

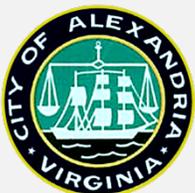
Beauregard Corridor Plan Traffic Impact Analysis

February 8, 2012

Volume I: Technical Report



Prepared For



By



For Submittal to the Virginia Department of Transportation
In compliance with VDOT Chapter 527 Requirements

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I. Background Information

Figure 1 shows a map of the Beaugard Corridor Small-Area Plan study area, shown in relation to the rest of the city. The study area is roughly defined by Holmes Run to the south, I-395 and Kenmore Avenue to the east, the city line and edge of the existing residential neighborhood to the west, and the edge of the Southern Towers complex to the north.

Figure 1: Map of the Study Area



The primary roadways through the study area are Interstate 395, Beaugard Street, Seminary Road, and N. Van Dorn Street. **Figure 2** show the functional classification of these roads and others within the study area.

The study area includes 28 intersections within the Alexandria city limits that were analyzed under Existing, Future without Development, and Future with Development conditions. **Figure 3** is a map showing the locations of these intersections.

II. Analysis of Existing (Year 2010) Conditions

Intersection turning movement volume and pedestrian volume data was collected in December 2009 and January 2010. Counts were performed during the following periods on a weekday:

- From 7:00 AM to 9:00 AM
- From 11:00 AM to 1:00 PM
- From 4:00 PM to 6:00 PM or 5:00 PM to 7:00 PM, depending on the intersection location

Figure 2: Functional Classification of Streets in the Study Area

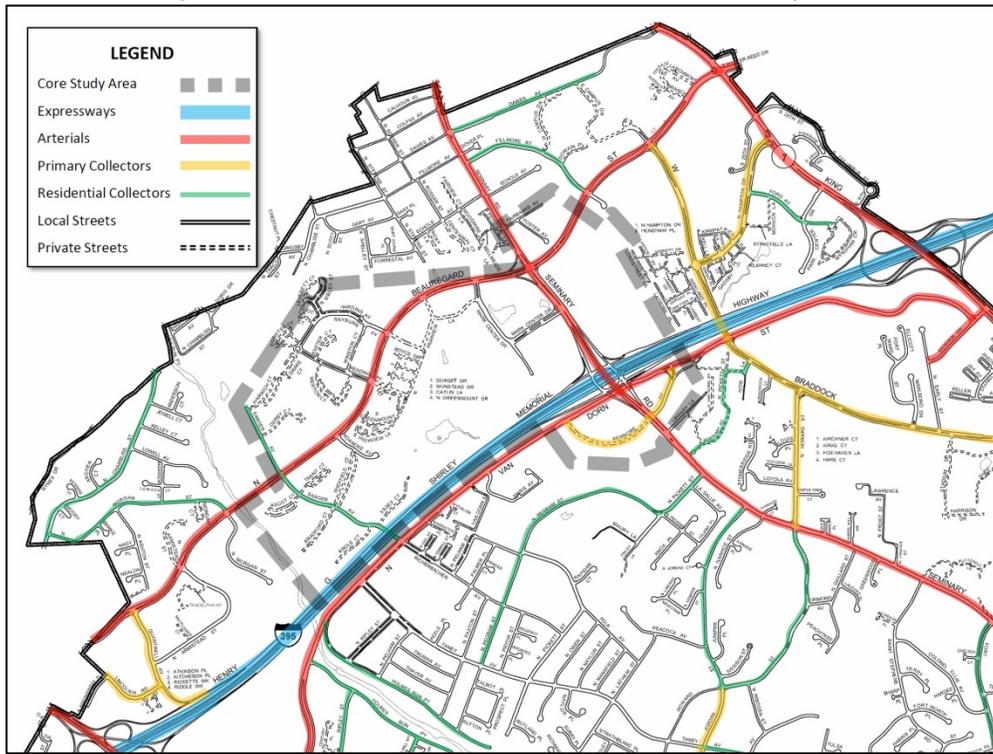
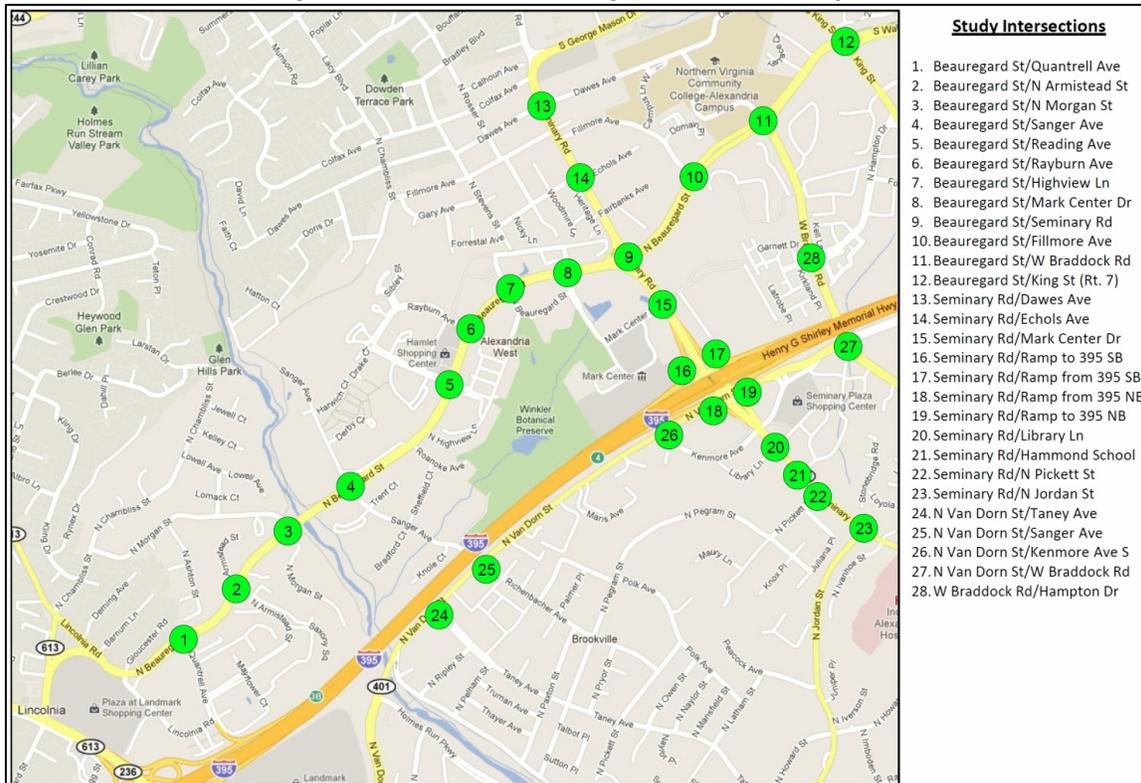


Figure 3: Locations of Existing Intersections Analyzed



Traffic data for some intersections were obtained from the Mark Center (BRAC 133) Transportation Study dated November 2, 2009. Prior year volumes were adjusted to 2010 levels using an annual growth rate of 1.1 percent. This growth rate was determined using Year 2008 and Year 2010 volumes generated using the travel demand model. **Table 1** summarizes the AM peak hour (7:30 – 8:30 AM) turning movement volumes at each of the intersections shown in **Figure 3**. **Table 2** shows the PM peak hour (5:00 – 6:00 PM) turning movement volumes. **Figures 4 & 5** also summarize the peak hour volumes. The effects of Mark Center (BRAC 133) are not included in the volumes or analysis of the Existing (Year 2010) conditions because the new BRAC 133 facility at Mark Center was opened after the substantial completion of this study.

VISSIM was used to analyze the traffic operations at each of the key intersections within the study area in terms of average delay in seconds per vehicle, and levels of service (LOS). The VISSIM model calibration objectives were as follows:

- Perform five (5) VISSIM model runs
- Calibrate capacity to be within 10% of field-measured flow rates between intersections
- Modeled corridor travel times to be within 15% (or one minute, if higher) of the field-measured times
- Visually acceptable queue lengths observed at intersections and on/off ramps
- Visually acceptable utilization of the lanes at lane drop locations

The following VISSIM parameters were adjusted to achieve the objectives listed above:

- Desired Speed
- Lane changing behavior (Urban driver)
 - Emergency stop distance
 - Lane change distance
- Car following behavior (Urban driver)
 - Average standstill distance
 - Additive part of safety distance
 - Multiplicative part of safety distance

The VISSIM parameters that were adjusted to calibrate the existing conditions model were held constant for the future conditions analyses.

Tables 3 and 4 summarize the Existing (2010) delay per vehicle and levels of service during the AM and PM peak hours at each of the intersections within the study area, by approach and for the overall intersection. **Figures 6 and 7** show the Existing (2010) approach levels of service on a diagram of the study area roadway network. The results of the VISSIM analysis shows that none of the intersections currently operate at LOS F during either the AM or PM peak hours. However, there are four (4) different intersections that have individual approaches that operate at LOS F during one or both of the AM/PM peak hours, as follows:

1. Beauregard Street at Sanger Avenue (AM & PM)
2. Seminary Road Interchange at the Ramp from Northbound I-395 (AM & PM)
3. Seminary Road at N. Jordan Street (AM)
4. N. Van Dorn Street at Sanger Avenue/Richenbacher Avenue (PM)

The Existing (2010) AM and PM peak hour levels of service on the roadway links along Beauregard Street and along Seminary Road are summarized in **Tables 5 and 6**. These levels of service were calculated using the Highway Capacity Manual (HCM) methodology for arterial LOS. None of the links that were evaluated currently operate at level of service F during either the AM or PM peak hours. The Year 2010 intersection lane configurations are shown in **Figures 8 & 9**.

Table 1: Existing (2010) AM Peak Hour Intersection Turning Movement Volumes

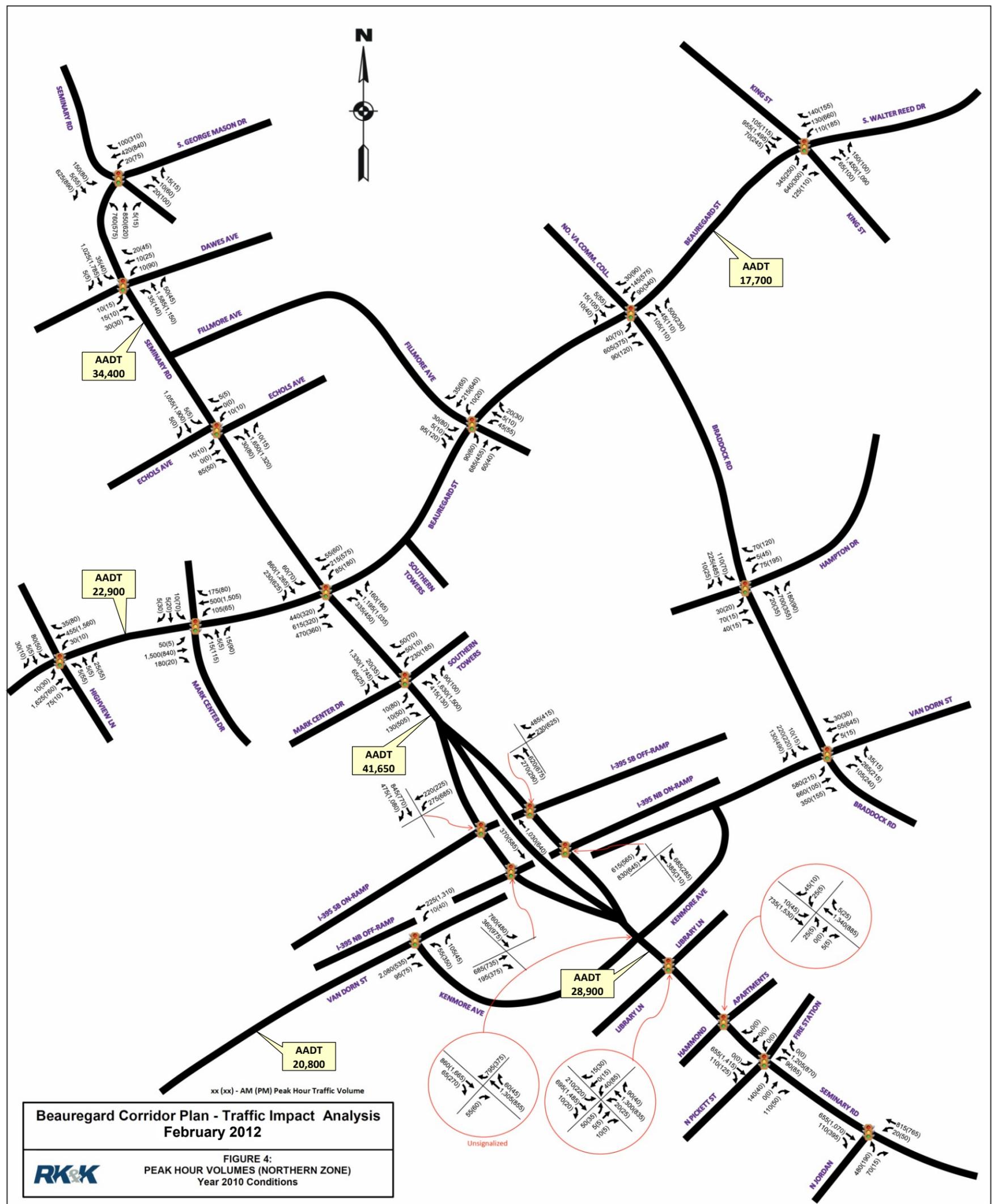
| Int. # | Intersection | Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | | Grand Total |
|--------|-------------------------------------|------------|-------|-------|-------|------------|------|-------|-------|-----------|-------|-------|-------|-----------|-------|-------|-------|-------------|
| | | Left | Thru | Right | Total | Left | Thru | Right | Total | Left | Thru | Right | Total | Left | Thru | Right | Total | |
| 1 | Beauregard St / Quantrell Ave | | 735 | 30 | 765 | 20 | 370 | | 390 | | | | | 120 | | 100 | 220 | 1,375 |
| 2 | Beauregard St / N Armistead St | 5 | 815 | 15 | 835 | 60 | 310 | 5 | 375 | 30 | 0 | 10 | 40 | 70 | 0 | 225 | 295 | 1,545 |
| 3 | Beauregard St / N Morgan St | 5 | 1,050 | 15 | 1,070 | 30 | 330 | 45 | 405 | 170 | 0 | 10 | 180 | 35 | 0 | 80 | 115 | 1,770 |
| 4 | Beauregard St / Sanger Ave | 90 | 1,080 | 130 | 1,300 | 100 | 225 | 80 | 405 | 105 | 100 | 85 | 290 | 95 | 65 | 295 | 455 | 2,450 |
| 5 | Beauregard St / Reading Ave | 140 | 1,330 | 10 | 1,480 | 25 | 305 | 20 | 350 | 195 | 5 | 70 | 270 | 30 | 10 | 70 | 110 | 2,210 |
| 6 | Beauregard St / Rayburn Ave | 95 | 1,455 | 45 | 1,595 | 10 | 295 | 185 | 490 | 230 | 15 | 45 | 290 | 10 | 5 | 25 | 40 | 2,415 |
| 7 | Beauregard St / Highview Ln | 10 | 1,625 | 75 | 1,710 | 30 | 455 | 35 | 520 | 80 | 5 | 30 | 115 | 5 | 5 | 25 | 35 | 2,380 |
| 8 | Beauregard St / Mark Center Dr | 50 | 1,500 | 180 | 1,730 | 105 | 500 | 175 | 780 | 10 | 5 | 5 | 20 | 15 | 5 | 15 | 35 | 2,565 |
| 9 | Beauregard St / Seminary Rd | 440 | 615 | 470 | 1,525 | 85 | 215 | 55 | 355 | 60 | 860 | 230 | 1,150 | 335 | 1,195 | 160 | 1,690 | 4,720 |
| 10 | Beauregard St / Fillmore Ave | 90 | 685 | 60 | 835 | 10 | 215 | 35 | 260 | 30 | 5 | 95 | 130 | 45 | 5 | 20 | 70 | 1,295 |
| 11 | Beauregard St / W Braddock Rd | 40 | 605 | 90 | 735 | 90 | 145 | 30 | 265 | 5 | 15 | 10 | 30 | 105 | 45 | 500 | 650 | 1,680 |
| 12 | Beauregard St / King St | 345 | 640 | 125 | 1,110 | 110 | 130 | 140 | 380 | 105 | 955 | 70 | 1,130 | 65 | 1,450 | 150 | 1,665 | 4,285 |
| 13 | Seminary Rd / Dawes Ave | 10 | 15 | 30 | 55 | 10 | 10 | 20 | 40 | 35 | 1,025 | 5 | 1,065 | 35 | 1,585 | 50 | 1,670 | 2,830 |
| 14 | Seminary Rd / Echols Ave | 15 | 0 | 85 | 100 | 10 | 0 | 5 | 15 | 5 | 1,055 | 5 | 1,065 | 30 | 1,650 | 10 | 1,690 | 2,870 |
| 15 | Seminary Rd / Mark Center Dr | 10 | 10 | 130 | 150 | 230 | 50 | 50 | 330 | 20 | 1,330 | 65 | 1,415 | 415 | 1,630 | 90 | 2,135 | 4,030 |
| 16 | Seminary Rd / Ramp to I-395 South | | | | | 275 | 220 | | 495 | | 845 | 475 | 1,320 | | | | | 1,815 |
| 17 | Seminary Rd / Ramp from I-395 South | | | | | | 230 | 485 | 715 | | | | | 270 | 620 | | 890 | 1,605 |
| 18 | Seminary Rd / Ramp from I-395 North | | 685 | 195 | 880 | | | | | 760 | 360 | | 1,120 | | | | | 2,000 |
| 19 | Seminary Rd / Ramp to I-395 North | 615 | 830 | | 1,445 | | | | | | | | | | 385 | 685 | 1,070 | 2,515 |
| 20 | Seminary Rd / Library Ln | 50 | 5 | 10 | 65 | 40 | 0 | 15 | 55 | 210 | 695 | 10 | 915 | 20 | 1,300 | 90 | 1,410 | 2,445 |
| 21 | Seminary Rd / Hammond M.S. | 25 | 0 | 5 | 30 | 25 | | 45 | 70 | 10 | 735 | | 745 | | 1,340 | 5 | 1,345 | 2,190 |
| 22 | Seminary Rd / N Pickett St | 140 | | 110 | 250 | 0 | 0 | 10 | 10 | | 655 | 110 | 765 | 90 | 1,205 | | 1,295 | 2,320 |
| 23 | Seminary Rd / N Jordan St | 480 | | 70 | 550 | | | | | | 655 | 110 | 765 | 20 | 815 | | 835 | 2,150 |
| 24 | N Van Dorn St / Taney Ave | | 2,210 | 135 | 2,345 | 35 | 450 | | 485 | | | | | 130 | | 80 | 210 | 3,040 |
| 25 | N Van Dorn St / Sanger Ave | 380 | 1,895 | 15 | 2,290 | 15 | 270 | 30 | 315 | 125 | 60 | 200 | 385 | 15 | 55 | 70 | 140 | 3,130 |
| 26 | N Van Dorn St / Kenmore Ave | | 2,080 | 95 | 2,175 | 10 | 225 | | 235 | | | | | 55 | | 105 | 160 | 2,570 |
| 27 | N Van Dorn St / W Braddock Rd | 580 | 660 | 350 | 1,590 | 5 | 55 | 30 | 90 | 10 | 220 | 130 | 360 | 105 | 265 | 35 | 405 | 2,445 |
| 28 | W Braddock Rd / Hampton Dr | 30 | 70 | 40 | 140 | 75 | 5 | 70 | 150 | 110 | 225 | 10 | 345 | 20 | 700 | 180 | 900 | 1,535 |

Note: Beauregard Street and Van Dorn Street are North-South roadways. Seminary Road is an East-West roadway.

Table 2: Existing (2010) PM Peak Hour Intersection Turning Movement Volumes

| Int. # | Intersection | Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | | Grand Total |
|--------|-------------------------------------|------------|------|-------|-------|------------|-------|-------|-------|-----------|-------|-------|-------|-----------|-------|-------|-------|-------------|
| | | Left | Thru | Right | Total | Left | Thru | Right | Total | Left | Thru | Right | Total | Left | Thru | Right | Total | |
| 1 | Beauregard St / Quantrell Ave | | 515 | 80 | 595 | 75 | 845 | | 920 | | | | | 100 | | 35 | 135 | 1,650 |
| 2 | Beauregard St / N Armistead St | 10 | 510 | 30 | 550 | 170 | 845 | 25 | 1,040 | 10 | 0 | 25 | 35 | 50 | 0 | 120 | 170 | 1,795 |
| 3 | Beauregard St / N Morgan St | 10 | 610 | 20 | 640 | 75 | 1,000 | 190 | 1,265 | 75 | 0 | 10 | 85 | 30 | 0 | 30 | 60 | 2,050 |
| 4 | Beauregard St / Sanger Ave | 75 | 455 | 185 | 715 | 370 | 995 | 65 | 1,430 | 50 | 65 | 75 | 190 | 195 | 55 | 135 | 385 | 2,720 |
| 5 | Beauregard St / Reading Ave | 135 | 480 | 25 | 640 | 110 | 1,340 | 80 | 1,530 | 120 | 5 | 75 | 200 | 15 | 10 | 75 | 100 | 2,470 |
| 6 | Beauregard St / Rayburn Ave | 50 | 605 | 20 | 675 | 15 | 1,415 | 195 | 1,625 | 170 | 10 | 50 | 230 | 65 | 10 | 25 | 100 | 2,630 |
| 7 | Beauregard St / Highview Ln | 30 | 760 | 10 | 800 | 10 | 1,560 | 80 | 1,650 | 50 | 5 | 10 | 65 | 55 | 5 | 55 | 115 | 2,630 |
| 8 | Beauregard St / Mark Center Dr | 5 | 840 | 20 | 865 | 65 | 1,505 | 80 | 1,650 | 70 | 20 | 30 | 120 | 115 | 5 | 90 | 210 | 2,845 |
| 9 | Beauregard St / Seminary Rd | 320 | 320 | 360 | 1,000 | 180 | 575 | 60 | 815 | 70 | 1,265 | 625 | 1,960 | 450 | 1,035 | 165 | 1,650 | 5,425 |
| 10 | Beauregard St / Fillmore Ave | 60 | 455 | 40 | 555 | 20 | 640 | 65 | 725 | 80 | 10 | 120 | 210 | 55 | 10 | 30 | 95 | 1,585 |
| 11 | Beauregard St / W Braddock Rd | 70 | 375 | 120 | 565 | 340 | 575 | 90 | 1,005 | 55 | 105 | 40 | 200 | 110 | 110 | 230 | 450 | 2,220 |
| 12 | Beauregard St / King St | 250 | 300 | 110 | 660 | 185 | 660 | 155 | 1,000 | 115 | 1,495 | 245 | 1,855 | 100 | 1,090 | 100 | 1,290 | 4,805 |
| 13 | Seminary Rd / Dawes Ave | 15 | 10 | 30 | 55 | 90 | 25 | 45 | 160 | 40 | 1,785 | 5 | 1,830 | 140 | 1,150 | 45 | 1,335 | 3,380 |
| 14 | Seminary Rd / Echols Ave | 10 | 0 | 50 | 60 | 10 | 0 | 5 | 15 | 5 | 1,900 | 0 | 1,905 | 80 | 1,320 | 15 | 1,415 | 3,395 |
| 15 | Seminary Rd / Mark Center Dr | 80 | 50 | 505 | 635 | 185 | 10 | 70 | 265 | 35 | 1,745 | 25 | 1,805 | 130 | 1,500 | 100 | 1,730 | 4,435 |
| 16 | Seminary Rd / Ramp to I-395 South | | | | | 685 | 225 | | 910 | | 770 | 1,080 | 1,850 | | | | | 2,760 |
| 17 | Seminary Rd / Ramp from I-395 South | | | | | | 625 | 415 | 1,040 | | | | | 290 | 675 | | 965 | 2,005 |
| 18 | Seminary Rd / Ramp from I-395 North | | 735 | 375 | 1,110 | | | | | 480 | 975 | | 1,455 | | | | | 2,565 |
| 19 | Seminary Rd / Ramp to I-395 North | 565 | 645 | | 1,210 | | | | | | | | | | 310 | 285 | 595 | 1,805 |
| 20 | Seminary Rd / Library Ln | 35 | 5 | 5 | 45 | 85 | 15 | 30 | 130 | 220 | 1,485 | 20 | 1,725 | 25 | 835 | 40 | 900 | 2,800 |
| 21 | Seminary Rd / Hammond M.S. | 5 | | 5 | 10 | 5 | | 10 | 15 | 45 | 1,530 | | 1,575 | | 885 | 25 | 910 | 2,510 |
| 22 | Seminary Rd / N Pickett St | 40 | | 50 | 90 | 0 | 0 | 0 | 0 | | 1,415 | 125 | 1,540 | 85 | 870 | | 955 | 2,585 |
| 23 | Seminary Rd / N Jordan St | 190 | | 15 | 205 | | | | | | 1,070 | 395 | 1,465 | 50 | 765 | | 815 | 2,485 |
| 24 | N Van Dorn St / Taney Ave | | 750 | 135 | 885 | 95 | 1,675 | | 1,770 | | | | | 145 | | 55 | 200 | 2,855 |
| 25 | N Van Dorn St / Sanger Ave | 285 | 495 | 25 | 805 | 40 | 1,305 | 100 | 1,445 | 75 | 80 | 445 | 600 | 20 | 65 | 30 | 115 | 2,965 |
| 26 | N Van Dorn St / Kenmore Ave | | 535 | 75 | 610 | 40 | 1,310 | | 1,350 | | | | | 350 | | 45 | 395 | 2,355 |
| 27 | N Van Dorn St / W Braddock Rd | 215 | 105 | 155 | 475 | 15 | 645 | 30 | 690 | 15 | 220 | 490 | 725 | 240 | 215 | 15 | 470 | 2,360 |
| 28 | W Braddock Rd / Hampton Dr | 20 | 15 | 15 | 50 | 195 | 45 | 120 | 360 | 70 | 485 | 25 | 580 | 35 | 355 | 90 | 480 | 1,470 |

Note: Beauregard Street and Van Dorn Street are North-South roadways. Seminary Road is an East-West roadway.



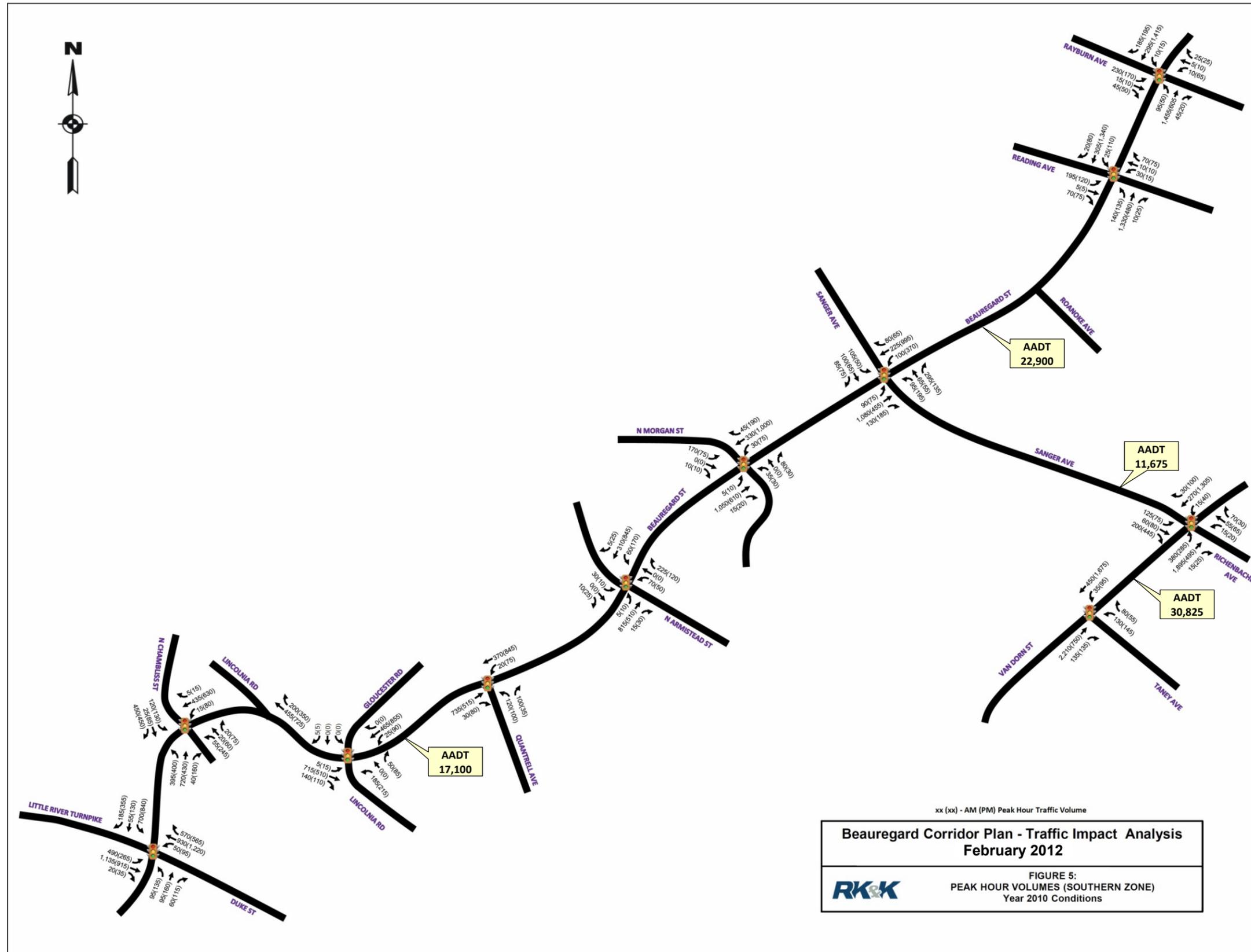


Table 3: Existing (2010) AM Peak Hour Delay and Level of Service (LOS) by Approach

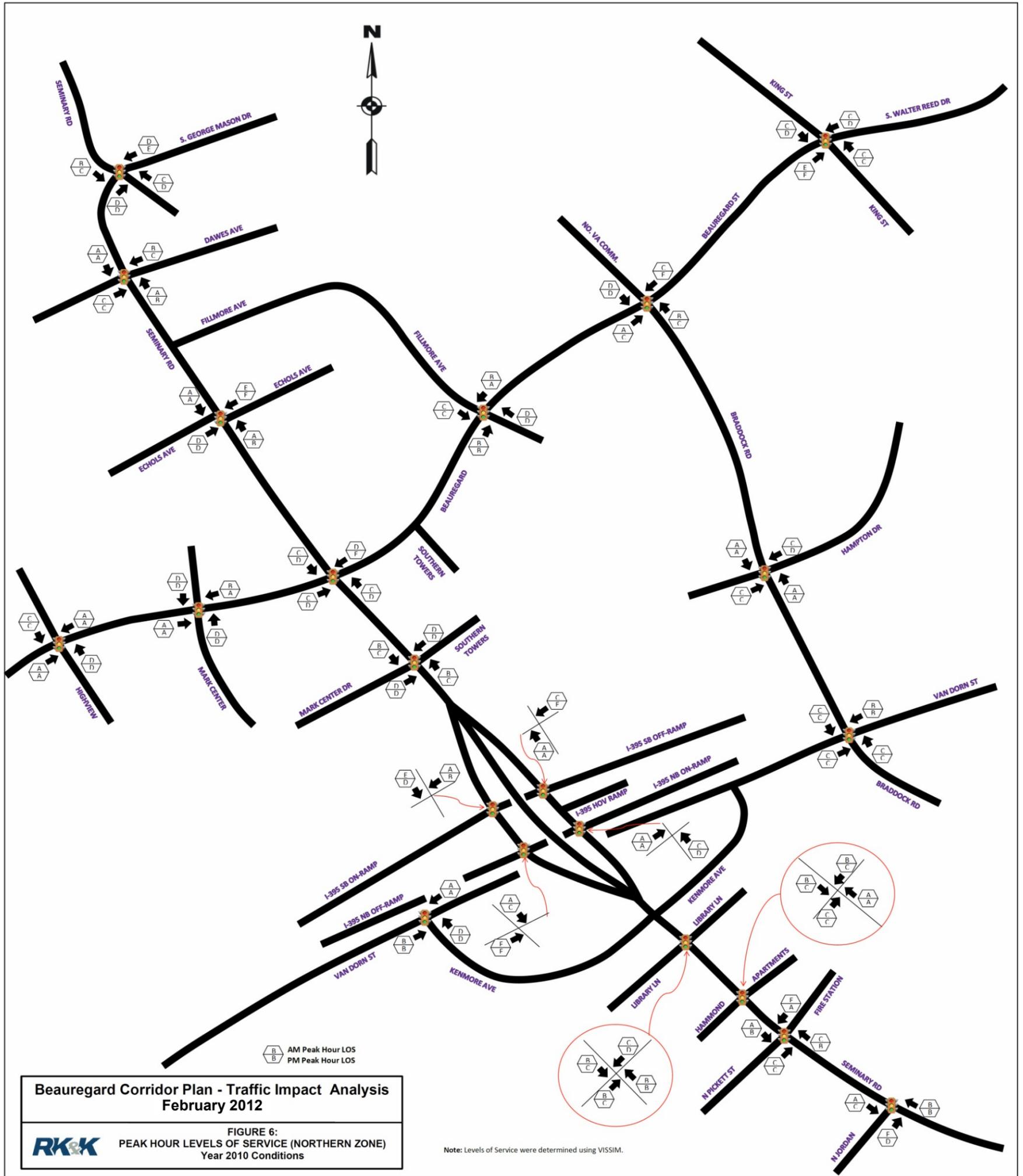
| Int. # | Intersection | Northbound | | Southbound | | Eastbound | | Westbound | | Overall Intersection | |
|--------|-------------------------------------|------------|-----|------------|-----|-----------|-----|-----------|-----|----------------------|-----|
| | | Delay | LOS | Delay | LOS | Delay | LOS | Delay | LOS | Delay | LOS |
| 1 | Beauregard St / Quantrell Ave | 5.8 | A | 5.1 | A | | | 38.1 | D | 11.0 | B |
| 2 | Beauregard St / N Armistead St | 6.5 | A | 5.4 | A | 5.6 | A | 7.6 | A | 6.4 | A |
| 3 | Beauregard St / N Morgan St | 12.7 | B | 9.3 | A | 27.5 | C | 21.1 | C | 13.9 | B |
| 4 | Beauregard St / Sanger Ave | 42.2 | D | 29.6 | C | 80.1 | F | 34.1 | C | 43.3 | D |
| 5 | Beauregard St / Reading Ave | 11.7 | B | 12.9 | B | 43.6 | D | 38.5 | D | 17.3 | B |
| 6 | Beauregard St / Rayburn Ave | 8.1 | A | 7.0 | A | 47.0 | D | 37.9 | D | 13.2 | B |
| 7 | Beauregard St / Highview Ln | 7.8 | A | 3.5 | A | 29.6 | C | 36.4 | D | 8.5 | A |
| 8 | Beauregard St / Mark Center Dr | 8.4 | A | 11.1 | B | 50.4 | D | 47.1 | D | 10.0 | B |
| 9 | Beauregard St / Seminary Rd | 32.2 | C | 49.2 | D | 34.1 | C | 34.5 | C | 34.7 | C |
| 10 | Beauregard St / Fillmore Ave | 11.6 | B | 12.0 | B | 32.8 | C | 40.5 | D | 15.3 | B |
| 11 | Beauregard St / W Braddock Rd | 9.6 | A | 27.4 | C | 40.9 | D | 14.2 | B | 14.8 | B |
| 12 | Beauregard St / King St | 55.9 | E | 34.4 | C | 22.9 | C | 30.3 | C | 35.1 | D |
| 13 | Seminary Rd / Dawes Ave | 29.7 | C | 16.1 | B | 4.2 | A | 9.2 | A | 7.8 | A |
| 14 | Seminary Rd / Echols Ave | 48.4 | D | 56.6 | E | 7.7 | A | 8.9 | A | 10.0 | A |
| 15 | Seminary Rd / Mark Center Dr | 44.3 | D | 40.9 | D | 16.7 | B | 19.0 | B | 21.1 | C |
| 16 | Seminary Rd / Ramp to I-395 South | | | 0.9 | A | 66.7 | E | | | 48.0 | D |
| 17 | Seminary Rd / Ramp from I-395 South | | | 24.5 | C | | | 3.0 | A | 13.0 | B |
| 18 | Seminary Rd / Ramp from I-395 North | 130.8 | F | | | 2.7 | A | | | 25.4 | C |
| 19 | Seminary Rd / Ramp to I-395 North | 2.1 | A | | | | | 27.4 | C | 8.5 | A |
| 20 | Seminary Rd / Library Ln | 19.6 | B | 33.5 | C | 16.0 | B | 19.9 | B | 18.8 | B |
| 21 | Seminary Rd / Hammond M.S. | 34.4 | C | 16.9 | B | 11.8 | B | 6.7 | A | 9.3 | A |
| 22 | Seminary Rd / N Pickett St | 26.3 | C | 55.3 | E | 7.5 | A | 28.6 | C | 21.2 | C |
| 23 | Seminary Rd / N Jordan St | 81.1 | F | | | 6.3 | A | 10.8 | B | 26.5 | C |
| 24 | N Van Dorn St / Taney Ave | 49.9 | D | 10.4 | B | | | 59.7 | E | 44.3 | D |
| 25 | N Van Dorn St / Sanger Ave | 35.1 | D | 29.5 | C | 41.0 | D | 51.1 | D | 36.1 | D |
| 26 | N Van Dorn St / Kenmore Ave | 14.5 | B | 4.8 | A | | | 50.6 | D | 15.7 | B |
| 27 | N Van Dorn St / W Braddock Rd | 24.3 | C | 13.0 | B | 26.4 | C | 23.1 | C | 23.9 | C |
| 28 | W Braddock Rd / Hampton Dr | 28.8 | C | 31.7 | C | 5.4 | A | 5.1 | A | 9.8 | A |

Note: Beauregard Street and North Van Dorn Street are north-south roadways. Seminary Road and West Braddock Road are east-west roadways. Delay/LOS determined using VISSIM.

