

# Southern Virginia Mega Site at Berry Hill Transportation Update

Connector Road, Vandola Drive, and Vandola Church Road

West Piedmont Planning District Commission and Danville Metropolitan Planning Organization

June 2018

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# SoVa Mega Site at Berry Hill – Transportation Study Update

FINAL REPORT

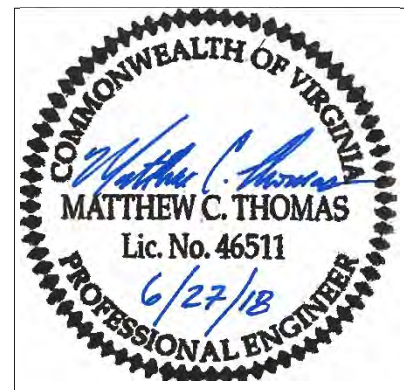
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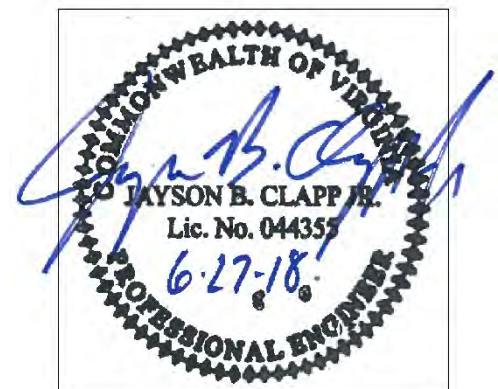


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# Executive Summary

Dewberry Engineers Inc. (Dewberry) in association with Ramey Kemp & Associates, Inc. (RKA) has prepared this Transportation Update to present the traffic impacts associated with the SoVa Mega Site at Berry Hill (Mega Site) located in Pittsylvania County, Virginia. This update has been prepared to expand the previous transportation plan prepared in 2009. This plan update will use the Connector Road as the preferred option and will not re-evaluate the construction of a new interchange off of Berry Hill Road. The intent of the transportation plan update is to develop logical phasing and cost estimates for the Connector Road for use in seeking funding. Below is summary of the results of this plan update and represent the roadway network required to support the Mega Site at 2,500 (Year 2022), 5,000 (Year 2032), and 11,500 (Year 2047) employees respectively. Further discussion on these items can be found within the update narrative or in Section 7 – Recommendations and Observations.

## Existing Road Network

1. The existing roadway network has sufficient capacity and an acceptable level of service for the base year 2017.
2. The existing road network for years 2022, 2032, and 2047 future background traffic is estimated to have sufficient capacity with an acceptable level of service.

## Oak Hill Road

1. Oak Hill Road (SR 862) and Berry Hill Road (US 311) should be improved to a VDOT Standard Rural Collector (GS-3) in the early phases of the Mega Site to increase the safety for the motoring public traveling in the vicinity of the development.
2. Industrial traffic should be limited along Oak Hill Road (SR 862) due to the characteristics of the existing road. Below are options to deter traffic from Oak Hill Road (SR 862).
  - o Designate Long Circle as prohibited to through truck traffic.
  - o Do not implement intersection improvements at Long Circle and Oak Hill Road.
  - o Install “WAY” finding signs along Martinsville Highway to direct industrial traffic to the Mega Site via Route 58 bypass and the Connector Road.

## Vandola Church Road and Vandola Drive

1. Vandola Church Road (SR 872) and Vandola Drive (SR 870) should be improved to a VDOT Standard Rural Collector (GS-3) upon construction of the Connector Road to increase the safety for the motoring public traveling in the vicinity of the development.

## Main Access

1. The Connector Road between the Oak Ridge Farms Road and Berry Hill Road will be the main access to the Mega Site.
2. Berry Hill Road between the new Connector Road and Oak Hill Road will require significant improvements.
3. Traffic impacts have been developed based on the build out of the Mega Site for employee levels 2,500 (Partial Build Year 2022), 5,000 (Partial Build Year 2032), and 11,500 (Full Build Year 2047). Associated improvements for each build have been included with each section.



## Connector Road

1. Three options for the Connector Road are presented in the following report. For each option, the eastern portion of the route is anticipated to remain the same due to property impacts, physical constraints and connection to the existing Oak Ridge Farms Road and Interchange. From there, the options differentiate based on tie in location along Berry Hill Road (US 311). Option 1 includes the shortest amount of roadway on new alignment, but includes the most reconstruction of Berry Hill Road (US 311). Option 3 has the longest amount of new roadway with the least amount of reconstruction of Berry Hill Road.
2. Environmental impacts at this time are anticipated to be limited to stream and wetlands crossings and time of year restrictions for construction.
  - o Further noise analysis will be needed as part of the NEPA study to be performed in near future.

## Other Recommendations and Observations

1. As other developments are proposed within the vicinity of the Mega Site, further evaluation should be performed to identify the capacity impacts of the proposed road network and the direct impact to the future development potential of the Mega Site.
2. The existing interchange of Oak Ridge Farm Road and the Danville Bypass (SR 58 Bypass) should be monitored and evaluated with each development proposal for the Mega Site or any adjacent development.
3. Site entrances to each development within the Mega Site should be located in accordance with the latest edition of the VDOT Access Management Guidelines.
4. The use of internal road networks should be encouraged to distribute traffic evenly across several points of access to each development within the Mega Site. The internal road network should be constructed in accordance with VDOT's Secondary Street Acceptance Requirements.
5. Future signalization has been proposed to increase the LOS at intersections exhibiting poor LOS as stop control intersections. However, it should be noted that a signal should not be installed until warranted in accordance with the latest edition of the Manual on Uniform Traffic Control Devices.
6. The proposed Mega Site will not be a significant generator for pedestrian or bicycle trips internally or externally of the Mega Site. The 2018 West Piedmont Regional Bicycle Plan identified a route that borders the Mega Site as part of the Beaches to Bluegrass Priority Corridor. The parts of this plan that overlap the study area of this plan are:
  - o Oak Hill Road between Huntington Trail and Ed Hardy Road.
  - o Berry Hill Road between Loomfixer Lake Road and Bachelor Farm Road
  - o Oak Ridge Farms Road between the Connector Road and Vandola Church Road
  - o Vandola Church Road between Oak Ridge Farms Road and Vandola Road
  - o Vandola Road between Vandola Church Road and Riverside Drive (Route 58)

Bicycle accommodations are included in the opinion of costs provided in Section 6.4 as a separate line item to be considered in review of all options of the Connector Road. These accommodations and estimates are based on the assumptions that roadways in this study that overlap the Beaches to Bluegrass Route receive "Share the Road" signage. The proposed shoulders along the Connector Road are proposed to be 8 feet, which are adequate to accommodate bicyclists. Only the signage is proposed.

7. Opportunities exist within the Mega Site to strategically locate transit amenities to support public transportation such as bus service from the City of Danville.
8. Upon acceptance of this study, the local planning authorities should incorporate the preferred road network into the County' comprehensive and long range transportation plans.

# SoVa Mega Site at Berry Hill – Transportation Study Update

## 1 INTRODUCTION

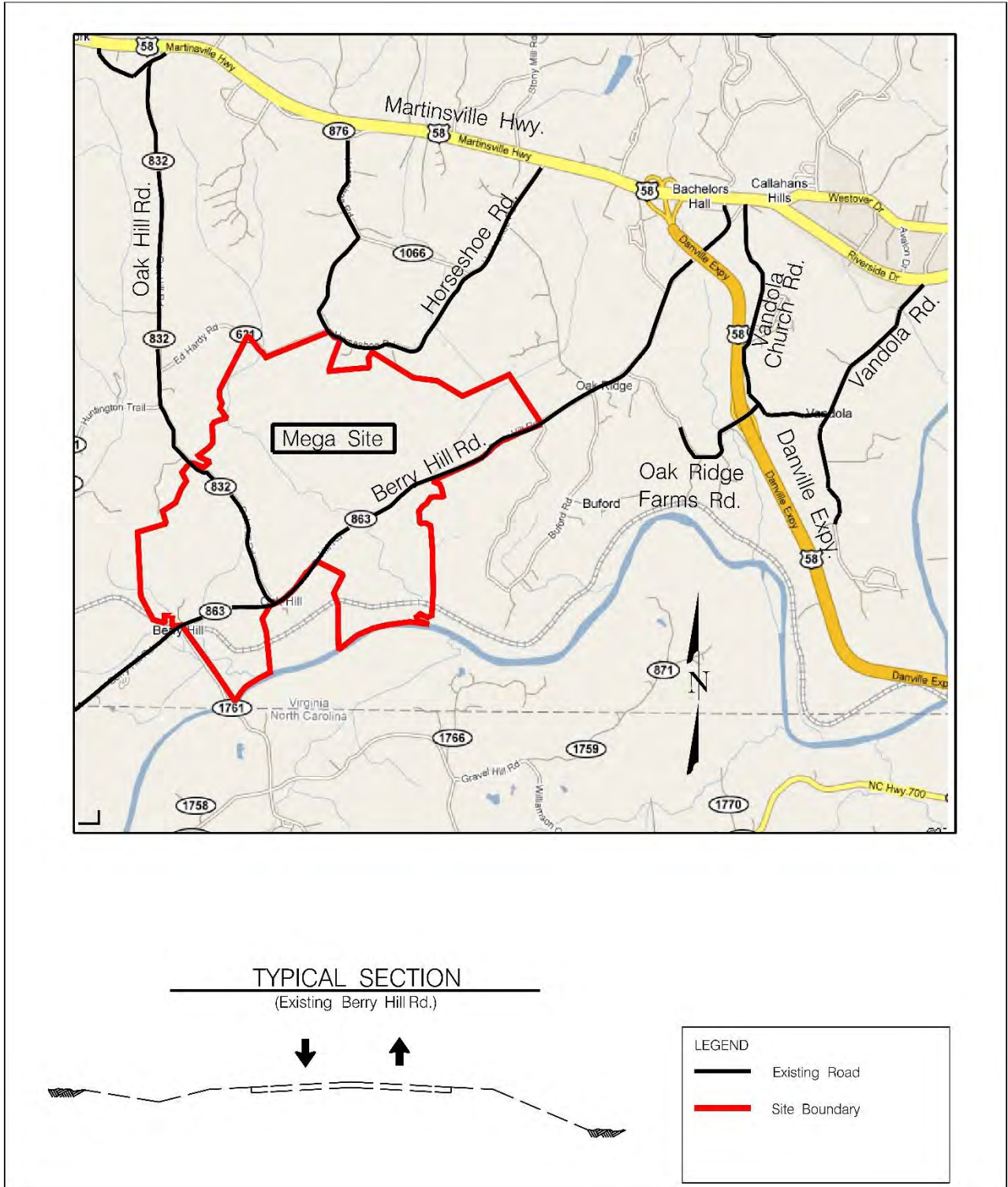
In 2009, Dewberry Engineers Inc. (Dewberry) prepared a transportation study to identify future road networks in support of the SoVa Mega Site at Berry Hill (Mega Site) located in Pittsylvania County, Virginia. This update has been prepared to update selected elements of the previous transportation plan, with an emphasis on the Connector Road. The Mega Site is being developed by the Danville-Pittsylvania Regional Industrial Facility Authority (RIFA), a political subdivision of the Commonwealth of Virginia, and is located on a 3,528 ± acre site along Berry Hill Road (US 311) as illustrated in **Figure 1**. Dewberry has prepared a land use master plan for the Mega Site depicted in **Figure 2**. The Mega Site can be developed into 13 parcels in sizes ranging from 100 to over 1,000 acres each. The first phase of grading providing 168 developed acres (including stormwater management) on Lot 4 is complete. Portions of water and sanitary sewer infrastructure have been installed to support development of the Mega Site. Additional utility infrastructure is currently under design or in construction.

This transportation study update includes several assumptions to address unknown parameters such as 1) the timing of the development as it relates to the full build-out year and the rate of development, 2) the type of industry to be developed, and 3) the number of expected employees. These assumptions with supporting data are included in the discussion of this study to justify the estimated generated trips associated with the Mega Site. Generally, in terms of the timing, the study assumes a full build-out year of 2047 (30<sup>th</sup> year) in comparison to the base year of 2017. Interim build-out phases were assumed to take place in the 5<sup>th</sup> year (or 2,500 employees) and the 15<sup>th</sup> year (or 5,000 employees). These assumptions were put in place so that background traffic could be adequately projected and accounted for when evaluating the roadway networks.

The purpose of this transportation study is to analyze and review the impacts of the Mega Site development on the following roadway segments and intersections:

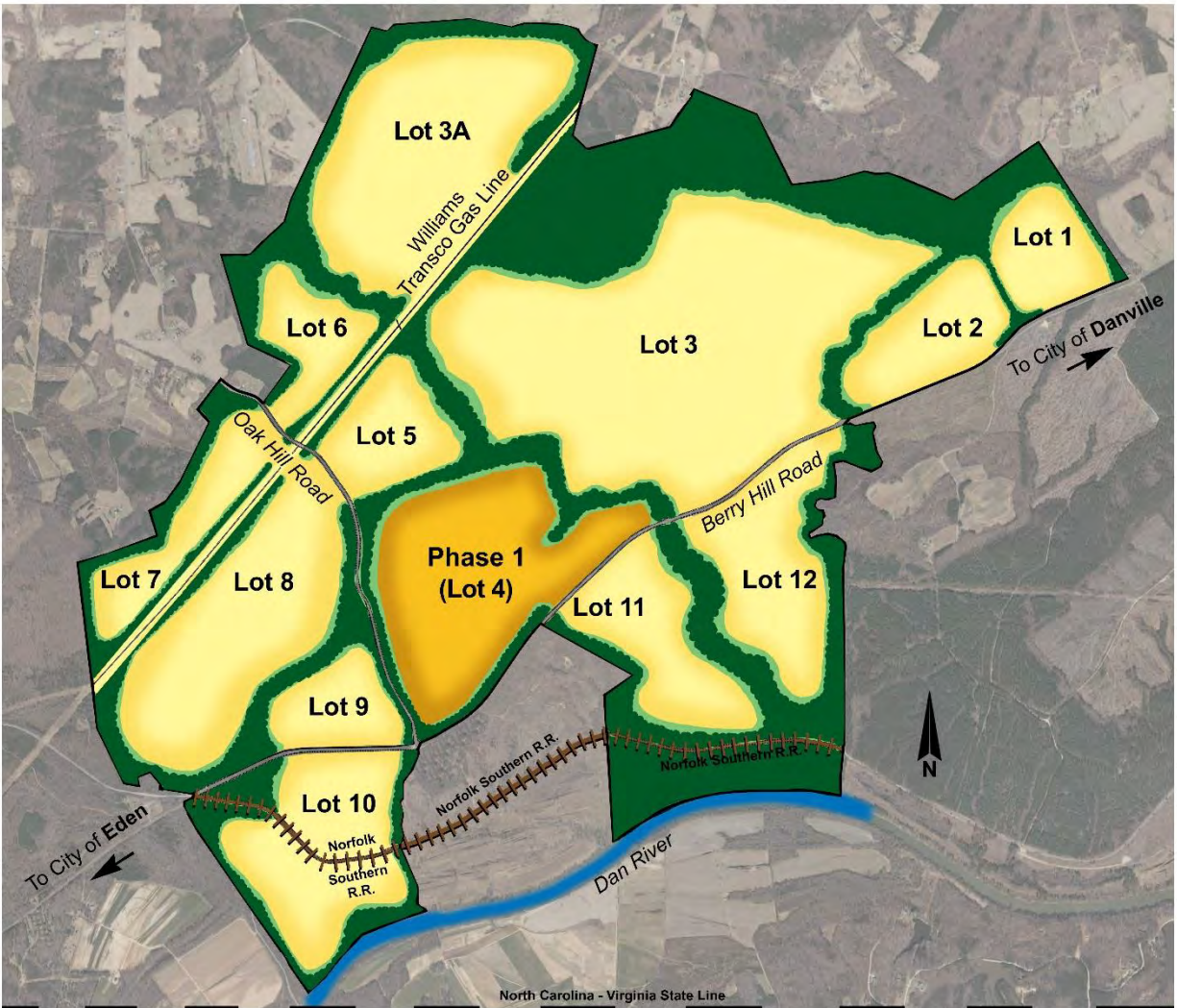
- Martinsville Highway (SR 58)
- Danville Expressway (SR 58 Bypass)
- Berry Hill Road (US 311)
- Oak Hill Road (SR 862)
- Oak Ridge Farms Road
- Vandola Church Road (SR 872)
- Vandola Drive (SR 870)
- Long Circle (West) & Martinsville Highway
- Berry Hill Road & Martinsville Highway
- Danville Expressway & Martinsville Highway
- Danville Expressway & Oak Ridge Farms Road
- Oak Ridge Farm Road & Vandola Church Road
- Vandola Church Road & Vandola Drive

**Figure 1**  
Site Location





**Figure 2**  
Master Plan



To determine the preferred supporting roadway network and intersections, the following tasks have been incorporated into this study.

