Traffic Impact Analysis

Cheviot Assemblage

Raleigh, NC

Prepared for:
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Traffic Impact Analysis
for
Cheviot Assemblage
Raleigh, North Carolina

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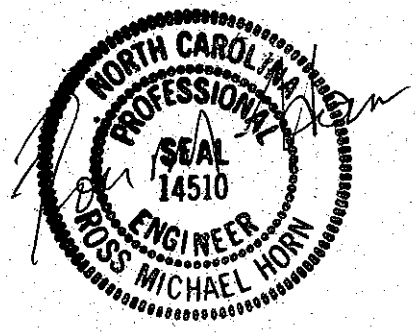

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1.0 Executive Summary

The proposed Cheviot Assemblage development is located on the west side of Capital Boulevard (US 1) between Gresham Lake Road and Durant Road in Raleigh, North Carolina. The proposed Cheviot Assemblage development will consist of 300 apartment units, 122,000 s.f. of light industrial space, 380,000 s.f. of general office space, 170,000 s.f. of general retail space, and 251,000 s.f. of car dealerships (new car sales) and is expected to be completed (built-out) by 2012. The primary points of access will consist of a full-movement driveway on Gresham Lake Road, a full-movement driveway on Durant Road, and a directional crossover (left-over) on Capital Boulevard (US 1) at the existing median opening at Homestead Drive.

This report presents trip generation, distribution, traffic analyses, and recommendations for transportation improvements required to meet anticipated traffic demands. The three traffic conditions studied include the existing (2008) traffic condition, the projected (2012) background traffic condition, and the projected (2012) build-out traffic condition. This report also summarizes the corridor analysis for Capital Boulevard (US 1) as requested by the City of Raleigh. The study was performed in accordance with the parameters agreed to in the TIA Assumptions dated January 22, 2008 and subsequent meetings with NCDOT and City of Raleigh staff.

The following is a summary of the committed improvements by others within the study area:

Capital Boulevard (US 1) & Durant Road/Perry Creek Road (City of Raleigh/Honeycutt):

- Lengthen the existing westbound dual left-turn lanes on Perry Creek Road to provide a total of 500 feet of full-width storage each.
- Convert the existing westbound right-turn lane on Perry Creek Road to an additional through lane as part of the widening of Perry Creek Road.
- Construct an exclusive westbound right-turn lane on Perry Creek Road providing 200 feet of full-width storage.
- Convert the existing northbound right-turn lane on Capital Boulevard (US 1) to a free-flow lane onto Perry Creek Road.
- Lengthen the existing southbound left-turn lane on Capital Boulevard (US 1) to provide a total of 350 feet of full-width storage.

The following is a summary of the recommended improvements needed to accommodate traffic from the proposed Cheviot Assemblage development for the projected (2012) build-out traffic conditions:

Recommended Build-out Improvements:

Capital Boulevard (US 1) & I-540 Westbound Ramp:

- Restripe the westbound approach of the I-540 Westbound Ramp to provide an exclusive left-turn lane, a shared left-turn/right-turn lane, and an exclusive right-turn lane.

Capital Boulevard (US 1) & Gresham Lake Road:

- Construct an additional northbound left-turn lane on Capital Boulevard (US 1) and lengthen the existing northbound left-turn lane to provide dual left-turn lanes each with 500 feet of full-width storage.
- Construct an additional eastbound right-turn lane on Gresham Lake Road and lengthen the existing eastbound right-turn lane to provide dual right-turn lanes each with 450 feet of full-width storage.

Capital Boulevard (US 1) & Homestead Drive/Proposed Site Driveway:

- Install a traffic signal.
- Construct an additional northbound left-turn lane on Capital Boulevard (US 1) and lengthen the existing northbound left-turn lane to provide dual left-turn lanes each with 400 feet of full-width storage.
- Construct an exclusive southbound right-turn lane on Capital Boulevard (US 1) with 100 feet of full-width storage.
- Construct an additional southbound through lane that extends from Durant Road/Perry Creek Road through this intersection to tie into existing southbound three-lane cross section.
- Construct the Proposed Site Driveway providing two eastbound right-turn lanes (outbound) and two inbound lanes.

Capital Boulevard (US 1) & Durant Road/Perry Creek Road:

- Restripe the existing southbound right-turn lane to provide a shared through/right-turn lane. Construct an additional southbound receiving lane on Capital Boulevard (US 1) that extends south of the Proposed Site Driveway/Homestead Drive to tie into the existing southbound three-lane cross section.

Gresham Lake Road & Proposed Site Driveway:

- Install a traffic signal.
- Construct an exclusive eastbound left-turn lane on Gresham Lake Road with 125 feet of full-width storage.
- Construct an exclusive westbound right-turn lane on Gresham Lake Road as a continuous lane from Capital Boulevard (US 1).
- Construct the Proposed Site Driveway providing an exclusive southbound left-turn lane and an exclusive southbound right-turn lane with 75 feet of full-width storage.

Durant Road & Proposed Site Driveway:

- Install a traffic signal.
- Construct an exclusive eastbound right-turn lane on Durant Road with 100 feet of full-width storage.
- Stripe an exclusive westbound left-turn lane on Durant Road with 125 feet of full-width storage.
- Construct the Proposed Site Driveway providing an exclusive northbound left-turn lane and an exclusive northbound right-turn lane with 175 feet of full-width storage.

The recommended roadway laneage is shown in Figure 9.

2.0 Introduction

The proposed Cheviot Assemblage development is located on the west side of Capital Boulevard (US 1) between Gresham Lake Road and Durant Road in Raleigh, North Carolina. The proposed Cheviot Assemblage development will consist of 300 apartment units, 122,000 s.f. of light industrial space, 380,000 s.f. of general office space, 170,000 s.f. of general retail space, and a 251,000 s.f. of car dealerships (new car sales) and is expected to be completed (built-out) by 2012. The primary points of access will consist of a full-movement driveway on Gresham Lake Road, a full-movement driveway on Durant Road, and a directional crossover (left-over) on Capital Boulevard (US 1) at the existing median opening at Homestead Drive.

Kimley-Horn and Associates, Inc. was retained to determine the potential external traffic impacts of this development and to identify roadway improvements that may be required to accommodate the impacts of both background traffic and new development traffic. This report presents trip generation, distribution, traffic analyses, and recommendations for transportation improvements required to meet anticipated traffic demands.

NCDOT District, Capital Region, and Congestion Management staff as well as City of Raleigh staff was contacted to obtain background information and to ascertain the elements to be covered in this Traffic Impact Analysis (TIA) and Corridor Analysis. The study was performed in accordance with the parameters set forth in the TIA Assumptions dated January 22, 2008 and subsequent meetings with NCDOT and City of Raleigh staff.

3.0 Inventory

3.1 Study Area

The study area for this TIA includes the following intersections:

- Capital Boulevard (US 1) & Old Wake Forest Road
- Capital Boulevard (US 1) & I-540 Eastbound Ramps
- Capital Boulevard (US 1) & I-540 Westbound Ramps
- Capital Boulevard (US 1) & Gresham Lake Road
- Capital Boulevard (US 1) & Homestead Drive/Proposed Site Driveway
- Capital Boulevard (US 1) & Durant Road/Perry Creek Road
- Capital Boulevard (US 1) & Thornton Road
- Gresham Lake Road & Proposed Site Driveway
- Durant Road & Proposed Site Driveway

This study area was determined based upon discussions with NCDOT and the City of Raleigh. Figure 1 shows the site location and Figure 2 shows the proposed site plan.

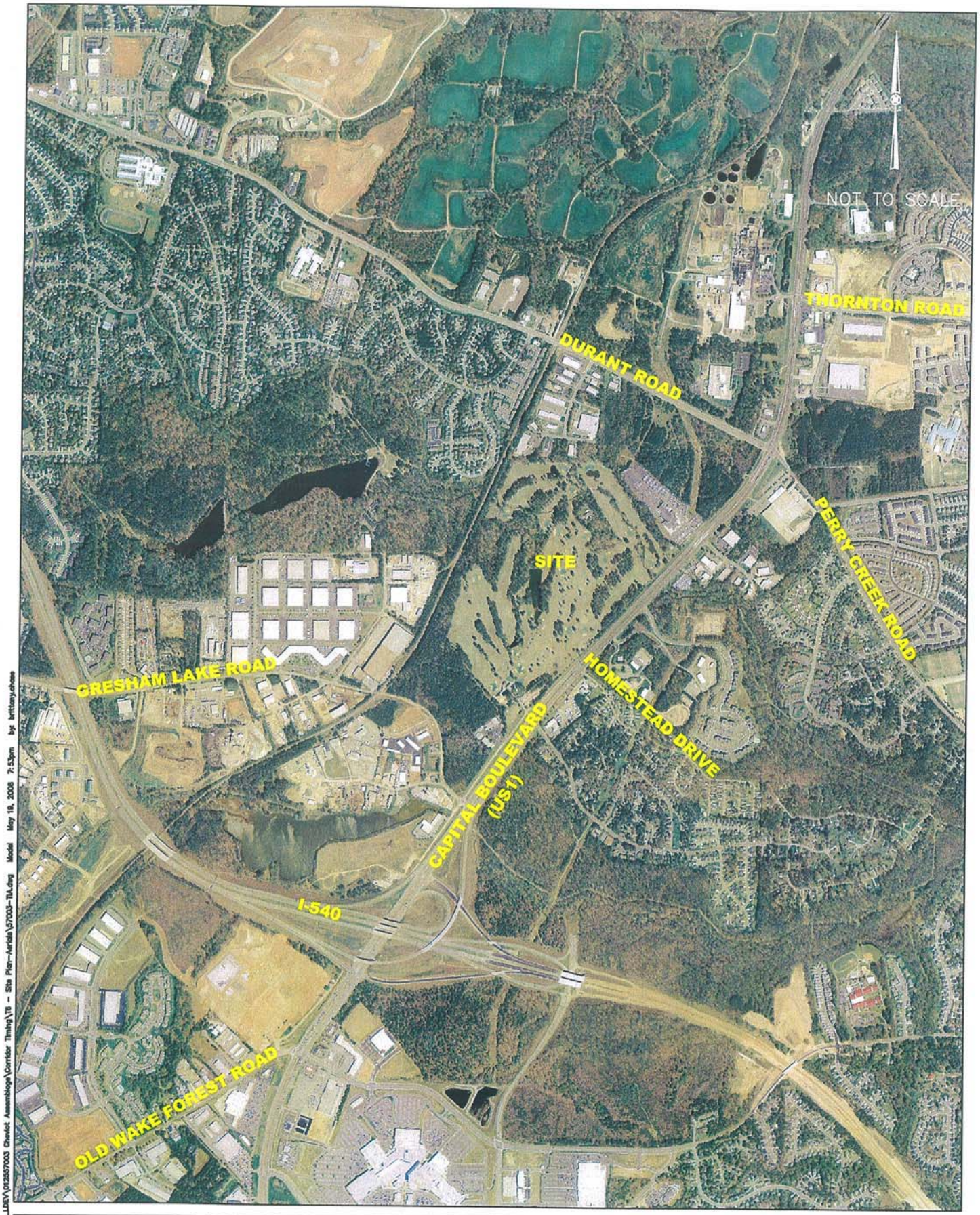
3.2 Existing Conditions

The proposed Cheviot Assemblage development is located on the west side of Capital Boulevard (US 1) between Gresham Lake Road and Durant Road in Raleigh, North Carolina. The surrounding land uses include a mix of residential, commercial, and light industrial uses. Major roadways in the immediate vicinity of the site include Capital Boulevard (US 1), Gresham Lake Road, and Durant Road. The existing roadway laneage is shown in Figure 3.

Capital Boulevard (US 1) is a four to eight-lane divided roadway located east of the site with an estimated 2008 ADT volume of approximately 59,000 vehicles per day and a posted speed limit of 55 miles per hour in the vicinity of the site. Capital Boulevard (US 1) is classified as a primary arterial in the City of Raleigh Comprehensive Plan.

Grehsam Lake Road is a two-lane roadway located south of the site with an estimated 2008 ADT volume of approximately 8,000 vehicles per day and a posted speed limit of 45 miles per hour in the vicinity of the site. Gresham Lake Road is classified as a minor thoroughfare in the City of Raleigh Comprehensive Plan.

Durant Road is a five-lane roadway with a center two-way left-turn lane located north of the site with an estimated 2008 ADT volume of approximately 15,000 vehicles per day and a posted speed limit of 45 miles per hour in the vicinity of the site. Durant Road is classified as a major thoroughfare in the City of Raleigh Comprehensive Plan.



