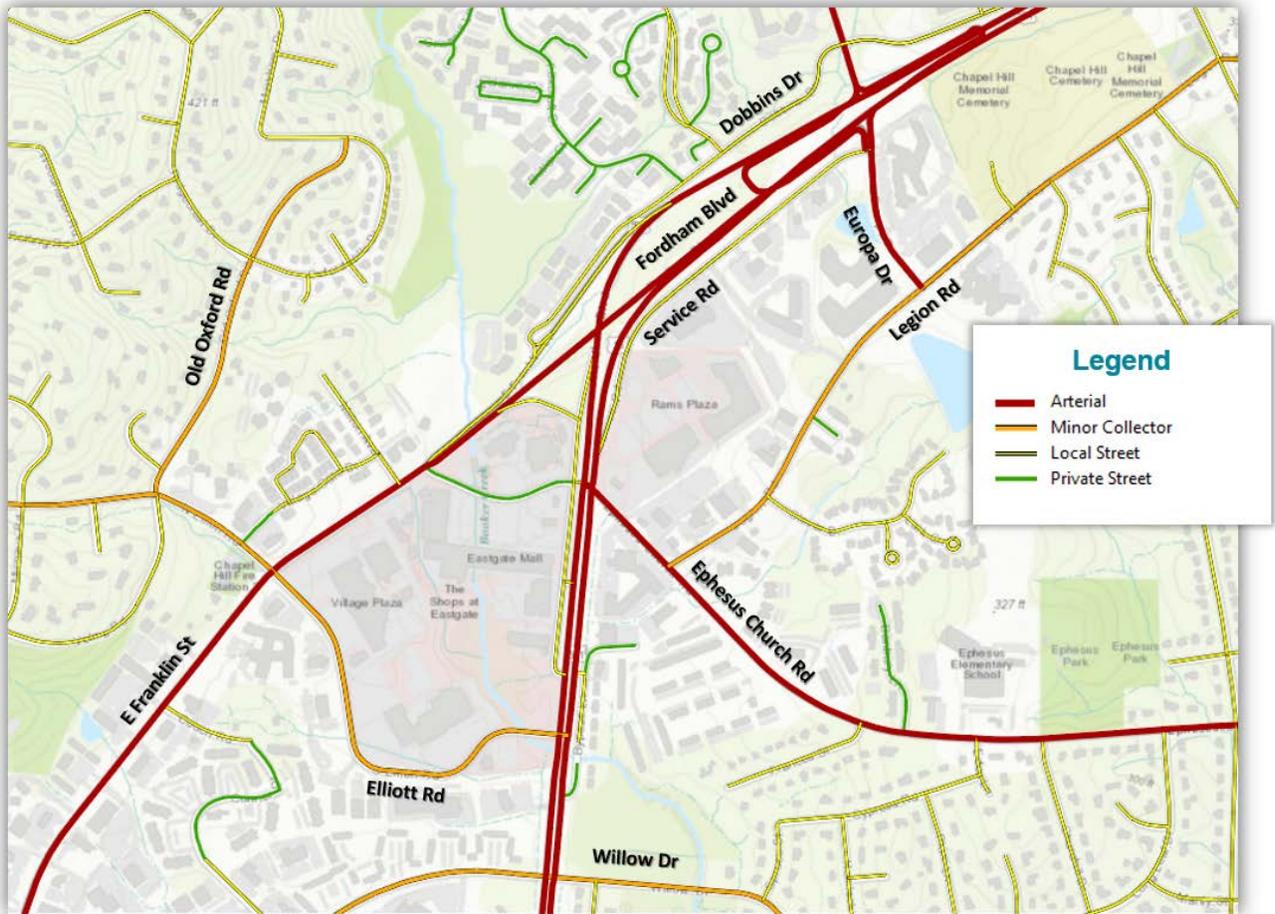


Figure 6. The existing street network borders the Ephesus-Fordham District with few local streets to provide circulation within or connections through the area.

Figure 6 shows that the District is well served by arterials and major streets on its boundaries, but a lack of local streets and connectivity within Ephesus-Fordham means traffic congestion and delays are common on those major streets. Limited connectivity means traffic volumes, particularly left turns, are high at the relatively few intersections. NCDOT and the Town continue to plan and construct improvements to help resolve congestion on the corridor.

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Bicycle/Pedestrian Network

To create an effective bike and pedestrian network within the District, attention must be paid to the external connections that link the network to the larger community—neighborhoods to shopping centers, schools to libraries, Downtown to the District. Figure 7 shows the existing and planned facilities included in the Town’s Greenway and Bike plans. Planned improvements include extending Booker and Bolin Creek Greenways east of Fordham Boulevard and creating future bike accommodations for Elliott Road, Franklin Street, Fordham Boulevard, Ephesus Church Road, Legion Road, and Erwin Road.

Better bicycle and pedestrian connections to the west along E Franklin Street and towards Downtown Chapel Hill are also desired, particularly as a link to the UNC Campus. There are no low-stress connections between Ram’s Plaza and Eastgate Shopping Center, due to long crossings and heavy traffic movements on Fordham Boulevard at Ephesus Church Road.

