



Item Overview

Business Meeting– 01/23/2017
Agenda # 10

Subject: Update: Elliott Road Extension Project

Staff:

Lance Norris, Public Works Director
Chris Roberts, PE, Manager of Engineering & Infrastructure
Chris Jensen, PE, Senior Engineer
Cindy Szwarcop, AICP, Consultant

Department:

Public Works

Stewart Engineering, Inc.

Overview: The purpose of this item is to provide Council an update of the status of the Elliott Road Extension design project including the 25% Design Plans, Opinion of Probable Construction Cost, and the process for updating the Traffic Impact Analysis.



Recommendations

That the Council accept the report as presented, updating the [Regulating Plan¹](#) in accordance with the 25% Design Plans.

Key Issues

- At the [May 23, 2016 Council business meeting²](#), the Town Council authorized staff to:
 - Begin the design of the Elliott Road Extension. The scope of the project includes:
 - Extension of Elliott Road eastward to Ephesus Church Road and realignment of Ephesus Church Road to be a through movement;
 - Construction of Elliott Road Extension with dual westbound left-turn lanes, a through lane, and an exclusive right-turn lane at Fordham Boulevard;
 - Addition of an exclusive eastbound right-turn lane on existing Elliott Road;
 - Extension of an exclusive eastbound right-turn lane on existing Elliott Road;
 - Extension of the existing exclusive eastbound left-turn lane on Elliott Road to include 300 feet of storage; and
 - Roundabout at Elliott Road and Ephesus Church Road intersection.
 - Bring 25% plans and the Opinion of Probable Construction Cost back to Council for review.
 - Once redevelopment of the Park Apartments is initiated, we will proceed with developing 70% plans.
 - Begin the process for updating the Traffic Impact Analysis (TIA) for the Ephesus-Fordham district area:
 - The Town issued a Request for Qualifications (RFQ) on August 12, 2016;
 - The Town hired HNTB as the consultant to perform the work;
 - The consultant and staff held a public meeting to review and define the proposed Ephesus-Fordham district area on October 12, 2016;

¹ <http://www.townofchapelhill.org/home/showdocument?id=32839>

² http://chapelhill.granicus.com/MetaViewer.php?view_id=7&clip_id=2781&meta_id=130411

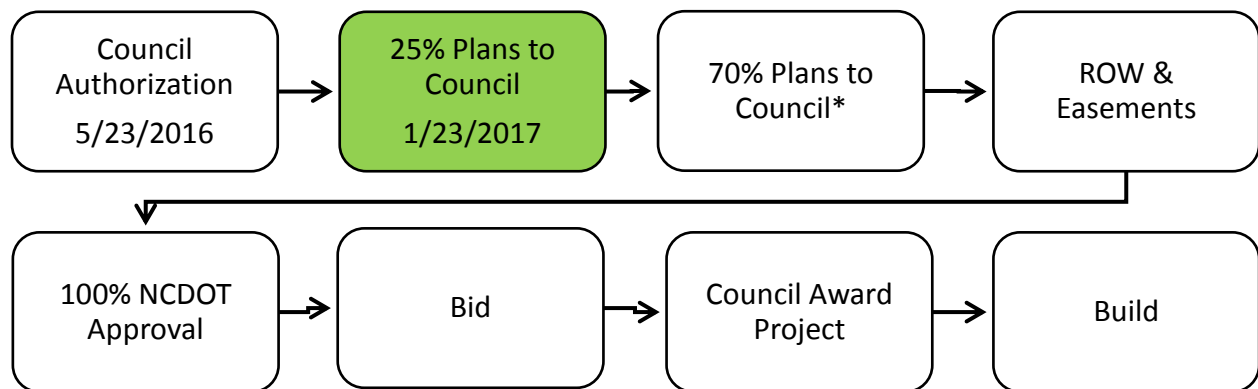
- The consultant collected traffic counts in November 2016;
- The consultant is currently conducting the current conditions analysis, expected to be complete by the end of January 2017.
- The consultant and staff will hold a second public meeting in mid-February to discuss the current conditions analysis.

Fiscal Impact/Resources:

- Elliott Road Extension, Design Cost (consultant contract) – approximately \$350,000*
- Elliott Road Extension, Acquisition of Parcels 4 Bypass Lane and 5 Bypass Lane – approximately \$579,000*
- Elliott Road Extension, Opinion of Probable Construction Cost (25% Design) - \$4.23 Million
- Elliott Road Extension, Right-of-Way Acquisition – to be determined, as needed
- TIA for the Ephesus Fordham District Area, Design Cost (consultant contract) – approximately \$195,000.







*Design Cost and Acquisition of Parcels 4 Bypass Lane and 5 Bypass Lane funded from FY16 Installment Financing.

Where is this item in its process?



*Once redevelopment of the Park Apartments is initiated, we will proceed with developing 70% plans.

Council Goals:

<input checked="" type="checkbox"/>		Create a Place for Everyone	<input type="checkbox"/>		Develop Good Places, New Spaces
<input type="checkbox"/>		Support Community Prosperity	<input type="checkbox"/>		Nurture Our Community
<input checked="" type="checkbox"/>		Facilitate Getting Around	<input type="checkbox"/>		Grow Town and Gown Collaboration



Attachments:

- Draft Staff Presentation
- Elliott Road Extension, 25% Plans – Design Narrative

- Elliott Road Extension 25% Plans – Opinion of Probable Construction Cost
- Elliott Road Extension, 25% Plans – Exhibit
- Elliott Road Extension, 25% Plans – Drainage Exhibit



Elliott Road Extension Council Update

Date: 1/23/2017

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Agenda

- Background
- Update from 5/23/16 Council Meeting
 - Elliott Road Extension 25% Design Plans
 - Elliott Road Extension Opinion of Probable Construction Cost
 - E-F Area Transportation Impact Analysis

