

**EPHESUS CHURCH ROAD-FORDHAM BOULEVARD AREA  
PLANNING DISTRICT**

**TRANSPORTATION IMPACT ANALYSIS**

**DRAFT**

**EXECUTIVE SUMMARY**



**Prepared for:**

The Town of Chapel Hill  
Public Works Department – Traffic Engineering

**Prepared by:**

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## Summary

A multimodal Transportation Impact Analysis (TIA) for the Ephesus Church Road-Fordham Boulevard area finds that whether future development occurs within the Ephesus/Fordham (E-F) District or not, additional improvements to the 15-501 corridor may be needed to manage vehicular congestion that could occur outside of the District. The study also finds that with some minor improvements, the existing planned roadway network resulting from the initial 2011 traffic study can accommodate the projected growth for the year 2030 within the E-F District.

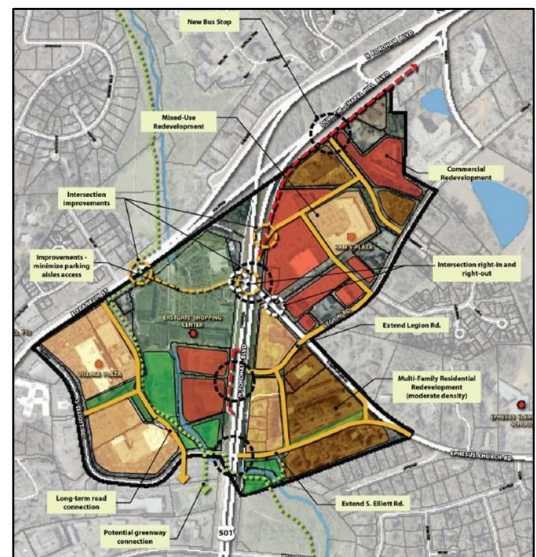
## Project Overview

The Town of Chapel Hill has contracted with HNTB North Carolina, PC to produce a multi-modal transportation impact analysis for the Ephesus Church Road-Fordham Boulevard Area District (E-F District). This study provides detailed information on 2016 Base Year and 2030 Future Year conditions both within the E-F District and broader E-F TIA study area related to all modes of transportation. The study also provides a detailed analysis of future development/redevelopment scenarios within the E-F District and for multiple large-scale development projects around the Town of Chapel Hill. The analyses and methodologies provided in this document were performed in accordance with the Town's approved guidelines and after consultation with Town staff, as directed by the Town Council.

Per information from Town staff, the Ephesus-Fordham Area became a new zoning district in July 2014. The goal is to renew and transform an area characterized by strip malls, parking lots, confusing roadways and traffic congestion. The area includes some of Chapel Hill's older, suburban style shopping centers -- including Eastgate Shopping Center, built in 1958; Village Plaza, built in 1974; and Rams Plaza, built in 1982. The vision for the zoning district is to create a pleasant walking experience, and a mix of commercial uses, upper story residences and offices, bike paths and sidewalk cafes.

In 2011, a detailed Small Area Plan and Traffic Impact Analysis was completed for the E-F District. This analysis was limited to the area of proposed E-F District and included assumptions about future development. Since the preparation of the 2011 analysis assumptions about future land uses have been revised. In addition, the community has expressed an interest in a revised analysis that expands the study area and includes assessment of all modes of transportation. To address those needs, this study provides an updated "snapshot" of 2016 conditions in a much broader study area context, and provides the future evaluation of scenarios in a longer-term manner (using a 2030 future evaluation year).

The Ephesus-Fordham District and overall project study area are located on the east side of Chapel Hill, with the project study area encompassing almost 40 intersections along major transportation corridors within the Town. **Figure ES-1** shows the general location of the site and the project study area defined for this report and agreed-upon by Town of Chapel Hill staff, with public input at a project scoping meeting held in October 2016. **Figure ES-2** shows a detailed aerial image of the E-F District and existing developments within it.





### Key Study Findings

- Whether additional future development occurs within the E-F District or not, additional improvements to the 15-501 corridor may be needed to manage vehicular congestion that could occur outside of the Ephesus/Fordham District from impeding transportation mobility along Fordham Boulevard to the north of Sage Road and to the south of Estes Drive.
- With some minor lane additions and other modifications, the existing planned roadway network resulting from the initial 2011 traffic study can accommodate the projected growth within the Ephesus/Fordham District from the 2030 “Build” Scenario, including a two-lane cross-section for the proposed Elliott Road Extension with a single-lane roundabout at existing Ephesus Church Road.
- Superstreets are identified as one possible solution to manage projected vehicular congestion north and south of the District.
  - More about Superstreets: Superstreets are being implemented throughout North Carolina as a means of increasing the capacity and efficiency of high volume arterial corridors similar to 15-501 with fewer lanes and smaller intersections than would otherwise be necessary to add capacity to conventional roadways and intersections.
    - Links to NCDOT Materials:
      - [https://www.ncdot.gov/download/projects/NCDOT\\_Synchronized\\_Streets\\_Flier.pdf](https://www.ncdot.gov/download/projects/NCDOT_Synchronized_Streets_Flier.pdf)
      - Pedestrian and Bicycle Accommodation on Superstreets: <https://connect.ncdot.gov/projects/planning/pages/ProjDetails.aspx?ProjectID=2012-13>
  - Superstreets can provide a safer and more efficient experience for pedestrians with proper design treatment that provides signalized crosswalks. Superstreets are not necessarily any more prohibitive for bicyclists than a standard high volume arterial roadway.
- For non-motorized travel, developers and the Town should continue to build bike paths, greenways and sidewalks that are recommended in the forthcoming Mobility Plan, which will include projects from the Town Bicycle Plan (2014) and Greenways Master Plan (2013).
  - For pedestrian travel, existing and future streets should have sidewalks on both sides and major intersections should be equipped with pedestrian-safe crossing designs. This will establish a more connected pedestrian network that can reduce local vehicular trips within the Ephesus/Fordham District.
  - For pedestrian and bicycle travel enhancements should be made to create an “off road” multi-use path that runs along both sides of 15-501, as recommended in the forthcoming Mobility Plan. This can also reduce local vehicular trips within the Ephesus/Fordham District by allowing people to walk or bike from where they live to restaurants, stores, parks, and other nearby places.
- For transit, enhancements to the existing CL or D routes should directly capture more of the ridership generated by the projected future development in the “Build” scenario.
- Five individual redevelopment projects within the E-F District were included in the TIA study, and were assumed to be completely built by the 2030 future analysis year. These projects and general summary recommendations for access and improvements needed along adjacent roadways and intersections are given on the following page:



- 1) Fordham Boulevard Apartments
  - Use of existing US 15-501 Service Road access and 15-501 southbound RIRO access point does not result in any deficient operational issues at this location.
  - Site-related traffic attempting to cross two traffic lanes to make an immediate u-turn at Elliott Road to head northbound on US 15-501 may find limited gaps to perform this maneuver using the existing access location, creating a potentially unsafe situation. If possible, a new access point further upstream is recommended to mitigate this specific issue.
- 2&3) Quality Inn Redevelopment & Hillstone (Crown Honda Redevelopment)
  - A two-lane undivided cross-section with stop controlled intersections at the US 15-501 Service Road and Legion Road is projected to provide adequate traffic operations in the 2030 analysis year with both adjacent sites built out.
- 4) Park at Chapel Hill Apartments Redevelopment
  - Current access plans that include the Elliott Road Extension (with two-lane cross-section) and midblock full movement access driveways, along with a full access driveway along Ephesus Church Road provide adequate traffic capacity to meet 2030 projected traffic demands, with minor additional improvements recommended for the upgraded intersection at US 15-501 and Elliott Road/Elliott Road Extension.
- 5) University Inn Redevelopment
  - Current conceptual plans for Legion Road Extension and connection to US 15-501 as a stop-controlled RIRO intersection provide adequate capacity in the 2030 analysis year provided a left-turn and shared through/right-turn lane configuration is provided on the existing Legion Road southbound approach to its intersection with Ephesus Church Road.

### 2016 Base Year Existing Conditions Summary

The first phase of the TIA study resulted in the *Ephesus Church Road-Fordham Boulevard Area Planning District - Draft Transportation Impact Analysis Technical Memorandum #1 - Existing Conditions Analysis* document, submitted to the Town in February 2017. The technical memorandum's purpose was to establish baseline conditions for traffic operations and safety for all travel modes within the broad E-F TIA study area, with a particular focus on the network within the E-F District.

A comprehensive effort into collecting all pertinent field data was undertaken in October and November 2016 that included traffic counts, pedestrian and bicycle counts, compilation of transit ridership and bus route capacities, and collection of crash data for the last five years. Detailed field observations and collection of all applicable planning documents, traffic control data, and models was also done at this time. All the relevant information from the data collection phase of the study was entered into regional, sub-area, and microsimulation transportation modeling software for the purposes of analyzing traffic operations, transit capacity and service, and pedestrian and bicycle networks.

Related to each travel mode, the 2016 Base Year existing conditions analyses provided in Section III of Technical Memorandum #1 can be summarized for each mode:

- **Vehicular operations** – Peak hour analyses of the weekday AM, noon, and PM peak hours in the E-F TIA study area indicate several areas of peak traffic congestion in the project study area where individual intersection LOS falls below Town/NCDOT threshold for acceptable operation. Queue analyses verified similar areas where congestion currently exists, impairing traffic flow. Summary results are shown in **Figure ES-3**.