Table 4: Existing (2010) PM Peak Hour Delay and Level of Service (LOS) by Approach

| Int. # | Intersection | Northbound | | Southbound | | Eastbound | | Westbound | | Overall Intersection | |
|--------|-------------------------------------|------------|-----|------------|-----|-----------|-----|-----------|-----|----------------------|-----|
| | | Delay | LOS | Delay | LOS | Delay | LOS | Delay | LOS | Delay | LOS |
| 1 | Beauregard St / Quantrell Ave | 3.5 | A | 4.3 | A | | | 36.2 | D | 6.7 | A |
| 2 | Beauregard St / N Armistead St | 6.3 | A | 5.5 | A | 3.7 | A | 8.2 | A | 5.9 | A |
| 3 | Beauregard St / N Morgan St | 9.7 | A | 15.4 | B | 24.6 | C | 16.1 | B | 14.0 | B |
| 4 | Beauregard St / Sanger Ave | 41.3 | D | 45.6 | D | 86.1 | F | 58.6 | E | 49.2 | D |
| 5 | Beauregard St / Reading Ave | 13.8 | B | 4.9 | A | 40.3 | D | 37.3 | D | 11.7 | B |
| 6 | Beauregard St / Rayburn Ave | 6.3 | A | 5.3 | A | 47.0 | D | 41.0 | D | 10.8 | B |
| 7 | Beauregard St / Highview Ln | 4.0 | A | 6.2 | A | 34.9 | C | 37.2 | D | 7.7 | A |
| 8 | Beauregard St / Mark Center Dr | 9.5 | A | 4.7 | A | 43.3 | D | 46.0 | D | 10.8 | B |
| 9 | Beauregard St / Seminary Rd | 40.6 | D | 58.2 | E | 41.3 | D | 35.6 | D | 42.1 | D |
| 10 | Beauregard St / Fillmore Ave | 13.7 | B | 6.2 | A | 31.7 | C | 35.2 | D | 13.9 | B |
| 11 | Beauregard St / W Braddock Rd | 20.3 | C | 71.8 | E | 35.1 | D | 26.1 | C | 46.4 | D |
| 12 | Beauregard St / King St | 58.3 | E | 51.4 | D | 42.8 | D | 25.0 | C | 41.8 | D |
| 13 | Seminary Rd / Dawes Ave | 32.4 | C | 27.6 | C | 7.5 | A | 10.4 | B | 10.0 | A |
| 14 | Seminary Rd / Echols Ave | 52.0 | D | 57.0 | E | 7.2 | A | 13.3 | B | 10.6 | B |
| 15 | Seminary Rd / Mark Center Dr | 50.6 | D | 37.5 | D | 22.1 | C | 23.9 | C | 28.0 | C |
| 16 | Seminary Rd / Ramp to I-395 South | | | 16.1 | B | 49.2 | D | | | 37.9 | D |
| 17 | Seminary Rd / Ramp from I-395 South | | | 65.1 | E | | | 6.2 | A | 36.9 | D |
| 18 | Seminary Rd / Ramp from I-395 North | 164.2 | F | | | 31.0 | C | | | 46.6 | D |
| 19 | Seminary Rd / Ramp to I-395 North | 1.4 | A | | | | | 42.9 | D | 7.4 | A |
| 20 | Seminary Rd / Library Ln | 31.5 | C | 40.5 | D | 24.5 | C | 18.9 | B | 23.6 | C |
| 21 | Seminary Rd / Hammond M.S. | 26.8 | C | 22.1 | C | 20.0 | C | 0.7 | A | 13.3 | B |
| 22 | Seminary Rd / N Pickett St | 27.9 | C | 1.0 | A | 12.7 | B | 10.7 | B | 12.5 | B |
| 23 | Seminary Rd / N Jordan St | 38.5 | D | | | 33.4 | C | 10.5 | B | 26.4 | C |
| 24 | N Van Dorn St / Taney Ave | 11.4 | B | 4.5 | A | | | 42.9 | D | 9.7 | A |
| 25 | N Van Dorn St / Sanger Ave | 34.2 | C | 42.7 | D | 210.4 | F | 54.6 | D | 73.2 | E |
| 26 | N Van Dorn St / Kenmore Ave | 14.4 | B | 5.6 | A | | | 44.9 | D | 12.5 | B |
| 27 | N Van Dorn St / W Braddock Rd | 33.3 | C | 18.3 | B | 31.4 | C | 24.8 | C | 26.5 | C |
| 28 | W Braddock Rd / Hampton Dr | 26.0 | C | 36.8 | D | 6.5 | A | 5.4 | A | 14.3 | B |

Note: Beauregard Street and North Van Dorn Street are north-south roadways. Seminary Road and West Braddock Road are east-west roadways. Delay/LOS determined using VISSIM.



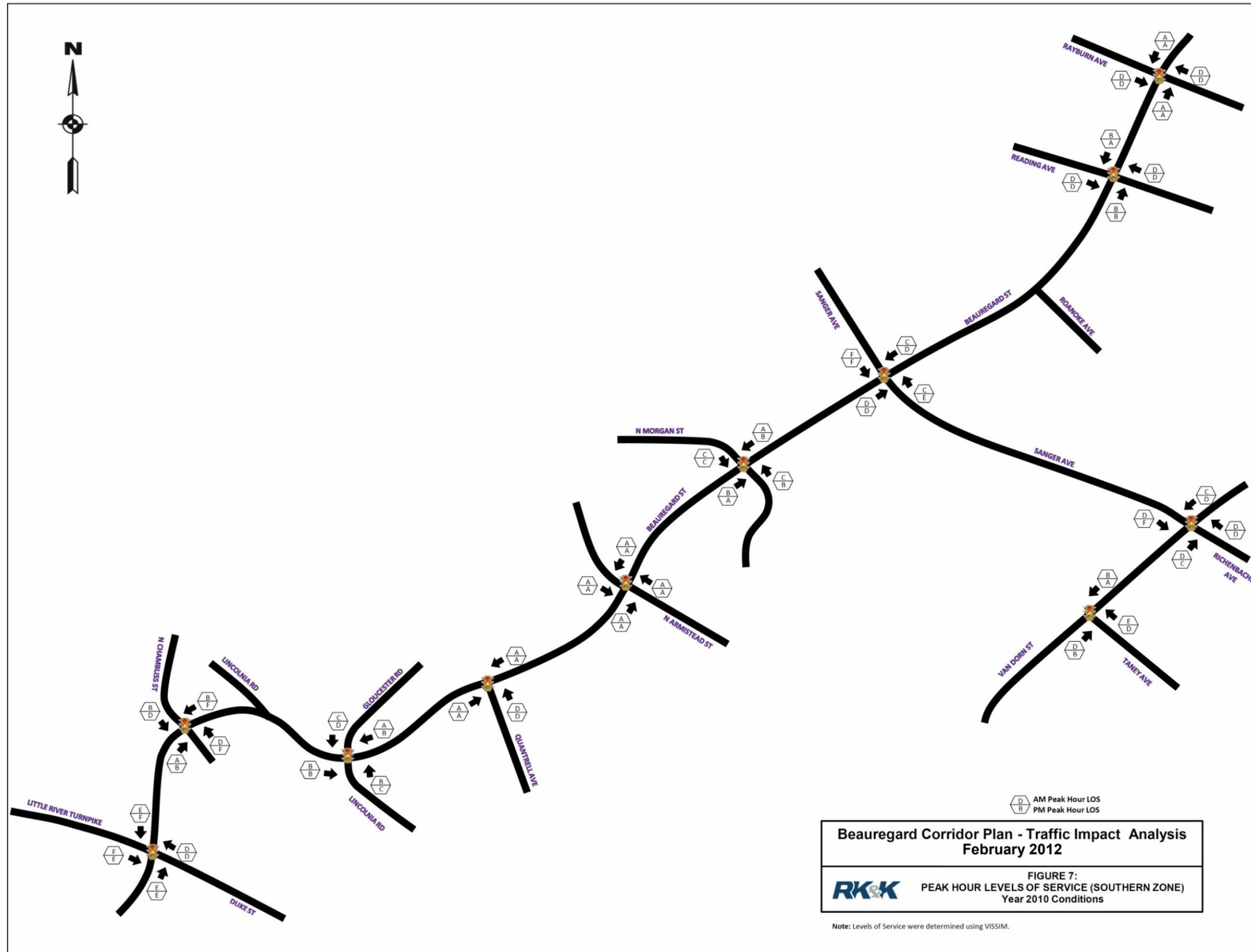
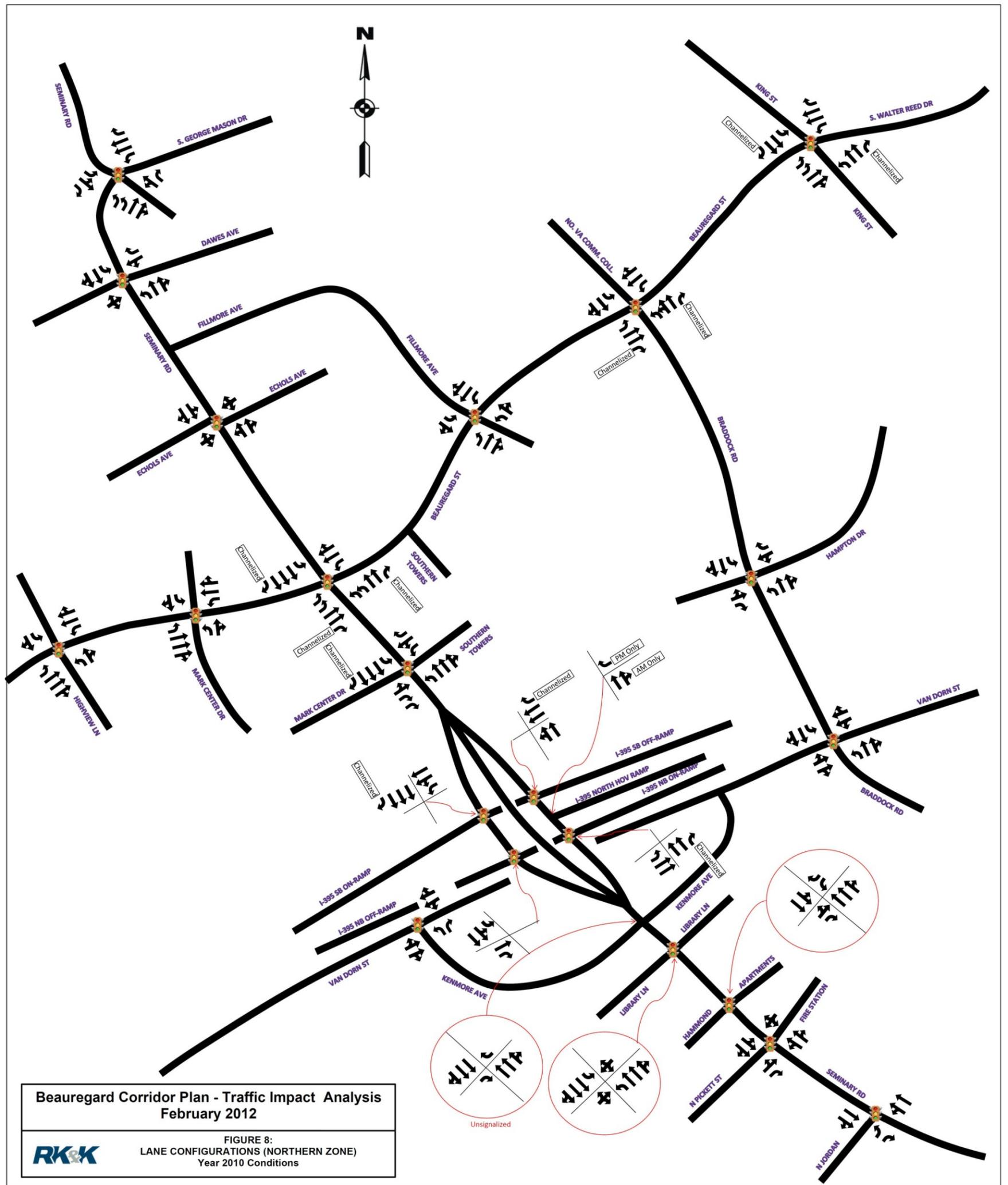


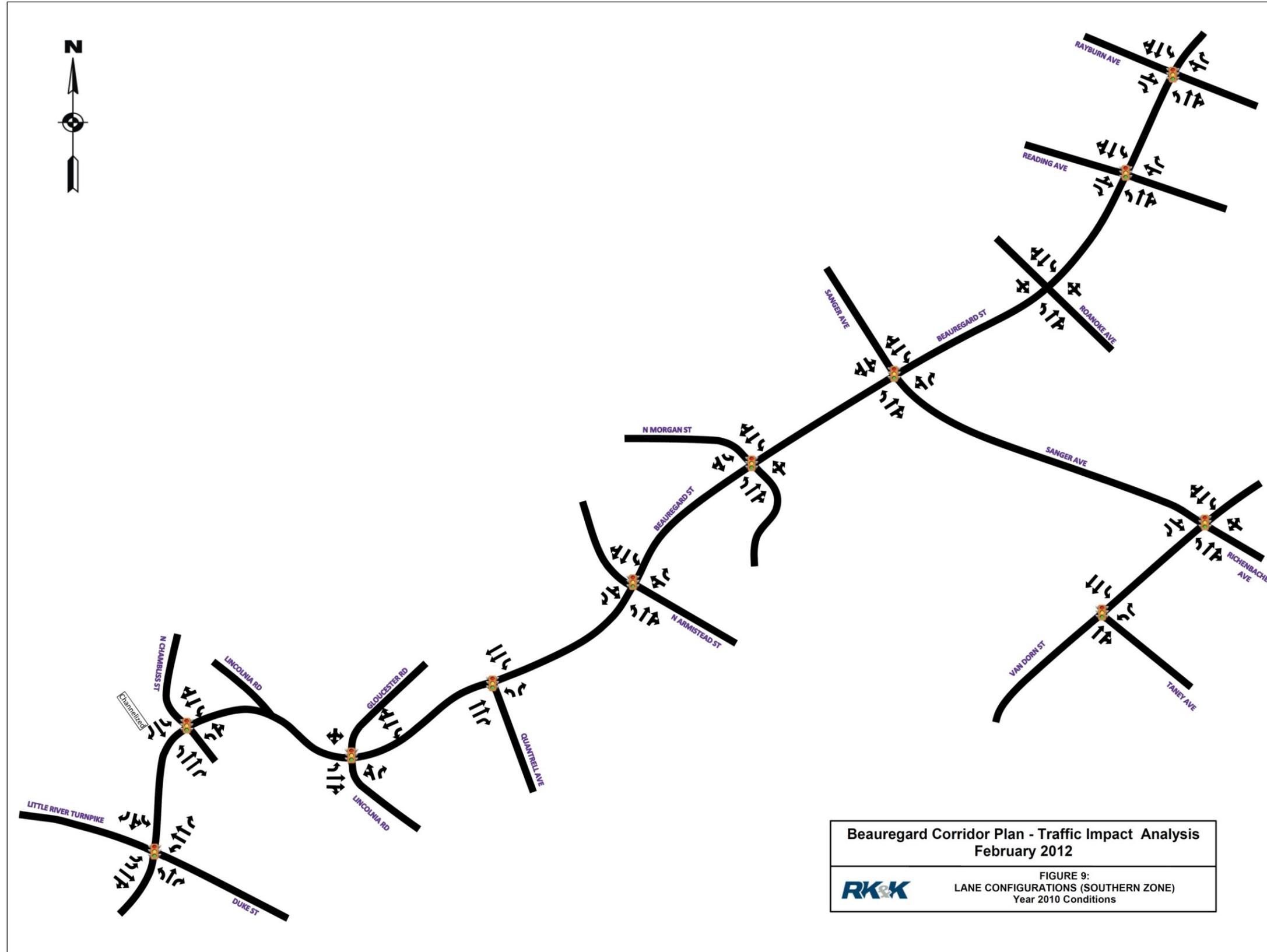
Table 5: Existing (2010) AM Peak Hour Roadway Link Levels of Service (HCM Method)

| Beauregard Street | | Northbound | | | Southbound | | |
|--------------------------|----------------|-----------------|--------------------|----------|-----------------|--------------------|----------|
| Endpoint A | Endpoint B | Travel Time (s) | Travel Speed (mph) | Link LOS | Travel Time (s) | Travel Speed (mph) | Link LOS |
| Quantrell Ave | N Armistead St | 36 | 18 | D | 25 | 25 | B |
| N Armistead St | N Morgan St | 39 | 19 | C | 30 | 24 | B |
| N Morgan St | Sanger Ave | 67 | 10 | F | 48 | 13 | E |
| Sanger Ave | Reading Ave | 59 | 22 | C | 69 | 19 | C |
| Reading Ave | Rayburn Ave | 26 | 20 | C | 31 | 17 | D |
| Rayburn Ave | Highview Lane | 22 | 22 | C | 26 | 19 | C |
| Highview Lane | Mark Center Dr | 21 | 25 | B | 20 | 27 | B |
| Mark Center Dr | Seminary Rd | 58 | 10 | F | 24 | 23 | C |
| Seminary Rd | Fillmore Ave | 34 | 28 | B | 71 | 14 | E |
| Fillmore Ave | W Braddock Rd | 33 | 24 | C | 30 | 26 | B |
| W Braddock Rd | King St | 76 | 13 | E | 42 | 24 | C |
| Seminary Road | | | | | | | |
| Seminary Road | | Eastbound | | | Westbound | | |
| Endpoint A | Endpoint B | Travel Time (s) | Travel Speed (mph) | Link LOS | Travel Time (s) | Travel Speed (mph) | Link LOS |
| Dawes Ave | Echols Ave | 34 | 20 | C | 28 | 25 | B |
| Echols Ave | Beauregard St | 73 | 12 | E | 36 | 24 | C |
| Beauregard St | Mark Center Dr | 35 | 15 | D | 46 | 11 | E |
| Library Lane | N Pickett St | 32 | 6 | F | 9 | 23 | C |
| N Pickett St | N Jordan St | 22 | 23 | C | 34 | 15 | D |

Table 6: Existing (2010) PM Peak Hour Roadway Link Levels of Service (HCM Method)

| Beauregard Street | | Northbound | | | Southbound | | |
|--------------------------|----------------|-----------------|--------------------|----------|-----------------|--------------------|----------|
| Endpoint A | Endpoint B | Travel Time (s) | Travel Speed (mph) | Link LOS | Travel Time (s) | Travel Speed (mph) | Link LOS |
| Quantrell Ave | N Armistead St | 35 | 18 | C | 26 | 25 | B |
| N Armistead St | N Morgan St | 32 | 23 | C | 31 | 24 | C |
| N Morgan St | Sanger Ave | 52 | 12 | E | 44 | 15 | D |
| Sanger Ave | Reading Ave | 53 | 25 | B | 74 | 18 | D |
| Reading Ave | Rayburn Ave | 25 | 20 | C | 23 | 22 | C |
| Rayburn Ave | Highview Lane | 19 | 25 | B | 31 | 16 | D |
| Highview Lane | Mark Center Dr | 30 | 18 | C | 24 | 22 | C |
| Mark Center Dr | Seminary Rd | 71 | 8 | F | 27 | 21 | C |
| Seminary Rd | Fillmore Ave | 36 | 27 | B | 92 | 11 | E |
| Fillmore Ave | W Braddock Rd | 41 | 19 | C | 31 | 25 | B |
| W Braddock Rd | King St | 64 | 16 | D | 44 | 23 | C |
| Seminary Road | | | | | | | |
| Seminary Road | | Eastbound | | | Westbound | | |
| Endpoint A | Endpoint B | Travel Time (s) | Travel Speed (mph) | Link LOS | Travel Time (s) | Travel Speed (mph) | Link LOS |
| Dawes Ave | Echols Ave | 39 | 18 | D | 35 | 20 | C |
| Echols Ave | Beauregard St | 102 | 8 | F | 57 | 15 | D |
| Beauregard St | Mark Center Dr | 34 | 15 | D | 36 | 14 | D |
| Library Lane | N Pickett St | 137 | 4 | F | 40 | 13 | E |
| N Pickett St | N Jordan St | 43 | 12 | E | 25 | 21 | C |





III. Trip Generation, Site Traffic Trip Distribution and Assignment

The proposed redevelopment within the Beauregard Corridor Plan study area will be mixed-use, with apartments and townhouses, retail space, office space, and hotels. Some of the new development will be infill development, whereas other new development will replaced existing development. The proposed development will have a higher density than the existing development, incorporating features such as structured parking and ground level retail with upper level residential and/or office, which encourage non-motorized trips between the different land uses.

The redevelopment of properties located within the study area is expected to occur in six (6) phases through 2040. Changes in land use, and the corresponding changes in trip generation and distribution, were projected for two distinct build-out intervals: An Interim Build-Out condition in Year 2020, and a Build-Out condition in Year 2035. The 2035 Build-Out condition excludes approximately 320,000 sq. ft. of net new residential development that would occur during the sixth phase (2036-2040). To determine the network-wide traffic volumes associated with the 2020 interim development and 2035 build-out, the land use components of the development were input into the COG travel demand model. These components are categorized as follows:

- Number of residential units
- Retail development floor area (in square feet)
- Number of hotel rooms
- Office development floor area (in square feet)
- Industrial development floor area (in square feet)
- Other development floor area (in square feet) not fitting these categories

The categories listed above are different from the data categories that are used by the COG model, and must be converted. The components used by the model are as follows:

- Number of households
- Population corresponding to the number of households
- Group quarters population
- Industrial employment
- Retail employment
- Office employment
- Other employment
- Ratio of TAZ household income to regional household income

The following factors provided by the City planning staff were used to convert the proposed land use data into the categories that are used by the COG model:

- 7.5% vacancy rate for residential units
- 2.05 occupants per household in Year 2035
- 2 employees per 1,000 square feet of retail space
- 3.5 employees per 1,000 square feet of office space
- 0.71 employees per 1,000 square feet of industrial space
- 1 employee per 1,000 square feet of “other” development space
- 0.5 employees per 1 hotel room

The traffic volumes and analyses for the Future Conditions With Development (for both the Year 2020 Interim Build-Out and Year 2035 Build-Out) are based on trip generation and distribution using the COG travel demand model. **Table 7** shows the net changes in residential dwelling units, retail and office gross floor area, and hotel rooms for each TAZ in the study area based on comparing the Year 2035 Conditions With Development (Market Demand) with the Year 2035 Conditions Without Development (Baseline). **Table 8** shows the net changes in these same land use types based on comparing the Year 2020 Conditions With Development (Interim Market Demand) to the Existing (2010) Conditions. These are the changes in land use that were input into the COG travel demand model to generate trips for this study. **Table 9** shows the land use differences between the Year 2020 Conditions With Interim Development (Interim Market Demand) and the Year 2035 Conditions Without Development (2035 Baseline).

**Table 7: Land Use Assumptions for Year 2035 Conditions With Development (Market Demand)
Net Change vs. Year 2035 Baseline Conditions**

| TAZ No. | TAZ Description | Residential Units | Retail Space (sq. ft.) | Office Space (sq. ft.) | Hotel Rooms | Industrial (sq. ft.) | Other (sq. ft.) |
|--------------|--------------------------|-------------------|------------------------|------------------------|-------------|----------------------|-----------------|
| 1387/1556 | Mark Center (JBG East) | +379 | +12,000 | +0 | +0 | +0 | +0 |
| 1372/1558 | Pegram (Home Properties) | +629 | +0 | +0 | +0 | +0 | +0 |
| 1384/1563 | JBG West / Duke | +2,266 | +294,680 | +1,156,850 | +420 | +0 | +0 |
| 1383/1564 | Shirley Gardens / NVCC | +520 | +16,000 | +78,469 | +140 | +0 | +0 |
| 1386/1566 | Southern Towers | +0 | +105,000 | +195,000 | +140 | +0 | +0 |
| 1362/1568 | Seminary Hill | +0 | -6,853 | +105,000 | +0 | +0 | +0 |
| Total | | +3,794 | +420,827 | +1,535,319 | +700 | +0 | +0 |

**Table 8: Land Use Assumptions for Year 2020 Conditions With Development (Interim Market Demand)
Net Change vs. Existing (2010)**

| TAZ No. | TAZ Description | Residential Units | Retail Space (sq. ft.) | Office Space (sq. ft.) | Hotel Rooms | Industrial (sq. ft.) | Other (sq. ft.) |
|--------------|--------------------------|-------------------|------------------------|------------------------|-------------|----------------------|-----------------|
| 1387/1556 | Mark Center (JBG East) | +0 | +0 | +1,743,537 | +0 | +0 | +0 |
| 1372/1558 | Pegram (Home Properties) | +687 | +0 | +0 | +0 | +0 | +0 |
| 1384/1563 | JBG West / Duke | +950 | +217,600 | +213,000 | +0 | +0 | +0 |
| 1383/1564 | Shirley Gardens / NVCC | +520 | +16,000 | +78,469 | +140 | +0 | +0 |
| 1386/1566 | Southern Towers | +0 | +45,900 | +75,000 | +0 | +0 | +0 |
| 1362/1568 | Seminary Hill | +0 | -6,853 | +105,000 | +0 | +0 | +0 |
| Total | | +2,157 | +272,647 | +2,215,006 | +140 | +0 | +0 |

**Table 9: Land Use Assumptions for Year 2020 Conditions With Development (Interim Market Demand)
Net Difference vs. Year 2035 Baseline Conditions**

| TAZ No. | TAZ Description | Residential Units | Retail Space (sq. ft.) | Office Space (sq. ft.) | Hotel Rooms | Industrial (sq. ft.) | Other (sq. ft.) |
|--------------|--------------------------|-------------------|------------------------|------------------------|-------------|----------------------|-----------------|
| 1387/1556 | Mark Center (JBG East) | +0 | +0 | +0 | +0 | +0 | +0 |
| 1372/1558 | Pegram (Home Properties) | +629 | +0 | +0 | +0 | +0 | +0 |
| 1384/1563 | JBG West / Duke | +950 | +217,600 | +213,000 | +0 | +0 | +0 |
| 1383/1564 | Shirley Gardens / NVCC | +520 | +16,000 | +78,469 | +140 | +0 | +0 |
| 1386/1566 | Southern Towers | +0 | +45,900 | +75,000 | +0 | +0 | +0 |
| 1362/1568 | Seminary Hill | +0 | -6,853 | +105,000 | +0 | +0 | +0 |
| Total | | +2,099 | +272,647 | +471,469 | +140 | +0 | +0 |

An alternate trip generation estimate for the proposed development was also prepared using ITE Trip Generation, 8th Edition formulas, for reference purposes only. Due to the large size of the study area, the volumes used for the analysis of traffic operations and impacts in this study were based on the NCHRP-refined travel demand model results, not the ITE methodology. The proposed development excludes the BRAC-133 facility at Mark Center, which is assumed to be included under the Year 2035 Without Development (i.e., Baseline) scenario. However, for reference, **Table 10** shows the ITE-based trip generation estimate for the BRAC-133 facility.

Table 10: Land Use and ITE Trip Generation for the BRAC-133 Facility at Mark Center

| <i>Mark Center (BRAC-133 Only)</i> | | | | | | | | | |
|---|--|------------|--------------|--|--------------|--------------|--|--------------|--------------|
| <u>YEAR 2011 - 2020</u> | | | | | | | | | |
| <u>TRIP TOTALS</u> | MORNING PEAK HOUR Adjacent Street Traffic | | | EVENING PEAK HOUR Adjacent Street Traffic | | | DAILY Adjacent Street Traffic | | |
| | IN | OUT | TOTAL | IN | OUT | TOTAL | IN | OUT | TOTAL |
| <i>General Office (ITE-710)</i> | | | | | | | | | |
| 1,743,537 sq.ft. | 1624 | 222 | 1846 | 345 | 1687 | 2032 | 6026 | 6026 | 12052 |
| <i>Transit Reduction (20%)</i> | <u>-325</u> | <u>-44</u> | <u>-369</u> | <u>-69</u> | <u>-337</u> | <u>-406</u> | <u>-1205</u> | <u>-1205</u> | <u>-2410</u> |
| <i>Trips after Transit Reduction</i> | 1299 | 178 | 1477 | 276 | 1350 | 1626 | 4821 | 4821 | 9642 |
| <i>Net New Trips</i> | 1,299 | 178 | 1,477 | 276 | 1,350 | 1,626 | 4,821 | 4,821 | 9,642 |
| Total New Trips | 1,299 | 178 | 1,477 | 276 | 1,350 | 1,626 | 4,821 | 4,821 | 9,642 |
| <u>YEAR 2021 - 2035 : No New Trips Generated</u> | | | | | | | | | |
| Total New Trips | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

The land uses associated with the proposed development are summarized by traffic analysis zone (TAZ) in **Tables 11 through 16**, along with the ITE trip generation estimates for those land uses. A map of the study area TAZs is provided in **Figure 19**. A 20% trip reduction due to the prevalence of transit routes within the corridor was assumed based on a sensitivity analysis performed using the regional travel demand model, which tested transportation networks with and without enhanced service in a proposed dedicated transitway along the Beauregard Street corridor. Trip reductions due to internal capture and pass-by trips were calculated using standard ITE practices.

The total number of new trips, using ITE Trip Generation, produced and attracted by the proposed development expected to occur between 2011 and 2020, and from 2021 to 2035, is summarized in **Table 24**.