Recommendation

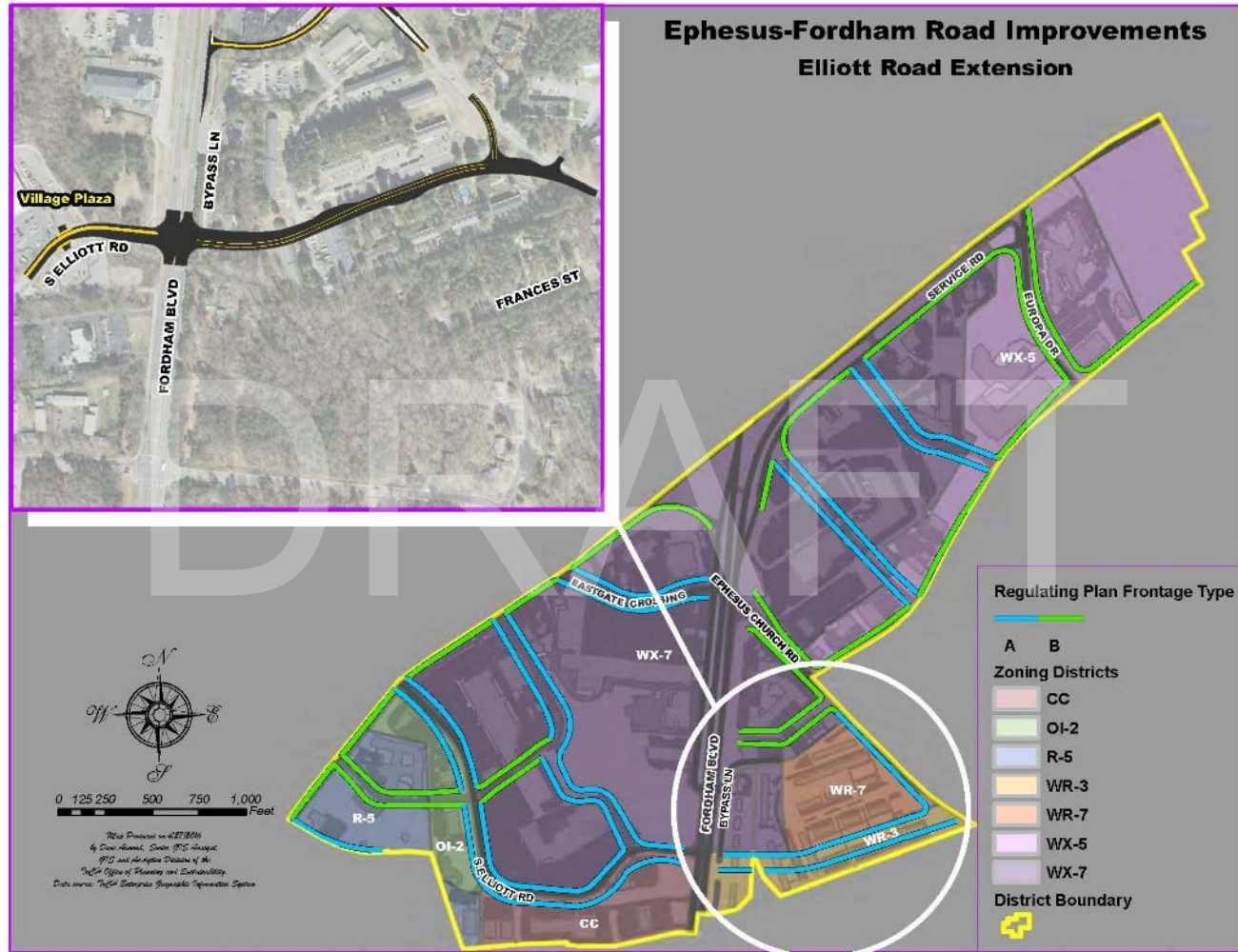
- That Council accept the report as presented, updating the Regulating Plan in accordance with the 25% Design Plans.

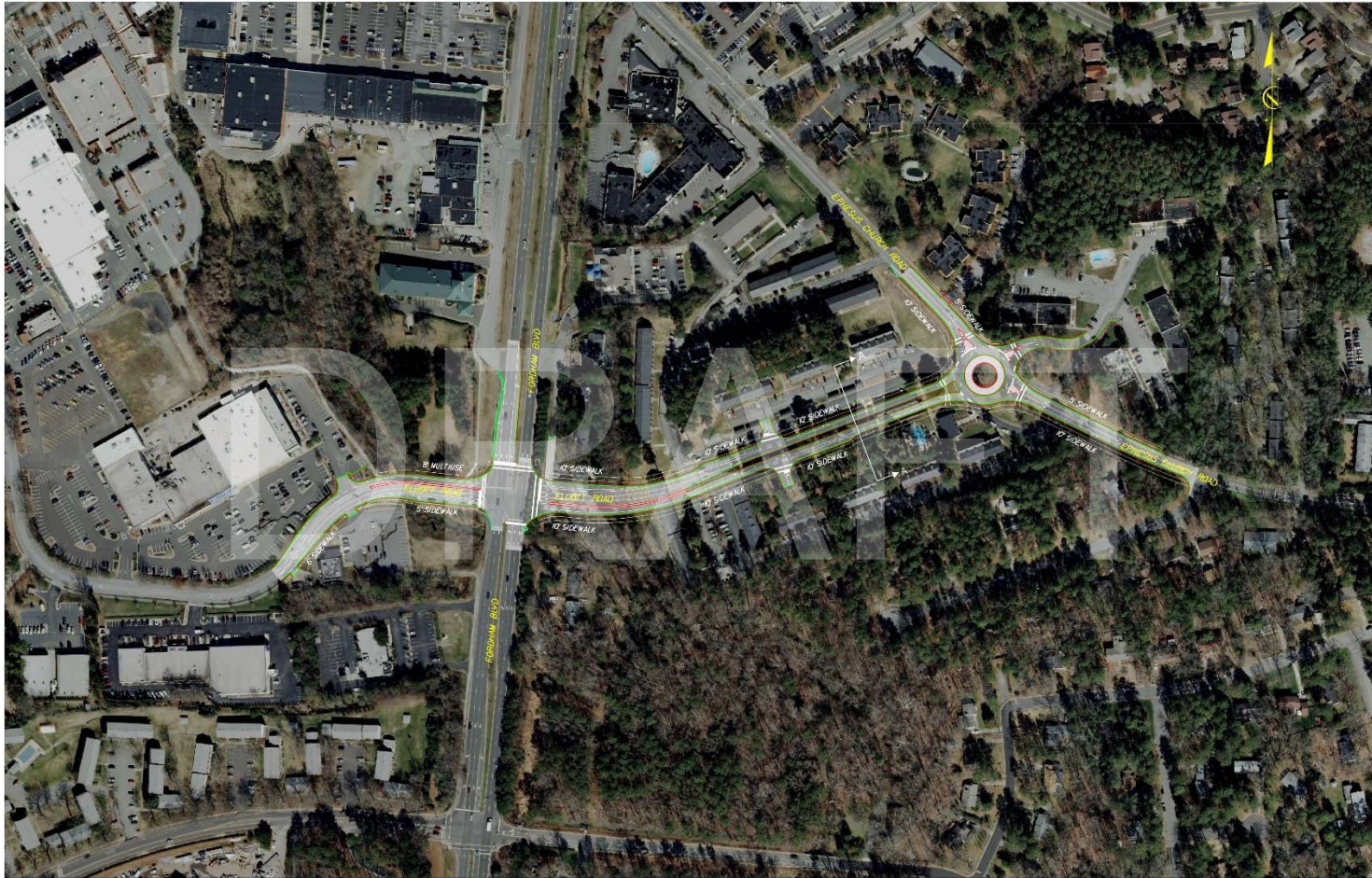
Background and Overview



- Town Council approved the Ephesus Church Fordham Boulevard Small Area Plan and Traffic Analysis in June 2011.
- \$8.8 million in Transportation Improvements expected to take place over multiple phases.
- May 23, 2016, Council directed staff to move forward with the design of Elliott Road Extension.