- **Transit operations** – Peak hour load/capacity evaluations for all routes directly serving the E-F District was completed with assistance from CHT and GoTriangle sources. Peak hour load demands exceed available individual bus capacity on several routes, depending on route direction and time of day. AM inbound routes through the E-F District and corresponding PM outbound routes face the highest demands.
- **Pedestrian operations** – The primary focus of pedestrian analyses for this study is the provision of adequate pedestrian facilities and crossings at intersections to provide connectivity within the E-F District and areas serving the District. Existing analysis results, both LOS estimates and general qualitative inspection of the existing pedestrian network indicate gaps in connectivity throughout the overall TIA study area and areas within the District, though several areas of high pedestrian activity exist.
- **Bicycle operations** – Similar to the pedestrian evaluations, bicycle analyses in this study focus on provision of safe and accessible bicycle routes within and outside the District. Comparatively, pedestrian accessibility is better than bicycle accessibility within and outside the District. There are locations throughout the larger study area where bicycling activity is present, but is more limited to off-road paved paths and greenways.
- **Crash analysis** – Data from the NCDOT crash analysis software indicates that crash rates on major facilities serving the E-F District vary considerably in comparison to state-wide averages. Depending on the amount of congestion on the facility and its geometrics and amount of existing access points, corresponding rates were higher (US 15-501, Elliott Road) or lower (E. Franklin Street, Ephesus Church Road, Legion Road) than comparable state-wide averages. Primarily crashes in and near the E-F District were rear-end type collisions, with certain facilities exhibiting high numbers of turning crashes at intersections or driveways.

As part of the 2016 Base Year existing conditions analysis process, a sub-area travel demand model was created, based on the existing Triangle Regional Travel Demand Model (TRM). Information from this sub-area model was used in comparison with existing peak hour data to aid the development of the peak hour traffic microsimulation model used in this study. The sub-area model was then used to evaluate travel growth for 2030 future year scenarios developed in the next phase of the study.

### **2030 Future Year Conditions Summary**

The second phase of the TIA study resulted in the *Ephesus Church Road-Fordham Boulevard Area Planning District - Draft Transportation Impact Analysis Technical Memorandum #2 – 2030 Future Year Analysis* document, submitted to the Town in August 2017. The technical memorandum's purpose was to project future year 2030 conditions for all travel modes on the broad E-F TIA study area, with a particular focus on the network within the E-F District. Three specific scenarios were studied:

- 1 A 2030 “No-Build” Scenario, where background developments outside the study area were considered in the analysis, as well as currently approved developments, or developments under construction in 2016, within the E-F District.
- 2 A 2030 “Build” Scenario was also analyzed, which assumed the completion of the five redevelopment projects described previously within the E-F District, as well as the construction of several roadway network improvements previously recommended in the 2011 original traffic impact analysis. **Figures ES-4A and ES-4B** highlight the locations and basic elements of each redevelopment location and associated roadway facility improvements.



- 3 Finally, a 2030 “Build+Mitigation” Scenario was analyzed where transportation system deficiencies revealed in the previous two analysis scenarios were mitigated by currently planned roadway improvements or the development of additional system improvements to provide adequate operations for all transportation modes.

All the scenarios described above were tested in the regional, sub-area, and microsimulation models created as part of the 2016 Base Year existing conditions analysis. Models were refined to account for land use and development changes, as well as transportation system changes to produce estimates of 2030 daily and peak hour traffic volumes and transit demand. Related to each travel mode, the 2030 future conditions analyses can be summarized for each mode as shown below.

- **Vehicular operations** – Peak hour analyses of the 2030 No-Build Scenario weekday AM, noon, and PM peak hours in the E-F TIA study area indicate multiple areas of peak traffic congestion in the project study area where individual intersection LOS falls below Town/NC DOT threshold for acceptable operation, as summarized in **Figure ES-5A**. 2030 Build Scenario conditions marginally increase system-wide operational issues, though the proposed Build Scenario improvements local to the Elliott Road, Ephesus Church Road and Legion Road corridors improve connectivity and access within these areas of the E-F District. Queue analyses verify similar areas where congestion is projected in both the No-Build and Build Scenarios, impairing traffic flow. A summary of Build Scenario operations is shown in **Figure ES-5B**. The intersection LOS and queue analysis results of the combined effect of proposed mitigation improvements is shown in **Figure ES-5C**.

**Figures ES-6A, 6B, and 6C** highlight the recommended roadway network improvements that provide substantial operational and safety improvement to projected congested conditions in the 2030 analysis year. The effectiveness of the proposed superstreet corridors far exceeds individual conventional intersection improvements along the US 15-501 corridor. Other proposed improvements at individual intersections are focused on mitigating a potential operational or queue issue at a critical intersection approach. **Figure ES-6C** focuses on any additional improvements within the E-F District that are necessary to provide adequate transportation mobility under 2030 Build Scenario peak hour traffic conditions.

- **Transit operations** – 2030 No-Build and Build Scenario peak hour load/capacity evaluations for all routes directly serving the E-F District was completed with assistance from CHT and GoTriangle sources. Projected ridership demand along the CHT CL, D and G routes may exceed available current individual bus capacity, depending on route direction and time of day. The Build Scenario for E-F District developments indicates that some additional transit demand is likely based on the proposed land uses for the five redevelopment projects, but not to the degree where individual routes are severely impacted with additional demand as compared to the 2030 No-Build Scenario. Dependable transit service for any routes utilizing the US 15-501 corridor will be provided by the superstreet recommended improvements. As part of the multi-modal LOS analyses completed for the study, **Figure ES-7A** shows peak hour directional transit LOS results for several corridors in and around the E-F District for the 2030 No-Build and Build Scenarios. Improvements to the multi-modal LOS results is highly dependent on providing additional service along a particular corridor segment, or providing new service along a segment if it currently does not exist.
- **Pedestrian operations** – The primary focus of pedestrian analyses for this study is the provision of adequate pedestrian facilities and crossings at intersections to provide connectivity within the E-F District and areas serving the District. 2030 No-Build and Build analysis results indicate areas in and near the E-F District where pedestrian service needs to be provided and/or enhanced. A primary conceptual improvement to benefit both pedestrians and bicyclists would be for the development of off-road paved paths in each direction along the US 15-501 corridor that either convert or utilize

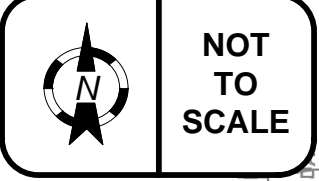


existing right-of-way provided by current paralleling frontage Service Roads. Build scenario conceptual development plans include the provision of local pedestrian facilities and potential signalized crossings and/or crosswalks to existing or planned pedestrian facilities. Additional coordination and consultation with the upcoming Town-wide Mobility Plan is recommended to ensure that pedestrian connectivity within the E-F District and to points beyond is completed by the 2030 future analysis year. **Figure ES-7B** shows peak hour directional pedestrian LOS results for several corridors in and around the E-F District for the 2030 No-Build and Build Scenarios.

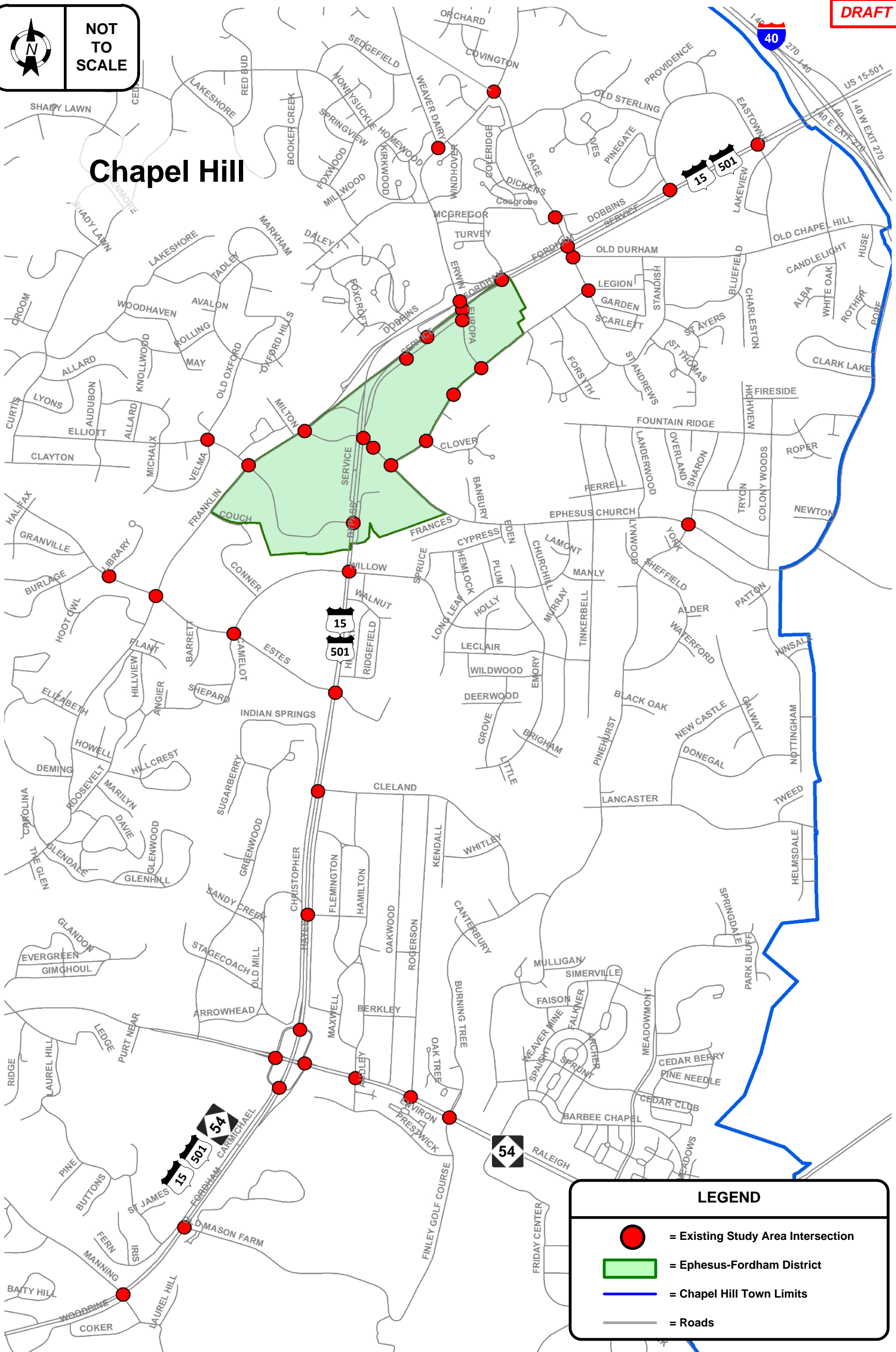
- **Bicycle operations** – Similar to the pedestrian evaluations and to results from the 2016 Base Year analysis, bicycle analyses in this study focus on provision of safe and accessible bicycle routes within and outside the District. Comparatively, pedestrian accessibility is better than bicycle accessibility within and outside the District. There are locations throughout the larger study area where bicycling activity is present, but is more limited to off-road paved paths and greenways – opportunities to expand and connect to these facilities is needed, along with the conceptual off-road paths paralleling US 15-501 as described above. Like recommendations made above for pedestrian facilities, additional coordination with the Town Mobility Plan is needed to develop adequate, connected bicycling facilities within the District and points beyond. **Figure ES-7C** shows peak hour directional bicycle LOS results for several corridors in and around the E-F District for the 2030 No-Build and Build Scenarios.