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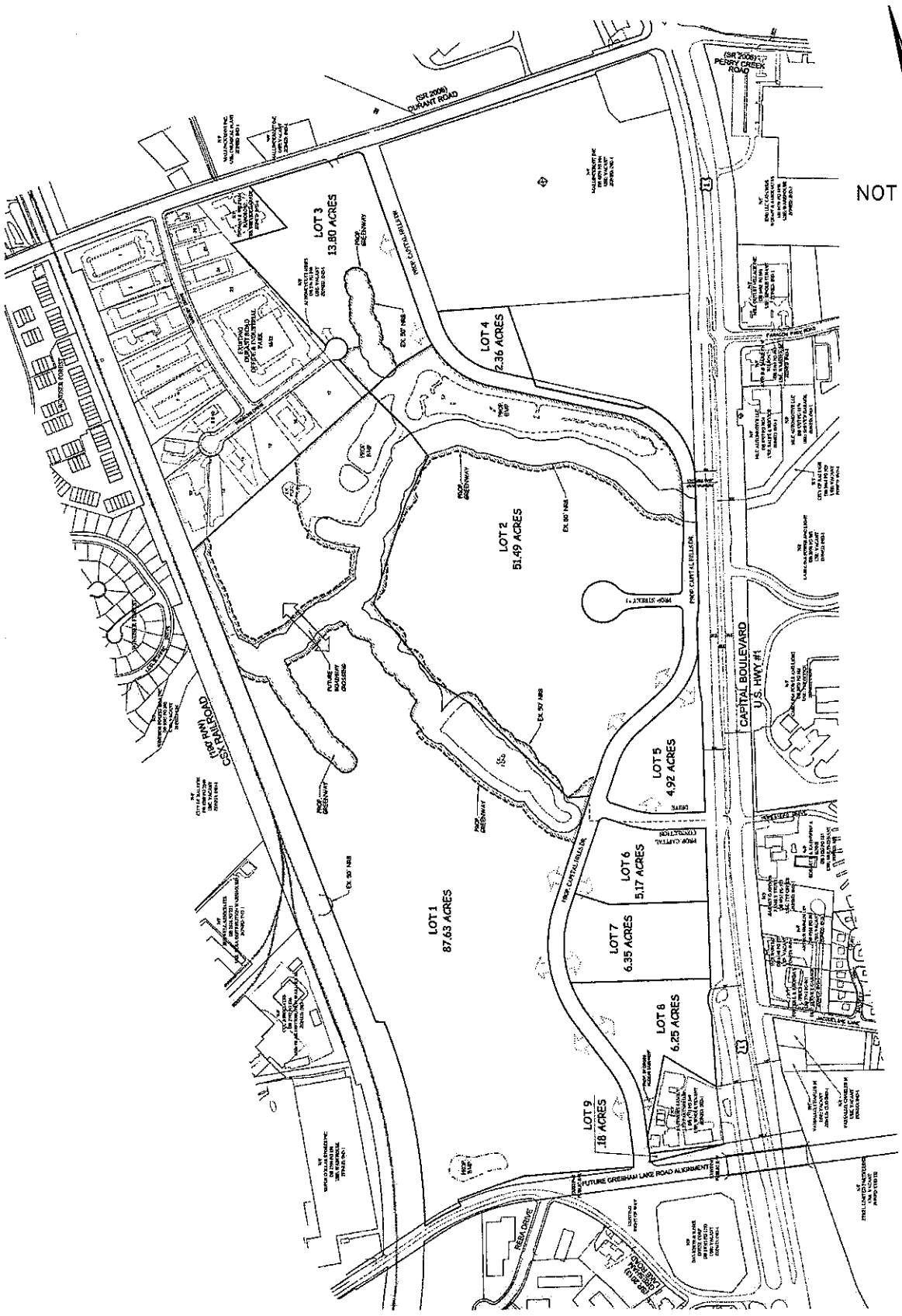
Kimley-Horn and Associates, Inc.	CHEVIOT ASSEMBLAGE TRAFFIC IMPACT ANALYSIS	SITE LOCATION	FIGURE 1

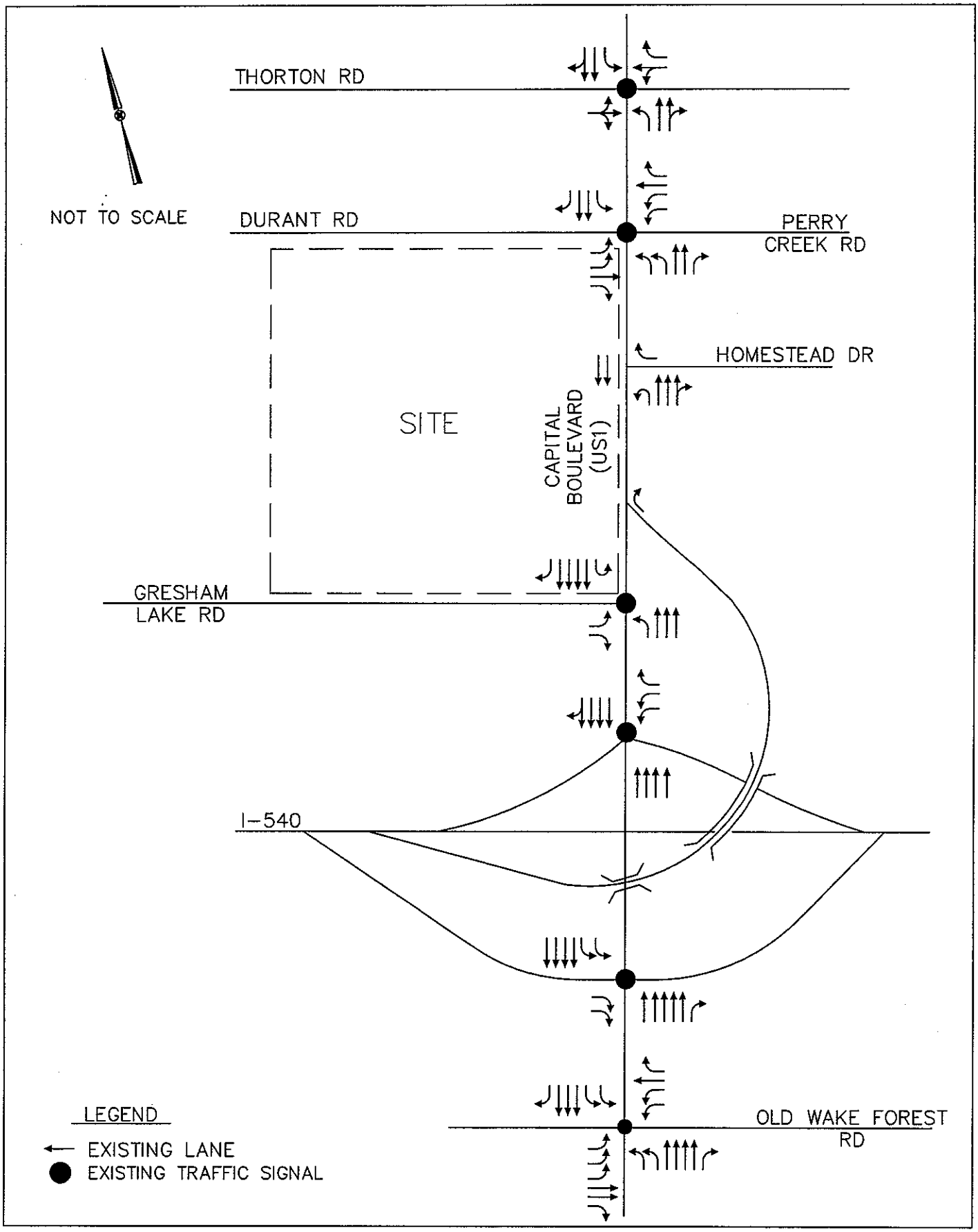


Kimley-Horn and Associates, Inc.

CHEVIOT ASSEMBLAGE
TRAFFIC IMPACT ANALYSIS

SITE LAYOUT

FIGURE
2



Kimley-Horn and Associates, Inc.	CHEVIOT ASSEMBLAGE TRAFFIC IMPACT ANALYSIS	EXISTING ROADWAY LANEAGE	FIGURE 3

4.0 Traffic Generation

The traffic generation potential of the proposed development was determined using the traffic generation rates published in *Trip Generation* (Institute of Transportation Engineers, Seventh Edition, 2003). As currently envisioned, the proposed Cheviot Assemblage development will consist of 300 apartment units, 122,000 s.f. of light industrial space, 380,000 s.f. of general office space, 170,000 s.f. of general retail space, and 251,000 s.f. of car dealerships (new car sales). The proposed development is expected to be completed (built-out) by 2012. Table 4.0 summarizes the estimated traffic generation for the proposed development.

Table 4.0
ITE Traffic Generation (Vehicles)

LUC	Land Use	24 Hour		AM Peak		PM Peak	
		In	Out	In	Out	In	Out
110	General Light Industrial (122,000 s.f.)	425	425	99	13	14	106
220	Apartment (300 d.u.)	977	977	30	121	119	64
710	General Office (380,000 s.f.)	1,865	1,865	480	66	86	418
820	Shopping Center (170,000 s.f.)	4,794	4,794	131	84	427	462
841	New Car Sales (251,000 s.f.)	4,184	4,184	381	134	180	281
Subtotal		**12,245**	**12,245**	**1,121**	**418**	**826**	**1,331**
Internal Capture (9.92%)		-1,350	-1,350	0	0	-107	-107
Pass-By Capture (12.52%)		-1,350	-1,350	0	0	-130	-140
Net New External Trips		**9,545**	**9,545**	**1,121**	**418**	**589**	**1,084**

Internally captured trips are trips that begin and end on the project site and do not access the external roadway network. Internal Capture was taken into account using rates published in the Institute of Transportation Engineers (ITE) *Trip Generation Handbook* (Second Edition, 2004).

Pass-by trips are trips already on the roadway network that will make a trip to the site as they pass by on the adjacent street. Pass-By Capture was taken into account using rates published in the Institute of Transportation Engineers (ITE) *Trip Generation Handbook* (Second Edition, 2004). Pass-by trips were assigned based on anticipated traffic patterns on Capital Boulevard (US 1).

Table 4.0 shows that the proposed development has the potential to generate 9,545 new trips entering and 9,545 new trips exiting the development during a typical weekday, 1,121 new trips entering and

418 new trips exiting during the AM peak hour, and 589 new trips entering and 1,084 new trips exiting during the PM peak hour. Detailed trip generation calculations are included in the Appendix of this report.

5.0 Site Traffic Distribution

The proposed generated trips were assigned to the surrounding roadway network. The directional distribution and assignment of new external trips are based on the existing roadway network, land uses and population densities in the area. Traffic is expected to access the site based on the following distribution:

- 23% to/from the south on Capital Boulevard (US 1)
- 1% to/from the east on Old Wake Forest Road
- 1% to/from the west on Old Wake Forest Road
- 10% to/from the east on I-540
- 15% to/from the west on I-540
- 10% to/from the west on Gresham Lake Road
- 10% to/from the east on Perry Creek Road
- 10% to/from the west on Durant Road
- 2% to/from the east on Thornton Road
- 1% to/from the west on Thornton Road
- 17% to/from the north on Capital Boulevard (US 1)

The site traffic distribution and assignment is shown in Figure 4.

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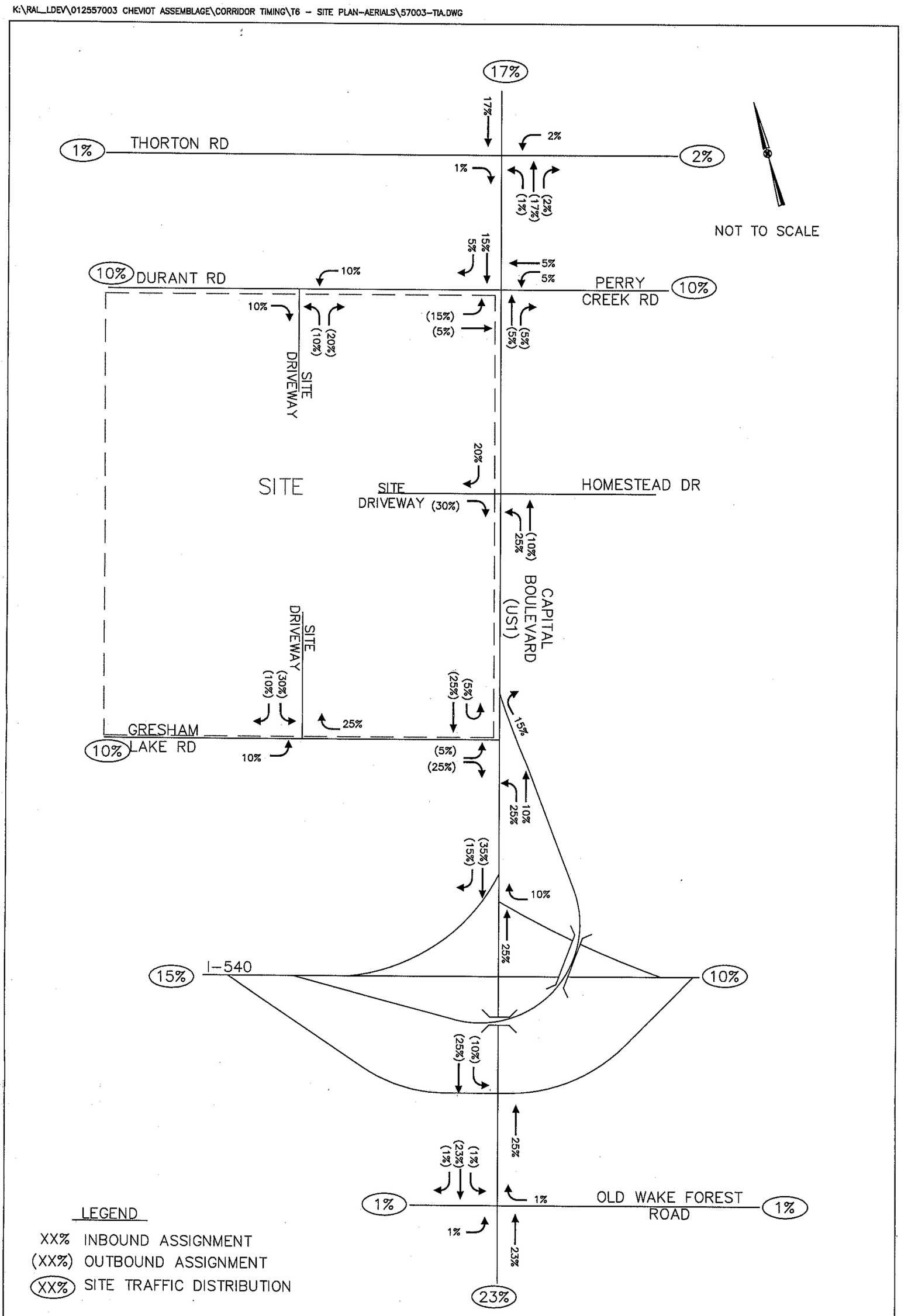

Kimley-Horn and Associates, Inc.	CHEVIOT ASSEMBLAGE TRAFFIC IMPACT ANALYSIS	SITE TRAFFIC DISTRIBUTION AND ASSIGNMENT	FIGURE 4

6.0 Projected Traffic Volumes

6.1 Existing Traffic

AM peak hour (7:00 AM to 9:00 AM) and PM peak hour (4:00 PM to 6:00 PM) turning movement counts were performed by Traffic Survey Services, Inc. at the following intersections:

- Capital Boulevard (US 1) & Old Wake Forest Road — Thursday, April 10, 2008
- Capital Boulevard (US 1) & I-540 Eastbound Ramps — Thursday, April 10, 2008
- Capital Boulevard (US 1) & I-540 Westbound Ramps — Thursday, January 10, 2008
- Capital Boulevard (US 1) & Gresham Lake Road/I-540 Ramp — Thursday, January 10, 2008
- Capital Boulevard (US 1) & Homestead Drive — Wednesday, January 9, 2008
- Capital Boulevard (US 1) & Durant Road/Perry Creek Road — Wednesday, January 9, 2008

All turning movement counts were performed while Wake County traditional and year-round schools were in session.

