

Town of Chapel Hill



Ephesus Church Road/Fordham Boulevard Small Area Planning/Traffic Analysis

2.18.2011



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Ram's Plaza



Eastgate Mall

The Ephesus Church - Fordham Boulevard Small Area Plan was initiated by the Department of Economic Development, Town Of Chapel Hill, North Carolina, with two main objectives: increasing the economic potential of the area and improving the transportation conditions. The study area is located between Downtown Chapel Hill and Durham and is in close proximity to the I-40 interchange which connects Chapel Hill to Raleigh. It is also one of the major commercial districts of Chapel Hill. Most of the properties have reached their peak performance and there is a tremendous potential for redevelopment. The area has also been known for its history of transportation problems. Though a "Super Street" was constructed north of the study area to solve some of the issues, the area is still facing major transportation and circulation challenges.

Purpose statement

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

Vision Statement

The Ephesus Church/Fordham shopping area will be an integral 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, re-connected, more accessible and more supportive of transit and the surrounding neighborhoods.

Fundamental principles

- Respect of the Chapel Hill environment and values,
- Assist in meeting market demands for retail, offices, and residences,
- Support preservation of adjacent neighborhoods,
- Development which is supportive of public transit,
- Improve the existing Level of Service (LOS) for the roadway and intersection, and
- Improve the quality of the suburban fabric of the planning area through better building design, connectedness and general accessibility.



Public Kick-off Meeting



Public meeting participants completing the COMPASS survey

The final report assesses different aspects of the existing conditions – physical conditions, transportation and circulation overview, and its market strengths and weaknesses. It also includes an overview of the issues faced and expressed by the community and identifies the development opportunities..

After defining the existing issues and opportunities the report illustrates the conceptual solutions in the first three framework scenario's, design products that came out of the July 2010 visioning workshop and the individual details within each one. A final preferred plan is then presented and conceptual imagery is used to illustrate the desired outcome of the plan.

Recommendations are then made for traffic improvements and implementation strategies are discussed in order to give the plan legs to move on from this point.



Visioning exercises

Including a public process is a vital aspect of the success of the Ephesus Church Road Small Area Plan. The stakeholders, residents, and city officials who work, live, and pass through this area of Chapel Hill have an intimate knowledge about the strengths, weaknesses, and opportunities of this area and their opinions are important to help form the final outcome of this plan as it affects them the most.

The public Process began in June of 2010 with meetings with Town Staff and major property owners within the study area. Town staff indicated issues and potential opportunities in the following subjects; Traffic, Accessibility, Connectivity, Visibility, Alternate modes of transit, Sustainability, Green buildings, Stormwater Parking. Each of the property owners were met with and expressed their thoughts about the future for the area and where improvements are needed both from a development as well as a traffic standpoint.

In July of 2010 a visioning workshop was held and the existing conditions analysis was discussed and the first public meeting got underway where the public participated in a COMPASS study to identify images of development, infrastructure, and other design details and assigned value to them to aid in guiding the design team to start working towards development scenarios.

October of 2010 three Development Framework Scenarios were presented to Town Staff so comments could be heard and responded to. The traffic and market studies were also presented to further describe the exact details that needed to be responded to from a development and traffic standpoint.

In December of 2010 the Preferred Framework Plan that was based on the three previous scenarios and the comments heard in the public discussion was presented to the Town, the public and to City Council.

The final steps of the planning process which are highlighted in the Implementation section of this report are a traffic study analysis based on the proposed framework as well as implementation strategies for the Town to carry this effort forward.

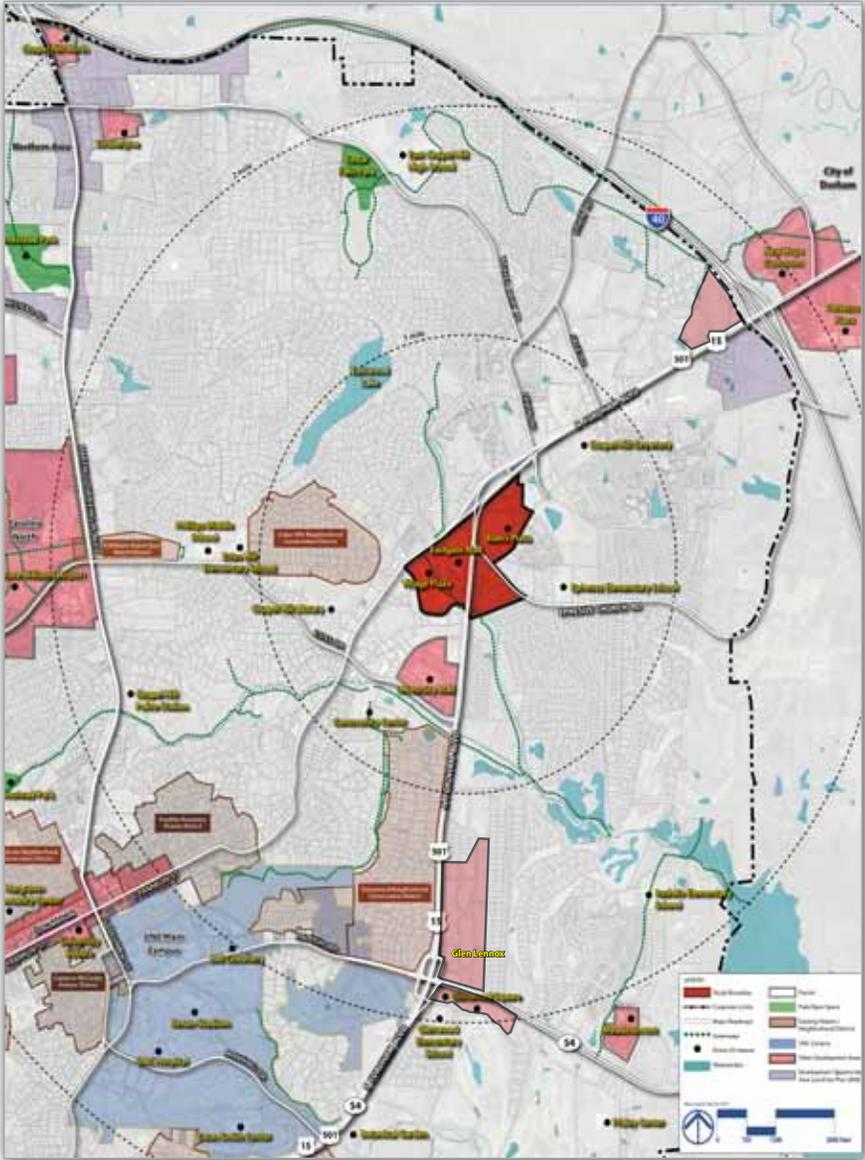
SURROUNDING CONTEXT

The Ephesus-Fordham Study area is located northeast of downtown Chapel Hill and University of North Carolina (UNC) main campus. It is positioned along one of the major regional highways (Hwy 15/501), which is advantageous for the development potential but also adds to the transportation issues within the area. The Study area is less than 3 miles away from Downtown, which is accessible directly through East Franklin Street. To the north, Highway 15/501 connects the area and the Town of Chapel Hill to the City of Durham and to Raleigh via I-40. In the south, Highway 15/501 is the main connection to Pittsboro.

The area is heavily commercial and is one of the major commercial districts of Chapel Hill. The adjacent map illustrates the spatial relationship between the study area and other commercial districts, which includes Downtown, Chapel Hill North, Timberlyne, Meadowmont, Glen Lennox, University Mall, New Hope Commons and Patterson Place. Carolina North is a two-hundred and fifty acre research and mixed-use academic campus planned by the University of North Carolina, west of the study area along Estes Road. Over the next 50 years, the main objective of this new campus is to create new opportunities for research and evolve as a major employment center supported by a sustainable development. Carolina North will include residential and retail uses along with classrooms, medical and research facilities.

The 2035 Durham-Chapel Hill-Carrboro Long Range Transportation Plan and the Chapel Hill Long Range Transit Plan (LRTP) identifies Highway 15/501 as one of the six gateway corridors and a High Investment Corridor. Though in its conceptual stage, this corridor is under consideration for incorporating Light Rail or Bus Rapid Transit, in order to serve the larger commuter market.

The map also highlights the lack of green open spaces near or within the area. In the stakeholder meetings and public kick off meeting, the area’s proximity to downtown, UNC, I-40 and shopping areas, was expressed as one of the prime reasons for preference and development interest.



Context Map

STUDY AREA

The Ephesus Church – Fordham Boulevard Study area includes Ram’s Plaza with adjacent parcels, the former Volvo property, Holiday Inn, Colony Apartments, and Eastgate Mall with adjacent properties as shown in the adjacent map. The area is approximately 123 acres and is bound by East Franklin Street and Highway 15/501 on the north and west, Elliot Road on the south, and Legion Road and Ephesus Church Road on the east. The focal point of the study area is the Ephesus Church Road and Fordham Boulevard intersection which is also a prime focus for existing traffic problems. This area is characterized by the three commercial centers: Ram’s Plaza, Eastgate Mall and Village Plaza. There is a fourth shopping mall just south of the study area – University Mall which is owned by the same development interest that own Ram’s Plaza.

Ram’s Plaza, located east of Fordham Boulevard, was constructed in 1982 as a neighborhood center. It is in need of major improvements and accessibility is the key issue for the businesses. Some of the businesses include Food Lion, Bailey’s Grill, and CVS Pharmacy. Surrounding properties including the former Volvo dealership property, Hampton Inn, Holiday Inn site and Colony Apartments, have also reached their peak performance and are in need of major improvements. The shopping center to the west of Fordham Boulevard is Eastgate Mall. It is in better condition and received façade upgrades in summer, 2010. Some of the major businesses include Trader Joe’s, Bruegger’s Bagels and Starbucks. The center completely lies within the floodplain and hence is restricted in terms of any future expansion or development opportunity. The Ephesus Church Road extends through the property to connect to East Franklin Street as a private road and is responsible for adding up to the traffic congestion. Village Plaza is located at the east corner of Elliot Road and East Franklin Street intersection and has Whole Foods as its main tenant. This center is performing well but is disconnected from the adjoining developments.

Through the stakeholder interviews and public discussions, circulation and transportation congestion was identified as major issues within this area, with unsafe conditions for bicyclists and pedestrians. The service road and accessibility to the shopping centers are also of prime concern. The community indicated that there is a lack of the inter-development connectivity and expressed the need for a cohesive redevelopment within the study area.



Study Area

EXISTING LAND USE

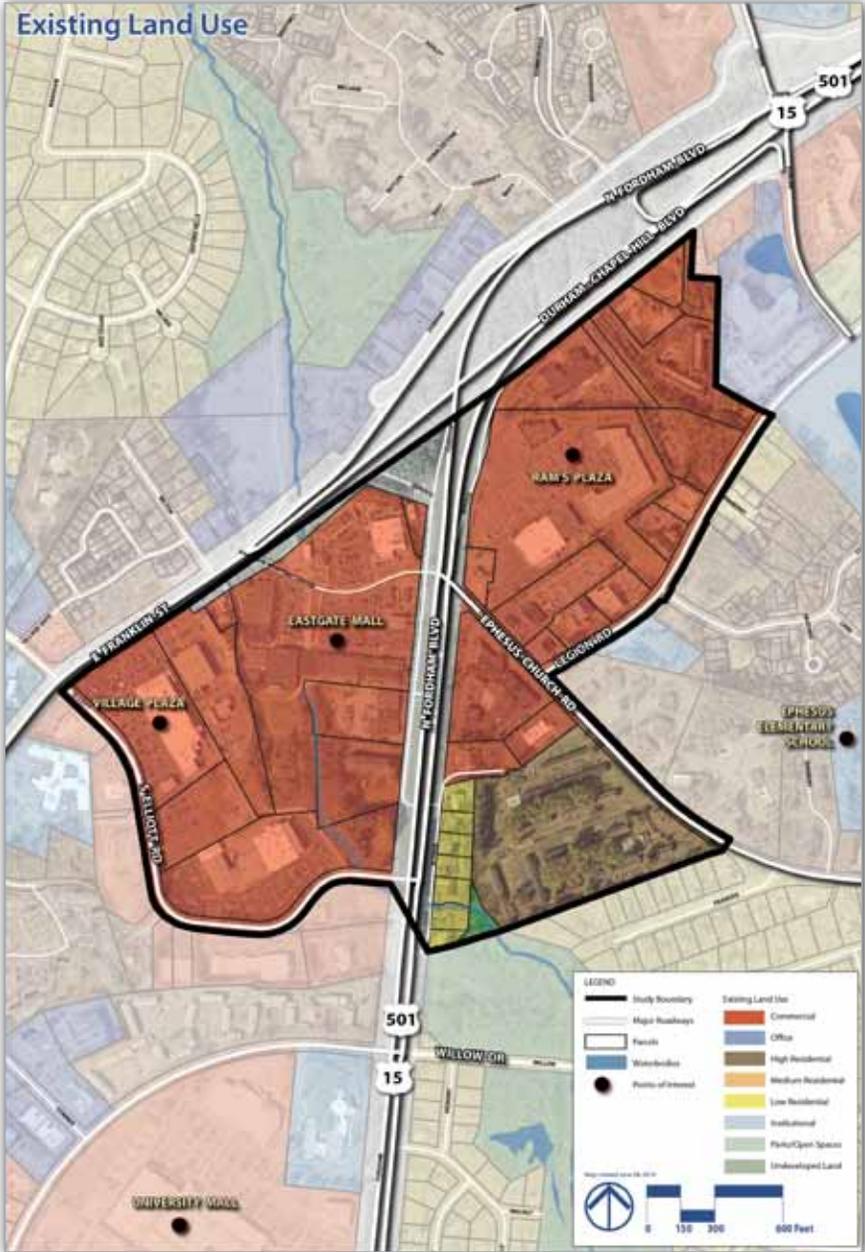
The land use analysis is an integral part for assessing development in the area as it currently exists. The following land use information was obtained from the Town’s GIS data base and was confirmed by the Planning Team through a windshield survey in June and July 2010.

The study area is predominantly commercial. The four general categories of land use within the study area are:

LAND USE	AREA (acres)	PERCENTAGE
Commercial	91.0	74
High Density Residential	15.5	13
Low Density Residential	2.7	2
Parks and Open Spaces	0.5	0.4

1. Commercial

Commercial properties make up the largest land use category, covering 74% of the study area. It is mainly comprised of three aging strip retail centers - Ram’s Plaza, Eastgate Mall and Village Plaza. Though the majority of the properties of Eastgate Mall are in the floodplain, the businesses are performing well. The properties to the east of Fordham Boulevard are struggling and have major concerns regarding accessibility



Existing Land Use Map



Ram's Plaza



Eastgate Mall

and site layout. There are some outparcels and few office buildings along the major roads, including University Ford which is one of the few car dealerships in Chapel Hill. The building is aging and there is no space to grow. There is also a heavy presence of hospitality services with five hotels within and near the study area, including the Sheraton, Residence Inn by Marriott, Hampton Inn, Days Inn, and Holiday Inn. The facilities are older and most need to be upgraded.

2. Residential

Residential is the second land use category found within the study area, with multifamily accounting for approximately 13% and single family accounting for 2% of the study area. The single family lots are located along Fordham Boulevard and some of these properties are vacant or are being used for other uses, as child day-care and fast food joint. The multi-family apartments are located along Ephesus Church Road and constitute the Colony Apartments. These are one of the few affordable housing options available in Chapel Hill and the COMPASS visual survey results indicated community members wanting to redevelop the area but retain the affordable housing option.

During the stakeholder interviews and public meeting, the community members expressed strong support for higher density and mixed-use development within the study area, which would conform to the existing character of the neighborhood while promoting economic growth.



