

**UNIVERSITY PLACE
REDEVELOPMENT**
TRAFFIC IMPACT STUDY - *DRAFT*

EXECUTIVE SUMMARY



Prepared for:

The Town of Chapel Hill
Public Works Department - Engineering

Prepared by:

VHB Engineering NC, P.C.

*940 Main Campus Drive, Venture 1
Suite 500
Raleigh, NC 27606*

NCBELS License #: C-3750

March 2021



**UNIVERSITY PLACE
REDEVELOPMENT**

TRAFFIC IMPACT STUDY - *DRAFT*

EXECUTIVE SUMMARY



Prepared for:

The Town of Chapel Hill
Public Works Department - Engineering

Prepared by:

VHB Engineering NC, P.C.

*940 Main Campus Drive, Venture 1
Suite 500
Raleigh, NC 27606*

NCBELS License #: C-3750

March 2021



Executive Summary

Ram Realty Advisors plans to redevelop the current University Place site, west of Fordham Boulevard (US 15-501) in Chapel Hill, NC. The site is bordered by S Estes Drive (SR 1750) to the south, Willow Drive to the west and north, and Fordham Boulevard (US 15-501) to the east (Figure ES-1). The current site consists of a 55,929 square foot multiplex movie theater, a service station with 8 fueling positions, a 53,371 square foot grocery store, a 4,578 square foot drive-in bank, and 302,237 square feet of retail. The proposed redevelopment will consist of a 55,929 square foot multiplex movie theater, a service station with 8 fueling positions, a 53,371 square foot grocery store, 300 multifamily housing dwelling units, 325,000 square feet of retail, a 7,950 square foot drive-in bank, 7,000 square feet of fast-food restaurant, 150,000 square feet of office, and a 150-room hotel.

The redevelopment is expected to be constructed in three (3) phases. Phase 1 includes the majority of land use totals with an anticipated build year of 2023, Phase 2 will add 50,000 square feet (sf) of office space by 2025, and Phase 3 will add an additional 45 multi-family dwelling units, 100,000-sf of office space, and 100,000-sf of retail space by 2027. Note that this total represents a mixture of land uses that are occupied today and will remain as is (supermarket, gas station), new uses (residential, fast food, office, hotel) and uses that will be expanded or modified (retail, bank). This document summarizes the traffic impacts associated with this redevelopment and improvements needed to mitigate those impacts.

Project Background

Based on the conceptual site plan (Figure ES-2), access to the development is proposed via ten (10) connections along Fordham Blvd (US 15-501), Willow Drive, and S Estes Drive (SR 1750). All of the existing site access points will be maintained and one (1) new one will be constructed as part of the redevelopment (Future Site Access) along Willow Drive. As a result, traffic may access the site from multiple directions as follows:

- › Fordham Boulevard (US 15-501) at Site Access #1 (unsignalized, RIRO)
- › S Estes Drive (SR 1750) at Site Access #2 (unsignalized, full access)
- › S Estes Drive (SR 1750) at Site Access #3 (unsignalized, full access)
- › S Estes Drive (SR 1750) at Site Access #4/ Brookwood Condos (unsignalized, full access)

- › S Estes Drive (SR 1750) at Site Access #5 (unsignalized, full access)
- › Willow Drive at Site Access #6 (unsignalized, full access)
- › Willow Drive at Site Access #7 (unsignalized, full access)
- › Willow Drive at Site Access #8 (unsignalized, full access)
- › Willow Drive at Site Access #9 (unsignalized, full access)
- › Willow Drive at Future Site Access/Conner Drive (unsignalized, full access)

Based on discussions with Town of Chapel Hill staff, the following intersections were included in the study area and analyzed for existing and future conditions, where appropriate:

- › Fordham Boulevard (US 15-501) at Ephesus Church Road (SR 1742) (signalized)
- › Fordham Boulevard (US 15-501) at S Elliott Road (signalized)
- › Fordham Boulevard (US 15-501) at Willow Drive (signalized)
- › Fordham Boulevard (US 15-501) at S Estes Drive (SR 1750) (signalized)
- › Willow Drive at Future Site Access/Conner Drive (unsignalized)
- › S Estes Drive (SR 1750) at Willow Drive/Shepherd Lane (signalized)
- › E Franklin Street (SR 1010) at Estes Drive (SR 1750) (signalized)
- › Fordham Boulevard (US 15-501) at Site Access #1 (unsignalized, RIRO)
- › S Estes Drive (SR 1750) at Site Access #2 (unsignalized, full access)
- › S Estes Drive (SR 1750) at Site Access #3 (unsignalized, full access)
- › S Estes Drive (SR 1750) at Site Access #4/ Brookwood Condos (unsignalized, full access)
- › S Estes Drive (SR 1750) at Site Access #5 (unsignalized, full access)
- › Willow Drive at Site Access #6 (unsignalized, full access)
- › Willow Drive at Site Access #7 (unsignalized, full access)
- › Willow Drive at Site Access #8 (unsignalized, full access)
- › Willow Drive at Site Access #9 (unsignalized, full access)

The Town of Chapel Hill requires that future year analysis of the traffic conditions be conducted for the projected build year(s) plus one (+1). Therefore, the AM and PM peak hour analyses were performed under the following ten (10) scenarios:

- › Existing (2019)
- › No-Build (2024)
- › Build (2024) Phase 1
- › Build (2024) Phase 1 with Improvements
- › No-Build (2026)
- › Build (2026) Phase 2
- › Build (2026) Phase 2 with Improvements
- › No-Build (2028)
- › Build (2028) Phase 3
- › Build (2028) Phase 3 with Improvements

The Existing (2019) scenario includes AM and PM peak hour analysis based on turning movement count data collected in 2019. The No-Build (2024), No-Build (2026), and No-Build

(2028) scenarios include existing traffic with annual growth rates applied to the study area roadways between the base year (2019) and build years (2024; 2026; 2028) and additional trips generated by background approved developments in the study area. The Build (2024), Build (2026), and Build (2028) scenarios include the No-Build (2024), No-Build (2026), and No-Build (2028) volumes with the addition of site trips generated by Phase 1, Phase 2, and Phase 3 of the proposed development, respectively. The Build (2024) with Improvements, Build (2026) with Improvements, and Build (2028) with Improvements scenarios include future conditions with the recommended improvements for each individual phase in place.

Intersection analyses were conducted using *Synchro/SimTraffic Version 10* and *TransModeler (TSM) Version 5.0 Build 7255*. The overall level of service (LOS) and delay for each intersection and the approach LOS and delay are shown in the Summary Level of Service table on page xviii.

Existing (2019) Conditions

Existing analyses were conducted based on current roadway geometrics and intersection turning movement counts. The existing turning movement counts were obtained from multiple sources. Turning movement counts from several intersections that overlapped with the University of North Carolina (UNC) Traffic Impact Analysis (TIA) 2019 Update, submitted in December 2019, were used in the analysis. The turning movement counts from those intersections were taken in September and October 2019. Intersections that were not included in the UNC TIA were counted in November 2019. Slight balancing adjustments were made to account for variations related to different count days. The balancing adjustments were typically made by adding to upstream or downstream through movements.

Study Area

The site is located in the northwest corner of the Fordham Boulevard (US 15-501) and S Estes Drive (SR 1750) intersection in Chapel Hill, North Carolina. The site has nine existing access points along Fordham Boulevard (US 15-501), Willow Drive, and S Estes Drive (SR 1750). Fordham Boulevard (US 15-501) is a north-south principal arterial and S Estes Drive (SR 1750) is an east-west minor arterial.

Bicycle lanes are not currently present within the study area. Sidewalks, however, are present on one or both sides of Fordham Boulevard (US 15-501), S Estes Drive (SR 1750), and Willow Drive adjacent to the proposed development location. Six (6) bus stops are also present, with three on the south side of the property, two on the west side, and one on the north side.

Crash Analysis

Five-year crash data (12/01/2014 - 11/30/2019) was obtained from the North Carolina Department of Transportation (NCDOT) Traffic Engineering Accident Analysis System (TEAAS) along Willow Drive, Fordham Boulevard (US 15-501), and S Estes Drive (SR 1750).

Level of Service Summary

As reported in the Summary Level of Service (LOS) table on page xviii, all signalized intersections operate at an overall acceptable level of service (i.e., LOS D or better) during both

peak hours, with one exception. The intersection of E Franklin Street (SR 1010) at Estes Drive (SR 1750) operates at LOS E during the PM peak hour. All stop-controlled approaches operate at acceptable levels of service during both peak hours.

No-Build (2024) Conditions

Background Growth

As directed by Town staff, future growth rates were derived from the Ephesus Church Road – Fordham Boulevard Area 2030 Future Year Analysis technical memorandum, submitted in August 2017. An annual growth rate of one percent (1%) was applied along Fordham Blvd (US 15-501) and a rate of one quarter of a percent (0.25%) was applied along all other study area roadways to account for growth between the base year (2019) and the Phase 1 build year (2024). Three (3) background developments were identified in the Ephesus Church Road – Fordham Boulevard Area 2030 Future Year Analysis for inclusion in this study. Three (3) additional background developments were identified within the project study area and are identified as to be constructed before the Phase 1 build year (2024). The Wegmans Supermarket is proposed along US 15-501 (Durham-Chapel Hill Boulevard) north of Old Durham Road. The existing UNC Health Care Medical Office Buildings complex is proposed to be redeveloped and expanded along US 15-501 (Durham-Chapel Hill Boulevard) and Eastowne Drive. The existing Glen Lennox neighborhood is also proposed to be redeveloped along NC 54 (Raleigh Road) and Fordham Boulevard (US 15-501). The site trips that are projected to be generated by the above additional developments were used in the No-Build (2024) analysis.