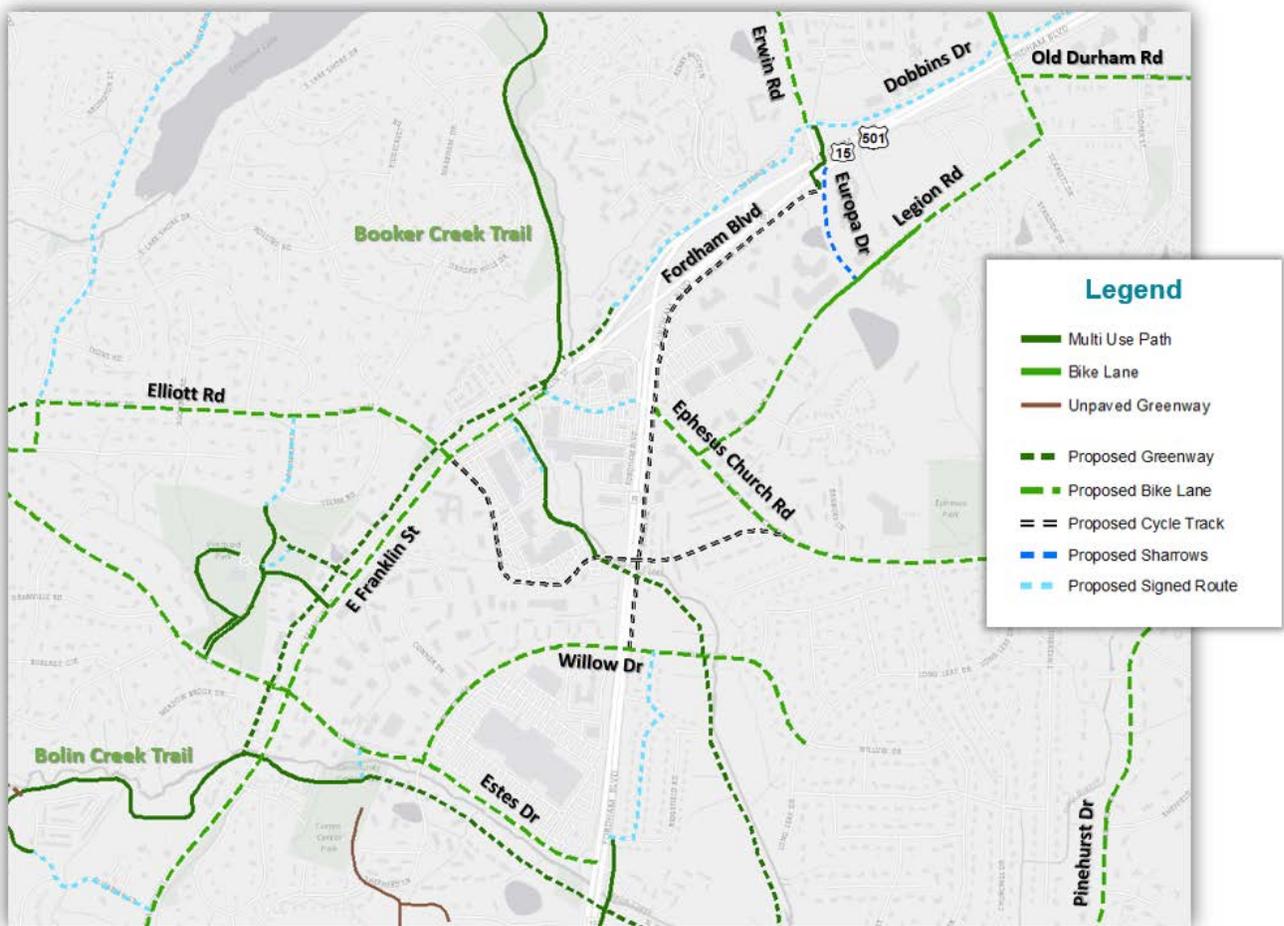


Figure 7. Existing and Planned Bicycle and Pedestrian Network Facilities in the Ephesus-Fordham District as they are laid out in the 2014 Chapel Hill Greenway Plan and the 2013 Chapel Hill Bike Plan

Access to Transit

The District is currently served by three regular Chapel Hill Transit routes (CL, D, F) and one express peak-hour route (DX). GoTriangle Route 400 and 405 also serve the District. Figure 8 shows transit stops in and around the District and a heatmap of daily boardings and alightings. Chapel Hill Transit’s Elliott Road and Ram’s Plaza stops represent the transit stops with the highest ridership in the District.

Much like the street network, the transit network only serves the edges of the District, with no penetration into the developments. Street-side bus stops leave transit users with long walks across auto-oriented parking lots to get to stores and services, and the stops themselves sometimes offer seating but rarely shelters at locations directly adjacent to busy streets.

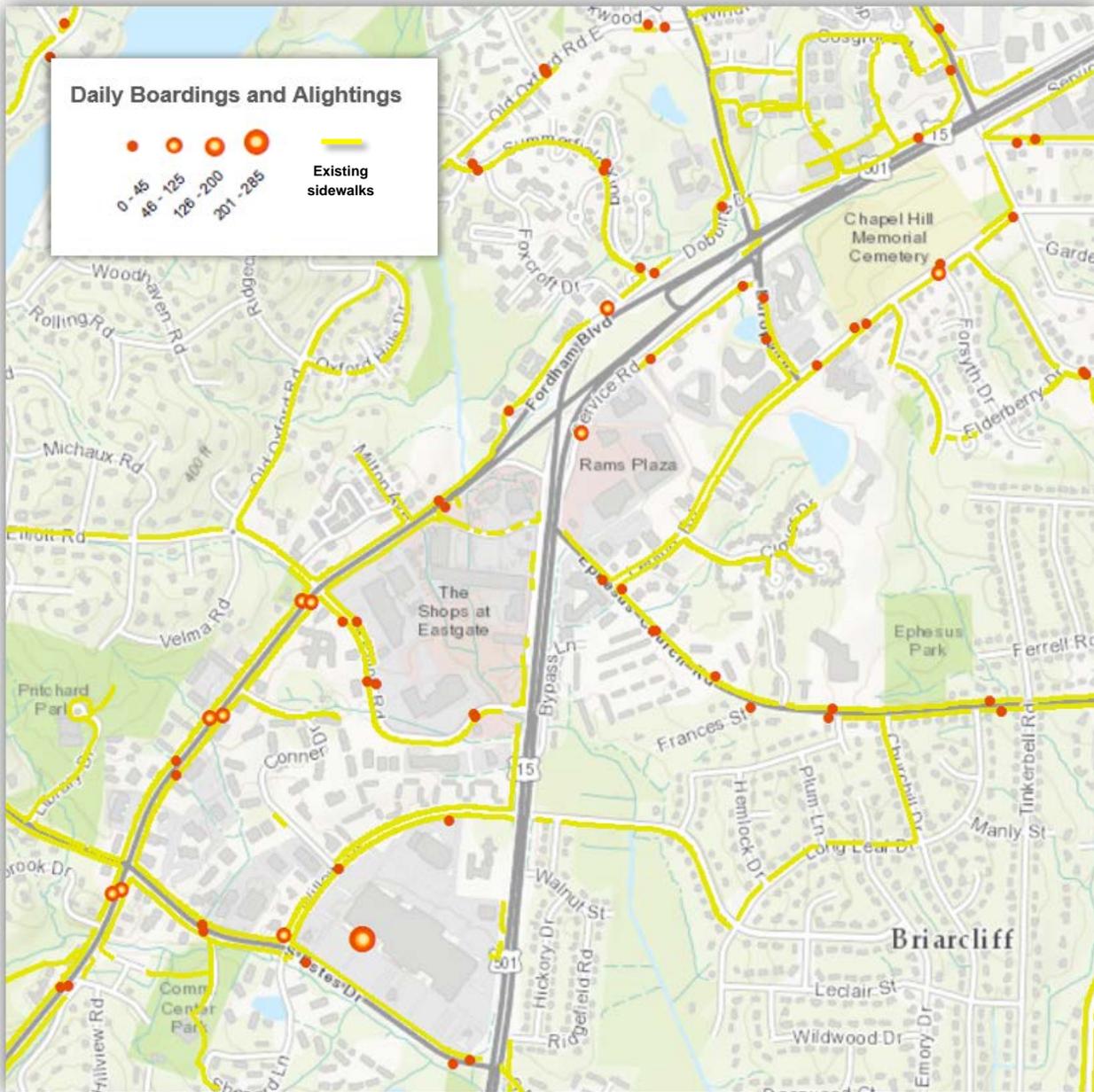


Figure 8. Existing sidewalk coverage and transit stops around the Ephesus-Fordham District showing daily boarding and alighting data from Chapel Hill Transit

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Ephesus-Fordham Mobility Recommendations