It is important to note that the recommended improvements for vehicular operations should not impair the ability to provide connectivity and accessibility for pedestrian or bicycle operations.

Additional analyses and summary evaluations will be made for the five E-F District development projects related to site access, circulation and specific design and operational details at existing and proposed E-F District intersections in the vicinity of each site. These evaluations will conform to Town guidelines for the preparation of traffic impact analyses and will utilize data and results compiled as part of the comprehensive E-F TIA documentation.



# Chapel Hill



**LEGEND**

- = Existing Study Area Intersection
- = Ephesus-Fordham District
- = Chapel Hill Town Limits
- = Roads



## Ephesus Church Road - Fordham Boulevard District Transportation Impact Analysis

DATE: August 2017

PROJECT STUDY AREA

FIGURE ES-1



Ephesus Church Road - Fordham Boulevard  
District  
Transportation Impact Analysis

E-F DISTRICT OVERVIEW

DATE: August 2017

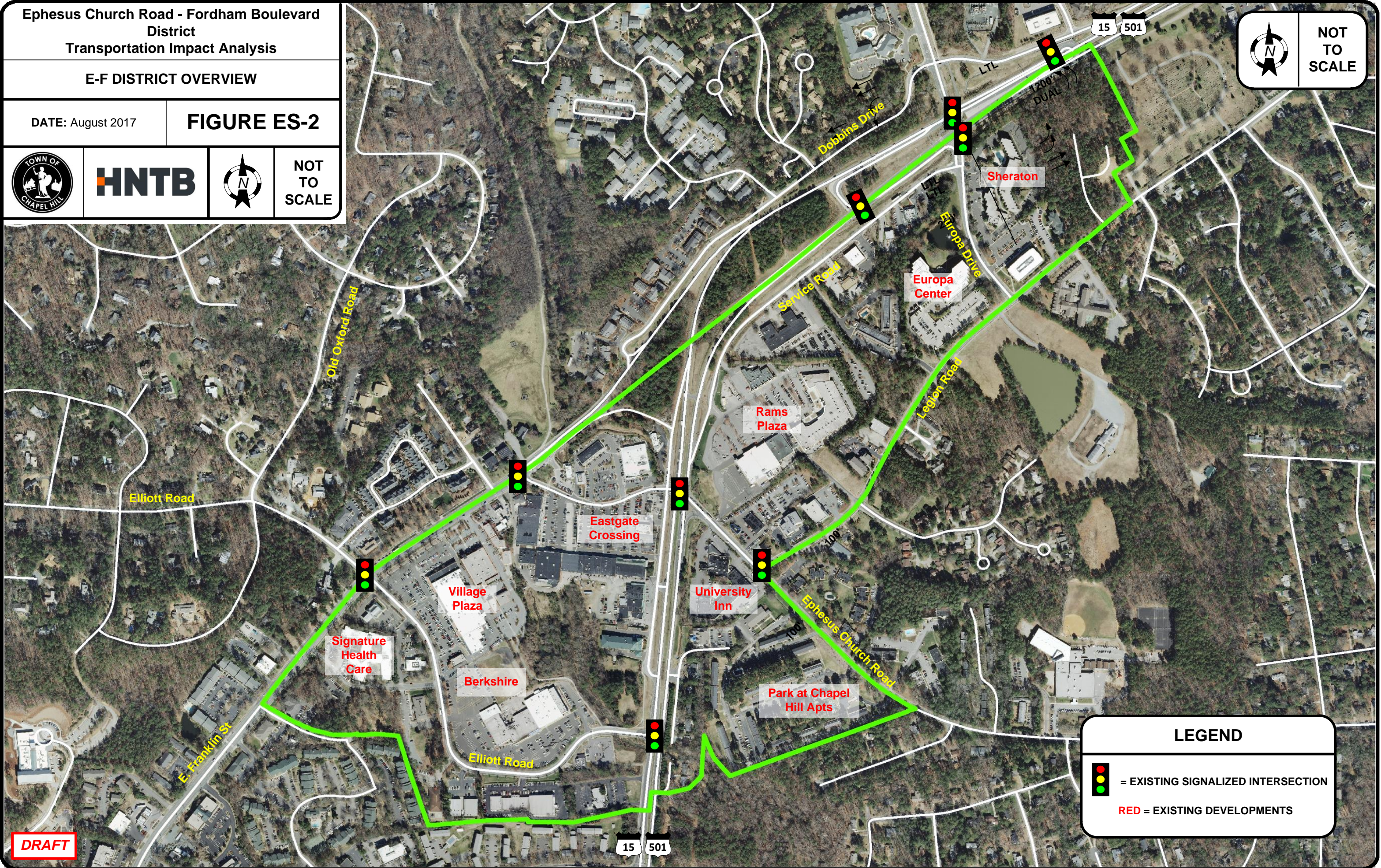
FIGURE ES-2



HNTB



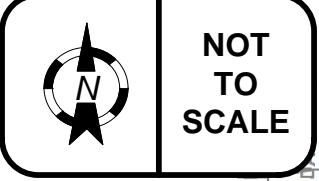
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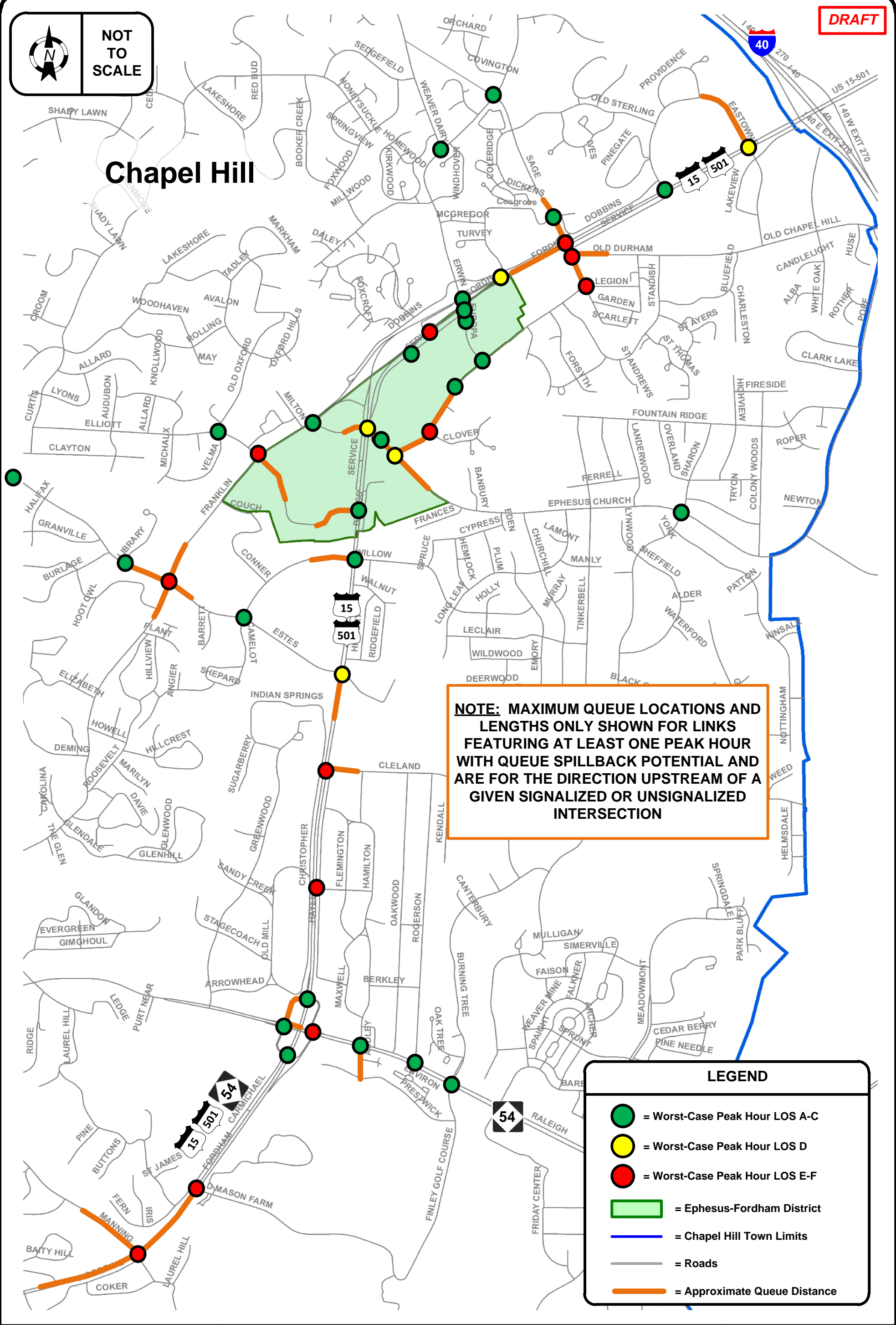
DRAFT

**LEGEND**

- = EXISTING SIGNALIZED INTERSECTION
- RED** = EXISTING DEVELOPMENTS



# Chapel Hill



**NOTE: MAXIMUM QUEUE LOCATIONS AND LENGTHS ONLY SHOWN FOR LINKS FEATURING AT LEAST ONE PEAK HOUR WITH QUEUE SPILLBACK POTENTIAL AND ARE FOR THE DIRECTION UPSTREAM OF A GIVEN SIGNALIZED OR UNSIGNALIZED INTERSECTION**