One (1) background roadway improvement project was identified within the study area. The Elliott Road Extension project plans to construct a fourth leg at the current intersection of Fordham Boulevard (US 15-501) and S Elliott Road. The committed background improvements from this project were included in the future year (2024; 2026; 2028) analyses.

Level of Service Summary

As reported in the Summary Level of Service (LOS) table on page xviii, all signalized intersections, except for one, continue to operate at an acceptable level of service during both peak hours. The Synchro results indicate that the signalized intersection of E Franklin Street (SR 1010) and Estes Drive (SR 1750) maintains an overall LOS E during the PM peak hour. All stop-controlled approaches continue to operate at acceptable levels of service during both peak hours.

Trip Generation and Assignment

Trip generation for the updated site plan will be conducted based on the most appropriate corresponding trip generation codes included in the *ITE Trip Generation Manual, 10th Edition* and the suggested method of calculation in the NCDOT's "Rate vs. Equation" spreadsheet. A summary of the current and proposed uses is included in Table ES-1 and the trip generation results are shown in Table ES-2, Table ES-3, and Table ES-4. Due to the robust transit service

in the study area, a transit reduction factor of 5% will be applied to the future volumes. To be conservative, no walking or bicycling reductions will be applied. For the purpose of this study, the existing site trips were removed from the study area driveways and network.

As shown in Table ES-2, Phase 1 of the University Place redevelopment is projected to generate up to 18,748 external daily site trips with 830 trips (453 entering, 377 exiting) occurring in the AM peak hour and 2,521 trips (1,338 entering, 1,183 exiting) occurring in the PM peak hour. The proposed site trips generated include the existing land uses that are to remain in the future year scenarios in addition to the square footage associated with the redevelopment.

As shown in Table ES-3, Phase 1 and Phase 2 of the University Place redevelopment (with existing land uses to remain) is projected to generate up to 18,812 external daily site trips with 871 trips (506 entering, 365 exiting) occurring in the AM peak hour and 2,589 trips (1,337 entering, 1,252 exiting) occurring in the PM peak hour. The proposed site trips generated include the existing land uses that are to remain in the future year scenarios in addition to the square footage associated with the redevelopment.

As shown in Table ES-4, the full build-out of the University Place redevelopment (with existing land uses to remain) is projected to generate up to 22,548 external daily site trips with 1,025 trips (646 entering, 379 exiting) occurring in the AM peak hour and 2,959 trips (1,484 entering, 1,475 exiting) occurring in the PM peak hour. The proposed site trips generated trips include the existing land uses that are to remain in the future year scenarios in addition to the square footage associated with the redevelopment.

Table ES-5 was requested as a guide to give the applicant flexibility to swap uses in the future. Using ratios in the upper table allows the applicant to compare rates between uses and the lower three tables provide some example calculations. For example, the developer may remove 1,000 square feet of retail and offset that with approximately three additional multifamily dwelling units or 780 square feet of office and still remain under the AM or PM external peak hour trips calculated in Table ES-4. The lower two tables calculate equivalent rates for 1,000 square feet of general office or ten dwelling units. Note that removal of too much of one use can result in a loss of internal capture reduction, which is not reflected in this table. As a result, this can be used as a guide, however a full trip generation of the entire site should be conducted to ensure that the total trips remain under the total trips contained in Tables ES-4 or earlier phases.

Table ES-1 Build (2024) Phase 1 Trip Generation Rates (Vehicle Trips)

Category	Use	Existing	Phase 1	Phase 2	Phase 3
Residential	Multifamily Housing	0 units	255 units	255 units	300 units
Lodging	Hotel	0 rooms	0 rooms	0 rooms	150 rooms
Office	Office	0 sf	0 sf	50,000 sf	150,000 sf
Commercial	Movie Theater	55,929 sf	55,929 sf	55,929 sf	55,929 sf
	General Retail	302,237 sf	225,000 sf	225,000 sf	325,000 sf
	Supermarket	53,371 sf	53,371 sf	53,371 sf	53,371 sf
	Bank	4,578 sf	7,950 sf	7,950 sf	7,950 sf
	Restaurant	0 sf	7,000 sf	7,000 sf	7,000 sf
	Gas Station	8 fueling positions	8 fueling positions	8 fueling positions	8 fueling positions

Table ES-2 Build (2024) Phase 1 Trip Generation Rates (Vehicle Trips)

Land Use Code ¹	Land Use	Unit	ADT	AM Peak Hour			PM Peak Hour		
				Enter	Exit	Total	Enter	Exit	Total
Total Site Trips²									
221	Multifamily Housing (Mid-Rise)	255 du	1,388	22	64	86	66	43	109
445	Multiplex Movie Theater	55,929 sf		0	0	0	577	418	995
820	General Retail	225,000 sf	10,435	164	100	264	475	515	990
850	Supermarket	53,371 sf	5,699	122	82	204	251	242	493
912	Drive-In Bank	7,950 sf	795	44	32	76	82	81	163
934	Fast-Food Restaurant with Drive-Through Window	7,000 sf	3,297	143	138	281	119	110	229
945	Gasoline/Service Station with Convenience Market	8 fueling positions	1,643	51	49	100	57	55	112
<i>Development Total</i>			23,257	546	465	1,011	1,627	1,464	3,091
Trip Reduction Due to Internal Capture³									
221	Multifamily Housing (Mid-Rise)	255 du	505	1	14	15	44	12	56
445	Multiplex Movie Theater	55,929 sf		0	0	0	44	41	85
820	General Retail	225,000 sf	1,069	9	13	22	48	58	107
850	Supermarket	53,371 sf	574	6	11	17	26	27	53
912	Drive-In Bank	7,950 sf	80	2	4	7	8	9	18
934	Fast-Food Restaurant with Drive-Through Window	7,000 sf	1,131	48	20	68	42	65	107
945	Gasoline/Service Station with Convenience Market	8 fueling positions	164	3	7	9	6	6	12
<i>Development Total</i>			3,525	69	69	138	218	219	437
Total External Site Trips									
221	Multifamily Housing (Mid-Rise)	255 du	883	21	50	71	22	31	53
445	Multiplex Movie Theater	55,929 sf		0	0	0	533	377	910
820	General Retail	225,000 sf	9,366	155	87	242	427	457	884
850	Supermarket	53,371 sf	5,125	116	71	187	225	215	440
912	Drive-In Bank	7,950 sf	715	42	28	70	74	72	146
934	Fast-Food Restaurant with Drive-Through Window	7,000 sf	2,166	95	118	213	77	45	122
945	Gasoline/Service Station with Convenience Market	8 fueling positions	1,479	48	42	90	51	49	100
<i>Development Total</i>			19,734	477	396	873	1,409	1,246	2,655
Total External Site Trips - With Transit Reduction (5%)									
221	Multifamily Housing (Mid-Rise)	255 du	839	20	48	68	21	29	50
445	Multiplex Movie Theater	55,929 sf		0	0	0	506	358	864
820	General Retail	225,000 sf	8,898	147	83	230	406	434	840
850	Supermarket	53,371 sf	4,869	110	67	177	214	204	418
912	Drive-In Bank	7,950 sf	679	40	27	67	70	68	138
934	Fast-Food Restaurant with Drive-Through Window	7,000 sf	2,058	90	112	202	73	43	116
945	Gasoline/Service Station with Convenience Market	8 fueling positions	1,405	46	40	86	48	47	95
<i>Development Total</i>			18,748	453	377	830	1,338	1,183	2,521
Pass-by Site Trips⁴									
221	Multifamily Housing (Mid-Rise)	255 du		0	0	0	0	0	0
445	Multiplex Movie Theater	55,929 sf		0	0	0	0	0	0
820	General Retail	225,000 sf		0	0	0	143	143	286
850	Supermarket	53,371 sf		0	0	0	75	75	150
912	Drive-In Bank	7,950 sf		10	9	19	24	24	48
934	Fast-Food Restaurant with Drive-Through Window	7,000 sf		49	50	99	29	29	58
945	Gasoline/Service Station with Convenience Market	8 fueling positions		27	26	53	27	26	53
<i>Development Total</i>				86	86	172	298	297	595
Non-Pass-by Site Trips									
221	Multifamily Housing (Mid-Rise)	255 du		20	48	68	21	29	50
445	Multiplex Movie Theater	55,929 sf		0	0	0	506	358	864
820	General Retail	225,000 sf		147	83	230	263	291	554
850	Supermarket	53,371 sf		110	67	177	139	129	268
912	Drive-In Bank	7,950 sf		30	18	48	46	44	90
934	Fast-Food Restaurant with Drive-Through Window	7,000 sf		41	62	103	44	14	58
945	Gasoline/Service Station with Convenience Market	8 fueling positions		19	14	33	21	21	42
<i>Development Total</i>				367	291	658	1,040	886	1,926

Notes:

1. Land Use Code and trip generation rates are determined based on *ITE Trip Generation, 10th Edition*
2. Total site trips are determined based on the suggested method in the NCDOT Rate Vs Equation Spreadsheet
3. Internal capture was based on NCHRP 684 method and NCDOT IC calculation spreadsheet
4. Unconstrained pass-by trips are calculated based on *ITE Trip Generation Handbook, 3rd Edition*. The final projections are not expected to exceed 10% of adjacent street volumes.