Elliott Road Extension

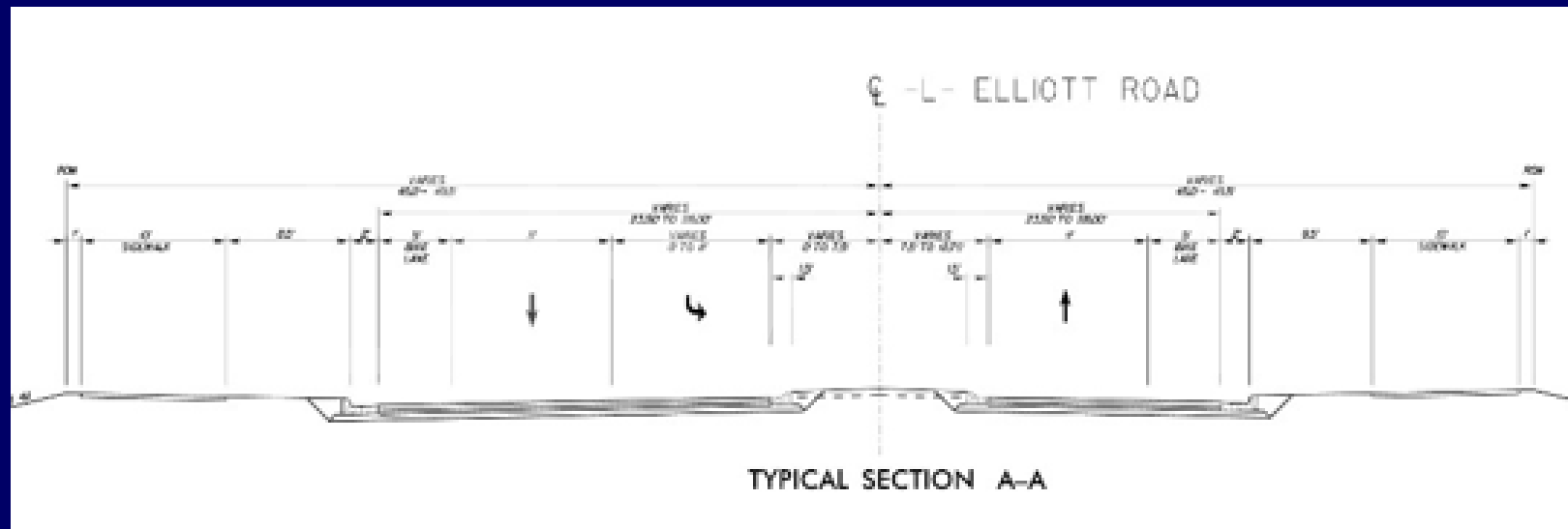


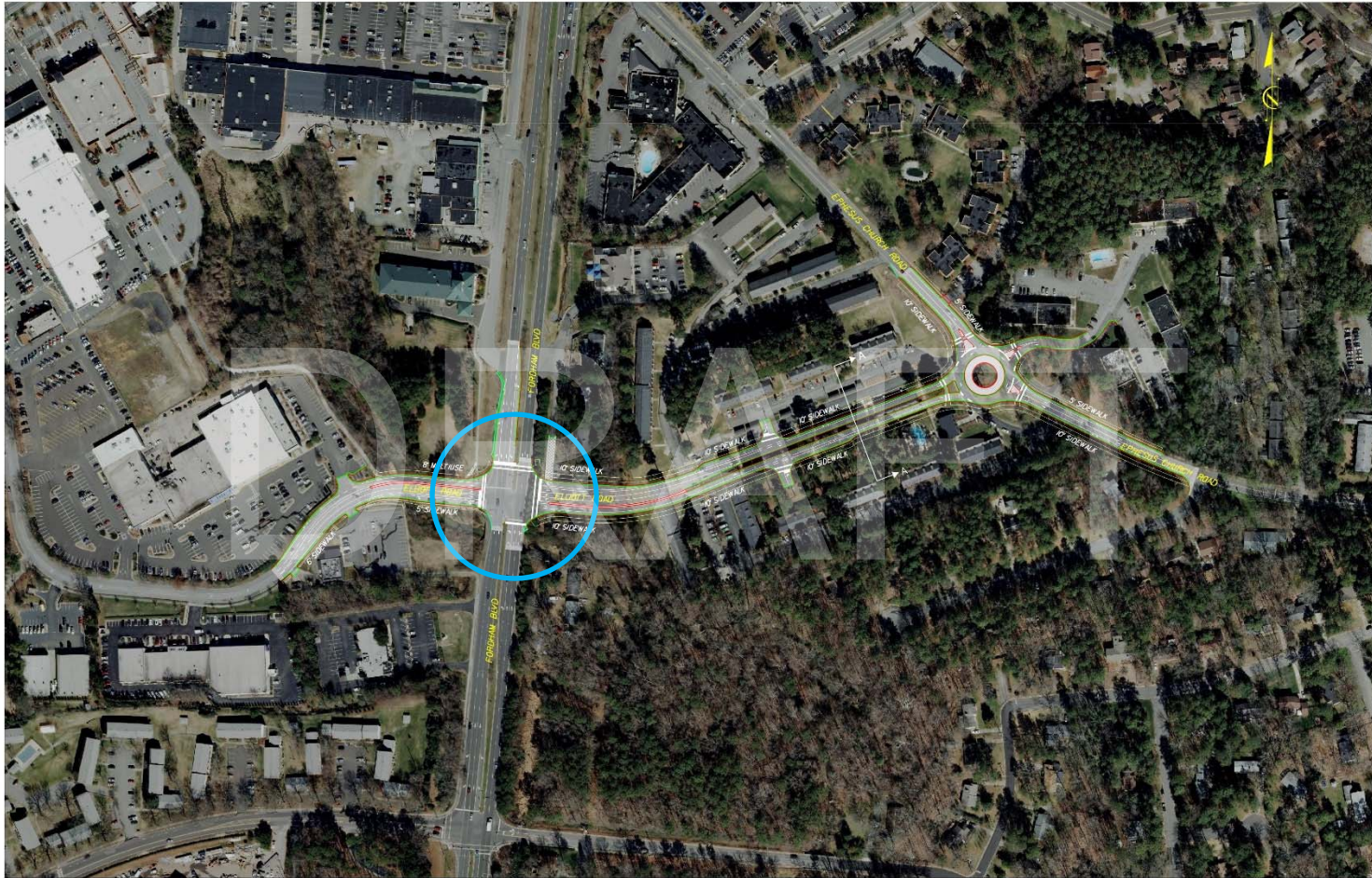


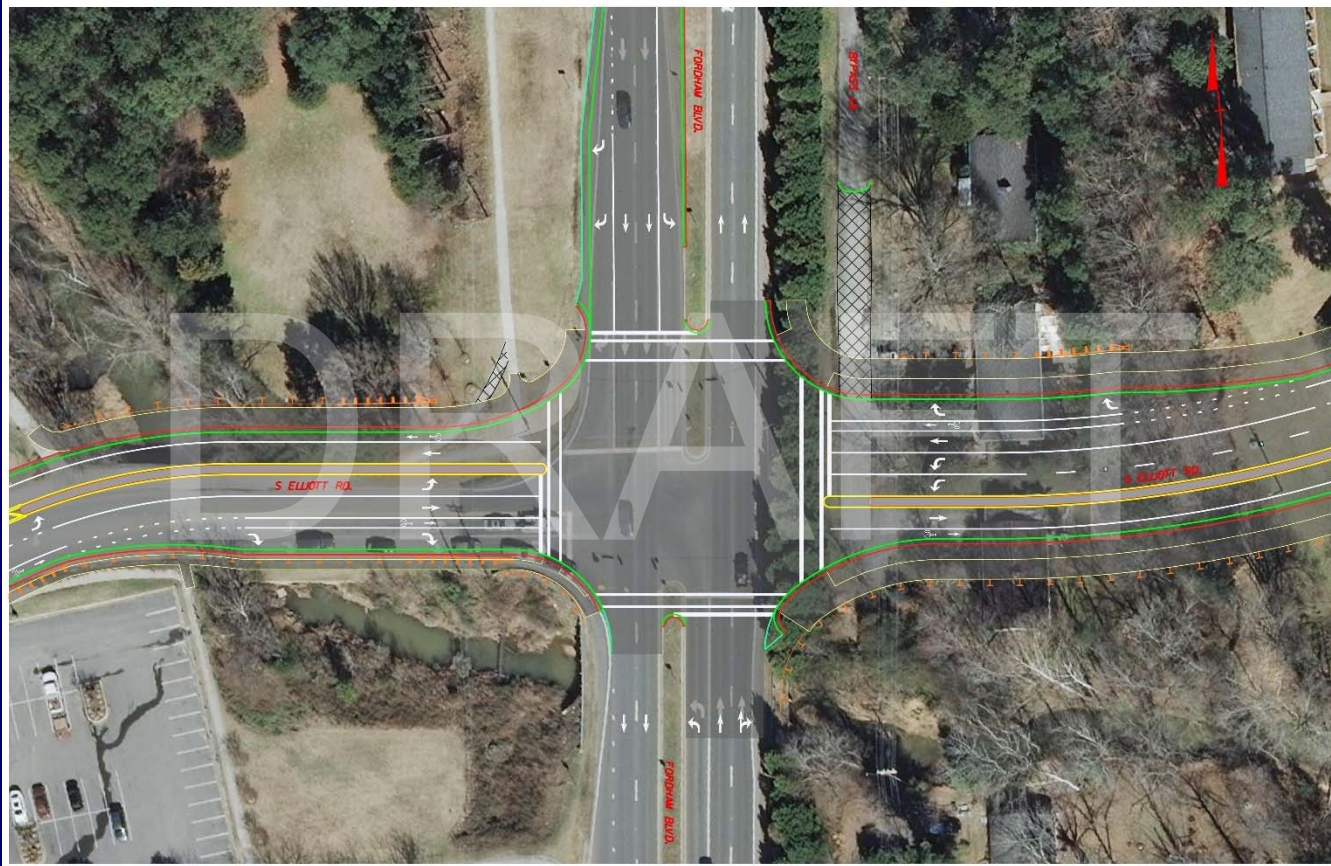
Elliott Road Extension

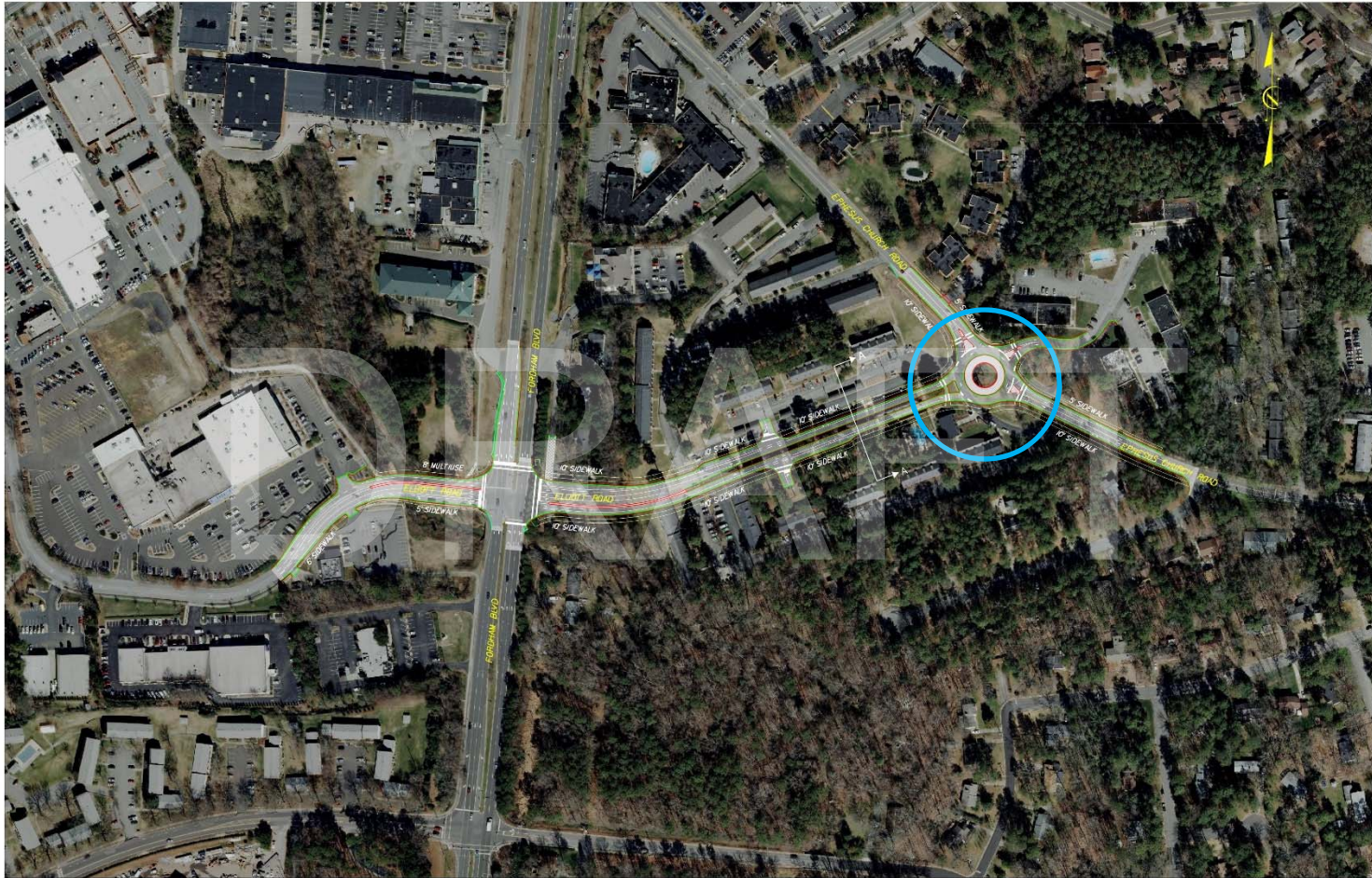
- Preliminary Plans (25%)
 - Contains basic roadway geometry (horizontal alignment and vertical design)
- Collaborative Review
 - Town and NCDOT staff provided comments
 - The current design incorporates these comments