**LEGEND**

- = Worst-Case Peak Hour LOS A-C
- = Worst-Case Peak Hour LOS D
- = Worst-Case Peak Hour LOS E-F
- = Ephesus-Fordham District
- = Chapel Hill Town Limits
- = Roads
- = Approximate Queue Distance



**Ephesus Church Road - Fordham Boulevard District  
Transportation Impact Analysis**

**2016 BASE YEAR INTERSECTION LOS & QUEUE SUMMARY**

DATE: August 2017

**FIGURE ES-3**

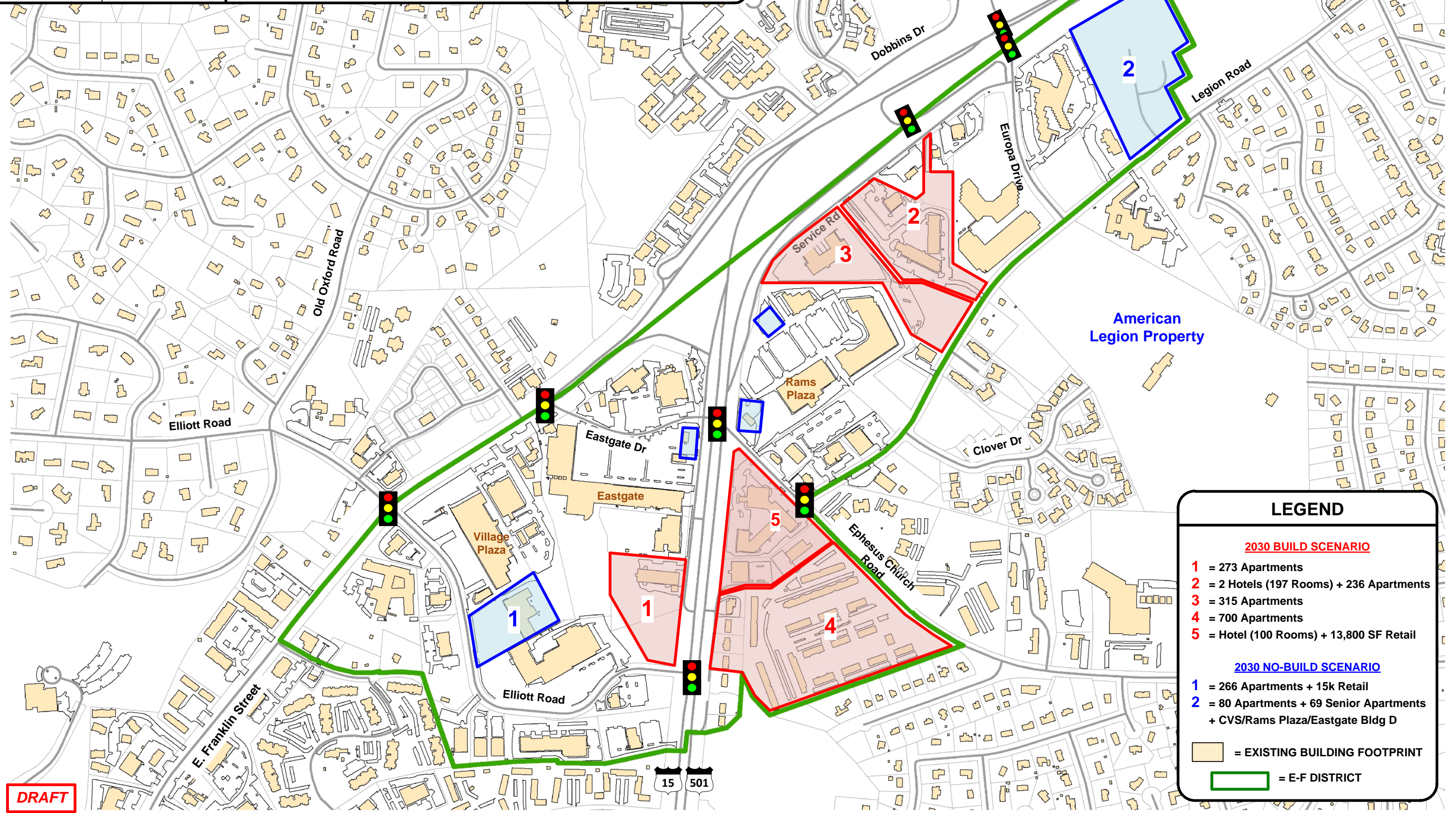
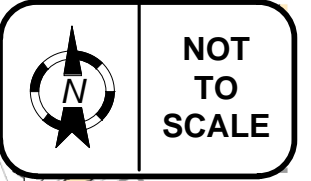


**HNTB**

Ephesus Church Road - Fordham Boulevard District  
Transportation Impact Analysis  
2030 DISTRICT DEVELOPMENT ASSUMPTIONS

DATE: August 2017

**FIGURE ES-4A**



**LEGEND**

**2030 BUILD SCENARIO**

- 1** = 273 Apartments
- 2** = 2 Hotels (197 Rooms) + 236 Apartments
- 3** = 315 Apartments
- 4** = 700 Apartments
- 5** = Hotel (100 Rooms) + 13,800 SF Retail

**2030 NO-BUILD SCENARIO**

- 1** = 266 Apartments + 15k Retail
- 2** = 80 Apartments + 69 Senior Apartments + CVS/Rams Plaza/Eastgate Bldg D

= EXISTING BUILDING FOOTPRINT

= E-F DISTRICT

**DRAFT**

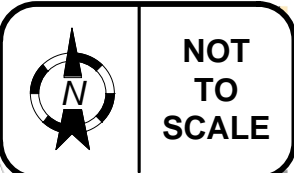


**HNTB**

Ephesus Church Road - Fordham Boulevard District  
Transportation Impact Analysis  
2030 DISTRICT BUILD SCENARIO ASSUMPTIONS

DATE: August 2017

**FIGURE ES-4B**



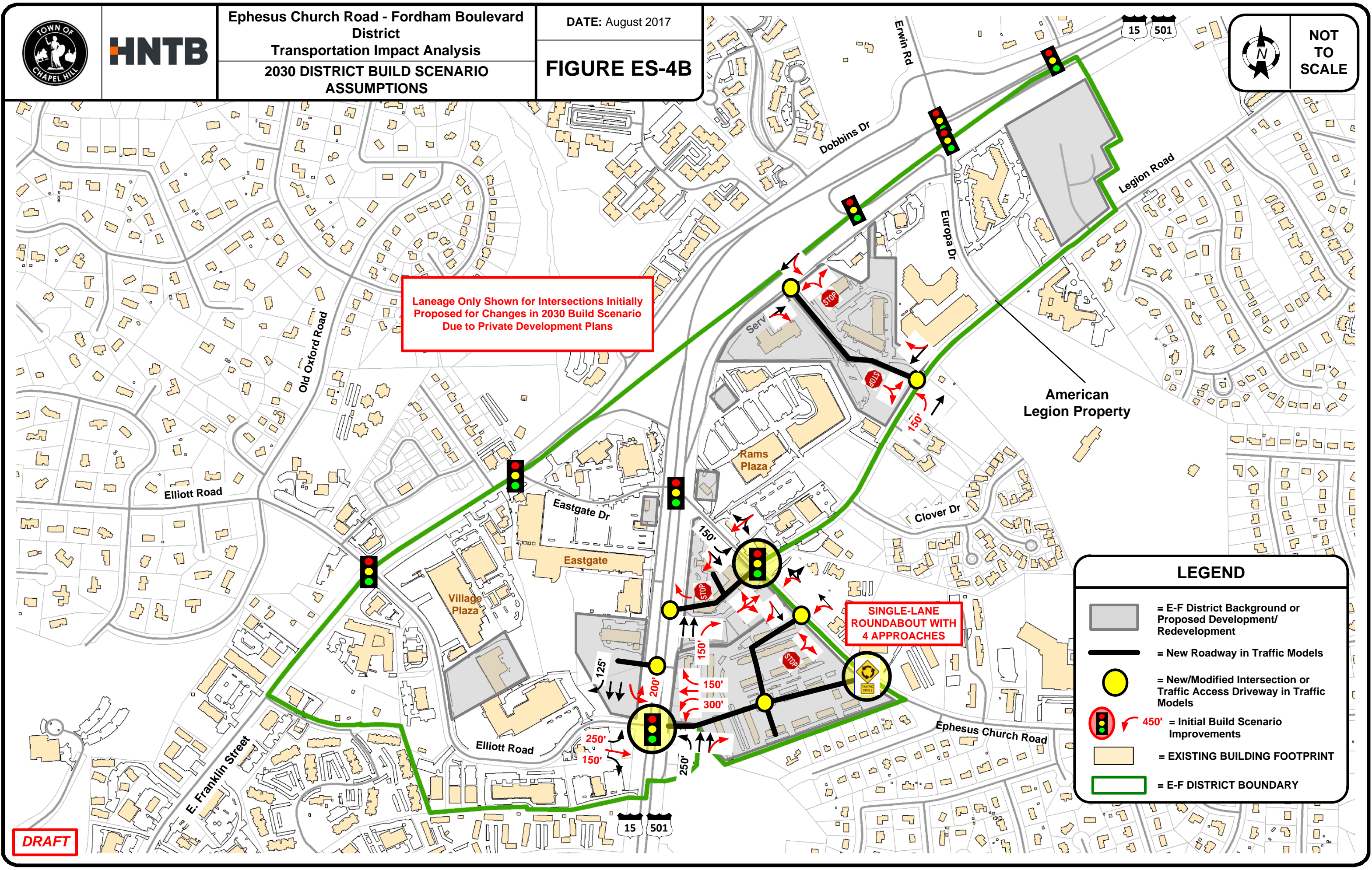
Laneage Only Shown for Intersections Initially Proposed for Changes in 2030 Build Scenario Due to Private Development Plans