Table ES-3 Build (2026) Phase 2 Trip Generation Rates (Vehicle Trips)

Land Use Code ¹	Land Use	Unit	ADT	AM Peak Hour			PM Peak Hour			
				Enter	Exit	Total	Enter	Exit	Total	
Total Site Trips²										
221	Multifamily Housing (Mid-Rise)	255 du	1,388	22	64	86	66	43	109	
445	Multiplex Movie Theater	55,929 sf		0	0	0	577	418	995	
710	General Office	50,000 sf	542	79	11	90	22	98	120	
820	General Retail	225,000 sf	10,435	164	100	264	475	515	990	
850	Supermarket	53,371 sf	5,699	122	82	204	251	242	493	
912	Drive-In Bank	7,950 sf	795	44	32	76	82	81	163	
934	Fast-Food Restaurant with Drive-Through Window	7,000 sf	3,297	143	138	281	119	110	229	
945	Gasoline/Service Station with Convenience Market	8 fueling positions	1,643	51	49	100	57	55	112	
			<i>Development Total</i>	23,799	625	476	1,101	1,649	1,562	3,211
Trip Reduction Due to Internal Capture³										
221	Multifamily Housing (Mid-Rise)	255 du	534	1	15	16	45	14	59	
445	Multiplex Movie Theater	55,929 sf		0	0	0	44	42	86	
710	General Office	50,000 sf	124	14	10	24	13	11	24	
820	General Retail	225,000 sf	1,164	10	14	24	53	62	116	
850	Supermarket	53,371 sf	627	7	12	19	28	29	57	
912	Drive-In Bank	7,950 sf	87	3	5	7	9	10	19	
934	Fast-Food Restaurant with Drive-Through Window	7,000 sf	1,280	55	31	86	43	69	112	
945	Gasoline/Service Station with Convenience Market	8 fueling positions	180	3	7	10	6	7	13	
			<i>Development Total</i>	3,996	93	94	187	242	244	486
Total External Site Trips										
221	Multifamily Housing (Mid-Rise)	255 du	854	21	49	70	21	29	50	
445	Multiplex Movie Theater	55,929 sf		0	0	0	533	376	909	
710	General Office	50,000 sf	418	65	1	66	9	87	96	
820	General Retail	225,000 sf	9,271	154	86	240	422	453	875	
850	Supermarket	53,371 sf	5,072	115	70	185	223	213	436	
912	Drive-In Bank	7,950 sf	708	41	27	68	73	71	144	
934	Fast-Food Restaurant with Drive-Through Window	7,000 sf	2,017	88	107	195	76	41	117	
945	Gasoline/Service Station with Convenience Market	8 fueling positions	1,463	48	42	90	51	48	99	
			<i>Development Total</i>	19,803	532	382	914	1,408	1,318	2,726
Total External Site Trips - With Transit Reduction (5%)										
221	Multifamily Housing (Mid-Rise)	255 du	811	20	47	67	20	28	48	
445	Multiplex Movie Theater	55,929 sf		0	0	0	506	357	863	
710	General Office	50,000 sf	397	62	1	63	9	83	92	
820	General Retail	225,000 sf	8,807	146	82	228	401	430	831	
850	Supermarket	53,371 sf	4,818	109	67	176	212	202	414	
912	Drive-In Bank	7,950 sf	673	39	26	65	69	67	136	
934	Fast-Food Restaurant with Drive-Through Window	7,000 sf	1,916	84	102	186	72	39	111	
945	Gasoline/Service Station with Convenience Market	8 fueling positions	1,390	46	40	86	48	46	94	
			<i>Development Total</i>	18,812	506	365	871	1,337	1,252	2,589
Pass-by Site Trips⁴										
221	Multifamily Housing (Mid-Rise)	255 du		0	0	0	0	0	0	
445	Multiplex Movie Theater	55,929 sf		0	0	0	0	0	0	
710	General Office	50,000 sf		0	0	0	0	0	0	
820	General Retail	225,000 sf		0	0	0	141	142	283	
850	Supermarket	53,371 sf		0	0	0	75	74	149	
912	Drive-In Bank	7,950 sf		9	10	19	24	24	48	
934	Fast-Food Restaurant with Drive-Through Window	7,000 sf		46	45	91	28	28	56	
945	Gasoline/Service Station with Convenience Market	8 fueling positions		27	26	53	26	27	53	
			<i>Development Total</i>	82	81	163	294	293	587	
Non-Pass-by Site Trips										
221	Multifamily Housing (Mid-Rise)	255 du		20	47	67	20	28	48	
445	Multiplex Movie Theater	55,929 sf		0	0	0	506	357	863	
710	General Office	50,000 sf		62	1	63	9	83	92	
820	General Retail	225,000 sf		146	82	228	260	288	548	
850	Supermarket	53,371 sf		109	67	176	137	128	265	
912	Drive-In Bank	7,950 sf		30	16	46	45	43	88	
934	Fast-Food Restaurant with Drive-Through Window	7,000 sf		38	57	95	44	12	56	
945	Gasoline/Service Station with Convenience Market	8 fueling positions		19	14	33	22	19	41	
			<i>Development Total</i>	424	284	708	1,043	959	2,002	

Notes:

1. Land Use Code and trip generation rates are determined based on *ITE Trip Generation, 10th Edition*
2. Total site trips are determined based on the suggested method in the NCDOT Rate Vs Equation Spreadsheet
3. Internal capture was based on NCHRP 684 method and NCDOT IC calculation spreadsheet
4. Unconstrained pass-by trips are calculated based on *ITE Trip Generation Handbook, 3rd Edition*. The final projections are not expected to exceed 10% of adjacent street volumes.

Table ES-4 Build (2028) Phase 3 Trip Generation Rates (Vehicle Trips)

Land Use Code ¹	Land Use	Unit	ADT	AM Peak Hour			PM Peak Hour			
				Enter	Exit	Total	Enter	Exit	Total	
Total Site Trips²										
221	Multifamily Housing (Mid-Rise)	300 du	1,633	26	74	100	77	50	127	
310	Hotel	150 rooms	1,267	41	29	70	44	42	86	
445	Multiplex Movie Theater	55,929 sf		0	0	0	577	418	995	
710	General Office	150,000 sf	1,572	209	28	237	41	189	230	
820	General Retail	325,000 sf	13,400	195	119	314	624	676	1,300	
850	Supermarket	53,371 sf	5,699	122	82	204	251	242	493	
912	Drive-In Bank	7,950 sf	795	44	32	76	82	81	163	
934	Fast-Food Restaurant with Drive-Through Window	7,000 sf	3,297	143	138	281	119	110	229	
945	Gasoline/Service Station with Convenience Market	8 fueling positions	1,643	51	49	100	57	55	112	
			<i>Development Total</i>	<i>29,306</i>	<i>831</i>	<i>551</i>	<i>1,382</i>	<i>1,872</i>	<i>1,863</i>	<i>3,735</i>
Trip Reduction Due to Internal Capture³										
221	Multifamily Housing (Mid-Rise)	300 du	640	1	18	19	53	17	70	
310	Hotel	150 rooms	365	2	13	15	17	13	30	
445	Multiplex Movie Theater	55,929 sf		0	0	0	51	50	101	
710	General Office	150,000 sf	377	45	26	71	21	20	41	
820	General Retail	325,000 sf	1,598	15	19	35	73	85	158	
850	Supermarket	53,371 sf	676	9	13	23	29	30	60	
912	Drive-In Bank	7,950 sf	94	3	5	9	10	10	20	
934	Fast-Food Restaurant with Drive-Through Window	7,000 sf	1,623	72	51	123	50	78	128	
945	Gasoline/Service Station with Convenience Market	8 fueling positions	198	4	8	12	7	7	14	
			<i>Development Total</i>	<i>5,571</i>	<i>152</i>	<i>154</i>	<i>306</i>	<i>311</i>	<i>310</i>	<i>621</i>
Total External Site Trips										
221	Multifamily Housing (Mid-Rise)	300 du	993	25	56	81	24	33	57	
310	Hotel	150 rooms	902	39	16	55	27	29	56	
445	Multiplex Movie Theater	55,929 sf		0	0	0	526	368	894	
710	General Office	150,000 sf	1,195	164	2	166	20	169	189	
820	General Retail	325,000 sf	11,802	180	100	280	551	591	1,142	
850	Supermarket	53,371 sf	5,023	113	69	182	222	212	434	
912	Drive-In Bank	7,950 sf	701	41	27	68	72	71	143	
934	Fast-Food Restaurant with Drive-Through Window	7,000 sf	1,674	71	87	158	69	32	101	
945	Gasoline/Service Station with Convenience Market	8 fueling positions	1,445	47	41	88	50	48	98	
			<i>Development Total</i>	<i>23,735</i>	<i>680</i>	<i>398</i>	<i>1,078</i>	<i>1,561</i>	<i>1,553</i>	<i>3,114</i>
Total External Site Trips - With Transit Reduction (5%)										
221	Multifamily Housing (Mid-Rise)	300 du	943	24	53	77	23	31	54	
310	Hotel	150 rooms	857	37	15	52	26	28	54	
445	Multiplex Movie Theater	55,929 sf		0	0	0	500	350	850	
710	General Office	150,000 sf	1,135	156	2	158	19	161	180	
820	General Retail	325,000 sf	11,212	171	95	266	523	561	1,084	
850	Supermarket	53,371 sf	4,772	107	66	173	211	201	412	
912	Drive-In Bank	7,950 sf	666	39	26	65	68	67	135	
934	Fast-Food Restaurant with Drive-Through Window	7,000 sf	1,590	67	83	150	66	30	96	
945	Gasoline/Service Station with Convenience Market	8 fueling positions	1,373	45	39	84	48	46	94	
			<i>Development Total</i>	<i>22,548</i>	<i>646</i>	<i>379</i>	<i>1,025</i>	<i>1,484</i>	<i>1,475</i>	<i>2,959</i>
Pass-by Site Trips⁴										
221	Multifamily Housing (Mid-Rise)	300 du		0	0	0	0	0	0	
310	Hotel	150 rooms		0	0	0	0	0	0	
445	Multiplex Movie Theater	55,929 sf		0	0	0	0	0	0	
710	General Office	150,000 sf		0	0	0	0	0	0	
820	General Retail	325,000 sf		0	0	0	184	184	368	
850	Supermarket	53,371 sf		0	0	0	74	74	148	
912	Drive-In Bank	7,950 sf		9	10	19	24	24	48	
934	Fast-Food Restaurant with Drive-Through Window	7,000 sf		37	37	74	24	24	48	
945	Gasoline/Service Station with Convenience Market	8 fueling positions		26	26	52	26	26	52	
			<i>Development Total</i>	<i>72</i>	<i>72</i>	<i>144</i>	<i>332</i>	<i>332</i>	<i>664</i>	
Non-Pass-by Site Trips										
221	Multifamily Housing (Mid-Rise)	300 du		24	53	77	23	31	54	
310	Hotel	150 rooms		37	15	52	26	28	54	
445	Multiplex Movie Theater	55,929 sf		0	0	0	500	350	850	
710	General Office	150,000 sf		156	2	158	19	161	180	
820	General Retail	325,000 sf		171	95	266	339	377	716	
850	Supermarket	53,371 sf		107	66	173	137	127	264	
912	Drive-In Bank	7,950 sf		30	16	46	44	43	87	
934	Fast-Food Restaurant with Drive-Through Window	7,000 sf		30	47	77	42	6	48	
945	Gasoline/Service Station with Convenience Market	8 fueling positions		19	13	32	22	20	42	
			<i>Development Total</i>	<i>574</i>	<i>307</i>	<i>881</i>	<i>1,152</i>	<i>1,143</i>	<i>2,295</i>	