Table 11: Land Use and ITE Trip Generation for TAZ 1362

| <i>TAZ 1362: WRIT</i> | | | | | | | | | |
|---|--|------------|--------------|--|------------|--------------|--|------------|--------------|
| <u>YEAR 2011 - 2020</u> | | | | | | | | | |
| TRIP TOTALS | MORNING PEAK HOUR Adjacent Street Traffic | | | EVENING PEAK HOUR Adjacent Street Traffic | | | DAILY Adjacent Street Traffic | | |
| | IN | OUT | TOTAL | IN | OUT | TOTAL | IN | OUT | TOTAL |
| General Office (ITE-710) | | | | | | | | | |
| 105,000 sq.ft. | 172 | 23 | 195 | 33 | 163 | 196 | 692 | 693 | 1385 |
| Transit Reduction (20%) | -34 | -5 | -39 | -7 | -33 | -39 | -138 | -139 | -277 |
| Trips after Transit Reduction | 138 | 18 | 156 | 26 | 130 | 157 | 554 | 554 | 1108 |
| less internal trips (0% AM, 2% PM, 0% Daily) | 0 | 0 | 0 | -1 | -3 | -4 | 0 | 0 | 0 |
| Net New Trips | 138 | 18 | 156 | 25 | 127 | 153 | 554 | 554 | 1,108 |
| Shopping Center (ITE-820) | | | | | | | | | |
| 6,853 sq.ft. (demol.) | 20 | 12 | 32 | 51 | 55 | 106 | 594 | 595 | 1189 |
| Transit Reduction (20%) | -4 | -2 | -6 | -10 | -11 | -21 | -119 | -119 | -238 |
| Trips after Transit Reduction | 16 | 10 | 26 | 41 | 44 | 85 | 475 | 476 | 951 |
| less internal trips (0% AM, 2% PM, 0% Daily) | 0 | 0 | 0 | -1 | -1 | -2 | 0 | 0 | 0 |
| Net External Trips | 16 | 10 | 26 | 40 | 43 | 83 | 475 | 476 | 951 |
| Pass-by Trips (34% PM) | 0 | 0 | 0 | -14 | -15 | -29 | 0 | 0 | 0 |
| Net Trips Eliminated | 16 | 10 | 26 | 26 | 28 | 54 | 475 | 476 | 951 |
| Total New Trips | 122 | 8 | 130 | -1 | 99 | 99 | 79 | 78 | 157 |
| <u>YEAR 2021 - 2035 : No New Trips Generated</u> | | | | | | | | | |
| Total New Trips | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Table 12: Land Use and ITE Trip Generation for TAZ 1372

| <i>TAZ 1372: Home Properties</i> | | | | | | | | | |
|---|--|------------|--------------|--|------------|--------------|--|--------------|--------------|
| <u>YEAR 2011 - 2020</u> | | | | | | | | | |
| TRIP TOTALS | MORNING PEAK HOUR Adjacent Street Traffic | | | EVENING PEAK HOUR Adjacent Street Traffic | | | DAILY Adjacent Street Traffic | | |
| | IN | OUT | TOTAL | IN | OUT | TOTAL | IN | OUT | TOTAL |
| Apartment Units, (ITE-220) | | | | | | | | | |
| 315 units | 32 | 126 | 158 | 124 | 67 | 191 | 1016 | 1016 | 2032 |
| Townhouse Units (ITE-230) | | | | | | | | | |
| 314 units | 22 | 107 | 129 | 103 | 51 | 154 | 870 | 871 | 1741 |
| Total Trips | 54 | 233 | 287 | 227 | 118 | 345 | 1886 | 1887 | 3773 |
| Transit Reduction (20%) | -11 | -47 | -57 | -45 | -24 | -69 | -377 | -377 | -755 |
| Trips after Transit Reduction | 43 | 186 | 230 | 182 | 94 | 276 | 1509 | 1510 | 3018 |
| Total New Trips | 75 | 312 | 388 | 306 | 161 | 467 | 2,525 | 2,526 | 5,050 |
| <u>YEAR 2021 - 2035 : No New Trips Generated</u> | | | | | | | | | |
| Total New Trips | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Table 13: Land Use and ITE Trip Generation for TAZ 1387

| <i>TAZ 1387: JBG (east of Beauregard)</i> | | | | | | | | | |
|---|--|------------|--------------|--|------------|--------------|--|--------------|--------------|
| <u>YEAR 2011 - 2020 : No New Trips Generated</u> | | | | | | | | | |
| Total New Trips | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| <u>YEAR 2021 - 2035</u> | | | | | | | | | |
| <u>TRIP TOTALS</u> | MORNING PEAK HOUR Adjacent Street Traffic | | | EVENING PEAK HOUR Adjacent Street Traffic | | | DAILY Adjacent Street Traffic | | |
| | IN | OUT | TOTAL | IN | OUT | TOTAL | IN | OUT | TOTAL |
| <i>Apartment Units (ITE-220)</i> | | | | | | | | | |
| 379 units | 38 | 151 | 189 | 147 | 79 | 226 | 1573 | 847 | 2420 |
| <i>Transit Reduction (20%)</i> | <u>-8</u> | <u>-30</u> | <u>-38</u> | <u>-29</u> | <u>-16</u> | <u>-45</u> | <u>-315</u> | <u>-169</u> | <u>-484</u> |
| <i>Trips after Transit Reduction</i> | 30 | 121 | 151 | 118 | 63 | 181 | 1258 | 678 | 1936 |
| less internal trips (5% AM, 6% PM, 9% Daily) | <u>-2</u> | <u>-6</u> | <u>-8</u> | <u>-8</u> | <u>-4</u> | <u>-11</u> | <u>-114</u> | <u>-62</u> | <u>-175</u> |
| <i>Net New Trips</i> | 28 | 115 | 143 | 110 | 59 | 170 | 1,144 | 616 | 1,761 |
| <i>Shopping Center (ITE-820)</i> | | | | | | | | | |
| 12,000 sq.ft. | 27 | 17 | 44 | 74 | 80 | 154 | 822 | 890 | 1712 |
| <i>Transit Reduction (20%)</i> | <u>-5</u> | <u>-3</u> | <u>-9</u> | <u>-15</u> | <u>-16</u> | <u>-31</u> | <u>-164</u> | <u>-178</u> | <u>-342</u> |
| <i>Trips after Transit Reduction</i> | 22 | 14 | 35 | 59 | 64 | 123 | 658 | 712 | 1370 |
| less internal trips (5% AM, 6% PM, 9% Daily) | <u>-1</u> | <u>-1</u> | <u>-2</u> | <u>-4</u> | <u>-4</u> | <u>-8</u> | <u>-60</u> | <u>-65</u> | <u>-124</u> |
| Net External Trips | 21 | 13 | 33 | 55 | 60 | 115 | 598 | 647 | 1,246 |
| Pass-by Trips (0% AM, 34% PM) | <u>0</u> | <u>0</u> | <u>0</u> | <u>-19</u> | <u>-21</u> | <u>-40</u> | <u>0</u> | <u>0</u> | <u>0</u> |
| <i>Net New Trips</i> | 21 | 13 | 33 | 36 | 39 | 75 | 598 | 647 | 1,246 |
| Total New Trips | 49 | 128 | 176 | 146 | 98 | 245 | 1,742 | 1,263 | 3,007 |

Table 14: Land Use and ITE Trip Generation for TAZ 1383

| <i>TAZ 1383 Hekemian</i> | | | | | | | | | |
|---|--|------------|--------------|--|------------|--------------|--|--------------|--------------|
| <u>YEAR 2011 - 2020</u> | | | | | | | | | |
| <u>TRIP TOTALS</u> | MORNING PEAK HOUR Adjacent Street Traffic | | | EVENING PEAK HOUR Adjacent Street Traffic | | | DAILY Adjacent Street Traffic | | |
| | IN | OUT | TOTAL | IN | OUT | TOTAL | IN | OUT | TOTAL |
| <i>Apartment Units (ITE-220)</i> | | | | | | | | | |
| 520 units | 52 | 207 | 259 | 198 | 106 | 304 | 1637 | 1638 | 3275 |
| Transit Reduction (20%) | -10 | -41 | -52 | -40 | -21 | -61 | -327 | -328 | -655 |
| Trips after Transit Reduction | 42 | 166 | 207 | 158 | 85 | 243 | 1310 | 1310 | 2620 |
| less internal trips (3% AM, 8% PM, 9% Day) | -1 | -5 | -6 | -13 | -7 | -20 | -118 | -118 | -236 |
| Net New Trips | 41 | 161 | 201 | 145 | 78 | 223 | 1,192 | 1,192 | 2,384 |
| <i>Hotel Rooms (ITE-310)</i> | | | | | | | | | |
| 140 rooms | 38 | 24 | 62 | 44 | 39 | 83 | 466 | 414 | 880 |
| <i>Shopping Center (ITE-820)</i> | | | | | | | | | |
| 16,000 sq.ft. | 32 | 20 | 52 | 89 | 97 | 186 | 1032 | 1032 | 2064 |
| Transit Reduction (20%) | -6 | -4 | -10 | -18 | -19 | -37 | -206 | -206 | -413 |
| Trips after Transit Reduction | 26 | 16 | 42 | 71 | 78 | 149 | 826 | 826 | 1651 |
| less internal trips (3% AM, 8% PM, 9% Day) | -1 | 0 | -1 | -6 | -7 | -12 | -75 | -75 | -149 |
| Net External Trips | 25 | 16 | 41 | 65 | 71 | 137 | 751 | 751 | 1,502 |
| Pass-by Trips (0% AM, 34% PM) | 0 | 0 | 0 | -23 | -25 | -48 | 0 | 0 | 0 |
| Net New Trips | 25 | 16 | 41 | 42 | 46 | 89 | 751 | 751 | 1,502 |
| <i>General Office (ITE-710)</i> | | | | | | | | | |
| 78,469 sq.ft. | 136 | 18 | 154 | 28 | 139 | 167 | 553 | 554 | 1107 |
| Transit Reduction (20%) | -27 | -4 | -31 | -6 | -28 | -33 | -111 | -111 | -221 |
| Trips after Transit Reduction | 109 | 14 | 123 | 22 | 111 | 134 | 442 | 443 | 886 |
| less internal trips (3% AM, 8% PM, 9% Day) | -3 | 0 | -4 | -2 | -9 | -11 | -40 | -40 | -80 |
| Net New Trips | 106 | 14 | 119 | 20 | 102 | 123 | 402 | 403 | 806 |
| Total New Trips | 210 | 215 | 423 | 251 | 265 | 518 | 2,811 | 2,760 | 5,572 |
| <u>YEAR 2021 - 2035 : No New Trips Generated</u> | | | | | | | | | |
| Total New Trips | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Table 15: Land Use and ITE Trip Generation for TAZ 1384

| <i>TAZ 1384 JBG (west of Beauregard) and Duke</i> | | | | | | | | | |
|---|--------------------------------|------------|--------------|--------------------------------|--------------|--------------|--------------------------------|---------------|---------------|
| <u>YEAR 2011 - 2020</u> | | | | | | | | | |
| <u>TRIP TOTALS</u> | MORNING PEAK HOUR | | | EVENING PEAK HOUR | | | DAILY | | |
| | Adjacent Street Traffic | | | Adjacent Street Traffic | | | Adjacent Street Traffic | | |
| | IN | OUT | TOTAL | IN | OUT | TOTAL | IN | OUT | TOTAL |
| <i>Apartment Units (ITE-220)</i> | | | | | | | | | |
| 950 units | 94 | 375 | 469 | 351 | 189 | 540 | 2940 | 2941 | 5881 |
| Transit Reduction (20%) | -19 | -75 | -94 | -70 | -38 | -108 | -588 | -588 | -1176 |
| Trips after Transit Reduction | 75 | 300 | 375 | 281 | 151 | 432 | 2352 | 2353 | 4705 |
| less internal trips (7% AM, 15% PM & Daily) | -5 | -21 | -26 | -43 | -23 | -65 | -353 | -353 | -706 |
| Net New Trips | 70 | 279 | 349 | 238 | 128 | 367 | 1,999 | 2,000 | 3,999 |
| <i>Shopping Center (ITE-820)</i> | | | | | | | | | |
| 217,600 sq.ft. | 149 | 95 | 244 | 514 | 557 | 1071 | 5628 | 5629 | 11257 |
| Transit Reduction (20%) | -30 | -19 | -49 | -103 | -111 | -214 | -1126 | -1126 | -2251 |
| Trips after Transit Reduction | 119 | 76 | 195 | 411 | 446 | 857 | 4502 | 4503 | 9006 |
| less internal trips (7% AM, 15% PM & Daily) | -8 | -5 | -14 | -62 | -67 | -129 | -676 | -676 | -1,351 |
| Net External Trips | 111 | 71 | 181 | 349 | 379 | 728 | 3,826 | 3,827 | 7,655 |
| Pass-by Trips(0% AM, 34% PM) | 0 | 0 | 0 | -119 | -129 | -248 | 0 | 0 | 0 |
| Net New Trips | 111 | 71 | 181 | 230 | 250 | 480 | 3,826 | 3,827 | 7,655 |
| <i>General Office (ITE-710)</i> | | | | | | | | | |
| 213,000 sq.ft. | 302 | 41 | 343 | 54 | 263 | 317 | 1194 | 1194 | 2388 |
| Transit Reduction (20%) | -60 | -8 | -69 | -11 | -53 | -63 | -239 | -239 | -478 |
| Trips after Transit Reduction | 242 | 33 | 274 | 43 | 210 | 254 | 955 | 955 | 1910 |
| less internal trips (7% AM, 15% PM & Daily) | -17 | -2 | -19 | -7 | -32 | -39 | -144 | -144 | -287 |
| Net New Trips | 225 | 31 | 255 | 36 | 178 | 215 | 811 | 811 | 1,623 |
| Total New Trips | 406 | 381 | 785 | 504 | 556 | 1,062 | 6,636 | 6,638 | 13,277 |
| <u>YEAR 2021 - 2035</u> | | | | | | | | | |
| <i>Hotel Rooms (ITE-310)</i> | | | | | | | | | |
| 300 rooms | 98 | 62 | 160 | 94 | 83 | 177 | 1156 | 1156 | 2312 |
| <i>Apartment Units (ITE-220)</i> | | | | | | | | | |
| 1,316 units | 130 | 519 | 649 | 482 | 259 | 741 | 4049 | 4050 | 8099 |
| Transit Reduction (20%) | -26 | -104 | -130 | -96 | -52 | -148 | -810 | -810 | -1620 |
| Trips after Transit Reduction | 104 | 415 | 519 | 386 | 207 | 593 | 3239 | 3240 | 6479 |
| less internal trips (2% AM, 7% PM, 8% Daily) | -2 | -8 | -10 | -28 | -15 | -42 | -260 | -260 | -519 |
| Net New Trips | 128 | 511 | 639 | 454 | 244 | 699 | 3,789 | 3,790 | 7,580 |
| <i>Shopping Center (ITE-820)</i> | | | | | | | | | |
| 77,080 sq.ft. | 81 | 51 | 132 | 256 | 278 | 534 | 2867 | 2867 | 5734 |
| Transit Reduction (20%) | -16 | -10 | -26 | -51 | -56 | -107 | -573 | -573 | -1147 |
| Trips after Transit Reduction | 65 | 41 | 106 | 205 | 222 | 427 | 2294 | 2294 | 4587 |
| less internal trips (2% AM, 7% PM, 8% Daily) | -1 | -1 | -2 | -15 | -16 | -30 | -184 | -184 | -367 |
| Net External Trips | 80 | 50 | 130 | 241 | 262 | 504 | 2,683 | 2,683 | 5,367 |
| Pass-by Trips(0% AM, 34% PM) | 0 | 0 | 0 | -82 | -90 | -172 | 0 | 0 | 0 |
| Net New Trips | 80 | 50 | 130 | 159 | 172 | 332 | 2,683 | 2,683 | 5,367 |
| <i>General Office (ITE-710)</i> | | | | | | | | | |
| 943,850 sq.ft. | 994 | 136 | 1130 | 193 | 943 | 1136 | 3757 | 3757 | 7514 |
| Transit Reduction (20%) | -199 | -27 | -226 | -39 | -189 | -227 | -751 | -751 | -1503 |
| Trips after Transit Reduction | 795 | 109 | 904 | 154 | 754 | 909 | 3006 | 3006 | 6011 |
| less internal trips (2% AM, 7% PM, 8% Daily) | -16 | -2 | -18 | -11 | -53 | -64 | -241 | -241 | -481 |
| Net New Trips | 978 | 134 | 1,112 | 182 | 890 | 1,072 | 3,516 | 3,516 | 7,033 |
| Total New Trips | 1,284 | 757 | 2,041 | 889 | 1,389 | 2,280 | 11,144 | 11,145 | 22,292 |

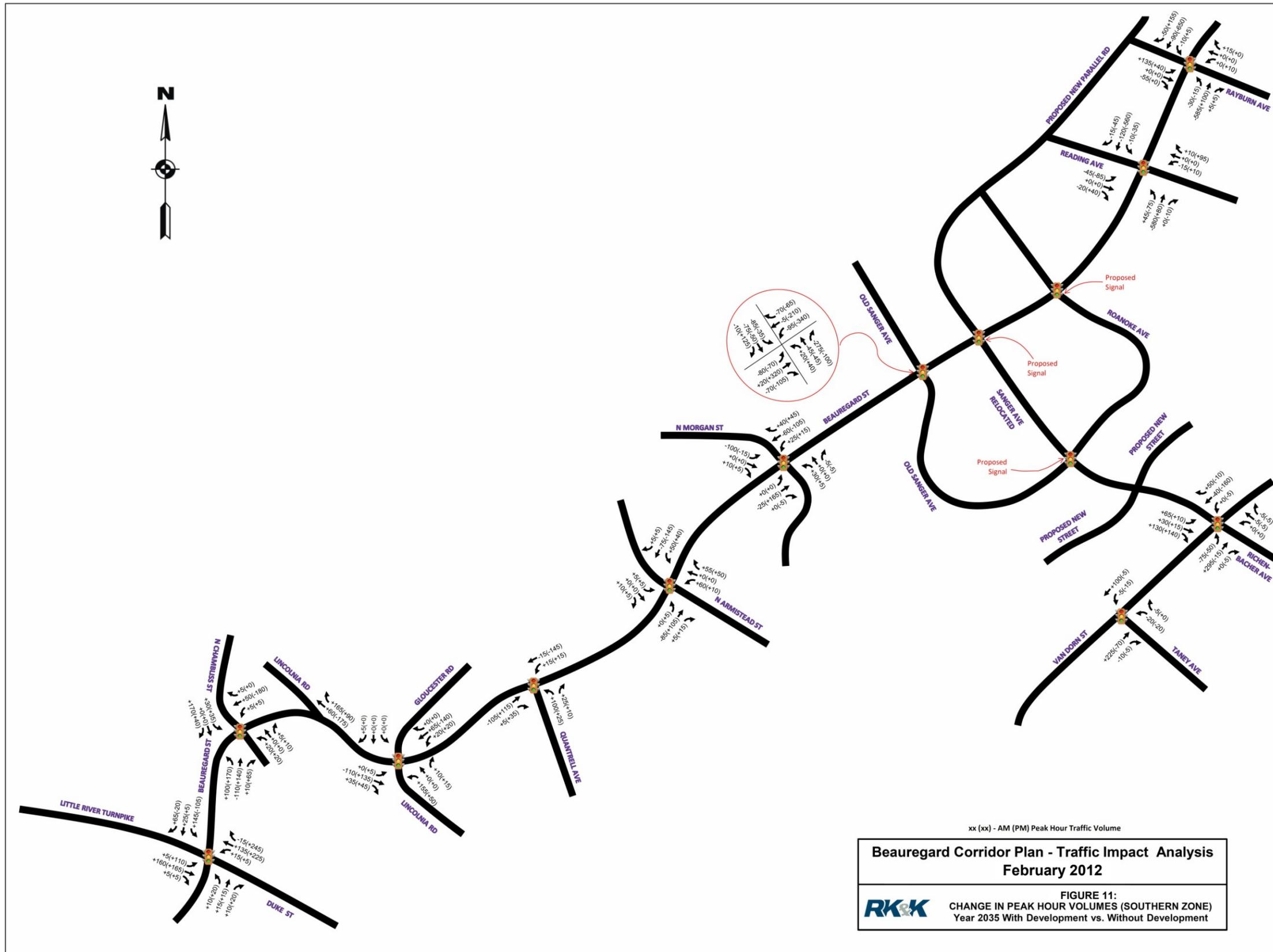
Table 16: Land Use and ITE Trip Generation for TAZ 1386

| TAZ 1386 : Southern Towers | | | | | | | | | |
|---|---|------------|--------------|---|------------|--------------|---|--------------|--------------|
| <u>YEAR 2011 - 2020</u> | | | | | | | | | |
| <u>TRIP TOTALS</u> | <u>MORNING PEAK HOUR</u> Adjacent Street Traffic | | | <u>EVENING PEAK HOUR</u> Adjacent Street Traffic | | | <u>DAILY</u> Adjacent Street Traffic | | |
| | <u>IN</u> | <u>OUT</u> | <u>TOTAL</u> | <u>IN</u> | <u>OUT</u> | <u>TOTAL</u> | <u>IN</u> | <u>OUT</u> | <u>TOTAL</u> |
| General Office (ITE-710) | | | | | | | | | |
| 75,000 sq.ft. | 131 | 18 | 149 | 28 | 135 | 163 | 534 | 535 | 1069 |
| Transit Reduction (20%) | -26 | -4 | -30 | -6 | -27 | -33 | -107 | -107 | -214 |
| Trips after Transit Reduction | 105 | 14 | 119 | 22 | 108 | 130 | 427 | 428 | 855 |
| less internal trips(2% AM, 4% PM, 4% Daily) | -2 | 0 | -2 | -1 | -5 | -6 | -18 | -18 | -35 |
| Net New Trips | 103 | 14 | 117 | 21 | 103 | 124 | 409 | 410 | 820 |
| Shopping Center (ITE-820) | | | | | | | | | |
| 45,900 sq.ft. | 59 | 38 | 97 | 181 | 197 | 378 | 2047 | 2047 | 4094 |
| Transit Reduction (20%) | -12 | -8 | -19 | -36 | -39 | -76 | -409 | -409 | -819 |
| Trips after Transit Reduction | 47 | 30 | 78 | 145 | 158 | 302 | 1638 | 1638 | 3275 |
| less internal trips(2% AM, 4% PM, 4% Daily) | -1 | -1 | -2 | -6 | -7 | -13 | -66 | -66 | -131 |
| Net External Trips | 46 | 29 | 76 | 139 | 151 | 289 | 1,572 | 1,572 | 3,144 |
| Pass-by Trips(0% AM, 34% PM) | 0 | 0 | 0 | -48 | -52 | -100 | 0 | 0 | 0 |
| Net New Trips | 46 | 29 | 76 | 91 | 99 | 189 | 1,572 | 1,572 | 3,144 |
| Total New Trips | 149 | 43 | 193 | 112 | 202 | 313 | 1,981 | 1,982 | 3,964 |
| <u>YEAR 2021 - 2035</u> | | | | | | | | | |
| Hotel Rooms (ITE-310) | | | | | | | | | |
| 140 rooms | 38 | 24 | 62 | 44 | 39 | 83 | 440 | 440 | 880 |
| General Office (ITE-710) | | | | | | | | | |
| 120,000 sq.ft. | 191 | 26 | 217 | 36 | 177 | 213 | 767 | 768 | 1535 |
| Transit Reduction (20%) | -38 | -5 | -43 | -7 | -35 | -43 | -153 | -154 | -307 |
| Trips after Transit Reduction | 153 | 21 | 174 | 29 | 142 | 170 | 614 | 614 | 1228 |
| less internal trips(2% AM, 3% PM, 4% Daily) | -3 | 0 | -3 | -1 | -5 | -6 | -25 | -25 | -50 |
| Net New Trips | 150 | 21 | 171 | 28 | 137 | 164 | 589 | 589 | 1,178 |
| Shopping Center (ITE-820) | | | | | | | | | |
| 59,100 sq.ft. | 69 | 44 | 113 | 215 | 232 | 447 | 2412 | 2413 | 4825 |
| Transit Reduction (20%) | -14 | -9 | -23 | -43 | -46 | -89 | -482 | -483 | -965 |
| Trips after Transit Reduction | 55 | 35 | 90 | 172 | 186 | 358 | 1930 | 1930 | 3860 |
| less internal trips(2% AM, 3% PM, 4% Daily) | -1 | -1 | -2 | -6 | -6 | -11 | -78 | -78 | -155 |
| Net External Trips | 54 | 34 | 88 | 166 | 180 | 347 | 1,852 | 1,852 | 3,705 |
| Pass-by Trips (0% AM, 34% PM) | 0 | 0 | 0 | -57 | -62 | -118 | 0 | 0 | 0 |
| Net New Trips | 54 | 34 | 88 | 109 | 118 | 229 | 1,852 | 1,852 | 3,705 |
| Total New Trips | 242 | 79 | 321 | 181 | 294 | 476 | 2,881 | 2,881 | 5,763 |

Table 17: Total ITE Trip Generation for All Study Area TAZs

| <u>YEAR 2011 - 2020</u> | | | | | | | | | |
|---|--|--------------|--------------|--|--------------|--------------|--|---------------|---------------|
| <u>ITE TRIP TOTALS</u> | MORNING PEAK HOUR Adjacent Street Traffic | | | EVENING PEAK HOUR Adjacent Street Traffic | | | DAILY Adjacent Street Traffic | | |
| | IN | OUT | TOTAL | IN | OUT | TOTAL | IN | OUT | TOTAL |
| <i>TAZ 1362: WRIT</i> | 122 | 8 | 130 | -1 | 99 | 99 | 79 | 78 | 157 |
| <i>TAZ 1372: Home Properties</i> | 43 | 186 | 230 | 182 | 94 | 276 | 1,509 | 1,510 | 3,018 |
| <i>TAZ 1383 Hekemian</i> | 210 | 215 | 423 | 251 | 265 | 518 | 2,811 | 2,760 | 5,572 |
| <i>TAZ 1384 JBG (west of Beauregard) and Duke</i> | 406 | 381 | 785 | 504 | 556 | 1,062 | 6,636 | 6,638 | 13,277 |
| <i>TAZ 1387: JBG (east of Beauregard)</i> | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| <i>TAZ 1386 : Southern Towers</i> | 149 | 43 | 193 | 112 | 202 | 313 | 1,981 | 1,982 | 3,964 |
| Total Additional ITE Trips | 930 | 833 | 1,761 | 1,048 | 1,216 | 2,268 | 13,016 | 12,968 | 25,988 |
| <u>YEAR 2021 - 2035</u> | | | | | | | | | |
| <u>ITE TRIP TOTALS</u> | | | | | | | | | |
| <i>TAZ 1362: WRIT</i> | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| <i>TAZ 1372: Home Properties</i> | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| <i>TAZ 1383 Hekemian</i> | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| <i>TAZ 1384 JBG (west of Beauregard) and Duke</i> | 1,284 | 757 | 2,041 | 889 | 1,389 | 2,280 | 11,144 | 11,145 | 22,292 |
| <i>TAZ 1387: JBG (east of Beauregard)</i> | 49 | 128 | 176 | 146 | 98 | 245 | 1,742 | 1,263 | 3,007 |
| <i>TAZ 1386 : Southern Towers</i> | 242 | 79 | 321 | 181 | 294 | 476 | 2,881 | 2,881 | 5,763 |
| Total Additional ITE Trips | 1,575 | 964 | 2,538 | 1,216 | 1,781 | 3,001 | 15,767 | 15,289 | 31,062 |
| Total New ITE Trips from 2011 - 2035 | 2,505 | 1,797 | 4,299 | 2,264 | 2,997 | 5,269 | 28,783 | 28,257 | 57,050 |

Figures 10 and 11 show the change in the AM and PM peak hour turning movement volumes between the Year 2035 Conditions With Development and the Year 2035 Conditions Without Development. These values represent the trip generation and distribution as determined by the COG travel demand model. The COG model assumes trip generation factors that are different than the ITE factors, and assigns trips to the network based on gravity model, resulting in traffic volume projections that may differ from volumes generated using the ITE equations. The COG model shows the proposed land use changes in the TAZs within the study area associated with the new development in 2035, as well as the proposed new parallel roadways west of Beauregard Street and north of Seminary Road (between I-395 and Beauregard Street) would result in a significant decrease in the volume of traffic traveling along portions of Beauregard Street and along Seminary Road, compared to the 2035 Without Development (Baseline) condition. Some of the traffic would be diverted to these parallel roads, and some drivers would choose different routes through the study area, possibly due to the shifts in land use types among the TAZs.



IV. Analysis of Year 2020 Conditions With Interim Development

The proposed redevelopment within the Beauregard Corridor study area would likely occur in phases between 2011 and 2035. The Year 2020 was selected by the City and the redevelopment team as an interim milestone at which traffic operations should be evaluated, to determine which of the improvements required in 2035 would be needed during an interim phase of development. Hence, no Year 2020 Without Development (i.e, 2020 Baseline) scenario was included in the scope of this study.

The results of the traffic analysis for the Year 2020 conditions with interim development indicate that most of the improvements that are recommended by 2035 will also be needed by 2020. These improvements are summarized in **Table 18**, with their locations shown on **Figure 12**.

Table 18: Transportation Improvements Required by Year 2020 With Interim Development

| No. | Location | Development Scenario Improvements by 2020 | Source of Improvement | CLRP? |
|-----|--|---|---|-------|
| B3 | Beauregard St at Seminary Rd | Add a separate right turn lane along westbound Seminary Road extending back to Mark Center Drive. | Beauregard Planning Study Assumed Improvement | No |
| D1 | | Construct an ellipse configuration at the intersection of Seminary / Beauregard. The conventional 8 phase traffic signal is replaced with a pair of interconnected, coordinated 3-phase signals along Seminary Road located about 300 feet apart. Left turns would be prohibited in the eastbound and westbound directions of Seminary Road. This project replaces 2035 Baseline projects numbers B1 and B2. | Beauregard Planning Study Assumed Improvement | No |
| D2 | | Add a new road through Southern Towers, parallel to Seminary, that would connect from the I-395 off-ramp into Southern Towers. The road would extend west, across Beauregard Street connecting to the future Hekemian development. The intersection with the new road and Beauregard Street would be signalized, and shared with a future transitway. The existing driveway from the Hermitage apartments at Beauregard Street would be closed, and adequate improvements to allow for access into and out of the Hermitage apartments. | Beauregard Planning Study Assumed Improvement | No |
| B4 | Beauregard Street | Construct a dedicated transitway in each direction along Beauregard Street heading southbound from King Street, turning east into Southern Towers, south and west onto Mark Center Drive and south onto Beauregard to Sanger Avenue. | Transitway Feasibility Study | No |
| B5 | Beauregard Street at Mark Center Drive | Provide a separate right turn lane along NB Beauregard Street | Beauregard Planning Study Assumed Improvement | No |
| B6 | | Reconfigure westbound approach as three lanes - 1 left, 1 thru and 1 right | Beauregard Planning Study Assumed Improvement | No |
| B7 | Beauregard St at Existing Sanger Ave | Reconfigure the Sanger Ave approaches to consist of a separate left turn lane, a thru lane, and a separate right turn lane in both the eastbound and westbound directions. The portion of Beauregard Street between Roanoke and existing Sanger will be mixed operations. SB transit will transition from median runningway on Beauregard Street to curbside running along existing Sanger Avenue. | Beauregard Planning Study Assumed Improvement | No |
| B8 | | Provide permissive left-turn phasing for the Sanger Ave left turns | Beauregard Planning Study Assumed Improvement | No |
| B9 | | Provide permissive right turn phasing for WB Sanger Ave | Beauregard Planning Study Assumed Improvement | No |
| B10 | Seminary Rd at Echols Ave | Add separate left turn lanes along EB and WB Seminary Rd, with protected/permissive left turn phasing | Beauregard Planning Study Assumed Improvement | No |
| B11 | Seminary Road at Mark Center Drive | Widen the Seminary Road westbound approach and gore area from the rotary back to the Mark Center Drive intersection from one to two lanes and provide a dedicated right-turn lane into Southern Towers. Restripe the westbound Seminary Road flyover to allow one through lane on Seminary Road and one left-turn lane into Mark Center Drive. Provide a physical separation between the two lanes from the rotary and the left-turn lane at Mark Center Drive. | BRAC / VDOT Short-Mid Term Improvement | No |

| No. | Location | Development Scenario Improvements by 2020 | Source of Improvement | CLRP? |
|-----|---|--|--|-------|
| B12 | Seminary Road at Mark Center Drive (continued) | Redesign eastbound Seminary Road approach to Mark Center Drive to allow three through lanes, and to align with new lane on Seminary east of Mark Center Drive accessing I-395. | BRAC / VDOT Short-Mid Term Improvement | No |
| B13 | | Add lanes at Southern Towers approach to separate the existing shared through/left turn lanes. The approach would include dual left turn lanes, one thru lane and one right turn lane. | Beauregard Planning Study Assumed Improvement | No |
| B14 | | Widen northbound Mark Center Drive to allow for a third right turn onto eastbound Seminary. This approach would be a left turn, thru/right, and dual right turn lanes. | BRAC / VDOT Short-Mid Term Improvement | No |
| B15 | | Construct a pedestrian bridge across Seminary Road west of Mark Center Drive. | BRAC / VDOT Short-Mid Term Improvement | No |
| D7 | | Widen Mark Center Dr to allow for a third right turn onto EB Seminary. This approach would be a left turn, one thru lane and three right turn lanes. | Beauregard Planning Study Improvement | No |
| B16 | EB Seminary Rd Off-ramp to I-395 Rotary | Widen eastbound Seminary Road and the southbound I-395 on-ramp by one lane from Mark Center Drive to the ramp meter signal to provide a continuous two-lane ramp from Seminary Road to the ramp meter. Restripe the southbound ramp connection from the rotary to provide a merge into the two-lane ramp from eastbound Seminary Road. | Beauregard Planning Study Improvement | No |
| B17 | I-395 at the Seminary rotary | Widen the northbound I-395 off-ramp from two to three lanes and provide two through lanes and one right turn lane. | BRAC / VDOT Short-Mid Term Improvement | No |
| B18 | | On the eastbound rotary (toward onramp), restripe the pavement to provide a separate left turn lane, a shared thru/left turn lane, and a thru lane. Requires removal of the island at westbound Seminary Road. | BRAC / VDOT Short-Mid Term Improvements | No |
| B19 | | Restripe the rotary to provide dual lefts for the eastbound-to-northbound movements. | BRAC / VDOT Short-Mid Term Improvement | No |
| B20 | | Restripe the westbound approach at the I-395 southbound off-ramp intersection to provide two through lanes and one left turn lane. | BRAC / VDOT Short-Mid Term Improvement | No |
| B21 | I-395 at Seminary Road | Construct a new HOV ramp at Seminary Road and I-395 to and from the north, connecting to the upper bridge of Seminary Road. | VDOT project (Subject to EA) | No |
| B22 | Van Dorn St at Braddock Rd | Replace the shared thru/left turn lanes along NB and SB Van Dorn St with separate left turn lanes | Beauregard Planning Study Assumed Improvements | No |
| B23 | | Add protected/permissive left turn phasing along northbound and southbound Van Dorn Street. | Beauregard Planning Study Assumed Improvements | No |
| B24 | Existing Sanger Avenue | Remove on-street parking in both directions and provide dedicated transit lane (one transit lane and one GP lane each direction). | Transitway Feasibility Study | No |
| B25 | Van Dorn St at Sanger Ave / Richenbacher Ave | Reconfigure eastbound Sanger Avenue to consist of a right turn lane, and a left/thru/right lane approaching Van Dorn Street. | Beauregard Planning Study Assumed Improvements | No |
| B26 | | Restripe the westbound approach along Richenbacher Avenue to consist of a separate left turn lane and a shared thru/right turn lane. | Beauregard Planning Study Assumed Improvements | No |
| B27 | Beauregard St at Braddock Rd | Change dual left to single left on westbound Braddock Road and replace the left-turn lane with a thru lane. | Beauregard Planning Study Assumed Improvements | No |
| D6 | Relocated Kenmore Avenue and Library Lane Extended | Kenmore Avenue currently connects Van Dorn St. to Seminary Rd. via an unsignalized intersection along Seminary Road that restricts movements to right turns only. To support the redevelopment of this area, and improve traffic flow, the plan proposes to relocate a portion of Kenmore Avenue south of Seminary Road such that it aligns with the Library Lane intersection at Seminary Road. | Beauregard Planning Study Assumed Improvement | No |
| D8 | Seminary Rd at Library Lane | Change pedestrian signal phase at Seminary / Library to concurrent phasing with advanced pedestrian signal. | Beauregard Planning Study Assumed Improvements | No |

Table 8 in Section III of this report shows the net changes in land uses between the Year 2020 Conditions With Development and the Existing 2010 conditions. **Table 9** in Section III compares the land uses for the 2020 Conditions With Development (Interim Build-Out) to the 2035 Conditions Without Development (Baseline).

The Year 2020 traffic volumes for conditions with development are shown in **Tables 20 and 21**. These volumes are also shown on the roadway network diagrams on **Figures 13 and 14**. A comparison of the actual Year 2010 roadway segment volumes and the NCHRP-Adjusted Year 2020 With Interim Development volumes for the peak hour directions along Beauregard Street, Seminary Road, and N. Van Dorn Street is provided in **Table 19**, along with the associated annual growth rates for each segment. Volumes were subsequently balanced/smoothed along Beauregard Street, Seminary Road, and Van Dorn Street to reflect the limited number of driveways/access points along these roadways. Additionally, due to the somewhat low growth rates exhibited by the travel demand model, the final volumes using these growth rates were adjusted higher for consistency with Mark Center BRAC-related trip generation previously performed by others. Hence, a comparison of the final Year 2010 and Year 2020 turning movement volumes used in the operational analysis may not yield the exact growth rates shown in **Table 19**.

Table 19: Comparison of Actual Year 2010 Volumes and NCHRP-Adjusted Year 2020 With Interim Development Volumes for Growth Rate Estimates

| | Actual Year 2010 Volumes | | NCHRP-Adjusted Year 2020 With Interim Development Volumes | | Annual Compound Growth Rate | |
|-------------------------------|--------------------------|---------------|---|---------------|-----------------------------|---------------|
| | AM Northbound | PM Southbound | AM Northbound | PM Southbound | AM Northbound | PM Southbound |
| Beauregard Street | | | | | | |
| Route 236 to N Chambliss | 1,155 | 1,325 | 1,091 | 1,362 | -0.2% | 0.1% |
| N Chambliss to N Morgan | 860 | 725 | 850 | 764 | 0.0% | 0.2% |
| N Morgan to Sanger | 1,300 | 1,265 | 1,291 | 1,333 | 0.0% | 0.2% |
| Sanger to Reading | 1,480 | 1,430 | 1,521 | 1,577 | 0.1% | 0.4% |
| Reading to Rayburn | 1,595 | 1,530 | 1,490 | 1,546 | -0.3% | 0.0% |
| Rayburn to Seminary | 1,525 | 1,650 | 1,984 | 1,725 | 1.1% | 0.2% |
| Seminary to Fillmore | 835 | 815 | 768 | 863 | -0.3% | 0.2% |
| Fillmore to Braddock | 735 | 725 | 662 | 708 | -0.4% | -0.1% |
| Braddock to Route 7 | 1,110 | 1,005 | 955 | 913 | -0.6% | -0.4% |
| Seminary Road | | | | | | |
| George Mason - Dawes | 1,295 | 1,465 | 1,325 | 1,574 | 0.1% | 0.3% |
| Dawes - Echols | 1,365 | 1,540 | 1,325 | 1,616 | -0.1% | 0.2% |
| Echols - Beauregard | 2,100 | 1,935 | 1,899 | 2,184 | -0.4% | 0.5% |
| Beauregard - Mark Center | 1,920 | 2,040 | 2,047 | 2,262 | 0.3% | 0.4% |
| Mark Center - I-395 SB Ramp | 1,770 | 2,435 | 1,871 | 2,582 | 0.2% | 0.2% |
| I-395 SB Ramp - I-395 NB Ramp | 1,690 | 1,805 | 1,793 | 1,916 | 0.2% | 0.2% |
| I-395 NB Ramp - Kenmore | 1,690 | 1,960 | 1,652 | 1,982 | -0.1% | 0.0% |
| Kenmore - Pickett | 1,670 | 1,905 | 1,695 | 1,997 | 0.1% | 0.2% |
| Pickett - Jordan | 1,660 | 1,830 | 1,616 | 1,786 | -0.1% | -0.1% |
| Van Dorn Street | | | | | | |
| Sanger - Seminary | 2,035 | 1,445 | 2,006 | 1,491 | -0.1% | 0.1% |
| Seminary - Braddock | 1,590 | 1,375 | 2,234 | 1,667 | 1.4% | 0.8% |

The VISSIM analyses indicated that most intersections would perform at LOS D or better during both the AM and PM peak hours, and no intersections would operate at LOS F overall. However, one (1) intersection – Beauregard Street at Sanger Avenue – would have one approach that operates at LOS F during the PM peak hour. The results of the VISSIM analyses are summarized in **Tables 22 and 23**, and are shown on the roadway network diagrams in **Figures 15 and 16**.

The 2020 With Development AM and PM peak hour levels of service on the roadway links along Beauregard Street and along Seminary Road are summarized in **Tables 24 and 25**. These levels of service were calculated using the Highway Capacity Manual (HCM) methodology for arterial LOS.