SINGLE-LANE ROUNDABOUT WITH 4 APPROACHES

**LEGEND**

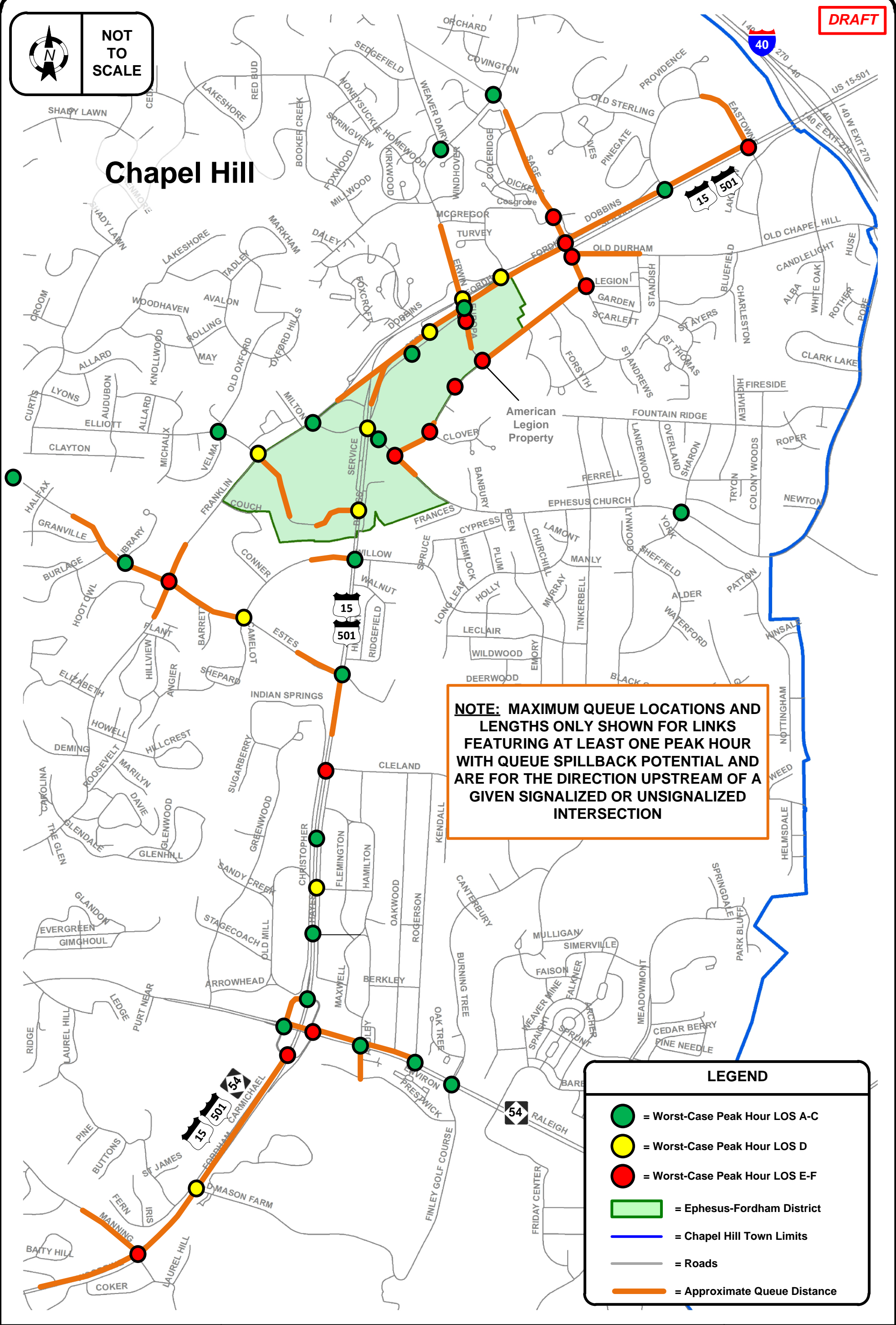
- [Grey Area] = E-F District Background or Proposed Development/Redevelopment
- [Black Line] = New Roadway in Traffic Models
- [Yellow Circle] = New/Modified Intersection or Traffic Access Driveway in Traffic Models
- [Traffic Light Icon] 450' = Initial Build Scenario Improvements
- [Tan Area] = EXISTING BUILDING FOOTPRINT
- [Green Line] = E-F DISTRICT BOUNDARY

**DRAFT**





# Chapel Hill



## Ephesus Church Road - Fordham Boulevard District Transportation Impact Analysis

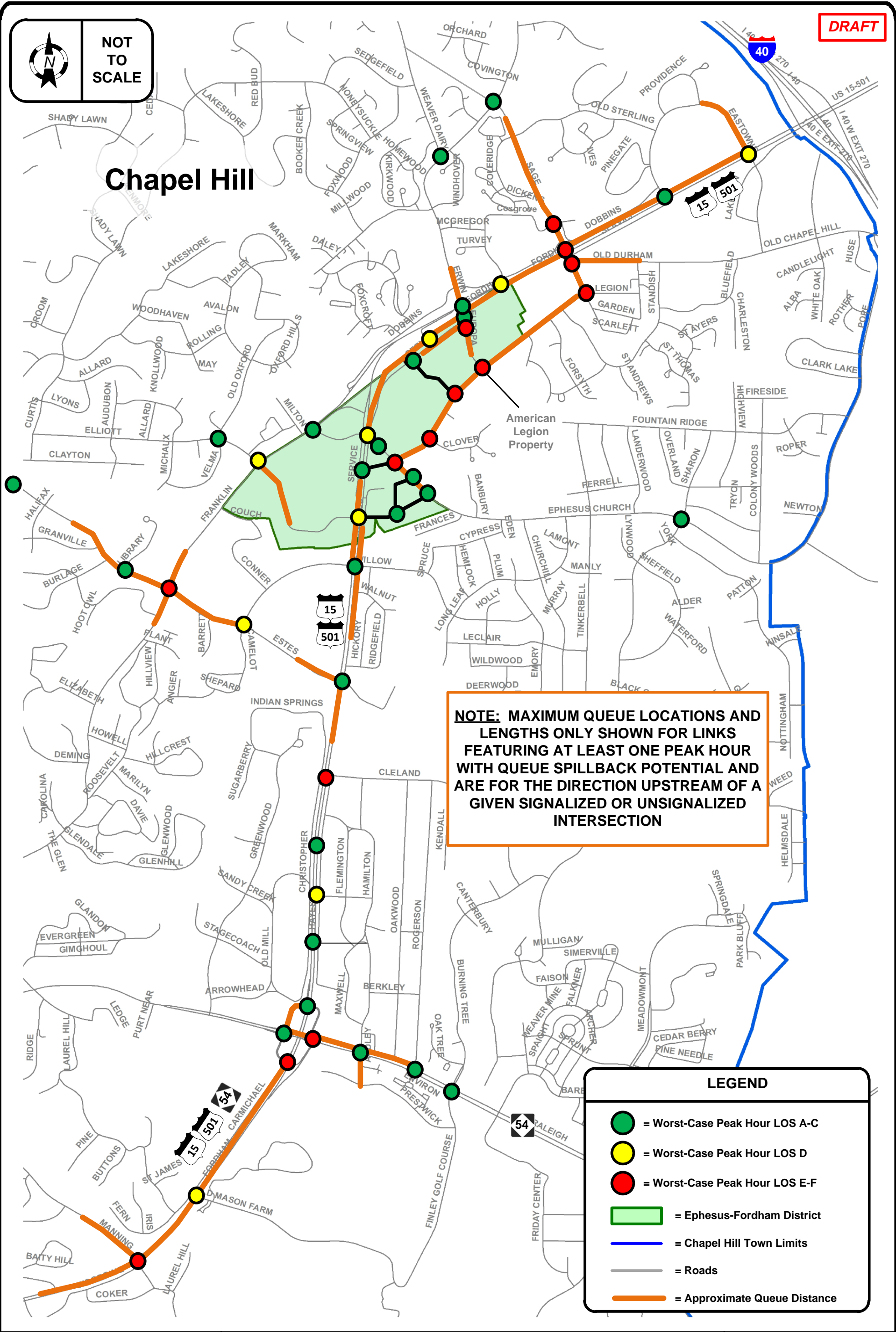
DATE: August 2017

### 2030 NO-BUILD SCENARIO INTERSECTION LOS & QUEUE SUMMARY

### FIGURE ES-5A



# Chapel Hill



**NOTE: MAXIMUM QUEUE LOCATIONS AND LENGTHS ONLY SHOWN FOR LINKS FEATURING AT LEAST ONE PEAK HOUR WITH QUEUE SPILLBACK POTENTIAL AND ARE FOR THE DIRECTION UPSTREAM OF A GIVEN SIGNALIZED OR UNSIGNALIZED INTERSECTION**

**LEGEND**

- = Worst-Case Peak Hour LOS A-C
- = Worst-Case Peak Hour LOS D
- = Worst-Case Peak Hour LOS E-F
- = Ephesus-Fordham District
- = Chapel Hill Town Limits
- = Roads
- = Approximate Queue Distance