Notes:

1. Land Use Code and trip generation rates are determined based on *ITE Trip Generation, 10th Edition*
2. Total site trips are determined based on the suggested method in the NCDOT Rate Vs Equation Spreadsheet
3. Internal capture was based on NCHRP 684 method and NCDOT IC calculation spreadsheet
4. Unconstrained pass-by trips are calculated based on *ITE Trip Generation Handbook, 3rd Edition*. The final projections are not expected to exceed 10% of adjacent street volumes.

Table ES-5 Land Use Trip Generation Comparison Matrix

External Trip Comparison Ratios Per Use (Maximum Build-Out)

ITE Code	Use	Daily	AM	PM
221	Multifamily Housing (unit)	3.14	0.26	0.18
310	Hotel (rooms)	5.71	0.35	0.36
445	Movie Theater (1,000 sf)	-	-	15.20
710	Office (1,000 sf)	7.57	1.05	1.20
820	Retail (1,000 sf)	34.50	0.82	3.34
850	Supermarket (1,000 sf)	89.41	3.24	7.72
912	Drive-In Bank (1,000 sf)	83.77	8.18	16.98
934	Fast-Food (1,000 sf)	227.14	21.43	13.71
945	Gas Station (fueling position)	171.63	10.50	11.75

Equivalency Table for 1,000 sf General Square Feet of General Retail

ITE Code	Use	Daily	AM	PM	Minimum (Rounded)
221	Multifamily Housing (unit)	11	3	19	3 du
310	Hotel (rooms)	6	2	9	2 rooms
445	Movie Theater (sf)	-	-	219	220 sf
710	Office (sf)	4559	777	2779	780 sf
820	Retail (sf)	1000	1000	1000	1000 sf
850	Supermarket (sf)	386	252	432	250 sf
912	Drive-In Bank (sf)	412	100	196	100 sf
934	Fast-Food (sf)	152	38	243	40 sf
945	Gas Station (fueling Positions)	0	0	0	0 pumps

Equivalency Table for 1,000 sf General Square Feet of General Office

ITE Code	Use	Daily	AM	PM	Minimum (Rounded)
221	Multifamily Housing (unit)	2	4	7	4 du
310	Hotel (rooms)	1	3	3	3 rooms
445	Movie Theater (sf)	-	-	79	80 sf
710	Office (sf)	1000	1000	1000	1000 sf
820	Retail (sf)	219	1287	360	360 sf
850	Supermarket (sf)	85	325	155	160 sf
912	Drive-In Bank (sf)	90	129	71	70 sf
934	Fast-Food (sf)	33	49	88	50 sf
945	Gas Station (fueling Positions)	0	0	0	0 pumps

Equivalency Table for 10 Multifamily Dwelling Units

ITE Code	Use	Daily	AM	PM	Minimum (Rounded)
221	Multifamily Housing (unit)	10	10	10	10 du
310	Hotel (rooms)	6	7	5	5 rooms
445	Movie Theater (sf)	-	-	118	120 sf
710	Office (sf)	42	2437	1500	1500 sf
820	Retail (sf)	9	3136	540	540 sf
850	Supermarket (sf)	4	792	233	230 sf
912	Drive-In Bank (sf)	4	314	106	110 sf
934	Fast-Food (sf)	1	120	131	120 sf
945	Gas Station (fueling Positions)	0	0	0	0 pumps

Build (2024) Conditions

The volumes associated with the No-Build (2024) scenario were utilized, and the generated site trips were distributed through the network based on existing turning movement counts and current land uses to calculate the volumes for the Build (2024) scenario.

Level of Service Summary

Based on the Build (2024) analysis shown on page xviii, three (3) signalized study intersections experience poor operations during the PM peak hours. The signalized intersection of Fordham Boulevard (US 15-501) at Willow Drive operates at a LOS D; however, has significant eastbound left-turn queuing. Fordham Boulevard (US 15-501) at Ephesus Church Road (SR 1742) operates at LOS E during the PM peak hour. The signalized intersection of E Franklin Street (SR 1010) at Estes Drive (SR 1750) also maintains a LOS E during the PM peak hour. Additionally, the eastbound stop-controlled approach along Site Access #1 at Fordham Boulevard (US 15-501) operates at LOS E during the PM peak hour.

No-Build (2026) Conditions

Background Growth

As conducted in the No-Build (2024) scenario, the annual growth rate of one percent (1%) was applied along Fordham Boulevard (US 15-501) and a rate of one quarter of a percent (0.25%) was applied along all other study area roadways to account for growth between the base year (2019) and the completion of Phase 2 (2026). No additional background developments were identified to be included in the No-Build (2026) scenario. Background development site trips that were utilized in the No-Build (2024) analysis were also used in the No-Build (2026) scenario.

The committed roadway improvements from the S Elliott Road Extension project that were analyzed in the No-Build (2024) scenario were also analyzed in the No-Build (2026) scenario.

Level of Service Summary

As reported in the Summary Level of Service (LOS) table on page xviii, two (2) signalized intersections operate at an unacceptable level of service during the PM peak hour. The signalized intersection of Franklin Street (SR 1010) and Estes Drive (SR 1750) maintains an overall LOS E during the PM peak hour. The signalized intersection of Fordham Boulevard (US 15-501) at Ephesus Church Road (SR 1742) operates at LOS E during the PM peak hour. All stop-controlled approaches continue to operate at acceptable levels of service during both peak hours.

Build (2026) Conditions

The volumes associated with the No-Build (2026) scenario were utilized and the generated site trips were distributed through the network based on existing turning movement counts and current land uses to calculate the volumes for the Build (2026) scenario.

Level of Service Summary

Based on the Build (2026) analysis shown on page xviii, three (3) signalized study intersections experience poor operations during the PM peak hours. The signalized intersection of Fordham Boulevard (US 15-501) at Willow Drive operates at a LOS D; however, has significant eastbound left-turn queuing. Fordham Boulevard (US 15-501) at Ephesus Church Road (SR 1742) operates at LOS E during the PM peak hour. The signalized intersection of Franklin Street (SR 1010) at Estes Drive (SR 1750) also maintains a LOS E during the PM peak hour. Additionally, the eastbound stop-controlled approach along Site Access #1 at Fordham Boulevard (US 15-501) operates at LOS F during the PM peak hour.

No-Build (2028) Conditions

Background Growth

As conducted in the No-Build (2026) scenario, the annual growth rate of one percent (1%) was applied along Fordham Boulevard (US 15-501) and a rate of one quarter of a percent (0.25%) was applied along all other study area roadways to account for growth between the base year (2019) and the full build-out year (2028). The third phase of the Glen Lennox redevelopment is scheduled to be completed in 2028, and the site trips associated with that phase were included in the No-Build (2028) analysis. Background development site trips that were utilized in the No-Build (2026) analysis were also used in the No-Build (2028) scenario.

The committed roadway improvements from the S Elliott Road Extension project that were analyzed in the No-Build (2026) scenario were also analyzed in the No-Build (2028) scenario.

Level of Service Summary

As reported in the Summary Level of Service (LOS) table on page xviii, two (2) signalized intersections operate at an unacceptable level of service during the PM peak hour. The signalized intersection of E Franklin Street (SR 1010) and Estes Drive (SR 1750) maintains an overall LOS E during the PM peak hour, and the signalized intersection of Fordham Boulevard (US 15-501) at Ephesus Church Road (SR 1742) operates at LOS E during the PM peak hour. All stop-controlled approaches continue to operate at acceptable levels of service during both peak hours.

Build (2028) Conditions

The volumes associated with the No-Build (2028) scenario were utilized and the generated site trips were distributed through the network based on existing turning movement counts and current land uses to calculate the volumes for the Build (2028) scenario.