The lane configurations for the 2020 With Development scenario are shown in **Figures 17 & 18**, with the recommended capacity improvements (vs. Year 2010 conditions) shown in red.

Figure 12: Map of Transportation Improvements Assumed by 2020 With Development

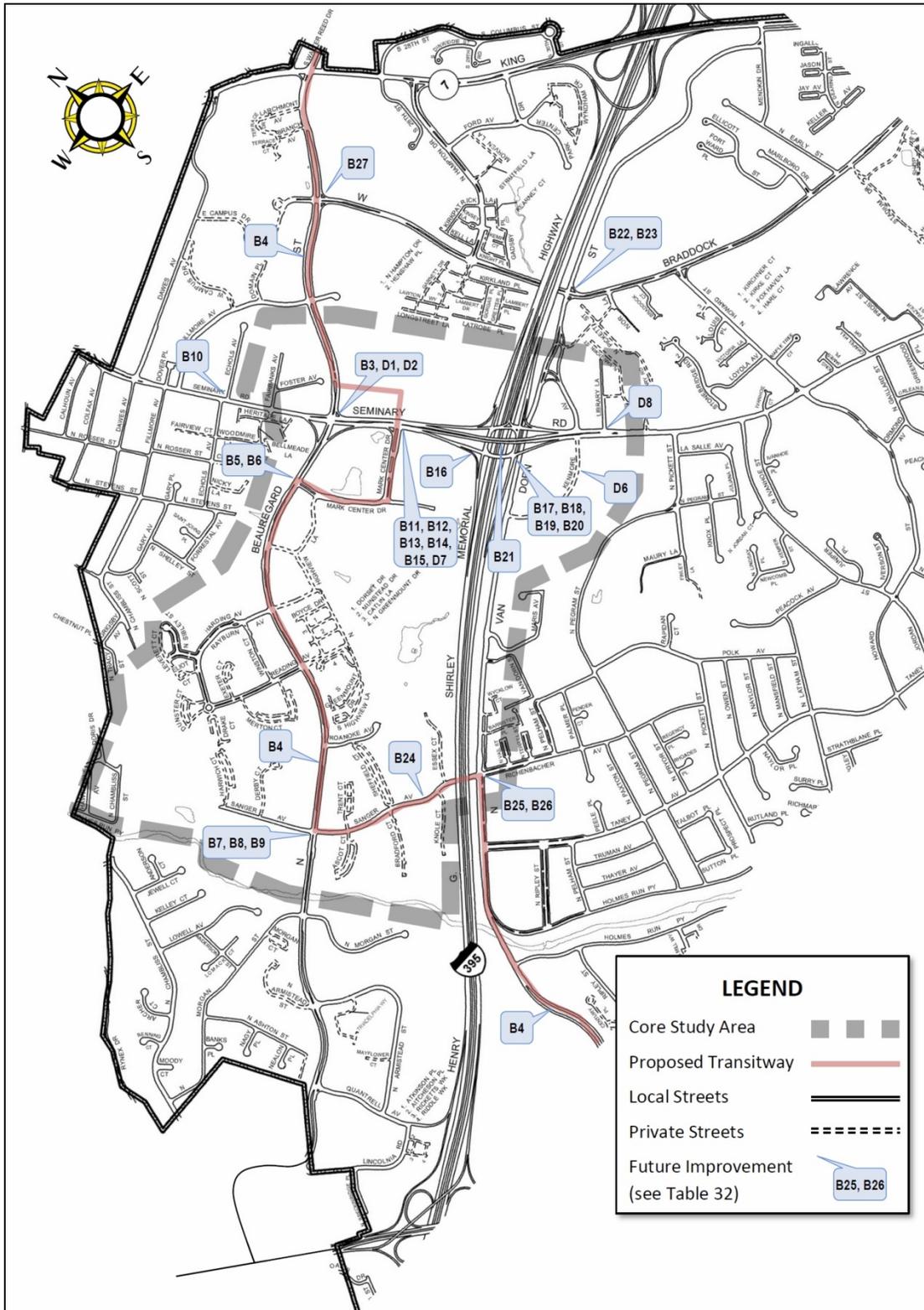


Table 20: Year 2020 AM Peak Hour Intersection Turning Movement Volumes With Development

| Int. # | Intersection | Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | | Grand Total |
|--------|-------------------------------------|------------|-------|-------|-------|------------|------|-------|-------|-----------|-------|-------|-------|-----------|-------|-------|-------|-------------|
| | | Left | Thru | Right | Total | Left | Thru | Right | Total | Left | Thru | Right | Total | Left | Thru | Right | Total | |
| 1 | Beauregard St / Quantrell Ave | | 870 | 30 | 900 | 20 | 505 | | 525 | | | | | 130 | | 100 | 230 | 1,655 |
| 2 | Beauregard St / N Armistead St | 5 | 950 | 15 | 970 | 60 | 440 | 5 | 505 | 30 | 0 | 10 | 40 | 75 | 0 | 220 | 295 | 1,810 |
| 3 | Beauregard St / N Morgan St | 5 | 1,180 | 15 | 1,200 | 35 | 455 | 45 | 535 | 170 | 0 | 10 | 180 | 40 | 0 | 80 | 120 | 2,035 |
| 4 | Beauregard St / Sanger Ave | 90 | 1,205 | 135 | 1,430 | 115 | 335 | 70 | 520 | 110 | 100 | 95 | 305 | 105 | 65 | 345 | 515 | 2,770 |
| 5 | Beauregard St / Reading Ave | 130 | 1,520 | 10 | 1,660 | 30 | 410 | 20 | 460 | 180 | 5 | 75 | 260 | 35 | 10 | 65 | 110 | 2,490 |
| 6 | Beauregard St / Rayburn Ave | 125 | 1,580 | 60 | 1,765 | 15 | 385 | 230 | 630 | 300 | 15 | 60 | 375 | 15 | 5 | 35 | 55 | 2,825 |
| 7 | Beauregard St / Highview Ln | 15 | 1,800 | 100 | 1,915 | 35 | 590 | 40 | 665 | 105 | 5 | 35 | 145 | 5 | 5 | 35 | 45 | 2,770 |
| 8 | Beauregard St / Mark Center Dr | 65 | 1,450 | 425 | 1,940 | 435 | 625 | 190 | 1,250 | 15 | 5 | 5 | 25 | 35 | 5 | 25 | 65 | 3,280 |
| 9 | Beauregard St / Seminary Rd | 480 | 495 | 515 | 1,490 | 115 | 185 | 80 | 380 | 170 | 810 | 165 | 1,145 | 900 | 985 | 195 | 2,080 | 5,095 |
| 10 | Beauregard St / Fillmore Ave | 80 | 725 | 55 | 860 | 10 | 270 | 40 | 320 | 25 | 5 | 75 | 105 | 35 | 5 | 20 | 60 | 1,345 |
| 11 | Beauregard St / W Braddock Rd | 35 | 630 | 105 | 770 | 170 | 145 | 40 | 355 | 5 | 25 | 15 | 45 | 160 | 70 | 640 | 870 | 2,040 |
| 12 | Beauregard St / King St | 320 | 845 | 110 | 1,275 | 150 | 185 | 190 | 525 | 90 | 1,300 | 85 | 1,475 | 85 | 1,975 | 130 | 2,190 | 5,465 |
| 13 | Seminary Rd / Dawes Ave | 10 | 15 | 30 | 55 | 10 | 10 | 20 | 40 | 35 | 1,020 | 5 | 1,060 | 35 | 1,440 | 50 | 1,525 | 2,680 |
| 14 | Seminary Rd / Echols Ave | 15 | 0 | 85 | 100 | 10 | 0 | 5 | 15 | 5 | 1,050 | 5 | 1,060 | 30 | 1,605 | 10 | 1,645 | 2,820 |
| 15 | Seminary Rd / Mark Center Dr | 30 | 15 | 235 | 280 | 280 | 75 | 55 | 410 | 20 | 1,135 | 285 | 1,440 | 695 | 1,995 | 95 | 2,785 | 4,915 |
| 16 | Seminary Rd / Ramp to I-395 South | | | | | 245 | 285 | | 530 | | 680 | 490 | 1,170 | | | | | 1,700 |
| 17 | Seminary Rd / Ramp from I-395 South | | | | | | 245 | 495 | 740 | | | | | 285 | 925 | | 1,210 | 1,950 |
| 18 | Seminary Rd / Ramp from I-395 North | | 925 | 125 | 1,050 | | | | | 680 | 245 | | 925 | | | | | 1,975 |
| 19 | Seminary Rd / Ramp to I-395 North | 1,140 | 465 | | 1,605 | | | | | | | | | | 480 | 335 | 815 | 2,420 |
| 20 | Seminary Rd / Library Ln | 50 | 5 | 15 | 70 | 55 | 0 | 215 | 270 | 200 | 760 | 15 | 975 | 20 | 1,350 | 85 | 1,455 | 2,770 |
| 21 | Seminary Rd / Hammond M.S. | 25 | 0 | 5 | 30 | 35 | | 45 | 80 | 15 | 815 | | 830 | | 1,385 | 5 | 1,390 | 2,330 |
| 22 | Seminary Rd / N Pickett St | 135 | | 115 | 250 | 0 | 0 | 0 | 0 | | 740 | 115 | 855 | 85 | 1,255 | | 1,340 | 2,445 |
| 23 | Seminary Rd / N Jordan St | 380 | | 70 | 450 | | | | | | 720 | 135 | 855 | 20 | 960 | | 980 | 2,285 |
| 24 | N Van Dorn St / Taney Ave | | 2,235 | 135 | 2,370 | 35 | 450 | | 485 | | | | | 135 | | 80 | 215 | 3,070 |
| 25 | N Van Dorn St / Sanger Ave | 430 | 1,870 | 15 | 2,315 | 15 | 280 | 30 | 325 | 110 | 50 | 190 | 350 | 15 | 55 | 70 | 140 | 3,130 |
| 26 | N Van Dorn St / Kenmore Ave | | 2,265 | 135 | 2,400 | 10 | 425 | | 435 | | | | | 55 | | 150 | 205 | 3,040 |
| 27 | N Van Dorn St / W Braddock Rd | 680 | 925 | 490 | 2,095 | 5 | 85 | 30 | 120 | 10 | 135 | 150 | 295 | 165 | 355 | 50 | 570 | 3,080 |
| 28 | W Braddock Rd / Hampton Dr | 40 | 70 | 35 | 145 | 65 | 5 | 95 | 165 | 95 | 195 | 10 | 300 | 25 | 795 | 245 | 1,065 | 1,675 |

Note: Beauregard Street and Van Dorn Street are North-South roadways. Seminary Road is an East-West roadway.

Table 21: Year 2020 PM Peak Hour Intersection Turning Movement Volumes With Development

| Int. # | Intersection | Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | | Grand Total |
|--------|-------------------------------------|------------|------|-------|-------|------------|-------|-------|-------|-----------|-------|-------|-------|-----------|-------|-------|-------|-------------|
| | | Left | Thru | Right | Total | Left | Thru | Right | Total | Left | Thru | Right | Total | Left | Thru | Right | Total | |
| 1 | Beauregard St / Quantrell Ave | | 555 | 85 | 640 | 80 | 1,020 | | 1,100 | | | | | 105 | | 35 | 140 | 1,880 |
| 2 | Beauregard St / N Armistead St | 10 | 550 | 30 | 590 | 180 | 1,020 | 25 | 1,225 | 10 | 0 | 25 | 35 | 55 | 0 | 125 | 180 | 2,030 |
| 3 | Beauregard St / N Morgan St | 10 | 655 | 20 | 685 | 80 | 1,185 | 200 | 1,465 | 75 | 0 | 10 | 85 | 30 | 0 | 30 | 60 | 2,295 |
| 4 | Beauregard St / Sanger Ave | 85 | 470 | 205 | 760 | 445 | 1,180 | 70 | 1,695 | 55 | 65 | 80 | 200 | 205 | 55 | 155 | 415 | 3,070 |
| 5 | Beauregard St / Reading Ave | 160 | 490 | 30 | 680 | 130 | 1,595 | 100 | 1,825 | 145 | 5 | 85 | 235 | 15 | 10 | 90 | 115 | 2,855 |
| 6 | Beauregard St / Rayburn Ave | 60 | 640 | 25 | 725 | 15 | 1,710 | 215 | 1,940 | 195 | 10 | 50 | 255 | 65 | 10 | 30 | 105 | 3,025 |
| 7 | Beauregard St / Highview Ln | 35 | 820 | 10 | 865 | 10 | 1,875 | 100 | 1,985 | 60 | 5 | 10 | 75 | 55 | 5 | 65 | 125 | 3,050 |
| 8 | Beauregard St / Mark Center Dr | 5 | 890 | 50 | 945 | 205 | 1,640 | 110 | 1,955 | 220 | 20 | 30 | 270 | 315 | 5 | 145 | 465 | 3,635 |
| 9 | Beauregard St / Seminary Rd | 370 | 350 | 535 | 1,255 | 170 | 515 | 180 | 865 | 235 | 950 | 770 | 1,955 | 670 | 985 | 275 | 1,930 | 6,005 |
| 10 | Beauregard St / Fillmore Ave | 60 | 760 | 40 | 860 | 20 | 680 | 70 | 770 | 80 | 10 | 125 | 215 | 60 | 10 | 30 | 100 | 1,945 |
| 11 | Beauregard St / W Braddock Rd | 65 | 695 | 110 | 870 | 315 | 610 | 90 | 1,015 | 50 | 105 | 40 | 195 | 120 | 125 | 235 | 480 | 2,560 |
| 12 | Beauregard St / King St | 235 | 645 | 100 | 980 | 170 | 700 | 140 | 1,010 | 105 | 1,360 | 225 | 1,690 | 90 | 990 | 90 | 1,170 | 4,850 |
| 13 | Seminary Rd / Dawes Ave | 15 | 10 | 30 | 55 | 95 | 25 | 50 | 170 | 40 | 1,675 | 5 | 1,720 | 150 | 1,235 | 50 | 1,435 | 3,380 |
| 14 | Seminary Rd / Echols Ave | 10 | 0 | 50 | 60 | 10 | 0 | 5 | 15 | 5 | 1,795 | 0 | 1,800 | 100 | 1,420 | 15 | 1,535 | 3,410 |
| 15 | Seminary Rd / Mark Center Dr | 305 | 75 | 1,345 | 1,725 | 195 | 15 | 70 | 280 | 35 | 1,465 | 55 | 1,555 | 155 | 1,555 | 110 | 1,820 | 5,380 |
| 16 | Seminary Rd / Ramp to I-395 South | | | | | 655 | 305 | | 960 | | 475 | 1,140 | 1,615 | | | | | 2,575 |
| 17 | Seminary Rd / Ramp from I-395 South | | | | | | 350 | 445 | 795 | | | | | 610 | 640 | | 1,250 | 2,045 |
| 18 | Seminary Rd / Ramp from I-395 North | | 395 | 425 | 820 | | | | | 475 | 655 | | 1,130 | | | | | 1,950 |
| 19 | Seminary Rd / Ramp to I-395 North | 395 | 475 | | 870 | | | | | | | | | | 325 | 300 | 625 | 1,495 |
| 20 | Seminary Rd / Library Ln | 50 | 5 | 5 | 60 | 90 | 15 | 360 | 465 | 230 | 1,490 | 20 | 1,740 | 35 | 1,000 | 55 | 1,090 | 3,355 |
| 21 | Seminary Rd / Hammond M.S. | 5 | 0 | 5 | 10 | 5 | | 15 | 20 | 45 | 1,540 | | 1,585 | | 1,070 | 35 | 1,105 | 2,720 |
| 22 | Seminary Rd / N Pickett St | 55 | | 55 | 110 | 0 | 0 | 0 | 0 | | 1,415 | 135 | 1,550 | 115 | 1,050 | | 1,165 | 2,825 |
| 23 | Seminary Rd / N Jordan St | 230 | | 20 | 250 | | | | | | 1,130 | 340 | 1,470 | 65 | 935 | | 1,000 | 2,720 |
| 24 | N Van Dorn St / Taney Ave | | 750 | 140 | 890 | 100 | 1,815 | | 1,915 | | | | | 150 | | 55 | 205 | 3,010 |
| 25 | N Van Dorn St / Sanger Ave | 265 | 515 | 25 | 805 | 40 | 1,345 | 90 | 1,475 | 80 | 85 | 550 | 715 | 20 | 60 | 30 | 110 | 3,105 |
| 26 | N Van Dorn St / Kenmore Ave | | 520 | 85 | 605 | 40 | 1,555 | | 1,595 | | | | | 360 | | 50 | 410 | 2,610 |
| 27 | N Van Dorn St / W Braddock Rd | 230 | 120 | 175 | 525 | 15 | 855 | 30 | 900 | 10 | 155 | 465 | 630 | 290 | 210 | 15 | 515 | 2,570 |
| 28 | W Braddock Rd / Hampton Dr | 20 | 15 | 15 | 50 | 175 | 45 | 115 | 335 | 65 | 440 | 25 | 530 | 35 | 345 | 90 | 470 | 1,385 |

Note: Beauregard Street and Van Dorn Street are North-South roadways. Seminary Road is an East-West roadway.



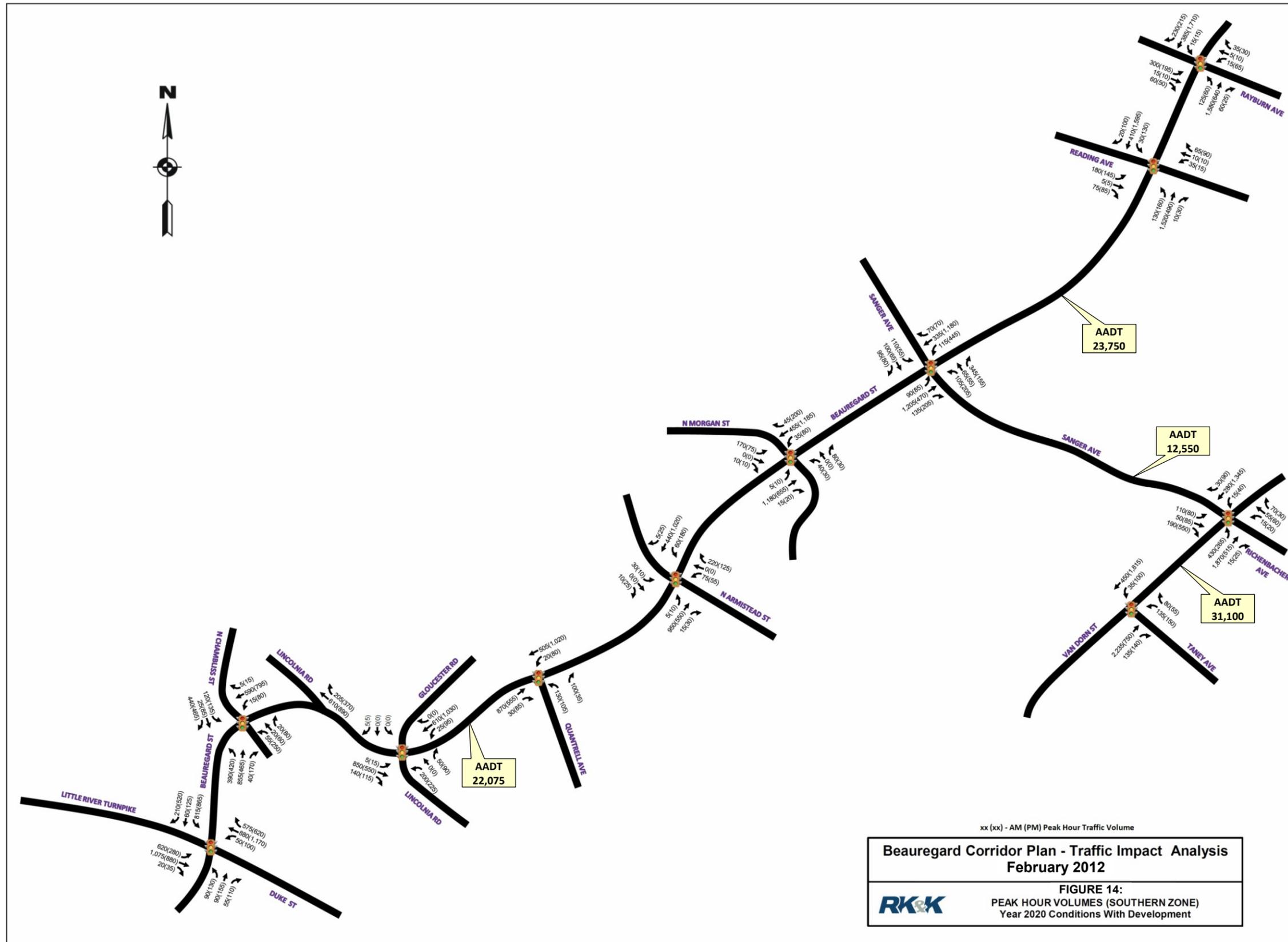


Table 22: Year 2020 With Development AM Peak Hour Delay and Level of Service (LOS) by Approach

| Int. # | Intersection | Northbound | | Southbound | | Eastbound | | Westbound | | Overall Intersection | |
|--------|--------------------------------|------------|-----|------------|-----|-----------|-----|-----------|-----|----------------------|-----|
| | | Delay | LOS | Delay | LOS | Delay | LOS | Delay | LOS | Delay | LOS |
| 1 | Beauregard St / Quantrell Ave | 2.7 | A | 1.9 | A | - | | 39.8 | D | 7.7 | A |
| 2 | Beauregard St / N Armistead St | 1.9 | A | 3.9 | A | 22.5 | C | 18.8 | B | 5.6 | A |
| 3 | Beauregard St / N Morgan St | 5.5 | A | 4.7 | A | 55.1 | E | 26.3 | C | 10.8 | B |
| 4 | Beauregard St / Sanger Ave | 34.1 | C | 24.1 | C | 42.4 | D | 73.0 | E | 40.2 | D |
| 5 | Beauregard St / Reading Ave | 23.1 | C | 17.3 | B | 40.4 | D | 24.8 | C | 23.9 | C |
| 6 | Beauregard St / Rayburn Ave | 13.9 | B | 7.9 | A | 45.8 | D | 19.0 | B | 16.8 | B |
| 7 | Beauregard St / Highview Ln | 6.1 | A | 4.7 | A | 44.7 | D | 17.6 | B | 8.0 | A |
| 8 | Beauregard St / Mark Center Dr | 12.9 | B | 47.0 | D | 47.0 | D | 47.0 | D | 20.2 | C |
| 9 | Beauregard St / Seminary Rd | 46.1 | D | 77.9 | E | 47.5 | D | 42.3 | D | 49.8 | D |
| 10 | Beauregard St / Fillmore Ave | 4.4 | A | 4.1 | A | 19.1 | B | 45.8 | D | 6.6 | A |
| 11 | Beauregard St / W Braddock Rd | 13.0 | B | 29.2 | C | 50.0 | D | 22.2 | C | 20.1 | C |
| 12 | Beauregard St / King St | 40.0 | D | 43.2 | D | 39.9 | D | 38.8 | D | 39.8 | D |
| 13 | Seminary Rd / Dawes Ave | 35.2 | D | 31.3 | C | 2.3 | A | 4.8 | A | 4.9 | A |
| 14 | Seminary Rd / Echols Ave | 21.9 | C | 44.1 | D | 5.6 | A | 10.2 | B | 9.1 | A |
| 15 | Seminary Rd / Mark Center Dr | 40.6 | D | 71.4 | E | 27.2 | C | 33.0 | C | 35.0 | D |
| 16-19 | Seminary Rd / I-395 Rotary | 36.7 | D | 24.5 | C | 34.3 | C | 31.2 | C | 32.4 | C |
| | Seminary Rd / I-395 HOV Ramp | 56.8 | E | - | - | 15.0 | B | 33.6 | C | 35.6 | D |
| 20 | Seminary Rd / Library Ln | 42.3 | D | 49.4 | D | 13.9 | B | 8.3 | A | 15.0 | B |
| 21 | Seminary Rd / Hammond M.S. | 49.4 | D | 27.0 | C | 3.9 | A | 1.5 | A | 3.8 | A |
| 22 | Seminary Rd / N Pickett St | 42.5 | D | - | - | 5.8 | A | 4.3 | A | 8.6 | A |
| 23 | Seminary Rd / N Jordan St | 42.1 | D | - | - | 8.1 | A | 9.9 | A | 15.4 | B |
| 24 | N Van Dorn St / Taney Ave | 13.4 | B | 6.5 | A | - | - | 41.3 | D | 14.3 | B |
| 25 | N Van Dorn St / Sanger Ave | 18.7 | B | 19.8 | B | 54.3 | D | 35.2 | D | 23.7 | C |
| 26 | N Van Dorn St / Kenmore Ave | 4.2 | A | 1.6 | A | - | - | 24.2 | C | 5.2 | A |
| 27 | N Van Dorn St / W Braddock Rd | 13.0 | B | 19.4 | B | 33.9 | C | 49.5 | D | 21.7 | C |
| 28 | W Braddock Rd / Hampton Dr | 44.9 | D | 28.9 | C | 7.6 | A | 5.2 | A | 11.4 | B |

Note: Beauregard Street and North Van Dorn Street are north-south roadways. Seminary Road and West Braddock Road are east-west roadways. Delay/LOS determined using VISSIM.

Table 23: Year 2020 With Development PM Peak Hour Delay and Level of Service (LOS) by Approach

| Int. # | Intersection | Northbound | | Southbound | | Eastbound | | Westbound | | Overall Intersection | |
|--------|--------------------------------|------------|-----|------------|-----|-----------|-----|-----------|-----|----------------------|-----|
| | | Delay | LOS | Delay | LOS | Delay | LOS | Delay | LOS | Delay | LOS |
| 1 | Beauregard St / Quantrell Ave | 1.1 | A | 7.3 | A | - | - | 47.1 | D | 8.0 | A |
| 2 | Beauregard St / N Armistead St | 4.3 | A | 2.2 | A | 9.7 | A | 20.7 | C | 4.6 | A |
| 3 | Beauregard St / N Morgan St | 4.9 | A | 6.3 | A | 51.7 | D | 24.9 | C | 8.0 | A |
| 4 | Beauregard St / Sanger Ave | 59.9 | E | 38.4 | D | 48.7 | D | 94.5 | F | 55.4 | E |
| 5 | Beauregard St / Reading Ave | 29.2 | C | 14.9 | B | 37.1 | D | 11.2 | B | 20.6 | C |
| 6 | Beauregard St / Rayburn Ave | 12.0 | B | 11.5 | B | 46.7 | D | 40.0 | D | 15.4 | B |
| 7 | Beauregard St / Highview Ln | 6.2 | A | 6.5 | A | 51.3 | D | 31.1 | C | 8.4 | A |
| 8 | Beauregard St / Mark Center Dr | 20.0 | C | 14.4 | B | 44.0 | D | 38.5 | D | 21.2 | C |
| 9 | Beauregard St / Seminary Rd | 31.9 | C | 71.1 | E | 13.3 | B | 59.7 | E | 48.8 | D |
| 10 | Beauregard St / Fillmore Ave | 8.2 | A | 5.7 | A | 28.4 | C | 49.8 | D | 10.6 | B |
| 11 | Beauregard St / W Braddock Rd | 21.2 | C | 25.0 | C | 48.0 | D | 29.7 | C | 26.3 | C |
| 12 | Beauregard St / King St | 33.5 | C | 68.0 | E | 55.2 | E | 31.6 | C | 47.7 | D |
| 13 | Seminary Rd / Dawes Ave | 36.3 | D | 43.7 | D | 9.2 | A | 10.3 | B | 11.9 | B |
| 14 | Seminary Rd / Echols Ave | 24.9 | C | 51.2 | D | 15.9 | B | 11.7 | B | 14.6 | B |
| 15 | Seminary Rd / Mark Center Dr | 50.0 | D | 62.1 | E | 28.7 | C | 37.1 | D | 39.8 | D |
| 16-19 | Seminary Rd / I-395 Rotary | 28.3 | C | 28.9 | C | 55.8 | E | 57.3 | E | 43.7 | D |
| | Seminary Rd / I-395 HOV Ramp | - | - | - | - | 16.7 | B | 17.1 | B | 16.9 | B |
| 20 | Seminary Rd / Library Ln | 38.3 | D | 51.9 | D | 21.7 | C | 13.8 | B | 23.7 | C |
| 21 | Seminary Rd / Hammond M.S. | 31.6 | C | 13.4 | B | 1.3 | A | 0.8 | A | 1.3 | A |
| 22 | Seminary Rd / N Pickett St | 34.1 | C | - | - | 3.1 | A | 5.3 | A | 5.3 | A |
| 23 | Seminary Rd / N Jordan St | 50.9 | D | - | - | 7.1 | A | 9.4 | A | 12.1 | B |
| 24 | N Van Dorn St / Taney Ave | 8.7 | A | 7.2 | A | - | - | 43.0 | D | 10.1 | B |
| 25 | N Van Dorn St / Sanger Ave | 47.5 | D | 40.2 | D | 59.5 | E | 49.7 | D | 47.0 | D |
| 26 | N Van Dorn St / Kenmore Ave | 4.3 | A | 10.2 | B | - | - | 58.4 | E | 16.5 | B |
| 27 | N Van Dorn St / W Braddock Rd | 21.2 | C | 30.4 | C | 27.7 | C | 37.2 | D | 29.1 | C |
| 28 | W Braddock Rd / Hampton Dr | 34.2 | C | 42.7 | D | 2.2 | A | 4.6 | A | 14.0 | B |

Note: Beauregard Street and North Van Dorn Street are north-south roadways. Seminary Road and West Braddock Road are east-west roadways. Delay/LOS determined using VISSIM.

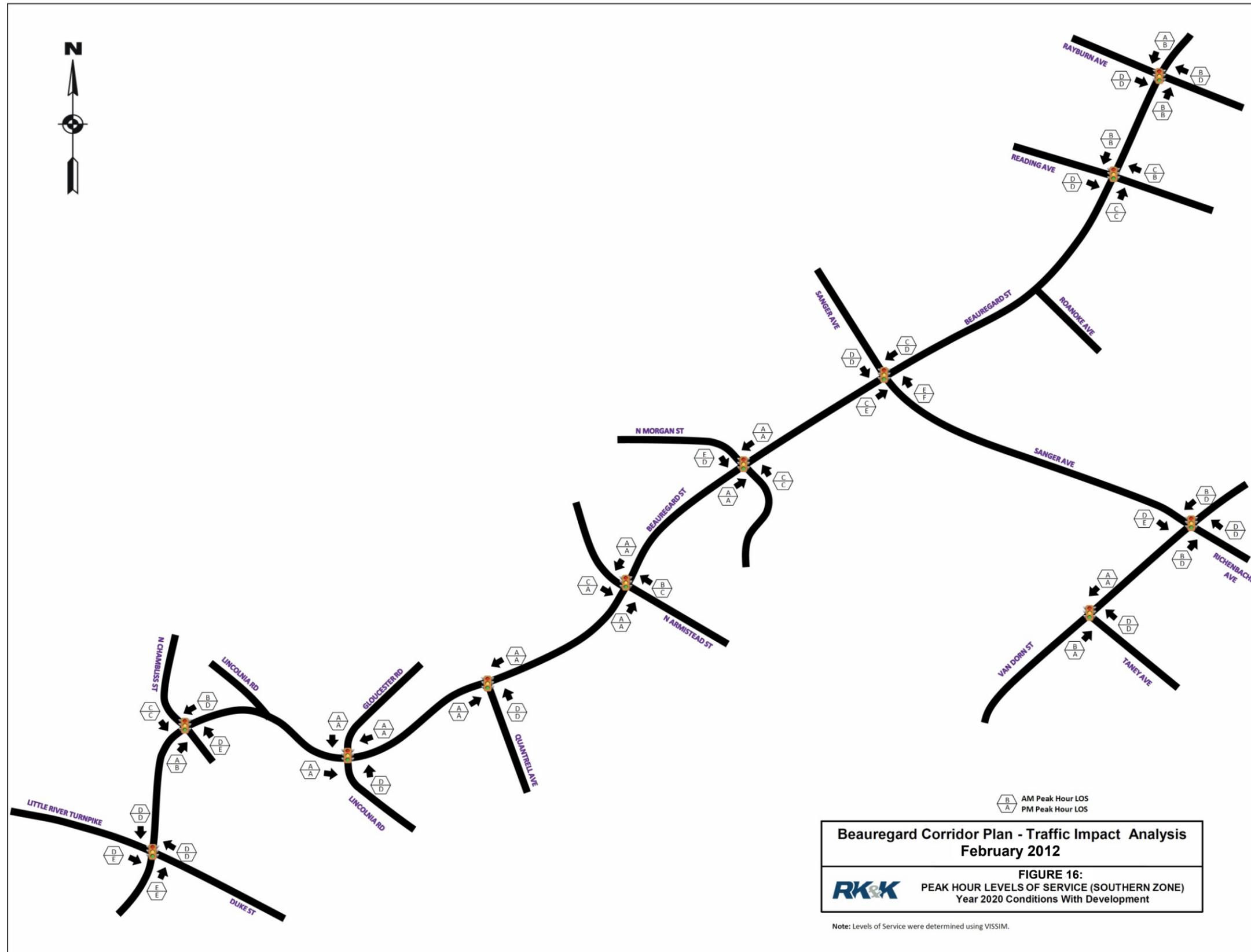
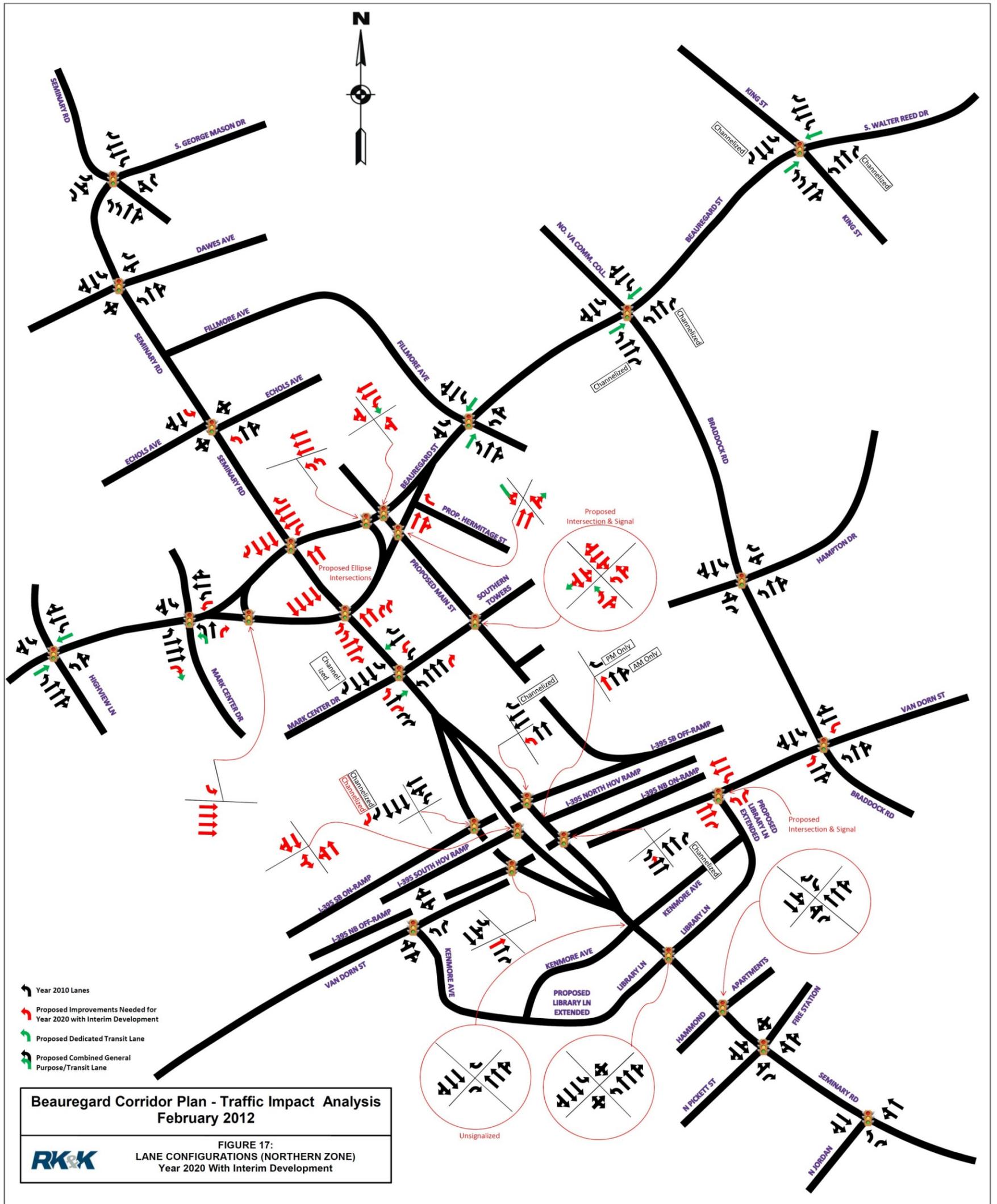