**Ephesus Church Road - Fordham Boulevard District  
Transportation Impact Analysis**

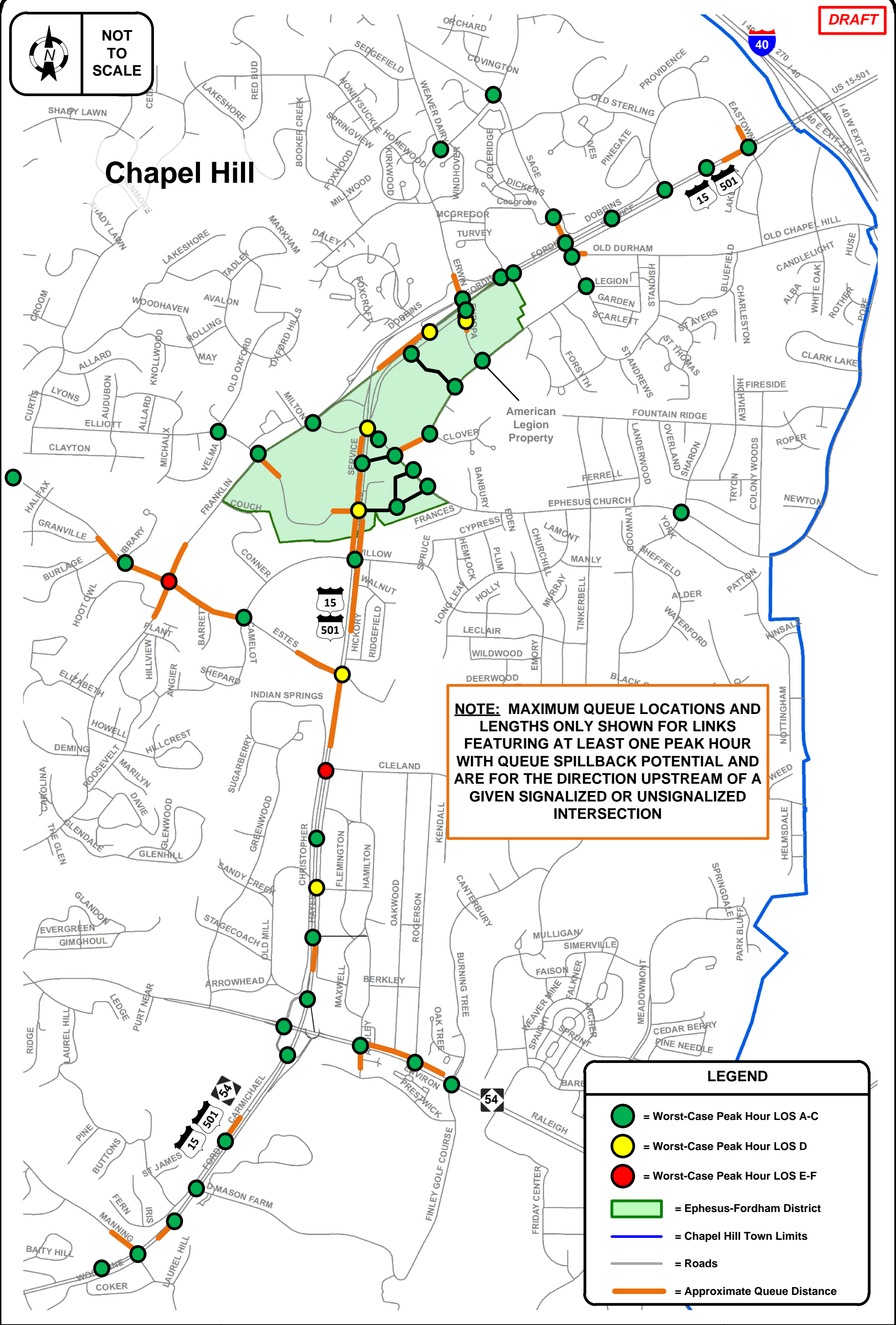
**2030 BUILD SCENARIO  
INTERSECTION LOS & QUEUE SUMMARY**

DATE: August 2017

**FIGURE ES-5B**



# Chapel Hill



**NOTE: MAXIMUM QUEUE LOCATIONS AND LENGTHS ONLY SHOWN FOR LINKS FEATURING AT LEAST ONE PEAK HOUR WITH QUEUE SPILLBACK POTENTIAL AND ARE FOR THE DIRECTION UPSTREAM OF A GIVEN SIGNALIZED OR UNSIGNALIZED INTERSECTION**

**LEGEND**

- = Worst-Case Peak Hour LOS A-C
- = Worst-Case Peak Hour LOS D
- = Worst-Case Peak Hour LOS E-F
- = Ephesus-Fordham District
- = Chapel Hill Town Limits
- = Roads
- = Approximate Queue Distance



**Ephesus Church Road - Fordham Boulevard District  
Transportation Impact Analysis**

**2030 BUILD+MITIGATION SCENARIO  
INTERSECTION LOS & QUEUE SUMMARY**

DATE: August 2017

**FIGURE ES-5C**

Ephesus Church Road - Fordham Boulevard  
District  
Transportation Impact Analysis

2030 RECOMMENDED IMPROVEMENTS -  
NORTH

DATE: August 2017

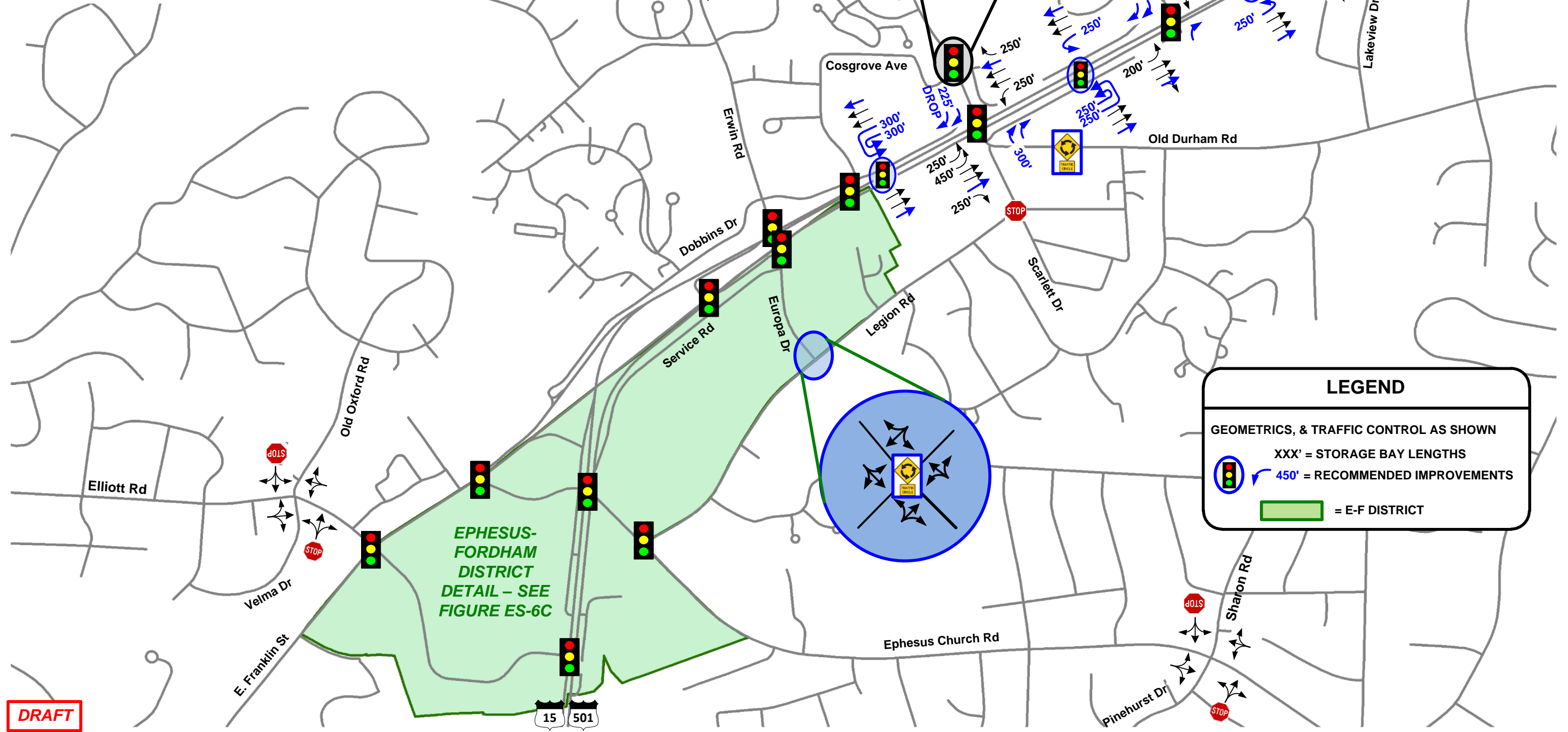
FIGURE ES-6A



**HNTB**



NOT  
TO  
SCALE



**LEGEND**

GEOMETRICS, & TRAFFIC CONTROL AS SHOWN

XXX' = STORAGE BAY LENGTHS

450' = RECOMMENDED IMPROVEMENTS

= E-F DISTRICT

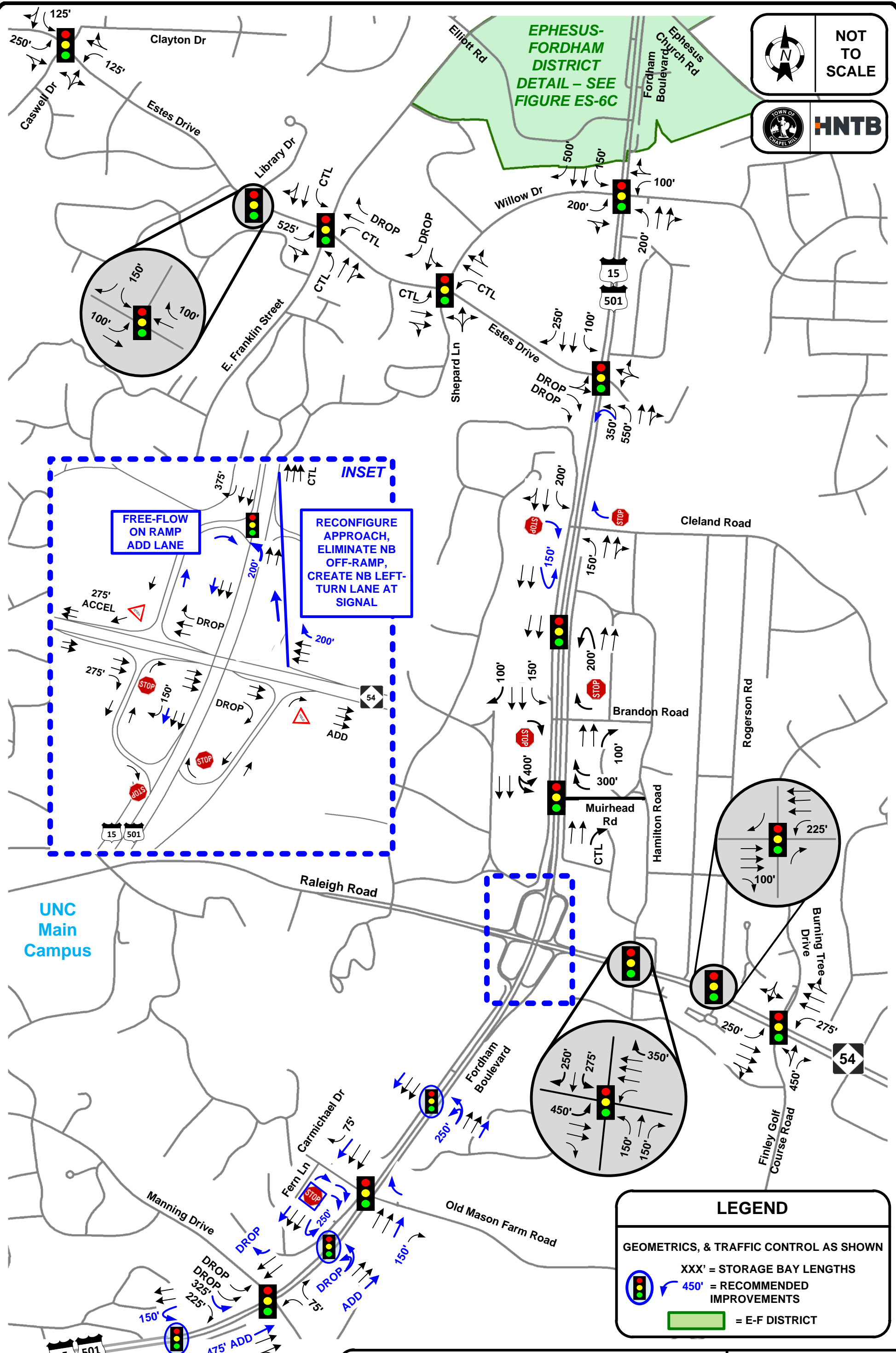
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EPHESUS-  
FORDHAM  
DISTRICT  
DETAIL - SEE  
FIGURE ES-6C