- Provided an inventory of the existing roadway network
- Estimated the current level of service (LOS) given the existing roadway network.
- Forecasted the existing background traffic to years 2022 (5<sup>th</sup> year), 2032 (15<sup>th</sup> year), and 2047 (30<sup>th</sup> year) utilizing a compounded growth of 1%.
- Calculated future LOS based on the forecasted background traffic for years 2022, 2032, and 2047 utilizing the existing road network.
- Developed estimated trip generation associated with the Mega Site for the following employee levels:
  - 2,500 employees (year 2022)
  - 5,000 employees (year 2032), and
  - 11,500 employees (year 2047).
- Determined an estimated peak hourly volume for each employee level and associated year.
- Estimated the trip distribution and trip assignments.
- Developed alternative roadway networks.
- Calculated the future LOS based on forecasted background traffic with the addition of trips generated from the Mega Site utilizing the existing roadway network.
- Compared roadway network alternatives to identify the preferred network.
- Make final recommendations and observations.

## 2 EXISTING NETWORK

### 2.1 Existing Roadways

#### 2.1.1 Existing Conditions

A description of each existing roadway within the study area is listed below along with their respective AADTs and peak hourly volumes listed in **Table I**.

**Martinsville Highway (SR 58)** is a primary highway between Danville and Martinsville. The posted speed limit along this road varies between 45 and 60 miles per hour (MPH). The road typical section includes four (4) lanes (two each direction) with lane and shoulder widths of 11 feet and 4 feet respectively. The horizontal alignment is primarily straight with very subtle horizontal curves. The vertical alignment consists of a rolling terrain while following the existing ground to a certain degree.

**Danville Expressway (SR 58 Bypass)** is a limited access highway that bypasses Danville, south of the city. The posted speed limit along this road is 65 miles per hour (MPH). The road typical section includes four (4) lanes (two each direction) with a lane width of 12 feet, 4 foot inside shoulders and 10 foot outside shoulders.

**Berry Hill Road (US 311)** is a two-lane rural road with a posted speed limit of 55 miles per hour (MPH) or 45 miles per hour (MPH) for trucks. This road serves as a north-south route for local traffic within Pittsylvania County. The road typical section includes 10 foot lanes with a shoulder width of 2 feet. The horizontal alignment follows the natural terrain with a rolling vertical alignment with few passing zones.

**Oak Hill Road (SR 862)** is a two-lane rural road with no pavement markings and an assumed speed limit of 55 miles per hour. This road serves as a north-south route for local traffic within Pittsylvania County. The road typical section includes 10 foot lanes with limited or no shoulder. The horizontal and vertical alignments follow the natural terrain.

**Oak Ridge Farms Road** is a two-lane rural road with no pavement markings and a posted speed limit of 25 miles per hour. The road typical section varies around the interchange with the Danville Expressway. The typical section around the interchange includes two (2) 12 foot lanes with pavement markings. The typical section for the rest of the road includes two (2) 10 foot lanes with no pavement markings.

**Vandola Church Road (SR 872)** is a two-lane rural road with no pavement markings and an assumed speed limit of 45 miles per hour. The typical section for the road includes a paved width of 18 feet with limited or no shoulder.

**Vandola Drive (SR 870)** is a two-lane rural road with an assumed speed limit of 45 miles per hour. This road serves as a north-south route for local traffic within Pittsylvania County and the City of Danville. This route is a popular route to access the Danville Expressway from the City of Danville. The typical section includes two (2) 12 foot lanes with centerline pavement markings and graded shoulders.

**Table I**  
Existing Year 2017 AADT/Peak Hourly Volume

Roadway Segment	AADT	Peak Hourly Volume
Martinsville Highway (A)	10,285	1,050
Martinsville Highway (B)	10,148	1,036
Martinsville Highway (C)	10,734	1,055
Martinsville Highway (D)	12,139	1,193
Danville Expressway	12,781	1,072
Berry Hill Road (A)	2,178	190
Berry Hill Road (B)	2,198	195
Berry Hill Road (C)	2,917	295
Oak Hill Road	161	18
Oak Ridge Farms Road	495	48
Vandola Church Road (A)	685	66
Vandola Church Road (B)	306	30
Vandola Drive	832	80



### 2.1.2 Existing Roadway Level of Service

Analyses were performed for the roadway segments for both two-lane and four-lane roadways to estimate the Levels of service (LOS). The definitions for each LOS are presented in the appendix for two lane and multi-lane roadway segments. Typically LOS A through C is considered an acceptable LOS for rural areas, whereas LOS D through F is considered unacceptable.

The LOS for a two-lane road is estimated by percent time-spent-following (PTSF), which is based on road terrain, geometrics, and traffic conditions of the roadway. As defined in the 2000 Highway Capacity Manual (HCM2000), PTSF is the percentage of time that vehicles must travel in a platoon due to a slower vehicle. The LOS for a multi-lane highway is estimated by density. As defined in the HCM2000, density is the number of passenger cars per hour per lane. The range of PTSF and density as it relates to LOS is presented in the Appendix of this report. The results of the analysis are summarized in **Table II** and **Table III**.

**Table II**  
Existing Year 2017 Two-Lane Roadway LOS

Roadway Segment	EB or NB		WB or SB	
	PTSF (%) AM / PM	LOS AM / PM	PTSF (%) AM / PM	LOS AM / PM
Berry Hill Road (A)	44.5 / 41.2	B / B	33.8 / 46.8	A / B
Berry Hill Road (B)	45.3 / 41.4	B / B	32.8 / 46.9	A / B
Berry Hill Road (C)	53.8 / 47.0	B / B	38.7 / 54.4	A / B
Oak Hill Road	16.6 / 24.4	A / A	31.4 / 24.4	A / A
Oak Ridge Farms Road	40.4 / 22.5	B / A	5.2 / 31.7	A / A
Vandola Church Road (A)	24.2 / 31.6	A / A	33.0 / 27.7	A / A
Vandola Church Road (B)	15.8 / 33.5	A / A	32.8 / 16.3	A / A
Vandola Drive	41.1 / 22.6	B / A	14.5 / 36.8	A / A

**Table III**  
Existing Year 2017 Multi-Lane Roadway LOS

Roadway Segment	EB or NB		WB or SB	
	Density (pc/mi/ln) AM / PM	LOS AM / PM	Density (pc/mi/ln) AM / PM	LOS AM / PM
Martinsville Highway (A)	6.1 / 5.4	A / A	4.7 / 6.0	A / A
Martinsville Highway (B)	6.6 / 4.7	A / A	3.7 / 6.7	A / A
Martinsville Highway (C)	6.8 / 4.7	A / A	3.8 / 7.4	A / A
Martinsville Highway (D)	7.7 / 5.3	A / A	3.8 / 8.8	A / A
Danville Expressway	4.4 / 3.6	A / A	4.4 / 4.1	A / A

As can be seen in the above tables, the existing traffic conditions are acceptable with no indication of any capacity problems.

## 2.2 Existing Intersections

### 2.2.1 Existing Conditions

A description of the existing intersections reviewed within the study area is listed below along with their existing geometry and pavement markings.

**Berry Hill Road and Oak Hill Road** is an unsignalized T intersection with Berry Hill Road serving as the main thru lanes. There is one lane in each direction on Berry Hill Road separated by a double yellow centerline. There are no turn lanes onto or from Oak Hill Road and Oak Hill Road has no pavement markings.

**Long Circle (West) and Martinsville Highway** is an unsignalized T intersection with Martinsville Highway serving as the main thru lanes. Martinsville Highway is a four lane divided highway with a Left Turn Lane from WB and a Right Turn Lane from EB onto Long Circle. Long Circle has no pavement markings.

**Berry Hill Road and Martinsville Highway** is a signalized four way intersection with Martinsville Highway serving as the main thru lanes. Martinsville highway is a four lane divided highway with Left and Right Turn Lanes onto the minor approaches. Berry Hill Road approaches from the south as a two lane facility with a double yellow centerline. Meadowview Dr approaches the intersection from the North as a two lane roadway with a double yellow centerline. Construction of left and right turn lanes by VDOT on Berry Hill Road at this intersection is anticipated to be completed by November 2020.

**Danville Expressway and Martinsville Highway** is a rural interchange with loop ramps connecting traffic on Danville Expressway to Westbound traffic on Martinsville Highway. The Ramps serving eastbound traffic on Martinsville Highway have acceleration/deceleration lanes and no stop conditions.

**Danville Expressway and Oak Ridge Farms Road** is a rural diamond interchange with the Danville Expressway providing a bypass to the City of Danville. Stop controlled ramps are provided at the ramp termini at Oak Ridge Farms Road.

**Oak Ridge Farm Road and Vandola Church Road** is an unsignalized T intersection with Vandola Church Road serving as the main thru lanes. There is one lane in each direction on both Oak Ridge Farms Road and Vandola Church Road. Oak Ridge Farms has a double yellow centerline between directions of travel while Oak Ridge Farms is unmarked. There are no turn lanes onto or from either roadway.

**Vandola Church Road and Vandola Drive** is an unsignalized T intersection with Vandola Drive serving as the main thru lanes. There is one lane in each direction on both Vandola Church Road and Vandola Drive. Vandola Church Road does not have any pavement markings while Vandola has a double yellow centerline dividing the direction of travel.

### 2.2.2 Existing Traffic Volumes and Intersection Geometry

To determine the peak hourly volumes of each intersection within the study area, manual turning movement counts for the AM and PM peak hour were conducted by Quality Counts, which is included in the Appendix. A review of the traffic counts indicate the AM and PM peak hours occur differently per intersection as summarized below in **Table IV**.

**Table IV**

Existing Year 2017 Estimated AM and PM Peak Period

Intersection	AM Peak Hours	PM Peak Hours
Berry Hill Road & Oak Hill Road	7:00AM to 8:00AM	4:45PM to 5:45PM
Long Circle (West) & Martinsville Highway	7:15AM to 8:15AM	5:00PM to 6:00PM
Berry Hill Road & Martinsville Highway	7:15AM to 8:15AM	5:00PM to 6:00PM
Danville Expressway & Martinsville Highway	7:15AM to 8:15AM	5:00PM to 6:00PM
Danville Expressway & Oak Ridge Farms Road	7:15AM to 8:15AM	5:00PM to 6:00PM
Oak Ridge Farm Road & Vandola Church Road	7:15AM to 8:15AM	5:00PM to 6:00PM
Vandola Church Road & Vandola Drive	7:15AM to 8:15PM	5:00PM to 6:00PM

The existing intersection geometry and traffic control devices are presented in **Figure 3**; and the existing 2017 traffic volumes are presented in **Figure 4**. It should be noted that for the purpose of this analysis, the peak hour traffic at each intersection was assumed to occur simultaneously.

### 2.2.3 Existing Level of Service

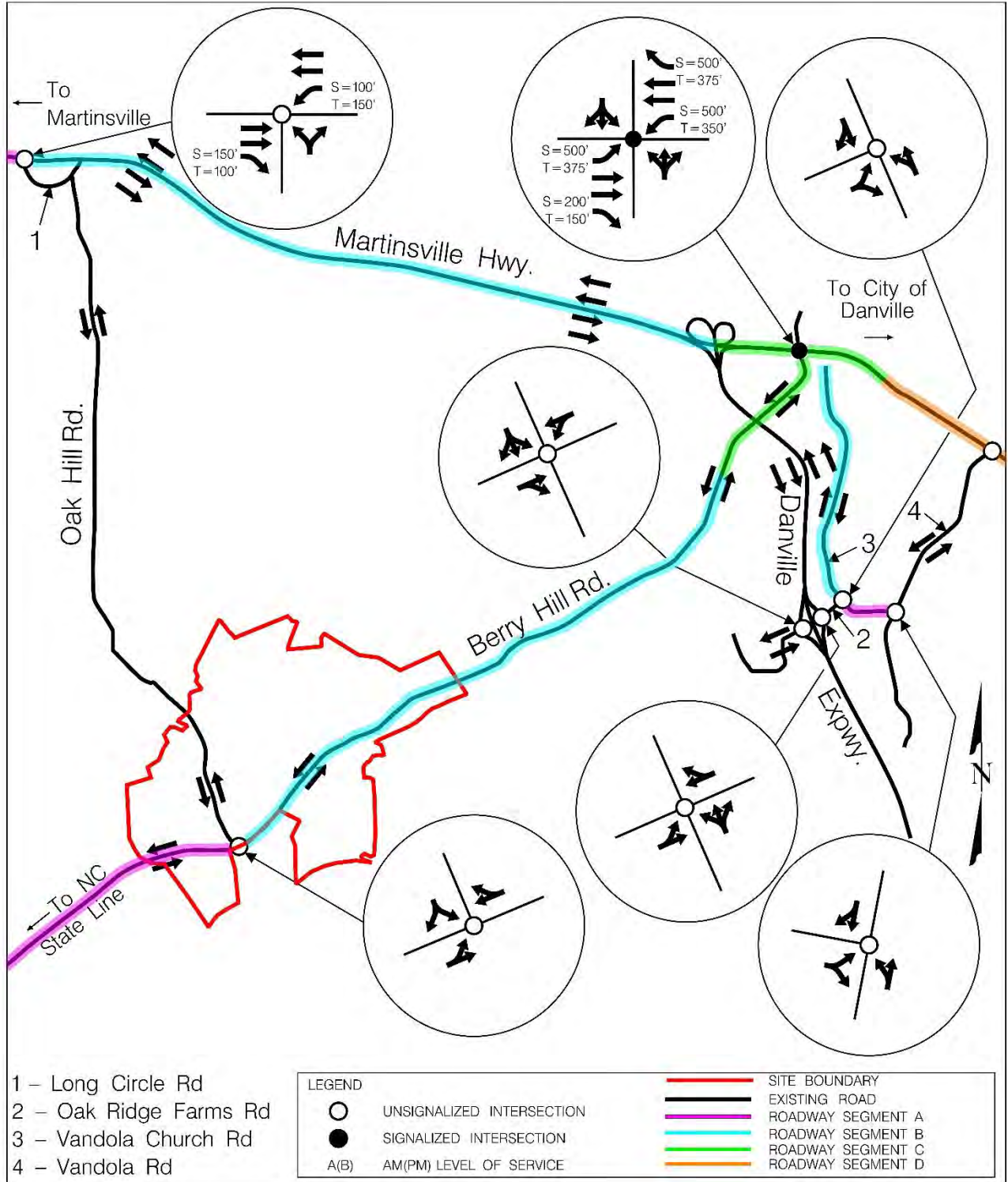
An analysis of intersection capacities was performed utilizing the methodologies as defined in the HCM2000. The measurement used to define the performance of an intersection is determined by the LOS. The definitions for each LOS are presented in the appendix for unsignalized and signalized intersections. The LOS for a signalized intersection is estimated by control delay per vehicle. As defined by the HCM2000, control delay is the portion of the total delay attributed to traffic signal operation. The LOS for a TWSC intersection is determined by the computed or measured control delay and is defined for each minor movement. The results of this analysis can be seen in **Figure 5** and summarized in **Table V** below and the range of control delay as it relates to LOS is presented in the Appendix of this study.