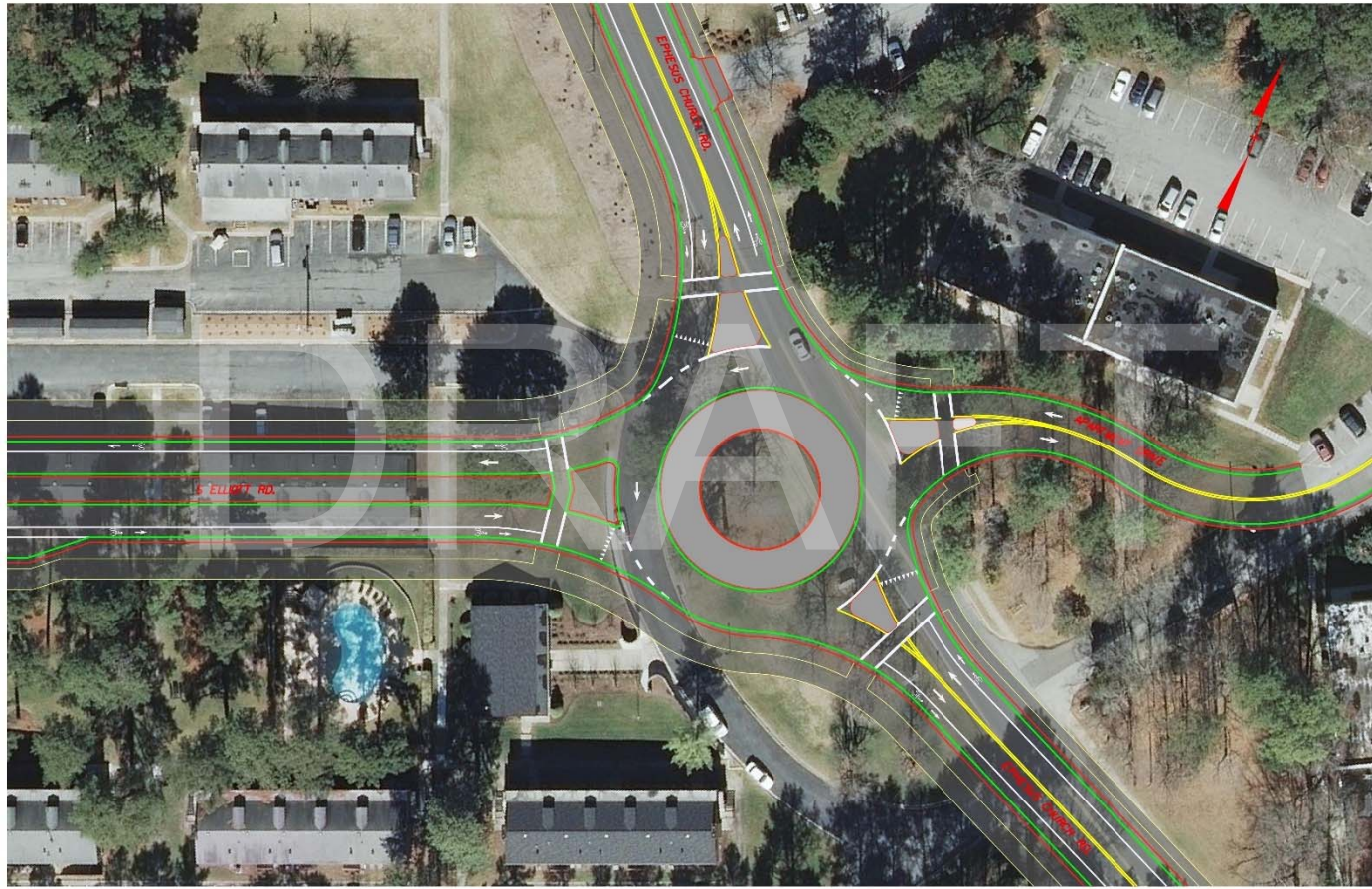
Roadway Section





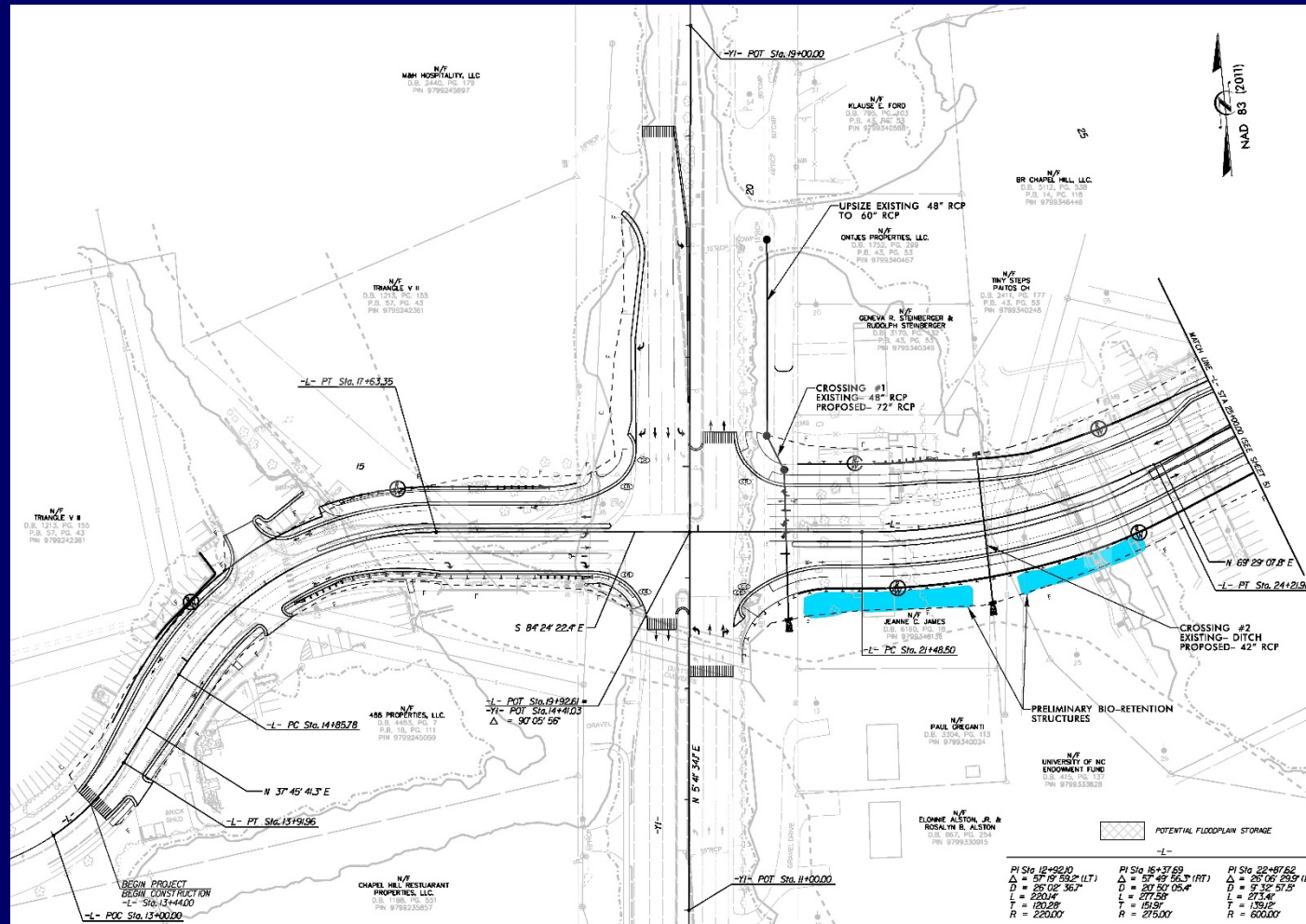






Elliott Road Extension

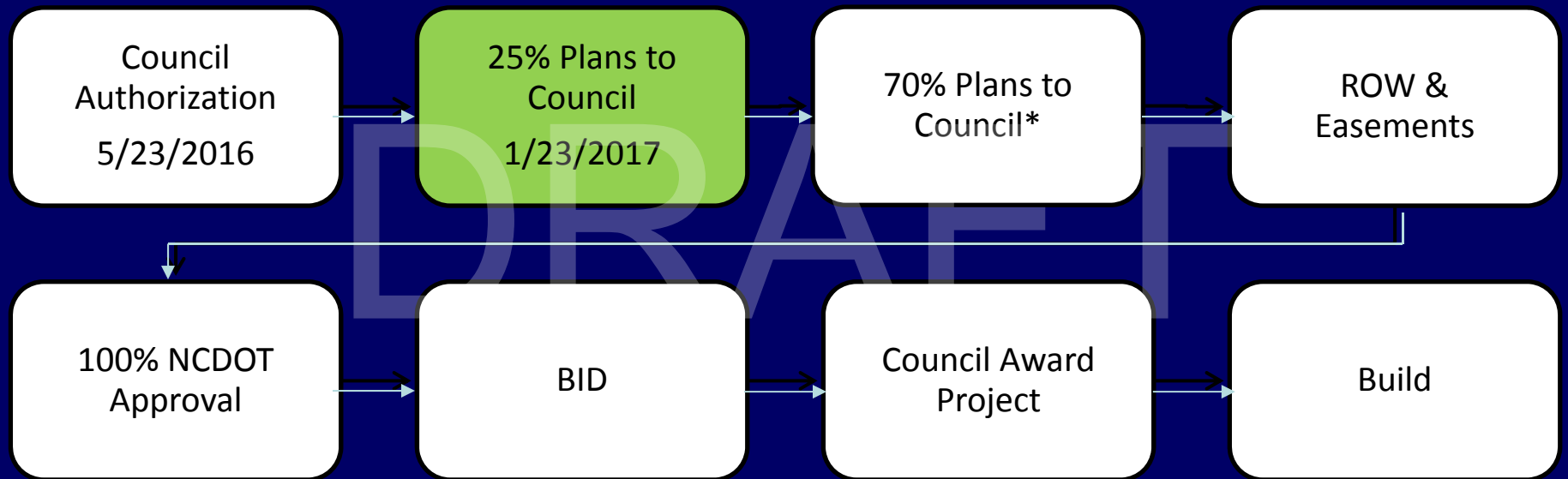
- Stormwater
 - Reviewed Lower Booker Creek Subwatershed Study
 - Preliminary Analysis of Major Crossings
 - Developed Conceptual BMP Locations



Elliott Road Extension

- Stormwater Next Steps
 - Detailed Design of Roadway Stormwater
 - Develop Stormwater Impact Analysis
 - Incorporate Results into Design

Elliott Road Extension Process



**70% plans will come to Council once redevelopment of the Park Apartments is initiated.

Fiscal Impacts/Resources

- Elliott Road Extension
 - Design Cost – Approximately \$350,000
 - Probable Construction Cost - \$4.23 million
 - EF Area TIA Consultant Cost - \$195,000

Recommendation

- That Council accept the report as presented, updating the Regulating Plan in accordance with the 25% Design Plans.

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Questions?



MEMORANDUM

To: Chris Roberts, PE- Town of Chapel Hill

From: Chad Beck, PE
Kimley-Horn and Associates, Inc.

Date: October 7, 2016

Subject: Elliott Road Extension- 25% Design Narrative

Attached you will find the 25% preliminary construction drawings for the Elliott Road Extension project. These plans include horizontal and vertical roadway design and initial right of way layout. Below are a few items to take note of while reviewing the plans.