Turning movement counts for the intersection of Capital Boulevard (US 1) and Thornton Road were obtained from the *Honeycutt Tract Traffic Impact Analysis* (Kimley-Horn and Associates, Inc., May 2007). The 2007 traffic count at the intersection was compared to the 2008 traffic count obtained at Capital Boulevard (US 1) and Durant Road/Perry Creek Road. The two counts were consistent and therefore, no adjustments were made to the 2007 traffic count.

The existing AM peak hour traffic volumes at the study intersections are shown in Figure 5 while the existing PM peak hour traffic volumes are shown in Figure 6. The traffic count data sheets are included in the Appendix. Minor traffic count balancing was performed at Old Wake Forest Road and the I-540 Eastbound Ramps in the AM peak hour and is shown in the Appendix.

6.2 Historic Growth Traffic

Historic growth traffic is the increase in traffic due to usage increases and non-specific growth throughout the area. The existing peak hour traffic volumes were grown by an annual rate of 3.0% for four years to account for background growth in 2012.

6.3 Approved and Proposed Development Traffic

Approved and proposed development traffic is generated by approved or proposed but not yet constructed projects in the vicinity of the proposed project. Based on discussions with NCDOT and City of Raleigh staff, there are two developments within the vicinity of the site that will have a significant impact on the study intersections.

Triangle Town Center Mixed-Use: This approved mixed-use development is located on the northeast quadrant of the intersection of Triangle Town Boulevard and Old Wake Forest Road. The Triangle Town Center Mixed-Use development will consist of 325 apartment units, 100 condominium/ townhomes, a 150-room hotel, 65,000 square feet (s.f.) of general office space, a 225,000 s.f. discount superstore, and 60,000 s.f. of general retail space. The trip generation potential of the development will be assigned to the intersections in the study area based on the *Faison Triangle Town Center TIA* prepared by Kimley-Horn and Associates, Inc. in May of 2006. The development is expected to be built-out in 2009.

Honeycutt Tract: This proposed multi-use development is located on the northeast quadrant of the intersection of Capital Boulevard (US 1) and Perry Creek Road. The Honeycutt Tract development will consist of 62 single-family homes, 37 condominium/townhomes, and 220,000 s.f. of general retail space. The trip generation potential of the development will be assigned to the intersections in the study area based on the *Honeycutt Tract TIA* prepared by Kimley-Horn and Associates, Inc. in May of 2007. This development is expected to be built-out prior to the build-out of Cheviot Assemblage.

The approved and proposed development traffic was added to the existing traffic and the historic growth to obtain the 2012 background traffic volumes. The projected (2012) background AM peak hour volumes are shown in Figure 5 (A & B) while the PM peak hour volumes are shown in Figure 6 (A & B).

6.4 Site Traffic

The proposed site traffic was generated and assigned to the adjacent roadway network according to the distribution discussed previously in Section 5.0. The AM peak hour site traffic volumes are shown in Figure 7 (A & B) while the PM peak hour site traffic volumes are shown in Figure 8 (A & B).

6.5 Traffic Diversion

The development of the site and proposed traffic signal on Capital Boulevard (US 1) will provide an alternate route for vehicles currently traveling from/to the south on Capital Boulevard (US 1) to/from the west on Durant Road. A portion of background traffic (approximately 37%) expected to utilize the northbound left-turn lane and the eastbound right-turn lane at the intersection of Capital Boulevard (US 1) at Durant Road/Perry Creek Road was reassigned to the project driveway on Durant Road and to the access on Capital Boulevard (US 1) at Homestead Drive. The traffic diversion is shown in Figure 7 (A & B) and Figure 8 (A & B).

6.6 Total Traffic

To obtain the projected (2012) build-out traffic volumes, the proposed site traffic was added to the projected (2012) background traffic. Total traffic volume calculations are detailed in intersection spreadsheets in the Appendix of this report. Figure 7 (A & B) shows the projected (2012) AM peak hour traffic volumes while Figure 8 (A & B) shows the projected (2012) PM peak hour traffic volumes at the study intersections following build-out of the development.

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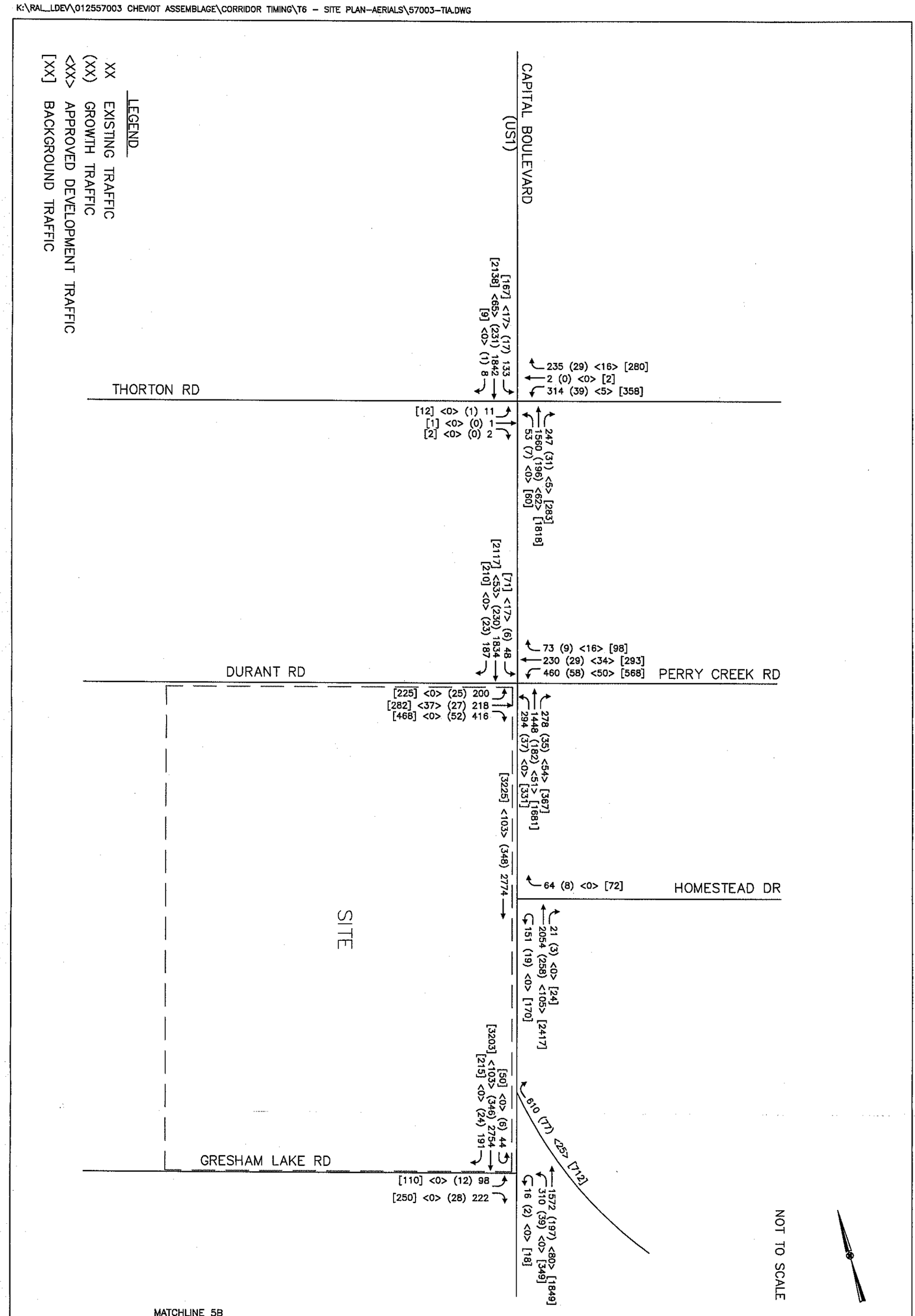

Kimley-Horn and Associates, Inc.	CHEVIOT ASSEMBLAGE TRAFFIC IMPACT ANALYSIS	EXISTING & PROJECTED (2012) BACKGROUND AM TRAFFIC VOLUMES	FIGURE 5A

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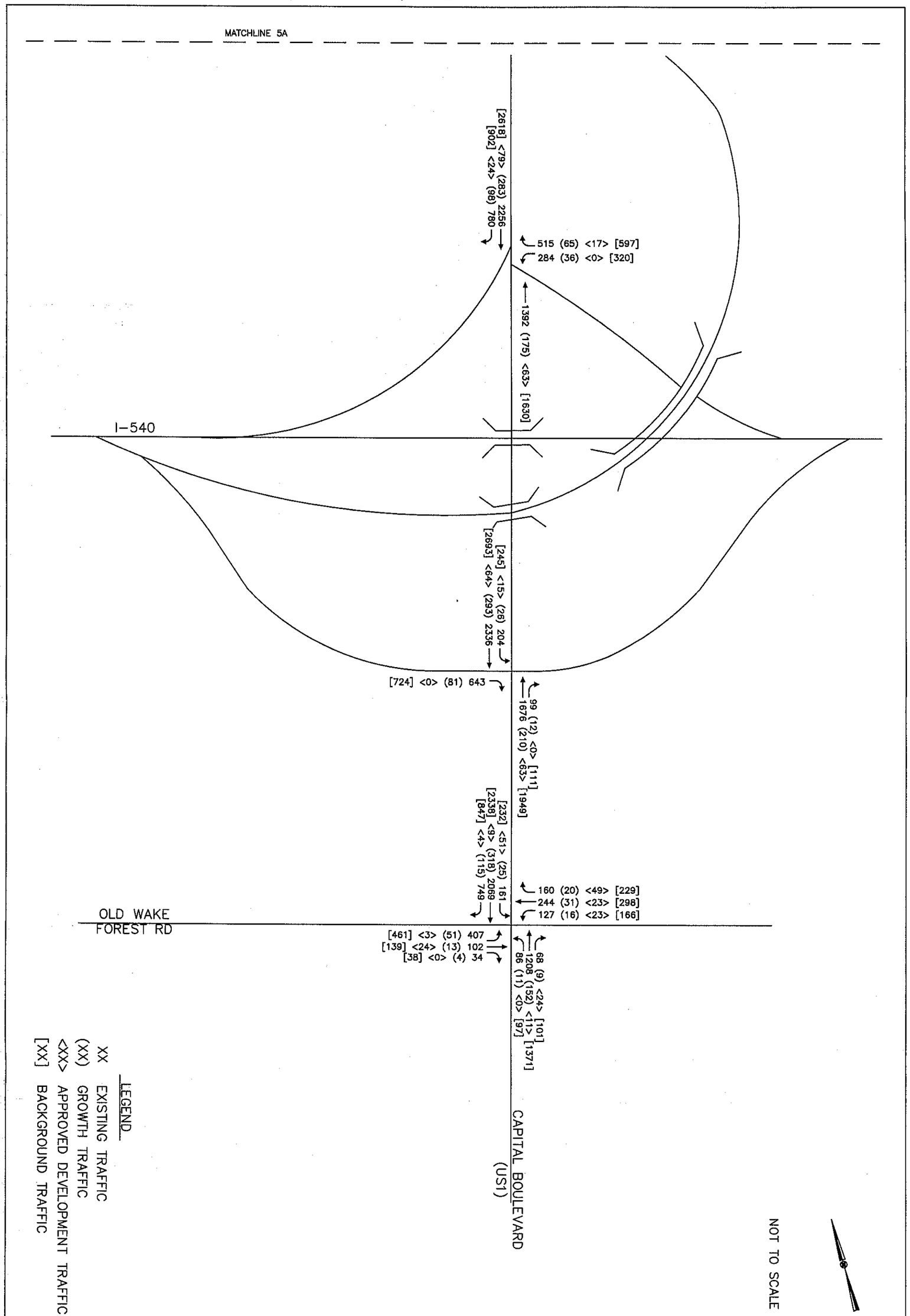

Kimley-Horn and Associates, Inc.	CHEVIOT ASSEMBLAGE TRAFFIC IMPACT ANALYSIS	EXISTING & PROJECTED (2012) BACKGROUND AM TRAFFIC VOLUMES	FIGURE 5B