Holiday Inn



Former Volvo Property



Day care center located in the single family lots



Colony Apartments



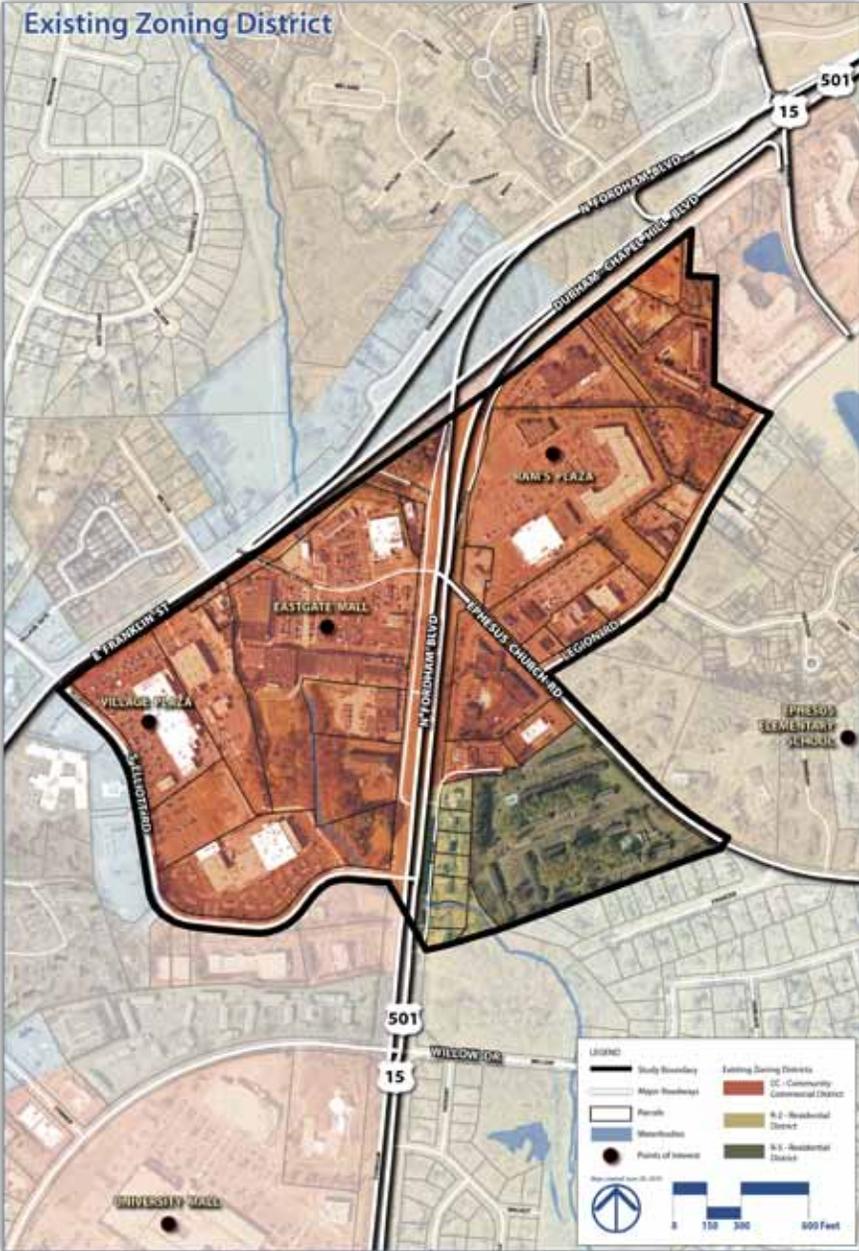
Office buildings along Legion Road



EXISTING ZONING

The existing zoning districts within the study area are consistent with the current land use pattern as illustrated in the "Existing Zoning" map. The majority of the study area is currently designated under the Community Commercial (CC) District. The Community Commercial (CC) district is intended to "provide for the development of high-intensity commercial and service centers that serve community-wide or regional commercial and service needs". It also permits single and multi family residential development. The Colony Apartments property falls under the R-5 Residential District, which allows multi-family residential developments. The single family residential lots along the Fordham Boulevard are zoned as R-2 Residential District.

To advance the vision for community and allow for a cohesive mixed-use development, as preferred by the community and suggested by the market study, a zone change or similar regulatory solution might have to be considered. Also, through the stakeholder interviews and survey results, Chapel Hill's entitlement and development review process was identified to be challenging, long and uncertain.



Existing Zoning Map



R-5 Residential District



Community Commercial District

STREET NETWORK & BLOCKS

As illustrated by the “Block” diagram, the Ephesus-Fordham Study Area is comprised of three superblocks, bounded by five major roads – Fordham Boulevard/Highway 15/501, Ephesus Church Road, East Franklin Road, Elliot Road and Legion Road. To encourage connectivity and support pedestrian and bicycle movements, ideally a block size should be 400-800 feet in length. The smaller image on the top-left corner compares the study area to that of the Chapel Hill downtown. The size of the blocks and the comparison clearly points out the lack of walkability and connectivity within the Ephesus-Fordham area, and is one of the major reasons for the transportation issues.



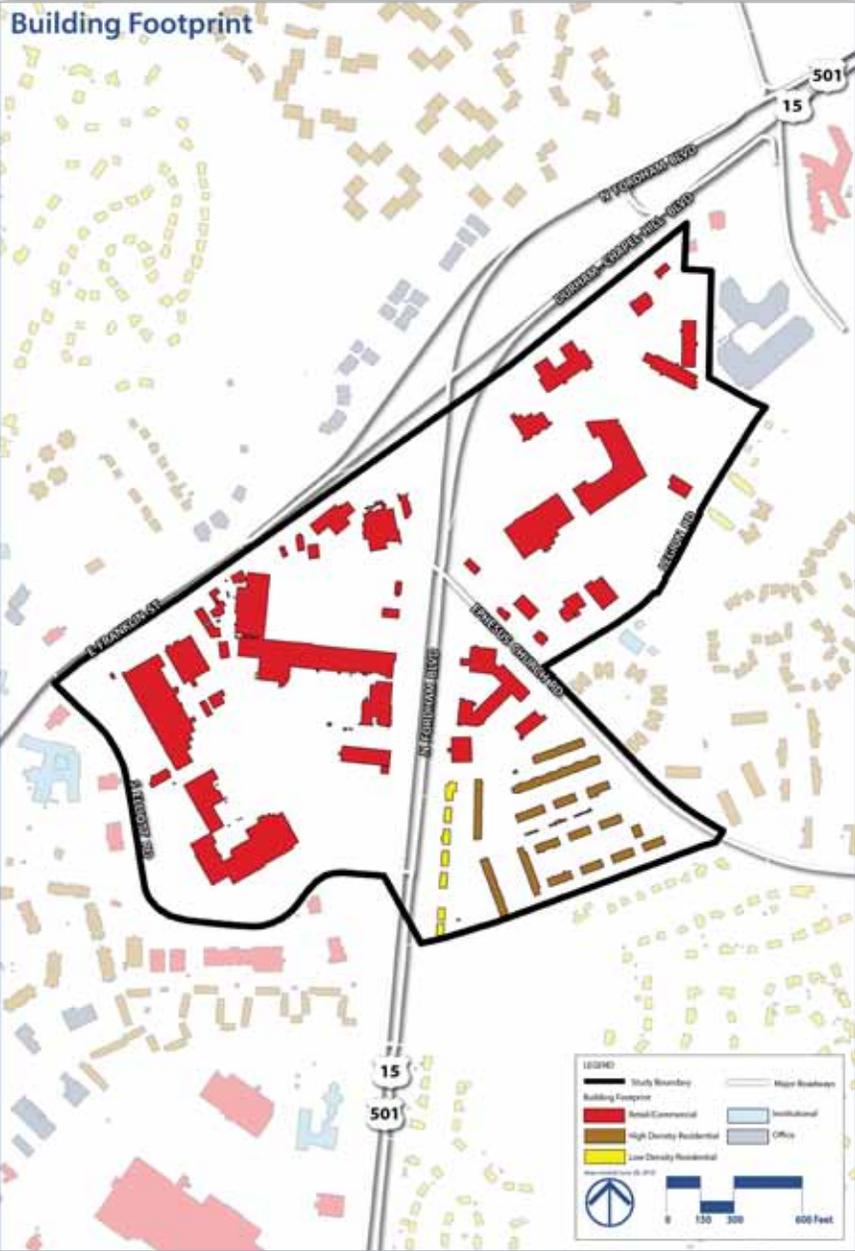
Block Layout Map



Bird's view of Ram's Plaza

FIGURE-GROUND

The "Figure-Ground" diagram represents the current building fabric within the study area, with each building colored to illustrate their respective land use. As clearly indicated, the study area comprises predominantly suburban retail strip-center buildings. These single story buildings are oriented around large surface parking lots and emphasize the public's concern for lack of inter-development and neighborhood connectivity. The hotels within the study area are mostly older two-story buildings. There are few single family residential buildings in the south, along the Fordham Boulevard, some of which have different uses or are currently unoccupied. The high density residential buildings shown in the map towards the south-east represent the Colony Apartments. The buildings are mostly 1-3 bedroom walk-up apartments and are in need of substantial upgrades.



Building Footprint Map



Multi-family apartments



Out-parcel commercial buildings

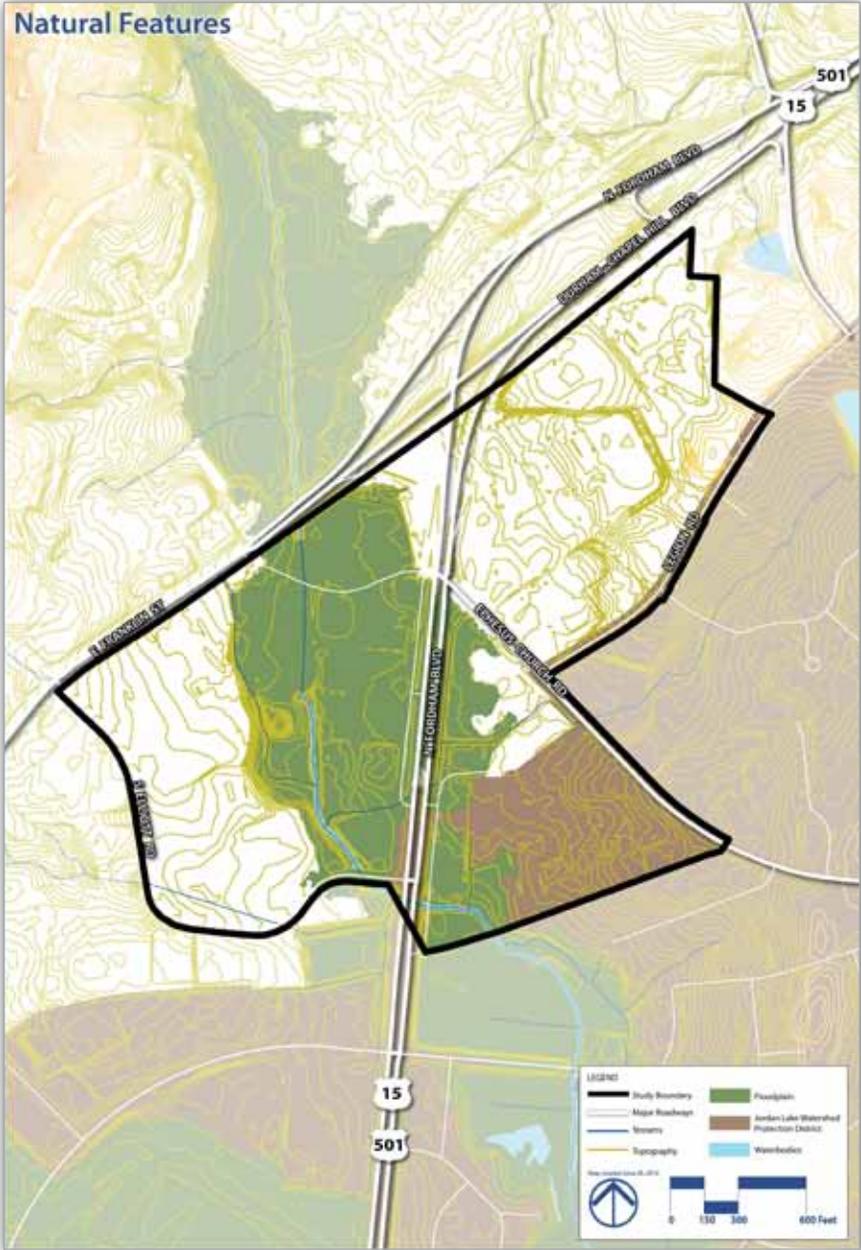
NATURAL FEATURES

The "Natural Features" diagram illustrates the existing topographical conditions of the study area. Booker Creek runs through the western portion and a considerable amount of the area including Eastgate Mall and its adjoining properties are within the floodplain, regulating and impacting their development opportunities. During the stakeholder interviews and public meeting, the owners expressed their concerns for development upgrades and the incapability to do so.

However, Booker Creek and its streams with their floodplains can also act as a community amenity. The greenway, Booker Creek Trail, proposed along the creek and partially constructed is widely used by the community.

There are some topographical challenges to be considered in the eastern part of the study area, as there are considerable elevation changes between Ram's Plaza and the former Volvo property creating access issues.

The southeast portion of the study area also falls within the Jordan Lake Water Protection District and has specific development guidelines which need to be considered and restricts the development potential of the area.



Natural Features Map



Booker Creek

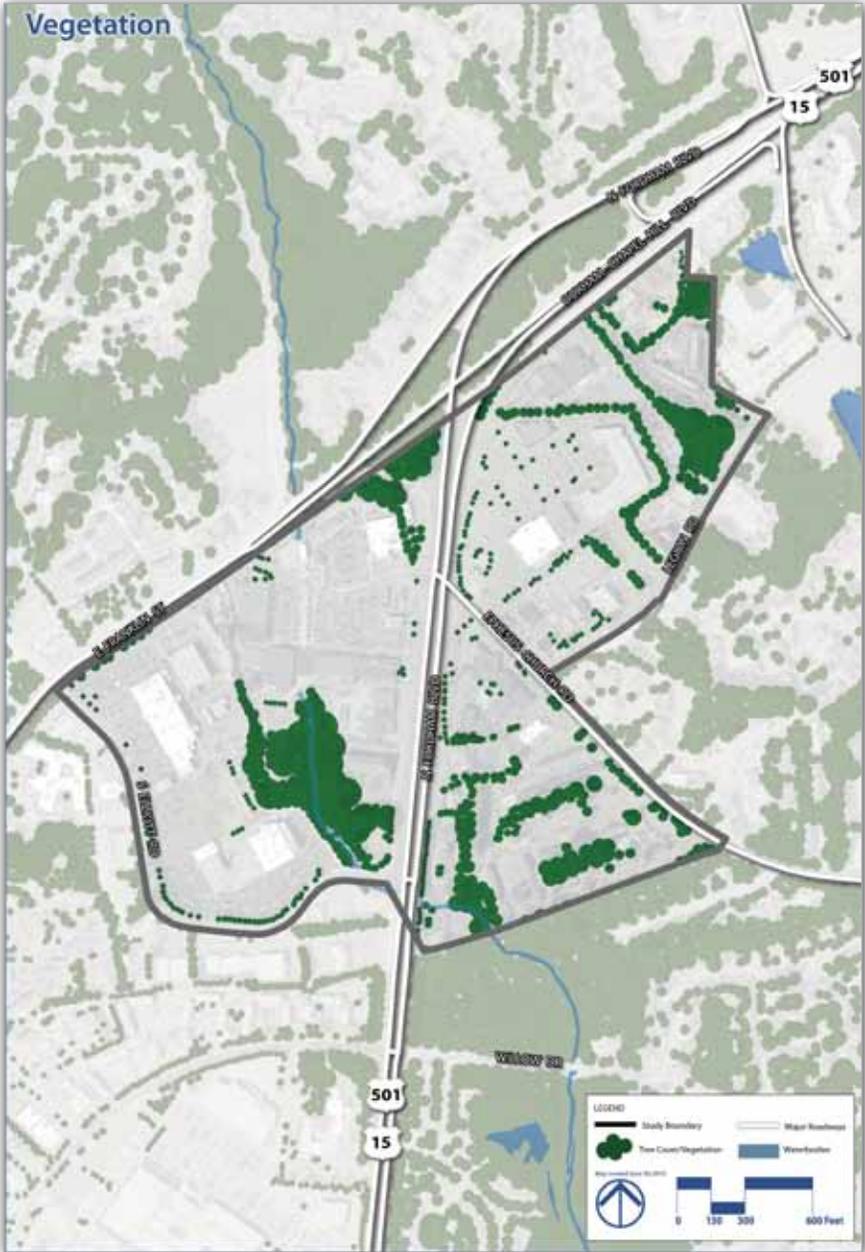


Bikers using the Booker Creek Trail

VEGETATION

The public meeting participants indicated that the existing vegetation was one of the reasons they preferred to reside in the Ephesus-Fordham area and is highlighted in the "Vegetation" diagram. These areas are mainly concentrated around the creek and its floodplain areas, and are mostly wooded and not available for development. There is minimal vegetation cover within the commercial centers. In some areas the vegetation is also responsible for poor visibility. For example, approaching the study area from the north, due to the green buffer, some of the businesses like Hampton Inn are not visible.

The area also lacks usable public open spaces. The nearest green open space is a 14-acre site owned privately by American Legion located north-east of the study area. During the visual preference survey the community expressed their need for more green spaces and consistent landscaping throughout the study area.