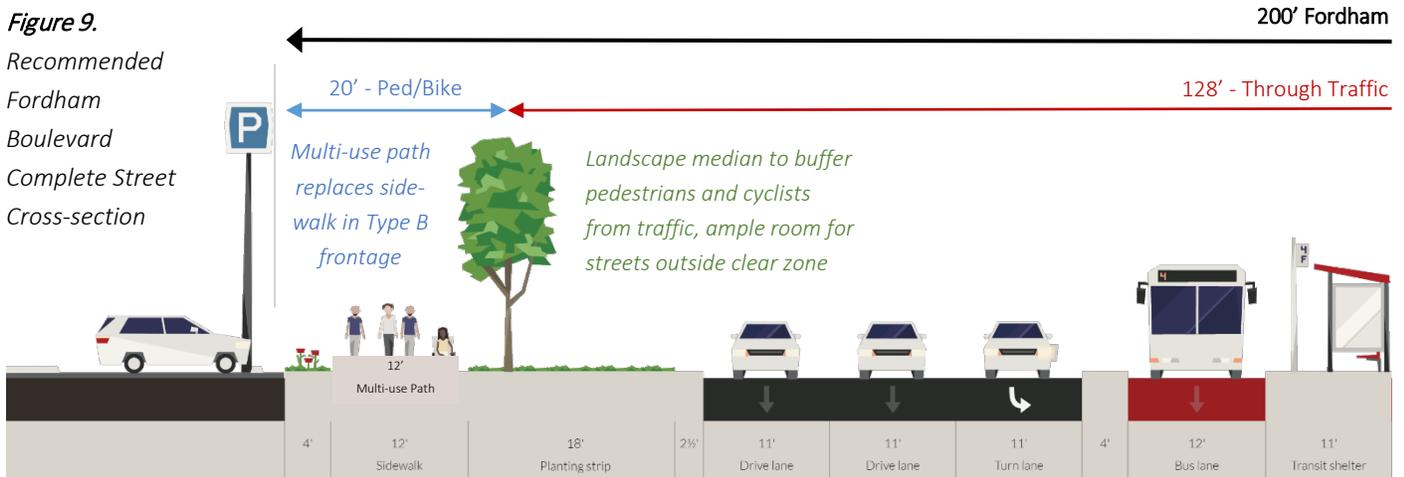
US 15-501 Fordham Boulevard

With Fordham Boulevard serving as the spine for the Ephesus-Fordham District, it is appropriate to focus on this main arterial first. Fordham Boulevard ushers 48,000 vehicles per day (2015) through the District, but needs to serve multimodal, not just vehicular, capacity. NCDOT is conducting a feasibility study looking at future widening and improvements to Fordham Boulevard, with funding for construction slated to begin around 2025. That study will hopefully indicate that the future of Fordham Boulevard must include all modes to meet the vision of a revitalized District supportive of transit, bicycling, and walking. With a 200-foot right-of-way, the ultimate cross-section proposed in Figure 9 can accommodate all users and still provide green space with landscaping and buffers.

Transit: While Fordham Boulevard is currently not planned for dedicated transit infrastructure such as light rail or bus rapid transit (BRT) in the Orange County Transit Plan, the ultimate cross-section has been developed with a Complete Streets concept to preserve the option for dedicated facilities running in the center median. Similar BRT routes are being designed for Martin Luther King Jr. Boulevard in Chapel Hill and on four routes in Wake County. Center-running BRT has several advantages over curb-running alternatives including eliminating conflicts with right-turning vehicles and bicycles and allowing for exclusive signal phasing for transit. It also reduces the length of pedestrian crossings by providing a center-island refuge, addressing a key public input concern about crossing Fordham Boulevard. A center-running option also reduces the right-of-way width needed for operations because stop locations from both directions of service are collocated in the median.

With dedicated transit proposed along the corridor in the future, select intersections will need to be identified as potential future station locations, giving transit priority, and improvements at those intersections should be designed to preserve space for future bus lanes, stations, and crossing locations. Any discussion of widening Fordham would need to consider how it could affect future transit service and whether the inside lanes could be converted ultimately to accommodate the cross-section.

Vehicular: The proposed cross-section below offers an alternative that maintains four through travel lanes in the corridor. At intersections, exclusive right-turn lanes could be accommodated by utilizing the wide outside planting strips without sacrificing street trees located at the edge of the NCDOT-required clear zone (15 feet from the back



of curb). Dual left turns could be provided at locations where transit stations are not planned. Where transit is prioritized around Ephesus Church Road and Legion Road intersections in the future, vehicular priority is recommended at the Elliott Road intersection to facilitate heavy turning movements associated with the shopping center.

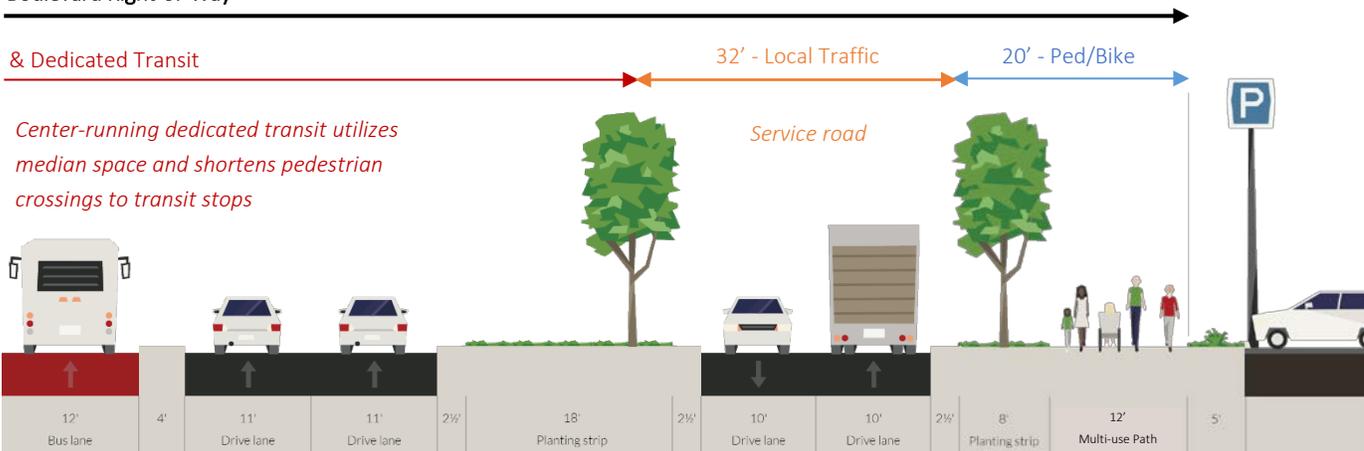
The proposed cross-section also preserves space for a service road for local traffic and access to adjacent businesses. While the preferred location for a street is shown in the typical section, it does not exactly match the existing alignments. Maintaining those would result in smaller planting strips or loss of the ability to place street trees along the boulevard. Developers could also have the option to forego the service street providing access and parking through a more developed local street network. The space gained along the frontage could accommodate additional green or public space or stormwater treatment measures, but should be activated with bike facilities and pedestrian-scale amenities.

Pedestrian/Bike: The Fordham Boulevard corridor is as important to bike and pedestrian connectivity as it is to vehicular traffic. Therefore, the proposed multi-use paths should be the focus of near-term improvements initiated by the Town and developers, leaving NCDOT to focus on long-term roadway and transit improvements. With major bike facilities along Sage and Old Durham Roads to the north and the Lower Booker Creek and Bolin Creek Greenway corridors, and to facilitate low-stress connections emphasized in public input, the Fordham corridor is recommended to include multi-use pathways along both sides of the roadway. The multi-use paths would replace the six-foot sidewalks required on frontages with parking lots (Type B frontages) within the District.