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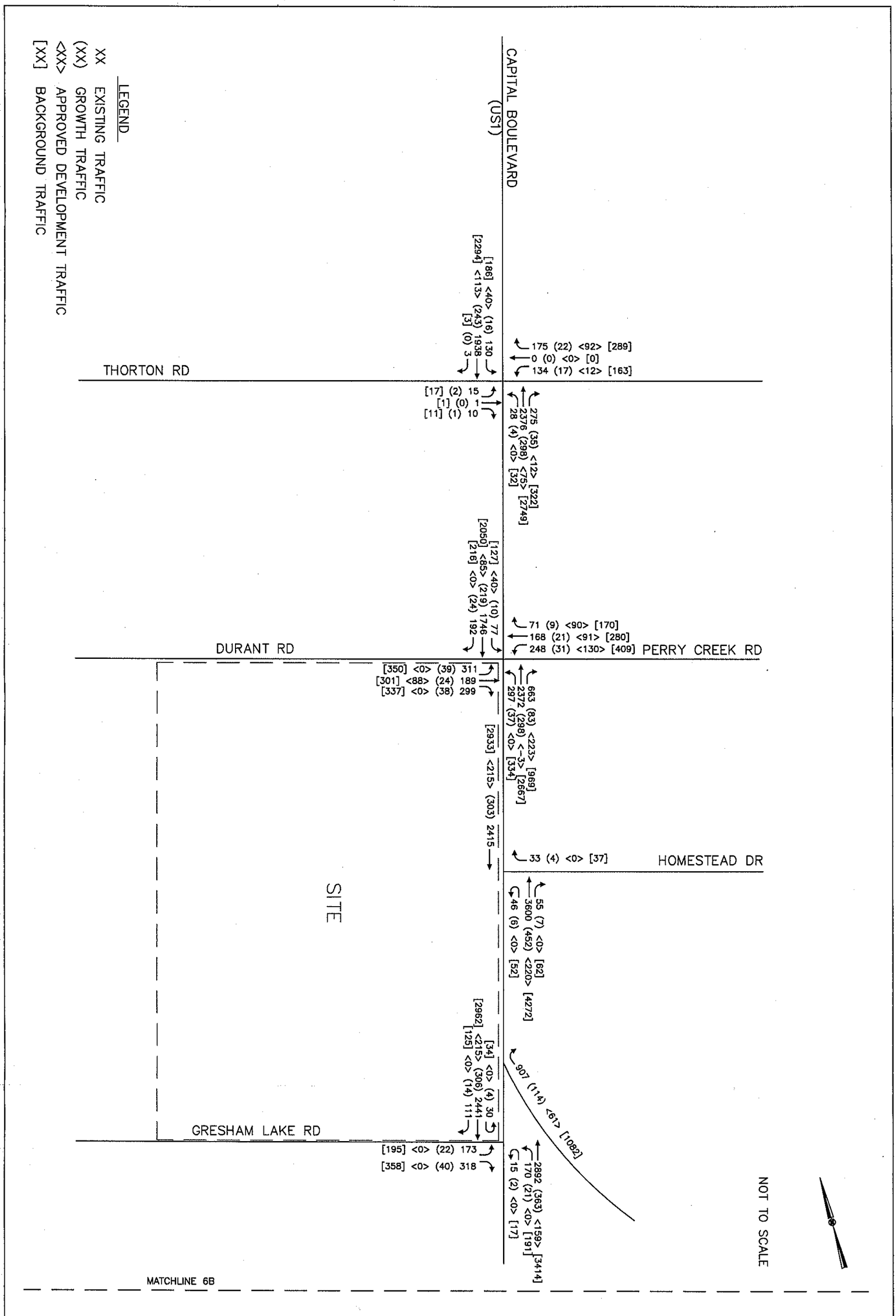

Kimley-Horn and Associates, Inc.	CHEVIOT ASSEMBLAGE TRAFFIC IMPACT ANALYSIS	EXISTING & PROJECTED (2012) BACKGROUND PM TRAFFIC VOLUMES	FIGURE 6A

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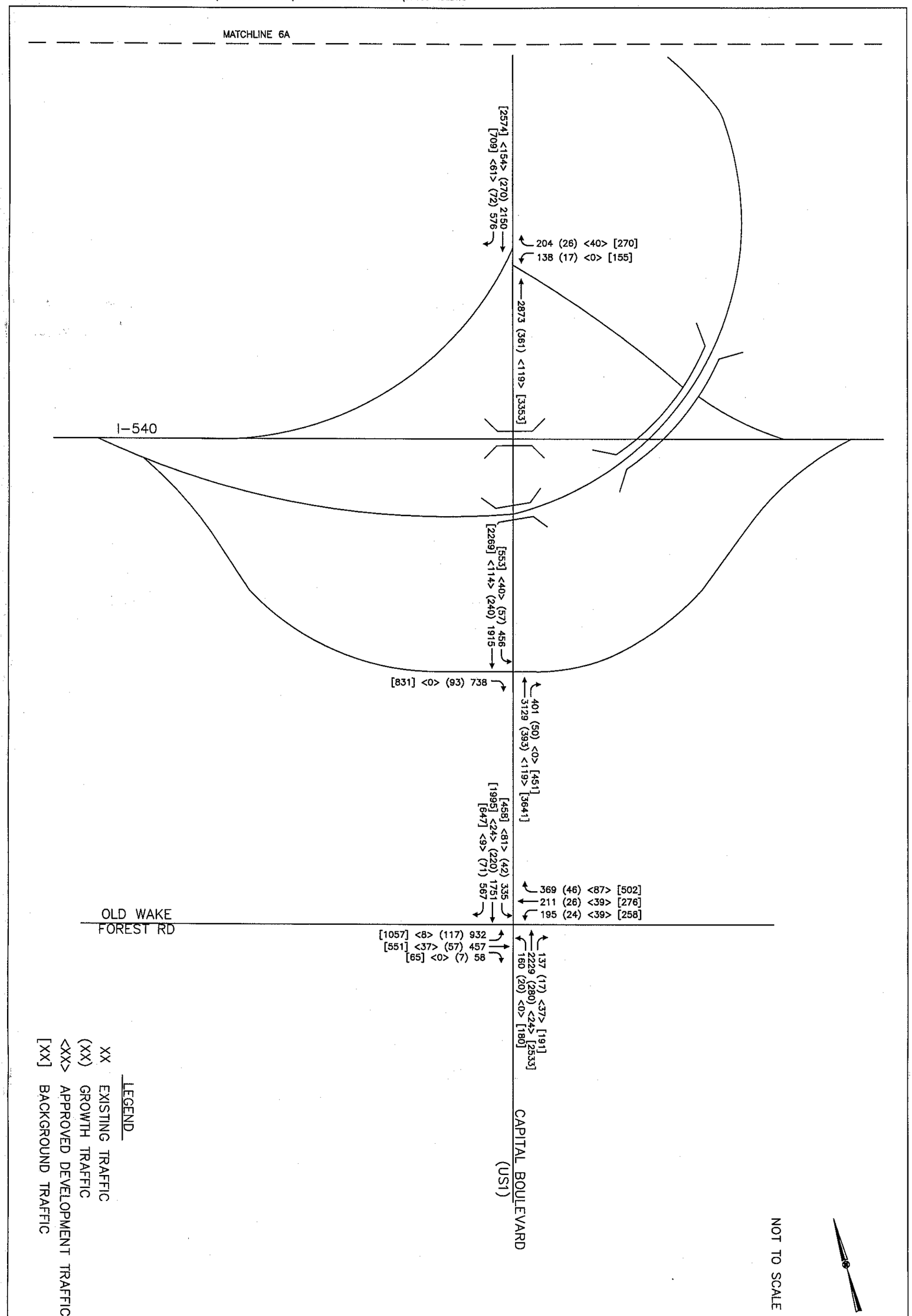

Kimley-Horn and Associates, Inc.	CHEVIOT ASSEMBLAGE TRAFFIC IMPACT ANALYSIS	EXISTING & PROJECTED (2012) BACKGROUND PM TRAFFIC VOLUMES	FIGURE 6B

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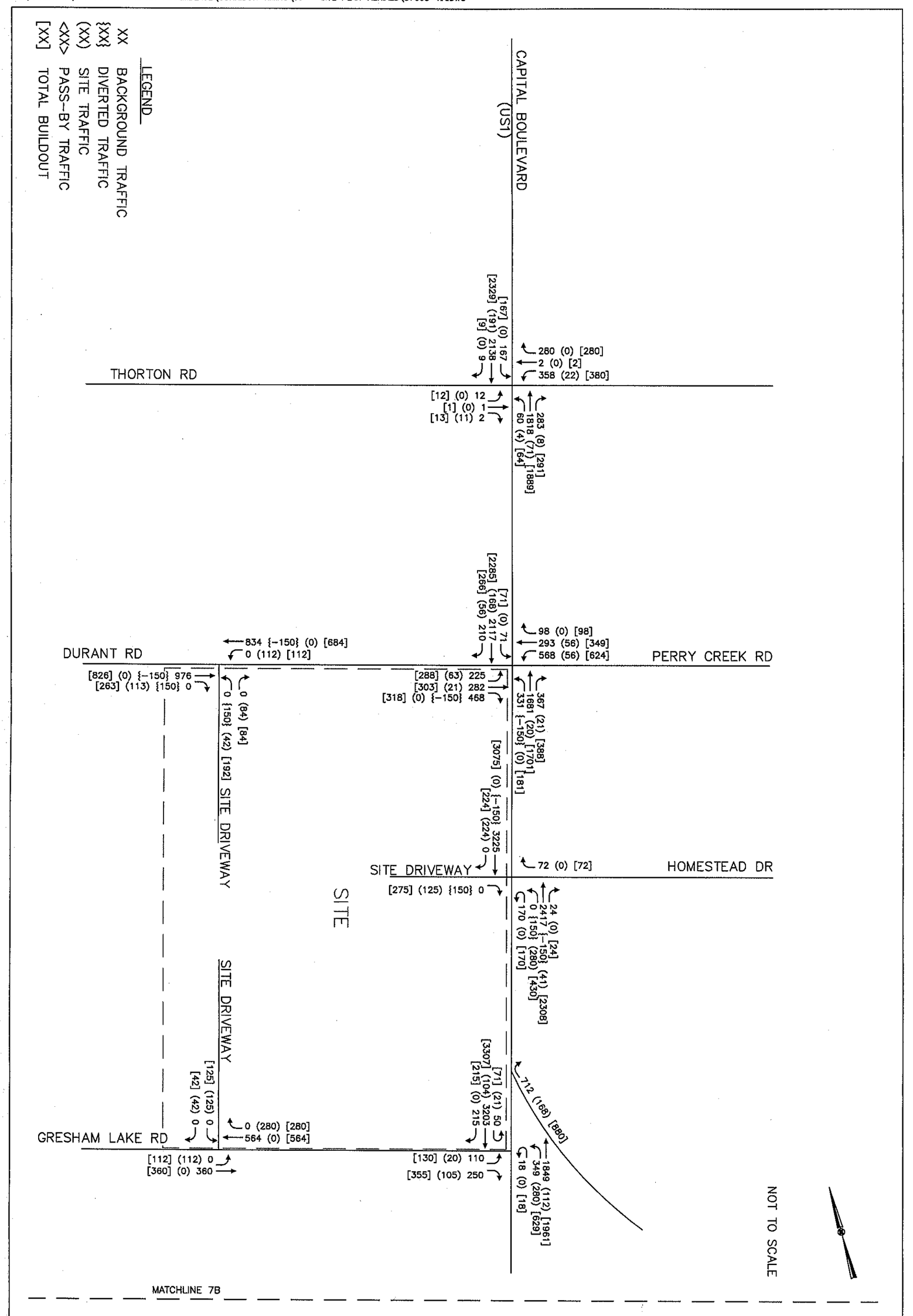

Kimley-Horn and Associates, Inc.	CHEVIOT ASSEMBLAGE TRAFFIC IMPACT ANALYSIS	PROJECTED (2012) BUILD–OUT AM TRAFFIC VOLUMES	FIGURE 7A

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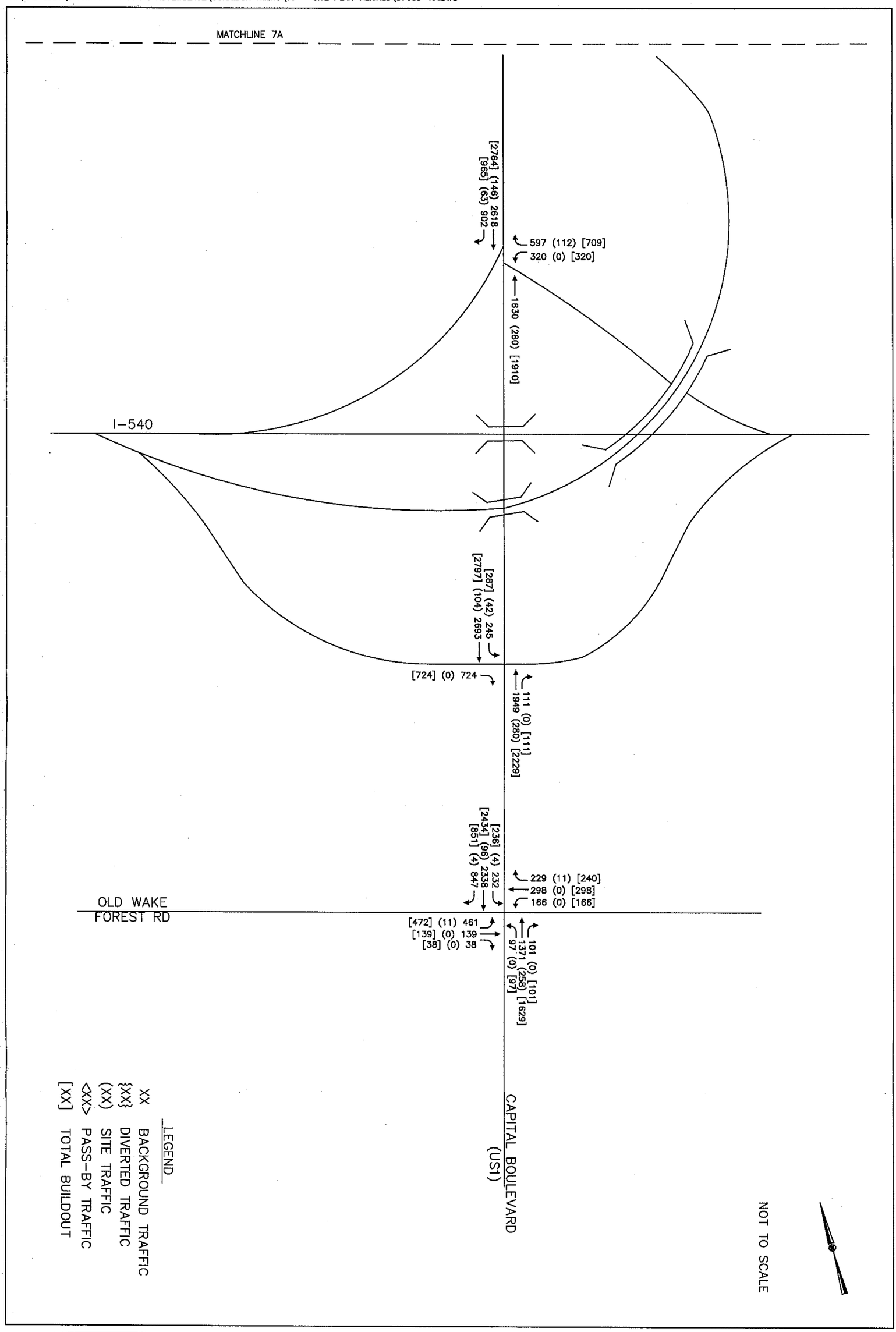