**Table V**  
Existing Year 2017 Intersection LOS

Intersection	Type of Control	Movement Approach	AM Peak Hours		PM Peak Hours	
			Level of Service	Delay (sec/veh)	Level of Service	Delay (sec/veh)
Berry Hill Rd & Oak Hill Rd	Unsignalized	EB (L)	A	7.4	A	7.4
		SB	A	9.4	A	9.6
Long Circle Rd & Martinsville Hwy	Unsignalized	WB (L)	A	9.8	A	9.2
		NB	B	14.4	B	13.6
Berry Hill Rd & Martinsville Hwy	Signalized	EB (L)	B	12.1	B	10.0
		EB (T)	C	21.5	B	18.3
		EB (R )	A	0.2	A	0.1
		WB (L)	B	12.6	B	10.7
		WB (T)	B	19.0	B	17.4
		WB (R )	A	0.2	A	0.1
		NB	B	16.2	B	15.3
		SB	C	23.8	C	22.3
		<b>Overall</b>	<b>B</b>	<b>18.6</b>	<b>B</b>	<b>15.8</b>
Danville Expwy SB Ramps & Oak Ridge Farms Rd	Unsignalized	WB (L)	A	7.3	A	7.4
		SB	A	9.4	A	8.6
Danville Expwy NB Ramps & Oak Ridge Farms Rd	Unsignalized	EB (L)	A	7.3	A	7.3
		NB	A	8.5	A	8.5
Oak Ridge Farm Rd & Vandola Church Rd	Unsignalized	WB (L)	A	7.4	A	7.3
		NB	A	8.6	A	8.7
Vandola Church Rd & Vandola Dr	Unsignalized	NB (L)	A	7.5	A	7.3
		EB	A	8.9	A	8.9

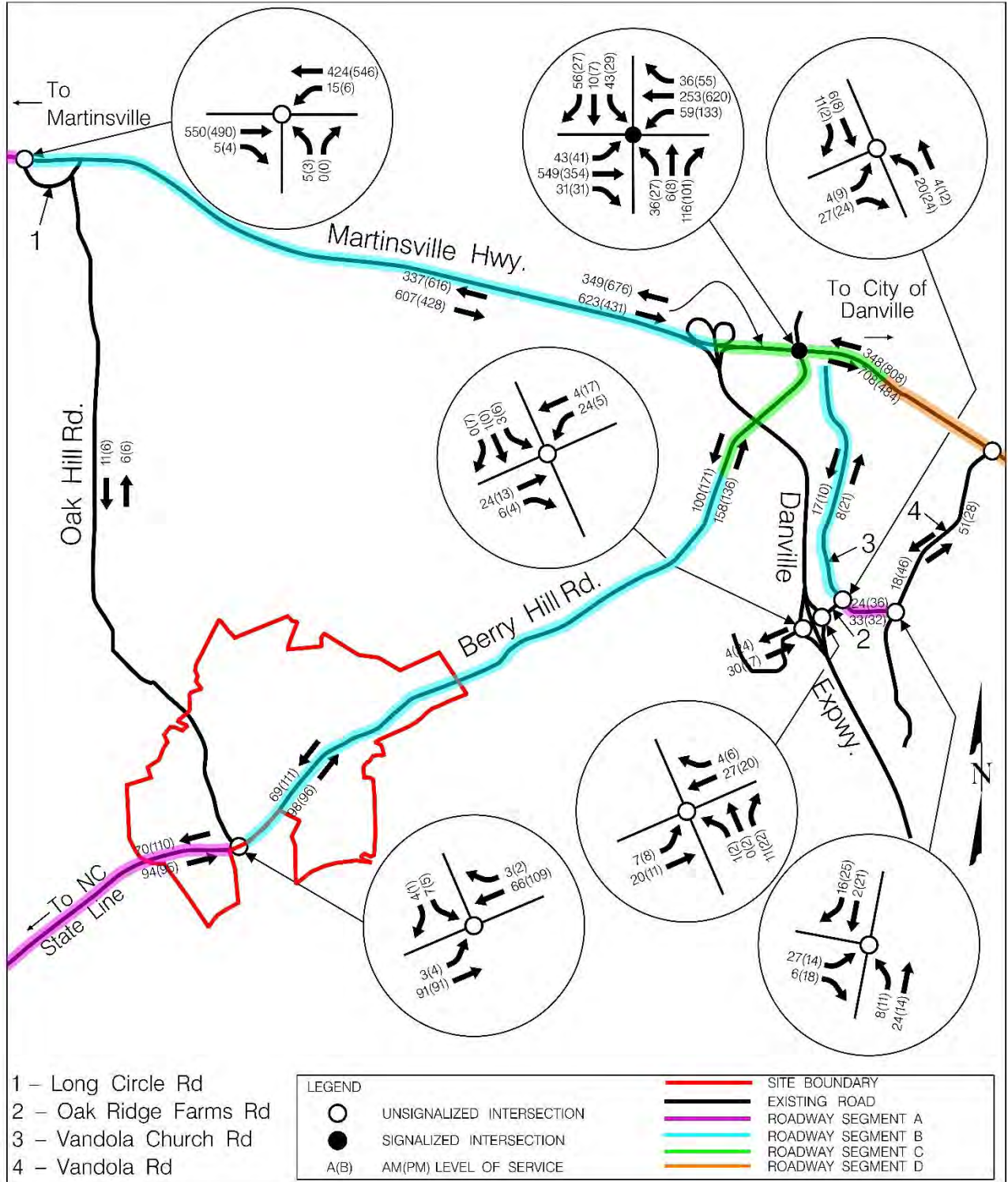
As can be seen in the above table, the existing traffic conditions are acceptable with no indication of any capacity problems.

**Figure 3**  
Existing 2017 Intersection Geometry

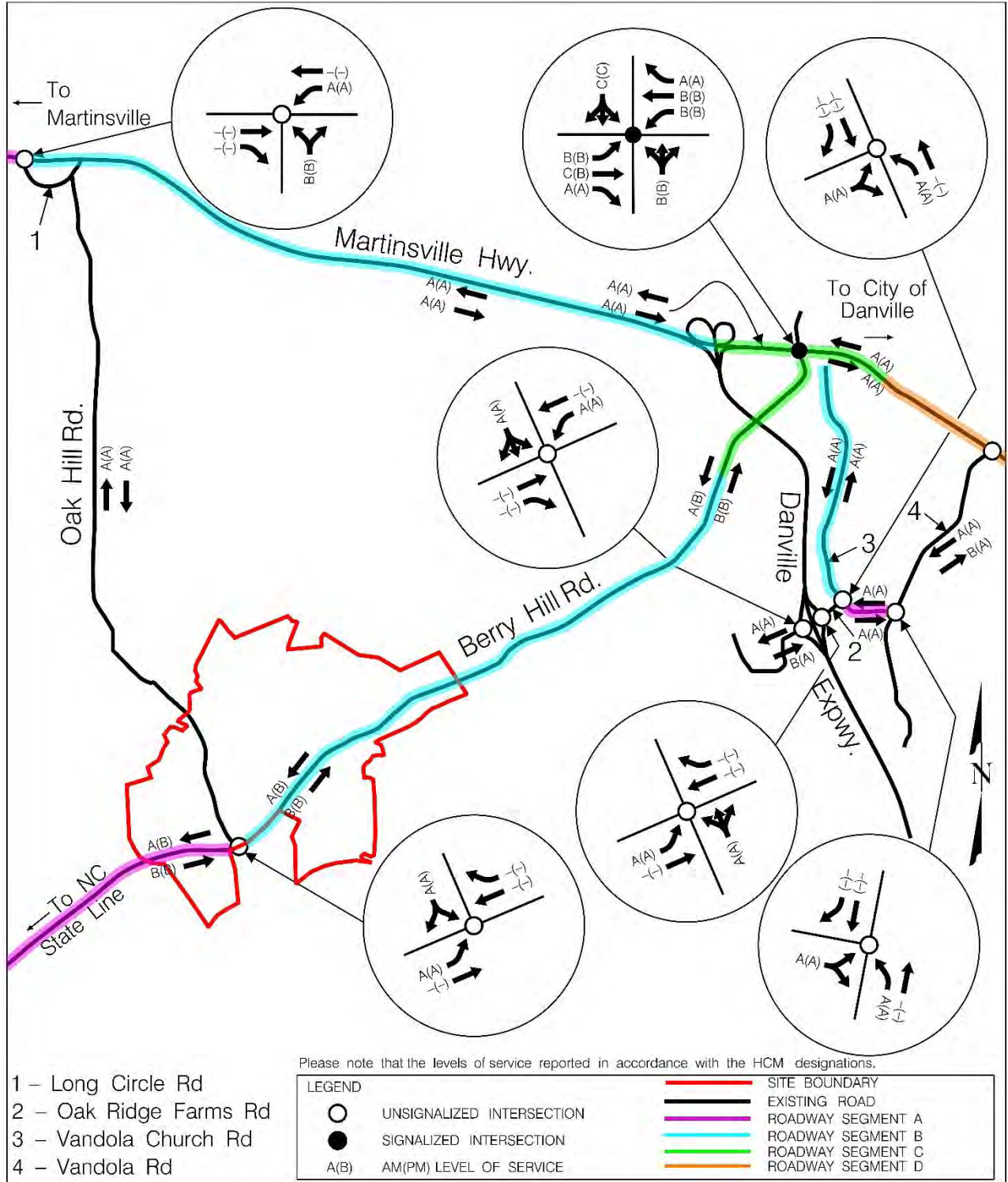




**Figure 4**  
Existing 2017 Traffic Volumes



**Figure 5**  
Existing 2017 Levels of Service





## 2.3 Existing Crash Data

As part of the review of the existing conditions of the road network surrounding the Mega Site site, the Danville MPO conducted a Crash Analysis of nine intersections and interchanges. Most of the study locations are within Pittsylvania County, while the intersection of Riverside Drive and Vandola Drive is located within the Danville City Limits. Crashes were analyzed for a three-year period between 2014 and 2016. No crashes involving fatalities occurred within the timeframe of the analysis, therefore only Property Damage and Injury crashes were reviewed. An overall summary of the conditions can be seen below, and the full analysis performed by the MPO can be found in the Appendix of this report.

- **Danville Expressway (U.S. Route 58 Bypass) and Oak Ridge Farms Road (SR 1260).** Three total collisions occurred at this interchange, all on the expressway itself. Of the three, only one involved multiple vehicles and it occurred just inside the influence zone of the northbound exit ramp.
- **Danville Expressway (U.S. Route 58 Bypass) and Martinsville Highway (U.S. Route 58).** A total of seven crashes took place in the vicinity of this interchange and were scattered throughout. Of the seven, it was noted that five were roadway departures, one was a head-on collision, and the last was classified as a non-collision.
- **Berry Hill Road (U.S. Route 311) and Oak Hill Road (SR 862).** Only one crash took place within the study time frame and it was noted as a rear-end collision just east of the intersection on Berry Hill Road.
- **Long Circle (SR 708) and Martinsville Highway (U.S. Route 58); west intersection.** Six total crashes took place at this intersection. Of the six, one was an angle crash, two were rear-end collisions, two were roadway departures, and one involved a deer strike.
- **Oak Ridge Farms Road (SR 1260) and Vandola Church Road (SR 872).** One crash occurred near this intersection during the review period. It was along Vandola Church Road and was noted as a non-collision.
- **Vandola Church Road (SR 872) and Vandola Drive (870).** No crashes were observed during the time frame of the analysis.
- **Berry Hill Road (U.S. Route 311) and Martinsville Highway (U.S. Route 58 Business).** A total of nine crashes occurred during the review period within 0.25-miles of the intersection. Six of the nine crashes occurred at the intersection, with four being angle crashes and two being rear-end collisions. Of the remaining three incidents, a collision involving a pedestrian occurred west of the intersection, a rear end crash occurred east of the intersection and a roadway departure occurred on Berry Hill Road south of the intersection.
- **Riverside Drive (U.S. Route 58 Business) and Vandola Drive (SR 870).** A total of seven crashes within 0.25-miles of this intersection during the period of analysis with four being directly at the intersection. Of the four, two were angle collisions, one was a roadway departure, and one was classified as “other.” The remaining three collisions, one of which was an angle collision, were clustered just west of the intersection near Avalon Drive.

After review of the crash data, no discernible pattern was noticed at any of the intersections. However three intersections stand out from the others when looking at the types of crashes, Riverside Drive at Vandola Drive, Berry Hill Road at Martinsville Highway, and Long Circle (West) at Martinsville Highway. Each of these involve angle crashes which typically indicate signal or geometry shortfalls within the intersection. Of important note is that the intersection of Long Circle (West) at Martinsville Highway is listed as a “Crash Hotspot” within the VTrans 2040 report. This indicates that this intersection will need to be reviewed for not only the traffic impacts based on the Mega Site expansion, but also for the intersection safety and signal warrants to address the crash rates.

### 3 FUTURE BACKGROUND TRAFFIC CONDITIONS

To estimate the future background LOS, the existing traffic was projected to the years 2022 (5<sup>th</sup> year), 2032 (15<sup>th</sup> year), and 2047 (30<sup>th</sup> year). These years correspond to the assumed development level for the Mega Site. Review of the Virginia Department of Transportation (VDOT) published Annual Average Daily Traffic (AADT) indicated that traffic estimates between the year 2010 and year 2016 revealed no to little growth in terms of traffic. Given the lack of historic traffic data supporting a consistent annual growth rate, population projections were consulted based on the Metropolitan Organization (MPO) studies. This also revealed a stagnant growth rate; therefore, a conservative compounded growth rate of 1 percent has been assumed for this study. **Figure 6**, **Figure 7**, and **Figure 8** display the future background traffic volumes for the years 2022, 2032, and 2047 respectively for each road segment and intersection within the study area.

As in determining the existing LOS, the future background LOS for a two-lane and a multi-lane road were determined by the *percent-time-spent-following (PTSF)* and *density* respectively. It should be noted that the existing truck percentages were used in this analysis. The results of this analysis are summarized in **Table VI**, **Table VII**, **Table VIII**, **Table IX**, **Table X**, and **Table XI** below and also in **Figure 9**, **Figure 10**, and **Figure 11**.