Table 1. Components of Fordham Boulevard Complete Streets Concept

Fordham Boulevard			
Right-of-way	200'	Frontages	Type B (typical)
Median	43' for dedicated bus rapid transit	Travel Lanes	Arterial – four 11' lanes Service road – two 10' lanes
Bike Facilities	10-12' multi-use path; location may vary along corridor	Planting Zone	18' planting strips, street trees 15' from curb face 4' hedge planting strips behind sidewalk (min)
Sidewalks		Parking	No on-street parking

Boulevard Right-of-Way



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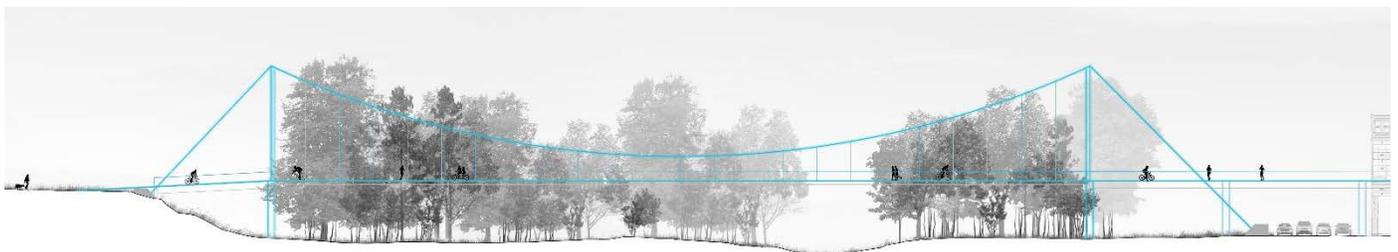
Several gaps exist in the sidewalk network that make it difficult for pedestrians to access Chapel Hill Transit at Ram's Plaza. The public input process identified gaps on the south side of Elliott Road between Franklin Street and Fordham Boulevard, on Europa Drive, along US 15-501, and on Ephesus Church Rd. These gaps have been added to the sidewalk prioritization list and targeted for construction to enhance the pedestrian network.

The public input showed that there was considerable interest in developing safe, low-stress crossings of Fordham Boulevard. Several options for crossings were developed in 2015, including alternatives to take pedestrians and cyclists over Fordham Boulevard and under Franklin Street.

Three options for crossing Fordham Boulevard were considered, including constructing a pedestrian bridge near 1) Ephesus Church Road, 2) the future Legion Road Extension, or 3) Elliott Road. The overpasses would create an important connection across the highway where pedestrians currently have to use a 145-foot crosswalk. After evaluating each of the options, the consultants recommended a bridge near the future Legion Road Extension as the best alternative. The new bridge has the potential to be integrated with future redevelopment of the Days Inn site or the southern portions of Eastgate Shopping Center, and would incorporate long ramps that would carry pedestrians and cyclists up and over the roadway.

While the Elliott Road option had the most direct connection for the Lower Booker Creek Greenway, the Legion Road alternative can make that important connection to the greenway by carrying the bridge over the greenspace behind Village Plaza along Booker Creek. The longer bridge would cost an estimated \$3.0 million (2017 \$) and create a more iconic feature with views over the creek and greenway. If the bridge only spanned Fordham Boulevard, the cost would be reduced to an estimated \$1.1 million, and still have an optional greenway connection to Lower Booker Creek trail around the north edge of the open space.

An underpass for East Franklin Street was also recommended, and is already highlighted in the Town Greenway Plan. The underpass would link the Lower Booker Creek Greenway to the northern side of the Ephesus-Fordham District. The existing, under-utilized ramp that connects northbound Franklin Street to the service road on the east side of Eastgate shopping center would be converted to a greenway link to the proposed multi-use trails along Fordham Boulevard. The project also includes a 100' pedestrian bridge over Booker Creek to connect the culvert to the trail and a newly recommended multi-use path along Dobbins Drive.



Village Plaza

Booker Creek Passive Open Space



Figure 10. Recommended multi-use bridge concept across Fordham Boulevard at Legion Road Extension, with extension over Booker Creek open space, including the design perspective below



Potential Days Inn site redevelopment

Bridge over Fordham Blvd.

Ramps along Legion Rd extension

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Table 2. Grade Separation Options and Cost Estimates for Creating Connections to the Core Network and Greenways in the Ephesus-Fordham District

Grade Separation	Details	Issues and Opportunities	Estimated Cost
Fordham-Legion Pedestrian Bridge	Single span pre-fab bike/ped bridge Two ~400' Ramps at 5% slope 17.5' vertical clearance over Fordham Blvd.	Option to extend over Booker Creek passive open space Ability to tie into redevelopment Ability to tie to future transit in Fordham Blvd median Can be coordinated with design/construction of Legion Rd. extension Does not directly connect the Booker Creek Greenway segments across Fordham Blvd	\$1.1 million - \$3.0 million
Franklin Street Pedestrian Underpass	Single span pre-fab over Booker Creek Bike/ped culvert under Franklin St. w/ lighting	Creates path on west side of Franklin Spans and avoids floodway Recommended as Priority #1 barrier to address in Greenway Plan Connects greenway to north section of Ephesus-Fordham District Provides low-stress connection between NB/SB local and regional transit stops on Franklin St	\$625,000

Street Network

Creating a tighter local street network within the district will provide the opportunity to make Ephesus-Fordham more pedestrian- and bike-friendly by changing the way users circulate in the area. New streets will increase internal connectivity between destinations, provide sidewalks and bikeways, and shorten trip distances. Fordham Boulevard is currently the primary carrier of north-south through traffic and most traffic accesses the district off Fordham Boulevard. With upgrades and/or extensions to Legion, Ephesus Church, and Elliott Roads and the creation of a new collector street linking the service road and Legion Road south of Europa Drive, traffic will be distributed to multiple intersections rather than being focused at Ephesus Church Road. Therefore, it is important to evaluate the appropriateness of the existing street classification and recommended street improvements (Figure 11).

Arterials: Elliott Road from Franklin Street to Fordham Boulevard should be reclassified to upgrade it to minor arterial status, based on its importance to vehicular and cycling through traffic on the south side of the District. With the proposed realignment of Ephesus Church Road combined with the Elliott Road extension, this street will become as the main circulator around the southern side of the District, allowing access to commercial development but also linking neighborhoods east and west of the area. Upsizing this segment of Elliott represents a transition from it being an arterial to the east and a collector to the west. The new cross-section will require additional right-of-way, and should be constructed with emphasis on access management and separation between cyclists and motor vehicles with the recommendation of buffered bike lanes.

Europa Drive south of Fordham Boulevard should be reclassified from an arterial to a minor arterial, deemphasizing vehicle traffic and creating stronger pedestrian/bicycle linkages between the Lower Booker Creek Greenway, the recommended Dobbins Drive multi-use path, the northern portion of Ephesus-Fordham, and Legion Road.

Collectors: With more emphasis on Elliott Road for vehicular traffic, some of the streets within the District should be reclassified as collectors to help support a greater focus on non-motorized transportation, including Ephesus Church Road north of the Elliott Road extension, the Legion Road extension, and any upgrade to the street proposed to

cross Eastgate Shopping Center. A new collector road is also planned to cross the north side of Rams Plaza between the Fordham service road and Legion Road.

Local Streets: Implementation of the form-based code for Ephesus-Fordham looks to fill in the local street network in areas where large lots with shopping centers and automobile retailers once existed or currently sit. The recent code revisions include a requirement for 1,600-foot block perimeters with 450-foot maximum block length. Those standards mean that redevelopment will have flexibility in creating a denser, more walkable street network. Building that network is dependent on total redevelopment to complete the street grid. New developments, particularly those on large parcels, will need to build numerous local streets even with the maximum block size. Local streets will make up the majority of new streets in the District.

District Streets: These streets provide access along the sides and backs of new buildings where parking is not required. Due to the density of street required in the District Plan, they represent a smaller cross-section street while providing vehicular, bike and pedestrian access, and landscaping.

Service & Residential Alleys: Alleys provide residents and businesses access to garages, parking decks, loading docks and service entrances necessary to conduct their everyday lives and work.