Vegetation Map



Existing vegetation next to Ram's Plaza

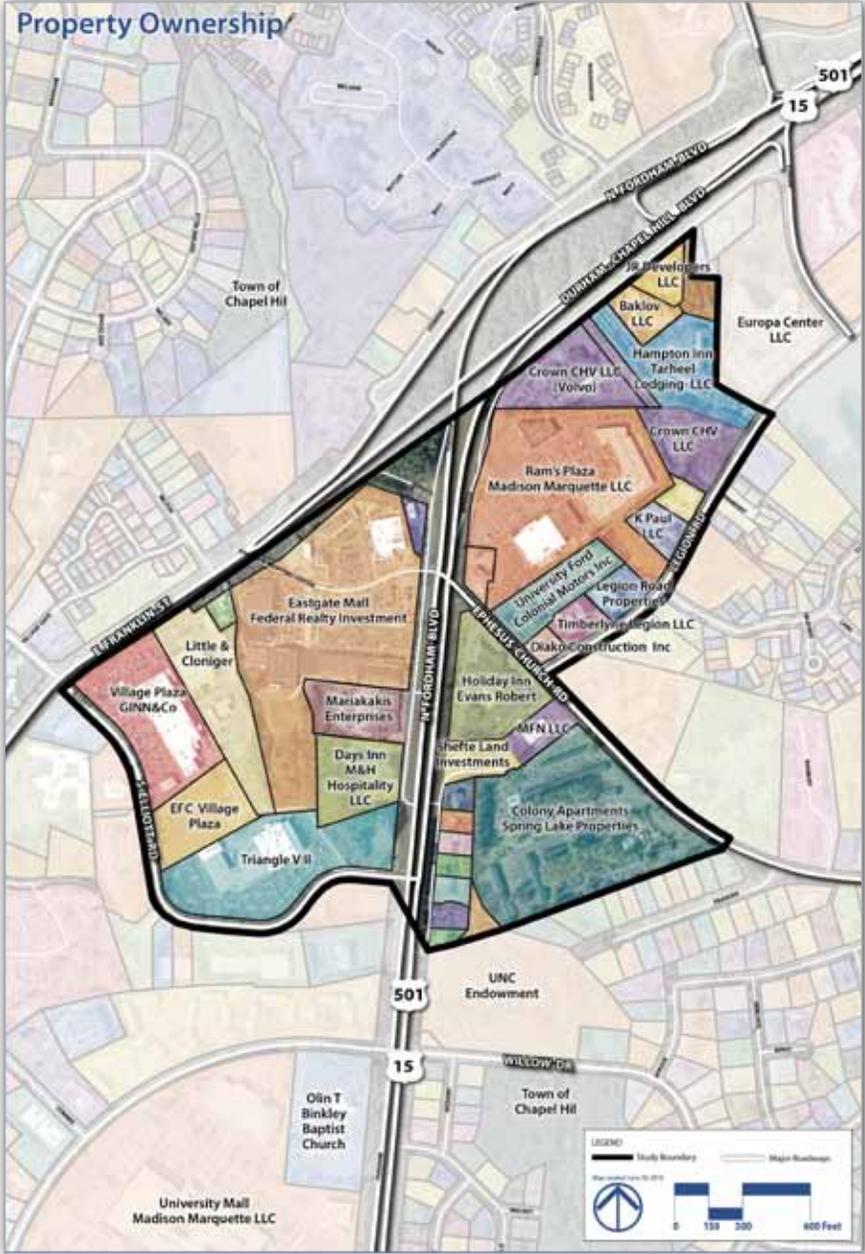


American Legion site across Legion Road

PROPERTY OWNERSHIP

The study area is comprised of multiple properties involving independent owners, which poses a significant challenge for implementation. Given the transportation issues and environmental constraints, a comprehensive plan for the whole area will be more impactful than developing/redeveloping individual properties. The "Property Ownership" map illustrates the ownership conditions of the study area. Through the stakeholder interviews, the Planning Team was able to identify the main key players who were interested in participating and willing to collaborate for advancing the vision for the community, including an interest in redevelopment.

Major property owners include Madison Marquette LLC (Ram's Plaza and University Mall), Federal Realty Investment (Eastgate Mall), Crown City LLC (former Volvo property) and Spring Lake Properties (Colony Apartments).



Property Ownership Map



University Ford



Strip center next to Eastgate Mall

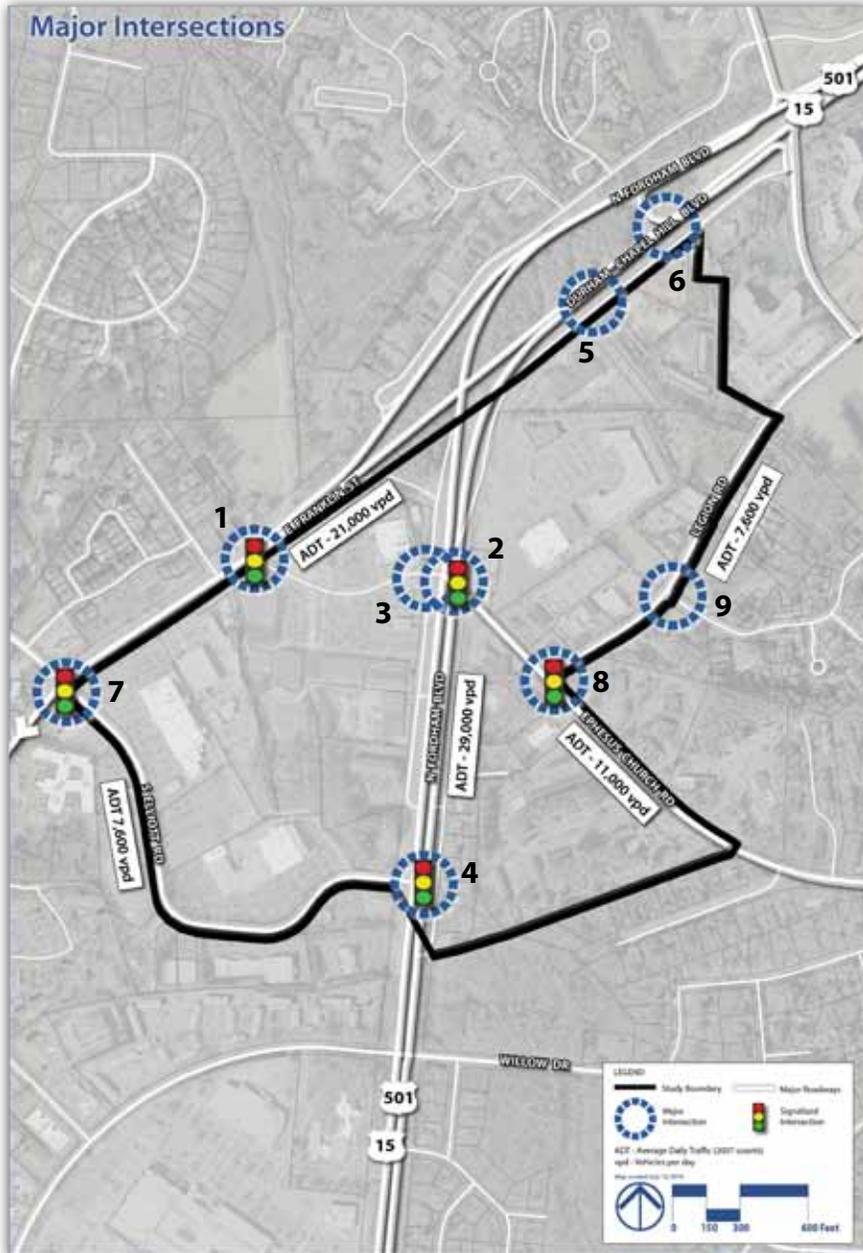
Understanding and communicating key aspects of the existing transportation network within the identified study area is the first step in projecting the potential impacts of future development. In helping to shape the Plan for the Ephesus Church Road/Fordham Boulevard area, the balancing act involves the following components:

- Maximizing economic development opportunity through optimal access to and within properties.
- Protecting the public with safe and flowing traffic of all modes– vehicular, bicycle and pedestrian, and transit service.
- Recognizing constraints of the related properties and roadway rights-of-way, in terms of environmental, physical, and geometric.

KHA has performed a review of existing transportation conditions within the following identified study area:

1. E. Franklin Street–Ephesus Church Road (Signalized)
2. Fordham Boulevard–Ephesus Church Road (Signalized)
3. Ephesus Church Road–Western Service Road (Old Oxford) (Unsignalized)
4. Fordham Boulevard–Elliott Road (Signalized)
5. Fordham Boulevard Eastbound–East Service Road Connection (East of Volvo) (Unsignalized)
6. Fordham Boulevard Eastbound–Fordham Blvd Superstreet Westbound U-turn (Unsignalized)
7. E. Franklin Street–Elliott Road (Signalized)
8. Ephesus Church Road–Legion Road (Signalized)
9. Legion Road–Clover Drive/Rams Plaza Drive (Unsignalized)

The above study area is represented graphically on the adjacent figure.



Major Intersections

The Team attended a project kick-off meeting with Town and North Carolina Department of Transportation (NCDOT) staff on Tuesday, June 22, 2010. The following summarizes the review of a variety of transportation-related information available from the Town and NCDOT, background data collected, and field observations to date within three sections:

- Vehicular Operations
- Bicycle and Pedestrian Accommodations
- Transit Service

The summary references study area intersection numbers as indicated above.

VEHICULAR OPERATIONS

Study Area Roadways

Franklin Street serves as the northern boundary of the study area. The five-lane cross section provides two through lanes in each direction with a center two-way left turn lane (TWLTL). The posted speed limit is 35 miles per hour (mph), and the 2009 average daily traffic (ADT) count was 21,000 vehicles per day (vpd) just north of Ephesus Church Road based on NCDOT traffic survey maps.

Fordham Boulevard (US 15-501) is a four-lane median divided roadway with left- and right-turn lanes at major intersections. In areas where left-turn lanes are not present, the median is approximately 30 feet wide. The posted speed limit is 45 mph in this area. The 2009 ADT was 30,000 vpd just north of Estes Drive based on NCDOT traffic survey maps.

NCDOT has identified US 15-501 as a Strategic Highway Corridor with a “Boulevard” classification. The purpose of the Strategic Highway Corridor Initiative is to protect and maximize the mobility and connectivity on a core set of highway corridors. NCDOT states that “a primary goal is to create a greater consensus towards the development of a genuine vision for each Corridor - specifically towards the identification of the



Road Network

desired facility type (freeway, expressway, boulevard, or thoroughfare) for each.” These corridors account for seven percent of the State’s Highway System, but carry 45% of the traffic. A Boulevard facility requires a minimum cross section of two lanes with a median. Boulevard criteria limit median crossovers to a minimum spacing of 1200 feet for posted speed limits of 45 mph or less, and seek to minimize/restrict individual driveway connections. A map of Strategic Highway Corridors and general criteria for such facilities are included in the Appendix.

Elliott Road has a three-lane cross section between Fordham Boulevard and Franklin Street. The posted speed limit is 25 mph. The 2009 ADT was 6,900 vpd just east of Franklin Street based on NCDOT traffic survey maps.

Ephesus Church Road is a three-lane cross section between the signalized intersections with Fordham Boulevard and Legion Road, with a 2009 ADT of 10,000 vpd. East of Legion Road the cross section transitions to a two-lane road. The posted speed limit is 35 mph. Between Fordham Boulevard and Franklin Street, Ephesus Church Road is a private road internal to the Eastgate Shopping Center with numerous parking aisle intersections. It is a two-lane facility with exclusive turn lanes approaching Fordham Boulevard and Franklin Street. A speed table, pedestrian refuge island, and a four-way stop exist along this segment as traffic calming features.

Legion Road is a two-lane road that extends from Ephesus Church Road to Scarlett Drive, generally parallel to US 15-501. The posted speed limit is 35 mph. The 2007 ADT was 7,600 vpd based on NCDOT traffic survey maps. (2009 ADTs are not available.)

On the west side of US 15-501(Fordham Boulevard), a parallel service road is present from the northern boundary of Eastgate Shopping Center southward to the Days Inn. In addition to the full movement access at Ephesus Church Road, there are two additional right-in/right-out service road connections to Fordham Boulevard along this segment.

On the east side of US 15-501(Fordham Boulevard), a parallel service extends from Europa Drive southward into Ram’s Plaza. There is also a right-in-only access to this service road just north of Ephesus Church Road.



Ephesus Church Road



Legion Road

Peak-Hour Intersection Turning Movement Traffic Counts

Intersection turning movement counts were performed for intersections 1, 3, 5, 7, 8, and 9 during the AM (7:00-9:00) and PM (4:00-6:00) peak-hour on Wednesday, August 31 and Thursday, September 1, 2010.

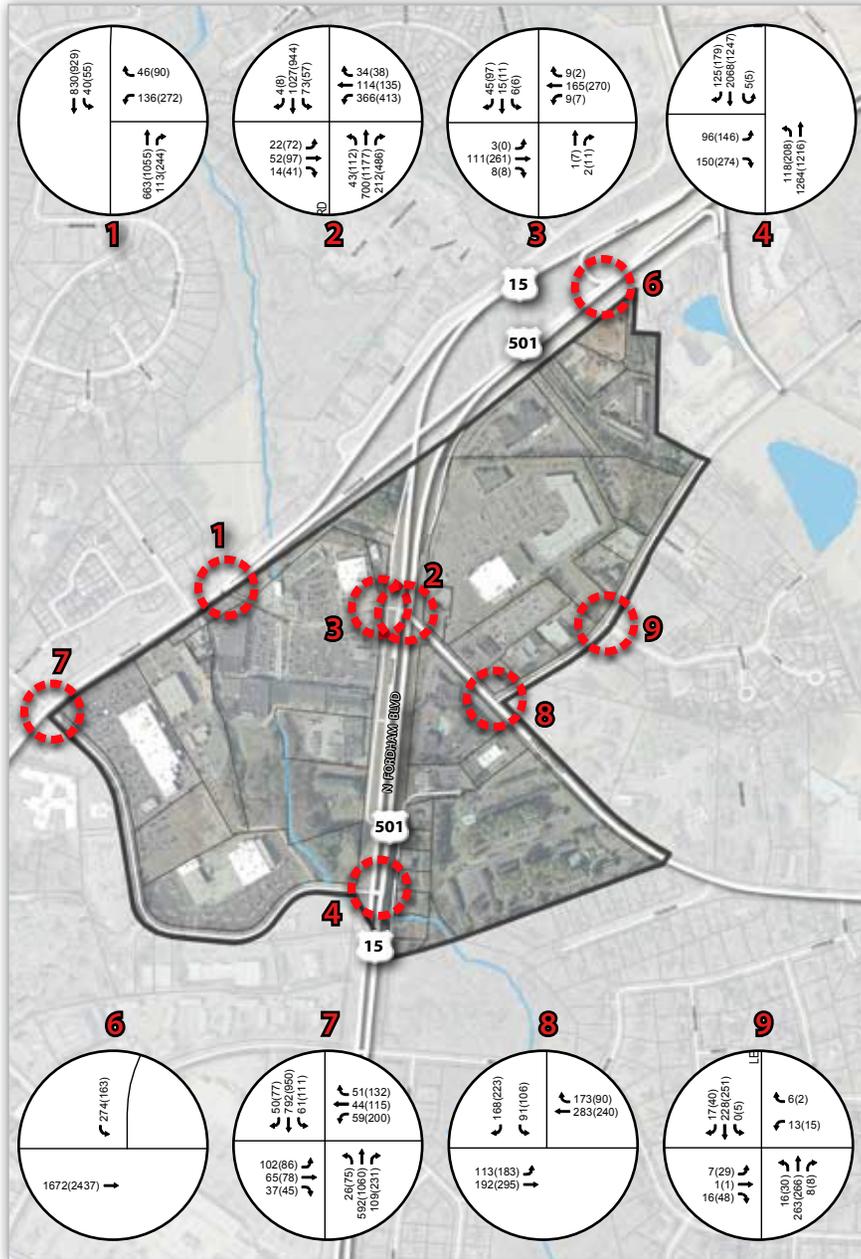
Year 2009 turning movement counts for intersections 2, 4, and 6 were provided by the Town. The adjacent figure represents the peak-hour counts graphically.

Existing Intersection Capacity Analysis

Peak-hour capacity analyses were performed to determine the current operating characteristics of the study area intersections. The analyses were conducted with methodologies contained in the 2000 Highway Capacity Manual (TRB Special Report 209, 2000 update) using the Synchro 7.0 computer model.

Capacity is defined as the maximum number of vehicles that can pass over a particular road segment or through a particular intersection within a given time duration. Capacity is described by Level-of-Service (LOS) for the operating characteristics of a road segment or intersection. LOS is defined as a qualitative measure that describes operational conditions and motorist perceptions within a traffic stream. The Highway Capacity Manual defines six levels of service, LOS A through LOS F, with A being the best and F being the worst. LOS for a two-way stop-controlled (TWSC) intersection is determined by the control delay and is defined for each lane group movement. LOS is not defined for a TWSC intersection as a whole.

Table 1 in page 1.18 summarizes the existing 2010 levels of service at the study area intersections. Synchro output reports are included in the Appendix.