**Table VI**  
Future Year 2022 Two-Lane Roadway LOS

Roadway Segment	EB or NB		WB or SB	
	PTSF (%) AM / PM	LOS AM / PM	PTSF (%) AM / PM	LOS AM / PM
Berry Hill Road (A)	45.1 / 42.2	B / B	34.4 / 47.9	A / B
Berry Hill Road (B)	49.0 / 42.5	B / B	33.4 / 48.2	A / B
Berry Hill Road (C)	54.7 / 48.6	B / B	39.7 / 56.3	A / C
Oak Hill Road	16.6 / 24.4	A / A	31.4 / 24.4	A / A
Oak Ridge Farms Road	40.7 / 22.8	B / A	5.0 / 31.7	A / A
Vandola Church Road (A)	24.4 / 32.0	A / A	33.0 / 27.8	A / A
Vandola Church Road (B)	13.2 / 34.1	A / A	32.9 / 15.7	A / A
Vandola Drive	41.1 / 23.4	B / A	15.1 / 36.9	A / A

**Table VII**  
Future Year 2022 Multi-Lane Roadway LOS

Roadway Segment	EB or NB		WB or SB	
	Density (pc/mi/ln) AM / PM	LOS AM / PM	Density (pc/mi/ln) AM / PM	LOS AM / PM
Martinsville Highway (A)	6.4 / 5.7	A / A	4.9 / 6.3	A / A
Martinsville Highway (B)	7.0 / 4.9	A / A	3.9 / 7.1	A / A
Martinsville Highway (C)	7.1 / 4.9	A / A	4.0 / 7.7	A / A
Martinsville Highway (D)	8.1 / 5.5	A / A	4.0 / 9.3	A / A
Danville Expressway	4.6 / 3.8	A / A	4.6 / 4.3	A / A

**Table VIII**

## Future Year 2032 Two-Lane Roadway LOS

Roadway Segment	EB or NB		WB or SB	
	PTSF (%) AM / PM	LOS AM / PM	PTSF (%) AM / PM	LOS AM / PM
Berry Hill Road (A)	46.6 / 44.4	B / B	36.9 / 50.3	A / B
Berry Hill Road (B)	50.6 / 44.6	B / B	35.1 / 50.4	A / B
Berry Hill Road (C)	56.4 / 50.9	C / B	41.2 / 58.7	B / C
Oak Hill Road	14.7 / 24.6	A / A	32.4 / 24.6	A / A
Oak Ridge Farms Road	41.0 / 23.0	B / A	6.1 / 32.4	A / A
Vandola Church Road (A)	24.9 / 32.5	A / A	33.9 / 28.7	A / A
Vandola Church Road (B)	14.8 / 34.7	A / A	32.9 / 15.6	A / A
Vandola Drive	42.3 / 23.1	B / A	15.3 / 38.1	A / A

**Table IX**

## Future Year 2032 Multi-Lane Roadway LOS

Roadway Segment	EB or NB		WB or SB	
	Density (pc/mi/ln) AM / PM	LOS AM / PM	Density (pc/mi/ln) AM / PM	LOS AM / PM
Martinsville Highway (A)	7.0 / 6.3	A / A	5.4 / 6.9	A / A
Martinsville Highway (B)	7.7 / 5.4	A / A	4.3 / 7.8	A / A
Martinsville Highway (C)	8.0 / 6.2	A / A	4.4 / 8.5	A / A
Martinsville Highway (D)	9.0 / 6.1	A / A	4.4 / 10.2	A / A
Danville Expressway	5.2 / 4.4	A / A	5.1 / 4.7	A / A

**Table X**

## Future Year 2047 Two-Lane Roadway LOS

Roadway Segment	EB or NB		WB or SB	
	PTSF (%) AM / PM	LOS AM / PM	PTSF (%) AM / PM	LOS AM / PM
Berry Hill Road (A)	49.8 / 47.7	B / B	38.9 / 52.5	A / B
Berry Hill Road (B)	53.3 / 47.9	B / B	37.7 / 52.6	A / B
Berry Hill Road (C)	58.8 / 53.0	C / B	43.8 / 61.6	B / C
Oak Hill Road	18.4 / 24.9	A / A	31.0 / 23.4	A / A
Oak Ridge Farms Road	42.0 / 23.8	B / A	5.5 / 33.0	A / A
Vandola Church Road (A)	25.5 / 33.2	A / A	35.1 / 30.1	A / A
Vandola Church Road (B)	13.5 / 34.7	A / A	34.3 / 17.5	A / A
Vandola Drive	43.6 / 24.6	B / A	16.2 / 39.4	A / A

**Table XI**

## Future Year 2047 Multi-Lane Roadway LOS

Roadway Segment	EB or NB		WB or SB	
	Density (pc/mi/ln) AM / PM	LOS AM / PM	Density (pc/mi/ln) AM / PM	LOS AM / PM
Martinsville Highway (A)	8.2 / 7.3	A / A	6.3 / 8.1	A / A
Martinsville Highway (B)	8.9 / 6.3	A / A	4.9 / 9.1	A / A
Martinsville Highway (C)	9.2 / 6.3	A / A	5.1 / 9.9	A / A
Martinsville Highway (D)	10.4 / 7.1	A / A	5.1 / 11.9	A / B
Danville Expressway	5.9 / 4.8	A / A	5.9 / 5.5	A / A

In addition to the roadway capacity analysis, an intersection capacity analysis was performed utilizing the future background peak hour traffic volumes from **Figure 6**, **Figure 7**, and **Figure 8**. The results of the analyses are presented in **Table XII**, **Table XIII**, and **Table XIV** below.

**Table XII**  
Future Year 2022 Intersection LOS

Intersection	Type of Control	Movement Approach	AM Peak Hours		PM Peak Hours	
			Level of Service	Delay (sec/veh)	Level of Service	Delay (sec/veh)
Berry Hill Rd & Oak Hill Rd	Unsignalized	EB (L)	A	7.4	A	7.5
		SB	A	9.4	A	9.7
Long Circle Rd & Martinsville Hwy	Unsignalized	WB (L)	A	9.8	A	9.3
		NB	B	14.3	B	13.9
Berry Hill Rd & Martinsville Hwy	Signalized	EB (L)	B	10.4	A	8.3
		EB (T)	B	18.2	B	15.6
		EB (R )	A	0.1	A	0.1
		WB (L)	B	10.6	A	8.1
		WB (T)	B	16.8	B	14.0
		WB (R )	A	0.1	A	0.1
		NB (L)	C	31.5	C	29.4
		NB (LT)	C	31.5	C	29.4
		NB (R )	A	0.1	A	0.1
		SB	C	21.2	C	20.0
		<b>Overall</b>	<b>B</b>	<b>15.3</b>	<b>B</b>	<b>12.5</b>
Danville Expwy SB Ramps & Oak Ridge Farms Rd	Unsignalized	WB (L)	A	7.3	A	7.4
		SB	A	9.4	A	8.6
Danville Expwy NB Ramps & Oak Ridge Farms Rd	Unsignalized	EB (L)	A	7.3	A	7.3
		NB	A	8.5	A	8.5
Oak Ridge Farm Rd & Vandola Church Rd	Unsignalized	WB (L)	A	7.4	A	7.3
		NB	A	8.6	A	8.7
Vandola Church Rd & Vandola Dr	Unsignalized	NB (L)	A	7.5	A	7.3
		EB	A	8.9	A	8.9

**Table XIII**

## Future Year 2032 Intersection LOS

Intersection	Type of Control	Movement Approach	AM Peak Hours		PM Peak Hours	
			Level of Service	Delay (sec/veh)	Level of Service	Delay (sec/veh)
Berry Hill Rd & Oak Hill Rd	Unsignalized	EB (L)	A	7.4	A	7.5
		SB	A	9.4	A	9.9
Long Circle Rd & Martinsville Hwy	Unsignalized	WB (L)	B	10.1	A	9.6
		NB	C	15.2	B	14.7
Berry Hill Rd & Martinsville Hwy	Signalized	EB (L)	B	10.6	A	8.9
		EB (T)	B	18.6	B	16.9
		EB (R )	A	0.1	A	0.1
		WB (L)	B	10.8	A	9.1
		WB (T)	B	16.3	B	15.5
		WB (R )	A	0.1	A	0.1
		NB (L)	C	33.6	C	32.1
		NB (LT)	C	33.4	C	32.1
		NB (R )	A	0.1	A	0.1
		SB	C	23.1	C	22.4
		<b>Overall</b>	<b>B</b>	<b>15.7</b>	<b>B</b>	<b>13.8</b>
Danville Expwy SB Ramps & Oak Ridge Farms Rd	Unsignalized	WB (L)	A	7.4	A	7.4
		SB	A	9.5	A	8.6
Danville Expwy NB Ramps & Oak Ridge Farms Rd	Unsignalized	EB (L)	A	7.3	A	7.3
		NB	A	8.5	A	8.5
Oak Ridge Farm Rd & Vandola Church Rd	Unsignalized	WB (L)	A	7.4	A	7.3
		NB	A	8.6	A	8.7
Vandola Church Rd & Vandola Dr	Unsignalized	NB (L)	A	7.5	A	7.3
		EB	A	9.0	A	8.9

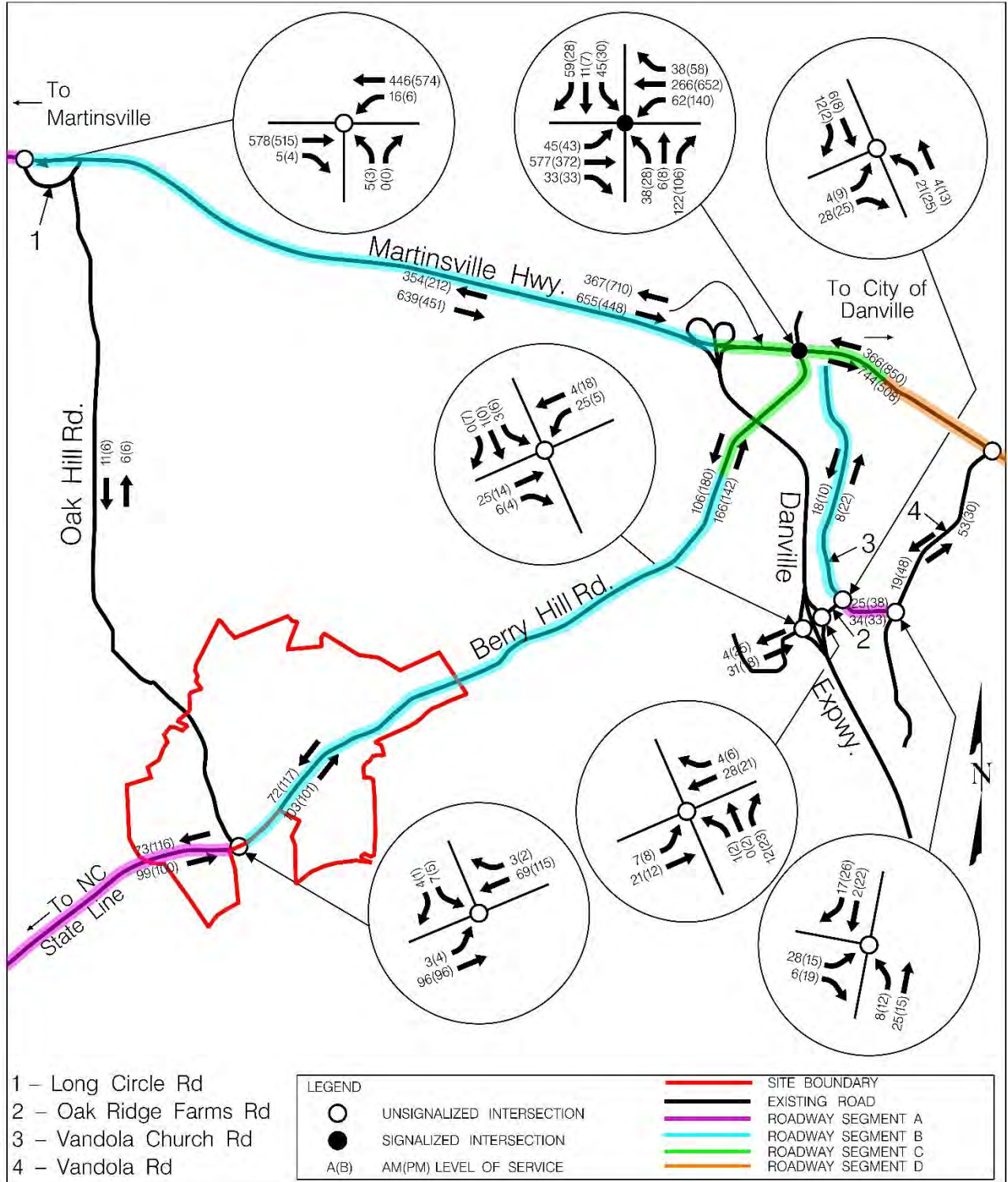
**Table XIV**  
Future Year 2047 Intersection LOS

Intersection	Type of Control	Movement Approach	AM Peak Hours		PM Peak Hours	
			Level of Service	Delay (sec/veh)	Level of Service	Delay (sec/veh)
Berry Hill Rd & Oak Hill Rd	Unsignalized	EB (L)	A	7.4	A	7.5
		SB	A	9.6	B	10.1
Long Circle Rd & Martinsville Hwy	Unsignalized	WB (L)	B	10.8	B	10.1
		NB	C	16.9	C	16.2
Berry Hill Rd & Martinsville Hwy	Signalized	EB (L)	B	10.6	A	9.5
		EB (T)	C	21.1	B	19.2
		EB (R )	A	0.2	A	0.2
		WB (L)	B	11.5	B	10.3
		WB (T)	B	16.3	B	16.9
		WB (R )	A	0.2	A	0.2
		NB (L)	D	35.7	D	35.4
		NB (LT)	D	35.6	D	35.4
		NB (R )	A	0.1	A	0.1
		SB	C	28.2	C	25.9
		<b>Overall</b>	<b>B</b>	<b>17.3</b>	<b>B</b>	<b>15.3</b>
Danville Expwy SB Ramps & Oak Ridge Farms Rd	Unsignalized	WB (L)	A	7.4	A	7.4
		SB	A	9.5	A	8.7
Danville Expwy NB Ramps & Oak Ridge Farms Rd	Unsignalized	EB (L)	A	7.3	A	7.3
		NB	A	8.5	A	8.6
Oak Ridge Farm Rd & Vandola Church Rd	Unsignalized	WB (L)	A	7.4	A	7.3
		NB	A	8.7	A	8.8
Vandola Church Rd & Vandola Dr	Unsignalized	NB (L)	A	7.5	A	7.4
		EB	A	9.1	A	9.0

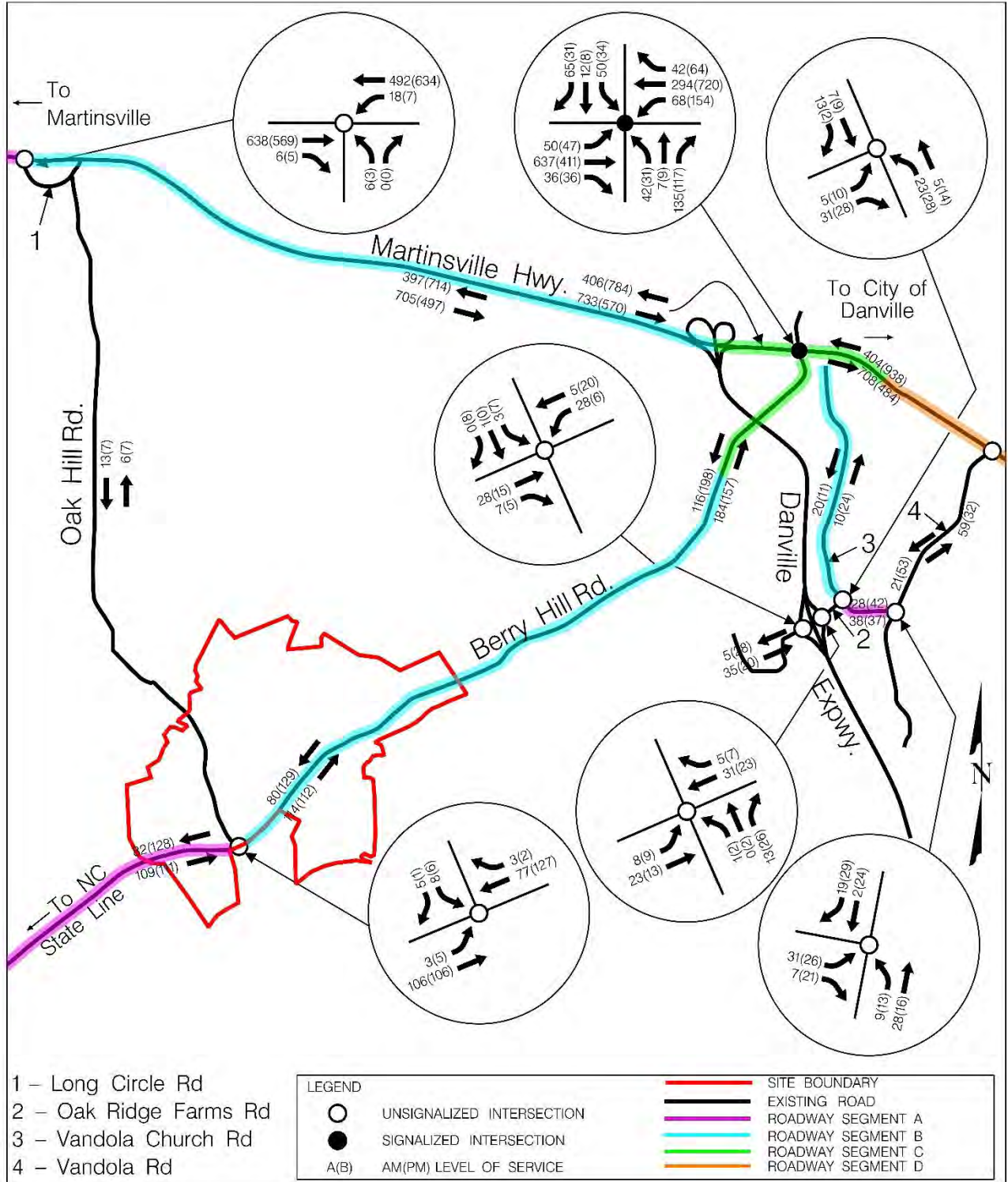
As can be seen in the above tables there is sufficient capacity when projecting the background traffic for years 2022, 2032, and 2047 for all roadways and intersections.