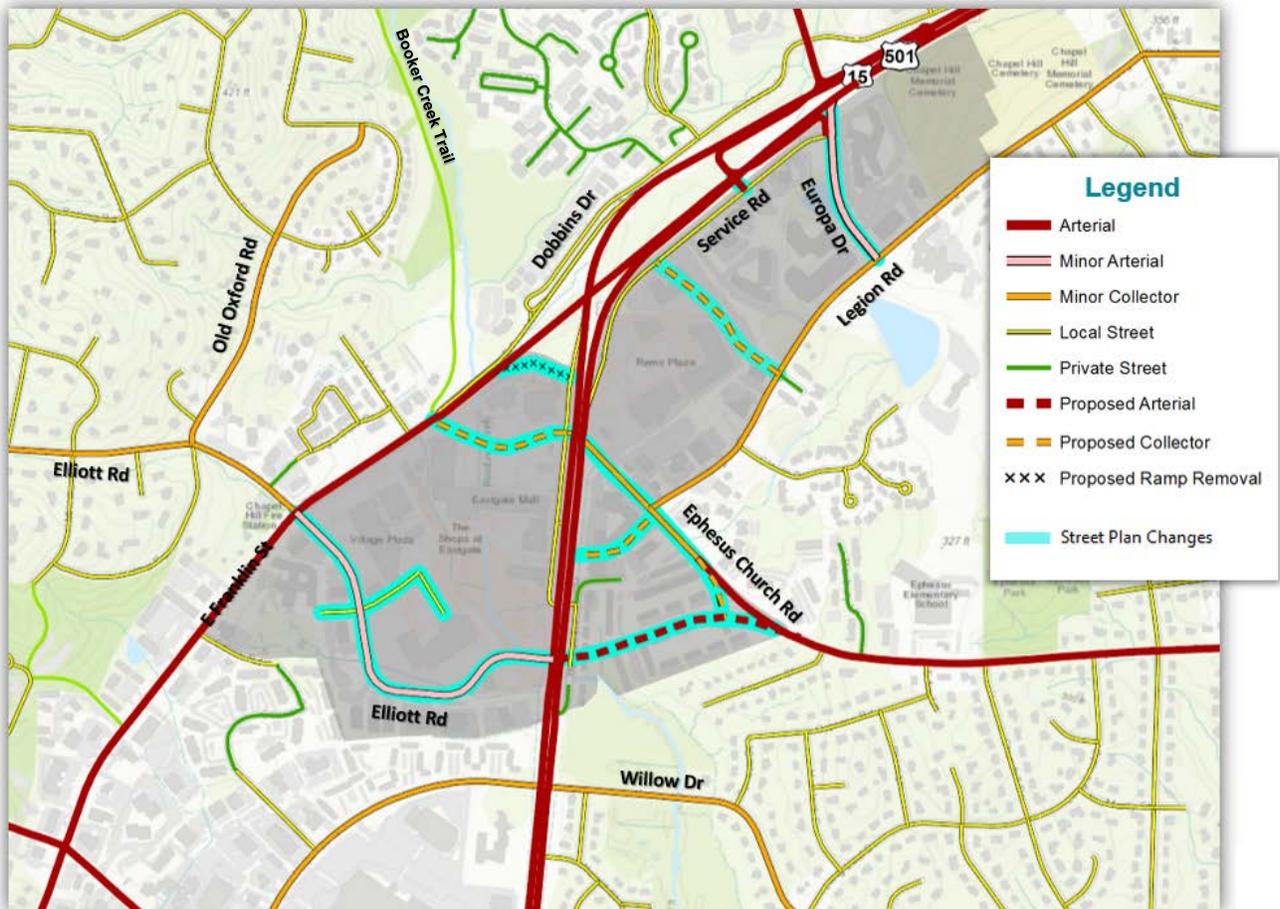


Figure 11. Existing streets and proposed changes to the street network in the Ephesus-Fordham District. New internal streets in the district (shown in grey) will occur with redevelopment according to the Block Perimeter and Regulating Plan

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Non-Vehicular Street: This street alternative is used only by bicycles and pedestrians, and may be considered as part of the street grid for the purpose of satisfying block length requirements. Characteristics of a non-vehicular street include a public access easement separating development sites, a wide multi-use path with a planting zone on each side, and connectivity to adjacent streets. Non-vehicular thoroughfares are appropriate in special cases, such as where an adjacent parcel is already developed and a vehicular street connection is infeasible, but pedestrian and bike connectivity is still achievable.

The right-of-way or easement width indicated for District Streets, Alleys, and Non-Vehicular Streets may need to increase in certain cases to allow for a future widening of the street up to Local Street standards. This determination would be made based on site conditions such as the development potential of adjacent sites. The ability to upgrade streets in the future gives the Town flexibility to support long-term growth in the Ephesus-Fordham District.

The District code includes specific illustrations for street frontages (Figure 12) outlining parking and pedestrian accommodations. Vehicular and bicycle accommodations are included in the cross-sections for each street classification. Figure 13 provides illustrations and common elements for each street type. The cross-sections are based on the Town’s standard details and the frontage types developed for the code. Each profile outlines the required laneage, bike facilities, sidewalk widths, and parking. On commercial collectors and local streets, on-street parallel parking is required with Type A frontages, but diagonal and perpendicular parking can be used at the expense of wider rights-of-way.

In addition, redevelopment of the District should also balance accessibility with mobility. Short block lengths coupled with numerous driveways would hamper the desired street frontages with on-street parking and a continuous pedestrian realm. Therefore, the Town should enforce strict access management policies in the Ephesus-Fordham District, particularly along Type A street frontages, to limit the number of driveways crossing the sidewalk. Consideration should be given to restrict local street access to right-in right-out at select intersections with collectors and most arterials. For example, parking lot, garage access, and delivery zones should be focused on Type B frontages or on district streets and alleys.

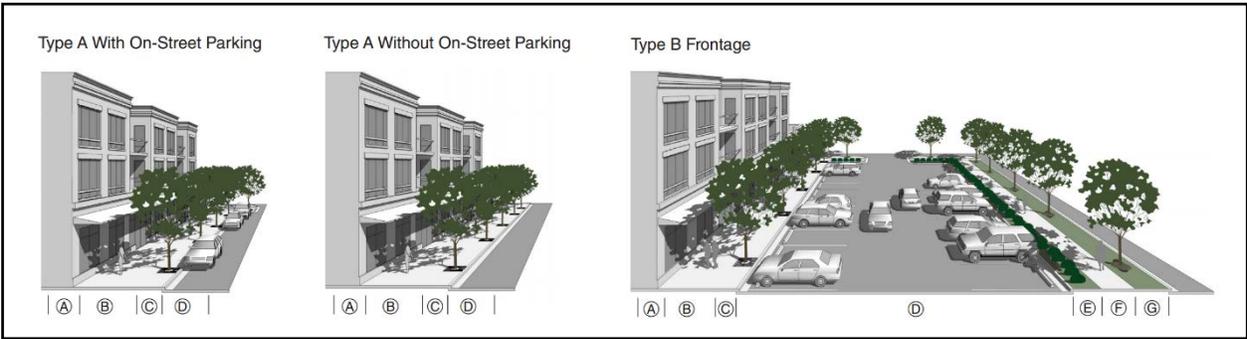


Figure 12. Illustrations of street frontages from Ephesus-Fordham District form-based code

Figure 13. Proposed typical sections for Ephesus-Fordham District



Arterial with Buffered Bike Lanes		PRIMARY STREET	
Right-of-way	Arterial – 117’ min, 124’ typical Minor Arterial – 93’ min, 100’ typical	Frontages	Type B (typical)
Median	Landscaped: 9’ minimum, 16’ preferred + 1.5’ mountable curb & gutter Center Turn Lane: 12’ minimum	Travel Lanes	Arterial – four 12’ lanes Minor Arterial – two 12’ lanes
Bike Facilities	Buffered* bike lanes (5’ lane + 2.5’ curb & gutter, 2’ min buffer*) * Buffer required when speed limit ≥ 35mph	Planting Zone	8’ planting strip 5’ hedge planting strips behind sidewalk
Sidewalks	6’ minimum	Parking	No on-street parking