Level of Service Summary

Based on the Build (2026) analysis shown on page xviii, four (4) signalized study intersections experience poor operations during the PM peak hours. The signalized intersections of Fordham Boulevard (US 15-501) at Willow Drive and Fordham Boulevard (US 15-501) at S Estes

Drive operate at a LOS E during the PM peak hour. The intersections of Fordham Boulevard (US 15-501) at Ephesus Church Road (SR 1742) and Franklin Street (SR 1010) at Estes Drive (SR 1750) degrade to LOS F during the PM peak hour. Additionally, the eastbound stop-controlled approach along Site Access #1 at Fordham Boulevard (US 15-501) operates at LOS F during the PM peak hour.

Roadway Improvement Recommendations

The proposed redevelopment is expected to impact operations at multiple study intersections under Build (2024), Build (2026), and Build (2028) conditions. The project study area includes several intersections that have current operational deficiencies or projected future deficiencies based on background growth or approved developments. Multiple improvements were identified but are not directly adjacent to the site and are not caused solely by the University Place redevelopment. As a result, these improvements are not considered to be the responsibility of the applicant.

E Franklin Street (SR 1010) at Estes Drive (SR 1750) (signalized)

The signalized intersection is projected to operate at LOS E during the PM peak hour under existing conditions. Additional degradation of operations is expected with background growth, additional approved development trips, as well as site generated trips. Since poor operations exist already, this is not a requirement of the applicant, however, is an improvement that has been identified to help improve operations at this location:

- › Construct an exclusive southbound right-turn lane with at least 350 feet of storage and appropriate taper.

Fordham Boulevard (US 15-501) at Ephesus Church Road (SR 1742) (signalized)

The signalized intersection is projected to operate at LOS E during the PM peak hour under Build (2024) and Build (2026) conditions, this is not a requirement of the applicant, however, is an improvement that has been identified to help improve operations at this location:

- › Construct an exclusive eastbound right-turn lane with at least 100 feet of storage and appropriate taper.

The following offsite roadway improvements have been identified due to direct impacts from the increase in site traffic from the proposed redevelopment and should be implemented with the construction of Phase 1:

Fordham Boulevard (US 15-501) at S Estes Drive (SR 1750) (signalized)

The signalized intersection is projected to operate at LOS D during the PM peak hour under Build (2024) and Build (2026) conditions, but site adds a considerable volume to the northbound left-turn, which creates 95th percentile PM peak hour queues of approximately 650 feet, which exceeds the existing available storage. Therefore, the following lane geometric improvements are recommended:

- › Extend the storage of both turn lanes to at least 700 feet of full width storage with appropriate taper.

Fordham Boulevard (US 15-501) at Willow Drive (signalized)

The signalized intersection is projected to operate at LOS D during the PM peak hour under Build (2024) and Build (2026) conditions, but site adds a considerable volume to the eastbound left-turn, which creates 95th percentile PM peak hour queues of over 750 feet, which more than doubles the existing available storage. Therefore, the following lane geometric improvements are recommended:

- › Construct a second exclusive eastbound left-turn and extend the storage of both turn lanes to at least 450 feet with appropriate taper.

Fordham Boulevard (US 15-501) at Site Access #1

The stop-controlled driveway is projected to operate at LOS E during the PM peak hour under Build (2024) and LOS F during the PM peak hour under Build (2026) conditions. The following intersection configuration is recommended:

- › Provide one ingress lane and one egress lane along the driveway.
- › Provide a high visibility painted crosswalk across the eastbound driveway approach.

S Estes Drive (SR 1750) at Site Access #2

The stop-controlled driveway is projected to operate at LOS D during the PM peak hour under Build (2024) and Build (2026) conditions. The eastbound queueing from the Fordham Boulevard (US 15-501) at Estes Drive (SR 1750) intersection is expected to spill back to this driveway during both peaks, which increase potential for left-turning crashes. With internal connections in place, left-turning vehicles can divert to Site Access #3 or Site Access #4 to make the left-turning ingress or egress movements and have better spacing from Fordham Boulevard (US 15-501). In addition, there is high right-turn volume that can impede vehicles along Estes Drive, particularly when there is a platoon of vehicles turning left onto Estes Drive from Fordham Boulevard. The separated right-turn lane helps minimize conflicts and improve efficiency for the westbound Estes Drive. The following intersection configuration is recommended:

- › Provide one ingress lane and one egress lane along the driveway.
- › Reconfigure the driveway to right-in/right-out only access.
- › Construct an exclusive westbound right-turn lane with at least 100 feet of full storage with appropriate taper.
- › Provide a high visibility painted crosswalk across the southbound driveway approach.

S Estes Drive (SR 1750) at Site Access #3

The stop-controlled driveway is projected to operate at LOS B during the AM peak hour and LOS D during the PM peak hour under Build (2024) and Build (2026) conditions. There is high right-turn volume that can impede vehicles along Estes Drive and the separated right-turn lane helps minimize conflicts and improve efficiency for the westbound Estes Drive. Due to the limited space between Site Access #3 and Site Access #2 The following intersection configuration is recommended:

- › Provide two ingress lanes and two egress lanes along the driveway.

- › Construct an exclusive westbound right-turn lane with continuous storage back to Site Access #2.
- › Provide a high visibility painted crosswalk across the southbound driveway approach.

S Estes Drive (SR 1750) at Brookwood Apartments Driveway/Site Access #4

The stop-controlled driveway is projected to operate at LOS B during the AM peak hour and LOS D during the PM peak hour under Build (2024) and Build (2026) conditions. The following driveway configuration is recommended:

- › Provide one or two ingress lanes and two egress lanes along the driveway.
- › Monitor for possible future signalization.

S Estes Drive (SR 1750) at Site Access #5

The stop-controlled driveway is projected to operate at LOS B during both peak hours under Build (2024) and Build (2026) conditions. The westbound queueing from the Estes Drive (SR 1750) at Willow Drive intersection is expected to spill back to this driveway during the PM peak, which increases potential for left-turning crashes. With internal connections in place, left-turning vehicles can divert to Site Access #6 or Site Access #4 to make the left-turning ingress or egress movements and have better spacing from the adjacent intersection. The following driveway configuration is recommended:

- › Provide one ingress lane and one egress lane along the driveway.
- › Reconfigure the driveway to right-in/right-out only access.
- › Provide a high visibility painted crosswalk across the southbound driveway approach.

Willow Drive at Site Access #6

The stop-controlled westbound driveway is projected to operate at LOS B during the AM peak hour and LOS C during the PM peak hour under Build (2024) and Build (2026) conditions. The following driveway configuration is recommended:

- › Provide one ingress lane and one egress lane along the driveway.
- › Provide a high visibility painted crosswalk across the westbound driveway approach.

Willow Drive at Site Access #7

The stop-controlled westbound driveway is projected to operate at LOS B during both peak hours under Build (2024) and Build (2026) conditions. The following driveway configuration is recommended:

- › Provide one ingress lane and two egress lanes along the driveway. The egress lanes should consist of a through/left-turn lane and an exclusive right-turn lane.
- › Provide a high visibility painted crosswalk across the westbound driveway approach.

Willow Drive at Conner Drive/Future Site Access

The stop-controlled southbound approach along Conner Drive is projected to operate at LOS D during the PM peak hour under Build (2024) and Build (2026) conditions. The following intersection configuration is recommended:

- › Provide single-lane stop-controlled approaches along Conner Drive and the future Site Access driveway.
- › Provide one ingress lane and two egress lanes along the driveway
- › Provide a high-visibility painted crosswalk across the two stop-controlled approaches.

Willow Drive at Site Access #8

The stop-controlled driveway is projected to operate at LOS B during both peak hours under Build (2024) and Build (2026) conditions. The following driveway configuration is recommended:

- › Provide one ingress lane and two egress lanes along the driveway.
- › Provide a high visibility painted crosswalk across the northbound driveway approach.

Willow Drive at Site Access #9

The stop-controlled driveway is projected to operate at LOS A during the AM peak hour and LOS B during the PM peak hour under Build (2024) and Build (2026) conditions. However, queues along the eastbound approach at the intersection of Fordham Boulevard (US 15-501) and Willow Drive are expected to back up through the site access driveway. In addition, the proposed eastbound left-turn lanes at the Fordham Boulevard (US 15-501) and Willow Drive intersection will extend past this driveway. Therefore, the following intersection configuration is recommended:

- › Provide one ingress lane and one egress lane along the driveway.
- › Reconfigure the driveway to right-in/right-out only access.
- › Provide a high visibility painted crosswalk across the northbound driveway approach.

No additional offsite improvements are recommended with the construction of Phase 2. The increase in site traffic from Phase 3 will require the implementation of these additional offsite roadway improvements.

Fordham Boulevard (US 15-501) at Estes Drive (SR 1750) (signalized)

The signalized intersection is projected to operate at LOS D during the PM peak hour under Build (2028) conditions, but Phase 3 of the site will add additionally northbound left-turning traffic to the intersection. Queuing from this increase in traffic is expected to exceed the available storage provided in Phase 1. Therefore, the following lane geometric improvements are recommended:

- › Extend the storage of both turn lanes to at least 850 feet of full width storage with appropriate taper.

- › Converting the Fordham Boulevard at Estes Drive intersection to a Reduced Conflict Intersection (RCI) design may be considered as an alternative improvement at this location. This would result in substantially improved operations at the intersection, however, would require further evaluation to determine the upstream and downstream signalized U-turn configurations and locations along Fordham Boulevard, likely at Access #1 to the north and Cleland Drive to the south.

S Estes Drive (SR 1750) at Brookwood Apartments Driveway/Site Access #4

The stop-controlled driveway is projected to operate at LOS E during the PM peak hour under Build (2028) conditions, worsening to a LOS F with re-routed trips included. The following additional improvement is recommended to make the ingress more efficient and reduce delay for the egress movement:

- › Construct an exclusive westbound right-turn lane with at least 100 feet of storage and appropriate taper.