**Figure 6**  
Future Background 2022 Traffic Volumes

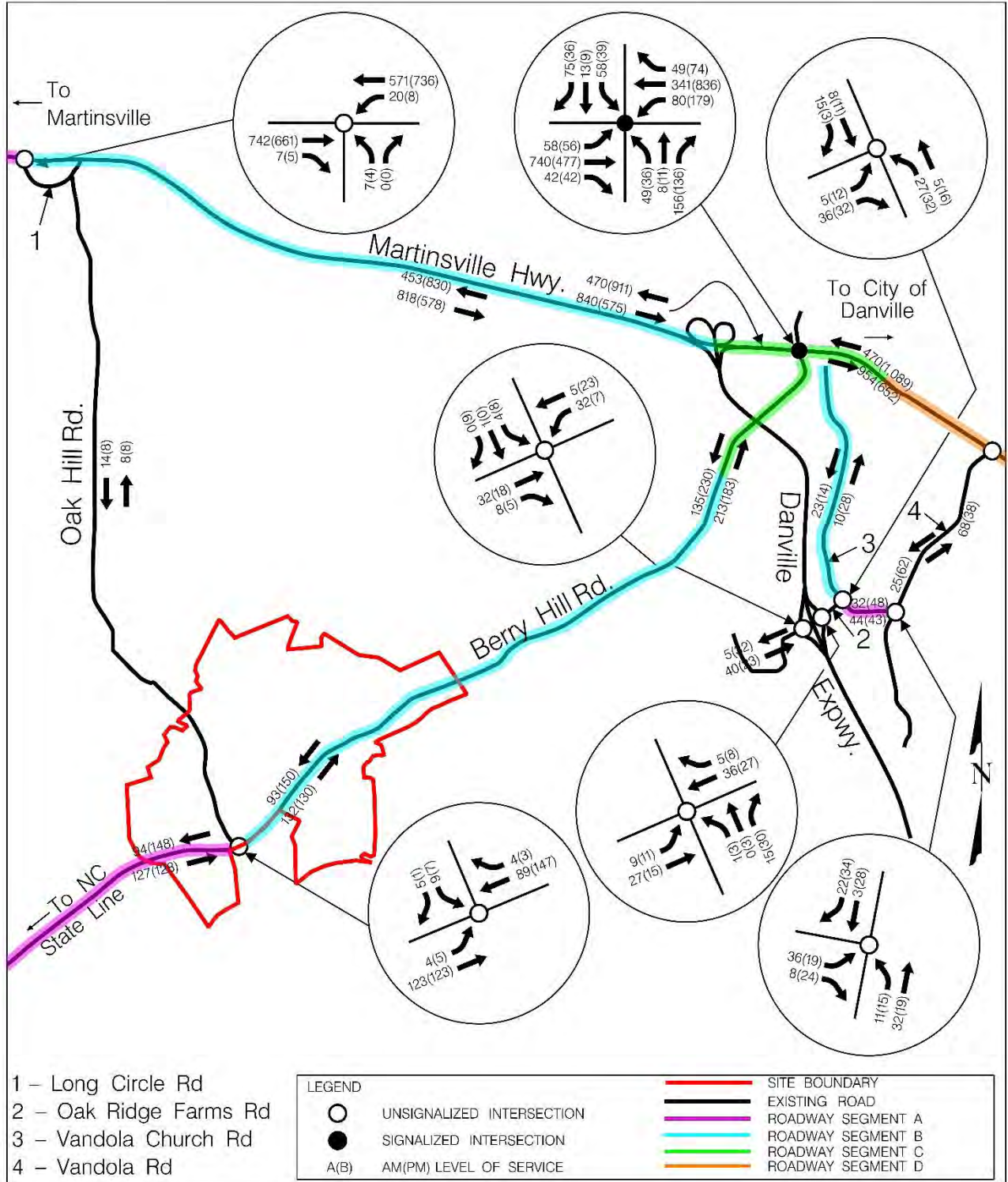


**Figure 7**  
 Future Background 2032 Traffic Volumes

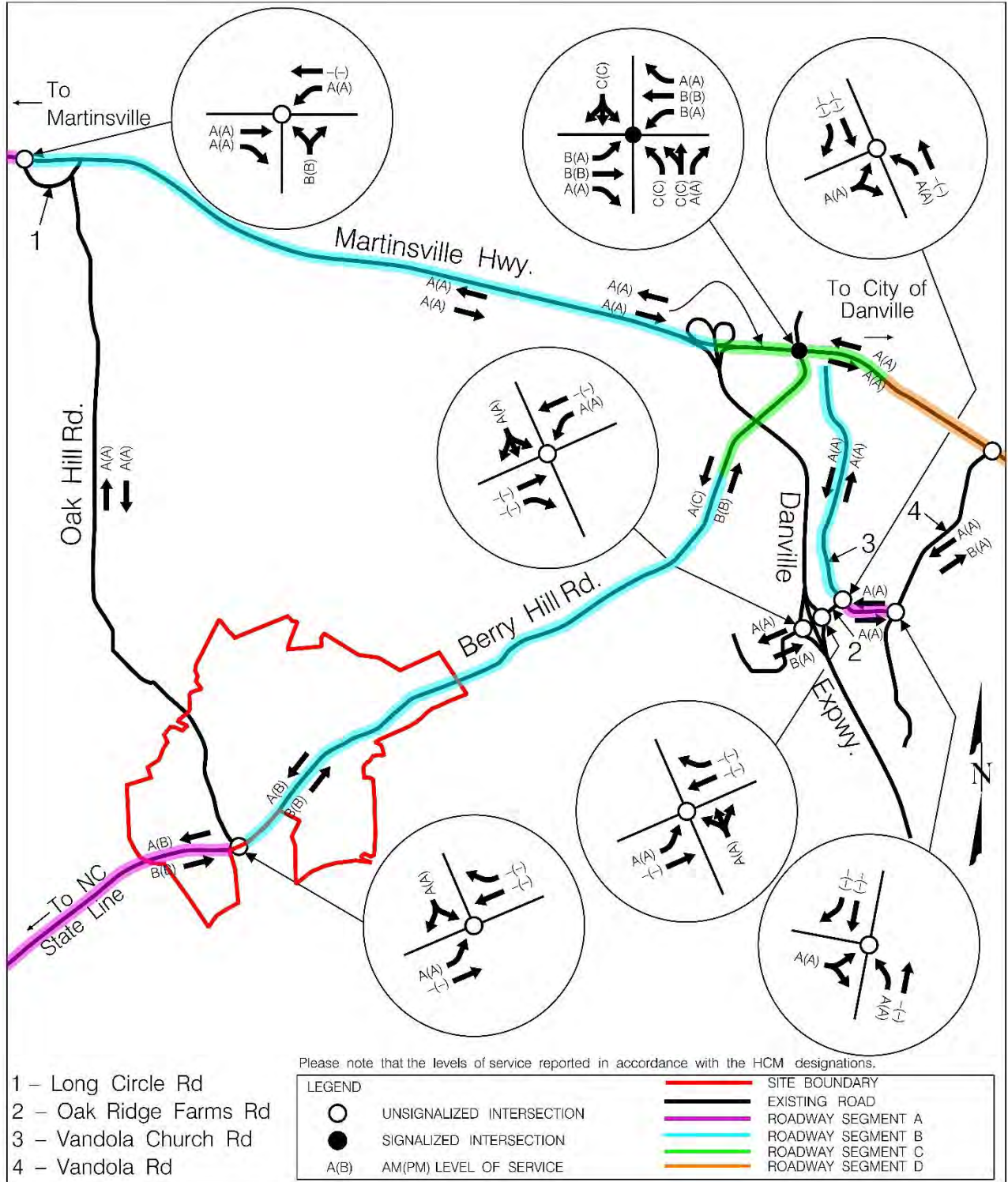




**Figure 8**  
Future Background 2047 Traffic Volumes

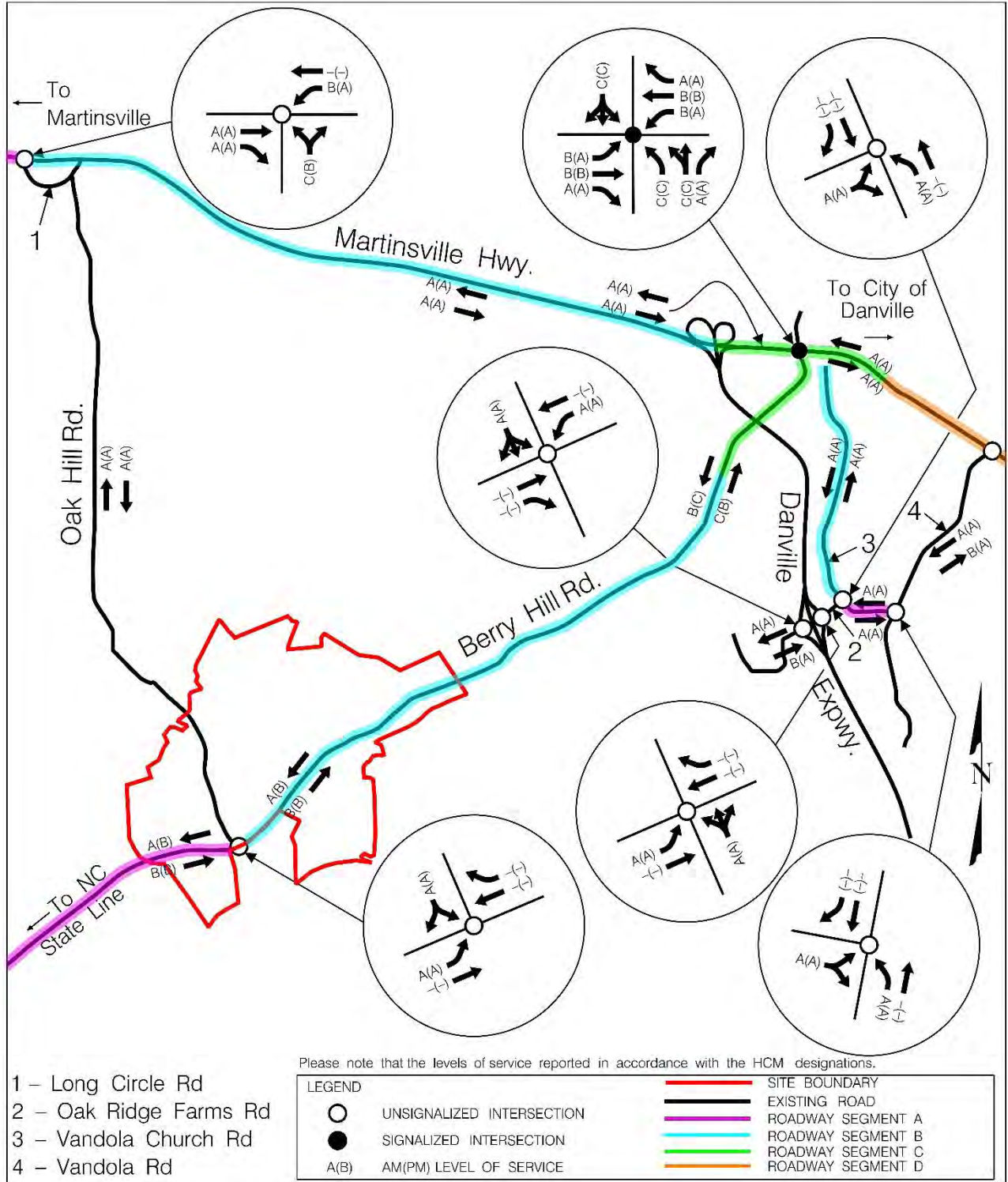


**Figure 9**  
 Future Background 2022 Levels of Service

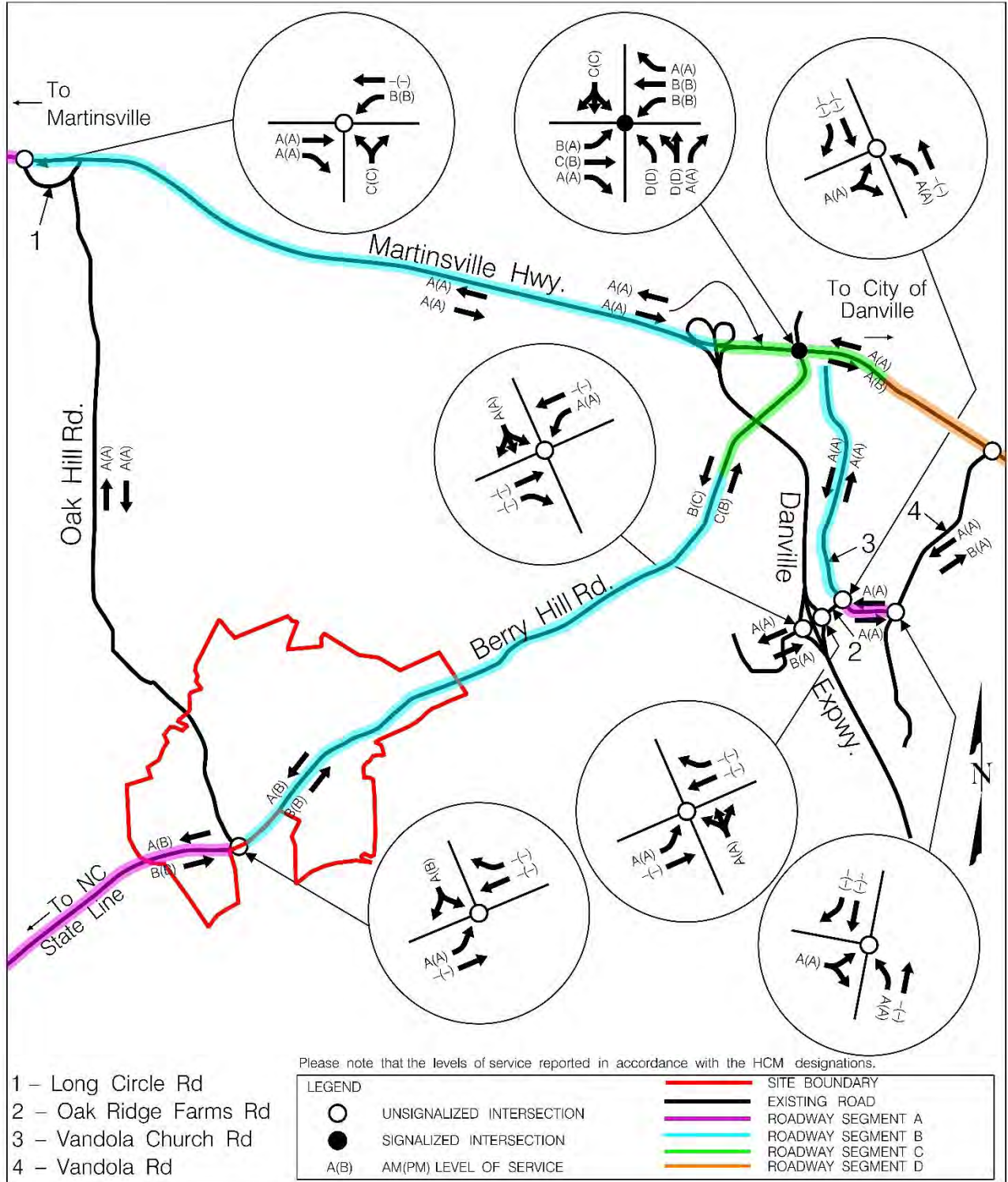




**Figure 10**  
 Future Background 2032 Levels of Service



**Figure 11**  
Future Background 2047 Levels of Service





## 4 SOVA MEGA SITE AT BERRY HILL TRIP DISTRIBUTION

### 4.1 ITE Based Trip Generation

After previous studies and discussions with the MPO have taken place, Dewberry has developed the trip generation data based on employee levels of 2,500, 5000 and 11,500 employees. The estimated 11,500 employees represent the full build-out of the Mega Site, whereas other employee represent interim build-out scenarios. Analyzing these employee levels will provide a probable sequence of anticipated road improvements based on employee levels at the Mega Site. The estimated trips generated by type for the 2,500, 5,000, and 11,500 employees are listed below in [Table XV](#).