NOT TO SCALE

EPHESUS-FORDHAM DISTRICT  
DETAIL - SEE FIGURE ES-6C



**FREE-FLOW ON RAMP ADD LANE**

**RECONFIGURE APPROACH, ELIMINATE NB OFF-RAMP, CREATE NB LEFT-TURN LANE AT SIGNAL**

INSET

**LEGEND**

GEOMETRICS, & TRAFFIC CONTROL AS SHOWN

XXX' = STORAGE BAY LENGTHS

450' = RECOMMENDED IMPROVEMENTS

[Green Box] = E-F DISTRICT

**DRAFT**

Ephesus Church Road - Fordham Boulevard District  
Transportation Impact Analysis

DATE: August 2017

2030 RECOMMENDED IMPROVEMENTS - SOUTH

**FIGURE ES-6B**



**HNTB**

**Ephesus Church Road - Fordham Boulevard District**  
Transportation Impact Analysis  
2030 RECOMMENDED IMPROVEMENTS

DATE: August 2017

**FIGURE ES-6C**

NOT TO SCALE

Laneage Only Shown for Intersections Recommended for Changes in 2030 Build Scenario Due to Operational / Safety Issues

SINGLE-LANE ROUNDABOUT WITH 4 APPROACHES

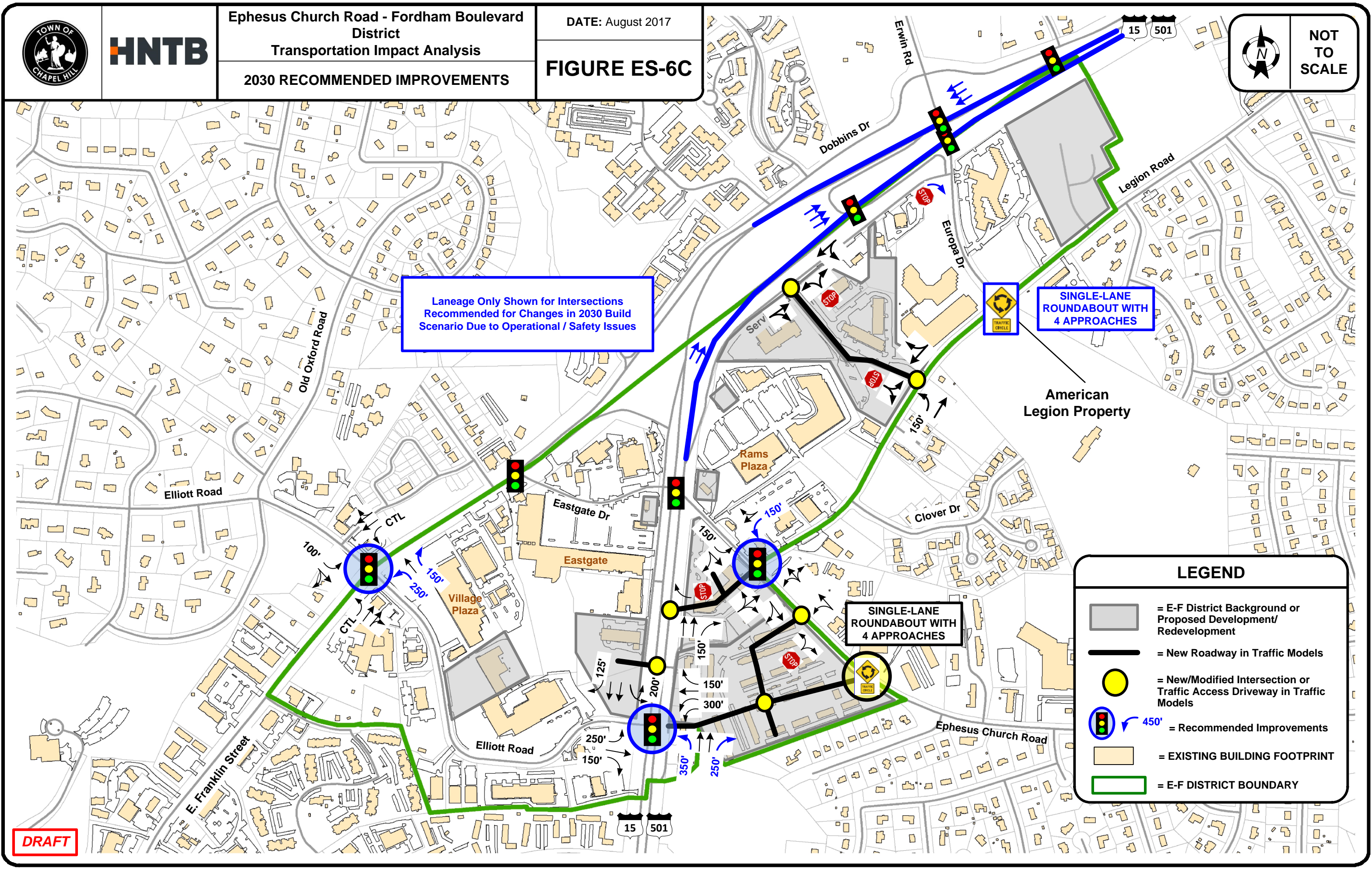
American Legion Property

SINGLE-LANE ROUNDABOUT WITH 4 APPROACHES

**LEGEND**

- = E-F District Background or Proposed Development/ Redevelopment
- = New Roadway in Traffic Models
- = New/Modified Intersection or Traffic Access Driveway in Traffic Models
- 450' = Recommended Improvements
- = EXISTING BUILDING FOOTPRINT
- = E-F DISTRICT BOUNDARY

**DRAFT**



**LEGEND**

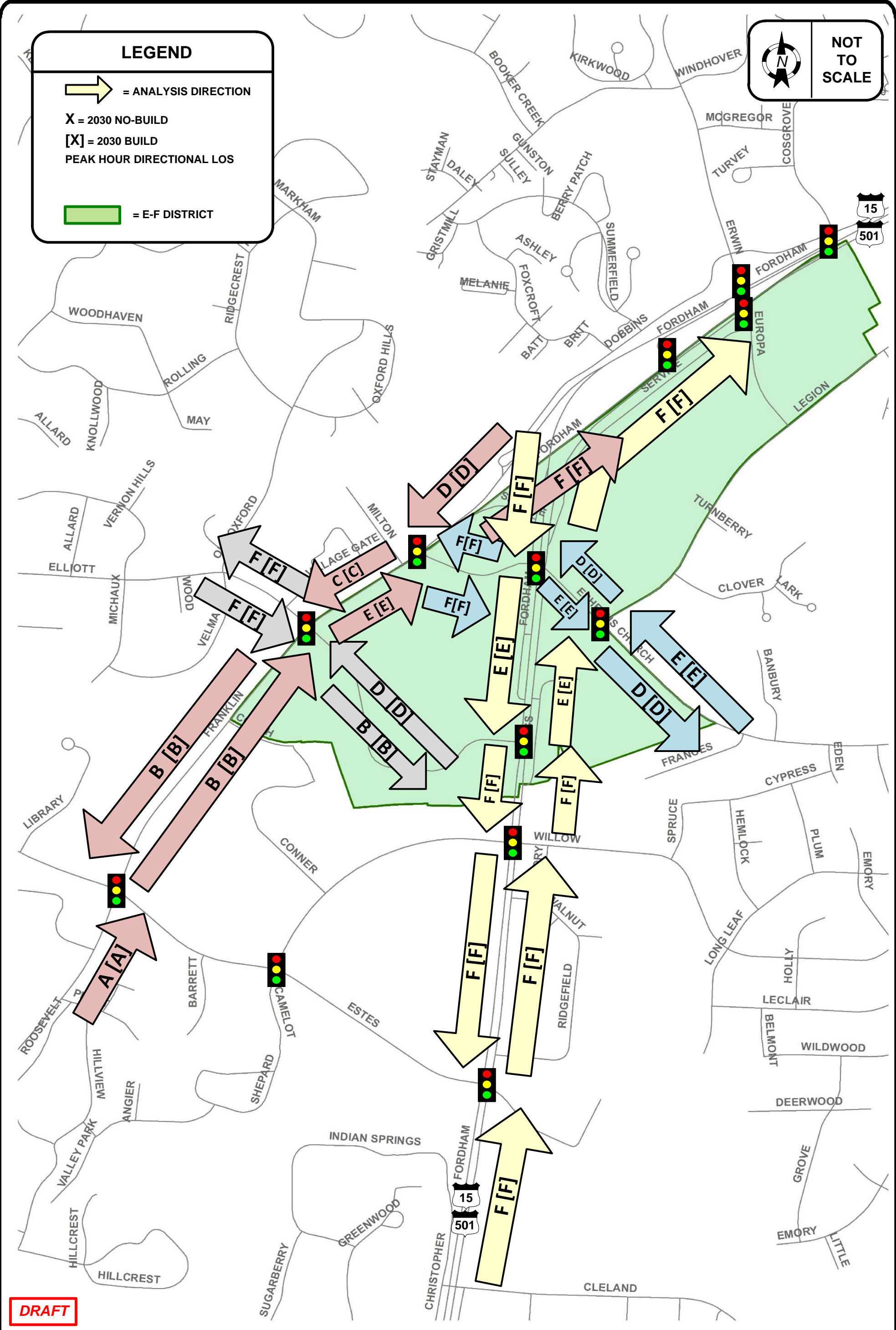
= ANALYSIS DIRECTION

X = 2030 NO-BUILD  
 [X] = 2030 BUILD

PEAK HOUR DIRECTIONAL LOS

= E-F DISTRICT

NOT TO SCALE



**DRAFT**

**HNTB**

Ephesus Church Road - Fordham Boulevard District  
 Transportation Impact Analysis