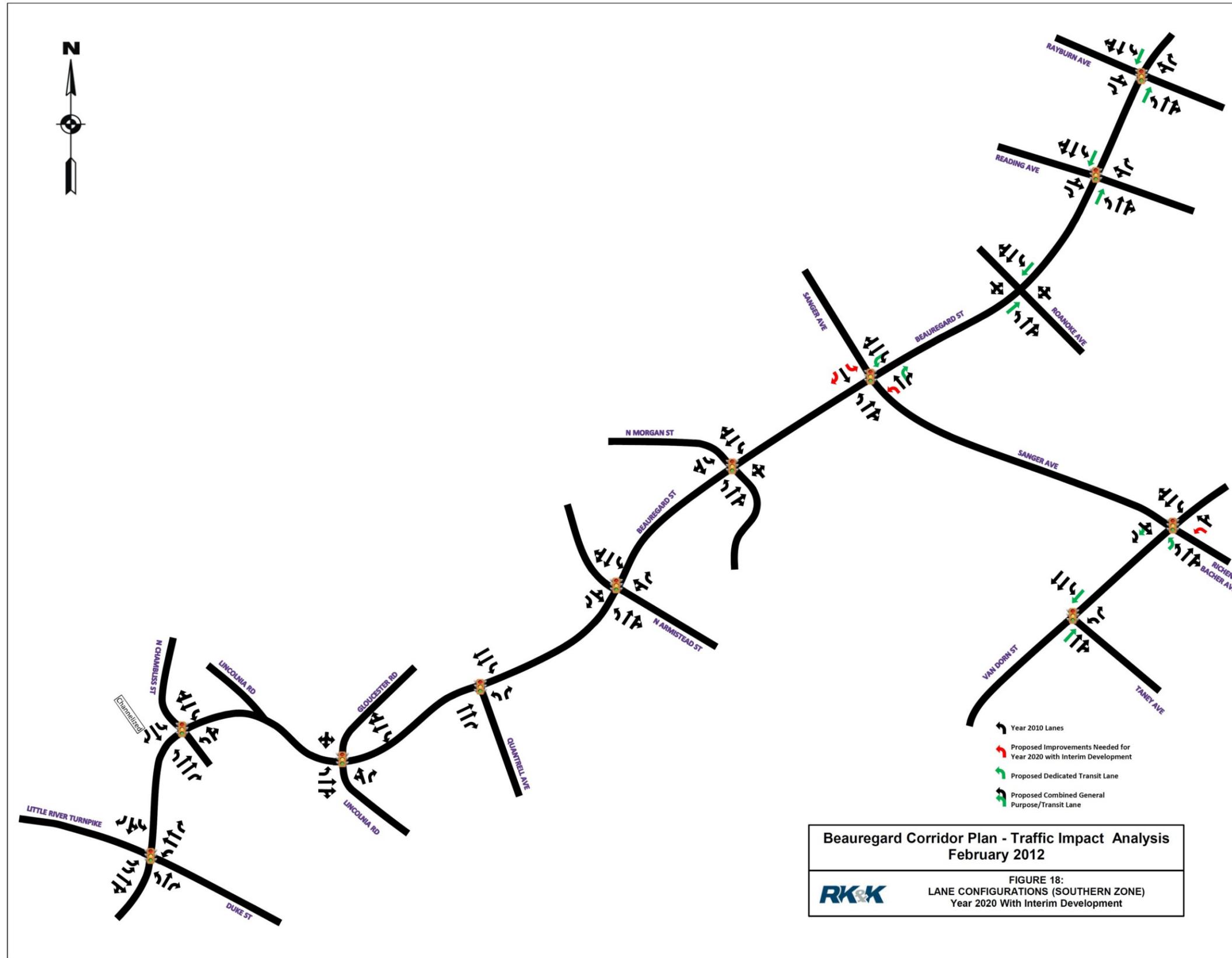
Table 24: 2020 With Development AM Peak Hour Roadway Link Levels of Service (HCM Method)

| Beauregard Street | | Northbound | | | Southbound | | |
|--------------------------|----------------|-----------------|--------------------|----------|-----------------|--------------------|----------|
| Endpoint A | Endpoint B | Travel Time (s) | Travel Speed (mph) | Link LOS | Travel Time (s) | Travel Speed (mph) | Link LOS |
| Quantrell Ave | N Armistead St | 30.4 | 22.9 | C | 24.9 | 27.9 | C |
| N Armistead St | N Morgan St | 36.1 | 19.5 | C | 26.5 | 26.6 | B |
| N Morgan St | Sanger Ave | 47.2 | 19.6 | C | 36.0 | 25.7 | E |
| Sanger Ave | Reading Ave | 43.0 | 23.1 | C | 48.6 | 20.5 | D |
| Reading Ave | Rayburn Ave | 34.0 | 14.3 | D | 24.0 | 20.3 | C |
| Rayburn Ave | Highview Lane | 22.9 | 21.4 | C | 18.7 | 26.2 | B |
| Highview Lane | Mark Center Dr | 26.7 | 20.3 | C | 22.8 | 23.8 | C |
| Mark Center Dr | Seminary Rd | 48.7 | 10.7 | E | 35.2 | 14.8 | C |
| Seminary Rd | Fillmore Ave | 38.0 | 24.7 | B | 78.2 | 12.0 | B |
| Fillmore Ave | W Braddock Rd | 41.4 | 18.5 | C | 30.6 | 25.1 | B |
| W Braddock Rd | King St | 142.2 | 6.9 | F | 46.2 | 21.2 | B |
| Seminary Road | | | | | | | |
| Seminary Road | | Eastbound | | | Westbound | | |
| Endpoint A | Endpoint B | Travel Time (s) | Travel Speed (mph) | Link LOS | Travel Time (s) | Travel Speed (mph) | Link LOS |
| Dawes Ave | Echols Ave | 34.5 | 19.7 | C | 24.6 | 27.6 | B |
| Echols Ave | Beauregard St | 67.3 | 12.3 | E | 33.6 | 24.6 | B |
| Beauregard St | Mark Center Dr | 50.8 | 9.3 | F | 38.6 | 12.2 | E |
| Library Lane | N Pickett St | 34.0 | 6.4 | F | 10.0 | 21.4 | C |
| N Pickett St | N Jordan St | 20.8 | 24.4 | B | 43.0 | 11.8 | E |

Table 25: 2020 With Development PM Peak Hour Roadway Link Levels of Service (HCM Method)

| Beauregard Street | | Northbound | | | Southbound | | |
|--------------------------|----------------|-----------------|--------------------|----------|-----------------|--------------------|----------|
| Endpoint A | Endpoint B | Travel Time (s) | Travel Speed (mph) | Link LOS | Travel Time (s) | Travel Speed (mph) | Link LOS |
| Quantrell Ave | N Armistead St | 29.5 | 23.6 | C | 28.9 | 24.1 | B |
| N Armistead St | N Morgan St | 29.0 | 24.3 | B | 25.0 | 28.2 | B |
| N Morgan St | Sanger Ave | 49.1 | 18.8 | C | 34.5 | 26.8 | B |
| Sanger Ave | Reading Ave | 46.9 | 21.2 | C | 35.1 | 28.3 | B |
| Reading Ave | Rayburn Ave | 22.0 | 22.1 | C | 31.7 | 15.3 | D |
| Rayburn Ave | Highview Lane | 19.3 | 25.4 | B | 34.3 | 14.3 | D |
| Highview Lane | Mark Center Dr | 38.2 | 14.2 | D | 24.9 | 21.8 | C |
| Mark Center Dr | Seminary Rd | 64.0 | 8.1 | F | 50.3 | 10.3 | E |
| Seminary Rd | Fillmore Ave | 39.2 | 24.0 | C | 97.0 | 9.7 | F |
| Fillmore Ave | W Braddock Rd | 49.4 | 15.5 | D | 29.5 | 26.0 | B |
| W Braddock Rd | King St | 72.5 | 13.5 | E | 46.2 | 21.2 | C |
| Seminary Road | | | | | | | |
| Seminary Road | | Eastbound | | | Westbound | | |
| Endpoint A | Endpoint B | Travel Time (s) | Travel Speed (mph) | Link LOS | Travel Time (s) | Travel Speed (mph) | Link LOS |
| Dawes Ave | Echols Ave | 37.5 | 18.1 | C | 28.6 | 23.7 | C |
| Echols Ave | Beauregard St | 44.8 | 18.5 | C | 39.2 | 21.1 | C |
| Beauregard St | Mark Center Dr | 55.4 | 8.5 | F | 40.8 | 11.6 | E |
| Library Lane | N Pickett St | 29.4 | 7.4 | F | 9.2 | 23.5 | C |
| N Pickett St | N Jordan St | 21.6 | 23.5 | C | 35.6 | 14.2 | D |





V. Analysis of Year 2035 Conditions Without Development (Baseline)

Travel demand forecasts for the Beauregard Corridor Plan were prepared using version 2.2 of the regional travel demand model developed by the Washington Metropolitan Area Council of Governments (COG). At the time of this study, the most recent approved regional land use projections for use with this model were from Round 7.2a of COG’s Cooperative Forecasting Program. The transportation modeling for the Beauregard Corridor Plan used this Round 7.2a data, with a few exceptions that are discussed later in this section of the report.

The Washington Metropolitan Area is divided into 2,191 traffic analysis zones (TAZs). The COG land use projections are grouped by TAZ. The study area for the Beauregard Corridor Plan is located within six (6) TAZs in the COG model. **Figure 19** shows the location of the study area relative to the boundaries of these TAZs.

The Future Conditions Without Development are primarily based on the Round 7.2a COG land use outside the City of Alexandria. However, the land use assumptions for the recently adopted Plan Amendment for the Baileys Crossroads section of Fairfax County were used instead of the Round 7.2a land use, due to its close proximity to the Beauregard Corridor Plan area. The Future Conditions Without Development include all approved and un-built development within the City of Alexandria, as shown in the City’s draft Year 2035 land use forecasts (dated July 2010) for inclusion in Round 8.0 of COG’s Cooperative Forecasting Program. It should be noted that:

- No additional redevelopment by the JBG Companies, Duke Realty, Home Properties, or Hekemian is assumed beyond Year 2010 levels.
- No additional redevelopment is assumed on the Washington Real Estate Investment Trust (WRIT) property along Kenmore Avenue (i.e., the Kenmore Medical Center).

The effect of the proposed additional redevelopment by the parties listed above is the focus of this traffic impact statement and, therefore, is included in the analysis of Future Conditions **With** Development described later in this report.

Figure 20 shows several of the existing major developments and features located within the study area, along with the TAZ boundaries. **Table 26** shows the net change in land use assumptions for the Year 2035 Future Conditions Without Development compared to the Existing (2010) Conditions.

**Table 26: Land Use Assumptions (Approved & Unbuilt) for Year 2035 Conditions Without Development (Baseline)
 Net Change vs. Existing (2010)**

| TAZ No. | TAZ Description | Residential Units | Retail Space (sq. ft.) | Office Space (sq. ft.) | Hotel Rooms | Industrial (sq. ft.) | Other (sq. ft.) |
|--------------|--------------------------|-------------------|------------------------|------------------------|-------------|----------------------|-----------------|
| 1387/1556 | Mark Center (JBG East) | +0 | +0 | +1,743,537 | +0 | +0 | +0 |
| 1372/1558 | Pegram (Home Properties) | +58 | +0 | +0 | +0 | +0 | +0 |
| 1384/1563 | JBG West / Duke | +0 | +0 | +0 | +0 | +0 | +0 |
| 1383/1564 | Shirley Gardens / NVCC | +0 | +0 | +0 | +0 | +0 | +0 |
| 1386/1566 | Southern Towers | +0 | +0 | +0 | +0 | +0 | +0 |
| 1362/1568 | Seminary Hill | +0 | +0 | +0 | +0 | +0 | +0 |
| Total | | +58 | +0 | +1,743,537 | +0 | +0 | +0 |

Figure 19: Study Area and Traffic Analysis Zone (TAZ) Boundaries

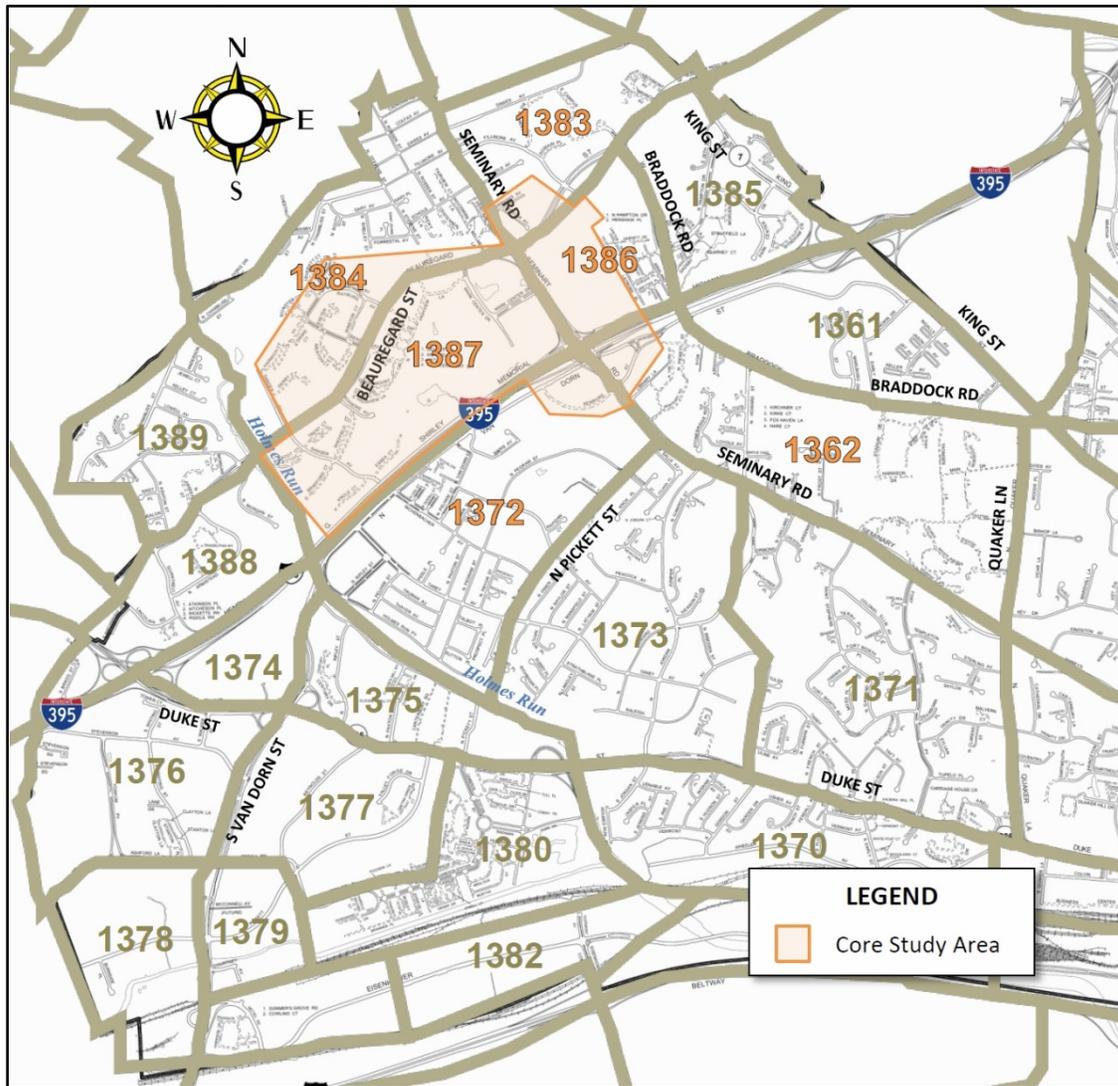
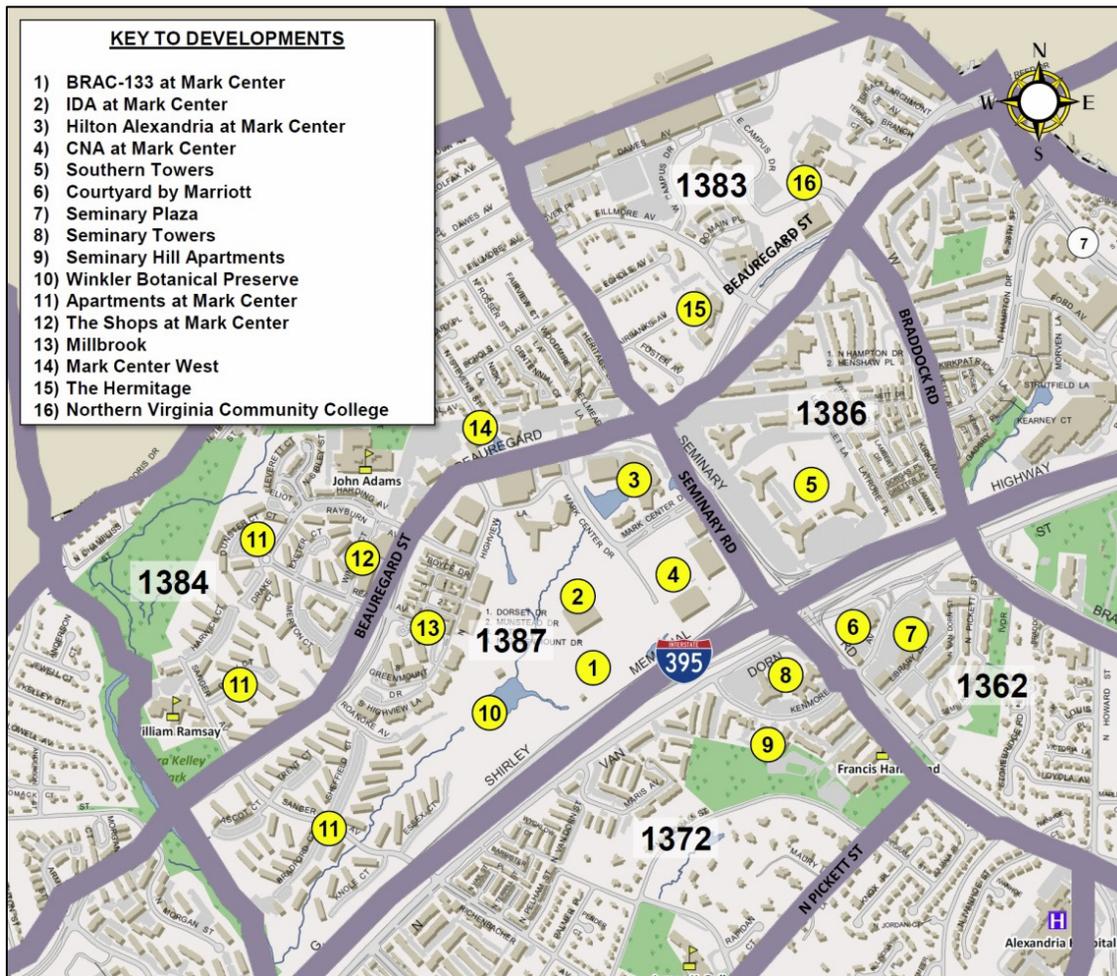


Figure 20: Existing Major Developments within the Study Area TAZs



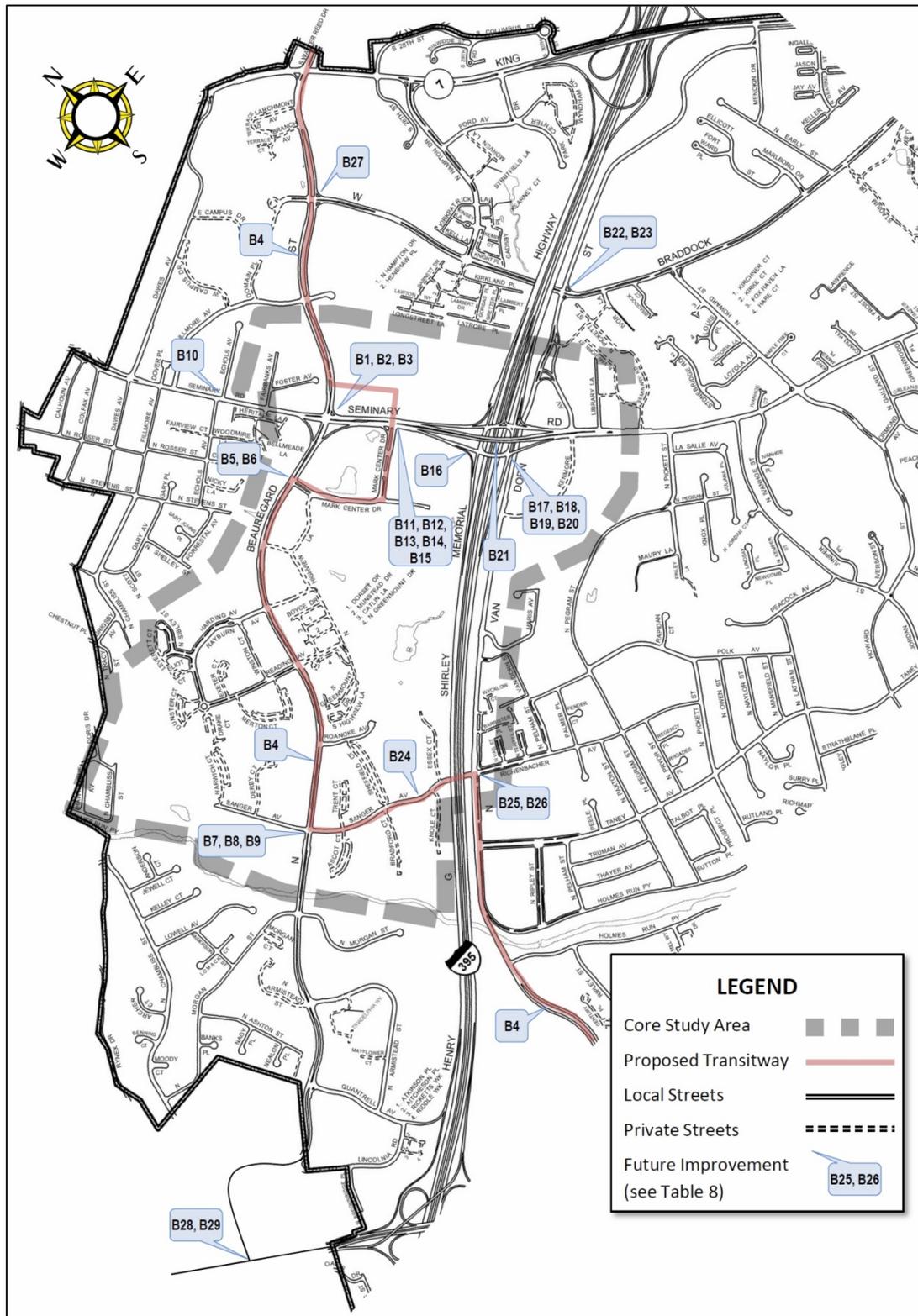
The transportation network assumed to be in place by Year 2035 without development (i.e., the baseline conditions), would include several key additions to the existing Year 2011 network, including, but not limited to, a new HOV ramp to and from the south at the I-395/Seminary Road interchange, intersection improvements at King Street and Beauregard Street that are currently under design, roadway widening along Route 236 at Beauregard Street that is listed in the latest MWCOG Constrained Long-Range Plan, an additional left turn lane along westbound Seminary Road at Beauregard Street and along southbound Beauregard Street at Mark Center Drive to accommodate new BRAC-133 facility traffic, and high-capacity north-south transit service through the Beauregard Corridor Plan study area with 10-minute headways and dedicated transit lanes on Van Dorn Street, Sanger Avenue, Mark Center Drive and Beauregard Street. These improvements, plus additional 2035 baseline network improvements, are summarized in **Table 28**, with their locations shown in **Figure 21**.

Table 28: Transportation Improvements Assumed by Year 2035 Without Development (Baseline)

| No. | Location | 2035 Improvements Without Development (Baseline) | Source of Improvement | CLRP? |
|-----|--|---|---|-------|
| B1 | Beauregard St at Seminary Rd | Widen northbound Beauregard Street between Mark Center Drive and Seminary Road to provide a dedicated right-turn lane at the northbound approach to Seminary Road after the direct connect ramp from northbound Beauregard Street to Eastbound Seminary Road. Reconfigure the intersection to allow the three-to-two through-lane drop at the new dedicated left-turn lanes. The new dedicated right-turn lane will be signed for Seminary Road eastbound to allow eastbound Seminary Road traffic to avoid the weave condition between the direct connect ramp exit and Mark Center Drive. | BRAC / VDOT Short-Mid Term Improvement | No |
| B2 | | Widen westbound Seminary Road to provide a deceleration lane and widen northbound Beauregard Street to provide an acceleration lane for the westbound-to-northbound right-turn lane. | BRAC / VDOT Short-Mid Term Improvement | No |
| B3 | | Add a separate right turn lane along westbound Seminary Road extending back to Mark Center Drive. | Beauregard Planning Study Assumed Improvement | No |
| B4 | Beauregard Street | Construct a dedicated transitway in each direction along Beauregard Street heading southbound from King Street, turning east into Southern Towers, south and west onto Mark Center Drive and south onto Beauregard to Sanger Avenue. | Transitway Feasibility Study | No |
| B5 | Beauregard Street at Mark Center Drive | Provide a separate right-turn lane along NB Beauregard Street | Beauregard Planning Study Assumed Improvement | No |
| B6 | | Reconfigure westbound approach as three lanes - 1 left, 1 thru and 1 right. | Beauregard Planning Study Assumed Improvement | No |
| B7 | Beauregard St at Existing Sanger Ave | Reconfigure the Sanger Ave approaches to consist of a separate left turn lane, a thru lane, and a separate right turn lane in both the eastbound and westbound directions. The portion of Beauregard Street between Roanoke and existing Sanger will be mixed operations. southbound transit will transition from median runningway on Beauregard Street to curbside running along existing Sanger Avenue. | Beauregard Planning Study Assumed Improvement | No |
| B8 | | Provide protected/permissive left-turn phasing for the Sanger Avenue left turns. | Beauregard Planning Study Assumed Improvement | No |
| B9 | | Provide permissive/overlap right turn phasing for westbound Sanger Avenue. | Beauregard Planning Study Assumed Improvement | No |
| B10 | Seminary Rd at Echols Ave | Add separate left turn lanes along eastbound and westbound Seminary Rd, with protected/permissive left turn phasing. | Beauregard Planning Study Assumed Improvement | No |
| B11 | Seminary Road at Mark Center Drive | Widen the Seminary Road westbound approach and gore area from the rotary back to the Mark Center Drive intersection from one to two lanes and provide a dedicated right-turn lane into Southern Towers. Restripe the westbound Seminary Road flyover to allow one through lane on Seminary Road and one left-turn lane into Mark Center Drive. Provide a physical separation between the two lanes from the rotary and the left-turn lane at Mark Center Drive. | BRAC / VDOT Short-Mid Term Improvement | No |
| B12 | | Redesign eastbound Seminary Road approach to Mark Center Drive to allow three through lanes, and to align with new lane on Seminary east of Mark Center Drive accessing I-395. | BRAC / VDOT Short-Mid Term Improvement | No |
| B13 | | Add lanes at Southern Towers approach to separate the existing shared through/left turn lanes. The approach would include dual left turn lanes, one thru lane and one right turn lane. | Beauregard Planning Study Assumed Improvement | No |
| B14 | | Widen northbound Mark Center Dr to allow for a third right turn onto EB Seminary. This approach would be a left turn, thru/right, and dual right turn lanes. | BRAC / VDOT Short-Mid Term Improvement | No |
| B15 | | Construct a pedestrian bridge across Seminary Road west of Mark Center Drive. | BRAC / VDOT Short-Mid Term Improvement | No |

| No. | Location | 2035 Improvements Without Development (Baseline) | Source of Improvement | CLRP? |
|-----|---|--|---|-----------------------|
| B16 | EB Seminary Rd Offramp to I-395 Rotary | Widen eastbound Seminary Road and the southbound I-395 on-ramp by one lane from Mark Center Drive to the ramp meter signal to provide a continuous two-lane ramp from Seminary Road to the ramp meter. Restripe the southbound ramp connection from the rotary to provide a merge into the two-lane ramp from eastbound Seminary Road. | Beauregard Planning Study Improvement | No |
| B17 | I-395 at the Seminary Rotary | Widen the northbound I-395 off-ramp from two to three lanes and provide two through lanes and one right turn lane. | BRAC / VDOT Short-Mid Term Improvement | No |
| B18 | | On the eastbound rotary (toward onramp), restripe the pavement to provide a separate left turn lane, a shared thru/left turn lane, and a thru lane. Requires removal of the island at westbound Seminary Road. | BRAC / VDOT Short-Mid Term Improvements | No |
| B19 | | Restripe the rotary to provide dual lefts for the eastbound-to-northbound movements. | BRAC / VDOT Short-Mid Term Improvement | No |
| B20 | | Restripe the westbound approach at the I-395 southbound off-ramp intersection to provide two through lanes and one left turn lane. | BRAC / VDOT Short-Mid Term Improvement | No |
| B21 | I-395 at Seminary Road | Construct a new HOV ramp at Seminary Road and I-395 to and from the north, connecting to the upper bridge of Seminary. | VDOT project (Subject to EA) | No |
| B22 | Van Dorn St at Braddock Rd | Replace the shared thru/left turn lanes along northbound and southbound Van Dorn St with separate left turn lanes | Beauregard Planning Study Assumed Improvements | No |
| B23 | | Add protected/permissive left turn phasing along northbound and southbound Van Dorn Street. | Beauregard Planning Study Assumed Improvements | No |
| B24 | Existing Sanger Avenue | Remove on-street parking in both directions and provide dedicated transit lane (one transit lane and one GP lane each direction) | Transitway Feasibility Study | No |
| B25 | Van Dorn St at Sanger | Reconfigure eastbound Sanger Ave to consist of a right turn lane, and a left/thru/right lane approaching Van Dorn Street. | Beauregard Planning Study Assumed Improvements | No |
| B26 | Ave / Richenbacher Ave | Restripe the westbound approach along Richenbacher Ave to consist of a separate left turn lane and a shared thru/right turn lane. | Beauregard Planning Study Assumed Improvements | No |
| B27 | Beauregard St at Braddock Rd | Change dual left to single left on westbound Braddock Road and replace the left-turn lane with a thru lane. | Beauregard Planning Study Assumed Improvements | No |
| B28 | Beauregard St at Route 236 | Add a third through lane on westbound Route 236. | Beauregard Planning Study Assumed Improvements | Yes (2025) |
| B29 | | Add a third through lane on eastbound Route 236. | Beauregard Planning Study Assumed Improvements | Yes (2025) |

Figure 21: Map of Transportation Improvements Assumed by 2035 Without Development (Baseline)



The AM and PM peak hour turning movement volumes from counts conducted by others in 2008 and 2009 were provided by the City planning staff. RK&K supplemented this count data from prior studies with new traffic counts performed in December 2009 and January 2010. The traffic data from 2008 and 2009 was adjusted to Year 2010 levels using a growth rate calculated using roadway link volumes from the Year 2008 and Year 2010 COG travel demand model runs.

Table 29: Comparison of Actual Year 2010 Volumes and NCHRP-Adjusted Year 2035 Without Development (Baseline) Volumes for Growth Rate Estimates

| | Actual Year 2010 Volumes | | NCHRP-Adjusted Year 2035 Without Development Volumes | | Annual Compound Growth Rate | |
|-------------------------------|--------------------------|---------------|--|---------------|-----------------------------|---------------|
| | AM Northbound | PM Southbound | AM Northbound | PM Southbound | AM Northbound | PM Southbound |
| Beauregard Street | | | | | | |
| Route 236 to N Chambliss | 1,155 | 1,325 | 1,267 | 1,578 | 0.4% | 0.7% |
| N Chambliss to N Morgan | 860 | 725 | 842 | 801 | -0.1% | 0.4% |
| N Morgan to Sanger | 1,300 | 1,265 | 1,221 | 1,333 | -0.3% | 0.2% |
| Sanger to Reading | 1,480 | 1,430 | 1,493 | 1,560 | 0.0% | 0.3% |
| Reading to Rayburn | 1,595 | 1,530 | 1,440 | 1,536 | -0.4% | 0.0% |
| Rayburn to Seminary | 1,525 | 1,650 | 1,380 | 1,626 | -0.4% | -0.1% |
| Seminary to Fillmore | 835 | 815 | 721 | 798 | -0.6% | -0.1% |
| Fillmore to Route 7 | 1,110 | 1,005 | 905 | 936 | -0.8% | -0.3% |
| Seminary Road | | | | | | |
| George Mason - Dawes | 1,295 | 1,465 | 1,454 | 1,660 | 0.5% | 0.5% |
| Dawes - Echols | 1,365 | 1,540 | 1,435 | 1,675 | 0.2% | 0.3% |
| Echols - Beauregard | 2,100 | 1,935 | 2,100 | 2,266 | 0.0% | 0.6% |
| Beauregard - Mark Center | 1,920 | 2,040 | 1,939 | 2,070 | 0.0% | 0.1% |
| Mark Center - I-395 SB Ramp | 1,770 | 2,435 | 1,715 | 2,383 | -0.1% | -0.1% |
| I-395 SB Ramp - I-395 NB Ramp | 1,690 | 1,805 | 1,660 | 1,757 | -0.1% | -0.1% |
| I-395 NB Ramp - Kenmore | 1,690 | 1,960 | 1,652 | 1,961 | -0.1% | 0.0% |
| Kenmore - Pickett | 1,670 | 1,905 | 1,602 | 1,844 | -0.2% | -0.1% |
| Pickett - Jordan | 1,660 | 1,830 | 1,606 | 1,778 | -0.1% | -0.1% |
| Van Dorn Street | | | | | | |
| Sanger - Seminary | 2,035 | 1,445 | 2,006 | 1,584 | -0.1% | 0.4% |
| Seminary - Braddock | 1,590 | 1,375 | 1,734 | 1,487 | 0.3% | 0.3% |

The screenline refinement process from NCHRP Report 255 was used to adjust the projected Year 2035 roadway link volumes from the COG travel demand model by comparing the Year 2010 model run volumes to the actual 2010 traffic counts. This refinement process adjusts the future volumes to be higher at locations where the model has underestimated the existing traffic, and it adjusts the future volumes to be lower at locations where the model has overestimated the existing traffic. The difference between the actual 2010 traffic volumes and the modeled Year 2035 Without Development (Baseline) volumes was used to determine traffic growth rates for specific roadway segments throughout the study area. **Table 29** shows the actual Year 2010 peak hour-peak direction roadway link volumes and the NCHRP-adjusted Year 2035 volumes on the same links, along with the link-based annual compound growth rate based on those volumes. The volume comparison shows there would be relatively low traffic

growth between 2010 and 2035 without the new development being proposed within the study area. These growth rates were applied to the Year 2010 turning movement volumes at the existing intersections shown previously in **Figure 3** to estimate the Year 2035 intersection turning movement volumes. Volumes were subsequently balanced/smoothed along Beauregard Street, Seminary Road, and Van Dorn Street to reflect the limited number of driveways/access points along these roadways (hence, a comparison of the final Year 2010 and Year 2035 turning movement volumes used in the operational analysis may not yield the exact growth rates shown in **Table 29**).

Tables 29 and 30 list the AM and PM peak hour turning movement volumes, respectively, for the Year 2035 Conditions Without Development at each of the key intersections within the study area. **Figures 22 and 23** show these same volumes on a diagram of the study area roadway network.