Fordham Boulevard (US 15-501) at Site Access #1

The following intersection configuration may be considered as an alternative improvement at this location:

- › Accommodating a signalized left-turn ingress with exclusive left-turn lane at this location may be considered as an alternative improvement in conjunction with the conversion of the Fordham Boulevard at Estes Drive intersection to a Reduced Conflict Intersection (RCI) design.

Due to restricting access to right-in/right-out only at several development driveways, some intersection levels of service degrade after the improvements are in place as a result of the associated volume reroutes. However, the impacts to the level of service and delay at the intersections are minor and the restrictions will reduce conflict points along the network roadways within the study area. Also note that the Build without improvements levels of service do not reflect improvements from previous phases such as turn lanes and driveway access restrictions.

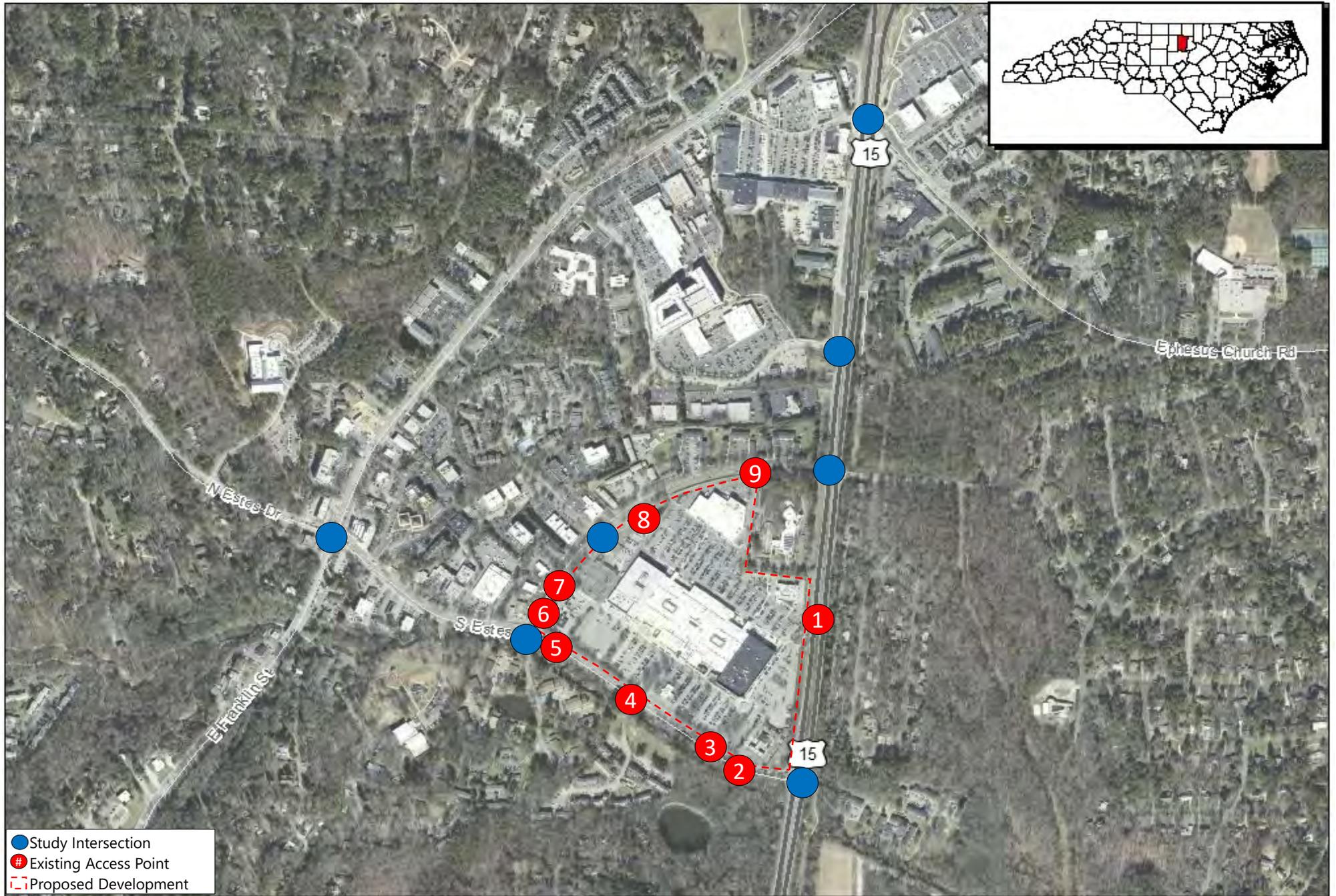
The recommended offsite roadway improvements for each Phase of the development are outlined in Table ES-6. The level of service summaries for the Build (2024), Build (2026), and Build (2028) scenarios with all network improvements in place can be found in Table ES-7.

Table ES-6 Summary of Offsite Roadway Improvements and Trip Thresholds Per Phase

Phase (Year)	Total AM External Trips	Total PM External Trips	Required Roadway Requirements
Phase 1 (2024)	830 trips	2,521 trips	<ul style="list-style-type: none"> • 450 ft dual EB left-turn lanes at Fordham Blvd/Willow Drive • 700 ft dual NB left-turn lanes at Fordham Blvd/Estes Drive • 100 ft WB right-turn lane at Site Access #2 • Continuous WB right-turn lane at Site Access #3 • Right-in, right-out restrictions at Accesses #2, #5, and #9
Phase 2 (2026)	871 trips	2,589 trips	<ul style="list-style-type: none"> • None
Phase 3 (2028)	1,025 trips	2,959 trips	<ul style="list-style-type: none"> • 850 ft dual NB left-turn lanes at Fordham Blvd/Estes Drive • 100 ft WB right-turn lane at Site Access #4