**2030 MULTI-MODAL LOS RESULTS - TRANSIT**

DATE: August 2017

**FIGURE ES-7A**

**LEGEND**

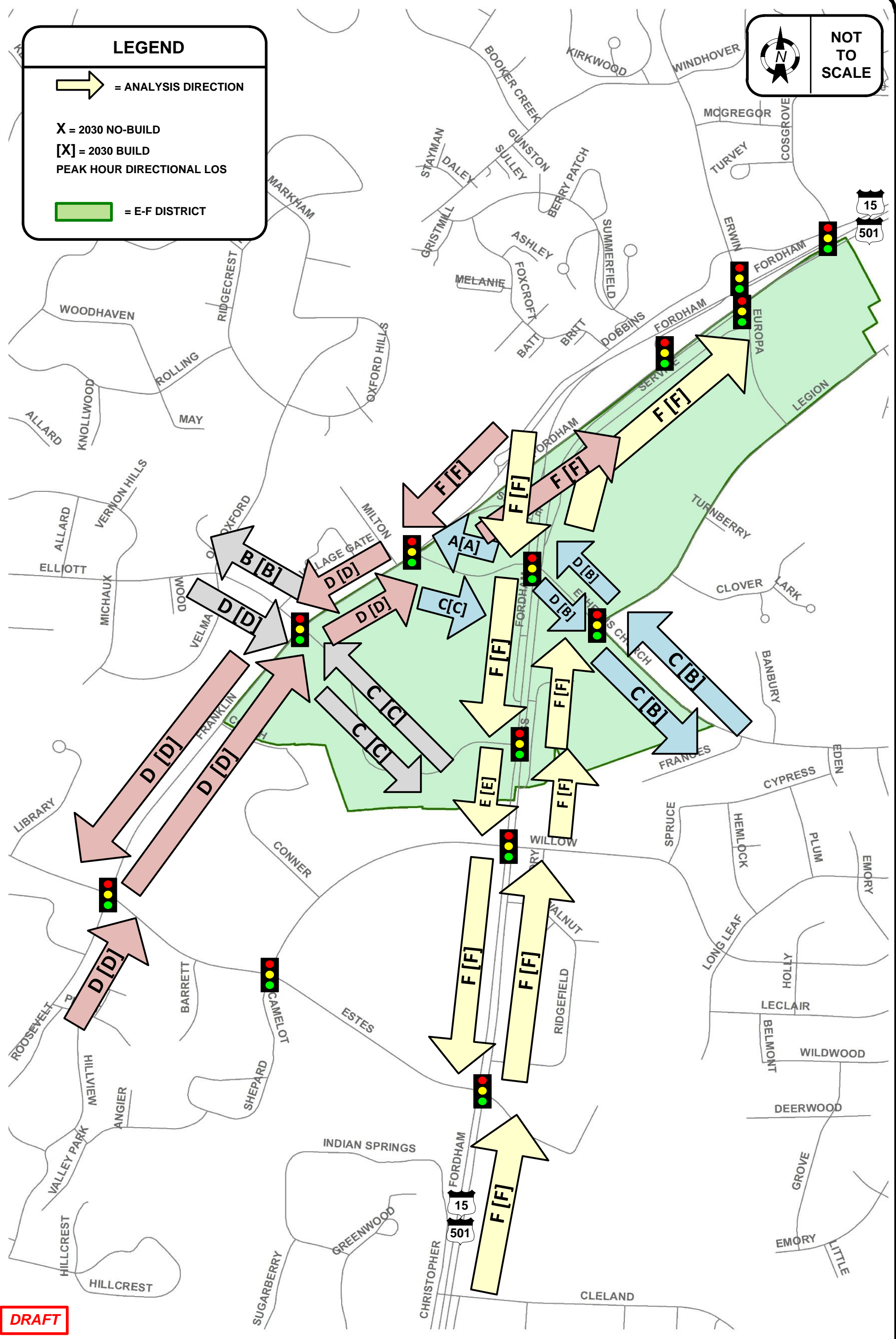
= ANALYSIS DIRECTION

X = 2030 NO-BUILD

[X] = 2030 BUILD

PEAK HOUR DIRECTIONAL LOS

= E-F DISTRICT



**DRAFT**



**HNTB**

**Ephesus Church Road - Fordham Boulevard District  
Transportation Impact Analysis**

DATE: August 2017

**2030 MULTI-MODAL LOS RESULTS - PEDESTRIAN**

**FIGURE ES-7B**

**LEGEND**

= ANALYSIS DIRECTION

X = 2030 NO-BUILD

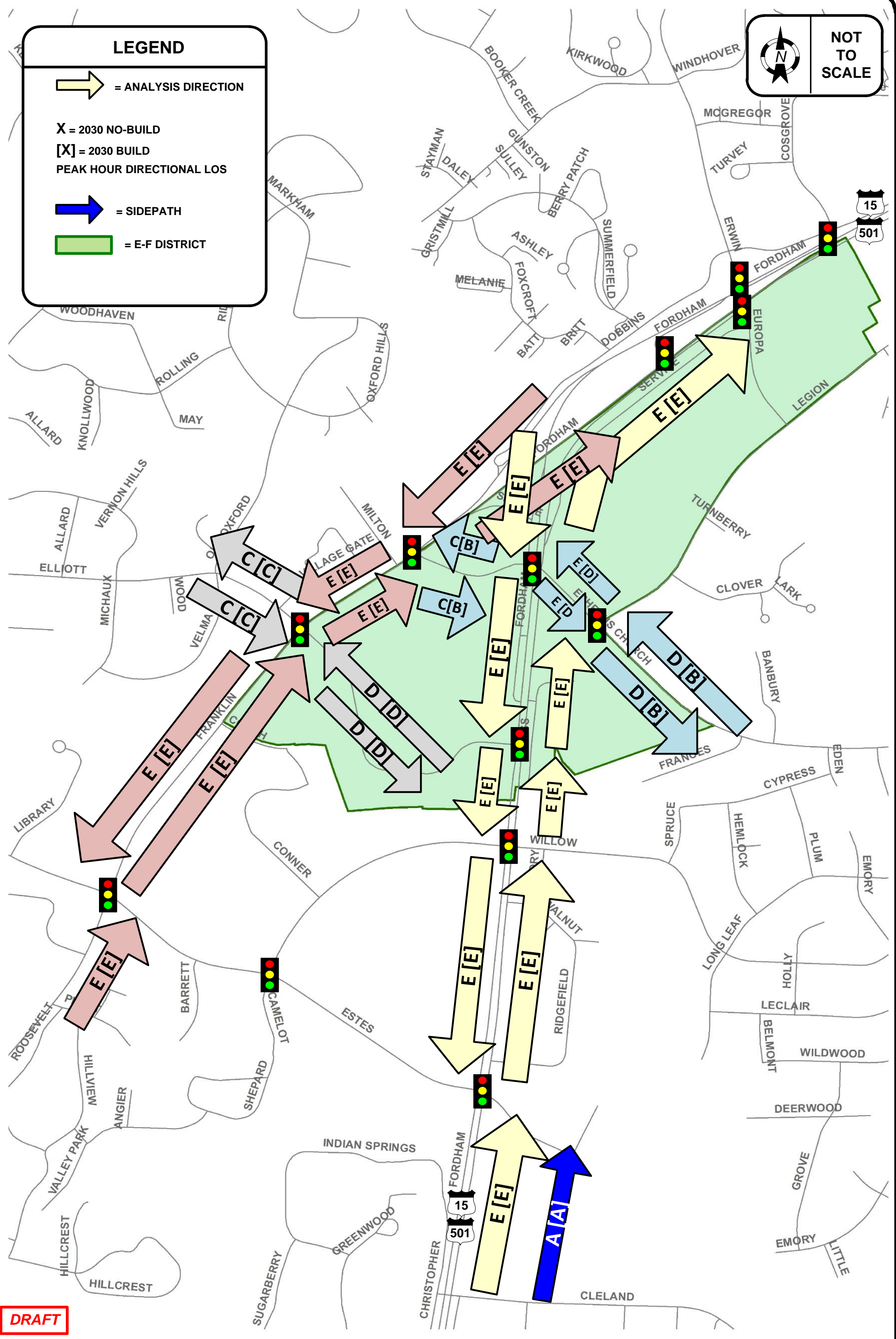
[X] = 2030 BUILD

PEAK HOUR DIRECTIONAL LOS

= SIDEPATH

= E-F DISTRICT

NOT TO SCALE



**DRAFT**



**HNTB**

Ephesus Church Road - Fordham Boulevard District  
Transportation Impact Analysis

2030 MULTI-MODAL LOS RESULTS - BICYCLE

DATE: August 2017

**FIGURE ES-7C**