ROADWAY DESIGN

In general, the 25% design follows the previously prepared functional design, with the exception of the following:

- The concrete monolithic island on Elliott Road west of Fordham Blvd was reduced in length so as not to block the two driveways. There is sufficient width in the proposed roadway to extend the island in the future, if so desired. This is consistent with discussions at the project kickoff meeting.
- Based on the impacts to the southbound Fordham Blvd. turn lanes, we have extended the turn lanes to provide adequate storage. This was not shown on the functional design.
- The right in/right out access points to the existing apartment complex are not shown at this time. Once a development plan for this property has been prepared, we will evaluate the appropriate locations of these driveways.
- The proposed bus stop along Elliott Road has not been shown at this time as it would be based on the locations of the driveways previously discussed.
- The roundabout has been included at the proposed intersection of Ephesus Church Road and Elliott Road in lieu of the traditional intersection. This is consistent with previous project discussions.

Additional roadway design items to note:

- The geometry and location of the roundabout had not been finalized when the survey limits were established for this project. At that time, it was assumed the Kings Arms apartment driveway would remain at its existing location and not relocated as shown on the 25% plans. Additional survey will need to be obtained in order to complete the design of the driveway at the proposed location. We have evaluated this location in the field and there not should be an issue with grades of the proposed driveway.

- The existing cross slopes of Ephesus Church Road vary greatly as compared to current design standards. The northbound lane varies from 6% to 10% along the length of the project. Current design standards limit this to 4% in curb and gutter typical sections. For this reason, the limits of the project were extended in order to transition to the existing cross slopes. We have confirmed that the field conditions match the provided survey in regard to the cross slope.

PEDESTRIAN AND BICYCLIST ACCESS

A major component of this project is providing improvements to pedestrian and bicyclist access along the corridor. We are proposing to construct bicycle lanes along Elliott Road and the impacted portions of Ephesus Church Road. In addition, we will be constructing sidewalks along the project corridor. Elliott Road Extension was designed per Type A Frontage as shown in the Ephesus/Fordham Form District Code. This will include 10' sidewalks and bike lanes on both sides of the road.

There was some discussion to eliminate the bike lanes and, instead, provide a multi-use path along the Elliott Road Extension. The use of the bike lanes and sidewalk, as shown in the 25% plans, is consistent with the intended urban feel of 'Street A' frontage. In addition, if buildings are constructed adjacent to the right of way, there will be doors opening onto the sidewalk with pedestrians entering and exiting. For these reasons, we recommend constructing separate bike and pedestrian facilities, as shown on the 25% plans.

Included in the roundabout design, we propose to construct shared use lanes within the roundabout for bicyclists. The approaching bike lanes would end approximately 80 feet in advance of the roundabout and the bicyclist would then merge in with vehicular traffic. The area between the bike lanes ending and roundabout would be marked with sharrows.

On previous roundabout projects, we have investigated constructing special bike ramps in advance of the roundabout and diverting bicycle traffic to "bike abouts" or multi-use paths, but several pedestrian groups, including the visually impaired, have been opposed to this option. By diverting bicycles to the sidewalks/multi-use paths, an additional unexpected obstruction or conflict point is introduced. The use of shared lanes in the roundabout has been the most accepted by user groups.

Due to the close proximity of the culvert under Fordham Blvd., we did not include a proposed crosswalk of the southern leg of the intersection of Elliott Road and Fordham Blvd. In order to include this proposed crosswalk, the curb and gutter would have to be extended further south along Fordham Blvd, creating additional impacts to the culvert (modifications to the headwall), guardrail and floodway of the creek.

PRELIMINARY HYDRAULIC ANALYSIS

As part to this task, we reviewed the "Draft Lower Booker Creek Subwatershed Study," dated September 12, 2016 for possible recommended stormwater improvements that could be incorporated into the Elliott Road Extension project. Two specific improvements were noted in the general area of the proposed roadway improvements:

- Elliott Storage Area- The report recommends constructing floodplain storage area/passive green space in the northwest corner of Elliott Road and Fordham Blvd. intersection, between Fordham Blvd. and Booker Creek (noted on figure). The report indicates this recommended improvement would encompass approximately 5.5 acres, impact several parcels and would cost approximately \$1,140,000. Due to the size and scope of the flood plain storage improvement, it is our recommendation that this be completed as a separate project from the Elliott Road Extension.
- Channel Improvements- The report recommends converting approximately 700 linear feet of open channel to a closed drainage system consisting of 54" RCP from Ephesus Church Road to Fordham Blvd. The existing ditch to be improved is approximately 600 feet north along Fordham Blvd. from the Elliott Road Extension project and is adjacent to the future Legion Extension project. For this reason, we recommend the ditch improvement be included in the Legion Road Extension project.
- It is noted that no water quality improvement projects were recommended in the vicinity of the Elliott Road Extension project.

As the subwatershed study is finalized, we will evaluate future drafts for any possible improvements that may be incorporated into the Elliott Road Extension project.

In addition to reviewing the subwatershed study, we identified major crossings along the corridor that would have impact to the roadway design. Based on our analysis, we have identified two such crossings and are noted on the attached figure.

- Crossing #1- The Elliott Road Extension would cross an existing 48" RCP that runs parallel to Fordham Blvd and discharges directly adjacent to the triple barrel box culvert under Fordham Blvd. The 48" RCP continues north, at some point transitions to a 60" CMP and daylights just north of Bypass lane. Based on our initial analysis, this pipe is undersized per NCDOT standards and it may not be feasible within the current right of way to appropriately size this culvert.

At a minimum, a portion of the 48" RCP under the Elliott Road Extension will need to be replaced and the discharge point relocated downstream along Booker Creek. Depending on project budget, it may be beneficial to replace the remaining portion of the 48" RCP with 60" RCP to be consistent with upstream portion of the system, as noted on the attached figure.

- Crossing #2- This crossing is an existing v-ditch that traverses along the western side of the apartment complex with a drainage area consisting of the northern half of the existing apartment complex. Based on our initial analysis, a 42" RCP would be required to adequately convey this drainage area. This is based on NCDOT design criteria of limiting the HW/D to 1.2 during the 50-year storm event and to prevent the headwater during the 100-yr event from infiltrating the roadway subgrade.

During the scoping phase of this project, we assumed these two crossings would be combined into one. After further evaluation, it was determined that impacts associated with this outweighed the

benefits and that the two crossings should remain separate, thus a reinforced concrete box culvert may not be necessary for this project.

Upon approval of the 25% roadway plans, Kimley-Horn will complete a more detailed hydraulic design for the roadway improvements, including a stormwater impact analysis to identify potential stormwater best management practices.