Peak-hour intersection turning movement traffic counts
 Legend: XX AM
 (XX) PM

Study Area Intersections	AM Peak LOS (Delay in Seconds)	PM Peak LOS (Delay in Seconds)
Franklin Street – Ephesus Church Road	Overall - B (10.5) WB – E (68.3) NB – A (4.0) SB – A (4.2)	Overall - B (14.2) WB – E (62.2) NB – A (4.2) SB – A (8.9)
Fordham Boulevard – Ephesus Church Road	Overall - D (44.4) EB – F (92.1) WB – F (93.7) NB – C (22.2) SB – D (36.8)	Overall - D (53.7) EB – F (94.7) WB – F (95.3) NB – D (35.4) SB – D (53.1)
Ephesus Church Road – Fordham Boulevard Western Service Road (Old Oxford Road)	Overall - Unsignalized EB – A (0.2) WB – A (0.4) NB – A (9.7) SB – B (10.5)	Overall - Unsignalized EB – A (0.0) WB – A (0.3) NB – B (11.6) SB – B (12.0)
Fordham Boulevard – Elliott Road	Overall - C (27.6) EB – F (96.3) NB – B (10.5) SB – C (30.7)	Overall - B (18.4) EB – F (103.8) NB – A (7.9) SB – A (3.7)
Fordham Boulevard – Westbound U-Turn	Overall – C (21.9) EB – B (13.0) SB – E (76.3)	Overall – C (21.8) EB – B (16.6) SB – F (100.8)
Franklin Street – Elliott Road	Overall - C (21.1) EB – D (53.1) WB – E (62.0) NB – B (15.9) SB – B (11.0)	Overall - C (33.1) EB – D (53.2) WB – E (62.3) NB – C (31.5) SB – B (19.4)
Ephesus Church Road – Legion Road	Overall - C (22.8) EB – B (11.2) WB – C (20.5) SB – D (40.5)	Overall - D (22.6) EB – B (15.7) WB – C (20.7) SB – D (35.3)
Legion Road – Clover Drive/Rams Plaza Drive	Overall - Unsignalized EB – B (11.5) WB – B (13.4) NB – A (0.6) SB – A (0.0)	Overall - Unsignalized EB – B (13.3) WB – C (16.7) NB – A (1.0) SB – A (0.2)

* Indicates analysis results based on Synchro files and volumes provided by the Town of Chapel Hill

Assumptions:

The following assumptions were made throughout the analysis:

- No growth applied to 2009 traffic volumes obtained from the Town based on historical growth data
- Heavy vehicle percentage of 2% at all intersections
- Minimum peak hour factor (PHF) of 0.9, computed by approach for 2010 counts
- 0.9 PHF assumed for 2009 volumes provided by the Town.
- Coordinated system and cycle length of 180 seconds during AM peak and PM peak along Fordham Boulevard.
- A 60-second cycle length was assumed for Ephesus Church Road–Legion Road intersection.
- Coordinated system and cycle length of 135 seconds during AM peak and PM peak along Franklin Street.
- All lost times were assumed to be 5.0 seconds, per NCDOT Congestion Management guidelines.
- Treated northbound right-turn movement on Fordham Boulevard at Ephesus Church Road as permitted + overlap phasing, which is a conservative assumption. (Currently operates under yield conditions, but there is no receiving lane present and therefore could not be coded as a free-flow condition.)
- Per NCDOT Congestion Management guidelines, right-turn on red movements were assumed to be prohibited at all intersections.
- No volume balancing was performed between intersections. (However, significant variations were noted on Fordham Boulevard between Ephesus Church Road and Elliott Road, and on Ephesus Church Road between the Western Service Road and Fordham Boulevard. These variations could be due to different timeframes and/or days of counts performed. The noted variations will be addressed in future analysis scenarios.)
- Assigned five southbound U-turn movements during AM and PM on Fordham Boulevard at Elliot Road to illustrate utilization of protected phase.
- If pedestrians counted on an approach, conflicting pedestrian added to the same approach’s right-turn movement, as well as the opposing approach’s left-turn movement only if the left turn performs under permitted phasing.
- If through bike movements counted on an approach, conflicting bike added to the same approach’s right-turn movement (no input available for a left-turn movement).

Field Observations

KHA performed two general field visits of the study area on Tuesday, June 22, 2010 (one of which was guided by Town staff). Additional field visits were made Thursday, September 9, 2010 within the identified study area during the morning and afternoon peak periods. The following observations were made.

Fordham Boulevard–Ephesus Church Road intersection:

- Western Service Road proximity to Fordham Boulevard, which introduces multiple decision/conflict points, intersection blockages, limited queuing of eastbound vehicles, and conflicting turning movements at the Ephesus Church Road–Western Service Road intersection, collectively reduce the efficiency of the Fordham Boulevard–Ephesus Church Road intersection.
- Conflicts were observed at the Ephesus Church Road–Western Service Road intersection due to its proximity to the Fordham Boulevard–Ephesus Church Road intersection. One near-accident was observed during the PM peak.
- The presence of multiple private drives along the eastern leg of Ephesus Church Road creates conflicting queues and turning movements. A skewed westbound Ephesus Church Road approach to the intersection creates inefficient flow due to the acute angle of dual left-turn movements to southbound Fordham Boulevard. The vehicle movements into and out of the closest Ram's Plaza drive creates gaps in queued westbound approach vehicles that appear to limit the traffic signal's ability to clear the westbound vehicular demand during peaks.
- While appropriate given the current lineage, geometry and traffic demands, the use of split phasing at the Fordham Boulevard–Ephesus Church Road intersection causes inefficient traffic operations.
- There appears to be significant unused green time on southbound Fordham Boulevard at Ephesus Church Road during the AM peak hour.
- Fordham Boulevard southbound queues were observed to be approximately 300 feet during the AM peak, which is shorter than the 700 feet indicated in the AM peak analysis results. This may be due to metering of traffic at upstream traffic signals.
- Southbound queues on Fordham Boulevard extend back to the Franklin Street



Fordham Boulevard - Ephesus Church Road Intersection



Traffic backed up on Ephesus Church Road



Multiple parking aisles along Ephesus Church Road



Proximity of service roads to the main roads

overpass during the PM peak hour.

- While significant northbound and southbound queues are present during the PM peak, queued vehicles were observed to clear during each cycle.

Other observations:

- In general, right-turn movements were observed as operating with less queuing than reported in Synchro analysis results due to the global assumption within the analysis of no right-turn-on-red condition (as typically required by NCDOT).
- The actual cycle length at Ephesus Church Road–Legion Road intersection varied but was generally observed to be in the range of 30 seconds during both peaks, which could explain better field operations observed for southbound vehicles (in addition to the assumed no right-turn on red).
- There is a general lack of parallel streets and connectivity between development quadrants to divert traffic away from the Fordham Boulevard–Ephesus Church Road intersection.
- Multiple parking aisles along Ephesus Church Road and the lack of turn lanes within the Eastgate Shopping Center create conflicts that impede efficient movement of traffic to, from, and within the Center. The internal four-way stop control is frequently ignored.
- During the PM peak, the merging of two northbound through lanes down to one, along with queues from northbound Fordham Boulevard/southbound Superstreet U-Turn traffic signal cause rolling queues to spill back to the Ephesus Church Road intersection.
- Superstreet U-turn LOS E/F is likely due to the long cycle length, which is the nature of a typical Superstreet left-turn movement.
- Access into Ram’s Plaza from southbound US 15-501 is limited to Europa Drive and Ephesus Church Road.
- There are significant grade differences between Hampton Inn, Volvo site, and Ram’s Plaza.
- The eastbound left-turn queues from Elliott Road to Fordham Boulevard were observed to be approximately 100 feet during the AM peak, which is shorter than the 200 feet reported in the AM peak analysis.

- During the PM peak, eastbound left turn queues from Elliott Road onto Fordham Boulevard sometimes exceeded the available storage.
- During the PM peak, northbound Elliott Road queues at Franklin Street sometimes extended past the internal retail drive, although the queues were observed to clear during each cycle.

The figure to the left, provides a graphic representation of calculated levels-of-service based on capacity analysis results, and observed issues.

Historical Traffic Growth

KHA compiled the average daily traffic volume data from 1997 to 2009 for streets in and around the study area. The overall trends indicate relatively minimal growth in traffic volumes, with a decline in most areas. The graphs and trendlines for the historical ADT volumes are included in the Appendix.

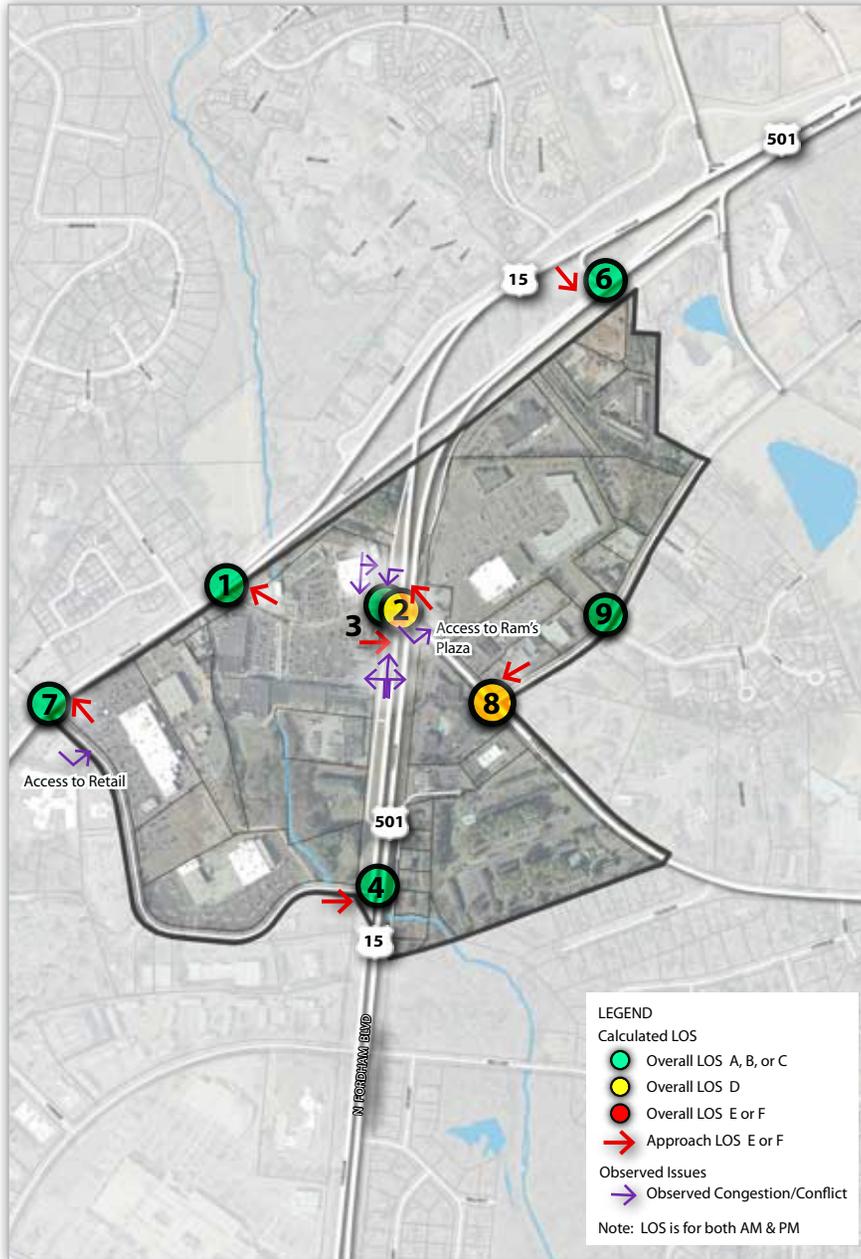
Planned Roadway Improvements

The Durham–Chapel Hill–Carrboro Regional Priority List includes requests for sidewalks, bike lanes, and transit improvements on Fordham Boulevard and Ephesus Church Road as indicated below:

- Ephesus Church Road (US 15-501 to Farrington Road)– sidewalks, bike lanes, and safety improvements
- Fordham Boulevard (Columbia Street to Ephesus Church Road)– sidewalks, wide outside lanes, and transit accommodations
- Fordham Boulevard (Ephesus Church Road to Elliott Road)– sidewalks

The complete Regional Priority List is included in the Appendix.

The draft 2012-2018 State Transportation Improvement Program (STIP) specifically includes funding of project U-5304 for sidewalks, wide outside lanes, and transit accommodations along US 15-501 from NC 86 to Ephesus Church Road. This project is targeted for construction in FY 2019. The referenced project as documented in the draft STIP is included in the Appendix.



Existing Traffic Conditions

Accident History

Available crash data for the previous three years was obtained from NCDOT for streets within the study area. The reports indicate that no fatalities or “Class A” injuries (generally defined as disabling; bleeding or distorted member, or any condition that required victim to be carried from the scene) occurred during this period. Of the reported crashes within the study area, approximately 75 percent involved property damage only.

The majority of the reported collisions were rear-end type crashes occurring at or near signalized intersections. Other noticeable trends involve left turns to and from driveways near intersections or in congested areas such as Ephesus Church Road between Fordham Boulevard and Legion Road. During this three-year period, there was one collision involving a pedestrian (reportedly suspected of alcohol impairment) that occurred on Ephesus Church Road at Legion Road. Four collisions involving bicyclists were reported: one on Elliott Road, one on Franklin Street, and two on Ephesus Church Road. The total number of reported crashes within the study area decreased 32 percent from 2008 to 2009.

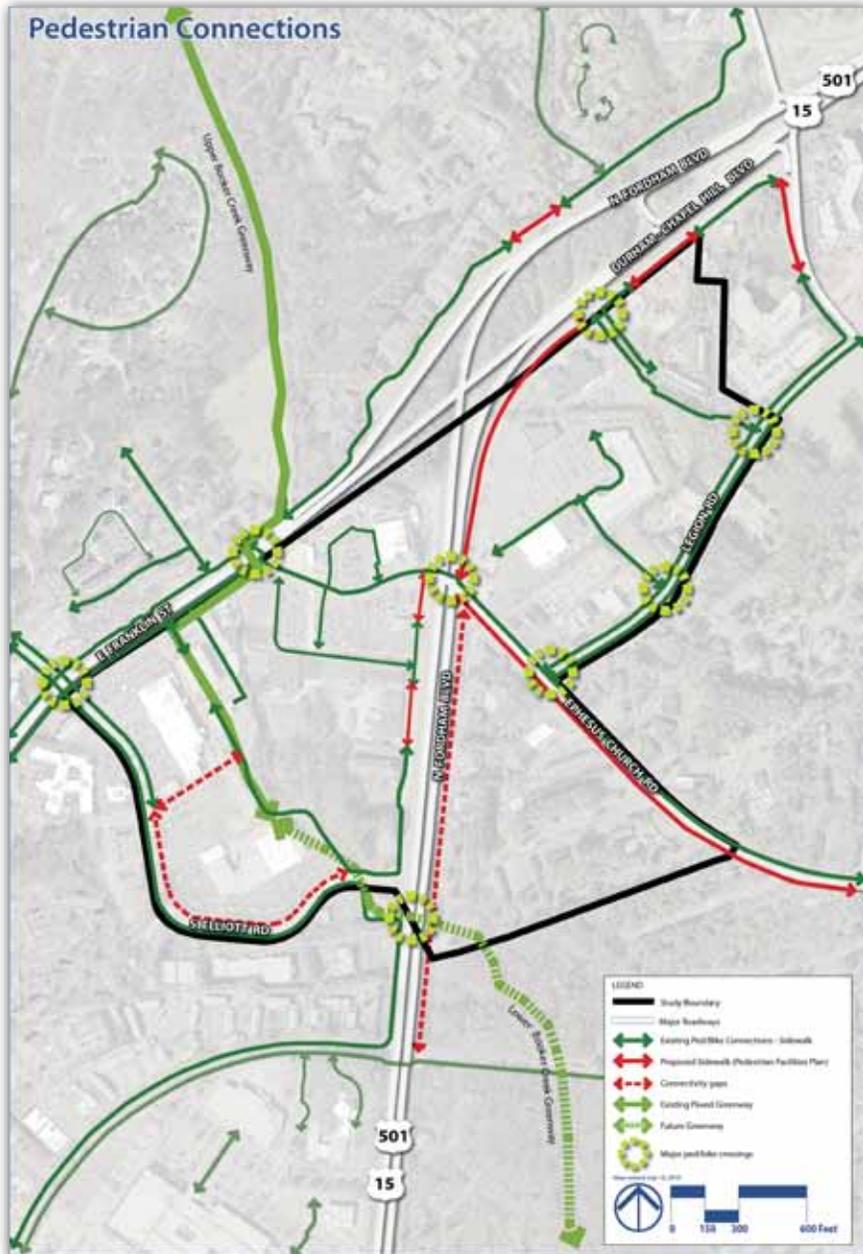


Ephesus Church Road and Legion Road Intersection

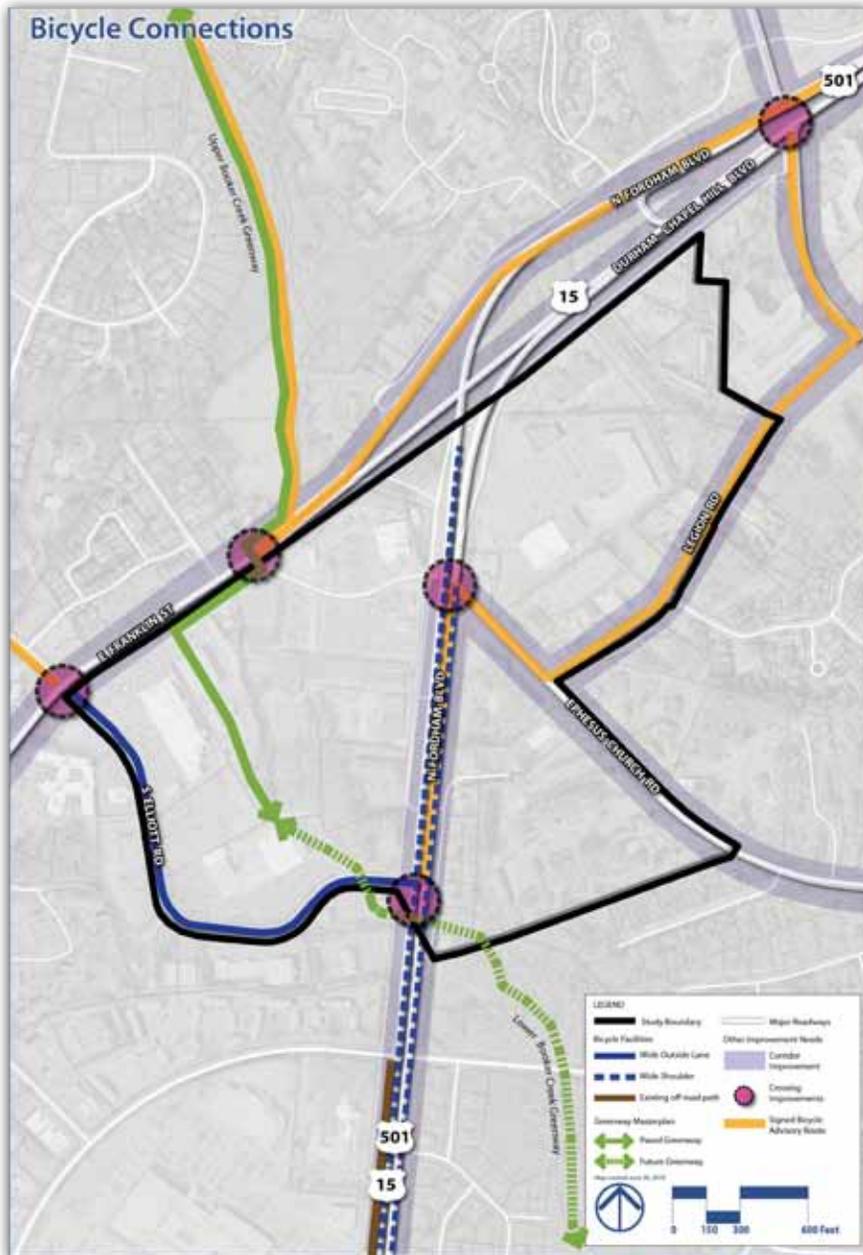
BICYCLE AND PEDESTRIAN ACCOMMODATIONS

The following summarizes field observations of existing bicycle and pedestrian accommodations within the study area:

- There is an existing striped bike lane on Legion Road that begins at Ephesus Road on the northwest side and shifts to the southeast side in the vicinity of the Hampton Inn entrance. The overall Legion Road pavement width varies from 28.5 feet to 30 feet, with pavement overlaid into the gutter pan in some locations.
- Wide shoulders are present along Fordham Boulevard.
- There are no sidewalks on the south side of Ephesus Church Road east of Fordham Boulevard.
- There are no sidewalks along the eastern service road adjacent to Ram’s Plaza and the Volvo property.
- There are no sidewalks along the east side of Fordham Boulevard between Elliott Road and Ephesus Church Road.
- There is no sidewalk in front of the 501 Diner on Fordham Boulevard Western Service Road (Old Oxford).
- There is no sidewalk connection along the Western Service Road from the BP Service Station to the Days Inn.
- There is a missing sidewalk connection near the bus shelter on Dobbins Drive.
- Signalized intersection crosswalks vary in design from standard horizontal parallel lines to longitudinal markings to textured pavement. The adjacent figure “Observed Intersection Pedestrian Accommodations” in page 1.23 indicates the existing sidewalk conditions and figure indicates the observed intersection pedestrian accommodations. Three locations appear to contain substandard accessible ramps or broken concrete at the study area intersections, as noted.



Pedestrian Conditions



Bicycle Connections

The adjacent figure illustrates the Bicycle Facilities Plan for the study area. The Copies of the adopted Bicycle and Pedestrian Plans are also included in the Appendix. With the exception of the eastern side of Fordham Boulevard, the Pedestrian Plan calls for construction of sidewalk in the areas noted above. It also proposes extension of the Booker Creek Greenway eastward, crossing Fordham at a new pedestrian underpass. The following exceptions to the Pedestrian Plan are indicated below:

- The greenway shown as future through Eastgate from the Fordham Boulevard–Elliott Road intersection appears to be in place.
- The missing sidewalk along the eastern service road north of the Volvo property (in front of the Advance Auto and Jiffy Lube) is in place.
- Sidewalk exists along the west side of Fordham Boulevard starting at Elliott Road and stopping at the northern property line of the Days Inn. It picks up again along the Eastgate and Boston Market frontage, but is not present adjacent to the service station.

In this area, the Regional Priority List includes requests for sidewalks and bike lanes on Fordham Boulevard and Ephesus Church Road, as included in the Appendix.

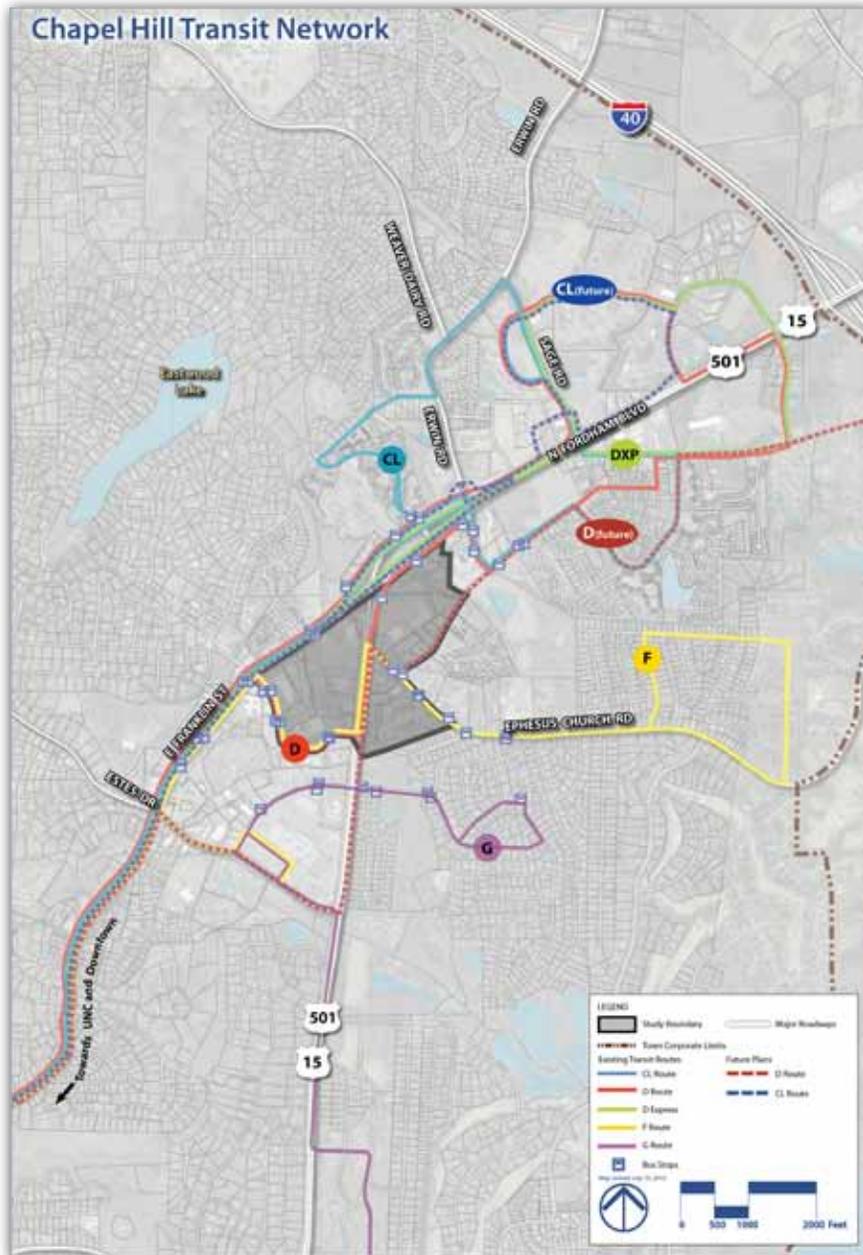


Observed Intersection Pedestrian Accommodations

TRANSIT SERVICE

The study area is currently served by the following primary bus routes based on available transit information:

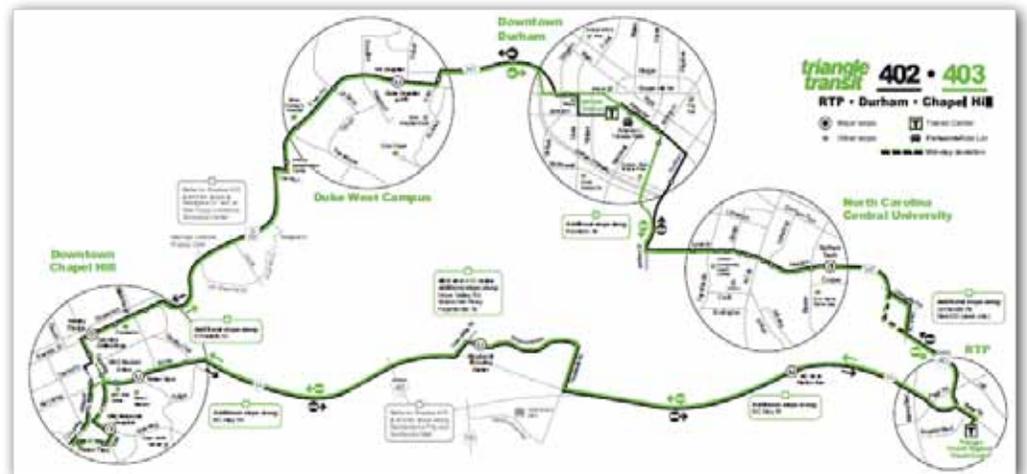
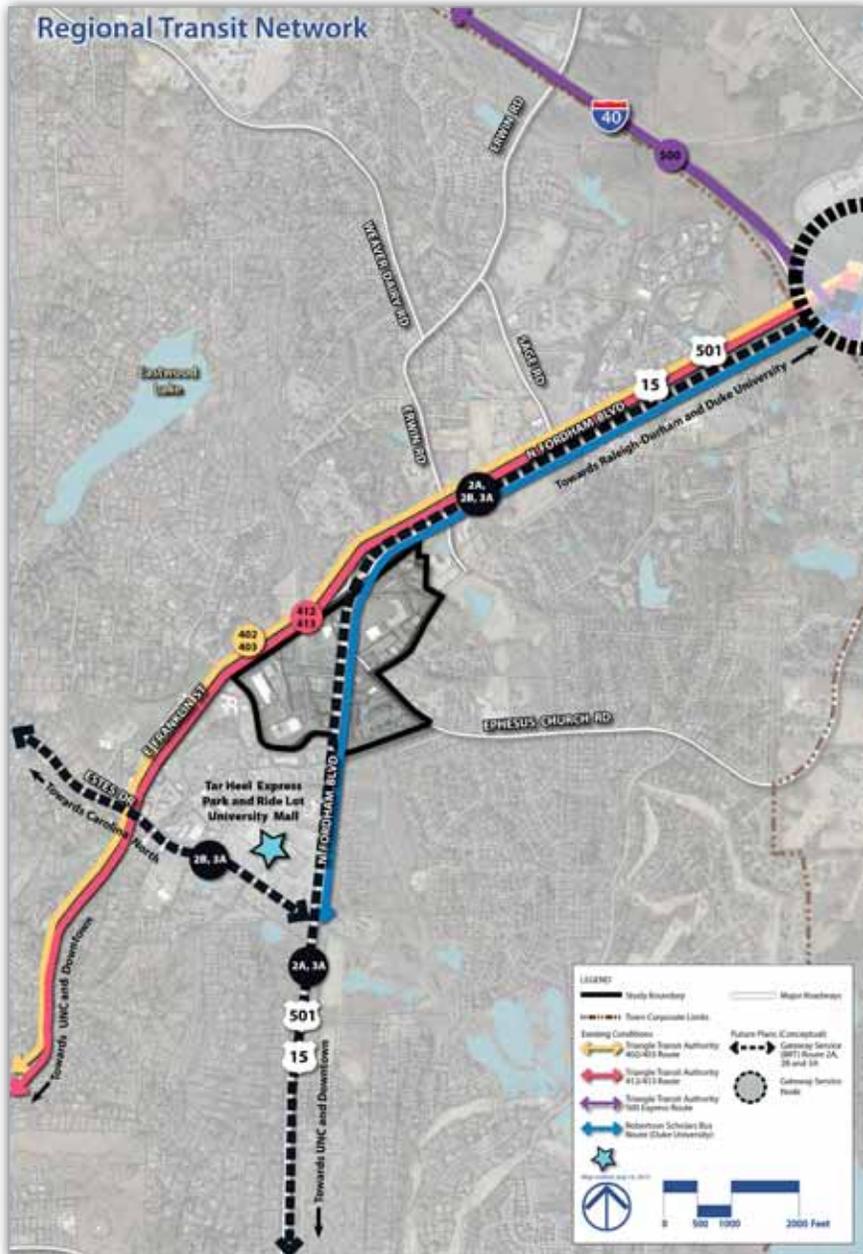
- On weekdays, Chapel Hill Transit routes D, CL and F serve the study area. These routes have approximately ten, five, and eleven stops within the study area, respectively. Route DXP is an express route through the study area via Franklin Street.
- On Saturdays, Chapel Hill Transit routes DM and FG have six and thirteen stops within the study area, respectively.
- Triangle Transit Authority (TTA) serves the area with routes 402/403 and 412/413. These are express routes that run through the study area via Franklin Street.
- The Tarheel Express is a shuttle system that operates from the University Mall Park & Ride facility for basketball and football games.
- Duke University offers the Robertson Scholars Bus Route which runs along US 15-501 between Duke University and the UNC campus, with boardings occurring at Morehead Planetarium.



Chapel Hill Transit Network

Route maps and schedules are included in the Appendix. Existing stops within the study area were noted during the September field visit.

Depending on the timeline, findings from the ongoing Transit Operations Study will be considered where appropriate. This area has also been identified as a candidate for high-order Bus Rapid Transit, although conceptual at this point.



Regional Transit Network

Triangle Transit Authority Map

The main focus of the Ephesus-Fordham Small Area Plan, along with the transportation improvements has been the redevelopment and integration of the retail centers with their neighborhood context.

Development Concepts, Inc., as part of the Planning Team, analyzed the existing conditions of the commercial centers and the market demand for the study area. Through various stakeholder interviews the key issues were identified. The complete report with the findings, limitations and recommendations has been included in the Appendix of this document. A summary of the market study has been included below.

SWOT Summary (Strengths, Weaknesses, Opportunities, Threats)

Strengths

- Major Town / Regional intersection
- Existing successful commercial properties
- High traffic counts, good visibility
- One of few commercial areas in Chapel Hill
- High quality retailers

Weaknesses

- Awkward / confusing traffic intersections and circulation
- Poor accessibility makes some sub-areas undesirable to tenants
- Poor visibility for properties off of main streets (i.e. Hampton Inn)

Opportunities

- Chapel Hill is desirable market
- Desire of land owners / developers to re-develop certain pieces of property

Threats

- Accessibility
- Entitlement Process
- Land acquisition / assembly
- Development competition from Durham (South Square, Patterson Place, etc.)
- Environmental Constraints



Successful commercial properties



Traffic congestion



Patterson Place as development competitor

Market Opportunities

Retail Market Opportunities:

- Retail potential includes 200,000 – 300,000 sq. ft. of retail
- Recommended that a smaller amount (40-50k) should be planned for service, dining and boutique retail to serve complimentary commercial, hospitality and residential uses.

Office Market Opportunities:

- Good location for office uses. However, opportunity may disappear if planned development is built, which will oversupply the market for up to 5-10 years.
- Office space for professionals and small business in a mixed-use environment may be appropriate.

Hospitality Opportunities

- Good location for hospitality uses.
- Some redevelopment potential to create better product, difficult to gauge growth potential without additional research.

Residential Opportunities

- Market strong enough across housing types, with possible exception of condos.
- Opportunity in study area to address affordable housing needs of the community, which focus on: (1) Affordable households (50-80% of AMI); (2) Workforce Housing (80% - 120% of AMI); and (3) Middle Market Families (80% - 120% of AMI).
- All would be accommodated in multi-family flats or townhome style development



Opportunity for dining and boutique retail



Opportunity higher density multi-family apartments

ISSUES & DEVELOPMENT OPPORTUNITIES

After assessing the existing physical, transportation and market conditions, and based on the stakeholder's interviews and public participation through the visioning exercises, major issues were noted and the "Development Opportunities" map was created. The area's location along the regional roads and proximity to downtown and UNC is a great advantage and as it is one of the few commercial districts of Chapel Hill, the area has tremendous potential. The major issues identified were:

- **Transportation and Traffic Congestion:** Due to high traffic count and the lack of connectivity, traffic congestion and inefficient circulation has become major issues at all the main intersections.
- **Connectivity:** Along with the lack of a cohesive road network, there is also a significant lack of connectivity within the existing developments.
- **Unsafe environment for pedestrians and bikers:** Discontinuous bike lanes and sidewalks, and lack of crosswalks at some intersections makes it difficult for the bicyclists and pedestrians to navigate safely within the study area.
- **Accessibility:** Due to the road network and topographical conditions, poor accessibility is a major concern of the commercial properties on the eastern part of the study area (e.g. Ram's Plaza, former Volvo property).
- **Visibility:** Some properties (i.e. Hampton Inn) have poor visibility from the main streets due to various reasons like green vegetation, topographical conditions, etc.
- **Under-utilized, aging and struggling retail centers:** Majority of the existing retail is in need of significant upgrades, which includes building as well as site improvements. Some areas like the Ram's Plaza and the former Volvo property are either under-utilized or unoccupied and needs a strategic plan to encourage economic development.
- **Environmental constraints for development/future expansion:** About 45% of the study area is either within the floodplain area or falls under the Jordan Lake Water Protection District, significantly restricting the development opportunities for those areas.
- **Lack of green open space:** Though the area has a lot of vegetation, due to the streams and their floodplains, there is no usable public space within or in the vicinity of the study area.