Traffic operations under the Year 2035 Conditions Without Development were evaluated using VISSIM. The results of these analyses are summarized in **Tables 31 and 32**, showing the AM and PM peak hour average delays in seconds per vehicle by approach, and the levels of service by approach. The levels of service by approach are also shown on **Figures 24 and 25**, which are diagrams of the study area roadway network. According to these analysis results, there would be seven (7) intersections that have one or more individual approaches operating at LOS F during the AM peak hour, and four (4) intersections with approaches operating at LOS F during the PM peak hour. Three intersections would have overall LOS F operations. The intersections with failing (LOS F) approaches are as follows:

1. Beauregard Street at N. Armistead Street (AM)
2. Beauregard Street at N. Morgan Street (AM)
3. Beauregard Street at Sanger Avenue (AM & PM)
4. Beauregard Street at Seminary Road (AM & PM)
5. Beauregard Street at King Street (AM & PM)
6. Seminary Road (Bridge) at Proposed I-395 South HOV Ramp (AM)
7. W. Braddock Road at Hampton Drive (AM)
8. N. Van Dorn Street at Sanger Avenue/Richenbacher Avenue (PM)

The 2035 Baseline AM and PM peak hour levels of service on the roadway links along Beauregard Street and along Seminary Road are summarized in **Tables 33 and 34**. These levels of service were calculated using the Highway Capacity Manual (HCM) methodology for arterial LOS. During the AM peak hour, two of the roadway segments evaluated within the study area would operate at LOS F:

1. Seminary Road Eastbound between Library Lane and N. Pickett Street
2. Seminary Road Westbound between N. Jordan Street and N. Pickett Street

During the PM peak hour, three (3) roadway segments would operate at LOS F:

1. Beauregard Street Northbound between Mark Center Drive and Seminary Road
2. Seminary Road Eastbound between Beauregard Street and Mark Center Drive
3. Seminary Road Eastbound between Library Lane and N. Pickett Street

The lane configurations for the Year 2035 Without Development (Baseline) conditions are shown in **Figures 26 & 27**, with the assumed improvements beyond the Year 2010 lane configurations shown in red.

Table 29: Year 2035 AM Peak Hour Intersection Turning Movement Volumes Without Development

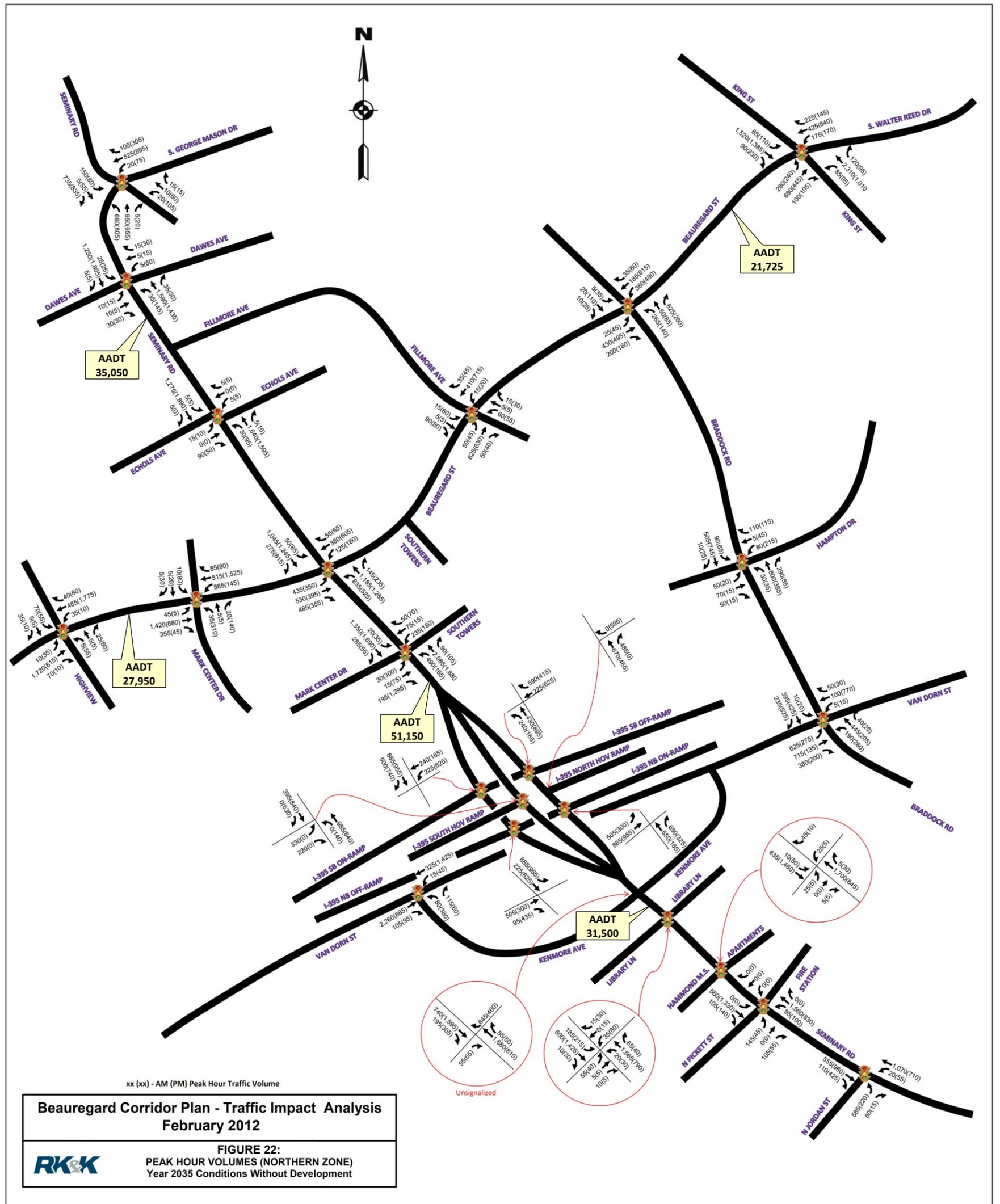
| Int. # | Intersection | Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | | Grand Total |
|--------|-------------------------------------|------------|-------|-------|-------|------------|------|-------|-------|-----------|-------|-------|-------|-----------|-------|-------|-------|-------------|
| | | Left | Thru | Right | Total | Left | Thru | Right | Total | Left | Thru | Right | Total | Left | Thru | Right | Total | |
| 1 | Beauregard St / Quantrell Ave | | 765 | 30 | 795 | 25 | 540 | | 565 | | | | | 140 | | 100 | 240 | 1,600 |
| 2 | Beauregard St / N Armistead St | 5 | 845 | 15 | 865 | 70 | 475 | 5 | 550 | 30 | 0 | 10 | 40 | 80 | 0 | 220 | 300 | 1,755 |
| 3 | Beauregard St / N Morgan St | 5 | 1,075 | 15 | 1,095 | 35 | 500 | 50 | 585 | 245 | 0 | 10 | 255 | 40 | 0 | 75 | 115 | 2,050 |
| 4 | Beauregard St / Sanger Ave | 90 | 1,175 | 130 | 1,395 | 105 | 340 | 85 | 530 | 105 | 100 | 115 | 320 | 130 | 65 | 315 | 510 | 2,755 |
| 5 | Beauregard St / Reading Ave | 125 | 1,460 | 10 | 1,595 | 30 | 400 | 25 | 455 | 175 | 5 | 90 | 270 | 40 | 10 | 65 | 115 | 2,435 |
| 6 | Beauregard St / Rayburn Ave | 85 | 1,575 | 40 | 1,700 | 15 | 365 | 145 | 525 | 210 | 15 | 75 | 300 | 15 | 5 | 25 | 45 | 2,570 |
| 7 | Beauregard St / Highview Ln | 10 | 1,730 | 70 | 1,810 | 35 | 485 | 40 | 560 | 70 | 5 | 35 | 110 | 5 | 5 | 25 | 35 | 2,515 |
| 8 | Beauregard St / Mark Center Dr | 45 | 1,425 | 355 | 1,825 | 890 | 520 | 85 | 1,495 | 10 | 5 | 5 | 20 | 35 | 5 | 20 | 60 | 3,400 |
| 9 | Beauregard St / Seminary Rd | 435 | 535 | 485 | 1,455 | 125 | 380 | 55 | 560 | 50 | 1,050 | 275 | 1,375 | 840 | 1,190 | 145 | 2,175 | 5,565 |
| 10 | Beauregard St / Fillmore Ave | 50 | 625 | 50 | 725 | 15 | 410 | 35 | 460 | 15 | 5 | 90 | 110 | 60 | 5 | 15 | 80 | 1,375 |
| 11 | Beauregard St / W Braddock Rd | 25 | 430 | 200 | 655 | 380 | 185 | 35 | 600 | 5 | 20 | 10 | 35 | 265 | 50 | 630 | 945 | 2,235 |
| 12 | Beauregard St / King St | 280 | 670 | 100 | 1,050 | 175 | 410 | 225 | 810 | 85 | 1,530 | 90 | 1,705 | 85 | 2,320 | 120 | 2,525 | 6,090 |
| 13 | Seminary Rd / Dawes Ave | 10 | 10 | 30 | 50 | 5 | 5 | 15 | 25 | 25 | 1,245 | 5 | 1,275 | 35 | 1,590 | 35 | 1,660 | 3,010 |
| 14 | Seminary Rd / Echols Ave | 15 | 0 | 90 | 105 | 5 | 0 | 5 | 10 | 5 | 1,275 | 5 | 1,285 | 30 | 1,640 | 5 | 1,675 | 3,075 |
| 15 | Seminary Rd / Mark Center Dr | 30 | 15 | 195 | 240 | 235 | 75 | 50 | 360 | 20 | 1,355 | 285 | 1,660 | 490 | 2,095 | 90 | 2,675 | 4,935 |
| 16 | Seminary Rd / Ramp to I-395 South | | | | | 225 | 240 | | 465 | | 890 | 500 | 1,390 | | | | | 1,855 |
| 17 | Seminary Rd / Ramp from I-395 South | | | | | | 225 | 595 | 820 | | | | | 240 | 760 | | 1,000 | 1,820 |
| 18 | Seminary Rd / Ramp from I-395 North | | 965 | 190 | 1,155 | | | | | 890 | 225 | | 1,115 | | | | | 2,270 |
| 19 | Seminary Rd / Ramp to I-395 North | 965 | 890 | | 1,855 | | | | | | | | | | 255 | 695 | 950 | 2,805 |
| 20 | Seminary Rd / Library Ln | 55 | 5 | 10 | 70 | 35 | | 15 | 50 | 185 | 600 | 10 | 795 | 20 | 1,600 | 85 | 1,705 | 2,620 |
| 21 | Seminary Rd / Hammond M.S. | 25 | 0 | 5 | 30 | 25 | | 45 | 70 | 10 | 625 | | 635 | | 1,590 | 5 | 1,595 | 2,330 |
| 22 | Seminary Rd / N Pickett St | 145 | | 105 | 250 | 0 | 0 | 0 | 0 | | 550 | 105 | 655 | 95 | 1,450 | | 1,545 | 2,450 |
| 23 | Seminary Rd / N Jordan St | 525 | | 80 | 605 | | | | | | 545 | 110 | 655 | 20 | 1,020 | | 1,040 | 2,300 |
| 24 | N Van Dorn St / Taney Ave | | 2,220 | 135 | 2,355 | 50 | 660 | | 710 | | | | | 190 | | 80 | 270 | 3,335 |
| 25 | N Van Dorn St / Sanger Ave | 415 | 1,870 | 15 | 2,300 | 20 | 395 | 45 | 460 | 125 | 60 | 295 | 480 | 20 | 55 | 70 | 145 | 3,385 |
| 26 | N Van Dorn St / Kenmore Ave | | 2,270 | 105 | 2,375 | 15 | 325 | | 340 | | | | | 80 | | 115 | 195 | 2,910 |
| 27 | N Van Dorn St / W Braddock Rd | 630 | 720 | 380 | 1,730 | 5 | 100 | 50 | 155 | 10 | 395 | 235 | 640 | 190 | 445 | 40 | 675 | 3,200 |
| 28 | W Braddock Rd / Hampton Dr | 50 | 70 | 50 | 170 | 80 | 5 | 110 | 195 | 90 | 510 | 10 | 610 | 30 | 805 | 290 | 1,125 | 2,100 |

Note: Beauregard Street and Van Dorn Street are North-South roadways. Seminary Road is an East-West roadway.

Table 30: Year 2035 PM Peak Hour Intersection Turning Movement Volumes Without Development

| Int. # | Intersection | Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | | Grand Total |
|--------|-------------------------------------|------------|------|-------|-------|------------|-------|-------|-------|-----------|-------|-------|-------|-----------|-------|-------|-------|-------------|
| | | Left | Thru | Right | Total | Left | Thru | Right | Total | Left | Thru | Right | Total | Left | Thru | Right | Total | |
| 1 | Beauregard St / Quantrell Ave | | 590 | 85 | 675 | 85 | 900 | | 985 | | | 0 | 110 | | 40 | 150 | 1,810 | |
| 2 | Beauregard St / N Armistead St | 10 | 590 | 30 | 630 | 190 | 900 | 30 | 1,120 | 10 | | 30 | 40 | 55 | 130 | 185 | 1,975 | |
| 3 | Beauregard St / N Morgan St | 10 | 695 | 25 | 730 | 85 | 1,075 | 210 | 1,370 | 90 | | 10 | 100 | 35 | 35 | 70 | 2,270 | |
| 4 | Beauregard St / Sanger Ave | 90 | 510 | 220 | 820 | 485 | 1,085 | 75 | 1,645 | 45 | 65 | 80 | 190 | 205 | 55 | 120 | 380 | 3,035 |
| 5 | Beauregard St / Reading Ave | 180 | 460 | 35 | 675 | 120 | 1,550 | 85 | 1,755 | 160 | 5 | 80 | 245 | 15 | 10 | 100 | 125 | 2,800 |
| 6 | Beauregard St / Rayburn Ave | 55 | 645 | 20 | 720 | 15 | 1,640 | 195 | 1,850 | 190 | 10 | 50 | 250 | 65 | 10 | 30 | 105 | 2,925 |
| 7 | Beauregard St / Highview Ln | 35 | 820 | 10 | 865 | 10 | 1,785 | 80 | 1,875 | 55 | 5 | 10 | 70 | 55 | 5 | 60 | 120 | 2,930 |
| 8 | Beauregard St / Mark Center Dr | 5 | 885 | 45 | 935 | 145 | 1,535 | 80 | 1,760 | 80 | 20 | 30 | 130 | 310 | 5 | 140 | 455 | 3,280 |
| 9 | Beauregard St / Seminary Rd | 350 | 400 | 355 | 1,105 | 180 | 610 | 65 | 855 | 85 | 1,255 | 620 | 1,960 | 530 | 1,295 | 235 | 2,060 | 5,980 |
| 10 | Beauregard St / Fillmore Ave | 45 | 630 | 40 | 715 | 20 | 715 | 45 | 780 | 60 | 5 | 80 | 145 | 55 | 10 | 30 | 95 | 1,735 |
| 11 | Beauregard St / W Braddock Rd | 45 | 495 | 180 | 720 | 490 | 615 | 60 | 1,165 | 35 | 110 | 25 | 170 | 140 | 85 | 260 | 485 | 2,540 |
| 12 | Beauregard St / King St | 240 | 455 | 105 | 800 | 170 | 845 | 145 | 1,160 | 110 | 1,395 | 230 | 1,735 | 95 | 1,015 | 95 | 1,205 | 4,900 |
| 13 | Seminary Rd / Dawes Ave | 15 | 5 | 30 | 50 | 60 | 15 | 30 | 105 | 25 | 1,805 | 5 | 1,835 | 145 | 1,435 | 30 | 1,610 | 3,600 |
| 14 | Seminary Rd / Echols Ave | 10 | | 50 | 60 | 5 | | 5 | 10 | 5 | 1,890 | | 1,895 | 95 | 1,595 | 10 | 1,700 | 3,665 |
| 15 | Seminary Rd / Mark Center Dr | 300 | 75 | 1,305 | 1,680 | 180 | 15 | 70 | 265 | 35 | 1,700 | 55 | 1,790 | 165 | 1,690 | 105 | 1,960 | 5,695 |
| 16 | Seminary Rd / Ramp to I-395 South | | | | 0 | 630 | 295 | | 925 | | 960 | 1,395 | 2,355 | | | | 0 | 3,280 |
| 17 | Seminary Rd / Ramp from I-395 South | | | | 0 | | 630 | 420 | 1,050 | | | | 0 | 295 | 895 | | 1,190 | 2,240 |
| 18 | Seminary Rd / Ramp from I-395 North | | 735 | 440 | 1,175 | | | | 0 | 960 | 630 | | 1,590 | | | | 0 | 2,765 |
| 19 | Seminary Rd / Ramp to I-395 North | 735 | 960 | | 1,695 | | | | 0 | | | | 0 | | 310 | 325 | 635 | 2,330 |
| 20 | Seminary Rd / Library Ln | 40 | 5 | 5 | 50 | 90 | 15 | 35 | 140 | 240 | 1,410 | 20 | 1,670 | 30 | 745 | 45 | 820 | 2,680 |
| 21 | Seminary Rd / Hammond M.S. | 5 | | 5 | 10 | 5 | | 10 | 15 | 50 | 1,455 | | 1,505 | | 805 | 30 | 835 | 2,365 |
| 22 | Seminary Rd / N Pickett St | 45 | | 55 | 100 | | | | 0 | | 1,325 | 140 | 1,465 | 100 | 790 | | 890 | 2,455 |
| 23 | Seminary Rd / N Jordan St | 220 | | 15 | 235 | | | | 0 | | 950 | 430 | 1,380 | 55 | 670 | | 725 | 2,340 |
| 24 | N Van Dorn St / Taney Ave | | 850 | 150 | 1,000 | 105 | 1,890 | | 1,995 | | | | 0 | 160 | | 60 | 220 | 3,215 |
| 25 | N Van Dorn St / Sanger Ave | 325 | 555 | 30 | 910 | 45 | 1,430 | 110 | 1,585 | 85 | 90 | 545 | 720 | 20 | 75 | 35 | 130 | 3,345 |
| 26 | N Van Dorn St / Kenmore Ave | | 690 | 95 | 785 | 45 | 1,435 | | 1,480 | | | | 0 | 385 | | 60 | 445 | 2,710 |
| 27 | N Van Dorn St / W Braddock Rd | 275 | 135 | 200 | 610 | 15 | 775 | 30 | 820 | 20 | 430 | 530 | 980 | 260 | 205 | 20 | 485 | 2,895 |
| 28 | W Braddock Rd / Hampton Dr | 20 | 15 | 15 | 50 | 215 | 45 | 115 | 375 | 65 | 750 | 25 | 840 | 35 | 390 | 85 | 510 | 1,775 |

Note: Beauregard Street and Van Dorn Street are North-South roadways. Seminary Road is an East-West roadway.



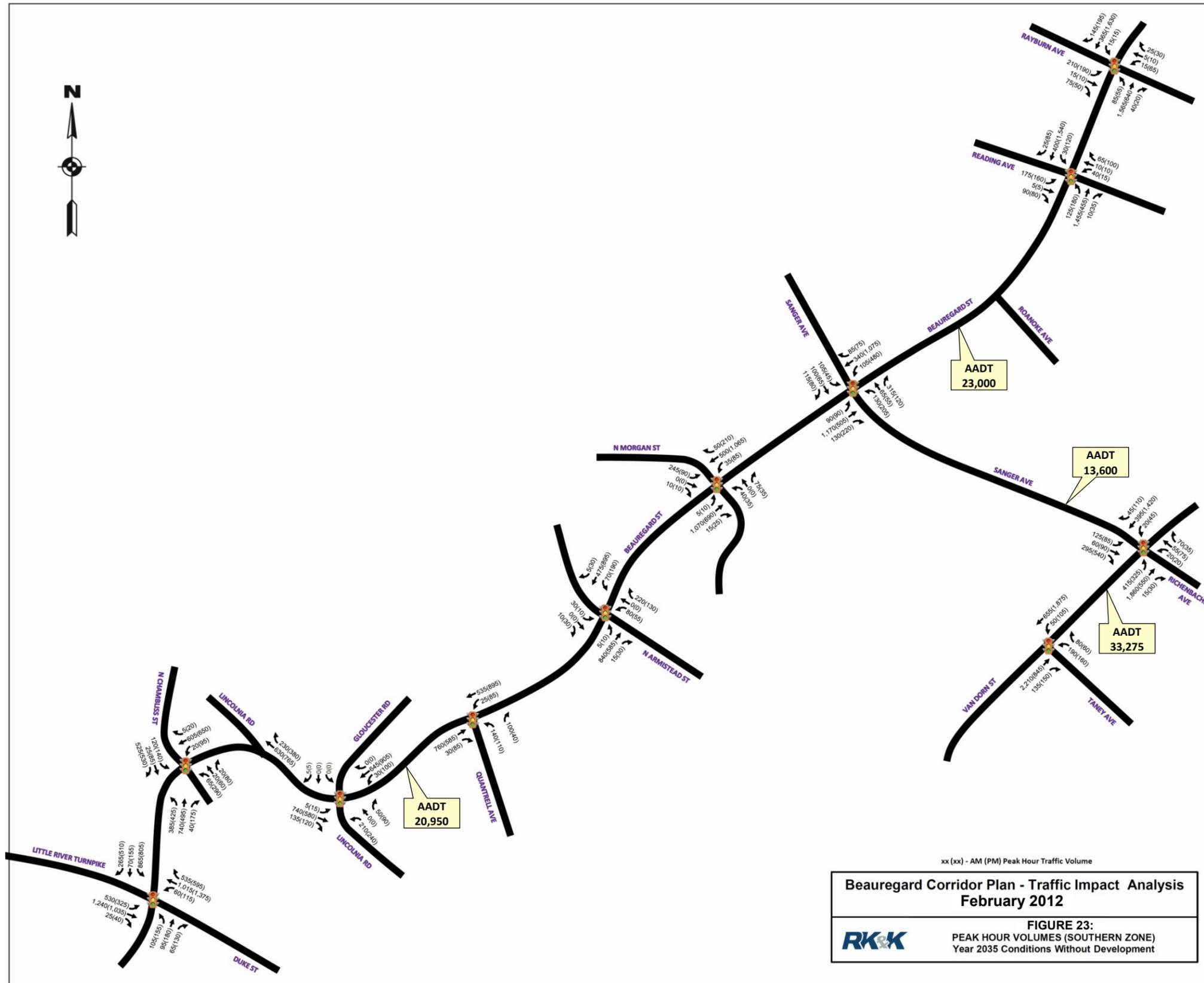


Table 31: Year 2035 Without Development AM Peak Hour Delay and Level of Service (LOS) by Approach

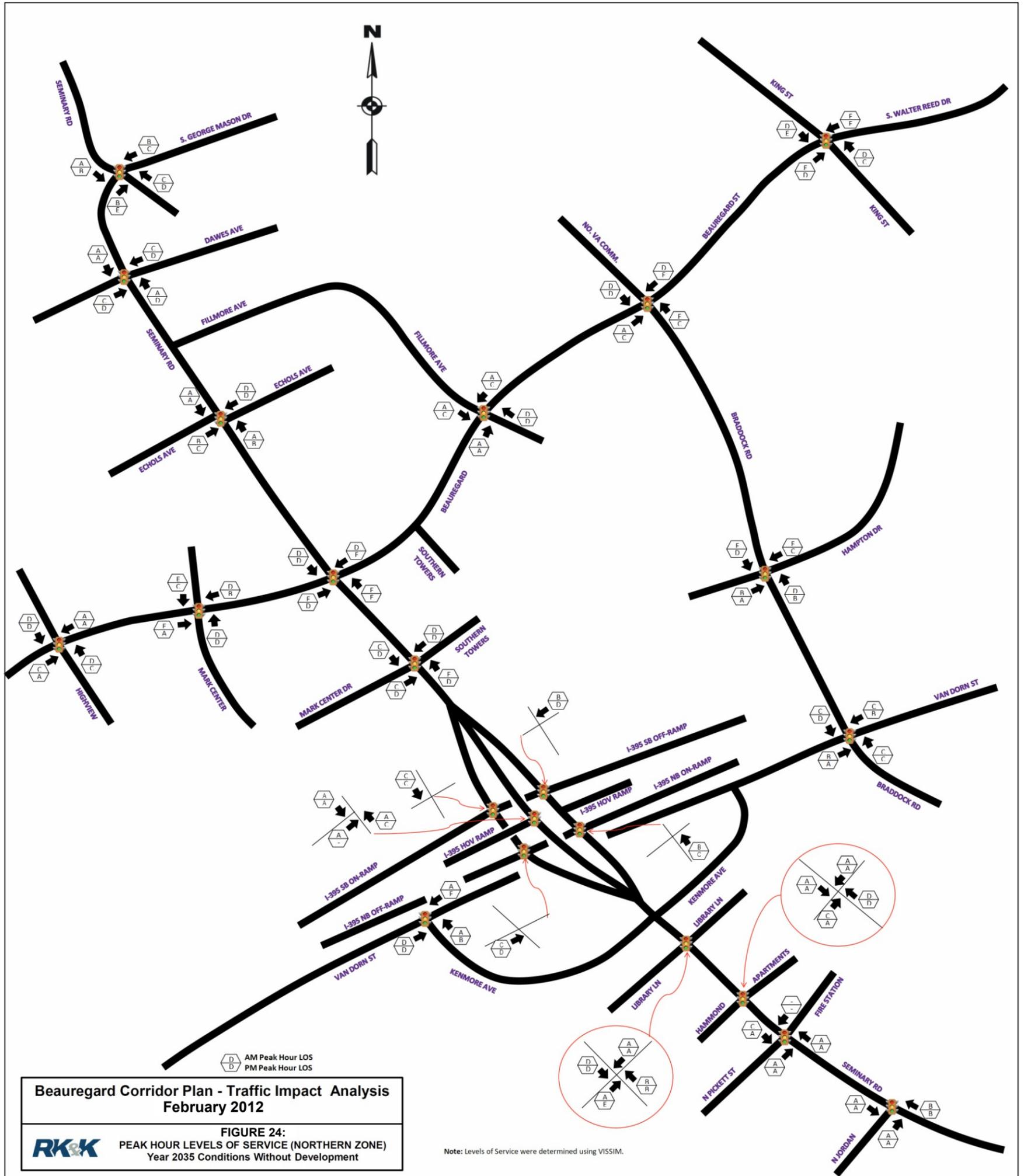
| Int. # | Intersection | Northbound | | Southbound | | Eastbound | | Westbound | | Overall Intersection | |
|--------|--------------------------------|------------|-----|------------|-----|-----------|-----|-----------|-----|----------------------|-----|
| | | Delay | LOS | Delay | LOS | Delay | LOS | Delay | LOS | Delay | LOS |
| 1 | Beauregard St / Quantrell Ave | 37.4 | D | 8.3 | A | | | 55.9 | E | 29.6 | C |
| 2 | Beauregard St / N Armistead St | 93.8 | F | 9.4 | A | 52.1 | D | 97.7 | F | 64.8 | E |
| 3 | Beauregard St / N Morgan St | 127.5 | F | 8.9 | A | 84.8 | F | 56.3 | E | 81.1 | F |
| 4 | Beauregard St / Sanger Ave | 118.6 | F | 28.8 | C | 66.9 | E | 56.0 | E | 81.3 | F |
| 5 | Beauregard St / Reading Ave | 32.0 | C | 10.7 | B | 42.6 | D | 29.1 | C | 28.8 | C |
| 6 | Beauregard St / Rayburn Ave | 25.2 | C | 10.4 | B | 49.5 | D | 28.9 | C | 25.0 | C |
| 7 | Beauregard St / Highview Ln | 28.1 | C | 7.8 | A | 48.1 | D | 38.9 | D | 24.4 | C |
| 8 | Beauregard St / Mark Center Dr | 62.5 | E | 51.2 | D | 62.7 | E | 53.2 | D | 57.5 | E |
| 9 | Beauregard St / Seminary Rd | 82.5 | F | 52.5 | D | 46.4 | D | 121.0 | F | 84.5 | F |
| 10 | Beauregard St / Fillmore Ave | 8.3 | A | 6.8 | A | 9.9 | A | 48.6 | D | 10.5 | B |
| 11 | Beauregard St / W Braddock Rd | 5.7 | A | 44.3 | D | 52.7 | D | 157.3 | F | 78.4 | E |
| 12 | Beauregard St / King St | 57.6 | E | 94.4 | F | 40.2 | D | 37.9 | D | 49.4 | D |
| 13 | Seminary Rd / Dawes Ave | 32.9 | C | 24.7 | C | 2.6 | A | 2.4 | A | 3.4 | A |
| 14 | Seminary Rd / Echols Ave | 19.1 | B | 46.0 | D | 4.8 | A | 2.1 | A | 4.1 | A |
| 15 | Seminary Rd / Mark Center Dr | 22.1 | C | 45.8 | D | 30.5 | C | 63.1 | E | 48.7 | D |
| 16-19 | Seminary Rd / I-395 Rotary | 34.0 | C | 14.3 | B | 25.2 | C | 15.9 | B | 22.0 | C |
| - | Seminary Rd / I-395 HOV Ramp | 91.2 | F | - | - | 14.9 | B | 80.2 | F | 71.3 | E |
| 20 | Seminary Rd / Library Ln | 56.5 | E | 59.0 | E | 36.7 | D | 18.8 | B | 25.8 | C |
| 21 | Seminary Rd / Hammond M.S. | 24.8 | C | 14.0 | B | 1.7 | A | 2.6 | A | 3.2 | A |
| 22 | Seminary Rd / N Pickett St | 47.0 | D | | | 3.2 | A | 5.1 | A | 8.9 | A |
| 23 | Seminary Rd / N Jordan St | 37.4 | D | | | 14.6 | B | 15.1 | B | 20.8 | C |
| 24 | N Van Dorn St / Taney Ave | 10.5 | B | 2.4 | A | | | 41.5 | D | 11.4 | B |
| 25 | N Van Dorn St / Sanger Ave | 29.9 | C | 16.7 | B | 55.8 | E | 40.8 | D | 32.2 | C |
| 26 | N Van Dorn St / Kenmore Ave | 9.8 | A | 8.3 | A | - | - | 52.9 | D | 12.5 | B |
| 27 | N Van Dorn St / W Braddock Rd | 21.9 | C | 26.4 | C | 61.7 | E | 38.1 | D | 33.1 | C |
| 28 | W Braddock Rd / Hampton Dr | 102.7 | F | 55.5 | E | 11.9 | B | 50.4 | D | 43.8 | D |

Note: Beauregard Street and North Van Dorn Street are north-south roadways. Seminary Road and West Braddock Road are east-west roadways. Delay/LOS determined using VISSIM.

Table 32: Year 2035 Without Development PM Peak Hour Delay and Level of Service (LOS) by Approach

| Int. # | Intersection | Northbound | | Southbound | | Eastbound | | Westbound | | Overall Intersection | |
|--------|--------------------------------|------------|-----|------------|-----|-----------|-----|-----------|-----|----------------------|-----|
| | | Delay | LOS | Delay | LOS | Delay | LOS | Delay | LOS | Delay | LOS |
| 1 | Beauregard St / Quantrell Ave | 1.1 | A | 0.8 | A | - | - | 43.6 | D | 4.5 | A |
| 2 | Beauregard St / N Armistead St | 8.1 | A | 4.6 | A | 15.0 | B | 18.5 | B | 7.2 | A |
| 3 | Beauregard St / N Morgan St | 20.7 | C | 4.9 | A | 57.7 | E | 40.6 | D | 13.3 | B |
| 4 | Beauregard St / Sanger Ave | 108.3 | F | 48.3 | D | 87.1 | F | 62.9 | E | 68.4 | E |
| 5 | Beauregard St / Reading Ave | 26.3 | C | 19.9 | B | 35.7 | D | 10.2 | B | 22.4 | C |
| 6 | Beauregard St / Rayburn Ave | 10.8 | B | 16.1 | B | 44.8 | D | 34.2 | C | 17.9 | B |
| 7 | Beauregard St / Highview Ln | 6.8 | A | 6.1 | A | 46.2 | D | 29.7 | C | 8.3 | A |
| 8 | Beauregard St / Mark Center Dr | 7.5 | A | 13.4 | B | 34.2 | C | 35.0 | D | 15.6 | B |
| 9 | Beauregard St / Seminary Rd | 44.5 | D | 99.3 | F | 48.5 | D | 58.7 | E | 58.3 | E |
| 10 | Beauregard St / Fillmore Ave | 9.8 | A | 26.6 | C | 28.1 | C | 49.3 | D | 20.9 | C |
| 11 | Beauregard St / W Braddock Rd | 23.6 | C | 68.3 | E | 46.2 | D | 25.0 | C | 45.7 | D |
| 12 | Beauregard St / King St | 54.8 | D | 82.7 | F | 55.6 | E | 34.3 | C | 56.6 | E |
| 13 | Seminary Rd / Dawes Ave | 35.2 | D | 36.0 | D | 7.5 | A | 35.0 | D | 21.1 | C |
| 14 | Seminary Rd / Echols Ave | 22.2 | C | 50.1 | D | 9.3 | A | 16.1 | B | 12.9 | B |
| 15 | Seminary Rd / Mark Center Dr | 43.1 | D | 42.6 | D | 38.8 | D | 49.4 | D | 43.9 | D |
| 16-19 | Seminary Rd / I-395 Rotary | 36.6 | D | 49.4 | D | 31.2 | C | 30.3 | C | 35.3 | D |
| - | Seminary Rd / I-395 HOV Ramp | - | - | - | - | 6.3 | A | 30.3 | C | 7.0 | A |
| 20 | Seminary Rd / Library Ln | 21.6 | C | 58.3 | E | 21.3 | C | 12.9 | B | 20.5 | C |
| 21 | Seminary Rd / Hammond M.S. | 26.4 | C | 20.9 | C | 2.1 | A | 0.8 | A | 1.9 | A |
| 22 | Seminary Rd / N Pickett St | 27.9 | C | - | - | 2.2 | A | 4.1 | A | 4.0 | A |
| 23 | Seminary Rd / N Jordan St | 47.5 | D | - | - | 14.0 | B | 7.4 | A | 15.3 | B |
| 24 | N Van Dorn St / Taney Ave | 9.2 | A | 12.3 | B | - | - | 40.2 | D | 13.2 | B |
| 25 | N Van Dorn St / Sanger Ave | 33.2 | C | 97.6 | F | 74.2 | E | 58.5 | E | 73.0 | E |
| 26 | N Van Dorn St / Kenmore Ave | 8.4 | A | 15.3 | B | - | - | 48.9 | D | 18.6 | B |
| 27 | N Van Dorn St / W Braddock Rd | 30.6 | C | 40.8 | D | 31.1 | C | 28.2 | C | 33.3 | C |
| 28 | W Braddock Rd / Hampton Dr | 24.7 | C | 37.0 | D | 4.0 | A | 9.6 | A | 13.2 | B |

Note: Beauregard Street and North Van Dorn Street are north-south roadways. Seminary Road and West Braddock Road are east-west roadways. Delay/LOS determined using VISSIM.