Project: Elliott Extension
 Prepared for: Town of Chapel Hill
 By: Kimley-Horn and Associates, Inc.
 Date: 11/11/2016

Preliminary Opinion of Probable Construction Cost

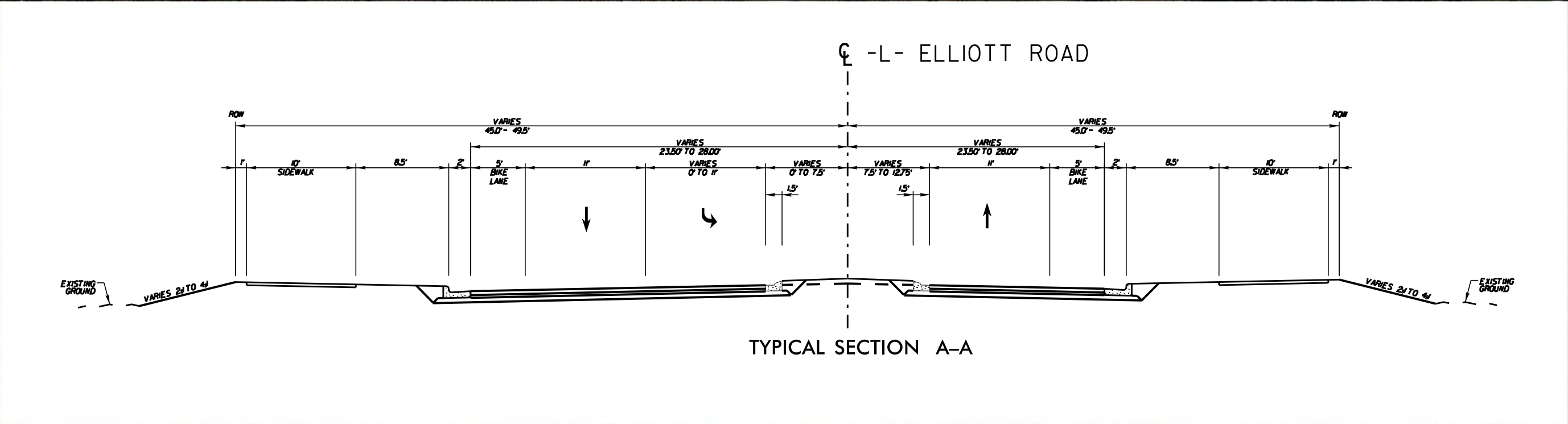
Line Item Number	Sec. No	Pay Item Description	Units	Quantity	Unit Price	Item Cost
1	800	MOBILIZATION (5%)	LS	1	\$ 202,000.00	\$ 202,000.00
2	801	CONSTRUCTION SURVEYING	LS	1	\$ 95,000.00	\$ 95,000.00
3	200	CLEARING AND GRUBBING	LS	1	\$ 140,000.00	\$ 140,000.00
4	225	UNCLASSIFIED EXCAVATION	CY	525	\$ 13.00	\$ 6,825.00
5	230	BORROW EXCAVATION	CY	27,680	\$ 20.00	\$ 553,600.00
6	250	REMOVAL OF EXISTING ASPHALT PAVEMENT	SY	3,080	\$ 10.00	\$ 30,800.00
7	543	AGGREGATE BASE COURSE	TON	3,868	\$ 16.00	\$ 61,888.00
8	610	ASPHALT CONC. BASE COURSE, TYPE B25.0B	TON	700	\$ 80.00	\$ 56,000.00
9	610	ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0B	TON	2,200	\$ 80.00	\$ 176,000.00
10	610	ASPHALT CONC. SURFACE COURSE, TYPE S9.5B	TON	2,700	\$ 80.00	\$ 216,000.00
11	620	ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22	TON	255	\$ 350.00	\$ 89,250.00
12		RETAINING WALL	SF	1,300	\$ 125.00	\$ 162,500.00
13	846	8"X18" CURB & GUTTER	LF	189	\$ 22.00	\$ 4,158.00
14	846	1'-6" CONCRETE CURB & GUTTER	LF	2,058	\$ 20.00	\$ 41,160.00
15	846	2'-6" CONCRETE CURB & GUTTER	LF	5,450	\$ 23.00	\$ 125,350.00
16	848	CONCRETE CURB RAMP	EA	21	\$ 1,500.00	\$ 31,500.00
17	848	6" CONCRETE DRIVEWAY	SY	32	\$ 75.00	\$ 2,400.00
18	852	5" MONOLITHIC CONCRETE ISLANDS (KEYED IN)	SY	413	\$ 60.00	\$ 24,780.00
19	862	STEEL BM GUARDRAIL	LF	800	\$ 15.00	\$ 12,000.00
20	862	GUARDRAIL ANCHOR UNITS, TYPE CAT-1	EA	4	\$ 425.00	\$ 1,700.00
21	SP	GUARDRAIL ANCHOR UNITS, TYPE 350	EA	4	\$ 1,800.00	\$ 7,200.00
22	SP	CONCRETE SIDEWALK	SY	4,390	\$ 40.00	\$ 175,600.00
23	SP	COLORED CONCRETE VEHICULAR APRON	SY	507	\$ 140.00	\$ 70,980.00
24	SP	DRAINAGE: -L- LINE	MI	0.34	\$ 440,000.00	\$ 149,600.00
25	SP	DRAINAGE: -Y2- LINE	MI	0.17	\$ 300,000.00	\$ 51,000.00
26	N/A	SIGNING	MI	0.51	\$ 16,000.00	\$ 8,160.00
27	N/A	TEMPORARY TRAFFIC CONTROL	MI	0.51	\$ 70,000.00	\$ 35,700.00
28	N/A	PAVEMENT MARKING	MI	0.51	\$ 40,000.00	\$ 20,400.00
29	N/A	EROSION CONTROL	ACR	5.38	\$ 20,000.00	\$ 107,600.00
30	N/A	TRAFFIC SIGNAL: METAL STRAIN & 1 TEMP	LS	1	\$ 200,000.00	\$ 200,000.00
31	N/A	CULVERT EXTENSION	LS	1	\$ 250,000.00	\$ 250,000.00
32	N/A	MISC (35%)	LS	1	\$ 1,125,000.00	\$ 1,125,000.00

TOTAL \$ 4,234,000.00

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

OPCC does not include utility relocation costs, demolition of existing apartment complex or right of way acquisition.

This document, together with the concepts and designs presented herein, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.



KHA PROJECT 01159020	DATE 11/15/2016	SCALE 1" = 100'	DESIGNED BY: CWB	DRAWN BY: TDW	CHECKED BY: CWB	KIMLEY-HORN © 2016 KIMLEY-HORN AND ASSOCIATES, INC. 300 WEST MORGAN STREET, SUITE 1500, DURHAM, NC, 27701 PHONE: 919-682-3583 WWW.KIMLEY-HORN.COM NC LICENSE #: F-0102	REVISIONS	No.	DATE	BY
PLAN VIEW										
ELLIOTT ROAD EXTENSION PREPARED FOR TOWN OF CHAPEL HILL, NC CHAPEL HILL NORTH CAROLINA										
SHEET NUMBER EXHIBIT B										

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