Table ES-7 Summary Level of Service Table

Intersection and Approach	Traffic Control	Existing (2019)		No-Build (2024)		Build (2024) Phase 1		Build (2024) Phase 1 with Improvements		No-Build (2026)		Build (2026) Phase 2		Build (2026) Phase 2 with Improvements		No-Build (2028)		Build (2028) - Phase 3		Build (2028) Phase 3 with Improvements	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Fordham Boulevard (US 15-501) at Estes Drive (SR 1750)	Signalized	C (24.6)	C (31.4)	C (28.5)	D (35.7)	C (28.7)	D (48.2)	C (24.3)	D (42.2)	C (29.0)	D (36.3)	C (29.6)	D (51.3)	C (24.9)	D (43.6)	C (29.8)	D (37.8)	C (32.1)	E (61.9)	C (26.7)	D (52.6)
Eastbound		E-65.8	E-58.0	E-65.1	E-56.3	E-65.6	D-52.0	E-74.4	E-67.0	E-65.0	E-56.5	E-64.6	D-52.2	E-73.4	E-66.8	E-64.7	E-56.3	E-62.5	D-54.0	E-73.2	E-70.0
Westbound		F-91.5	F-92.7	F-91.5	F-92.7	F-91.5	F-92.7	F-94.0	F-96.8	F-91.5	F-92.7	F-91.5	F-92.7	F-94.0	F-96.8	F-91.5	F-92.7	F-91.5	F-92.7	F-94.0	F-96.8
Northbound		C-24.0	C-30.1	C-25.1	C-33.0	C-25.0	D-37.1	C-24.3	D-37.2	C-25.3	C-33.4	C-25.6	D-37.2	C-26.2	D-37.3	C-25.9	C-33.9	C-27.4	D-43.4	C-26.4	D-40.1
Southbound		B-15.0	C-23.6	C-23.8	C-32.6	C-24.3	E-61.8	B-13.0	D-40.7	C-24.8	C-33.8	C-26.2	E-70.0	B-12.7	D-44.2	C-26.1	D-37.1	C-30.5	F-89.2	B-16.9	E-63.3
Fordham Boulevard (US 15-501) at Willow Drive	Signalized	B (11.5)	C (25.2)	B (13.9)	C (28.5)	B (15.6)	D (41.9)	B (16.5)	C (30.3)	B (14.1)	C (29.3)	B (15.8)	D (46.2)	B (16.6)	C (31.3)	B (14.5)	C (30.9)	B (16.8)	E (62.2)	B (18.4)	D (38.8)
Eastbound		E-72.2	E-71.6	E-73.0	E-72.3	E-75.9	F-152.3	F-88.5	F-84.7	E-73.1	E-72.3	E-75.5	F-172.8	F-88.4	F-86.6	E-73.1	E-72.6	E-76.4	F-242.8	F-88.2	F-87.6
Westbound		F-83.0	F-81.6	F-81.7	F-80.6	F-81.6	F-83.1	F-83.2	F-93.3	F-81.7	F-80.4	F-81.6	F-82.8	F-83.4	F-96.9	F-81.7	F-80.5	F-81.7	F-83.3	F-83.3	F-105.6
Northbound		A-6.0	B-17.1	A-7.8	C-24.8	A-8.7	C-25.8	A-9.4	C-23.8	A-8.1	C-26.3	A-9.1	C-27.0	A-9.3	C-24.3	A-8.6	C-28.9	A-9.8	C-29.3	B-11.3	C-29.0
Southbound		A-6.0	B-18.2	B-10.3	C-20.4	B-11.5	C-23.5	A-11.7	B-17.6	B-10.6	C-20.8	B-11.9	C-25.3	B-12.1	B-18.2	B-11.2	C-22.0	A-13.3	C-34.3	B-14.0	C-28.8
Fordham Boulevard (US 15-501) at Elliott Rd	Signalized	A (7.6)	B (18.1)	B (15.4)	C (29.4)	B (15.9)	C (32.2)	B (16.5)	C (33.7)	B (15.8)	C (29.9)	B (16.4)	C (32.8)	B (17.0)	C (34.0)	B (16.0)	C (30.8)	B (17.3)	D (39.8)	B (18.8)	D (39.3)
Eastbound		F-84.3	E-75.6	F-86.1	F-97.5	F-85.3	F-93.7	F-85.9	F-97.9	F-86.2	F-97.4	F-85.6	F-93.3	F-85.6	F-97.6	F-85.7	F-97.7	F-85.4	F-92.9	F-84.6	F-98.8
Westbound		---	---	F-92.2	F-94.4	F-93.8	F-100.3	F-93.8	F-103.5	F-92.2	F-94.4	F-94.0	F-100.3	F-93.6	F-103.5	F-92.2	F-94.4	F-94.7	F-100.9	F-94.3	F-107.8
Northbound		A-3.7	B-10.0	A-9.0	B-12.4	A-9.3	B-12.6	B-10.1	B-14.6	A-9.3	B-12.8	A-9.7	B-12.2	B-10.5	B-14.6	A-9.7	B-13.1	A-9.9	B-12.6	B-10.8	B-14.9
Southbound		A-3.9	B-13.9	A-8.7	C-29.7	A-9.0	D-36.2	A-9.5	D-36.4	A-9.3	C-30.7	A-9.8	D-38.7	B-10.2	D-37.6	A-9.8	C-32.7	B-11.8	E-56.3	B-14.0	D-50.6
Fordham Boulevard (US 15-501) at Ephesus Church Rd (SR 1742)	Signalized	C (33.7)	D (45.7)	D (40.5)	D (54.4)	D (40.5)	E (62.5)	D (39.0)	E (55.2)	D (41.2)	E (56.2)	D (41.5)	E (66.9)	D (39.7)	E (56.6)	D (42.2)	E (60.0)	D (43.8)	F (81.2)	D (41.0)	E (61.8)
Eastbound		F-91.6	F-98.9	F-90.6	F-94.3	F-90.8	F-94.1	F-82.5	F-87.1	F-90.9	F-94.4	F-91.3	F-94.3	F-82.4	F-90.5	F-91.2	F-94.9	F-92.3	F-94.6	F-82.0	F-90.6
Westbound		E-79.1	E-79.8	F-91.5	F-87.0	F-91.5	F-84.6	F-99.7	F-104.1	F-91.4	F-86.1	F-91.4	F-84.2	F-99.0	F-105.9	F-91.4	F-85.6	F-91.2	F-83.2	F-104.0	F-117.3
Northbound		B-16.4	C-27.6	B-18.9	D-40.8	B-19.4	D-49.5	B-19.9	D-44.9	B-19.5	D-43.2	B-19.8	E-55.7	C-20.2	D-46.3	C-20.3	D-47.7	C-20.9	E-73.8	C-20.8	D-52.4
Southbound		C-33.8	D-43.9	D-43.6	D-53.6	D-43.4	E-65.4	D-38.4	D-48.5	D-44.9	E-55.8	D-45.3	E-70.2	D-40.0	D-49.6	D-46.6	E-60.7	D-49.6	F-86.5	D-41.6	D-53.6
Franklin Street at Estes Drive (SR 1750)	Signalized	D (48.0)	E (57.1)	D (49.9)	E (65.6)	D (50.7)	E (70.4)	D (45.3)	E (62.8)	D (50.1)	E (66.1)	D (50.9)	E (72.7)	D (45.4)	E (60.2)	D (50.5)	E (67.4)	D (51.8)	F (81.2)	D (46.3)	E (66.5)
Eastbound		E-60.1	E-66.4	E-61.6	E-69.7	E-61.6	E-77.7	D-50.6	E-73.8	E-62.0	E-69.9	E-62.0	E-77.9	D-50.9	E-73.3	E-62.1	E-71.2	E-63.0	F-84.8	D-51.6	F-80.2
Westbound		D-51.6	E-58.6	D-53.0	E-76.3	D-54.1	F-86.7	D-53.0	E-71.0	D-53.2	E-77.7	D-54.0	F-96.1	D-52.8	E-70.5	D-53.6	F-82.5	D-54.4	F-123.5	D-54.7	E-78.9
Northbound		D-39.9	D-54.9	D-41.7	E-58.6	D-42.6	E-61.3	D-45.1	E-60.2	D-41.8	E-58.9	D-42.7	E-61.4	D-45.2	E-62.3	D-42.4	E-58.9	D-43.7	E-63.0	D-45.8	E-69.8
Southbound		D-41.7	D-52.1	D-43.9	E-61.4	D-44.9	E-61.9	D-36.6	D-51.5	D-44.1	E-61.6	D-45.0	E-62.0	D-36.7	D-41.6	D-44.6	E-61.5	D-46.0	E-62.2	D-37.2	D-44.0
Estes Drive (SR 1750) at Shepherd Lane/Willow Drive	Signalized	B (13.4)	B (19.6)	B (13.2)	B (19.0)	B (12.9)	B (17.5)	B (12.8)	B (17.8)	B (13.2)	B (19.1)	B (12.9)	B (17.7)	B (12.7)	B (18.1)	B (13.2)	B (19.0)	B (13.2)	B (17.8)	B (12.8)	B (18.0)
Eastbound		B-10.4	B-19.2	B-10.2	B-17.5	A-9.4	B-14.9	A-9.3	B-15.6	B-10.2	B-17.5	A-9.7	B-14.9	A-9.3	B-16.0	B-10.3	B-17.3	B-10.6	B-14.6	A-9.9	B-14.9
Westbound		A-8.3	B-16.6	A-8.5	B-17.8	A-8.3	B-16.7	A-8.3	B-16.7	A-8.5	B-18.0	A-8.5	B-16.9	A-8.5	B-16.9	A-8.5	B-18.2	A-8.9	B-18.3	A-8.9	B-18.3
Northbound		C-27.4	C-28.2	C-27.2	C-27.5	C-27.2	C-29.3	C-27.2	C-29.3	C-27.2	C-27.5	C-27.2	C-29.2	C-27.2	C-29.2	C-27.2	C-29.2	C-27.2	C-29.2	C-27.2	C-29.2
Southbound		C-23.7	C-22.4	C-23.8	C-22.0	C-24.4	C-21.9	C-24.4	C-22.0	C-23.9	C-21.8	C-24.0	C-22.2	C-24.0	C-22.2	C-23.9	C-21.8	C-23.4	C-21.8	C-23.4	C-21.8
Willow Drive at Conner Drive/Future Site Access	Unsignalized	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Northbound		---	---	---	---	B-11.5	C-16.8	B-11.5	C-16.9	---	---	B-11.6	C-17.2	B-11.5	C-17.3	---	---	B-12.0	C-20.3	B-12.1	C-20.3
Southbound		B-10.7	B-14.6	B-11.2	C-15.4	B-12.8	D-31.6	B-12.8	D-32.0	B-11.2	C-15.5	B-12.9	D-34.0	B-12.9	D-34.5	B-11.2	C-15.7	B-13.6	E-47.6	B-13.6	E-47.6
Fordham Boulevard (US 15-501) at Site Access #1	Unsignalized	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eastbound		C-17.0	C-18.6	C-22.7	D-25.1	D-26.8	E-48.9	D-26.8	E-48.9	C-23.4	D-26.1	D-27.3	F-56.9	D-27.5	F-56.9	C-24.1	D-27.8	D-28.5	F-94.9	D-28.7	F-94.9
Estes Drive (SR 1750) at Site Access #2	Unsignalized	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Southbound		B-13.4	C-16.5	B-14.2	C-18.5	B-13.0	D-31.5	A-9.6	B-11.1	B-14.3	C-18.5	B-13.2	D-33.7	A-9.6	B-11.1	B-14.5	C-18.9	B-14.2	F-51.1	A-9.8	B-11.4
Estes Drive (SR 1750) at Site Access #3	Unsignalized	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Southbound		B-12.2	C-15.8	B-12.9	C-17.9	B-13.0	D-29.5	B-12.6	C-23.9	B-12.9	C-18.0	B-13.4	D-30.6	B-12.9	C-24.8	B-13.0	C-18.2	B-14.1	E-44.4	B-13.3	D-32.7
Estes Drive (SR 1750) at Site Access #4/ Brookwood Condos	Unsignalized	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Northbound		B-10.8	B-11.2	B-11.5	B-11.8	B-11.8	B-12.5	B-11.9	B-13.0	B-11.5	B-11.8	B-11.9	B-12.6	B-12.1	B-13.1	B-11.6	B-11.9	B-12.3	B-13.2	B-12.6	B-13.7
Southbound		A-9.6	B-13.9	A-9.9	C-15.3	B-13.2	D-26.4	C-15.7	F-131.9	A-9.9	C-15.5	B-13.3	D-27.7	C-15.9	F-152.6	B-10.0	C-15.6	B-14.0	E-37.6	C-17.0	F-230.3
Estes Drive (SR 1750) at Site Access #5	Unsignalized	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Southbound		B-10.5	A-9.6	B-10.9	A-9.9	B-11.4	B-13.7	A-9.3	B-10.0	B-10.9	A-9.9	B-11.2	B-13.9	A-9.3	B-10.1	B-11.0	A-9.9	B-11.2	B-14.5	A-9.4	B-10.2
Willow Drive at Wells Fargo Driveway/Site Access #6	Unsignalized	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eastbound		B-12.5	B-13.6	B-12.8	B-13.9	B-12.4	B-13.4	B-12.4	B-13.4	B-12.8	B-13.9	B-12.5	B-13.6	B-12.5	B-13.6	B-12.8	B-14.0	B-12.9	B-14.2	B-12.9	B-14.2
Westbound		A-0.0	C-18.1	A-0.0	C-18.7	B-11.6	C-16.3	B-11.6	C-16.3	A-0.0	C-18.8	B-11.7	C-16.8	B-11.7	C-16.8	A-0.0	C-19.0	B-12.8	C-18.1	B-12.0	C-17.6
Willow Drive at Site Access #7																					





UNIVERSITY PLACE CHAPEL HILL • ILLUSTRATIVE SITE PLAN

PN 1019418 | 11.09.2020 | RAM REALTY | BB+M ARCHITECTURE



LandDesign.