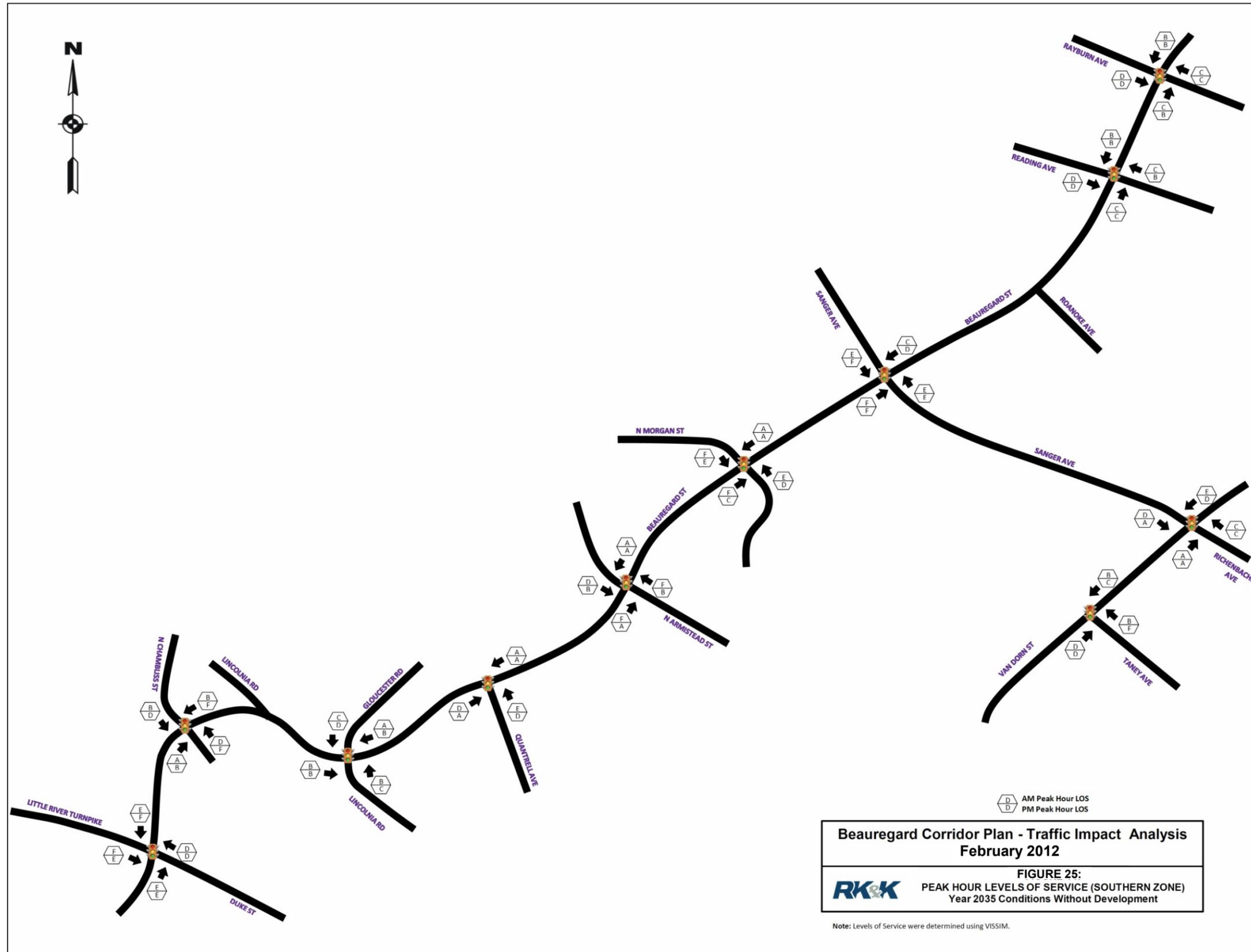
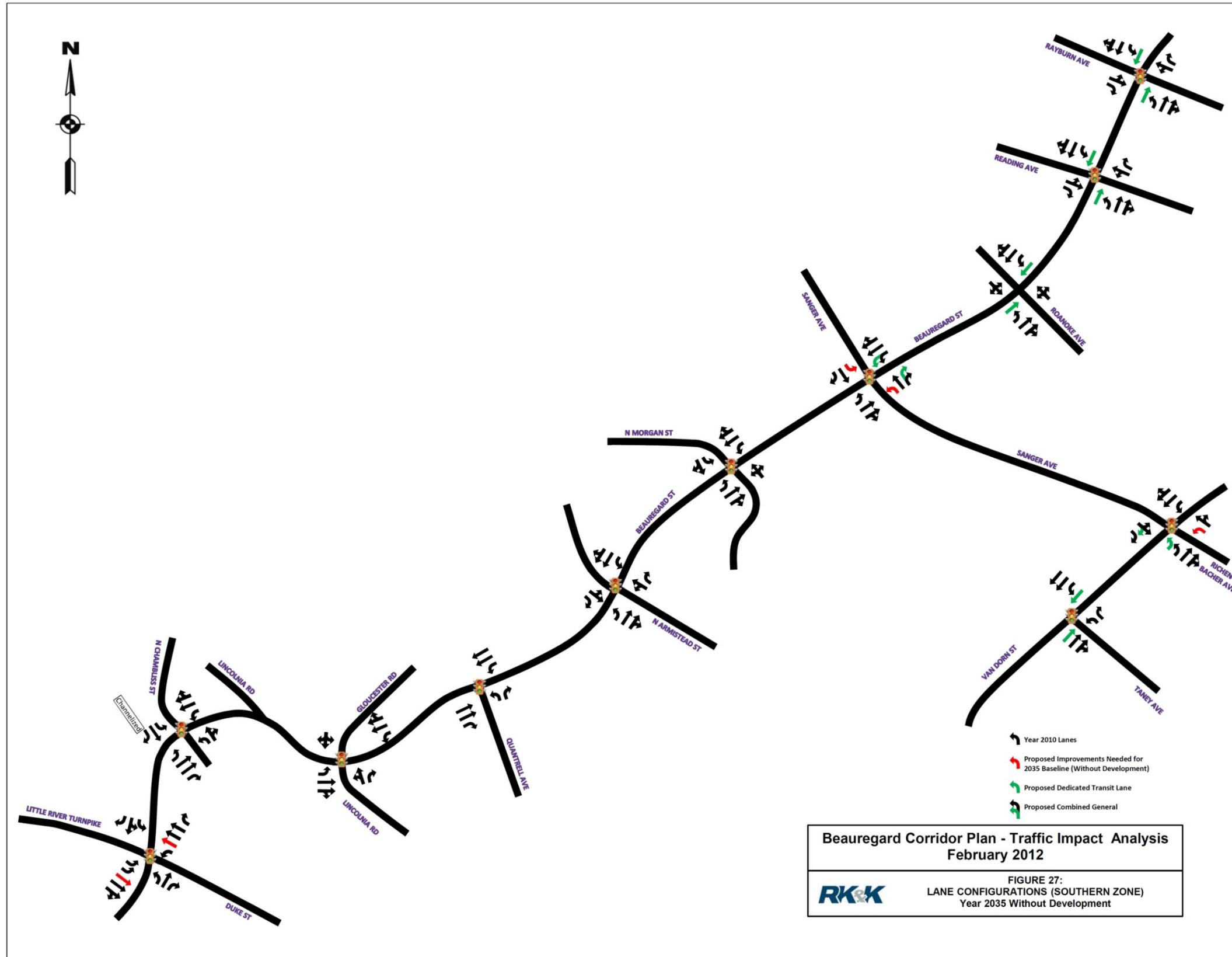


Table 33: 2035 Baseline AM Peak Hour Roadway Link Levels of Service (HCM Method)

| Beauregard Street | | Northbound | | | Southbound | | |
|--------------------------|----------------|-----------------|--------------------|----------|-----------------|--------------------|----------|
| Endpoint A | Endpoint B | Travel Time (s) | Travel Speed (mph) | Link LOS | Travel Time (s) | Travel Speed (mph) | Link LOS |
| Quantrell Ave | N Armistead St | 25 | 26 | B | 23 | 27 | B |
| N Armistead St | N Morgan St | 33 | 22 | C | 26 | 28 | B |
| N Morgan St | Sanger Ave | 40 | 16 | D | 33 | 20 | C |
| Sanger Ave | Reading Ave | 53 | 25 | B | 57 | 23 | C |
| Reading Ave | Rayburn Ave | 27 | 19 | C | 27 | 19 | C |
| Rayburn Ave | Highview Lane | 21 | 23 | C | 19 | 26 | B |
| Highview Lane | Mark Center Dr | 38 | 14 | E | 20 | 27 | B |
| Mark Center Dr | Seminary Rd | 36 | 15 | D | 27 | 21 | C |
| Seminary Rd | Fillmore Ave | 36 | 27 | B | 84 | 12 | E |
| Fillmore Ave | W Braddock Rd | 40 | 20 | C | 41 | 19 | C |
| W Braddock Rd | King St | 83 | 12 | E | 39 | 26 | B |
| Seminary Road | | | | | | | |
| Seminary Road | | Eastbound | | | Westbound | | |
| Endpoint A | Endpoint B | Travel Time (s) | Travel Speed (mph) | Link LOS | Travel Time (s) | Travel Speed (mph) | Link LOS |
| Dawes Ave | Echols Ave | 31 | 22 | C | 28 | 25 | B |
| Echols Ave | Beauregard St | 63 | 14 | E | 38 | 23 | C |
| Beauregard St | Mark Center Dr | 35 | 14 | D | 39 | 13 | E |
| Library Lane | N Pickett St | 34 | 6 | F | 9 | 23 | C |
| N Pickett St | N Jordan St | 24 | 21 | C | 98 | 5 | F |

Table 34: 2035 Baseline PM Peak Hour Roadway Link Levels of Service (HCM Method)

| Beauregard Street | | Northbound | | | Southbound | | |
|--------------------------|----------------|-----------------|--------------------|----------|-----------------|--------------------|----------|
| Endpoint A | Endpoint B | Travel Time (s) | Travel Speed (mph) | Link LOS | Travel Time (s) | Travel Speed (mph) | Link LOS |
| Quantrell Ave | N Armistead St | 35 | 18 | C | 24 | 27 | B |
| N Armistead St | N Morgan St | 31 | 23 | C | 27 | 27 | B |
| N Morgan St | Sanger Ave | 44 | 15 | D | 26 | 25 | B |
| Sanger Ave | Reading Ave | 46 | 30 | B | 46 | 29 | B |
| Reading Ave | Rayburn Ave | 24 | 21 | C | 29 | 17 | D |
| Rayburn Ave | Highview Lane | 20 | 25 | B | 30 | 16 | D |
| Highview Lane | Mark Center Dr | 31 | 17 | D | 23 | 23 | C |
| Mark Center Dr | Seminary Rd | 60 | 10 | F | 34 | 16 | D |
| Seminary Rd | Fillmore Ave | 34 | 28 | B | 85 | 11 | E |
| Fillmore Ave | W Braddock Rd | 48 | 16 | D | 29 | 27 | B |
| W Braddock Rd | King St | 66 | 15 | D | 41 | 24 | B |
| Seminary Road | | | | | | | |
| Seminary Road | | Eastbound | | | Westbound | | |
| Endpoint A | Endpoint B | Travel Time (s) | Travel Speed (mph) | Link LOS | Travel Time (s) | Travel Speed (mph) | Link LOS |
| Dawes Ave | Echols Ave | 37 | 19 | C | 30 | 23 | C |
| Echols Ave | Beauregard St | 60 | 14 | D | 45 | 19 | C |
| Beauregard St | Mark Center Dr | 130 | 4 | F | 39 | 13 | E |
| Library Lane | N Pickett St | 45 | 5 | F | 9 | 24 | C |
| N Pickett St | N Jordan St | 20 | 27 | B | 27 | 20 | C |



VI. Analysis of Year 2035 Conditions With Development

Several new roadways are being proposed as part of the 2035 build-out of the redevelopment in the study area. The analysis of the Year 2035 conditions with development assumes these roadways would be in place to handle the additional trips that would be generated by the changes in land uses shown in **Table 7** of Section III of this report. These are not traffic impact mitigation options, but are roadway network enhancements that are inherent to the proposed redevelopment. These new streets are described below:

New Street West of and Parallel to Beauregard Street:

This planned new street would extend from a relocated Sanger Avenue in the south (see description below) and extend north to the intersection of Beauregard Street and Mark Center Drive. It would be a collector roadway consisting of one through lane per direction for general traffic use, plus left turn lanes at intersections with cross streets that link to Beauregard Street to the east. This street is expected to carry a significant portion of traffic that would ordinarily travel north and south along Beauregard Street. As a result, the 2035 Conditions With Development traffic volumes shown along the adjacent segment of Beauregard Street in the following tables and figures are generally lower than the volumes on the same portion of Beauregard Street under the 2035 Conditions Without Development.

Relocated Sanger Avenue:

The segment of existing Sanger Avenue between Sheffield Court and Beauregard Street would be relocated such that it intersects with Beauregard Street approximately 400 feet north of the existing Sanger Avenue intersection. The relocated Sanger Ave would extend across Beauregard Street and directly connect to the new street west of and parallel to Beauregard Street. The relocated Sanger Avenue would include a transitway in a dedicated lane in the westbound direction from Beauregard to Van Dorn Street, and in the eastbound direction from Sheffield to Van Dorn. Left turns would be prohibited at the westbound approach to Beauregard, the westbound approach to Sheffield, and at the southbound approach to the relocated Sanger Avenue.

New Local Streets Parallel to Relocated Sanger Avenue:

A new local street south of the Relocated Sanger Avenue would intersect Beauregard Street at the approximate location of the existing Sanger Avenue intersection. This intersection is anticipated to be signalized, and allow for southbound left turns from Beauregard. This new street would tie into relocated Sanger Avenue further east.

North of relocated Sanger Avenue, Roanoke Avenue would be reconfigured to loop around newly planned development in the area and also tie into relocated Sanger Ave near the existing intersection of Bradford and Sheffield Court. The intersection at Beauregard would allow for southbound left turns. The new street would tie into the relocated Sanger Avenue.

Relocated Kenmore Avenue and Library Lane Extended:

Kenmore Avenue currently connects Van Dorn Street to Seminary Road via an unsignalized intersection along Seminary Road that restricts movements to right turns only. To support the

redevelopment in this area and improve traffic flow, the plan proposes to relocate a portion of Kenmore Avenue south of Seminary Road such that it aligns with the Library Lane intersection at Seminary Road. Library Lane would then be extended northward to connect to Van Dorn Street. These changes would provide a continuous loop around the planned development in this part of the study area with signalized connections at Seminary Road and at Van Dorn Street.

Main Street (Southern Towers):

A new local street would travel east-west across the Southern Towers property, linking the off-ramp from southbound I-395 to Beauregard Street. The intersection of this new street at Beauregard Street would be signalized. There would be a new internal intersection on the Southern Towers property at Mark Center Drive and this new east-west street.

These roadway network enhancements may require new traffic signals to be installed at certain locations throughout the study area. Although an MUTCD signal warrant analysis has not been performed, the following is a list of locations that will likely require signalization, based on a desire to maintain network connectivity. In the future, an MUTCD signal warrant analysis will be required to determine if signals would actually be justified at each location.

- Beauregard Street at Relocated Sanger Avenue
- Beauregard Street at Roanoke Avenue
- Beauregard Street at Proposed Main Street (Southern Towers)
- Sanger Avenue at Relocated Sanger Avenue (East of Beauregard Street)
- Van Dorn Street at Library Lane Extended (South of Braddock Road)

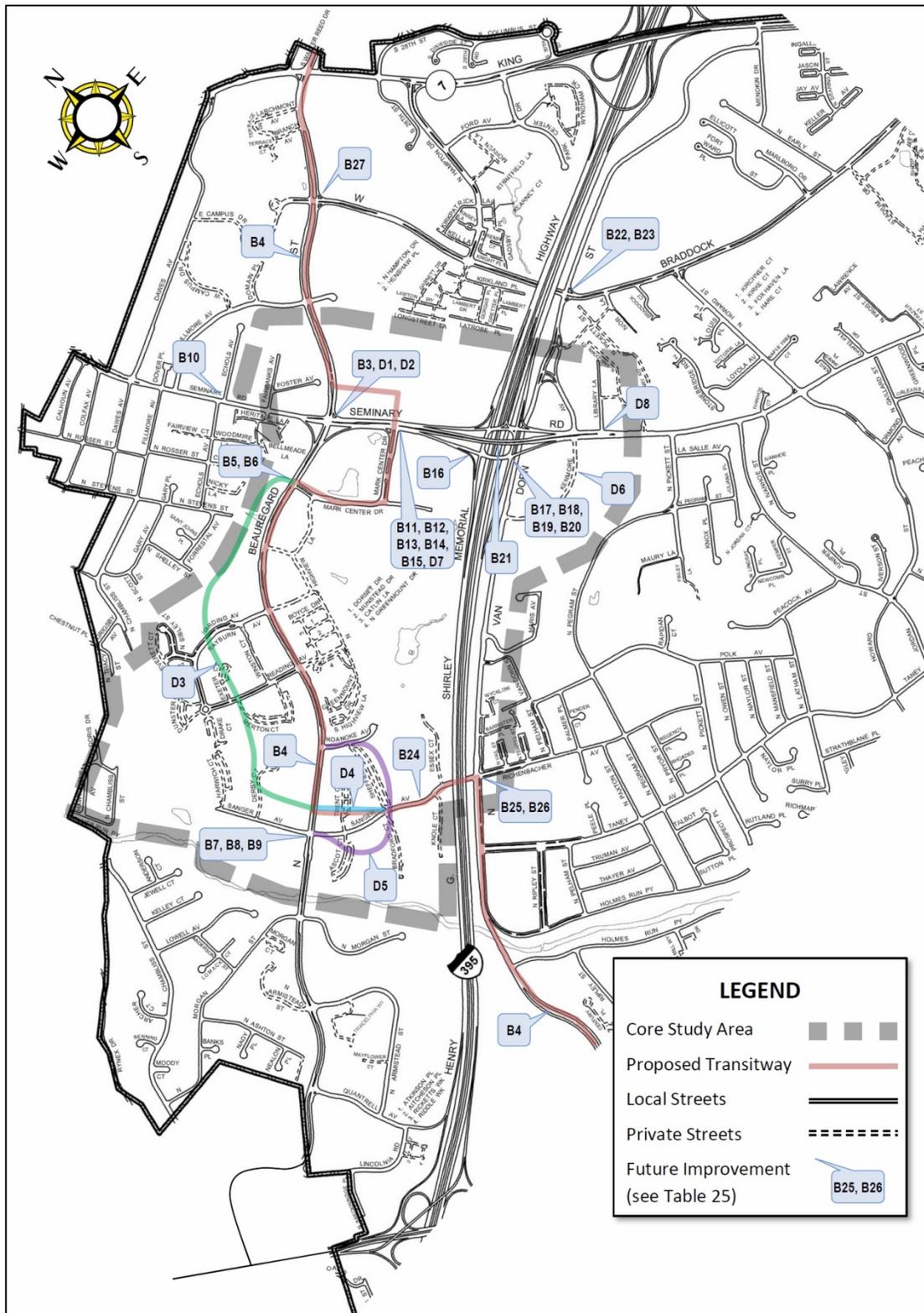
In addition to the improvements described above, the intersection of Beauregard Street and Seminary Road is proposed to be reconfigured in the form of an unconventional at-grade intersection, referred to in this study as an “ellipse” due to its geometric layout. The proposed ellipse would eliminate left turns from both directions along Seminary Road and redirect those movements as right turns, which would subsequently circulate around part of the ellipse to continue in the desired direction. Although the traffic circulation pattern of the ellipse would be very similar to that of a modern roundabout, through traffic movements along Seminary Road would be allowed to pass straight through the center island of the ellipse. Therefore, several traffic signals will be required around the ellipse to alternate the right-of-way among the various movements. The primary benefit of the elliptical configuration is the reduction of potential vehicle conflict points due to the elimination of the left turn movements along Seminary Road. This reduces the number of signal phases required at the Beauregard/Seminary intersection, and may also reduce the likelihood of certain types of crashes (such as those involving through vehicles colliding with left-turning vehicles). The current design concept for the ellipse shows the proposed intersection of Beauregard Street at Main Street (from Southern Towers) located at the northern end of the ellipse. The improvements described above are summarized in **Table 35**, with their locations shown in **Figure 28**.

Table 35: Transportation Improvements Assumed by Year 2035 With Development

| No. | Location | 2035 Development Scenario Improvements | Source of Improvement | CLRP? |
|-----|--|--|--|-------|
| D1 | Beauregard St at Seminary Rd | Construct an ellipse configuration at the intersection of Seminary Road / Beauregard Street. The conventional 8 phase traffic signal is replaced with a pair of interconnected, coordinated 3-phase signals along Seminary Road located about 300 feet apart. Left turns would be prohibited in the eastbound and westbound directions of Seminary Road. This project replaces 2035 Baseline projects numbers B1 and B2. | Beauregard Planning Study Assumed Improvement | No |
| D2 | | Add a new road through Southern Towers, parallel to Seminary, that would connect from the I-395 off-ramp into Southern Towers. The road would extend west, across Beauregard Street connecting to the future Hekemian development. The intersection with the new road and Beauregard would be signalized (Part of ellipse project above), and shared with a future transitway (Project B4). The existing driveway from the Hermitage apartments at Beauregard would be closed, and adequate improvements to allow for access into and out of the Hermitage apartments. | Beauregard Planning Study Assumed Improvement | No |
| D3 | New Parallel Road to Beauregard | Construct new parallel road from a relocated Sanger Avenue in the south, and connect to Mark Center Drive. It would be a collector roadway consisting of one through lane per direction for general traffic use plus left turn lanes at intersections with cross streets that link to Beauregard to the east. | Beauregard Planning Study Assumed Improvement | No |
| D4 | Relocated Sanger | The segment of existing Sanger Avenue between Sheffield Court and Beauregard Street would be relocated such that it intersects with Beauregard Street approximately 400 feet north of the existing Sanger Avenue intersection. The relocated Sanger Avenue would extend across Beauregard Street and directly connect to the new street west of and parallel to Beauregard Street. The relocated Sanger Avenue would include a transitway in the westbound direction from Beauregard to Van Dorn, and in the eastbound direction from Sheffield to Van Dorn. Left turns would be prohibited at the westbound approach to Beauregard, the WB approach to Sheffield, and at the southbound approach to the relocated Sanger. | Beauregard Planning Study Assumed Improvement | No |
| D5 | New Local Streets Parallel to Relocated Sanger | A new local street south of Sanger Avenue would intersect Beauregard Street at the approximate location of the existing Sanger Ave intersection. This intersection is anticipated to be signalized, and allow for southbound left turns from Beauregard Street. This new street would tie into relocated Sanger further east. North of relocated Sanger Avenue, Roanoke Avenue would be reconfigured to loop around newly planned development in the area and also tie into relocated Sanger Avenue near the existing intersection of Bradford and Sheffield Court. The intersection at Beauregard Street would allow for southbound left turns. The new street would tie into the relocated Sanger Avenue. | Beauregard Planning Study Assumed Improvement | No |
| D6 | Relocated Kenmore Avenue and Library Lane Extended | Kenmore Avenue currently connects Van Dorn St. to Seminary Rd. via an unsignalized intersection along Seminary Road that restricts movements to right turns only. To support the redevelopment of this area, and improve traffic flow, the plan proposes to relocate a portion of Kenmore Avenue south to Seminary Road such that it aligns with the Library Lane intersection at Seminary Road. | Beauregard Planning Study Assumed Improvement | No |
| D7 | Seminary at Mark Center Drive | Widen Mark Center Drive to allow for a third right turn onto eastbound Seminary Road. This approach would be a left turn, one thru lane and three right turn lanes. | Beauregard Planning Study Improvement | No |
| D8 | Seminary Rd at Library Lane | Change pedestrian signal phase at Seminary / Library to concurrent phasing with advanced pedestrian signal. | Beauregard Planning Study Assumed Improvements | No |

NOTE: The 2035 Development scenario would include most of the projects identified in the 2035 Baseline scenario. The Development scenario projects are in addition to those in the 2035 Baseline scenario, but in some cases, the projects in the 2035 Development scenario replace projects in the 2035 Baseline scenario, as noted.

Figure 28: Map of Transportation Improvements Assumed by 2035 With Development



The Year 2035 traffic volumes for conditions with development are shown in **Tables 37 and 38**. These volumes are also depicted on the roadway network diagrams on **Figures 29 and 30**. A comparison of the actual Year 2010 roadway segment volumes and the NCHRP-Adjusted Year 2035 With Development volumes for the peak hour directions along Beauregard Street, Seminary Road, and N. Van Dorn Street is provided in **Table 36**, along with the associated annual growth rates for each segment. Volumes were subsequently balanced/smoothed along Beauregard Street, Seminary Road, and Van Dorn Street to reflect the limited number of driveways/access points along these roadways. Additionally, due to the somewhat low growth rates exhibited by the travel demand model, the final volumes using these growth rates were adjusted higher for consistency with Mark Center BRAC-related trip generation previously performed by others. Hence, a comparison of the final Year 2010 and Year 2035 turning movement volumes used in the operational analysis may not yield the exact growth rates shown in **Table 36**.

Table 36: Comparison of Actual Year 2010 Volumes and NCHRP-Adjusted Year 2035 With Development Volumes for Growth Rate Estimates

| | Actual Year 2010 Volumes | | NCHRP-Adjusted Year 2035 With Development Volumes | | Annual Compound Growth Rate | |
|-------------------------------|--------------------------|---------------|---|---------------|-----------------------------|---------------|
| | AM Northbound | PM Southbound | AM Northbound | PM Southbound | AM Northbound | PM Southbound |
| Beauregard Street | | | | | | |
| Route 236 to N Chambliss | 1,155 | 1,325 | 1,426 | 1,673 | 0.8% | 0.9% |
| N Chambliss to N Morgan | 860 | 725 | 1,060 | 976 | 0.8% | 1.2% |
| N Morgan to Sanger | 1,300 | 1,265 | 1,099 | 1,137 | -0.7% | -0.4% |
| Sanger to Reading | 1,480 | 1,430 | 1,021 | 1,078 | -1.5% | -1.1% |
| Reading to Rayburn | 1,595 | 1,530 | 1,738 | 1,822 | 0.3% | 0.7% |
| Rayburn to Seminary | 1,525 | 1,650 | 1,492 | 1,941 | -0.1% | 0.7% |
| Seminary to Fillmore | 835 | 815 | 822 | 891 | -0.1% | 0.4% |
| Fillmore to Route 7 | 1,110 | 1,005 | 1,065 | 1,080 | -0.2% | 0.3% |
| Seminary Road | | | | | | |
| George Mason - Dawes | 1,295 | 1,465 | 1,290 | 1,703 | 0.0% | 0.6% |
| Dawes - Echols | 1,365 | 1,540 | 1,235 | 1,587 | -0.4% | 0.1% |
| Echols - Beauregard | 2,100 | 1,935 | 1,771 | 2,229 | -0.7% | 0.6% |
| Beauregard - Mark Center | 1,920 | 2,040 | 2,100 | 2,378 | 0.4% | 0.6% |
| Mark Center - I-395 SB Ramp | 1,770 | 2,435 | 1,798 | 2,735 | 0.1% | 0.5% |
| I-395 SB Ramp - I-395 NB Ramp | 1,690 | 1,805 | 1,181 | 1,306 | -1.4% | -1.3% |
| I-395 NB Ramp - Kenmore | 1,690 | 1,960 | 1,719 | 2,089 | 0.1% | 0.3% |
| Kenmore - Pickett | 1,670 | 1,905 | 1,439 | 1,682 | -0.6% | -0.5% |
| Pickett - Jordan | 1,660 | 1,830 | 1,690 | 2,002 | 0.1% | 0.4% |
| Van Dorn Street | | | | | | |
| Sanger - Seminary | 2,035 | 1,445 | 1,882 | 1,398 | -0.3% | -0.1% |
| Seminary - Braddock | 1,590 | 1,375 | 2,609 | 1,705 | 2.0% | 0.9% |

VISSIM was used to evaluate the AM and PM peak hour traffic operations at the key intersections throughout the Beauregard Corridor Plan study area, using the projected traffic volumes associated with build-out of the proposed development through 2035. According to the analysis results, each of the key intersections within the study area would operate at an overall LOS E or better during the AM or PM

peak hours in 2035 With Development. Therefore, the roadway network enhancements described above would accommodate the projected traffic growth resulting from the proposed redevelopment. However, there are three (3) intersections at which one or more individual approaches would still operate at level of service F:

1. Beauregard Street at Seminary Road (AM & PM)
2. Beauregard Street at King Street (AM & PM)
3. N. Van Dorn Street at Sanger Avenue/Richenbacher Avenue (AM & PM)

The results of the VISSIM analyses are summarized in **Tables 39 and 40**, and are shown on the roadway network diagrams in **Figures 31 and 32**.

The 2035 With Development AM and PM peak hour levels of service on the roadway links along Beauregard Street and along Seminary Road are summarized in **Tables 41 and 42**. These levels of service were calculated using the Highway Capacity Manual (HCM) methodology for arterial LOS. There are four (4) roadway segments that would operate at LOS F during the AM peak hour:

1. Beauregard Street Northbound from Mark Center Drive to Seminary Road
2. Beauregard Street Northbound from W. Braddock Road to King Street
3. Seminary Road Eastbound from Library Lane to N. Pickett Street
4. Seminary Road Westbound from N. Jordan Street to N. Pickett Street

During the PM peak hour, there would also be four (4) roadway segments operating at LOS F:

1. Beauregard Street Northbound from Old Sanger Avenue to Relocated Sanger Avenue
2. Beauregard Street Northbound from Mark Center Drive to Seminary Road
3. Seminary Road Eastbound from Beauregard Street to Mark Center Drive
4. Seminary Road Eastbound from Library Lane to N. Pickett Street

The lane configurations for the Year 2035 With Development scenario are shown in **Figures 33 & 34**, with the recommended capacity improvements shown in red.

Table 37: Year 2035 AM Peak Hour Intersection Turning Movement Volumes With Development

| Int. # | Intersection | Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | | Grand Total |
|--------|---|------------|-------|-------|-------|------------|------|-------|-------|-----------|-------|-------|-------|-----------|-------|-------|-------|-------------|
| | | Left | Thru | Right | Total | Left | Thru | Right | Total | Left | Thru | Right | Total | Left | Thru | Right | Total | |
| 1 | Beauregard St / Quantrell Ave | | 655 | 35 | 690 | 40 | 520 | | 560 | | | | | 240 | | 125 | 365 | 1,615 |
| 2 | Beauregard St / N Armistead St | 5 | 755 | 20 | 780 | 120 | 400 | 10 | 530 | 35 | 0 | 20 | 55 | 140 | 0 | 275 | 415 | 1,780 |
| 3 | Beauregard St / N Morgan St | 5 | 1,045 | 15 | 1,065 | 60 | 440 | 90 | 590 | 145 | 0 | 20 | 165 | 70 | 0 | 70 | 140 | 1,960 |
| 4 | Beauregard St / Old Sanger Ave | 10 | 1,190 | 60 | 1,260 | 10 | 335 | 15 | 360 | 20 | 25 | 105 | 150 | 150 | 20 | 40 | 210 | 1,980 |
| 5 | Beauregard St / Relocated Sanger Ave | 205 | 985 | 60 | 1,250 | 0 | 255 | 30 | 285 | 70 | 25 | 105 | 200 | 0 | 45 | 115 | 160 | 1,895 |
| 6 | Beauregard St / Roanoke Ave | 240 | 920 | 10 | 1,170 | 110 | 260 | 5 | 375 | 20 | 50 | 20 | 90 | 5 | 20 | 115 | 140 | 1,775 |
| 7 | Beauregard St / Reading Ave | 170 | 875 | 10 | 1,055 | 20 | 280 | 10 | 310 | 130 | 5 | 70 | 205 | 25 | 10 | 75 | 110 | 1,680 |
| 8 | Beauregard St / Rayburn Ave | 55 | 980 | 45 | 1,080 | 5 | 275 | 95 | 375 | 345 | 15 | 20 | 380 | 15 | 5 | 40 | 60 | 1,895 |
| 9 | Beauregard St / Highview Ln | 5 | 1,285 | 75 | 1,365 | 35 | 345 | 65 | 445 | 380 | 5 | 25 | 410 | 5 | 5 | 25 | 35 | 2,255 |
| 10 | Beauregard St / Mark Center Dr | 30 | 1,295 | 365 | 1,690 | 650 | 405 | 200 | 1,255 | 230 | 5 | 5 | 240 | 35 | 5 | 20 | 60 | 3,245 |
| 11 | Beauregard St / Seminary Rd | 485 | 535 | 525 | 1,545 | 215 | 305 | 145 | 665 | 185 | 900 | 180 | 1,265 | 770 | 855 | 175 | 1,800 | 5,275 |
| 12 | Beauregard St / Main St (New) | 50 | 715 | 130 | 895 | 55 | 435 | 25 | 515 | 10 | 25 | 75 | 110 | 155 | 25 | 210 | 390 | 1,910 |
| 13 | Beauregard St / Fillmore Ave | 85 | 830 | 20 | 935 | 15 | 375 | 45 | 435 | 15 | 5 | 80 | 100 | 60 | 5 | 5 | 70 | 1,540 |
| 14 | Beauregard St / W Braddock Rd | 130 | 540 | 180 | 850 | 340 | 225 | 45 | 610 | 5 | 15 | 20 | 40 | 190 | 80 | 755 | 1,025 | 2,525 |
| 15 | Beauregard St / King St | 320 | 865 | 115 | 1,300 | 195 | 305 | 250 | 750 | 100 | 1,705 | 160 | 1,965 | 145 | 2,585 | 145 | 2,875 | 6,890 |
| 16 | Seminary Rd / Dawes Ave | 10 | 15 | 30 | 55 | 10 | 10 | 20 | 40 | 35 | 1,130 | 5 | 1,170 | 35 | 1,385 | 50 | 1,470 | 2,735 |
| 17 | Seminary Rd / Echols Ave | 15 | 0 | 95 | 110 | 10 | 0 | 5 | 15 | 5 | 1,160 | 5 | 1,170 | 25 | 1,450 | 10 | 1,485 | 2,780 |
| 18 | Seminary Rd / Mark Center Dr | 20 | 15 | 295 | 330 | 390 | 130 | 50 | 570 | 35 | 1,315 | 290 | 1,640 | 610 | 1,730 | 105 | 2,445 | 4,985 |
| 19 | Seminary Rd / Ramp to I-395 South | | | | | 235 | 505 | | 740 | | 825 | 555 | 1,380 | | | | | 2,120 |
| 20 | Seminary Rd / Ramp from I-395 South | | | | | | 235 | 565 | 800 | | | | | 505 | 395 | | 900 | 1,700 |
| 21 | Seminary Rd / Ramp from I-395 North | | 395 | 100 | 495 | | | | | 825 | 235 | | 1,060 | | | | | 1,555 |
| 22 | Seminary Rd / Ramp to I-395 North | 900 | 320 | | 1,220 | | | | | | | | | | 505 | 335 | 840 | 2,060 |
| 23 | Seminary Rd / North I-395 HOV Ramp | | | | | | | 0 | 0 | | | | | | 900 | 505 | 1,405 | 1,405 |
| 24 | Seminary Rd Bridge / South I-395 HOV Ramp | 785 | | 170 | 955 | | | | | | 620 | 0 | 620 | 0 | 700 | | 700 | 2,275 |
| 25 | Seminary Rd / Library Ln | 45 | 5 | 10 | 60 | 40 | 0 | 265 | 305 | 215 | 890 | 10 | 1,115 | 20 | 950 | 80 | 1,050 | 2,530 |
| 26 | Seminary Rd / Hammond M.S. | 25 | 0 | 5 | 30 | 25 | | 40 | 65 | 10 | 930 | | 940 | | 985 | 5 | 990 | 2,025 |
| 27 | Seminary Rd / N Pickett St | 125 | 0 | 110 | 235 | 0 | 0 | 0 | 0 | 0 | 850 | 110 | 960 | 80 | 865 | 0 | 945 | 2,140 |
| 28 | Seminary Rd / N Jordan St | 290 | | 70 | 360 | | | | | | 750 | 210 | 960 | 20 | 655 | | 675 | 1,995 |
| 29 | N Van Dorn St / Taney Ave | | 2,435 | 125 | 2,560 | 45 | 755 | | 800 | | | | | 170 | | 75 | 245 | 3,605 |
| 30 | N Van Dorn St / Sanger Ave | 340 | 2,155 | 15 | 2,510 | 20 | 355 | 95 | 470 | 190 | 90 | 425 | 705 | 20 | 50 | 65 | 135 | 3,820 |
| 31 | N Van Dorn St / Kenmore Ave | | 2,700 | 155 | 2,855 | 15 | 560 | | 575 | | | | | 75 | | 170 | 245 | 3,675 |
| 32 | N Van Dorn St / Library Ln Extended | | 2,180 | 690 | 2,870 | 50 | 570 | | 620 | | | | | 5 | | 55 | 60 | 3,550 |
| 33 | N Van Dorn St / W Braddock Rd | 800 | 860 | 575 | 2,235 | 5 | 115 | 55 | 175 | 15 | 230 | 285 | 530 | 220 | 430 | 55 | 705 | 3,645 |
| 34 | W Braddock Rd / Hampton Dr | 50 | 70 | 40 | 160 | 70 | 5 | 110 | 185 | 105 | 420 | 10 | 535 | 40 | 865 | 380 | 1,285 | 2,165 |
| 35 | Sanger Ave Relocated / Old Sanger Ave | 10 | 10 | 275 | 295 | 290 | 5 | 5 | 300 | 5 | 75 | 5 | 85 | 215 | 145 | 135 | 495 | 1,175 |
| 36 | Mark Center Dr / Main St (New) | 50 | 50 | 55 | 155 | 15 | 150 | 230 | 395 | 60 | 105 | 45 | 210 | 375 | 110 | 30 | 515 | 1,275 |