Ram's Plaza access from Service Roads



Under-utilized Retail Centers



- Lack of identity: The residents expressed the lack of character, cohesiveness and sense of place within the study area.
- Conformity with neighborhood character: The stakeholders and the public meeting participants expressed their concern for preserving the existing neighborhood character and maintaining the conformity of the new development/redevelopment to its surrounding context.
- Entitlement Process: The Town’s extensive entitlement and development review process could be a challenge for implementation.

The “Development Opportunities” map highlights the potential areas for major catalytic development or redevelopment, which could be responsible for furthering the vision for the community. It accounts for approximately 60 acres of the study area. As can be observed from the illustration, majority of the area east of Fordham Boulevard is susceptible to change. The areas highlighted in orange include properties which are under-utilized, or that are either aging or include some unoccupied properties. The areas highlighted in green are unbuildable due to floodplain and other environmental constraints, but could be developed as an amenity for the neighborhood as public open spaces and could also enhance the character and identity of the area.

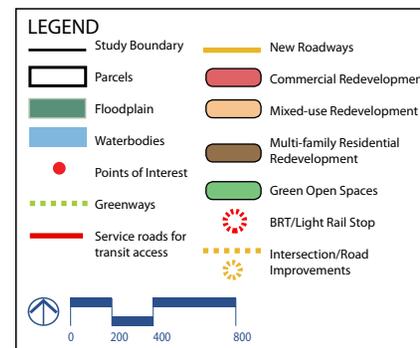
Development Opportunities Map

Framework Scenario "A" focuses on honing in on key development and infrastructural improvement opportunities while leaving much of the existing fabric intact. In this framework increasing connectivity and creating a development structure more conducive to user friendly walkable commercial uses is the central component. Moves such as a formalized entry into Ram's Plaza from Legion Road and a new connection from Ephesus Church Road into the Colony Apartments area.

In Scenario "A" Ram's Plaza sees redevelopment only in a couple locations on the northern edge along with the new connection. The redevelopment focuses on commercial uses and public greenspace.

The Colony Apartments area is focused on multi-family redevelopment with minimal commercial uses and a connection from the 15/501 service road to Ephesus Church Road. The Eastgate/Village Plaza areas have very little redevelopment and very little change to the current infrastructure with the exception of a re-worked intersection at Franklin Street entrance to Eastgate.

The 15/501 Corridor portion of Scenario "A" only includes re-worked intersections at Ephesus Church Road and South Elliott Road.



Development Opportunities Map

Framework Scenario “B” also focuses on creating increased connectivity, but does so by creating new roads that give drivers more pathway options to their destinations. Scenario “B” also uses this network of streets to create new developable spaces within the existing developments with a focus on commercial, mixed-use, increased greenspace and re-developed MF.

In Scenario “B” Ram’s Plaza becomes a more intensely developed commercial node strengthening its ability to create a pedestrian oriented space less auto-centric and more oriented towards the pedestrian user experience.

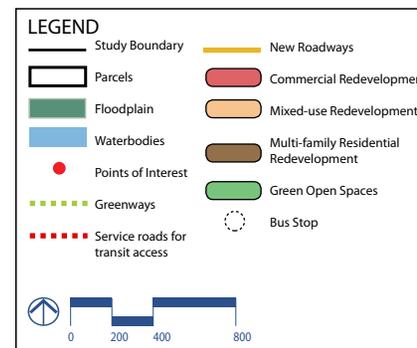
The Colony Apartment area includes a roadway connection from Ephesus Church Road to 15/501 and a mixture of multi-family, mixed-use, greenspace and commercial uses.

The Eastgate/Village Plaza developments, similar to Scenario “A” , don’t develop much space and focus on creating public spaces, including the greenway from Scenario “A” and in this scheme a public park.

The 15/501 Corridor in sees the extension and addition of service roads as multi-modal transit ways that would include new BRT bus stops at important intersections.



Development Opportunities Map



Framework Scenario “C” is the most aggressive option. Connectivity is increased with the implementation of a new framework throughout that is based on existing pathways (though many are not public roadways or formalized as streets). This new system breaks down the existing superblock structure into a smaller scale of development for pedestrians that is seen as mostly mixed-use and higher density. Each of the development areas includes a mixed-use node, space for office uses, multi-family and an increase in public green space.

Ram’s Plaza has a mixed-use focus and the most drastic change to its block structure. Multi-family development is also seen as an option on the northeast side of the area.

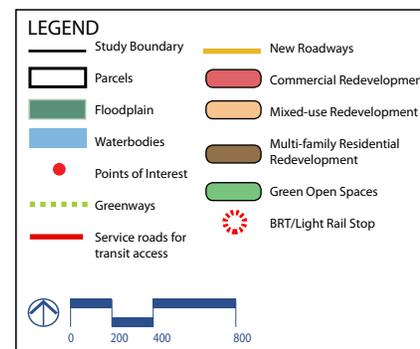
The Colony Apartments area focuses on multi-family redevelopment with high density mixed-use along the 15/501 corridor along with commercial and greenspace as well.

The Eastgate/Village Plaza development areas receive some high density commercial along 15/501 with the remaining redevelopment area geared towards mixed-use with a multi-family focus and a major public greenspace within the flood plain utilizing the topography for recreational spaces.

The 15/501 Corridor includes two transit stations for BRT/Light Rail and takes advantage of ample right-of-way along the corridor to separate the transit facilities from the vehicular traffic.



Development Opportunities Map



INTRODUCTION

The Scenario Comparison section will describe five categories: Land Use, Street Network, Transportation Systems, Development Density and Greenspace Network. Each category will be illustrated across framework Scenarios "A", "B", and "C". These drawings allow quick contrast and comparison within a category as well as between different categories. For instance understanding which scenario has the greatest density and which density gives you the most greenspace.

LAND USE

The Land Uses across each of the three scenarios are similar in nature, but vary in amount. The most notable difference is Scenario "A" not including any mixed-use space while the other two use it and "C" uses it as a central focus.

Each development includes, commercial space, multi-family and greenspace though the placement and arrangement vary based on the street network that is envisioned for that scenario and in Scenario "C" the greenspace becomes more about a major public space and less about smaller green oasis throughout the development areas.



STREET NETWORK

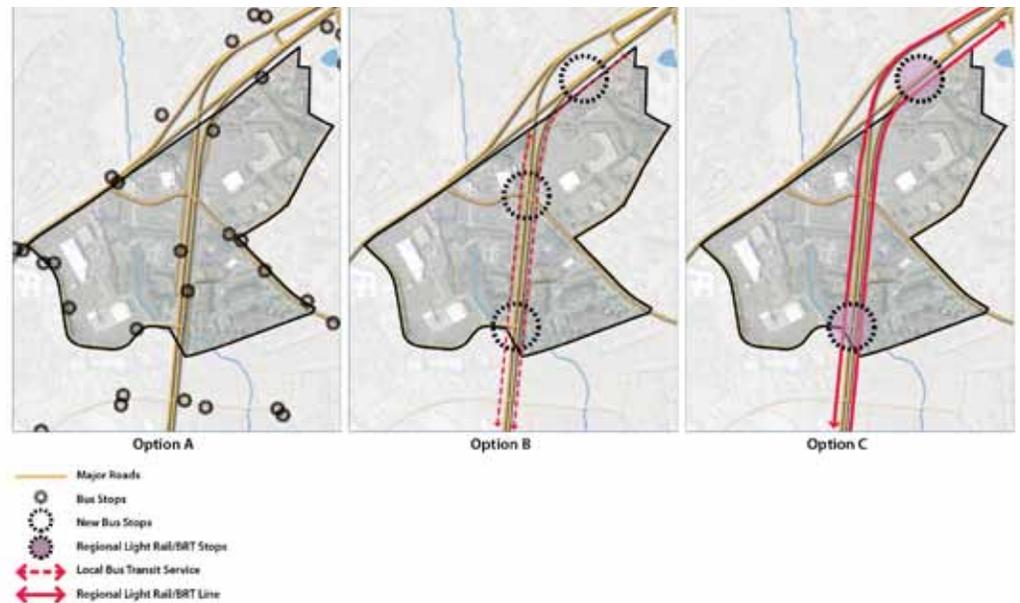
The street networks vary drastically from Scenarios "A-C"; but are grounded on similar concepts that show up in each scenario. In each scenario connectivity is increased within each development area providing increased access to and from Franklin Street, Ephesus Church Road, and Legion Street. Each network also focuses on breaking down the existing superblock structure and creating a more walkable pedestrian friendly environment.



TRANSPORTATION SYSTEM

The transportation system assessments focus on improvements to the 15/501 Corridor transit ways and the potential for installation of new technology such as Bus Rapid Transit (BRT) and Light Rail.

Scenario "A" illustrates existing bus stops as this scenario overall density is not increased by such a value that added public transit would be feasible. Scenario "B" looks to utilize the right-of-way along 15/501 and locate BRT lines stops at integral intersections along the corridor that are separate from existing vehicular systems. Scenario "C" illustrates the potential for light rail within the same right-of-way as "B" and identifies two transit hubs/stations that would be utilized for multi-modal transit.



DEVELOPMENT DENSITY

The Development Density assessment indicates the projected densities throughout each scenario in a lowest to highest type of ranking. Similar to the other assessments as the aggressiveness of the strategy goes up as does the density.

The theme that is used throughout is to keep increased density along the 15/501 corridor and in situations where there is enough space to transition from the contextual levels of density to keep from having stark differences from surrounding properties. For instance in Scenario "C" the density increases towards the center of the site and steps down to meet the existing heights around the edge of the development.



GREENSPACE NETWORK

The Greenspace network illustrates the amount of open public space that is envisioned in each scenario. The amount of greenspace in each scenario is comparable, but has more flexibility to become an integrated, focal point of the developments as the density of the scenarios increase.

Scenario "A" and "B" focus mostly on small installations of greenspace aiming at providing a green oasis for each development area while Scenario "C" creates a focused public space putting the majority of the open space along the floodplain in the existing open space.



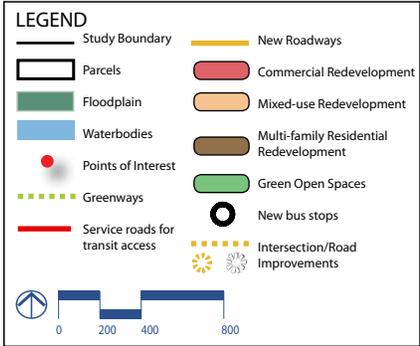
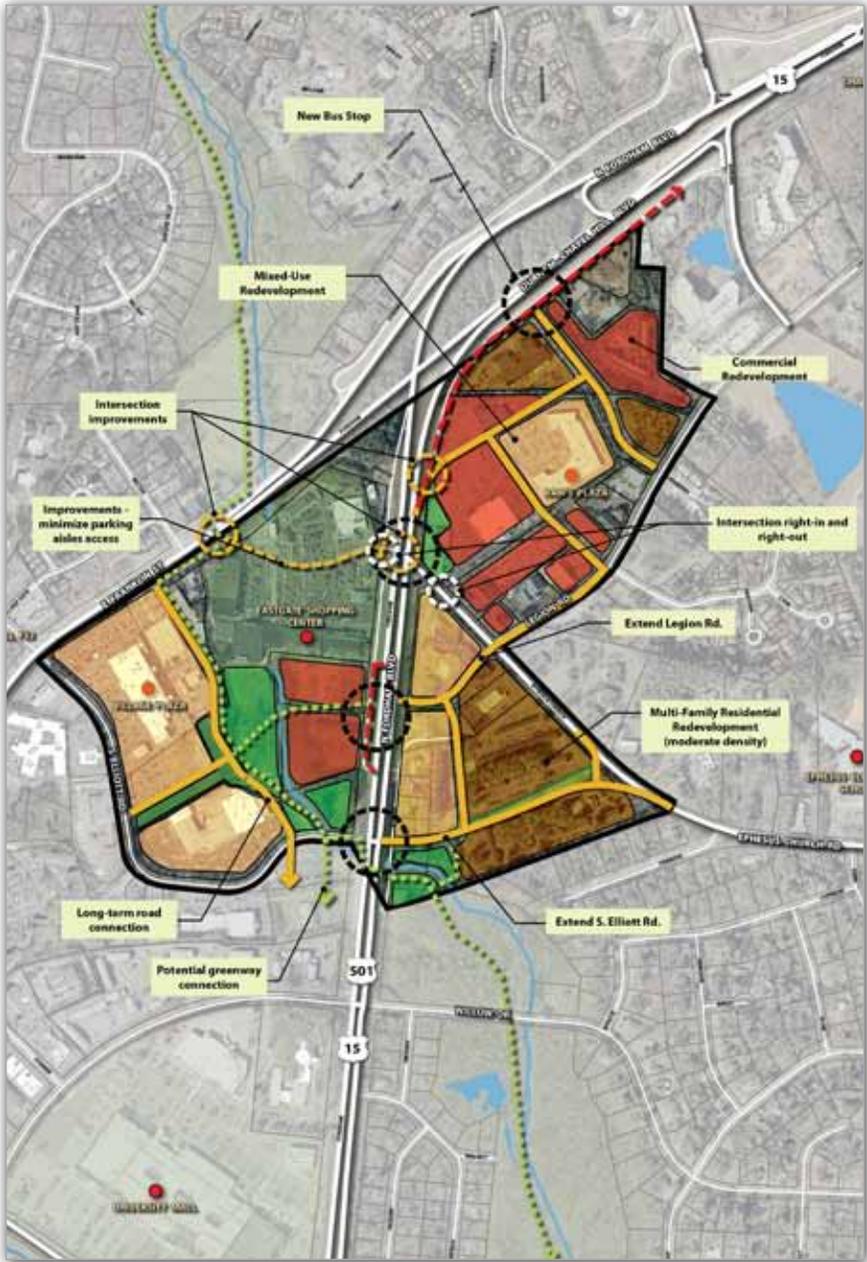
PREFERRED DEVELOPMENT FRAMEWORK

The preferred framework plan illustrates a hybrid of the three previous scenarios after working with the public and town staff to discuss what portions of each scenario were seen as positive moves. The reviewers agreed that a hybrid solution of Scenario "B" and "C" was needed. As the work was reviewed it was found that the intensity of re-development in Scenario "B" was preferred over "C", but the traffic solutions shown in "C" were more in line with what was necessary for the level of improvement desired. Each development has a mixed-use focus with a re-tooled network of streets creating a smaller more connected development framework.

Ram's Plaza has a commercial focus with some multi-family residential included. The transit improvements include a new street network and most importantly re-worked intersections to help control backups created by left turns.

The Colony Apartments area has a multi-family residential focus. The multi-family goes from taller apartments in the center to town houses along the edges to transition into the surrounding neighborhoods and along the 15/501 corridor is where the most dense mixed-use development would go.

Eastgate/Village Plaza also has a mixed-use focus and incorporates a central park for community recreation as well as connections for multi-use trails. The highest density again is along the 15/501 corridor, and improvements to the street network and intersections were utilized to improve traffic congestion and increase connectivity.