Collector with Bike Lanes – Commercial Context		PRIMARY STREET	
Right-of-way	85’ minimum	Frontages	Type A (typical)
Median	None	Travel Lanes	Two 11’ lanes
Bike Facilities	6’ bike lanes adjacent to parking	Planting Zone	8’ tree grates in sidewalk
Sidewalks	18’ minimum (minimum 10’ extending to 18’ between street trees)	Parking	2.5’ curb & gutter Parallel – 8’ minimum (including gutter) Perpendicular – 18’ minimum 60° diagonal – 16’ typical

Appendix D: Ephesus-Fordham Mobility and Connectivity

D20

Figure 13 (continued). Proposed typical sections for Ephesus-Fordham District



Collector with Bike Lanes – Residential Context		PRIMARY STREET	
Right-of-way	73' min	Frontages	Type A (typical)
Median	None	Travel Lanes	Two 11' lanes
Bike Facilities	5' bike lanes min + 2.5' curb & gutter	Planting Zone	8' tree grates in sidewalk
Sidewalks	18' minimum (minimum 10' extending to 18' between street trees)	Parking	None



Local Street with Sharrows		PRIMARY STREET	
Right-of-way	75' min	Frontages	Type A or B (according to code)
Median	None	Travel Lanes	Two 11-12' lanes
Bike Facilities	Shared lane markings (i.e. sharrows)	Planting Zone	Type A - 8' tree grates in sidewalk Type B - 8' planting strip 5' hedge planting strips behind sidewalk
Sidewalks	Type A - 18' minimum (min 10' + 8' between street trees) Type B - 14' minimum (min 6' + 8' between street trees)	Parking	8' min (including gutter) 2.5' curb & gutter

Figure 13 (continued). Proposed typical sections for Ephesus-Fordham District



District Street		SECONDARY STREET	
Right-of-way	55' minimum	Frontages	Type A (typical)
Median	None	Travel Lanes	Two 11' lanes
Bike Facilities	Shared lane markings (i.e. sharrows)	Planting Zone	8' tree grates in sidewalk
Sidewalks	14' minimum (min 6' + 8' between street trees)	Parking	Loading/unloading only



Alley – Residential or Service		SERVICE STREET	
Easement	30' minimum	Frontages	Service – Loading areas, service entrances Residential – Garages or parking deck access
Median	None	Travel Lanes	Service – Two 10' unmarked lanes Residential – Two 9' unmarked lanes
Bike Facilities	None	Planting Zone	None
Sidewalks	Service - 6' minimum (one side) Residential – 8' minimum (one side)	Parking	Loading/unloading only

Note Section can be converted to woonerf-type, pedestrian-oriented streets by raising vehicular street to sidewalk level (concrete or pavers) and select installation of street trees, furnishing, and other calming features.

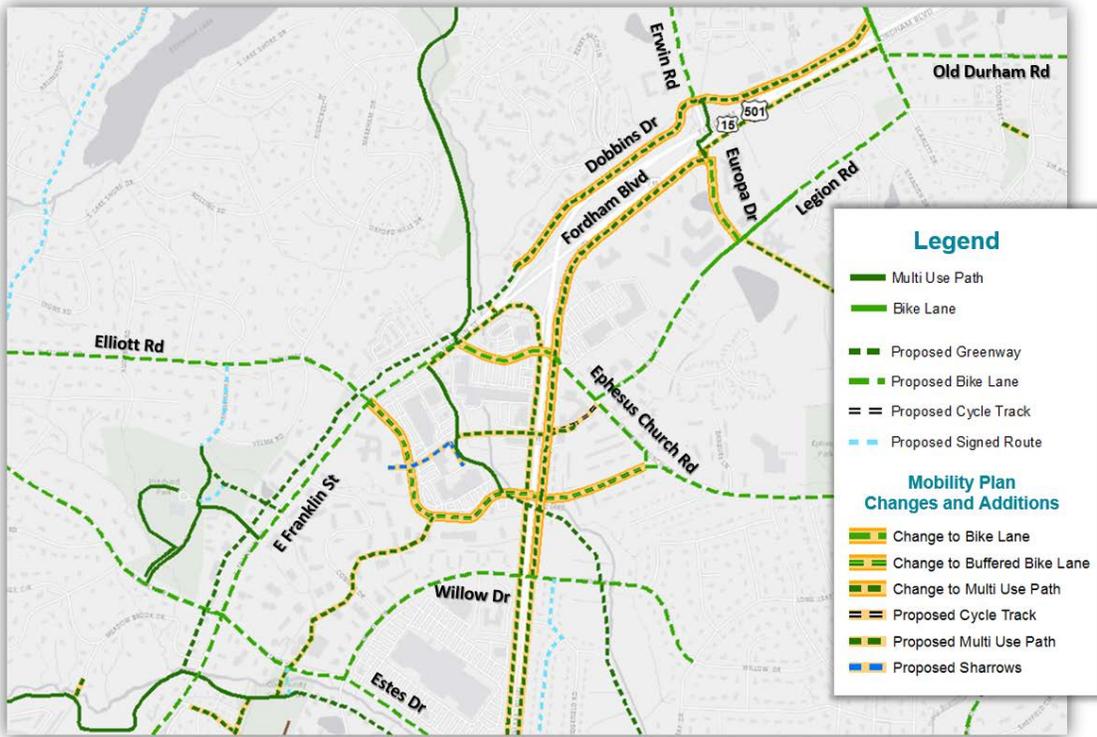
Bicycle & Pedestrian Network

As discussed in the previous section, the newly approved block length and perimeter standards ensure a compact street network that is bikable and walkable. The addition of pedestrian pass-throughs connecting to wide sidewalks along the street frontages required in the code further increase pedestrian routes. A dense pattern of local streets with multiple connections in any redevelopment scenario means short blocks will disperse motorized and non-motorized traffic, keeping speeds low with frequent intersections and on-street parking. Therefore, separated bike facilities are recommended only for collectors and arterials within and along on the edges of the district, as well as along Fordham Boulevard to create the core network for cycling in the District. Recommendations are shown in [Figures 14-15](#).

Outside of redevelopment, long crossing distances and heavy turning traffic are deterrents to pedestrian crossing Fordham Boulevard between the District's various activity centers. For cyclists, lack of dedicated facilities, clearly defined space, and signal actuation at intersections are problematic. The difficulties were reflected in the public input, with crossings of the Fordham Boulevard corridor representing largest number of responses from citizens. Several key recommendations are made to improve the bicycle and pedestrian circulation and access:

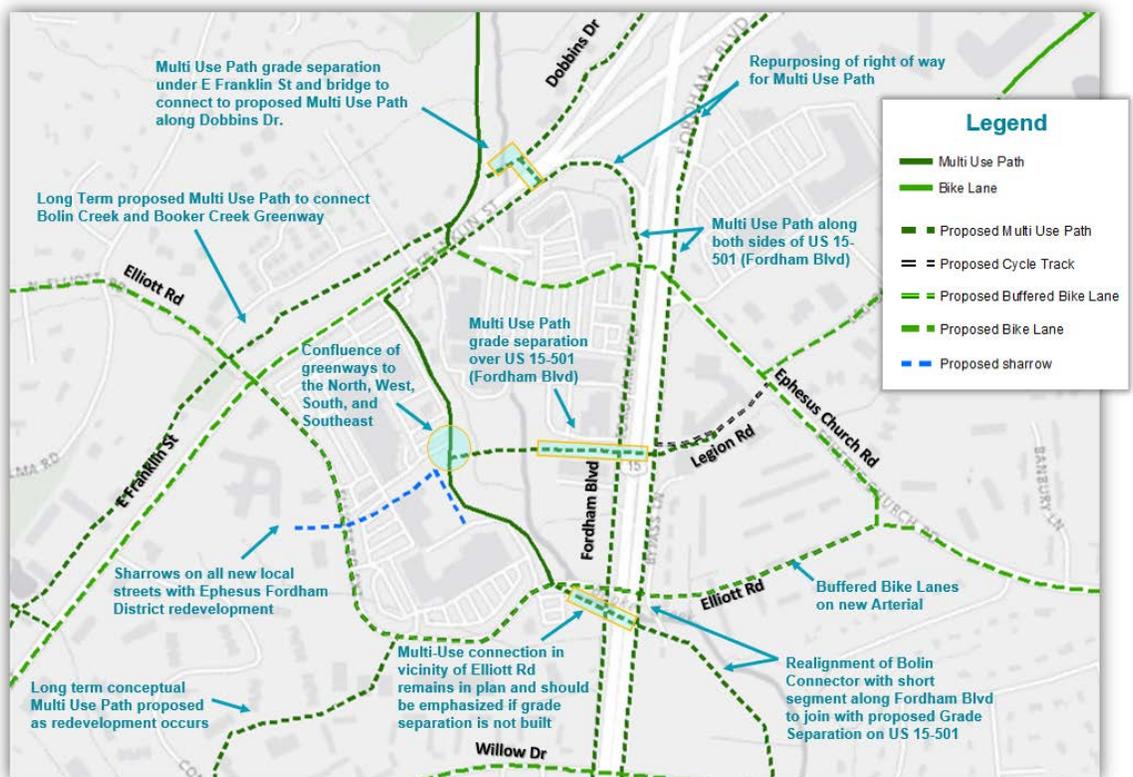
- **Multi-use connections west of Fordham Boulevard:** A greenway path across or around the Booker Creek open space and connecting to the Fordham pedestrian overpass provides a key link that then connects to the pedestrian and bicycle networks within and external to the District. This spur off the Lower Booker Creek Greenway would connect users to the sidewalks and multiuse paths on Fordham Boulevard and the connections north running under E Franklin Street and along Dobbins Drive.
- **Multi-use connections east of Fordham Boulevard:** The core network is further enhanced by multi-use facilities on both sides of Fordham Boulevard that tie into the pedestrian overpass and link existing and planned sections of the Lower Booker Creek Greenway. Separated facilities can be constructed on Fordham Boulevard in the wide right-of-way if space can be claimed from the existing service roads or drainage swales. A proposed multi-use connection along the northern parcel boundary of the American Legion property is also recommended, creating a bicycle and pedestrian link with and between neighborhoods to the east.
- **Bicycle Facilities:** With the Fordham multi-use paths and the pedestrian overpass anchoring the bike network, strategic updates to the Bike Plan (2014) are recommended:
 - Separated facilities (cycle tracks or multi-use paths) for the Legion Road extension, considering the extension will be a focal point for cyclists coming from the north- and southeast, particularly Old Durham Road.
 - Buffered bike lanes along the minor arterials of Elliott Road and Europa Drive, to provide low-stress connections for cyclists on streets that will continue to handle large volumes of traffic.
 - Bike lanes along the Eastgate access road between the Booker Creek Greenway and Fordham Boulevard, and for Ephesus Church Road north of the Elliott Road.
 - Sharrows on local streets.
- **Pedestrian Facilities:** Numerous sidewalk gaps were identified and proposed facilities in and around the district are shown in [Figure 16](#).

Bicycle and Multi-Use Path Recommendations



Figures 14-15. Recommended bike improvements link facilities surround the Ephesus-Fordham District (above) but also facilitate bicycle connectivity across Fordham Boulevard and mobility between developments (below).

Bicycle and Multi-Use Path Recommendations - Detailed



Pedestrian and Multi-Use Path Recommendations - Detailed

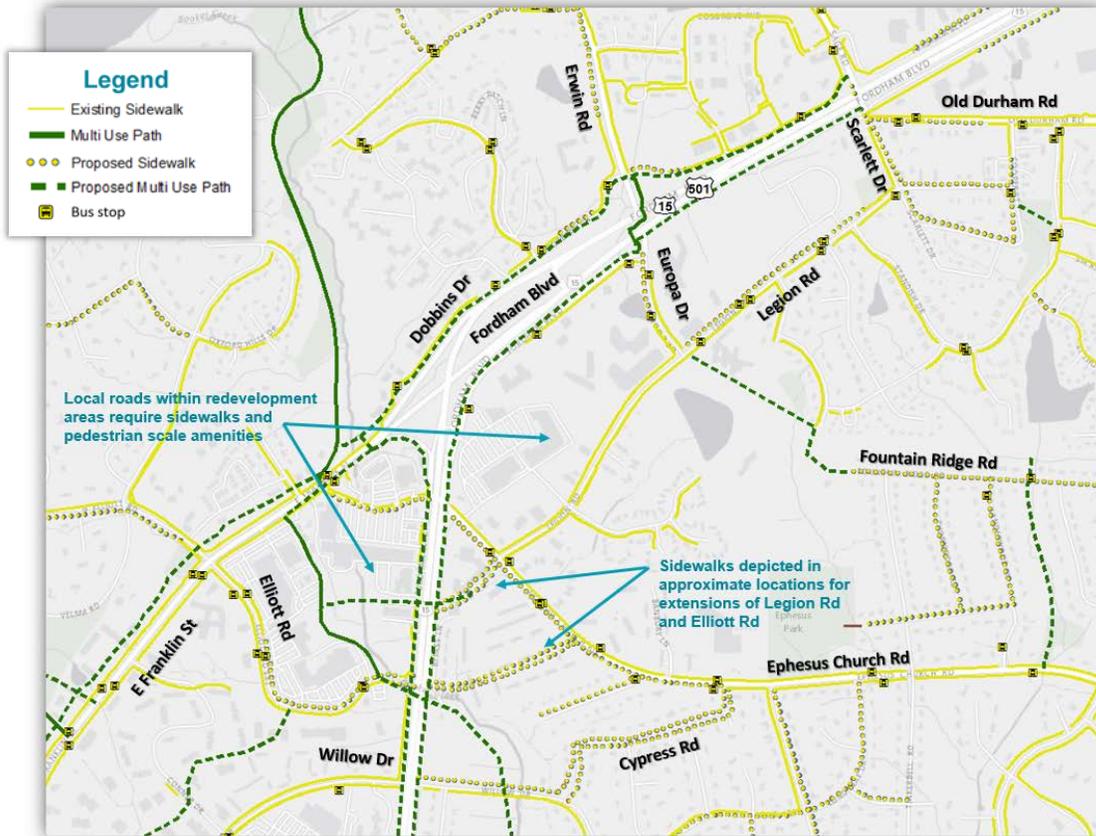


Figure 16. Recommended changes to the pedestrian network emphasize connections to transit and multi-use paths and close sidewalk gaps. Local roads and road extensions within the Ephesus-Fordham District will require sidewalks pedestrian scale amenities at the time of construction.