**Table XV**  
Trips by Type

Types of Trips	Total Trips	Percentage of Trips
2,500 Employees:		
Employee	5,000	68%
Industrial	2,406	32%
<b>Total</b>	<b>7,406</b>	<b>100%</b>
5,000 Employees:		
Employee	10,000	68%
Industrial	4,781	32%
<b>Total</b>	<b>14,781</b>	<b>100%</b>
11,500 Employees:		
Employee	22,884	67%
Industrial	11,267	33%
<b>Total</b>	<b>34,151</b>	<b>100%</b>

#### 4.1.1 Estimated Peak Hourly Volume

The peak hourly volume was estimated from the ITE Manual. To determine the peak hourly volume, it was assumed the employee traffic would approximate 67 percent of the overall trips in the peak hour. [Table XVI](#) represents the equivalent peak hourly volumes for the 2,500, 5,000, and 11,500 employee levels of the Mega Site.

**Table XVI**  
Peak Hourly Volumes

Types of Trips	Peak Hour Trips			
	AM		PM	
	(IN)	(OUT)	(IN)	(OUT)
2,500 Employees:				
Employee	603	90	187	457
Industrial	302	45	93	229
<b>Total</b>	<b>905</b>	<b>135</b>	<b>280</b>	<b>686</b>
5,000 Employees:				
Employee	1,102	165	361	883
Industrial	552	82	180	442
<b>Total</b>	<b>1,654</b>	<b>247</b>	<b>541</b>	<b>1,325</b>
11,500 Employees:				
Employee	2,265	339	809	1,981
Industrial	1,133	169	405	990
<b>Total</b>	<b>3,398</b>	<b>508</b>	<b>1,214</b>	<b>2,971</b>

#### 4.1.2 Estimated Trip Distribution – Industrial

It is estimated that most industrial traffic being generated by the Mega Site would originate or be destined to and from the north, south, and east towards Norfolk and industrial ports along the coasts, in addition to the I-95 corridor. Industrial trips generated to and from the west would be dependent on freight patterns, future interstate highway development such as the future I-73, and any inland freight ports within the region. The 2014 *Virginia Multimodal Freight Plan* as prepared for the Office of Intermodal Planning and Investment by Cambridge Systematics, Inc. was reviewed to provide insight to possible directional distributions of industrial traffic. This study showed that I-81 has the highest average truck volumes in Virginia per day followed closely by I-95 and I-77. As problem areas were indicated within the Commonwealth, this study recommended areas of improvement to mitigate the problems.

The majority of the truck traffic around the Mega Site travels along Route 58 east of Danville and the North-South corridor of Route 29. Therefore, assuming the majority of the truck traffic will utilize the Danville Expressway, the industrial trip distribution for the Mega Site was determined. This distribution is displayed in **Table XVII**.

**Table XVII**  
Industrial Distribution

Direction	Distribution
Westbound Rte. 58	15%
Southbound Rte. 863	2%
Eastbound Rte. 58	15%
Eastbound Rte. 58 Bypass	68%
<b>Total</b>	<b>100%</b>

The characteristics of the industrial traffic will vary depending on the type of industry that occupies the Mega Site. However, it is anticipated that a majority of the industrial traffic would consist of trucks. In accordance with the ITE Manual (ITE Code 130 – Industrial Park) truck percentages have ranged from 1 to 22 percent of the total industrial park trips with the average being 8 percent. Given the range and uncertainty, this traffic impact analysis assumes a conservative 22 percent of the total development trips (Industrial + Employee) to be trucks (2/3 of the industrial trips). This percentage has been used within the analysis for each employee level.

#### 4.1.3 Estimated Trip Distribution – Employee

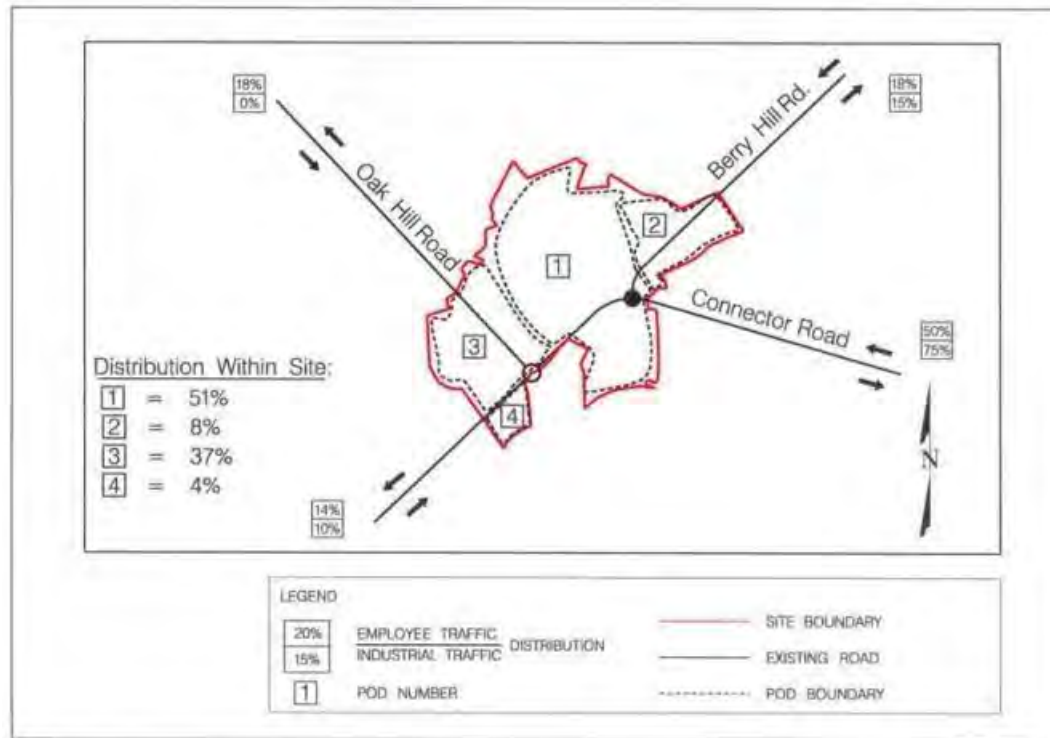
Employee traffic, which represents the majority of the estimated trips generated, will have a different distribution than industrial traffic. Using data received from the Danville Metropolitan Planning Organization (MPO) and population information from within the MPO, the employee distribution was determined. The MPO Study assumes that 11,500 employees/jobs are created by the Mega Site at full build-out. Half of the jobs (5,750) will be shifted from current jobs or capacity within the MPO and the other half (5,750) will be newly created jobs. Based upon the MPO investigations nearly half of the newly created jobs (2,375) will be filled by residents living outside the boundaries of the MPO.

In addition, the trip distribution inside the Mega Site boundary was determined based on the distribution of the planned lot area within the Mega Site. Based on this it was also assumed that there would be several internal roads developed within the Mega Site to aid in distributing traffic congestion throughout the site. In general, the site was broken up into four individual pods as illustrated in the figure below. The traffic distribution was

determined based on the size of the pod. It should be noted that the future Connector Road was included given that the year 2022 (no-build) scenario discussed in Section V reflects poor level of service in certain locations.

**Figure 12** represents the assumed trip destinations for both the employee and industrial traffic within and outside the Mega Site.

**Figure 12**  
Mega Site Trip Distribution



## 5 NETWORK ALTERNATIVES

To determine the scope of possible road improvements to support the Mega Site, several scenarios were identified and discussed as summarized below. For each of the scenarios, the total traffic condition was used for an analysis of the existing network and proposed improvements based on the build out of the Mega Site. The total traffic condition consist of the future background traffic volumes plus the anticipated traffic volumes generated by the Mega Site. The years 2022, 2032, and 2047 will be used as the base condition for the growth of the Mega Site. Each analysis uses a different employee level for the Mega Site in order to develop a sequence of improvement to the existing roadway network.

The analysis begins with identification and discussion of access points to the Mega Site and continues with a review of the roadway network during different build out levels as summarized below.

- **Oak Hill Road.** The previous section shows a significant increase to traffic accessing the Mega Site from the west. Dewberry identified two (2) alternative westerly routes to accommodate employee traffic to and from the Mega Site originating from Martinsville Highway (SR 58) corridor to the west. The alternatives included Oak Hill Road (SR 862) and Horseshoe Road.
- **Vandola Drive/Vandola Church Road.** A significant increase to traffic along Vandola Drive or Vandola Church Road is not anticipated as a result of the Mega Site during the initial phases of build out. As the Mega Site continues to grow and the Connector Road is constructed, some users may choose to access the Mega Site from the East using Vandola Drive and Vandola Church Road in times of heavier traffic.

## 5.1 Oak Hill Road

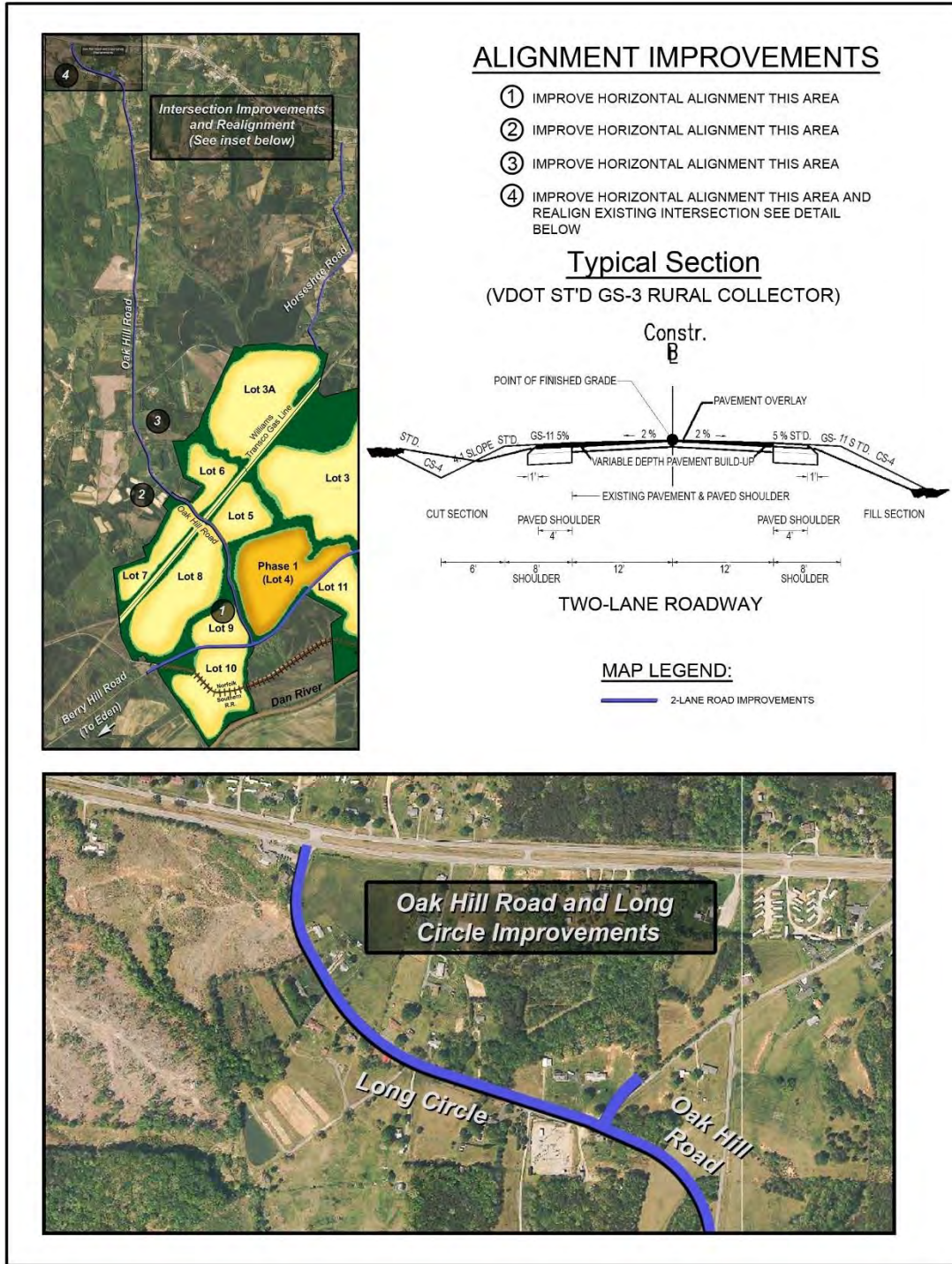
As identified in the existing road inventory, Oak Hill Road (SR 862) is a two-lane rural road with no pavement markings and a posted speed limit of 55 mph. This road serves as a north-south route for local traffic within Pittsylvania County connecting Martinsville Highway (SR 58) via Long Circle to Berry Hill Road (US 311). The road typical section includes 10 foot lanes with limited or no shoulder with the horizontal and vertical alignments follow the natural terrain. Upon development of the Mega Site, Oak Hill Road (SR 862) will experience an increase in traffic from those commuting to the Mega Site.

The current road section does not meet current Virginia Department of Transportation (VDOT) geometric standards. The applicable standard for this road would be a Rural Collector (GS-3) with a design speed of 50 mph. This standard requires 12 feet lanes with 8 feet graded shoulder (4 feet of the shoulder paved). See **Figure 13** for an example typical section for expanding Oak Hill Road (SR 862).

Other deficiencies identified on Oak Hill Road (SR 862) include isolated horizontal and vertical substandard geometry. In these cases more significant improvements will be implemented including horizontal realignment and vertical curve adjustments for the purpose of increasing vertical sight distance. Probable areas needing these types of improvements are identified in **Figure 13**.

Lastly, Oak Hill Road (SR 862) currently ties to Long Circle prior to connecting to Martinsville Highway (SR 58). To more efficiently handle the traffic through this area it is recommended that Oak Hill Road be connected directly to Martinsville Highway (SR 58). One probable solution is identified in **Figure 13**. The connection to Martinsville Highway (SR 58) will require improvements on Martinsville Highway (SR 58) to accommodate turn lanes.

**Figure 13**  
Oak Hill Road Improvements





## 5.2 Vandola Drive/Vandola Church Road

Until construction of the Connector Road takes place, Vandola Drive or Vandola Church Road is not anticipated to experience any additional traffic as a result of the Mega Site. Once the Connector Road is in place, some local commuters may decide to use Vandola and Vandola Church Road during high levels of traffic to access the Mega Site from the East. But it is not anticipated for significant increases to the traffic volumes to occur on these routes. After discussions with the MPO and local users, there are several areas along Vandola Drive and Vandola Church Road that need review for potential improvements for safer travel through the area. A review of the existing roadways and intersections can be found below along with anticipated improvements.

### 5.2.1 Vandola Drive

As identified in the existing road inventory, Vandola Drive (SR 870) is a two-lane rural road with only a centerline lane marking and an assumed speed limit of 45 mph. This road serves as a north-south route for local traffic within Pittsylvania County connecting the City of Danville to the Danville Expressway via Vandola Church Road and Oak Ridge Farms Rd. The road typical section includes 12 foot lanes and graded shoulder with the horizontal and vertical alignments following the natural terrain. Upon development of the Mega Site, it is not anticipated that Vandola Drive will experience a significant increase in traffic under normal conditions.

The current road section does not meet current Virginia Department of Transportation (VDOT) geometric standards. The applicable standard for this road would be a Rural Collector (GS-3) with a design speed of 45 mph. The current roadway typical section does not meet this standard. This standard for ADT less than 400 vpd, requires eleven (11) foot lanes with five (5) foot graded shoulders, one (1) of which is to be paved, and a minimum horizontal curve radius of approximately 600 feet. Other deficiencies identified on the northern section of Vandola Drive include increasing the horizontal and vertical sight distance through improving the horizontal and vertical curve alignments. **Figure 14** highlights the recommended improvements and potential typical section of this northern section of Vandola Church Road.

A summary of general improvements on Vandola Drive (SR 870) are identified in **Figure 14** and as follows:

- Correct isolated horizontal and vertical geometry deficiencies.
- Widen the existing road, both sections in each direction, and add standard shoulders and ditches.