Figure ES-2
Site Plan
(1 of 2)

University Place Redevelopment
Traffic Impact Analysis
Chapel Hill, NC



UNIVERSITY PLACE CHAPEL HILL • ILLUSTRATIVE SITE PLAN

PN 1019418 | 11.09.2020 | RAM REALTY | BB+M ARCHITECTURE

LandDesign.



Figure ES-2
Site Plan
(2 of 2)

University Place Redevelopment
Traffic Impact Analysis
Chapel Hill, NC

LEGEND	
	Existing Roadway
	Future Roadway
	Existing Stop Controlled Approach
	Future Stop Controlled Approach
	Existing Signalized Intersection
	Signalized Intersection Improvements
	Existing Lane Configuration
	Phase 1/2 Lane Configuration - by Applicant
	Future Lane Configuration - Committed Background
	Future Lane Configuration - Other Background

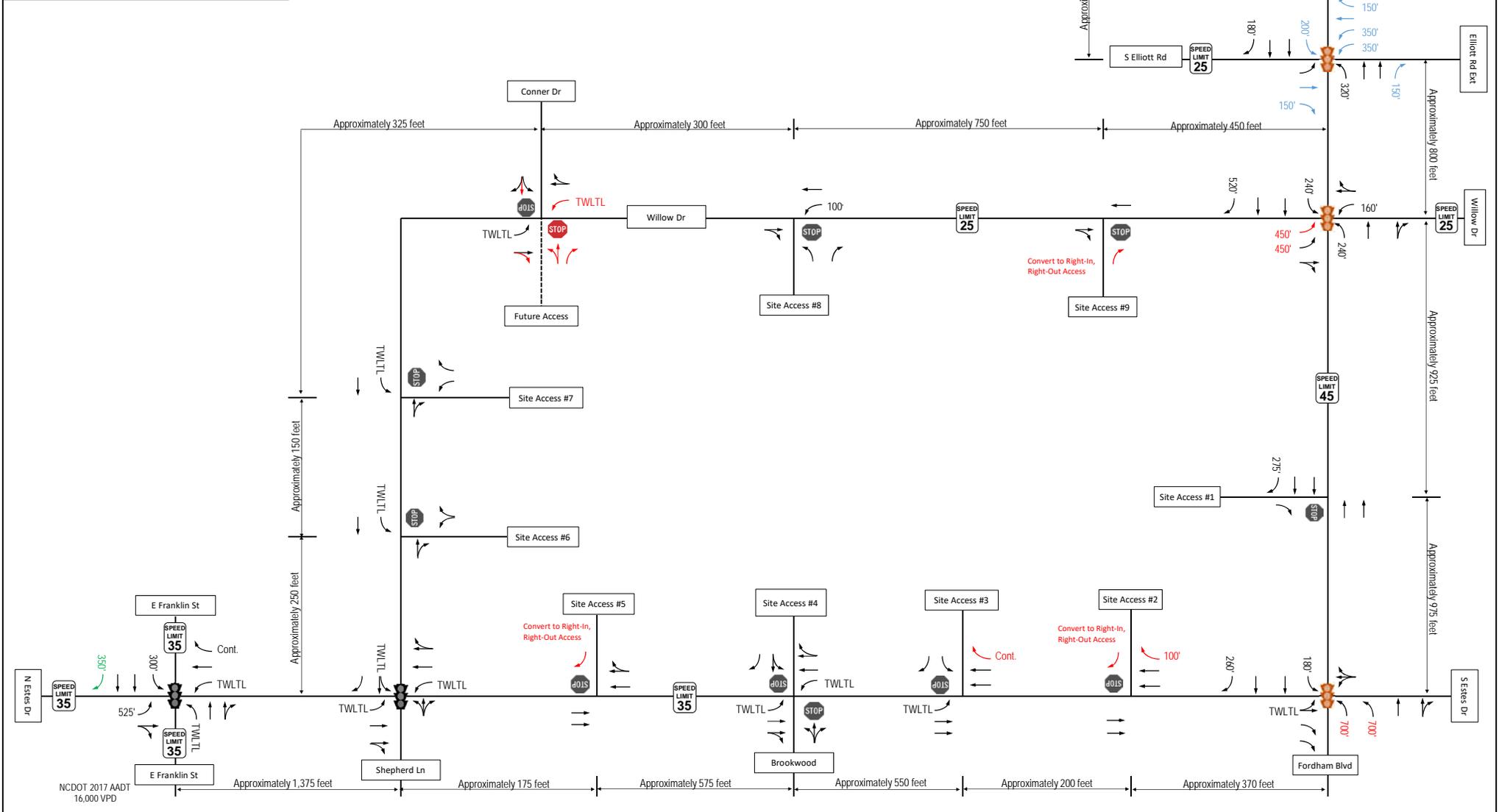


Figure ES-3
Build (2024) and Build (2026) Lane Geometrics and Traffic Control

LEGEND	
	Existing Roadway
	Future Roadway
	Existing Stop Controlled Approach
	Future Stop Controlled Approach
	Existing Signalized Intersection
	Signalized Intersection Improvements
	Existing Lane Configuration
	Phase 1/2 Lane Configuration - by Applicant
	Phase 3 Lane Configuration - by Applicant
	Future Lane Configuration - Committed Background
	Future Lane Configuration - Other Background

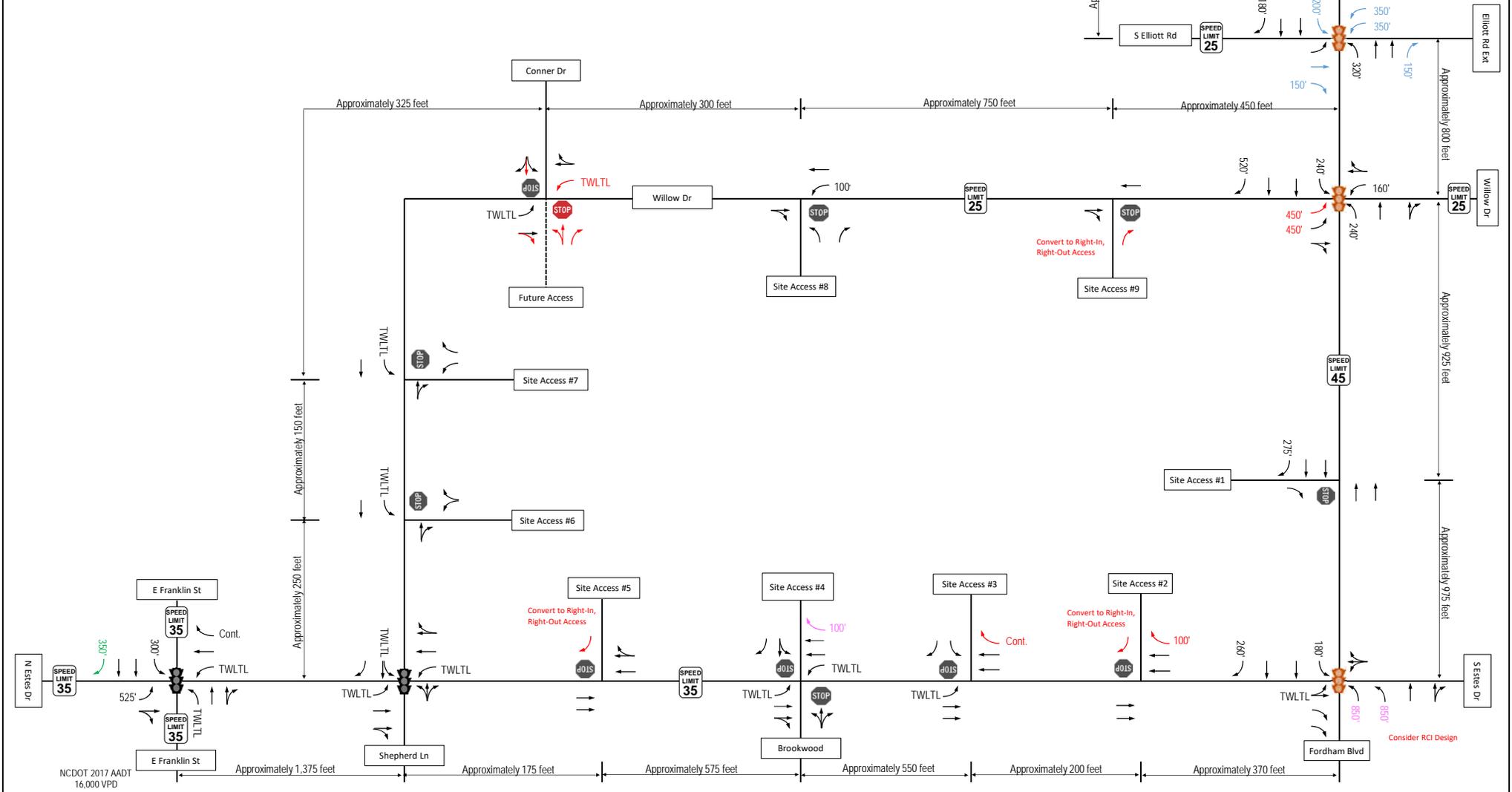


Figure ES-4
Build (2028) Lane Geometrics and Traffic Control



www.vhb.com