These recommended improvements play a key role in the development of the non-motorized priority corridors conceptualized in the Mobility Plan. These priority corridors serve to connect the six focus areas around Chapel Hill by knitting together Town greenways, multi-use paths, and neighborhood sidewalks and bikeways to create a network of pedestrian and bicycle corridors parallel to the major roadways. By connecting these destinations, residents of the Town can use local street and trail connections to access the priority corridors and then travel to major destinations throughout Chapel Hill, as well as access the greater Triangle greenway and bike network.

Three of the priority corridors connect to the Ephesus-Fordham District:

- **Treelyne Trail** connecting N MLK/I-40 focus area to the Ephesus-Fordham District via the Lower Booker Creek Greenway and neighborhood streets in north Chapel Hill
- **Midlyne Trail** connecting S MLK focus area to the Ephesus-Fordham District on bike facilities and pedestrian pathways alongside Estes and Elliott Drives
- **Eastern Explorer Trail** connecting Downtown to Ephesus-Fordham and Durham via bike lanes and multiuse paths along E Franklin Street, Dobbins Drive, Legion and Old Durham Roads

Implementation

To realize the vision and fundamental principles of the Ephesus-Fordham District, the Town will need to put its plans into action by implementing these recommendations through the cooperation and coordination with developers, NCDOT, GoTriangle, environmental agencies, and local property/business owners. The following tables provide guidance on moving the Mobility Plan's projects and policies forward with next steps and potential funding options. The projects are broken up into categories for short-, mid-, and long-term implementation. The short-term projects represent policies that can be easily implemented with the approval of the Mobility Plan, or shortly thereafter, and projects that can be constructed as parts of redevelopment or small capital improvement projects with some engineering and through existing levels of funding. Mid-term projects may include more involved engineering and design, and require funding identification and planning. Long-term projects will require substantial design work and depend on significant planning by Town staff, project approval by outside agencies, and funding mechanisms.

Projects in the District can be funded in several ways, including private and public options. While the form-based code places the burden of local street construction and improvements for adjacent streets on developers, the larger street improvements and many of the pedestrian, bicycle, and greenway projects will be the responsibility of the Town to prioritize and identify for funding. Several mechanisms shown in the implementation tables as potential funding options are defined here:

- **Developer exactions:** The form-based code, Land Use Management Ordinance (LUMO), and Comprehensive Plan outline the requirements for developments in Chapel Hill to construct the infrastructure needed to support the new residents and users.
- **Private/public partnerships:** With numerous property owners and a large district, it is likely that individual sites will only build out short segments of larger projects. Therefore, it may be advantageous at times for the Town to enter into agreements with developers to accept payments-in-lieu to help fund larger projects in the future, or to provide developers funding to build more than they are required in order to complete key connections or incentivize future developments. The Town development code provides guidance for right-of-way or easement dedication and a phasing schedule for both public improvements by the developer and those to be constructed by the Town.
- **Capital Improvement Program (CIP) budget/funding:** The Town's CIP is a 15-year financial plan for its major infrastructure needs, establishing priorities and potential funding sources. The CIP is updated annually as part of the Town's budget and allocates tax revenues to, amongst other things, transportation and parks/greenway projects. Revenues for CIP funding includes property tax and town fees, but may also receive monies from traditional and innovative sources such as:
 - **Bonds:** Municipal bonds are financial bonds issued by the Town to fund numerous projects, typically by tax increases outlined in a referendum voted on by residents.
 - **Municipal Services District:** Under North Carolina Law, the Town aids property owners in forming a Municipal Service District to provide specific services to a defined geographic area through special property tax. The tax is approved by and levied on the property owners within that area.
 - **Tax Increment Financing (TIF) District:** TIF districts are established to fund projects within the District and repay those costs through the incremental increase in tax revenues resulting from redevelopment. TIF districts can be formally established by the Town or "synthetically" administered by monitoring and accounting for the increases in Town financial records.
- **Durham-Chapel Hill-Carrboro MPO (DCHC) funding:** The DCHC Metropolitan Planning Organization receives federal transportation funds for the region that are intended for municipalities to program for local projects. In FY2015-16, approximately \$13 million was awarded to localities in the region, including Chapel Hill.

Appendix D: Ephesus-Fordham Mobility and Connectivity

- **NCDOT State Transportation Improvement Program (STIP) funding:** Based on current prioritization formulas, it is a competitive process to receive NCDOT funds. While there is stiff competition for ped/bike projects statewide, the Town has had success in getting bike/ped projects into the STIP.
- **Special federal or non-profit grants:** Examples include the USDOT's TIGER grant program for major infrastructure projects that support job growth and People For Bikes' Big Jump project to cycling in cities.

Pedestrian/Bicycle/Greenway Improvement Strategies

Recommended Improvement/Policy	Potential Funding Sources	Estimated Cost to Town	Next Steps
Short-term Implementation			
Sidewalk Gaps	CIP Funding	\$325,000	Identify priority segments and funding (Ephesus Church Rd, Eastgate Shopping Center Dr, Legion Rd)
Pedestrian Pass-throughs	Developer Exactions	--	Adopt land use recommendations to revise pedestrian pass-throughs
Franklin St. Ramp closure/ Greenway Conversion	CIP Funding	\$200,000	Consult with NCDOT Division office about potential road closure and ROW abandonment
Europa Dr. Improvements: Bicycle Lanes and Sidewalks	Developer Exactions + CIP Funding	\$475,000	Develop conceptual plans for alignment
Legion Road Bicycle Lanes	Developer Exactions + CIP Funding	\$800,000	Develop conceptual widening plans
Mid-term Implementation			
Elliott Rd. Improvements: Buffered Bike Lanes and Sidewalks	Developer Exactions + CIP Funding	\$4.5 million	Monitor developer site plans and consider for future transportation bond
Franklin St. Underpass and Booker Creek Multi-Use Bridge	CIP Funding, Special grant funding	\$625,000	Develop design plans to make shovel ready as potential funding identified
Fordham Blvd Multi-Use Paths (Willow Dr. to Europa Dr.)	Developer Exactions + CIP Funding or NCDOT STIP	\$1.85 million	Monitor developer site plans and consider for future transportation or parks bond
Dobbins Drive Multi-Use Path	CIP Funding	\$1.5 million	Develop alignment feasibility study
Long-term Implementation			
Fordham Blvd Multi-Use Overpass	CIP Funding, NCDOT STIP	\$1.1 - 3.0 million	Investigate potential score in NCDOT SPOT prioritization process Develop design plans to make shovel-ready; identify potential funding
Fountain Ridge/Europa Multi-Use Connector	Developer Exactions, CIP Funding	\$475,000	Monitor potential sale of American Legion property, including considering property purchase

Street Improvement Strategies

Recommended Improvement/Policy	Potential Funding Sources	Estimated Cost to Town	Next Steps
Short-term Implementation			
Street Plan Updates/Street Classification Changes	--	--	Prepare Comprehensive Plan amendments
New Ephesus-Fordham Street Cross-sections	--	--	Adopt Mobility Plan and amend District Code in tandem with land use recommendations
District Local Street Network	Developer Exactions	--	Adopt land use recommendations to revise block perimeters and lengths
Collector North of Rams Plaza	Developer Exactions	--	Review development plans for consistency and alignments
Mid-term Implementation			
Eastgate Collector Street	Developer Exactions	--	Add facility to proposed streets in Street Plan
Elliott Road Extension	Developer Exactions + CIP Funding	\$4.2 million	Develop conceptual engineering plans for alignment and cost estimate
Long-term Implementation			
Legion Road Extension	Developer Exactions + CIP Funding	\$1.6 million	Develop conceptual engineering plans for alignment and cost estimate