### 5.2.2 Vandola Church Road

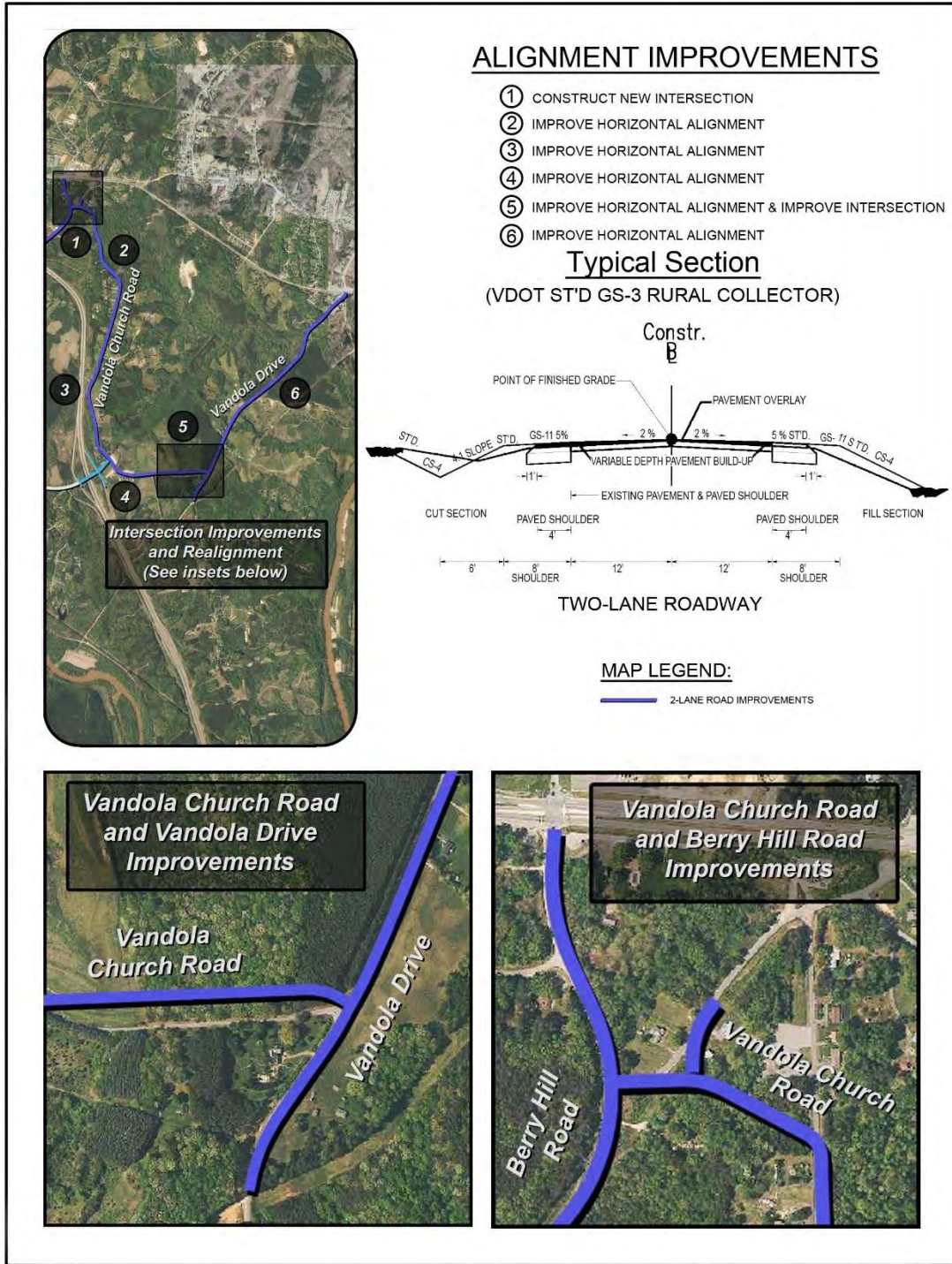
As identified in the existing road inventory, Vandola Church Road (SR 872) is a two-lane rural road with no pavement markings and a posted speed limit of 45 mph. This road serves as a north-south route for local traffic within Pittsylvania County connecting Berry Hill Road to Vandola Drive as well as a connection to the Danville Expressway via Oak Ridge Farms Rd. The road typical section includes 9 foot lanes with limited or no shoulder with the horizontal and vertical alignments following the natural terrain. Upon development of the Mega Site, it is not anticipated that Vandola Church Road will experience a significant increase in traffic under normal conditions.

The current road section does not meet current Virginia Department of Transportation (VDOT) geometric standards. The applicable standard for this road would be a Rural Collector (GS-3) with a design speed of 45 mph. The current roadway typical section does not meet this standard. This standard for ADT less than 400 vpd, requires ten (10) foot lanes with 2 foot graded shoulders, one (1) of which is to be paved, and a minimum horizontal curve radius of approximately 600 feet. Other deficiencies identified on the northern section of Vandola Church Road include increasing the horizontal and vertical sight distance. **Figure 14** highlights the recommended improvements and potential typical section of this northern section of Vandola Church Road.

Lastly, the intersections at each end of Vandola Church Road need improvements. The northern section ties to Berry Hill Road via an intersection with Vandola Church Rd that switches back to head southwest toward Berry Hill Road. To more efficiently handle traffic through this area, it is recommended that Vandola Church Road potentially be connected directly to Berry Hill Road as shown in **Figure 14**. The southern section ties to Vandola Drive at a substandard skew, creating difficulties with sight distance for both roadways. To decrease the skew of the intersection similar to what is shown in **Figure 14** would reduce the sight distance issues of the intersection.



**Figure 14**  
Vandola Church Road and Vandola Drive Improvements



## 5.3 Main Access

Berry Hill Road (US 311) will serve as the primary access within the boundary of the Mega Site. However, once outside the boundary there are several alternatives for the extension of the main access road that will accommodate the necessary capacity.

As identified in the existing road inventory Berry Hill Road (US 311) is a two-lane rural road with a posted speed limit of 55mph or 45 mph for trucks. This road serves as a north-south route for local traffic within Pittsylvania County with connections into North Carolina. The existing road typical section includes 10 foot lanes with a shoulder width of 2 feet. The horizontal alignment follows the natural terrain with a rolling vertical alignment with few passing zones.

Berry Hill Road (US 311) was identified in a “no-build” analysis to not have adequate capacity to accommodate the employee levels as the Mega Site is built out. The “no-build” analysis has been included in the appendix for reference. Therefore, Berry Hill Road (US 311) will require extensive improvements to accommodate future traffic starting at this stage.

With this deficiency in Berry Hill Road, an alternative is needed to provide the main access from Martinsville Highway and the Danville Expressway. The capacity to accommodate the future build out levels can be achieved through improvements to Berry Hill Road and surrounding roadways and intersections as well as the construction of the Connector Road. The Connector Road will be the primary access outside the boundaries of the Mega Site via a 4-lane divided highway in accordance with a VDOT Rural Minor Arterial (GS-2) from the Danville Expressway (SR 58 Bypass). A review of the impacts from the build out of the Mega Site to the surrounding network can be see below based on the following:

- **Partial Build – 2,500 Employees.** The analysis begins with the base employee levels distributed and evaluated on partial build outs of the Mega Site to identify roads inadequate to handle the 2,500 employees (or the future years 2022) total traffic. The partial build out includes partial construction of the Connector Road.
- **Partial Build – 5,000 Employees.** The analysis continues with the base employee levels distributed and evaluated on partial build outs of the Mega Site to identify roads inadequate to handle the 5,000 employees (or the future 2032) total traffic.
- **Full Build – 11,500 Employees.** The analysis finishes with the base employee levels distributed and evaluated on the full build out of the Mega Site to identify roads inadequate to handle the 11,500 employees (or the future year 2047) total traffic.

### 5.3.1 Partial Build Network – 2,500 Employees

To improve the unacceptable LOS identified in the year 2022 (no-build) analysis, several road improvements have been identified as summarized below.

- Build the Connector Road as a two-lane minor arterial highway road that will serve as the primary route for industrial traffic and for through traffic originating from the south.
- Add a new intersection on the Connector Road and construct a diversion road from Berry Hill Road (US 311) north to the new intersection.
- Expand Berry Hill Road Segment B to a four-lane divided minor arterial highway.
- Modify the existing intersection of Oak Hill Road and Long Circle, in order to allow for a more direct path to the Mega Site.

- Reconfigure northbound approach of Berry Hill Road to provide a dedicated left turn, shared left-thru, and a dedicated right turn lane. *This improvement is currently being designed and constructed through a VDOT Smart Scale project.*

The adjusted trip distribution and assignments and corresponding total traffic volumes reflecting the above improvements are listed in **Figure 15** and **Figure 16**.

As in determining the existing and projected background LOS, the future total LOS for a two-lane and a multi-lane road were determined by the *percent-time-spent-following (PTSF)* and *density* respectively. The results of this analysis are summarized in **Table XVIII** and **Table XIX** and within **Figure 17**.

**Table XVIII**  
2,500 Employees (Future Year 2022) - Total Traffic Two-Lane Roadway LOS

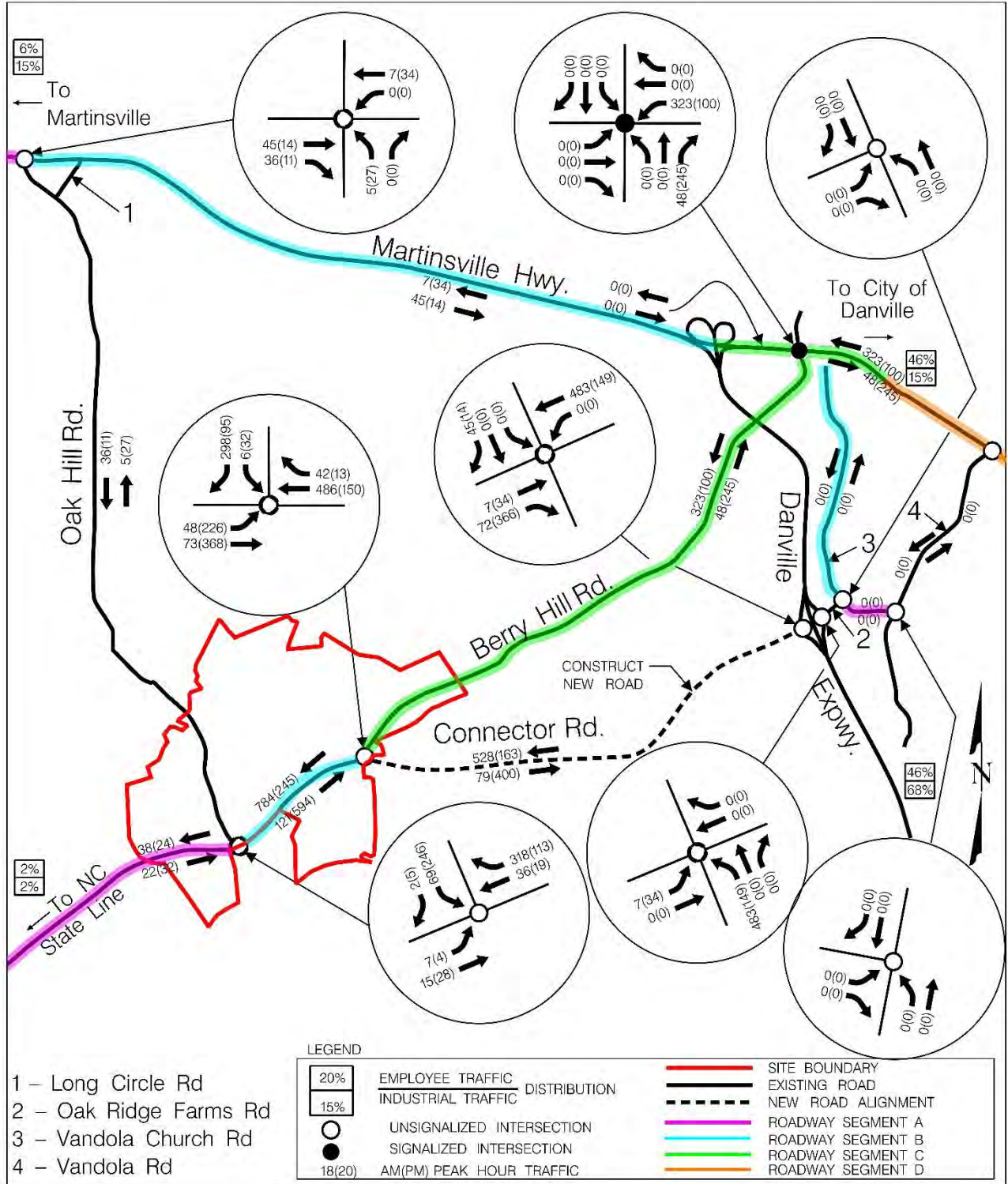
Roadway Segment	EB or NB		WB or SB	
	PTSF (%) AM / PM	LOS AM / PM	PTSF (%) AM / PM	LOS AM / PM
Berry Hill Road (A)	48.8 / 50.3	B / B	45.5 / 51.5	B / B
Berry Hill Road (C)	49.7 / 68.0	B / C	69.1 / 58.9	C / C
Oak Hill Road	10.0 / 35.4	A / A	38.6 / 18.5	A / A
Oak Ridge Farms Road	40.7 / 22.8	B / A	5.0 / 31.7	A / A
Vandola Church Road (A)	24.4 / 32.0	A / A	33.0 / 27.8	A / A
Vandola Church Road (B)	13.2 / 34.1	A / A	32.8 / 15.7	A / A
Vandola Drive	41.1 / 23.4	B / A	15.1 / 37.3	A / A
Connector Road	23.2 / 67.0	A / C	70.4 / 42.4	C / B

**Table XIX**  
2,500 Employees (Future Year 2022) - Total Traffic Multi-Lane Roadway LOS

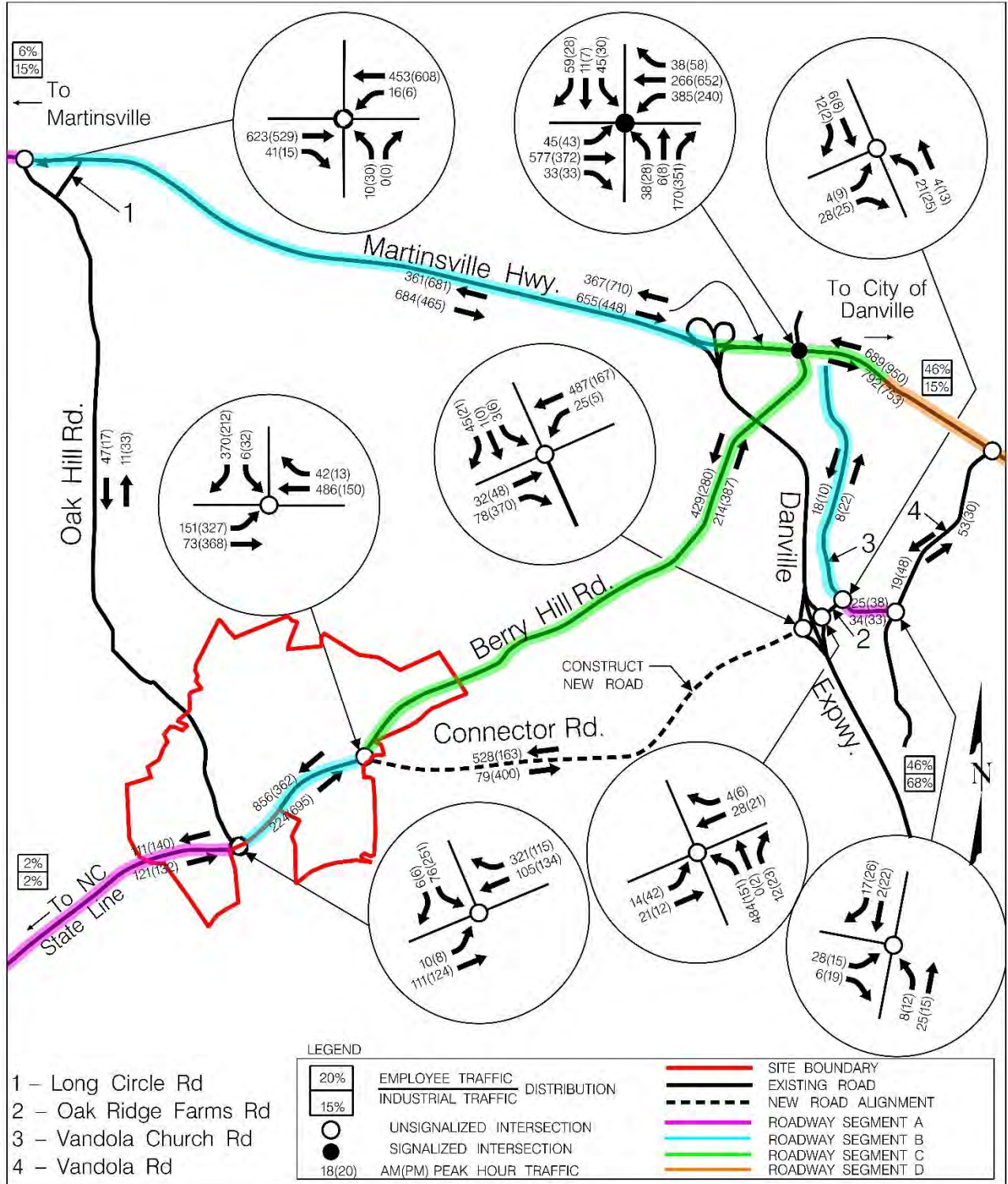
Roadway Segment	EB or NB		WB or SB	
	Density (pc/mi/ln) AM / PM	LOS AM / PM	Density (pc/mi/ln) AM / PM	LOS AM / PM
Martinsville Highway (A)	7.2 / 5.9	A / A	5.1 / 7.0	A / A
Martinsville Highway (B)	7.5 / 5.1	A / A	3.9 / 7.4	A / A
Martinsville Highway (C)	7.1 / 4.9	A / A	4.0 / 7.7	A / A
Martinsville Highway (D)	8.6 / 8.2	A / A	7.5 / 10.4	A / A
Danville Expressway	4.7 / 4.0	A / A	4.9 / 4.4	A / A
Berry Hill Road (B)	2.4 / 7.6	A / A	9.3 / 3.9	A / A