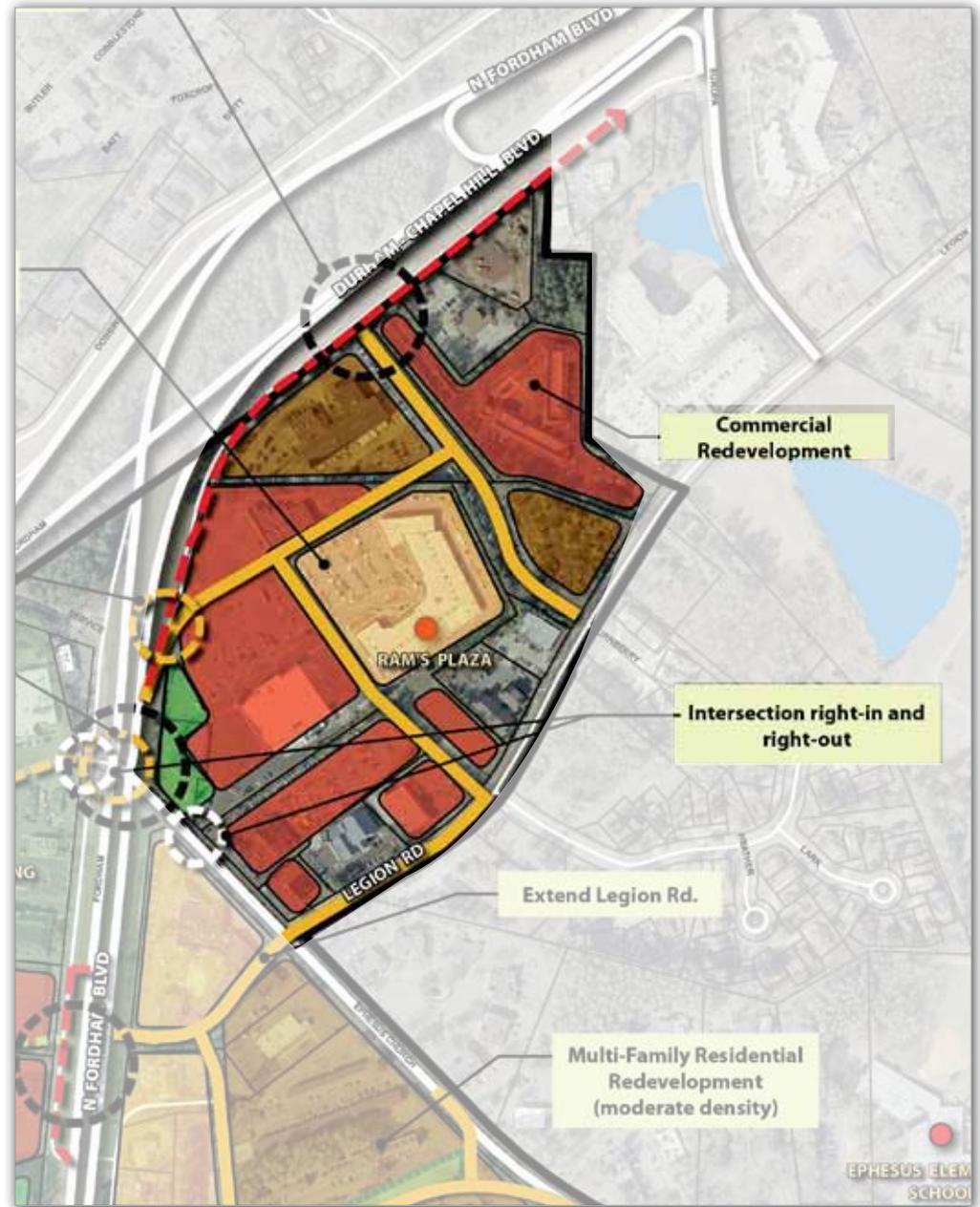
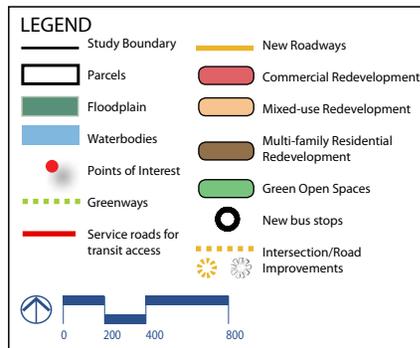
The conceptual massing study above illustrates a concept of the development vision and conveys how the densities would be utilized, lower 1-3 story buildings along the fringes and 3-5 story buildings in the center.

- LEGEND
- Commercial
 - Office
 - Townhome
 - Multi-family
 - Parking
 - Greenspace
 - Existing

Zooming in on Ram's Plaza the framework details become more clear. Illustrated in white circles are the right-in/right-out traffic devices being suggested to control traffic delays due to left turns.

The orange lines and orange circles indicate new/improve roads and intersections. Ram's Plaza is using a new street network to control the development growth within and create smaller more well connected blocks.

The centerpiece of the development is a mixed-use block most likely commercial and residential uses flanked by more multi-family uses to aid in creating a critical mass of residents on site to support the local retail.



AFTER



The Ram's Plaza concept illustrates what the on street feel of the space may be within the Preferred Development Plan. The image to the right is the existing condition at Ram's Plaza, an image dominated by surface parking spaces and non-programmed greenspace, while the after image above shows the addition of bicycle and pedestrian facilities and infill development within existing parking areas including a hotel off in the distance, multi-family dwellings and commercial/retail in the foreground.

BEFORE



AFTER



The entry from Legion Road as depicted to the right, is made up of open lots that are identified as potential locations for retail and commercial locations. The above image depicts the level of density as well as the improvements to the pedestrian facilities, making for a comfortable retail experience.

This location is also seen as a gateway to Ram’s Plaza and utilizes design details to announce the entry into this re-formatted shopping mixed-use development.

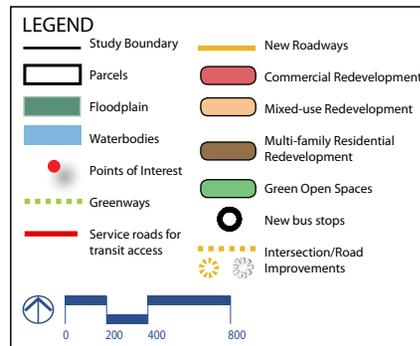
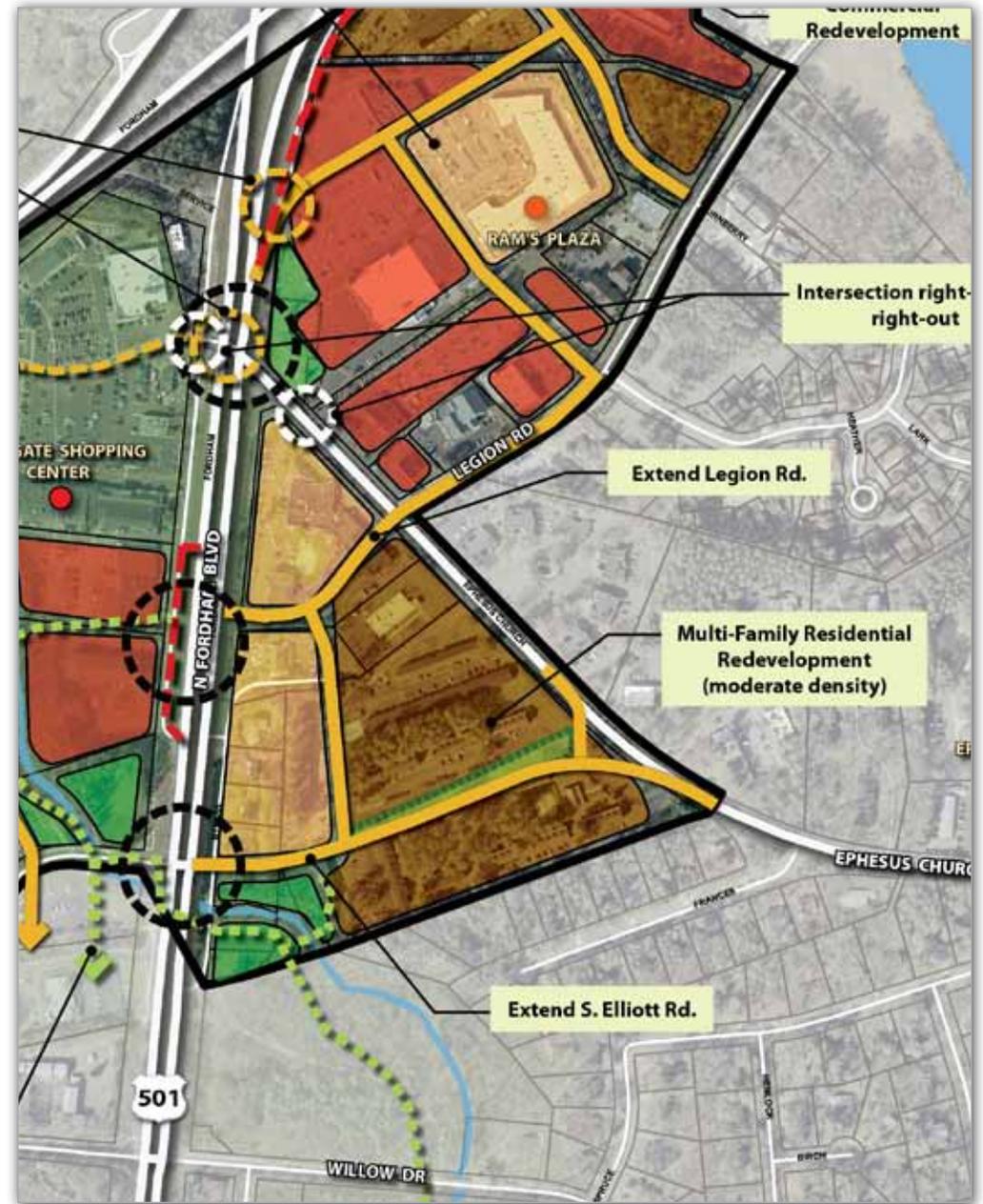
BEFORE



Colony Apartments is majority multi-family development from lower density town homes along the edges to ease transitions with surrounding communities to high density apartment type housing towards the center.

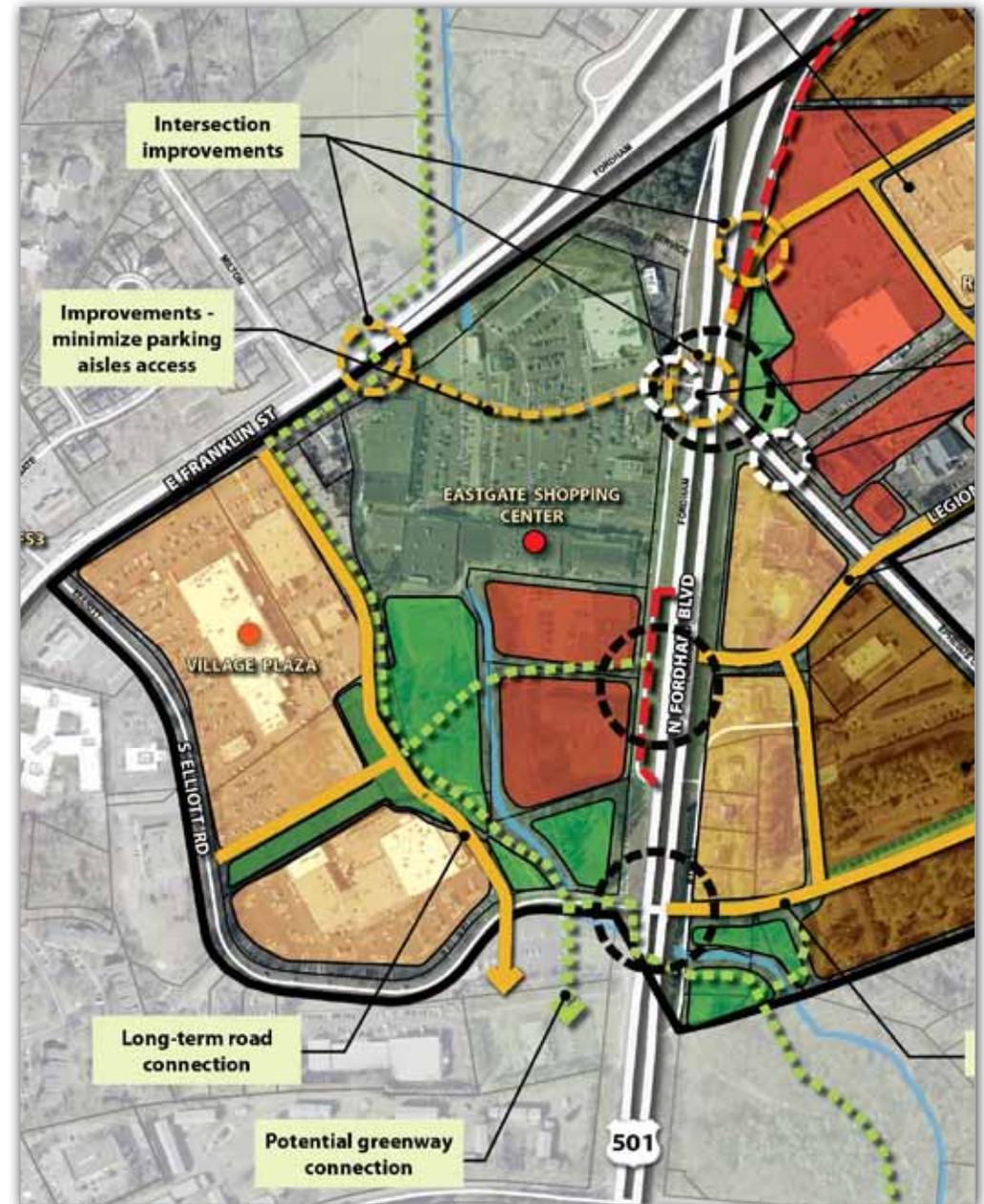
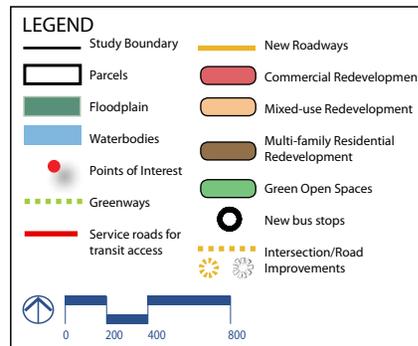
The development along the 15/501 Corridor is seen as higher density mixed-use development, most likely some form of office and commercial space.

The street network in this area creates two new connections from 15/501 to Ephesus Church Road in an effort to alleviate the pressure on the Ephesus Church Road and 15/501 intersection on the north side of Colony Apartments.



The Eastgate and Village Plaza development areas also focus on mixed-use development with the key central organizing point being the public green space in the flood plain area along the new spine roadway that connects South Elliot Road and Franklin Street.

Below is a conceptual plan of how the greenspace could be used as a plaza/ amphitheater space for large gatherings.



AFTER



The 15/501 Corridor is envisioned to have separate mass transit and vehicular facilities . The image to the right shows the current condition along 15/501 with service roads, no space for transit, and a wide green buffer.

The concept above illustrates the buffer with more vibrant plantings and area district banners, as well as infill development along both sides that increase the density and frame the corridor that also include pedestrian and bicycle facilities.

BEFORE





The Town of Chapel Hill seeks to define future land uses and determine transportation solutions to encourage reinvestment within the areas surrounding the Ephesus Church Road/Fordham Boulevard intersection. The project is defined as the 'Ephesus Church Road/ Fordham Boulevard Small Area Plan and Traffic Analysis,' as shown in Figure ES-1. The consultant team assembled to develop the project includes Urban Collage, Inc., Development Concepts, Inc. (DCI), and Kimley-Horn and Associates, Inc. The consultant team, in coordination with Town of Chapel Hill and North Carolina Department of Transportation (NCDOT) staff team members, has prepared a proposed Small Area Plan (SAP) Framework based on identified issues/opportunities and public input. The proposed SAP Framework is shown in Figure ES-2. It consists of a mix of identified redevelopment land use and transportation components, assumed to be completed in year 2020. The transportation objective for the project is to achieve optimal access and protect the public with safe and flowing traffic of all modes– vehicular, bicycle and pedestrian, and transit service– recognizing existing development, environmental, and right-of-way constraints. The Fordham Boulevard/Ephesus Church Road intersection was identified early-on in the SAP project as the primary transportation concern based on staff and public input. Key transportation elements in the SAP Framework are:

- Improved access and connectivity within the area for vehicles, pedestrians, and bicyclists.
- Extension of Elliott Road eastward to Ephesus Church Road.
- Realignment of Ephesus Church Road to be a through movement with Elliott Road Extension.
- Access limitations to decrease congestion and conflict points on Ephesus Church Road
- Improved transit access.
- Improvements to coordinated traffic signal system.
- Directional/wayfinding signage to encourage preferred traffic movements.