Kimley-Horn and Associates, Inc.	CHEVIOT ASSEMBLAGE TRAFFIC IMPACT ANALYSIS	PROJECTED (2012) BUILD–OUT AM TRAFFIC VOLUMES	FIGURE 7B

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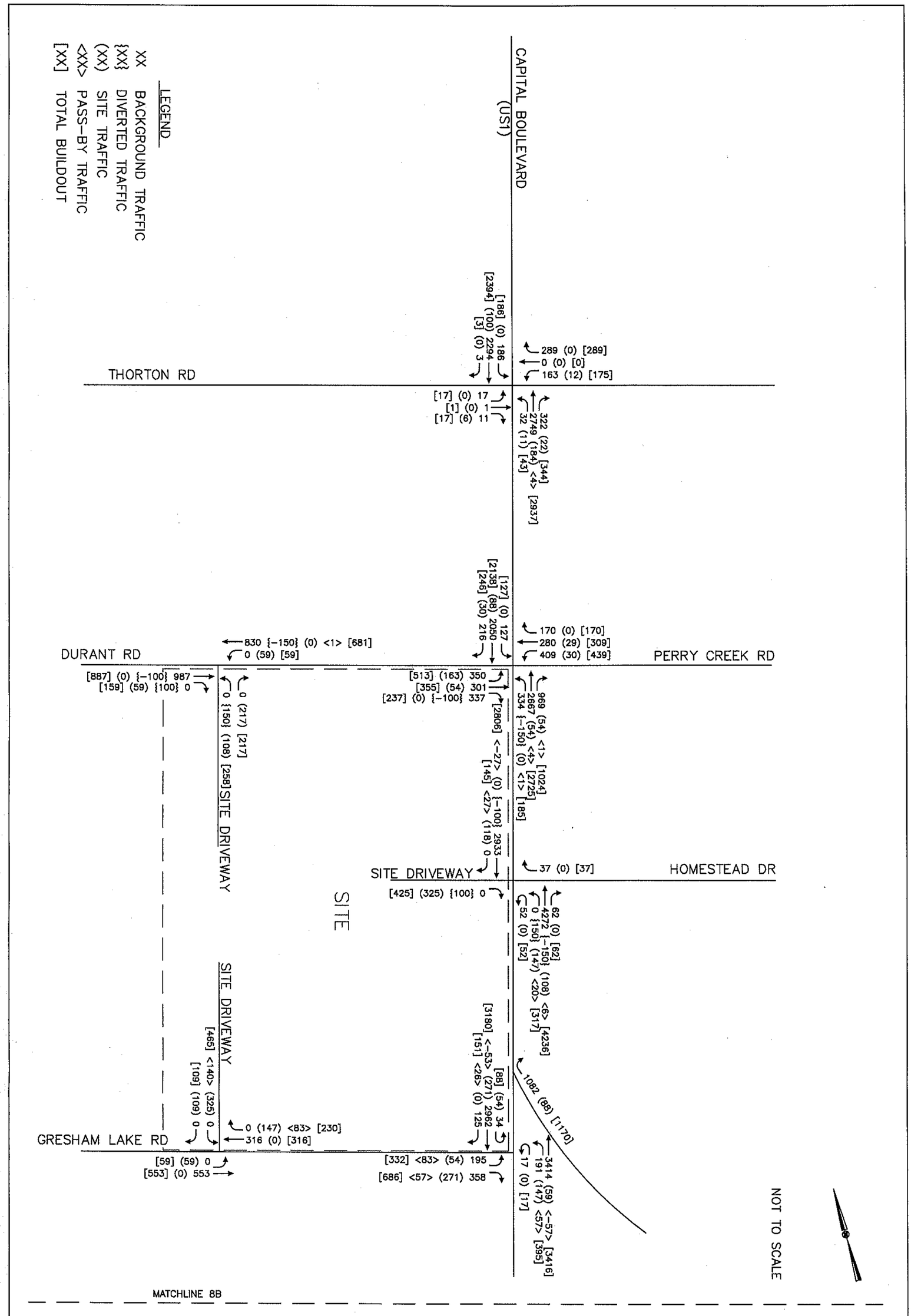

Kimley-Horn and Associates, Inc.	CHEVIOT ASSEMBLAGE TRAFFIC IMPACT ANALYSIS	PROJECTED (2012) BUILD-OUT PM TRAFFIC VOLUMES	FIGURE 8A

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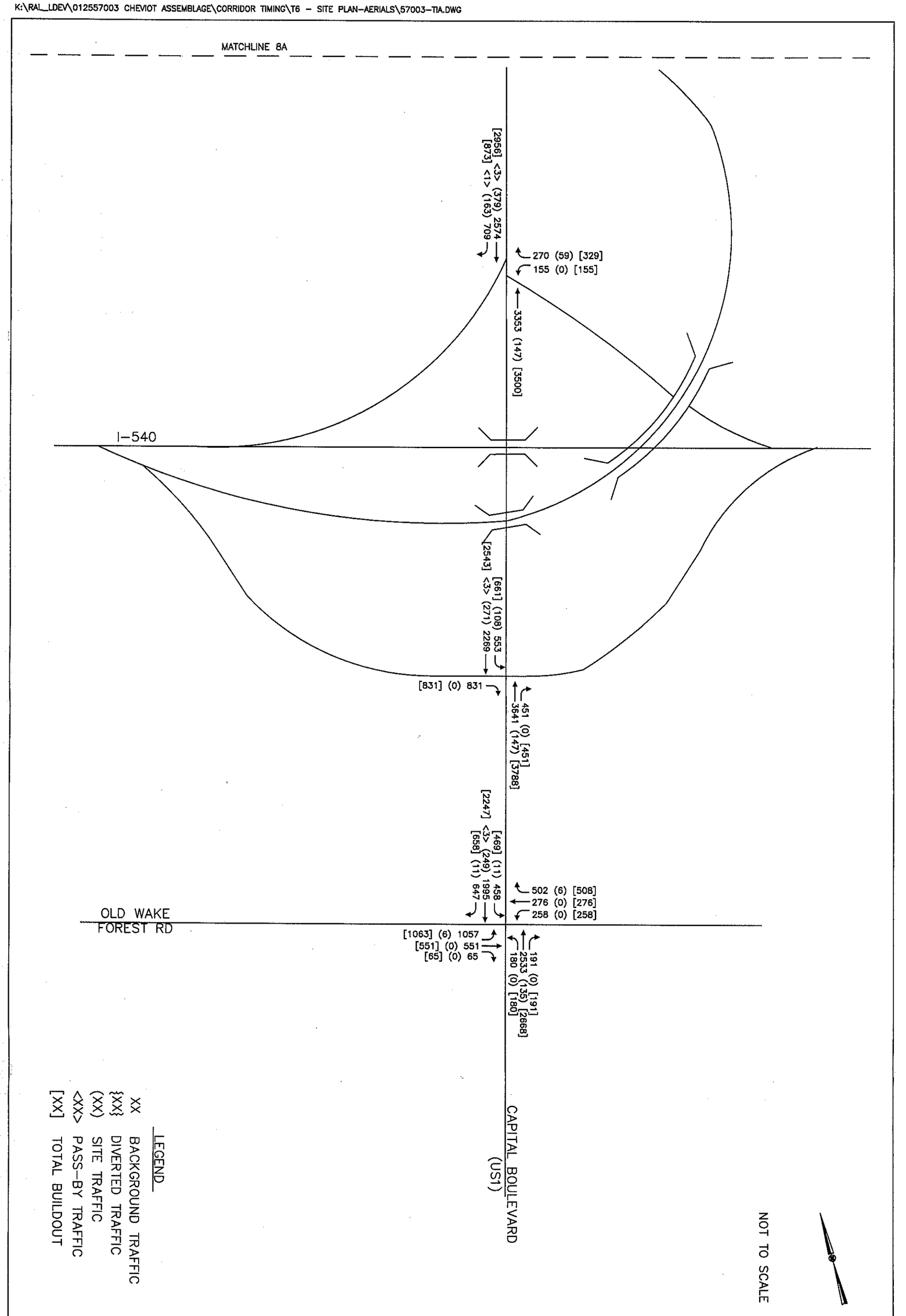

Kimley-Horn and Associates, Inc.	CHEVIOT ASSEMBLAGE TRAFFIC IMPACT ANALYSIS	PROJECTED (2012) BUILD-OUT PM TRAFFIC VOLUMES	FIGURE 8B

7.0 Capacity Analysis

Capacity analyses (see Appendix) were performed for the AM and PM peak hours for the existing (2008) traffic condition, the projected (2012) background traffic condition, and the projected (2012) build-out traffic condition using Synchro (Version 7, Build 761) software to determine the operating characteristics of the adjacent road network and the impacts of the proposed project.

Capacity is defined as the maximum number of vehicles that can pass over a particular road segment or through a particular intersection within a set time duration. Capacity is combined with Level-of-Service (LOS) to describe the operating characteristics of a road segment or intersection. LOS is a qualitative measure that describes operational conditions and motorist perceptions within a traffic stream. Synchro Version 7 defines six levels of service, LOS A through LOS F, with A representing the shortest average delays and F representing the longest average delays. LOS D is the typically accepted standard for signalized intersections in urbanized areas. For signalized intersections, LOS is defined for the overall intersection operation.

For unsignalized intersections, only the movements that must yield right-of-way experience control delay. Therefore, LOS criteria for the overall intersection is not reported by Synchro Version 7 or computable using methodology published in the *Highway Capacity Manual.* Accordingly, minor street approach delays are reported herein for unsignalized conditions. It is typical for stop sign controlled side streets and driveways intersecting major streets to experience long delays (LOS F) during peak hours, while the majority of the traffic moving through the intersection on the major street experiences little or no delay. Table 7.0-A lists the LOS control delay thresholds published in the *Highway Capacity Manual* for signalized and unsignalized intersections, as well as the unsignalized operational descriptions assumed herein.

Section 9.0 describes the settings used to analyze the intersections in Synchro 7 and an explanation of why these settings were used.

Table 7.0-A lists the LOS control delay thresholds published in the *Highway Capacity Manual* for signalized and unsignalized intersections.

Table 7.0-A
Level-of-Service Control Delay Thresholds

Level-of-Service	Signalized Intersections – Control Delay Per Vehicle [sec/veh]	Unsignalized Intersections – Average Control Delay [sec/veh] & Qualitative Operational Description
A	≤ 10	≤ 10
B	> 10 – 20	> 10 – 15
C	> 20 – 35	> 15 – 25
D	> 35 – 55	> 25 – 35
E	> 55 – 80	> 35 – 50
F	> 80	> 50

Capacity analyses were performed for 1) Existing (2008) Traffic Condition, the 2) Projected (2012) Background Traffic Condition, and the 3) Projected (2012) Build-Out Traffic Condition for the following intersections:

- Capital Boulevard (US 1) & Old Wake Forest Road
- Capital Boulevard (US 1) & I-540 Eastbound Ramps
- Capital Boulevard (US 1) & I-540 Westbound Ramps
- Capital Boulevard (US 1) & Gresham Lake Road
- Capital Boulevard (US 1) & Homestead Drive/Proposed Site Driveway
- Capital Boulevard (US 1) & Durant Road/Perry Creek Road
- Capital Boulevard (US 1) & Thornton Road
- Gresham Lake Road & Proposed Site Driveway
- Durant Road & Proposed Site Driveway

Table 7.0-B summarizes the LOS and delay (seconds per vehicle) for all of the study intersections for the AM and PM peak hour traffic conditions listed above. All capacity analyses are included in the Appendix and are briefly summarized in the following sub-sections. As requested by the City of Raleigh, NCDOT crash data is also included in the Appendix.