Table 38: Year 2035 PM Peak Hour Intersection Turning Movement Volumes With Development

| Int. # | Intersection | Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | | Grand Total |
|--------|---|------------|-------|-------|-------|------------|-------|-------|-------|-----------|-------|-------|-------|-----------|-------|-------|-------|-------------|
| | | Left | Thru | Right | Total | Left | Thru | Right | Total | Left | Thru | Right | Total | Left | Thru | Right | Total | |
| 1 | Beauregard St / Quantrell Ave | | 700 | 120 | 820 | 100 | 750 | | 850 | | | | | 135 | | 50 | 185 | 1,855 |
| 2 | Beauregard St / N Armistead St | 15 | 690 | 45 | 750 | 230 | 750 | 35 | 1,015 | 15 | 0 | 35 | 50 | 65 | 0 | 180 | 245 | 2,060 |
| 3 | Beauregard St / N Morgan St | 10 | 855 | 20 | 885 | 100 | 960 | 255 | 1,315 | 75 | 0 | 15 | 90 | 40 | 0 | 30 | 70 | 2,360 |
| 4 | Beauregard St / Old Sanger Ave | 20 | 825 | 115 | 960 | 140 | 865 | 10 | 1,015 | 10 | 15 | 205 | 230 | 245 | 10 | 20 | 275 | 2,480 |
| 5 | Beauregard St / Relocated Sanger Ave | 110 | 635 | 110 | 855 | 0 | 815 | 35 | 850 | 45 | 20 | 200 | 265 | 0 | 35 | 65 | 100 | 2,070 |
| 6 | Beauregard St / Roanoke Ave | 115 | 600 | 30 | 745 | 275 | 815 | 20 | 1,110 | 10 | 35 | 30 | 75 | 5 | 20 | 55 | 80 | 2,010 |
| 7 | Beauregard St / Reading Ave | 105 | 535 | 25 | 665 | 85 | 980 | 40 | 1,105 | 75 | 5 | 120 | 200 | 25 | 10 | 195 | 230 | 2,200 |
| 8 | Beauregard St / Rayburn Ave | 40 | 740 | 25 | 805 | 20 | 980 | 350 | 1,350 | 230 | 10 | 50 | 290 | 75 | 10 | 30 | 115 | 2,560 |
| 9 | Beauregard St / Highview Ln | 25 | 960 | 15 | 1,000 | 10 | 1,280 | 375 | 1,665 | 130 | 5 | 5 | 140 | 65 | 5 | 70 | 140 | 2,945 |
| 10 | Beauregard St / Mark Center Dr | 5 | 1,105 | 50 | 1,160 | 155 | 1,310 | 280 | 1,745 | 335 | 20 | 25 | 380 | 330 | 5 | 155 | 490 | 3,775 |
| 11 | Beauregard St / Seminary Rd | 485 | 405 | 705 | 1,595 | 185 | 540 | 195 | 920 | 180 | 745 | 595 | 1,520 | 610 | 765 | 255 | 1,630 | 5,665 |
| 12 | Beauregard St / Main St (New) | 40 | 585 | 215 | 840 | 205 | 685 | 35 | 925 | 35 | 55 | 80 | 170 | 155 | 25 | 175 | 355 | 2,290 |
| 13 | Beauregard St / Fillmore Ave | 65 | 700 | 30 | 795 | 20 | 730 | 75 | 825 | 50 | 10 | 135 | 195 | 60 | 10 | 25 | 95 | 1,910 |
| 14 | Beauregard St / W Braddock Rd | 155 | 455 | 165 | 775 | 325 | 780 | 15 | 1,120 | 60 | 115 | 5 | 180 | 40 | 135 | 305 | 480 | 2,555 |
| 15 | Beauregard St / King St | 270 | 435 | 115 | 820 | 200 | 750 | 165 | 1,115 | 125 | 1,605 | 265 | 1,995 | 105 | 1,170 | 110 | 1,385 | 5,315 |
| 16 | Seminary Rd / Dawes Ave | 15 | 10 | 25 | 50 | 80 | 25 | 50 | 155 | 35 | 1,355 | 5 | 1,395 | 155 | 1,155 | 50 | 1,360 | 2,960 |
| 17 | Seminary Rd / Echols Ave | 10 | 0 | 55 | 65 | 10 | 0 | 5 | 15 | 5 | 1,455 | 0 | 1,460 | 85 | 1,345 | 15 | 1,445 | 2,985 |
| 18 | Seminary Rd / Mark Center Dr | 275 | 75 | 1,375 | 1,725 | 210 | 85 | 200 | 495 | 80 | 1,500 | 55 | 1,635 | 120 | 1,155 | 155 | 1,430 | 5,285 |
| 19 | Seminary Rd / Ramp to I-395 South | | | | | 690 | 130 | | 820 | | 725 | 730 | 1,455 | | | | | 2,275 |
| 20 | Seminary Rd / Ramp from I-395 South | | | | | | 260 | 120 | 380 | | | | | 560 | 555 | | 1,115 | 1,495 |
| 21 | Seminary Rd / Ramp from I-395 North | | 490 | 430 | 920 | | | | | 725 | 690 | | 1,415 | | | | | 2,335 |
| 22 | Seminary Rd / Ramp to I-395 North | 490 | 725 | | 1,215 | | | | | | | | | | 130 | 410 | 540 | 1,755 |
| 23 | Seminary Rd / North I-395 HOV Ramp | | | | 0 | | | 495 | 495 | | | | | | 620 | 0 | 620 | 1,115 |
| 24 | Seminary Rd Bridge / South I-395 HOV Ramp | 0 | | 0 | 0 | | | | 0 | | 775 | 855 | 1,630 | 170 | 755 | | 925 | 2,555 |
| 25 | Seminary Rd / Library Ln | 45 | 5 | 5 | 55 | 90 | 15 | 270 | 375 | 240 | 1,395 | 20 | 1,655 | 35 | 890 | 55 | 980 | 3,065 |
| 26 | Seminary Rd / Hammond M.S. | 5 | 0 | 5 | 10 | 5 | | 15 | 20 | 45 | 1,445 | | 1,490 | | 960 | 35 | 995 | 2,515 |
| 27 | Seminary Rd / N Pickett St | 55 | 0 | 60 | 115 | 0 | 0 | 0 | 0 | 0 | 1,300 | 155 | 1,455 | 110 | 940 | 0 | 1,050 | 2,620 |
| 28 | Seminary Rd / N Jordan St | 215 | | 20 | 235 | | | | | | 980 | 380 | 1,360 | 70 | 835 | | 905 | 2,500 |
| 29 | N Van Dorn St / Taney Ave | | 775 | 145 | 920 | 90 | 1,870 | | 1,960 | | | | | 140 | | 60 | 200 | 3,080 |
| 30 | N Van Dorn St / Sanger Ave | 275 | 535 | 25 | 835 | 40 | 1,260 | 100 | 1,400 | 95 | 105 | 680 | 880 | 20 | 70 | 30 | 120 | 3,235 |
| 31 | N Van Dorn St / Kenmore Ave | | 650 | 100 | 750 | 40 | 1,350 | | 1,390 | | | | | 340 | | 60 | 400 | 2,540 |
| 32 | N Van Dorn St / Library Ln Extended | | 545 | 165 | 710 | 270 | 1,360 | | 1,630 | | | | | 30 | | 20 | 50 | 2,390 |
| 33 | N Van Dorn St / W Braddock Rd | 315 | 110 | 140 | 565 | 15 | 875 | 5 | 895 | 20 | 260 | 455 | 735 | 300 | 90 | 20 | 410 | 2,605 |
| 34 | W Braddock Rd / Hampton Dr | 20 | 15 | 15 | 50 | 215 | 45 | 70 | 330 | 75 | 505 | 25 | 605 | 5 | 390 | 15 | 410 | 1,395 |
| 35 | Sanger Ave Relocated / Old Sanger Ave | 5 | 5 | 310 | 320 | 445 | 10 | 20 | 475 | 20 | 100 | 10 | 130 | 315 | 75 | 75 | 465 | 1,390 |
| 36 | Mark Center Dr / Main St (New) | 70 | 120 | 120 | 310 | 10 | 135 | 135 | 280 | 230 | 145 | 100 | 475 | 260 | 150 | 50 | 460 | 1,525 |



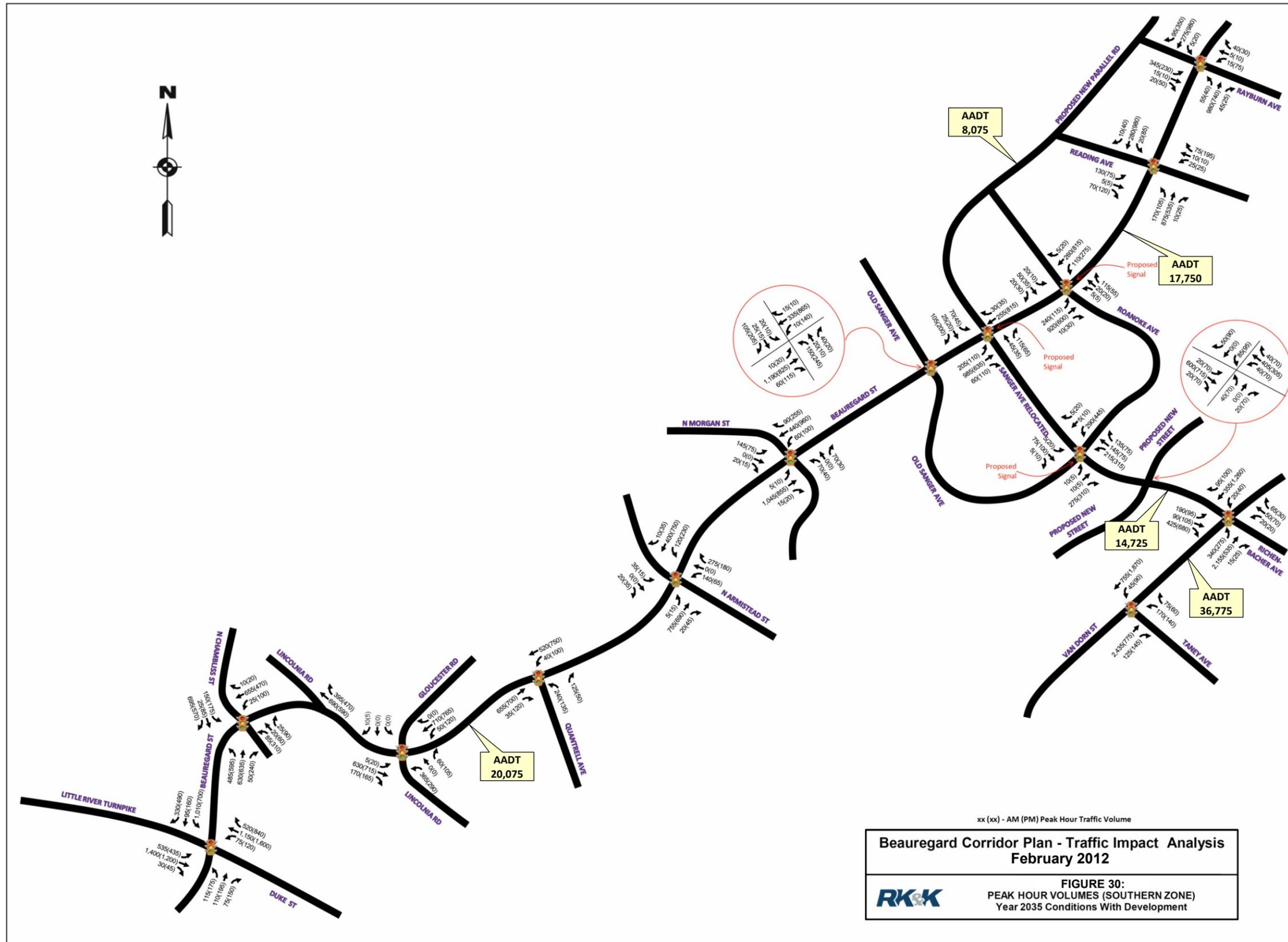


Table 39: Year 2035 With Development AM Peak Hour Delay and Level of Service (LOS) by Approach

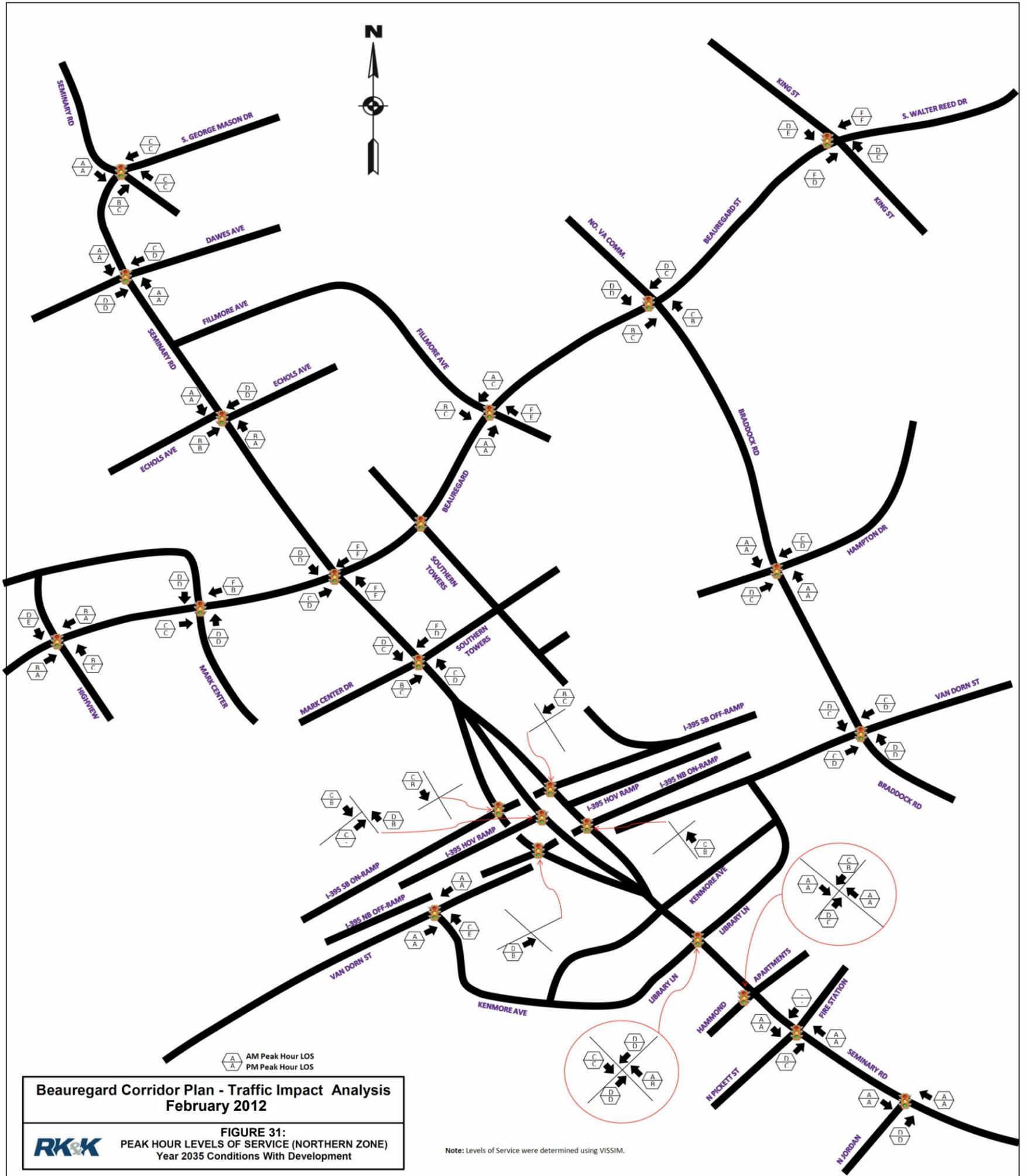
| Int. # | Intersection | Northbound | | Southbound | | Eastbound | | Westbound | | Overall Intersection | |
|--------|--------------------------------|------------|-----|------------|-----|-----------|-----|-----------|-----|----------------------|-----|
| | | Delay | LOS | Delay | LOS | Delay | LOS | Delay | LOS | Delay | LOS |
| 1 | Beauregard St / Quantrell Ave | 7.4 | A | 3.9 | A | - | | 48.6 | D | 15.5 | B |
| 2 | Beauregard St / N Armistead St | 3.5 | A | 5.7 | A | 19.0 | B | 25.7 | C | 9.8 | A |
| 3 | Beauregard St / N Morgan St | 3.2 | A | 5.0 | A | 50.0 | D | 28.7 | C | 9.3 | A |
| 4 | Beauregard St / Old Sanger Ave | 9.9 | A | 7.8 | A | 18.4 | B | 44.0 | D | 13.7 | B |
| | Beauregard St / Roanoke Ave | 14.5 | B | 21.1 | C | 49.3 | D | 20.7 | C | 18.2 | B |
| 5 | Beauregard St / Reading Ave | 14.1 | B | 19.0 | B | 38.9 | D | 15.2 | B | 18.0 | B |
| 6 | Beauregard St / Rayburn Ave | 14.1 | B | 5.3 | A | 57.8 | E | 18.8 | B | 18.8 | B |
| 7 | Beauregard St / Highview Ln | 17.2 | B | 14.6 | B | 50.0 | D | 17.1 | B | 22.8 | C |
| 8 | Beauregard St / Mark Center Dr | 26.7 | C | 59.6 | E | 53.8 | D | 41.5 | D | 41.5 | D |
| 9 | Beauregard St / Seminary Rd | 23.6 | C | 100.2 | F | 48.3 | D | 69.2 | E | 54.3 | D |
| 10 | Beauregard St / Fillmore Ave | 7.8 | A | 5.3 | A | 13.4 | B | 57.9 | E | 9.8 | A |
| 11 | Beauregard St / W Braddock Rd | 18.5 | B | 37.5 | D | 38.5 | D | 22.7 | C | 25.1 | C |
| 12 | Beauregard St / King St | 56.1 | E | 170.3 | F | 54.9 | D | 48.6 | D | 64.2 | E |
| 13 | Seminary Rd / Dawes Ave | 36.8 | D | 28.7 | C | 7.3 | A | 4.1 | A | 4.5 | A |
| 14 | Seminary Rd / Echols Ave | 20.0 | B | 45.9 | D | 3.7 | A | 12.5 | B | 6.7 | A |
| 15 | Seminary Rd / Mark Center Dr | 18.1 | B | 57.1 | E | 37.4 | D | 28.0 | C | 32.8 | C |
| 16-19 | Seminary Rd / I-395 Rotary | 35.3 | D | 16.0 | B | 31.0 | C | 28.0 | C | 26.7 | C |
| | Seminary Rd / I-395 HOV Ramp | 31.4 | C | - | - | 32.2 | C | 35.9 | D | 33.0 | C |
| 20 | Seminary Rd / Library Ln | 48.1 | D | 44.5 | D | 21.5 | C | 9.8 | A | 19.8 | B |
| 21 | Seminary Rd / Hammond M.S. | 50.9 | D | 24.8 | C | 2.6 | A | 1.2 | A | 3.3 | A |
| 22 | Seminary Rd / N Pickett St | 39.0 | D | - | - | 2.6 | A | 3.7 | A | 7.2 | A |
| 23 | Seminary Rd / N Jordan St | 50.3 | D | - | - | 4.6 | A | 7.5 | A | 14.1 | B |
| 24 | N Van Dorn St / Taney Ave | 16.2 | B | 7.2 | A | - | - | 44.7 | D | 16.2 | B |
| 25 | N Van Dorn St / Sanger Ave | 17.0 | B | 20.9 | C | 86.4 | F | 39.2 | D | 31.1 | C |
| 26 | N Van Dorn St / Kenmore Ave | 7.9 | A | 5.5 | A | - | - | 33.8 | C | 9.3 | A |
| 27 | N Van Dorn St / W Braddock Rd | 21.1 | C | 27.3 | C | 50.3 | D | 50.5 | D | 31.2 | C |
| 28 | W Braddock Rd / Hampton Dr | 43.5 | D | 28.5 | C | 3.7 | A | 5.6 | A | 9.9 | A |

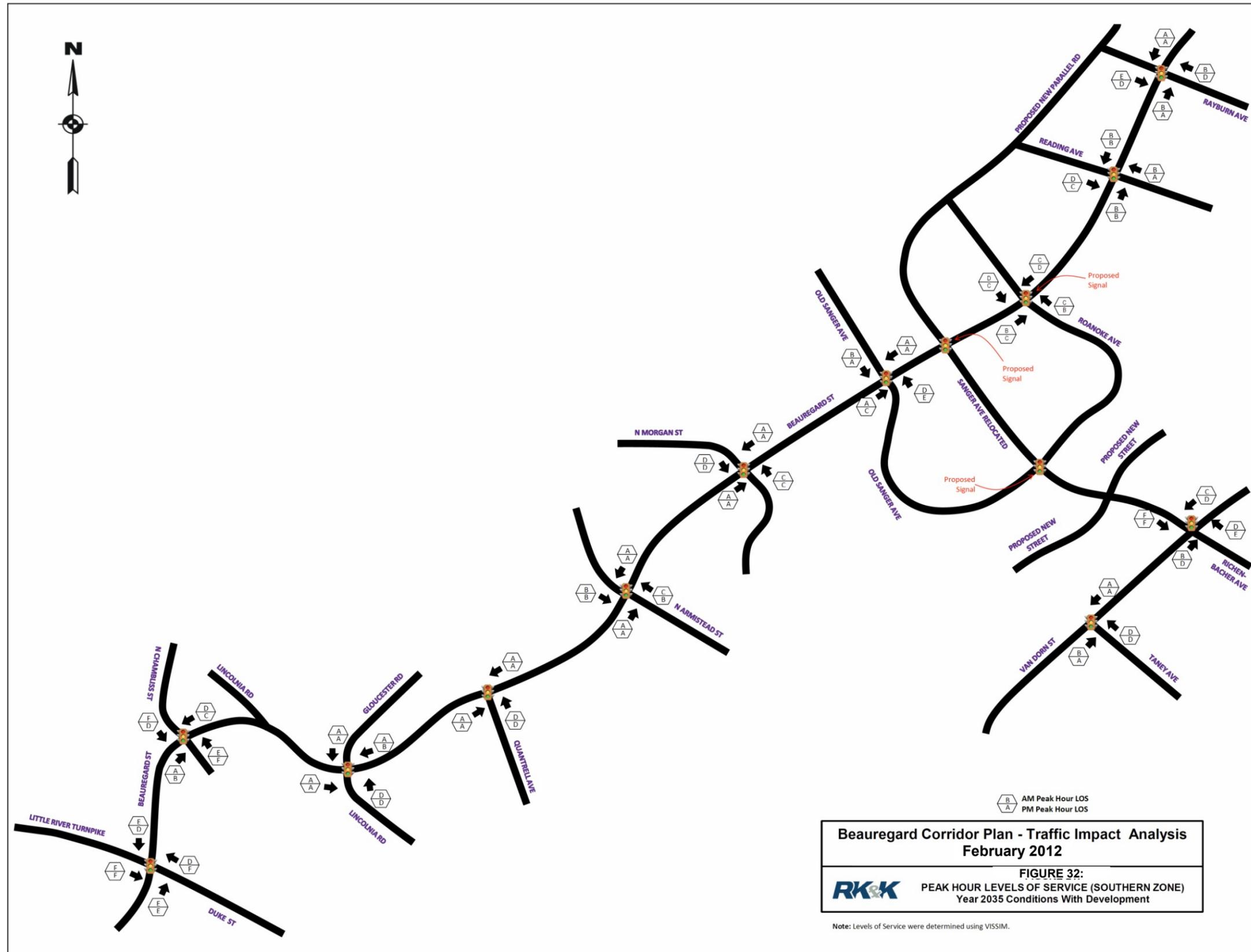
Note: Beauregard Street and North Van Dorn Street are north-south roadways. Seminary Road and West Braddock Road are east-west roadways. Delay/LOS determined using VISSIM.

Table 40: Year 2035 With Development PM Peak Hour Delay and Level of Service (LOS) by Approach

| Int. # | Intersection | Northbound | | Southbound | | Eastbound | | Westbound | | Overall Intersection | |
|--------|--------------------------------|------------|-----|------------|-----|-----------|-----|-----------|-----|----------------------|-----|
| | | Delay | LOS | Delay | LOS | Delay | LOS | Delay | LOS | Delay | LOS |
| 1 | Beauregard St / Quantrell Ave | 2.7 | A | 4.9 | A | - | - | 46.1 | D | 8.2 | A |
| 2 | Beauregard St / N Armistead St | 8.6 | A | 3.7 | A | 10.6 | B | 18.5 | B | 7.4 | A |
| 3 | Beauregard St / N Morgan St | 3.4 | A | 4.2 | A | 50.0 | D | 27.3 | C | 6.4 | A |
| 4 | Beauregard St / Old Sanger Ave | 22.1 | C | 7.0 | A | 9.9 | A | 55.1 | E | 18.5 | B |
| | Beauregard St / Roanoke Ave | 25.8 | C | 38.1 | D | 25.8 | C | 16.0 | B | 32.2 | C |
| 5 | Beauregard St / Reading Ave | 14.0 | B | 16.5 | B | 24.7 | C | 9.8 | A | 15.8 | B |
| 6 | Beauregard St / Rayburn Ave | 9.8 | A | 9.2 | A | 44.8 | D | 42.5 | D | 15.1 | B |
| 7 | Beauregard St / Highview Ln | 4.9 | A | 6.2 | A | 57.0 | E | 30.1 | C | 9.4 | A |
| 8 | Beauregard St / Mark Center Dr | 24.0 | C | 15.4 | B | 49.4 | D | 37.2 | D | 24.5 | C |
| 9 | Beauregard St / Seminary Rd | 36.8 | D | 94.9 | F | 35.5 | D | 85.8 | F | 64.1 | E |
| 10 | Beauregard St / Fillmore Ave | 9.5 | A | 24.0 | C | 23.5 | C | 56.4 | E | 19.6 | B |
| 11 | Beauregard St / W Braddock Rd | 22.9 | C | 29.2 | C | 52.7 | D | 18.6 | B | 27.0 | C |
| 12 | Beauregard St / King St | 52.6 | D | 81.4 | F | 79.1 | E | 33.6 | C | 63.4 | E |
| 13 | Seminary Rd / Dawes Ave | 37.0 | D | 40.4 | D | 5.6 | A | 7.4 | A | 8.8 | A |
| 14 | Seminary Rd / Echols Ave | 18.0 | B | 45.8 | D | 3.6 | A | 5.2 | A | 4.9 | A |
| 15 | Seminary Rd / Mark Center Dr | 24.5 | C | 48.3 | D | 33.2 | C | 46.7 | D | 35.3 | D |
| 16-19 | Seminary Rd / I-395 Rotary | 10.3 | B | 29.1 | C | 18.2 | B | 10.0 | B | 16.0 | B |
| | Seminary Rd / I-395 HOV Ramp | - | - | - | - | 10.4 | B | 12.8 | B | 11.3 | B |
| 20 | Seminary Rd / Library Ln | 39.9 | D | 40.5 | D | 24.2 | C | 14.3 | B | 23.3 | C |
| 21 | Seminary Rd / Hammond M.S. | 30.0 | C | 16.5 | B | 1.5 | A | 0.8 | A | 1.4 | A |
| 22 | Seminary Rd / N Pickett St | 32.2 | C | - | - | 3.6 | A | 4.1 | A | 5.1 | A |
| 23 | Seminary Rd / N Jordan St | 54.0 | D | - | - | 6.4 | A | 8.6 | A | 11.8 | B |
| 24 | N Van Dorn St / Taney Ave | 8.5 | A | 5.6 | A | - | - | 42.0 | D | 9.0 | A |
| 25 | N Van Dorn St / Sanger Ave | 39.1 | D | 53.8 | D | 96.4 | F | 72.0 | E | 61.7 | E |
| 26 | N Van Dorn St / Kenmore Ave | 4.3 | A | 9.5 | A | - | - | 58.9 | E | 15.8 | B |
| 27 | N Van Dorn St / W Braddock Rd | 36.2 | D | 35.4 | D | 34.7 | C | 43.2 | D | 36.6 | D |
| 28 | W Braddock Rd / Hampton Dr | 31.4 | C | 46.6 | D | 2.9 | A | 7.7 | A | 15.8 | B |

Note: Beauregard Street and North Van Dorn Street are north-south roadways. Seminary Road and West Braddock Road are east-west roadways. Delay/LOS determined using VISSIM.





Beauregard Corridor Plan - Traffic Impact Analysis
February 2012

FIGURE 32:
PEAK HOUR LEVELS OF SERVICE (SOUTHERN ZONE)
Year 2035 Conditions With Development

Note: Levels of Service were determined using VISSIM.

Table 41: 2035 With Development AM Peak Hour Roadway Link Levels of Service (HCM Method)

| Beauregard Street | | Northbound | | | Southbound | | |
|--------------------------|------------------|-----------------|--------------------|----------|-----------------|--------------------|----------|
| Endpoint A | Endpoint B | Travel Time (s) | Travel Speed (mph) | Link LOS | Travel Time (s) | Travel Speed (mph) | Link LOS |
| Quantrell Ave | N Armistead St | 32.8 | 21.2 | C | 28.5 | 24.4 | B |
| N Armistead St | N Morgan St | 39.7 | 17.8 | D | 26.8 | 26.3 | B |
| N Morgan St | Old Sanger Ave | 25.9 | 25.2 | B | 39.8 | 16.4 | D |
| Old Sanger Ave | Reloc Sanger Ave | 21.4 | 12.6 | E | 14.7 | 18.4 | C |
| Reloc Sanger Ave | Roanoke Ave | 17.4 | 20.8 | C | 22.4 | 16.2 | D |
| Roanoke Ave | Reading Ave | 25.7 | 24.6 | B | 30.7 | 20.6 | C |
| Reading Ave | Rayburn Ave | 20.4 | 23.8 | C | 22.0 | 22.1 | C |
| Rayburn Ave | Highview Lane | 24.1 | 20.3 | C | 22.2 | 22.1 | C |
| Highview Lane | Mark Center Dr | 33.9 | 16.0 | D | 24.6 | 22.1 | C |
| Mark Center Dr | Seminary Rd | 63.4 | 8.2 | F | 22.3 | 23.3 | C |
| Seminary Rd | Fillmore Ave | 38.7 | 24.3 | B | 65.4 | 14.4 | D |
| Fillmore Ave | W Braddock Rd | 53.9 | 14.2 | D | 38.8 | 19.8 | C |
| W Braddock Rd | King St | 153.2 | 6.4 | F | 52.2 | 18.8 | C |
| Seminary Road | | | | | | | |
| Seminary Road | | Eastbound | | | Westbound | | |
| Endpoint A | Endpoint B | Travel Time (s) | Travel Speed (mph) | Link LOS | Travel Time (s) | Travel Speed (mph) | Link LOS |
| Dawes Ave | Echols Ave | 35.8 | 19.0 | C | 29.6 | 22.9 | C |
| Echols Ave | Beauregard St | 66.0 | 12.5 | E | 41.4 | 20.0 | C |
| Beauregard St | Mark Center Dr | 34.0 | 13.9 | E | 37.2 | 12.7 | E |
| Library Lane | N Pickett St | 34.5 | 6.3 | F | 9.2 | 23.5 | C |
| N Pickett St | N Jordan St | 25.6 | 19.8 | C | 68.0 | 7.5 | F |

Table 42: 2035 With Development PM Peak Hour Roadway Link Levels of Service (HCM Method)

| Beauregard Street | | Northbound | | | Southbound | | |
|--------------------------|------------------|-----------------|--------------------|----------|-----------------|--------------------|----------|
| Endpoint A | Endpoint B | Travel Time (s) | Travel Speed (mph) | Link LOS | Travel Time (s) | Travel Speed (mph) | Link LOS |
| Quantrell Ave | N Armistead St | 29.9 | 23.3 | C | 26.1 | 26.6 | B |
| N Armistead St | N Morgan St | 30.9 | 22.8 | C | 26.4 | 26.7 | B |
| N Morgan St | Old Sanger Ave | 32.7 | 20.0 | C | 37.5 | 17.4 | D |
| Old Sanger Ave | Reloc Sanger Ave | 29.0 | 9.3 | F | 19.3 | 14.0 | D |
| Reloc Sanger Ave | Roanoke Ave | 16.4 | 22.1 | C | 23.8 | 15.2 | D |
| Roanoke Ave | Reading Ave | 23.6 | 26.8 | B | 33.6 | 18.8 | C |
| Reading Ave | Rayburn Ave | 20.7 | 23.5 | C | 23.1 | 21.0 | C |
| Rayburn Ave | Highview Lane | 19.9 | 24.6 | B | 21.3 | 23.0 | C |
| Highview Lane | Mark Center Dr | 31.8 | 17.1 | D | 23.1 | 23.5 | C |
| Mark Center Dr | Seminary Rd | 57.9 | 9.0 | F | 37.9 | 13.7 | E |
| Seminary Rd | Fillmore Ave | 44.2 | 21.2 | C | 73.5 | 12.8 | E |
| Fillmore Ave | W Braddock Rd | 58.4 | 13.1 | E | 33.1 | 23.2 | C |
| W Braddock Rd | King St | 90.6 | 10.8 | E | 39.1 | 25.1 | B |
| Seminary Road | | | | | | | |
| Seminary Road | | Eastbound | | | Westbound | | |
| Endpoint A | Endpoint B | Travel Time (s) | Travel Speed (mph) | Link LOS | Travel Time (s) | Travel Speed (mph) | Link LOS |
| Dawes Ave | Echols Ave | 42.9 | 15.8 | D | 31.7 | 21.4 | C |
| Echols Ave | Beauregard St | 36.9 | 22.4 | C | 46.4 | 17.8 | D |
| Beauregard St | Mark Center Dr | 57.3 | 8.2 | F | 42.3 | 11.2 | E |
| Library Lane | N Pickett St | 35.0 | 6.2 | F | 9.2 | 23.5 | C |
| N Pickett St | N Jordan St | 21.1 | 24.0 | B | 28.1 | 18.1 | C |

VII. Conclusions

The findings of this traffic impact statement indicate that build-out of the proposed redevelopment in 2035, with the roadway network improvements accompanying the new development, would result in traffic operations similar to the 2035 Without Development (i.e., Baseline) conditions. With the new development and roadway improvements, there would be fewer intersections with individual approaches operating at level of service (LOS) F during one or both peak hours, compared to the 2035 Baseline conditions. Furthermore, none of the intersections would operate at LOS F overall, compared to three intersections operating at LOS F overall under the 2035 Baseline conditions.

The intersections that would operate at an overall LOS F under the 2035 Baseline conditions are as follows:

1. Beauregard Street at N. Morgan Street
2. Beauregard Street at Sanger Avenue
3. Beauregard Street at Seminary Road

Traffic operations under the growth associated with the partial build-out of the proposed redevelopment by Year 2020 would also be acceptable, with no intersections operating at an overall LOS F during the peak hours (although one location – Beauregard Street at Sanger Avenue – would have one approach operating at LOS F).

Although three (3) intersections would have individual approaches operating at LOS F during the peak hours under the Year 2035 With Development scenario, none of the intersections would operate at an overall LOS F. With projected traffic conditions under this scenario expected to be better than the conditions under the 2035 Baseline scenario, no additional traffic impact mitigation improvements are being recommended beyond the 2035 With Development improvements described in this report.

Figure 35 shows a series of cut lines across significant roadways that were evaluated for this study, with the projected daily traffic volumes and peak hour arterial levels of service at those locations. The changes in volumes associated with each future year development scenario show the impact of expanded transit service, alternate parallel routes, and trip reductions due to the prevalence of mixed-use development proposed for each of the traffic analysis zones (TAZs) within the study area. The arterial level of service results do not exhibit any obvious trends. However, the levels of service remain similar between the different development scenarios, which can be attributed to the effects of the recommended roadway improvements associated with the 2020 With Interim Development and 2035 With Development scenarios.

Figure 35: Projected Daily Volumes and Arterial LOS, by Development Scenario