The purpose of this study is to build upon the big-picture SAP transportation improvements with technical analyses to establish intersection-level improvements needed. The intent of the intersection-level improvements is to accommodate existing

traffic and additional SAP redevelopment traffic. This report focuses on the traffic analysis of projected 2020 SAP conditions and transportation improvements needed to accommodate the associated traffic demands. The analyses have been conducted for the following study area intersections during the AM peak hour and PM peak hour:

- Franklin Street – Ephesus Church Road
- Fordham Boulevard – Ephesus Church Road
- Fordham Boulevard – Elliott Road/Ephesus Church Road
- Fordham Boulevard Eastbound – Fordham Boulevard Superstreet Westbound U-turn
- Franklin Street – Elliott Road
- Ephesus Church Road – Legion Road
- Legion Road – Clover Drive/Rams Plaza Drive
- Elliott Road Extension and Ephesus Church Road (new intersection)
- Legion Road Extension and Fordham Boulevard (new intersection)

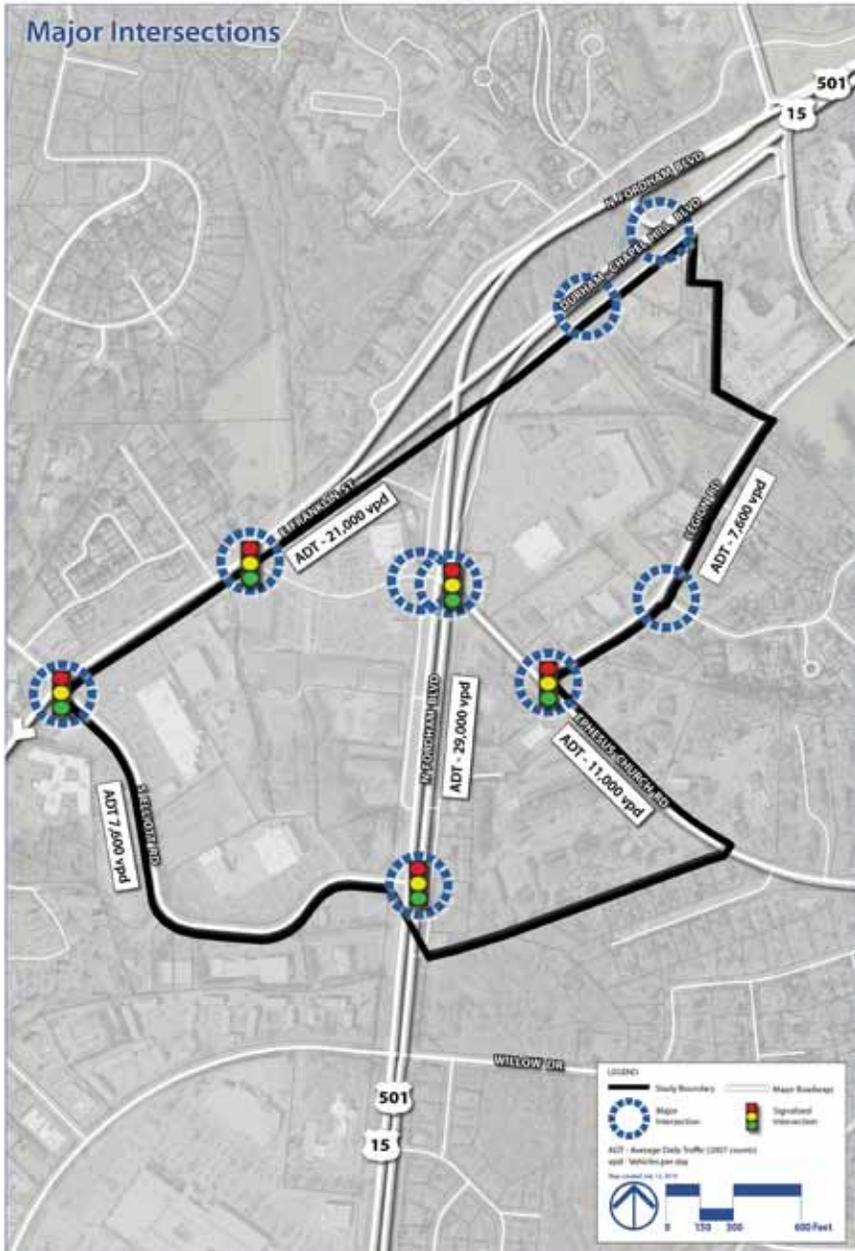
The traffic analysis results generate the following recommended transportation improvements, as shown in Figure ES-3:

Fordham Boulevard and Ephesus Church Road

- Improved alignment of the westbound Ephesus Church Road approach to reduce the existing skew.
- Addition of an exclusive westbound left-turn lane to result in dual exclusive left-turn lanes and a shared through-right lane.
- Traffic signal modifications to reflect a change from eastbound-westbound split phasing to concurrent eastbound-westbound operations (assuming sufficient alignment and sight distance can be achieved).
- Potential removal of the existing northbound right-turn lane.

Fordham Boulevard and Elliott Road

- Addition of an exclusive eastbound right-turn lane on existing Elliott Road.
- Construction of the Elliott Road Extension with dual westbound left-turn lanes, a



through lane, and an exclusive right-turn lane.

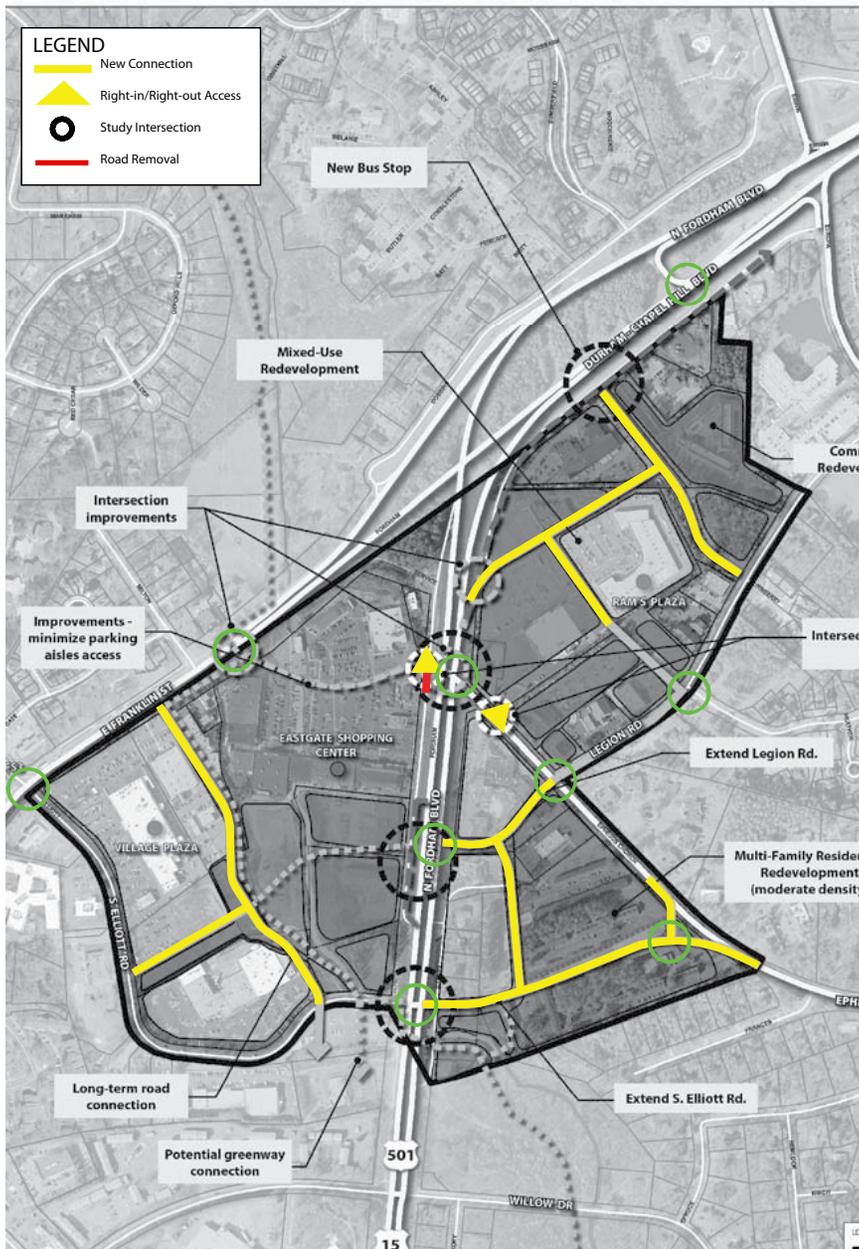
Franklin Street and Elliott Road

- Extension of the existing exclusive westbound left-turn lane on Elliott Road to include 300 feet of storage; as a result, right-in/right-out operation is recommended for the driveways along Elliott Road within the 300-foot left-turn lane. In addition, a center two-way left-turn lane is recommended as an extension of the existing westbound left-turn lane on Ephesus Church Road at Franklin Street, by approximately 140 feet to the existing pedestrian refuge median. Preparation of conceptual layouts is recommended to evaluate the feasibility of the improvements shown in Figure ES-3. Opinions of probable construction cost should then be prepared based on the conceptual layouts, and potential funding sources and financing options be determined. As redevelopment occurs and the 2020 horizon nears, field monitoring and a follow-up analysis should be conducted to confirm actual traffic patterns and determine if additional laneage or operational improvements are necessary beyond those specifically identified in this analysis.

Roadway Improvement Construction Estimate

Development Area	Work	Estimated Cost
Colony Apartments	Elliott/Legion Rd. Ext., Colony N-S Collector	\$3.5-\$4.4 (m)
Ram’s Plaza	Clover/Turnberry Dr. Ext., Turnberry Service Road Connector	\$1.75-\$2.275 (m)
Ephesus- Fordham	Intersection Approaches and Service Roads	\$150-\$200,000
Village Plaza	Rear Access Road and Entry Road	\$1.05-\$1.4 (m)
Total Estimate		\$6.5-8.3 (m)

The improvement estimates above are only general estimates and will need to be refined through more detailed preliminary design and engineering. The costs also do not include streetscape/pedestrian facilities that may be born (at least partially) by private sector redevelopment.



The implementation section of the report highlights the most important aspect of this body of work, putting into movement the actions that will advance this planning effort and ensure the energy and time put forth by the public and city is validated by utilizing the information and recommendations at hand. Some of the big picture strategic recommendations that come from this plan are;

- 1) Advancing conceptual engineering of major public improvements to lay the foundation for potential construction funding;
- 2) Creating a streamlined process for development that follows the plan;
- 3) Maintaining some leverage for the Town in development negotiations;
- 4) Protecting environmental resources;
- 5) Leveraging both local, regional and state private funding in the packaging of proposed improvements;
- 6) Leveraging private partnerships for public improvements, with a focus on pedestrian and bicycle projects;
- 7) Maintaining the high level of community involvement through implementation.

As discussed previously, the ability to leverage the scale and type of development illustrated in this report will require the intervention of the Town of Chapel Hill on several different fronts. Acting the role of redevelopment agent is undoubtedly new for the Town, yet as the Town becomes built-out and continues to investigate redevelopment opportunities like the Ephesus Church-Fordham study area, Downtown or Glen Lennox, it must learn to become comfortable using tools to ease the transition of real estate from under performing assets to more highly productive and functional development. This is especially true if a primary goal remains the increase of the non-residential tax base.

The four chief activities the Town needs to be responsible for are: (1) infrastructure improvements that make existing real estate more economically viable; (2) incentives and related financial tools that, in addition to infrastructure improvements, will encourage developers to build development that corresponds with the vision of Town

government and residents; (3) a streamlined entitlement and development review process designed to encourage private development to occur in a timely and effective manner; and (4) utilizing existing and creating new zoning categories when necessary as well as working to create development agreements on a project-by-project basis.

Infrastructure Improvements

This plan has recommended the following infrastructure improvements to be made within the study area:

- Extension of Elliot Rd across Fordham
- Realignment of Ephesus Church to Elliot Rd extension
- Extension of Legion Road to Fordham Blvd
- Access improvements
- Disconnect southern leg of western service road at Ephesus
- Consolidate number of parking aisles on Ephesus Rd going through Eastgate Mall
- Limit Ram's Plaza and car dealership entrance on Ephesus to right in and right out
- Connectivity improvements:
 - New road behind Staples and Village Plaza connecting to Elliot Rd
 - New internal roads in Rams Plaza
 - New road by Hampton Inn connecting to Legion Road
 - New road connecting Legion Rd extension to realigned Elliot extension-Ephesus Church Rd

Some of these recommendations are designed to encourage optimal development outcomes, while others are designed to establish functional improvements to overall circulation and access in the northeast quadrant of the Town, as well as regional traffic circulation along 15-501. The public sector is most commonly responsible for infrastructure improvements in the latter category, while investment in the former – infrastructure directly related to real estate development outcomes, can be split between public and private sectors, depending on the location, context and type of development. Suburban communities like Chapel Hill (i.e. communities adjacent or



near others with significantly more employment and /or population) often put the burden of infrastructure upon a private developer. However, it has been an assumption throughout this planning process that in order to achieve the redevelopment of property within the Ephesus-Fordham study area, some public sector intervention would be necessary to make a development project financially feasible, considering that optimal development as illustrated in this plan would require considerable property assemblage and reconfiguration, as well as new / altered access routes.

Investment / Operating Tools

Municipal Services District

An MSD is a mechanism that provides funding for the implementation and maintenance of roads, utilities and other infrastructure within a designated area. The district is a special taxation district, similar to those that exist in Downtown Chapel Hill, or on Hillsborough Street in Raleigh, where a small tax is assessed on property owners. The revenue from this tax is then used for infrastructure improvements. An example is the MSD in the College Hill and Charles B. Aycock Historic Districts in Greensboro, where property owners are assessed at \$0.05 per \$100 of valuation.

The taxing district allows for funds to be designated for construction and maintenance that does not necessarily come from the general fund. For example, the properties within the study area are assessed at approximately \$85 million in land and building value. A hypothetical \$0.05 municipal services tax would generate \$42,712 annually in funds that could be used for various purposes.

For new construction, MSD revenue can be used to support the payments on a bond issuance. Revenue from the existing study area is unlikely to support bond payments alone without assistance from another source (\$42,712 would roughly support a bond issuance of \$420,000)

Tax Increment Finance (TIF) District / Project Development Financing

Tax increment financing provides local governments with a means of encouraging economic development that would not occur without assistance from the public sector. TIF districts allows bond debt from public investments in infrastructure and other public facilities development to be secured by the increase in tax revenue anticipated from private development spurred by those public investments.

In 2004, the citizens of North Carolina approved an amendment to the state constitution that enabled for the first time the use of tax-increment financing. However, despite North Carolina being the 49th state to approve this type of incentive, it has yet to be used in any quantity. Part of the reason for this is the lack of public support for TIFs, which can be perceived as re-focusing tax revenue from local services like schools to private developers. Another hurdle in North Carolina is that state law requires counties to review municipal TIF projects and allows them to choose whether or not to participate in financing those projects. Counties may even veto municipal TIF projects even if they choose not to participate in financing.

Because of these hurdles, some communities in the State have turned to “synthetic” TIFs. This is essentially unofficial project development financing, using increment to support a bond issuance, but in a manner that does not officially establish the mechanism to collect those revenues, such as a TIF. Synthetic TIFs follow the same approach as official TIFs, they just require local municipalities to identify and allocate tax increment from a project to support the public investment.

There are seven basic steps to using TIF in North Carolina:

- 1) Consult with the NC Local Governments Commission
- 2) Define the TIF district boundaries (“the Development Financing District”)
- 3) Develop a TIF Plan (“Development Financing Plan”)
- 4) Request External Reviews
- 5) Hold a Public Hearing, Pass a “but for” resolution and adopt the TIF Plan
- 6) Submit a TIF Application to the NCLGC (Local Government Commission) for TIF Bond

issuance approval

- 7) In approved, notify the county tax assessor to set base tax valuation, establish a tax revenue increment fund, and produce annual TIF reports.

Established TIFs can use increment in a “pay-as-you-go” method, as long as that increment is not necessary for bond payments. Assuming that the TIF district generates increment, that increment can be used for various purposes as it is accrued in the tax revenue increment fund. Without an established TIF district, this option is not available in the short-term, but it can be used to support infrastructure improvements beyond an initial bond issuance provided that increment exceeds the amount necessary for bond payments.

Revenue Bonds

Revenue bonds are a special type of municipal bond that is characterized by its guarantee of repayment primarily from revenues generated by a specific project, as opposed to tax. An advantage of a revenue bond is that payments do not burden other revenue sources within a municipality, such as tax revenue. These types of bonds are often used to finance water and wastewater utilities, toll roads, airports, and power plants. Any government agency or fund that generates operating revenues (like a municipal services district) can issue revenue bonds.

In regard to private development, revenue bonds are often used for the finance of parking garages, since these projects can be owned and managed by public entities, and they provide a stream of revenue for operating and debt purposes. Publicly financing structured parking can improve the financial feasibility in some private development projects since it removes a significant cost for a developer, yet allow them to build at higher densities.

Loan Guarantees

An increasingly common method for municipalities to provide project financing without specifically providing funds to a project, or issuing a municipal bond. They can do this



by guaranteeing a conventional loan from a bank, leaving a private developer to pay for the required infrastructure improvements. Loans can be guaranteed through general funds, but also TIF or MSD funds. This approach sometimes involves less risk than a bond issuance, though while funds are not technically expended, they can be “locked up” for the length of a loan, reducing the liquidity of economic development funds to a level similar to a grant or bond.

Land Use and Zoning Tools

Utilize Existing Zoning Categories

Utilizing existing zoning categories should be looked to first to utilize what is already in place such as Mixed-Use Village (MU-v) for arterial corridors which allows 20 dwelling units/acre. Other categories such as the TOD Development District category may not be available until significant investment has been made to the transit systems in the area.

Create a New Redevelopment Zoning District

When no existing code is applicable the creation of new redevelopment districts may apply. Creating new districts may allow for process simplification and zoning flexibility to encourage new types of projects in line with the future vision of Chapel Hill.

Create Development Agreement

Utilizing development agreements can aid in solidifying public processes by coming to agreements on goals that were set and making sure those goals are set as a framework for the developer to work within still allowing them flexibility to plan and build feasible developments that work in the current market conditions.

- 1) Work with area stakeholders to implement “low hanging fruit” improvements such as restricted turning movements;
- 2) Conduct preliminary engineering on the Elliott Road Extension to establish feasibility and cost;
- 3) Continue project-by-project negotiations with property owners and development interests to communicate intent of the plan;
- 4) Explore the feasibility of public/private financing mechanisms such as TIF and/or a synthetic TIF;
- 5) Work with NCDOT to identify future partnership on transportation projects of regional significance;
- 6) Working with Planning, establish the best mechanism for regulatory changes and the timing associated with that timing;
- 7) Continue ongoing discussions with community citizens as implementation continues.