Table 7.0-B
Level-of-Service Summary

Condition	AM Peak-Hour LOS (Delay)	PM Peak-Hour LOS (Delay)
Capital Boulevard (US 1) & Old Wake Forest Road (Signalized)		
Existing (2008) Traffic	Overall – C (33.8) NB – C (33.3) SB – C (23.0) EB – E (66.8) WB – E (62.3)	Overall – D (49.9) NB – D (45.2) SB – C (29.3) EB – F (81.2) WB – E (77.6)
Projected (2012) Background Traffic	Overall – D (38.7) NB – D (35.9) SB – C (23.1) EB – F (96.8) WB – E (68.6)	Overall – E (69.5) NB – E (76.5) SB – C (30.8) EB – F (107.0) WB – F (105.1)
Projected (2012) Build-Out Traffic w/ Corridor Retiming	Overall – D (38.5) NB – C (31.6) SB – C (22.3) EB – F (89.7) WB – F (90.0)	Overall – E (67.8) NB – E (70.0) SB – C (30.1) EB – F (108.6) WB – F (118.0)
Capital Boulevard (US 1) & I-540 Eastbound Ramp (Signalized)		
Existing (2008) Traffic	Overall – B (19.6) NB – A (9.5) SB – B (14.3) EB – E (68.2)	Overall – B (17.6) NB – A (1.6) SB – C (24.3) EB – E (72.8)
Projected (2012) Background Traffic	Overall – B (17.9) NB – A (5.4) SB – B (14.7) EB – E (66.7)	Overall – C (21.0) NB – A (1.5) SB – C (27.7) EB – F (94.8)
Projected (2012) Build-Out Traffic w/ Corridor Retiming	Overall – B (14.3) NB – A (1.9) SB – B (10.8) EB – E (69.5)	Overall – C (21.1) NB – B (15.4) SB – B (18.8) EB – E (58.9)
Capital Boulevard (US 1) & I-540 Westbound Ramp (Signalized)		
Existing (2008) Traffic	Overall - B (18.6) NB – A (7.7) SB – B (16.5) WB – D (43.7)	Overall - B (14.9) NB – B (16.6) SB – A (2.9) WB – E (76.1)
Projected (2012) Background Traffic	Overall - C (30.7) NB – A (4.6) SB – B (10.5) WB – F (134.9)	Overall - C (22.8) NB – C (25.2) SB – A (1.9) WB – F (129.7)
Projected (2012) Build-Out Traffic w/Recommended Improvement and Corridor Retiming	Overall – B (15.2) NB – A (5.2) SB – A (4.3) WB – E (63.2)	Overall – A (9.9) NB – A (6.5) SB – A (2.4) WB – F (80.4)

Table 7.0-B (Cont.) Level-of-Service Summary		
Condition	**AM Peak-Hour LOS (Delay)**	**PM Peak-Hour LOS (Delay)**
Capital Boulevard (US 1) & Gresham Lake Road (Signalized)		
Existing (2008) Traffic	Overall - C (24.9) NB – B (18.7) SB – C (25.8) EB – D (53.5)	Overall - C (24.6) NB – B (19.3) SB – C (24.5) EB – E (58.2)
Projected (2012) Background Traffic	Overall - C (30.2) NB – C (23.9) SB – C (31.7) EB – D (54.7)	Overall - D (40.9) NB – D (45.6) SB – C (32.4) EB – E (57.9)
Projected (2012) Build-Out Traffic w/ Recommended Improvements and Corridor Retiming	Overall – C (28.3) NB – C (24.3) SB – C (28.1) EB – D (51.4)	Overall – D (53.3) NB – E (60.7) SB – D (39.4) EB – E (71.9)
Capital Boulevard (US 1) & Homestead Drive/Proposed Site Driveway (Unsignalized & Signalized)		
Existing (2008) Traffic (Unsignalized)	NBL – F (274.5) WB – C (17.3)	NBL – D (34.9) WB – E (36.1)
Projected (2012) Background Traffic (Unsignalized)	NBL – F (754.6) WB – C (21.4)	NBL – F (77.2) WB – F (60.1)
Projected (2012) Build-Out Traffic w/ Recommended Improvements and Corridor Retiming (Signalized)	Overall – B (19.0) NBL – E (63.8) NB – B (13.4) SB – C (20.8) EB – E (57.1)	Overall – B (16.7) NBL – D (54.5) NB – B (11.6) SB – B (17.5) EB – E (66.8)
Projected (2012) Build-Out Traffic w/ No Signal	NBL – F (3763.6) WB – C (20.2) EB – F (54.0)	NBL – F (1418.6) WB – F (54.5) EB – F (84.1)
Capital Boulevard (US 1) & Durant Road/Perry Creek Road		
Existing (2008) Traffic	Overall - F (81.2) NB – D (48.9) SB – F (84.5) EB – F (126.5) WB – F (108.2)	Overall - F (84.7) NB – F (95.0) SB – D (49.0) EB – F (119.0) WB – F (106.0)
Projected (2012) Background Traffic w/Committed Improvements	Overall - F (114.3) NB – E (56.5) SB – F (144.5) EB – F (182.4) WB – F (112.9)	Overall - F (136.1) NB – F (148.1) SB – F (84.8) EB – F (238.8) WB – F (105.7)
Projected (2012) Build-Out Traffic w/ Recommended Improvements and Corridor Retiming	Overall - F (85.3) NB – D (49.3) SB – E (73.2) EB – F (161.6) WB – F (126.6)	Overall – F (127.0) NB – F (146.7) SB – D (36.8) EB – F (228.6) WB – F (167.3)

Table 7.0-C (Cont.)
Level-of-Service Summary

Condition	AM Peak-Hour LOS (Delay)	PM Peak-Hour LOS (Delay)
Capital Boulevard (US 1) & Thornton Road (Signalized)		
Existing (2008) Traffic	Overall – F (293.1) NB – E (69.9) SB – A (8.8) EB – F (123.5) WB – F (2074.3)	Overall – D (36.4) NB – C (23.1) SB – B (13.2) EB – F (154.4) WB – F (296.6)
Projected (2012) Background Traffic	Overall – F (307.5) NB – F (116.1) SB – B (13.2) EB – F (127.1) WB – F (2022.7)	Overall – F (89.7) NB – F (97.8) SB – D (48.3) EB – F (206.5) WB – F (254.3)
Projected (2012) Build-Out Traffic w/ Corridor Retiming	Overall – F (234.4) NB – F (110.3) SB – B (19.1) EB – F (151.0) WB – F (1474.0)	Overall – F (102.0) NB – F (115.5) SB – D (51.0) EB – F (204.2) WB – F (280.9)
Gresham Lake Road & Proposed Site Driveway		
Projected (2012) Build-Out Traffic w/ Recommended Improvements	Overall – B (17.0) SB – C (30.6) EB – B (12.9) WB – B (16.6)	Overall – C (26.2) SB – C (25.7) EB – C (24.6) WB – B (19.3)
Durant Road & Proposed Site Driveway		
Projected (2012) Build-Out Traffic w/ Recommended Improvements	Overall – B (16.8) NB – C (26.4) EB – B (18.6) WB – B (11.1)	Overall – B (18.2) NB – C (24.8) EB – C (20.2) WB – B (11.3)

7.1 Capital Boulevard (US 1) & Old Wake Forest Road

Analyses indicate that the existing signalized intersection of Capital Boulevard (US 1) & Old Wake Forest Road currently operates at LOS C in the AM peak hour and LOS D in the PM peak hour. In 2012 without the proposed Cheviot Assemblage development, the intersection is projected to operate at LOS D in the AM peak hour and LOS E PM peak hour.

At project build-out in 2012 with the corridor retiming in place, the intersection is projected to continue to operate at LOS D in the AM peak hour and LOS E in the PM peak hour. No roadway improvements are needed to mitigate build-out traffic conditions.

Table 7.1 summarizes the level-of-service and delay for the signalized intersection of Capital Boulevard (US 1) & Old Wake Forest Road for the existing (2008) traffic, projected (2012) background traffic, and projected (2012) build-out traffic with the proposed corridor retiming.

Table 7.1
Level-of-Service
Capital Boulevard (US 1) & Old Wake Forest Road

Condition	AM Peak Hour LOS (Delay)	PM Peak Hour LOS (Delay)
Existing (2008) Traffic	Overall – C (33.8) NB – C (33.3) SB – C (23.0) EB – E (66.8) WB – E (62.3)	Overall – D (49.9) NB – D (45.2) SB – C (29.3) EB – F (81.2) WB – E (77.6)
Projected (2012) Background Traffic	Overall – D (38.7) NB – D (35.9) SB – C (23.1) EB – F (96.8) WB – E (68.6)	Overall – E (69.5) NB – E (76.5) SB – C (30.8) EB – F (107.0) WB – F (105.1)
Projected (2012) Build-Out Traffic w/ Corridor Retiming	Overall – D (38.5) NB – C (31.6) SB – C (22.3) EB – F (89.7) WB – F (90.0)	Overall – E (67.8) NB – E (70.0) SB – C (30.1) EB – F (108.6) WB – F (118.0)

7.2 Capital Boulevard (US 1) & I-540 Eastbound Ramp

Analyses indicate that the existing signalized intersection of Capital Boulevard (US 1) & I-540 Eastbound Ramp currently operates at LOS B in the AM and PM peak hours. In 2012 without the proposed Cheviot Assemblage development, the intersection is projected to operate at LOS B in the AM peak hours and LOS C in the PM peak hour.

At project build-out in 2012 with the corridor retiming in place, the intersection is projected to continue to operate at LOS B in the AM peak hour and LOS C in the PM peak hour. No roadway improvements are needed to mitigate build-out traffic conditions.

Table 7.2 summarizes the level-of-service and delay for the signalized intersection of Capital Boulevard (US 1) & I-540 Eastbound Ramp for the existing (2008) traffic, projected (2012) background traffic, and projected (2012) build-out traffic with the proposed corridor retiming.

Table 7.2
Level-of-Service
Capital Boulevard (US 1) & I-540 Eastbound Ramp

Condition	AM Peak Hour LOS (Delay)	PM Peak Hour LOS (Delay)
Existing (2008) Traffic	Overall – B (19.6) NB – A (9.5) SB – B (14.3) EB – E (68.2)	Overall – B (17.6) NB – A (1.6) SB – C (24.3) EB – E (72.8)
Projected (2012) Background Traffic	Overall – B (17.9) NB – A (5.4) SB – B (14.7) EB – E (66.7)	Overall – C (21.0) NB – A (1.5) SB – C (27.7) EB – F (94.8)
Projected (2012) Build-Out Traffic w/ Corridor Retiming	Overall – B (14.3) NB – A (1.9) SB – B (10.8) EB – E (69.5)	Overall – C (21.1) NB – B (15.4) SB – B (18.8) EB – E (58.9)

7.3 Capital Boulevard (US 1) & I-540 Westbound Ramp

Analyses indicate that the existing signalized intersection of Capital Boulevard (US 1) & I-540 Westbound Ramp currently operates at LOS B in the AM and PM peak hours. In 2012 without the proposed Cheviot Assemblage development, the intersection is projected to operate at LOS C in the AM and PM peak hours. The following improvements are recommended to mitigate build-out traffic conditions:

- Restripe the westbound approach of the I-540 Westbound Ramp to provide an exclusive left-turn lane, a shared left-turn/right-turn lane, and an exclusive right-turn lane.

At project build-out in 2012 with the corridor retiming and recommended improvement in place, the intersection is projected to operate at LOS B in the AM peak hour and LOS A in the PM peak hour.

Capital Boulevard (US 1) looking north at the I-540 Westbound Ramps

Table 7.3 summarizes the level-of-service and delay for the signalized intersection of Capital Boulevard (US 1) & I-540 Westbound Ramp for the existing (2008) traffic, projected (2012) background traffic, and projected (2012) build-out traffic with the proposed corridor retiming and recommended improvement.

Table 7.3
Level-of-Service
Capital Boulevard (US 1) & I-540 Westbound Ramp

Condition	AM Peak Hour LOS (Delay)	PM Peak Hour LOS (Delay)
Existing (2008) Traffic	Overall - B (18.6) NB – A (7.7) SB – B (16.5) WB – D (43.7)	Overall - B (14.9) NB – B (16.6) SB – A (2.9) WB – E (76.1)
Projected (2012) Background Traffic	Overall - C (30.7) NB – A (4.6) SB – B (10.5) WB – F (134.9)	Overall - C (22.8) NB – C (25.2) SB – A (1.9) WB – F (129.7)
Projected (2012) Build-Out Traffic w/Recommended Improvement and Corridor Retiming	Overall – B (15.2) NB – A (5.2) SB – A (4.3) WB – E (63.2)	Overall – A (9.9) NB – A (6.5) SB – A (2.4) WB – F (80.4)

7.4 Capital Boulevard (US 1) & Gresham Lake Road

Analyses indicate that the existing signalized intersection of Capital Boulevard (US 1) & Gresham Lake Road currently operates at LOS C in the AM and PM peak hours. In 2012 without the proposed Cheviot Assemblage development, the intersection is projected to operate at LOS C in the AM peak hour and LOS D in the PM peak hour. The following improvements are recommended to mitigate build-out traffic conditions:

- Construct an additional northbound left-turn lane on Capital Boulevard (US 1) and lengthen the existing northbound left-turn lane to provide dual left-turn lanes each with 500 feet of full-width storage.
- Construct an additional eastbound right-turn lane on Gresham Lake Road and lengthen the existing eastbound right-turn lane to provide dual right-turn lanes each with 450 feet of full-width storage.

Capital Boulevard (US 1) looking south at Gresham Lake Road

At project build-out in 2012 with the corridor retiming and the recommended improvements in place, the intersection is projected to continue to operate at LOS C in the AM peak hour and LOS D in the PM peak hour.

Table 7.4 summarizes the level-of-service and delay for the signalized intersection of Capital Boulevard (US 1) & Gresham Lake Road for the existing (2008) traffic, projected (2012) background traffic, and projected (2012) build-out traffic with the proposed corridor retiming and recommended improvements.

Table 7.4
Level-of-Service
Capital Boulevard (US 1) & Gresham Lake Road

Condition	AM Peak Hour LOS (Delay)	PM Peak Hour LOS (Delay)
Existing (2008) Traffic	Overall - C (24.9) NB – B (18.7) SB – C (25.8) EB – D (53.5)	Overall - C (24.6) NB – B (19.3) SB – C (24.5) EB – E (58.2)
Projected (2012) Background Traffic	Overall - C (30.2) NB – C (23.9) SB – C (31.7) EB – D (54.7)	Overall - D (40.9) NB – D (45.6) SB – C (32.4) EB – E (57.9)
Projected (2012) Build-Out Traffic w/ Recommended Improvements and Corridor Retiming	Overall – C (28.3) NB – C (24.3) SB – C (28.1) EB – D (51.4)	Overall – D (53.3) NB – E (60.7) SB – D (39.4) EB – E (71.9)

7.5 Capital Boulevard (US 1) & Homestead Drive/Proposed Site Driveway

Analyses indicate that the minor street westbound approach at the existing unsignalized intersection of Capital Boulevard (US 1) & Homestead Drive currently operates at LOS C in the AM peak hour and LOS E in the PM peak hour with the northbound left-turn movement operating at LOS F in the AM peak hour and LOS D in the PM peak hour. In 2012 without the proposed Cheviot Assemblage development, the minor street approach is projected to operate at LOS C in the AM peak hour and LOS F in the PM peak hour while the northbound left-turn movement is projected to operate at LOS F in the AM and PM peak hours. The following improvements are recommended to mitigate build-out traffic conditions:

- Install a traffic signal.
- Construct an additional northbound left-turn lane on Capital Boulevard (US 1) and lengthen the existing northbound left-turn lane to provide dual left-turn lanes each with 400 feet of full-width storage.
- Construct an exclusive southbound right-turn lane on Capital Boulevard (US 1) with 100 feet of full-width storage.
- Construct an additional southbound through lane that extends from Durant Road/Perry Creek Road through this intersection to tie into existing southbound three-lane cross section.
- Construct the Proposed Site Driveway providing two eastbound right-turn lanes (outbound) and two inbound lanes.

Capital Boulevard (US 1) looking north at Homestead Drive

At project build-out in 2012 with the corridor retiming and the recommended improvements in place, the intersection is projected to operate at LOS B in the AM and PM peak hours. It is important to note that the traffic signal will be a two-phase signal and the northbound through traffic on Capital Boulevard (US 1) will not stop. Therefore, the westbound approach (Homestead Drive) will not be under signal control and will operate similar to what is expected under background traffic conditions.

As requested by the City of Raleigh, the intersection of Capital Boulevard (US 1) & Homestead Drive was also analyzed as an unsignalized intersection. In this case, the recommended additional northbound left-turn lane on Capital Boulevard (US 1) was removed. If the driveway is unsignalized, the westbound minor street approach of the intersection is projected to operate at LOS C in the AM peak hour and LOS F in the PM peak hour with the northbound left-turn and eastbound approach operating at LOS F with very extensive delays during both the AM and PM peak hours.

Table 7.5 summarizes the level-of-service and delay for the intersection of Capital Boulevard (US 1) & Homestead Drive/Proposed Site Driveway for the existing (2008) traffic, projected (2012) background traffic, and projected (2012) build-out traffic with the proposed corridor retiming and recommended improvements.

Table 7.5
Level-of-Service
Capital Boulevard (US 1) & Homestead Drive/Proposed Site Driveway

Condition	AM Peak Hour LOS (Delay)	PM Peak Hour LOS (Delay)
Existing (2008) Traffic (Unsignalized)	NBL – F (274.5) WB – C (17.3)	NBL – D (34.9) WB – E (36.1)
Projected (2012) Background Traffic (Unsignalized)	NBL – F (754.6) WB – C (21.4)	NBL – F (77.2) WB – F (60.1)
Projected (2012) Build-Out Traffic w/ Recommended Improvements and Corridor Retiming (Signalized)	Overall – B (19.0) NBL – E (63.8) NB – B (13.4) SB – C (20.8) EB – E (57.1)	Overall – B (16.7) NBL – D (54.5) NB – B (11.6) SB – B (17.5) EB – E (66.8)
Projected (2012) Build-Out Traffic w/ No Signal	NBL – F (3763.6) WB – C (20.2) EB – F (54.0)	NBL – F (1418.6) WB – F (54.5) EB – F (84.1)

7.6 Capital Boulevard (US 1) & Durant Road/Perry Creek Road

Analyses indicate that the existing signalized intersection of Capital Boulevard (US 1) & Durant Road/Perry Creek Road currently operates at LOS F in the AM and PM peak hours. The following improvements have been committed at this intersection by the City of Raleigh and the Honeycutt development:

- Lengthen the existing westbound dual left-turn lanes on Perry Creek Road to provide a total of 500 feet of full-width storage each.
- Convert the existing westbound right-turn lane on Perry Creek Road to an additional through lane as part of the widening of Perry Creek Road.
- Construct an exclusive westbound right-turn lane on Perry Creek Road providing 200 feet of full-width storage.
- Convert the existing northbound right-turn lane on Capital Boulevard (US 1) to a free-flow lane onto Perry Creek Road.
- Lengthen the existing southbound left-turn lane on Capital Boulevard (US 1) to provide a total of 350 feet of full-width storage.

Capital Boulevard (US 1) looking north at Durant Road/Perry Creek Road

In 2012 with the committed improvements in place but without the proposed Cheviot Assemblage development, the intersection is projected to continue to operate at LOS F in the AM and PM peak hours. The following improvements are recommended to mitigate build-out traffic conditions:

- Restripe the existing southbound right-turn lane to provide a shared through/right-turn lane. Construct an additional southbound receiving lane on Capital Boulevard (US 1) that extends south of the Proposed Site Driveway/Homestead Drive to tie into the existing southbound three-lane cross section.

At project build-out in 2012 with the corridor retiming and the recommended improvement in place, the intersection is projected to continue to operate at LOS F in the AM and PM peak hours.

Table 7.6 summarizes the level-of-service and delay for the signalized intersection of Capital Boulevard (US 1) & Durant Road/Perry Creek Road for the existing (2008) traffic, projected (2012) background traffic, and projected (2012) build-out traffic with the proposed corridor retiming and recommended improvements.

Table 7.6
Level-of-Service
Capital Boulevard (US 1) & Durant Road/Perry Creek Road

Condition	AM Peak Hour LOS (Delay)	PM Peak Hour LOS (Delay)
Existing (2008) Traffic	Overall - F (81.2) NB – D (48.9) SB – F (84.5) EB – F (126.5) WB – F (108.2)	Overall - F (84.7) NB – F (95.0) SB – D (49.0) EB – F (119.0) WB – F (106.0)
Projected (2012) Background Traffic w/Committed Improvements	Overall - F (114.3) NB – E (56.5) SB – F (144.5) EB – F (182.4) WB – F (112.9)	Overall - F (136.1) NB – F (148.1) SB – F (84.8) EB – F (238.8) WB – F (105.7)
Projected (2012) Build-Out Traffic w/ Recommended Improvements and Corridor Retiming	Overall - F (85.3) NB – D (49.3) SB – E (73.2) EB – F (161.6) WB – F (126.6)	Overall – F (127.0) NB – F (146.7) SB – D (36.8) EB – F (228.6) WB – F (167.3)

7.7 Capital Boulevard (US 1) & Thornton

Analyses indicate that the existing signalized intersection of Capital Boulevard (US 1) & Thornton Road currently operates at LOS F in the AM peak hour and LOS D in the PM peak hours. In 2012 without the proposed Cheviot Assemblage development, the intersection is projected to operate at LOS F in the AM and PM peak hours.

At project build-out in 2012 with the corridor retiming in place, the intersection is projected to continue to operate at LOS F in the AM and PM peak hours. No roadway improvements are recommended to mitigate build-out traffic conditions.

Table 7.7 summarizes the level-of-service and delay for the signalized intersection of Capital Boulevard (US 1) & Thornton Road for the existing (2008) traffic, projected (2012) background traffic, and projected (2012) build-out traffic with the proposed corridor retiming.

Table 7.7
Level-of-Service
Capital Boulevard (US 1) & Thornton Road

Condition	AM Peak Hour LOS (Delay)	PM Peak Hour LOS (Delay)
Existing (2008) Traffic	Overall – F (293.1) NB – E (69.9) SB – A (8.8) EB – F (123.5) WB – F (2074.3)	Overall – D (36.4) NB – C (23.1) SB – B (13.2) EB – F (154.4) WB – F (296.6)
Projected (2012) Background Traffic	Overall – F (307.5) NB – F (116.1) SB – B (13.2) EB – F (127.1) WB – F (2022.7)	Overall – F (89.7) NB – F (97.8) SB – D (48.3) EB – F (206.5) WB – F (254.3)
Projected (2012) Build-Out Traffic w/ Corridor Retiming	Overall – F (234.4) NB – F (110.3) SB – B (19.1) EB – F (151.0) WB – F (1474.0)	Overall – F (102.0) NB – F (115.5) SB – D (51.0) EB – F (204.2) WB – F (280.9)

7.8 Gresham Lake Road & Proposed Site Driveway

The Proposed Site Driveway on Gresham Lake Road will be constructed to tie into Gresham Lake Road west of Capital Boulevard (US 1) and serve the proposed development as the full-movement access point on Gresham Lake Road. It is anticipated that traffic volumes will warrant signalization prior to build-out of this development. The following improvements are recommended to mitigate build-out traffic conditions:

- Install a traffic signal.
- Construct an exclusive eastbound left-turn lane on Gresham Lake Road with 125 feet of full-width storage.
- Construct an exclusive westbound right-turn lane on Gresham Lake Road as a continuous lane from Capital Boulevard (US 1).
- Construct the Proposed Site Driveway providing an exclusive southbound left-turn lane and an exclusive southbound right-turn lane with 75 feet of full-width storage.

At project build-out in 2012 with the recommended improvements in place, the intersection is projected to continue to operate at LOS B in the AM peak hour and LOS C in the PM peak hour.

Table 7.8 summarizes the level-of-service and delay for the proposed signalized intersection of Gresham Lake Road & Proposed Site Driveway for the projected (2012) build-out traffic with the recommended improvements.

Table 7.8
Level-of-Service
Gresham Lake Road & Proposed Site Driveway

Condition	AM Peak Hour LOS (Delay)	PM Peak Hour LOS (Delay)
Projected (2012) Build-Out Traffic w/ Recommended Improvements	Overall – B (17.0) SB – C (30.6) EB – B (12.9) WB – B (16.6)	Overall – C (26.2) SB – C (25.7) EB – C (24.6) WB – B (19.3)

7.9 Durant Road & Proposed Site Driveway

The Proposed Site Driveway on Durant Road will be constructed to tie into Durant Road west of Capital Boulevard (US 1) and serve the proposed development as the full-movement access point on Durant Road. It is anticipated that traffic volumes will warrant signalization prior to build-out of this development. The following improvements are recommended to mitigate build-out traffic conditions:

- Install a traffic signal.
- Construct an exclusive eastbound right-turn lane on Durant Road with 100 feet of full-width storage.
- Stripe an exclusive westbound left-turn lane on Durant Road with 125 feet of full-width storage.
- Construct the Proposed Site Driveway providing an exclusive northbound left-turn lane and an exclusive northbound right-turn lane with 175 feet of full-width storage.

At project build-out in 2012 with the recommended improvements in place, the intersection is projected to continue to operate at LOS B in the AM and PM peak hours.

Table 7.9 summarizes the level-of-service and delay for the proposed signalized intersection of Durant Road & Proposed Site Driveway for the projected (2012) build-out traffic with the recommended improvements.

Table 7.9
Level-of-Service
Durant Road & Proposed Site Driveway

Condition	AM Peak Hour LOS (Delay)	PM Peak Hour LOS (Delay)
Projected (2012) Build-Out Traffic w/ Recommended Improvements	Overall – B (16.8) NB – C (26.4) EB – B (18.6) WB – B (11.1)	Overall – B (18.2) NB – C (24.8) EB – C (20.2) WB – B (11.3)

8.0 Recommendations

Based on the capacity analyses presented herein, the following is a summary of the improvements committed by others and improvements recommended to accommodate traffic from the proposed Cheviot Assemblage development:

The following is a summary of the committed improvements by others within the study area:

Capital Boulevard (US 1) & Durant Road/Perry Creek Road (City of Raleigh/Honeycutt):

- Lengthen the existing westbound dual left-turn lanes on Perry Creek Road to provide a total of 500 feet of full-width storage each.
- Convert the existing westbound right-turn lane on Perry Creek Road to an additional through lane as part of the widening of Perry Creek Road.
- Construct an exclusive westbound right-turn lane on Perry Creek Road providing 200 feet of full-width storage.
- Convert the existing northbound right-turn lane on Capital Boulevard (US 1) to a free-flow lane onto Perry Creek Road.
- Lengthen the existing southbound left-turn lane on Capital Boulevard (US 1) to provide a total of 350 feet of full-width storage.

The following is a summary of the recommended improvements needed to accommodate traffic from the proposed Cheviot Assemblage development for the projected (2012) build-out traffic conditions:

Recommended Build-out Improvements:

Capital Boulevard (US 1) & I-540 Westbound Ramp:

- Restripe the westbound approach of the I-540 Westbound Ramp to provide an exclusive left-turn lane, a shared left-turn/right-turn lane, and an exclusive right-turn lane.

Capital Boulevard (US 1) & Gresham Lake Road:

- Construct an additional northbound left-turn lane on Capital Boulevard (US 1) and lengthen the existing northbound left-turn lane to provide dual left-turn lanes each with 500 feet of full-width storage.
- Construct an additional eastbound right-turn lane on Gresham Lake Road and lengthen the existing eastbound right-turn lane to provide dual right-turn lanes each with 450 feet of full-width storage.

Capital Boulevard (US 1) & Homestead Drive/Proposed Site Driveway:

- Install a traffic signal.
- Construct an additional northbound left-turn lane on Capital Boulevard (US 1) and lengthen the existing northbound left-turn lane to provide dual left-turn lanes each with 400 feet of full-width storage.
- Construct an exclusive southbound right-turn lane on Capital Boulevard (US 1) with 100 feet of full-width storage.
- Construct an additional southbound through lane that extends from Durant Road/Perry Creek Road through this intersection to tie into existing southbound three-lane cross section.
- Construct the Proposed Site Driveway providing two eastbound right-turn lanes (outbound) and two inbound lanes.

Capital Boulevard (US 1) & Durant Road/Perry Creek Road:

- Restripe the existing southbound right-turn lane to provide a shared through/right-turn lane. Construct an additional southbound receiving lane on Capital Boulevard (US 1) that extends south of the Proposed Site Driveway/Homestead Drive to tie into the existing southbound three-lane cross section.

Gresham Lake Road & Proposed Site Driveway:

- Install a traffic signal.
- Construct an exclusive eastbound left-turn lane on Gresham Lake Road with 125 feet of full-width storage.
- Construct an exclusive westbound right-turn lane on Gresham Lake Road as a continuous lane from Capital Boulevard (US 1).
- Construct the Proposed Site Driveway providing an exclusive southbound left-turn lane and an exclusive southbound right-turn lane with 75 feet of full-width storage.

Durant Road & Proposed Site Driveway:

- Install a traffic signal.
- Construct an exclusive eastbound right-turn lane on Durant Road with 100 feet of full-width storage.
- Stripe an exclusive westbound left-turn lane on Durant Road with 125 feet of full-width storage.
- Construct the Proposed Site Driveway providing an exclusive northbound left-turn lane and an exclusive northbound right-turn lane with 175 feet of full-width storage.

The recommended roadway laneage is shown in Figure 9.

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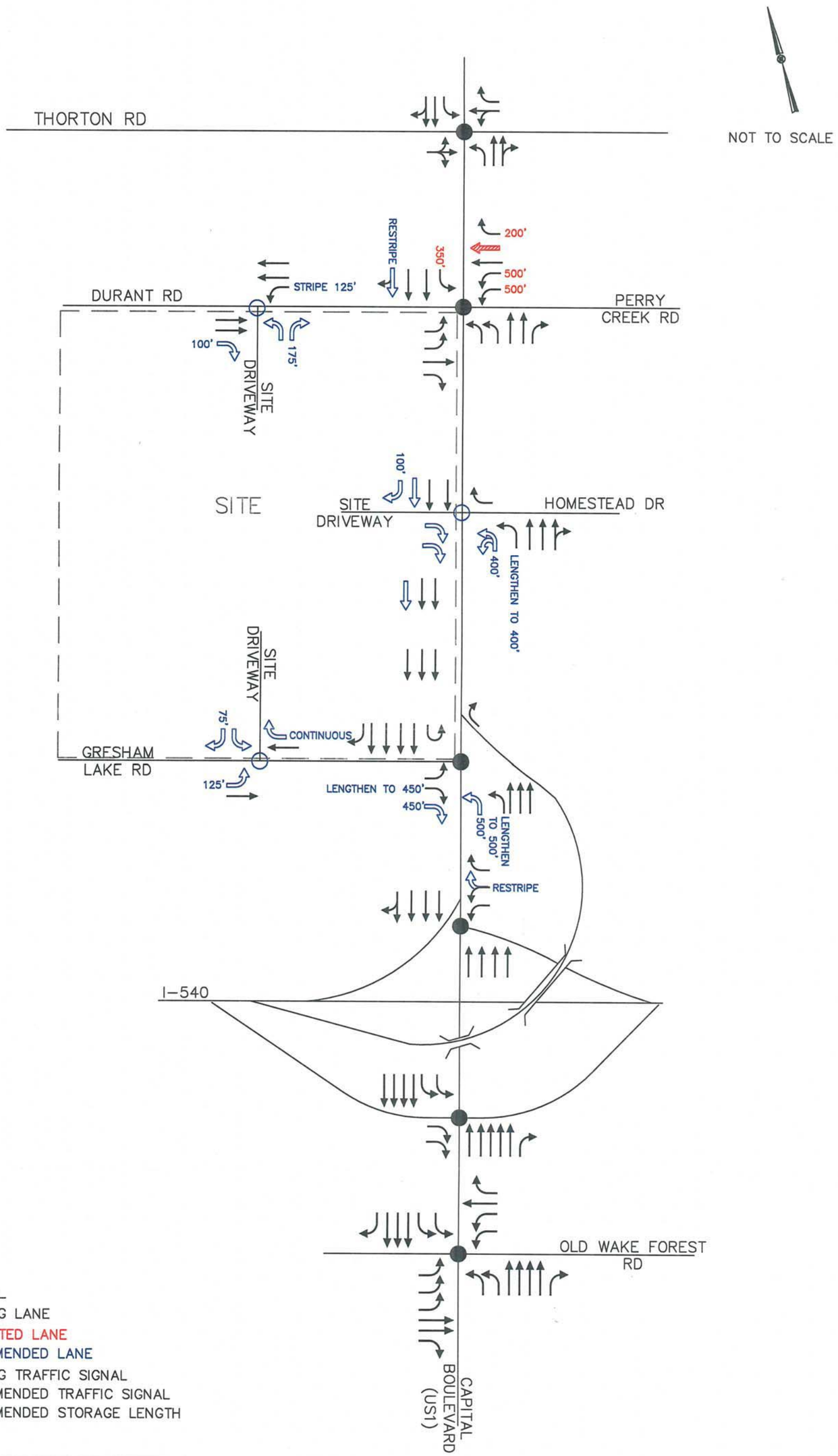

Kimley-Horn and Associates, Inc.	CHEVIOT ASSEMBLAGE TRAFFIC IMPACT ANALYSIS	RECOMMENDED ROADWAY LANEAGE	FIGURE 9

9.0 Corridor Analysis

As requested by the City of Raleigh, a corridor analysis was performed as part of this TIA. The corridor analysis determined the potential impact of the additional signal at Capital Boulevard (US 1) and Proposed Site Driveway/Homestead Drive. The results of the corridor analysis indicate that the addition of the traffic signal along with the recommended improvements and re-timing of the corridor (build-out scenario) result in an overall improvement of bandwidth for northbound and southbound traffic on Capital Boulevard (US 1) during the AM and PM peak hours. The build-out scenario also results in the same overall level-of-service or better at each of the study intersections. Figures 10 and 11 show the results of the AM peak hour and PM peak hour corridor analysis, respectively.

Synchro Settings

The existing and background traffic scenarios were analyzed using splits and offsets from timing plans provided by the City of Raleigh. The splits and offsets were modified/optimized in the build-out scenario and represent recommended timings for the corridor upon build out of the proposed development in 2012. The minimum initial, yellow, and all red times were obtained from signal plans provided by NCDOT. If roadway modifications were made to the intersection, the yellow and red times were set to 5.0 and 2.0, respectively. A lost time of 5.0 seconds was used, as described in the Congestion Management guidelines. As typically done when performing corridor analyses, right-turns on red were permitted under all traffic scenarios. Right-turns on red are currently allowed at each intersection. The existing peak hour factors were used for each intersection. Because the through movements at Homestead Drive and Thornton Road were obtained from the adjacent intersections, the peak hour factors were also obtained from the adjacent intersections.

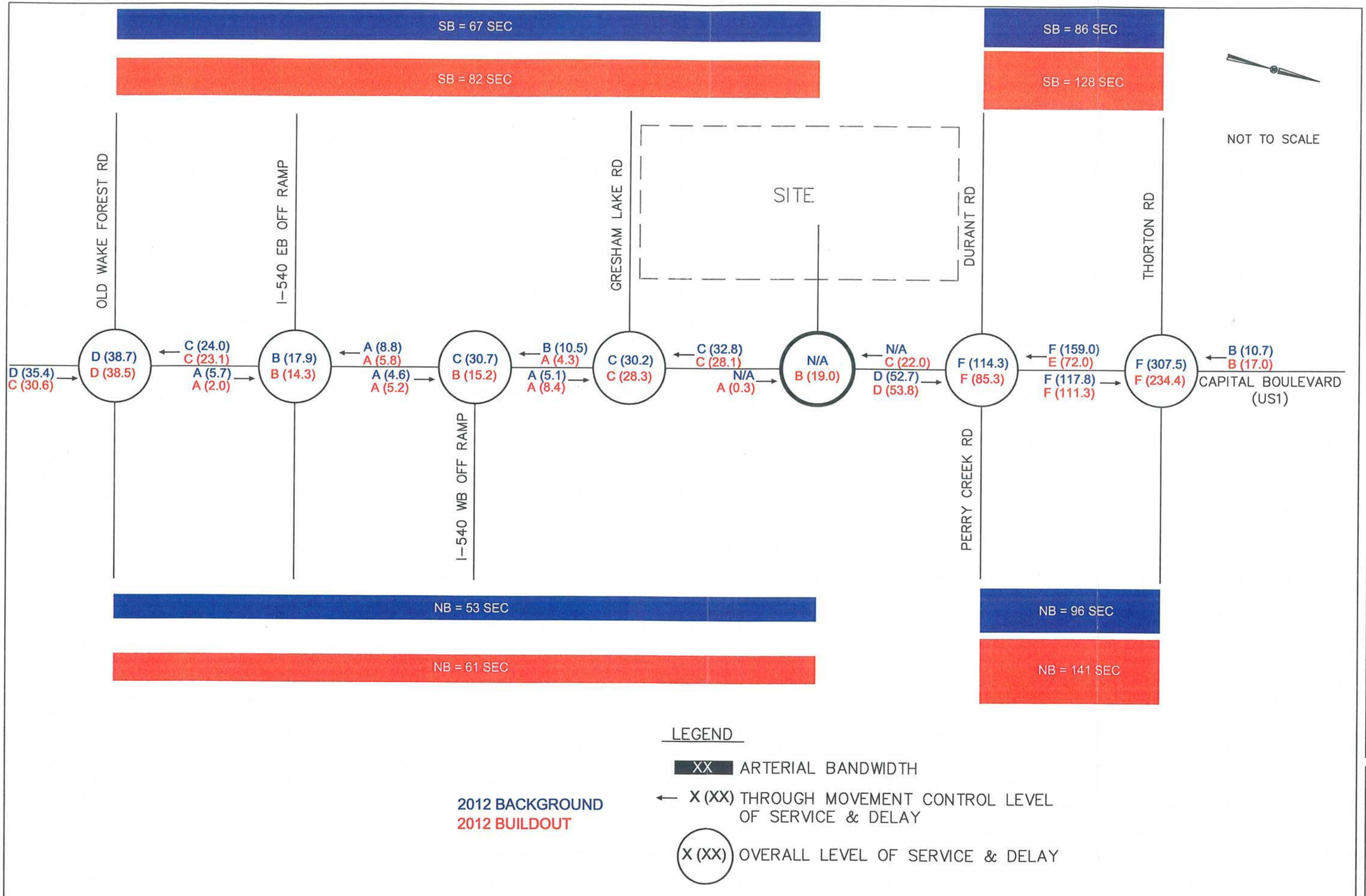

FIGURE 10

AM PEAK HOUR

CHEVIOT ASSEMBLAGE
CORRIDOR ANALYSIS

Kimley-Horn and Associates, Inc.

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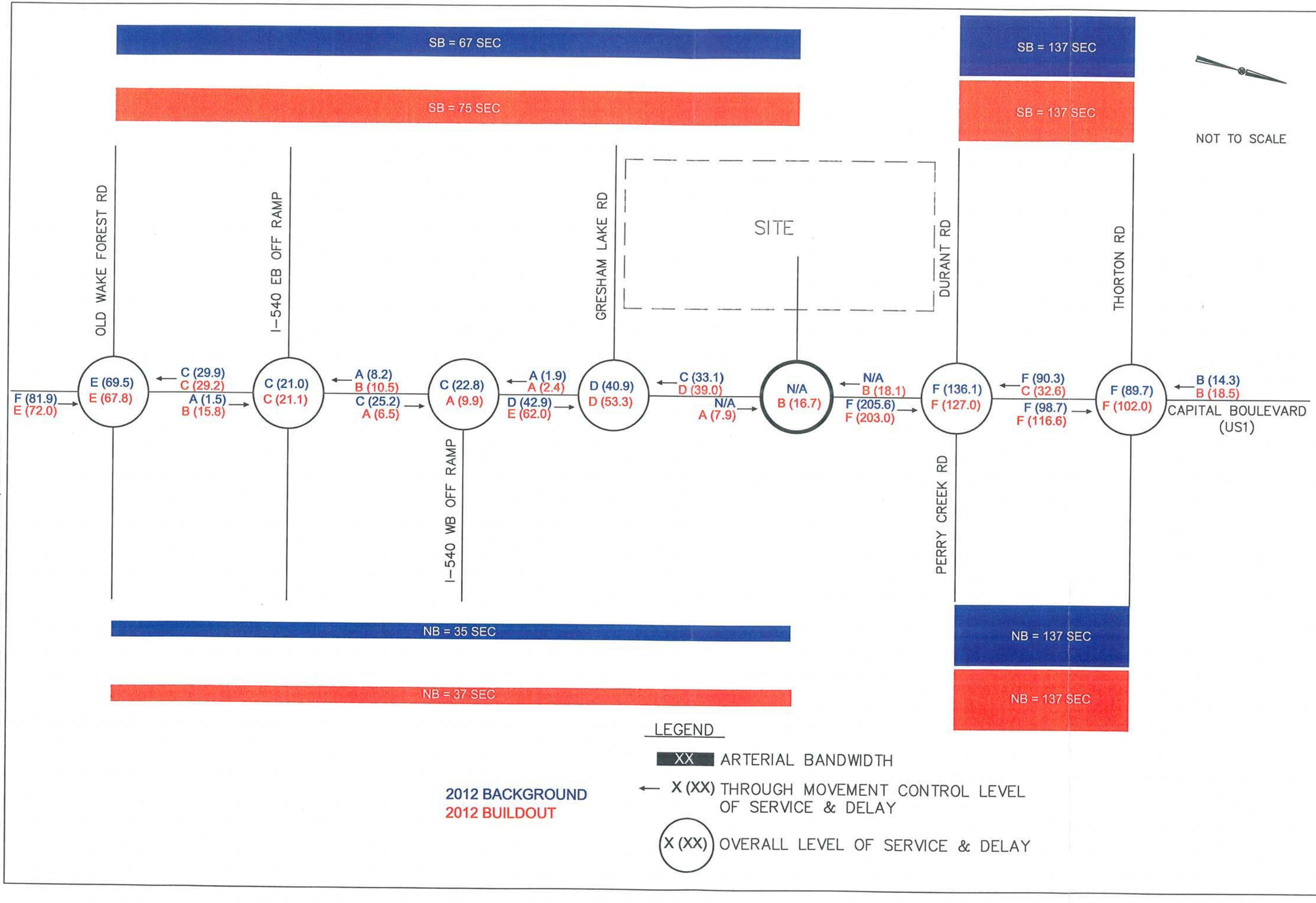

FIGURE 11

PM PEAK HOUR

CHEVIOT ASSEMBLAGE
CORRIDOR ANALYSIS

Kimley-Horn and Associates, Inc.

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