**Figure 15**  
2,500 Employees (Year 2022) Trip Distribution and Assignment

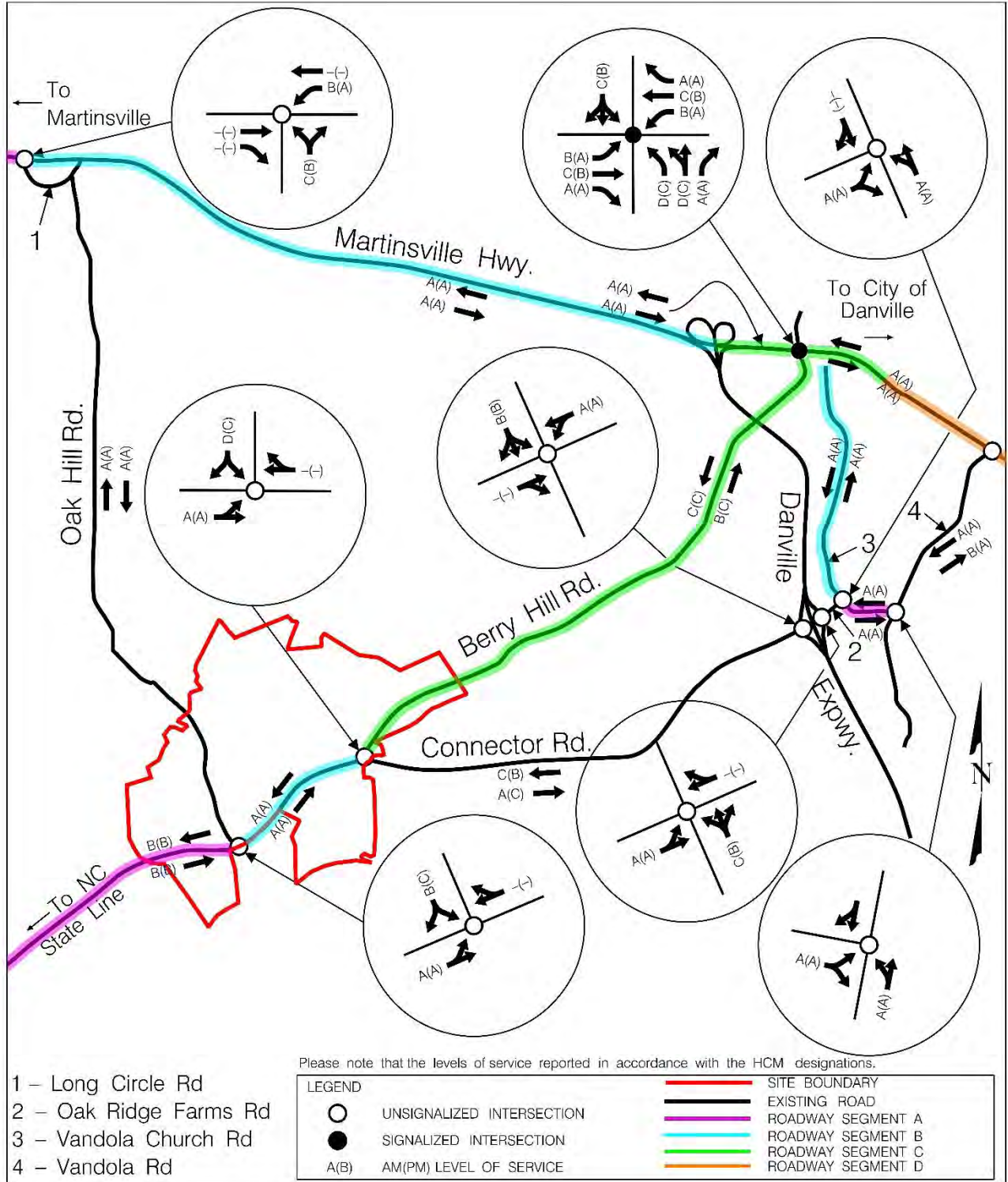


**Figure 16**  
2,500 Employees (Year 2022) Total Traffic





**Figure 17**  
2,500 Employees (Year 2022) Levels of Service





In addition to the roadway capacity analysis, an intersection capacity analysis was performed utilizing the total future peak hour traffic volumes from **Figure 16**. The results of the analysis are presented in **Table XX** and within **Figure 17**.

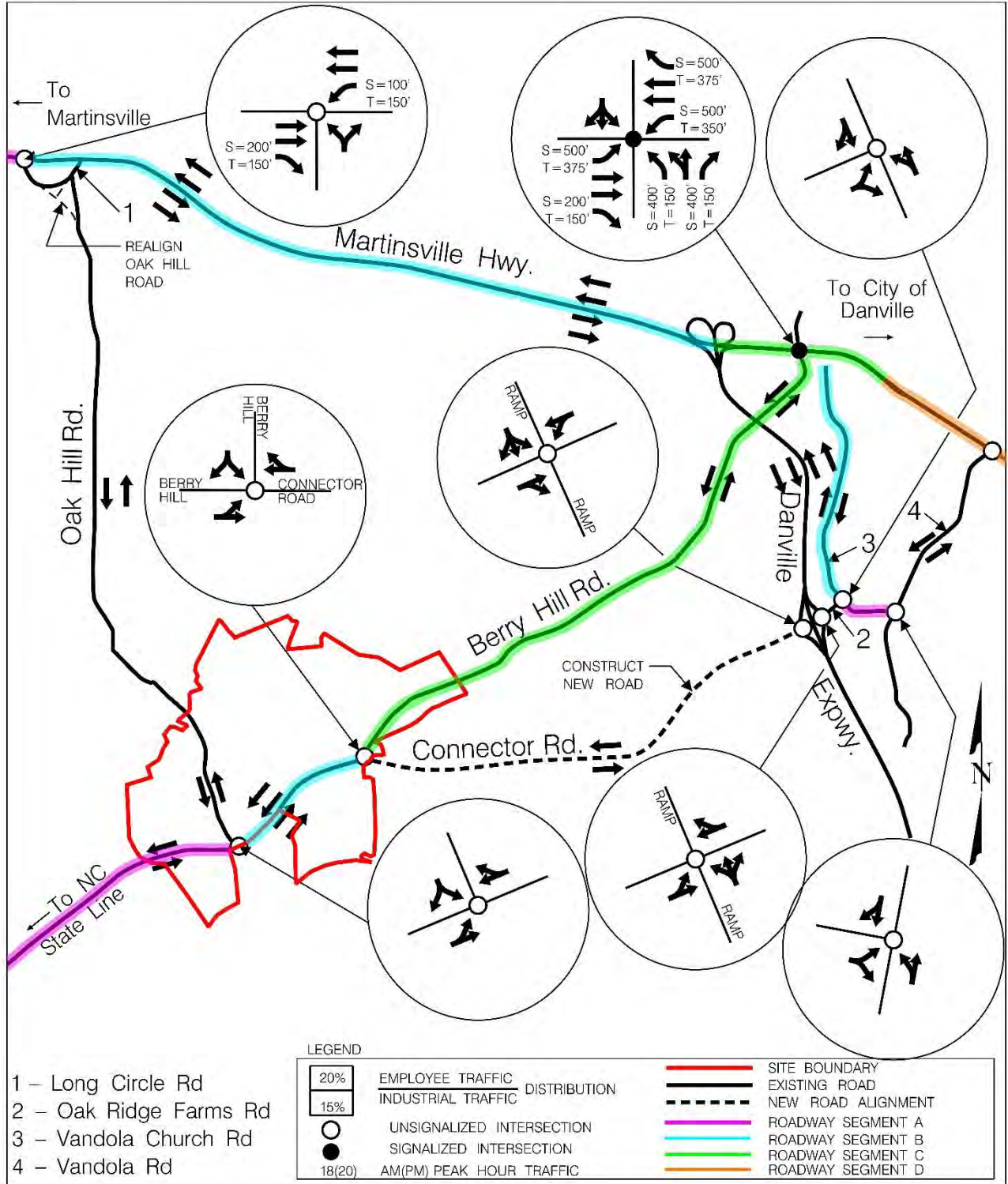
**Table XX**  
2,500 Employees (Future Year 2022) - Total Traffic Intersection LOS

Intersection	Type of Control	Movement Approach	AM Peak Hours		PM Peak Hours	
			Level of Service	Delay (sec/veh)	Level of Service	Delay (sec/veh)
Berry Hill Rd & Oak Hill Rd	Unsignalized	EB (L)	A	8.4	A	7.9
		SB	B	12.6	C	16.0
Long Circle Rd & Martinsville Hwy	Unsignalized	WB (L)	B	10.1	A	9.4
		NB	C	15.0	B	14.9
Berry Hill Rd & Martinsville Hwy	Signalized	EB (L)	B	11.2	A	9.0
		EB (T)	C	29.6	B	18.9
		EB (R )	A	0.2	A	0.2
		WB (L)	B	17.9	A	9.1
		WB (T)	B	12.8	B	13.9
		WB (R )	A	0.1	A	0.1
		NB (L)	D	38.1	C	29.3
		NB (LT)	D	38.1	C	29.3
		NB (R )	A	0.2	A	0.4
		SB	C	29.6	B	20.0
		<b>Overall</b>	<b>B</b>	<b>19.7</b>	<b>B</b>	<b>11.5</b>
Danville Expwy SB Ramps & Oak Ridge Farms Rd	Unsignalized	WB (L)	A	7.5	A	8.5
		SB	B	14.4	B	10.3
Danville Expwy NB Ramps & Oak Ridge Farms Rd	Unsignalized	EB (L)	A	7.6	A	7.9
		NB	C	16.3	B	10.8
Oak Ridge Farm Rd & Vandola Church Rd	Unsignalized	WB (L)	A	7.4	A	7.3
		NB	A	8.6	A	8.7
Vandola Church Rd & Vandola Dr	Unsignalized	NB (L)	A	7.5	A	7.3
		EB	A	8.9	A	8.9
Berry Hill Road & Connector Road	Unsignalized	EB (L)	A	9.4	A	8.5
		SB	D	34.6	C	23.4

As can be seen in the above tables the majority of the roadways and intersections are estimated to have sufficient capacity and level of service utilizing the proposed geometry. **Figure 18** depicts the proposed road improvements and associated intersection geometry presented within this partial build.

Due to the characteristics of Oak Hill Road (SR 862), the above analysis assumes that all industrial traffic originating from the west along Martinsville Highway will bypass Oak Hill Road and proceed to the Mega Site via Route 58 Bypass and the proposed Connector Road.

**Figure 18**  
2,500 Employees (Year 2022) Proposed Geometry



### 5.3.2 Partial Build Network – 5,000 Employees

Additional road improvements anticipated with the 5,000 employee trip distribution and assignment, **Figure 19**, and total traffic volumes, **Figure 20**, are summarized below.

- Expand the Connector Road to a four-lane divided minor arterial highway.
- Expand Berry Hill Road Segment C to a four-lane divided minor arterial highway.
- Add left and right turn lanes to Berry Hill Road (US 311) at the intersection with Oak Hill Road (SR 862).
- Add left and right turn lanes at the Danville Expressway (SR 58 Bypass) NB Ramp at terminal to provide an exclusive left turn lane, a shared left-thru lane, and an exclusive right turn lane.
- Add a left turn lane from the Connector Road to Northbound Berry Hill Road.
- Add a right turn lane from SB Berry Hill Road onto westbound Connector Road. Keep shared left-right approach from SB Berry Hill Road.
- Signal control expected at the following intersections:
  - The Connector Road and Berry Hill Road (US 311)
  - Danville Expressway (SR 58 Bypass) NB Ramp and Oak Ridge Farm Road (the Connector Road).
  - Oak Hill Road and Berry Hill Road.

It should be noted that for this analysis, a traffic signal improves the LOS during the peak traffic hours; however, a signal should not be installed until warranted in accordance with the published warrants with the latest edition of the Manual on Uniform Traffic Control Devices.

As in determining the existing and projected background LOS, the future total LOS for a two-lane and a multi-lane road were determined by the *percent-time-spent-following (PTSF)* and *density* respectively. The results of this analysis are summarized in **Table XXI** and **Table XXII** and within **Figure 21**.

**Table XXI**  
5,000 Employees (Future Year 2032) - Total Traffic Two-Lane Roadway LOS

Roadway Segment	EB or NB		WB or SB	
	PTSF (%) AM / PM	LOS AM / PM	PTSF (%) AM / PM	LOS AM / PM
Berry Hill Road (A)	52.6 / 54.4	B / B	52.8 / 54.9	B / B
Oak Hill Road	10.1 / 40.3	A / B	48.1 / 20.0	B / A
Oak Ridge Farms Road	41.0 / 23.0	B / A	6.1 / 32.4	A / A
Vandola Church Road (A)	24.9 / 32.5	A / A	33.9 / 28.7	A / A
Vandola Church Road (B)	14.8 / 34.7	A / A	32.9 / 15.6	A / A
Vandola Drive	42.3 / 23.1	B / A	15.3 / 38.1	A / A

**Table XXII**

5,000 Employees (Future Year 2032) - Total Traffic Multi-Lane Roadway LOS

Roadway Segment	EB or NB		WB or SB	
	Density (pc/mi/ln) AM / PM	LOS AM / PM	Density (pc/mi/ln) AM / PM	LOS AM / PM
Martinsville Highway (A)	8.6 / 6.8	A / A	5.7 / 8.3	A / A
Martinsville Highway (B)	8.6 / 5.7	A / A	4.5 / 8.5	A / A
Martinsville Highway (C)	8.0 / 6.2	A / A	4.4 / 8.5	A / A
Martinsville Highway (D)	9.9 / 11.3	A / B	10.8 / 12.3	A / B
Danville Expressway	5.3 / 5.2	A / A	5.7 / 4.9	A / A
Berry Hill Road (B)	3.7 / 13.7	A / B	16.5 / 6.6	B / A
Berry Hill Road (C)	3.0 / 6.9	A / A	7.7 / 4.3	A / A
Connector Road	1.4 / 7.6	A / A	9.5 / 3.1	A / A

In addition to the roadway capacity analysis, an intersection capacity analysis was performed utilizing the total future peak hour traffic volumes from **Figure 20**. See **Table XXIII** and within **Figure 21** for results of this analysis.

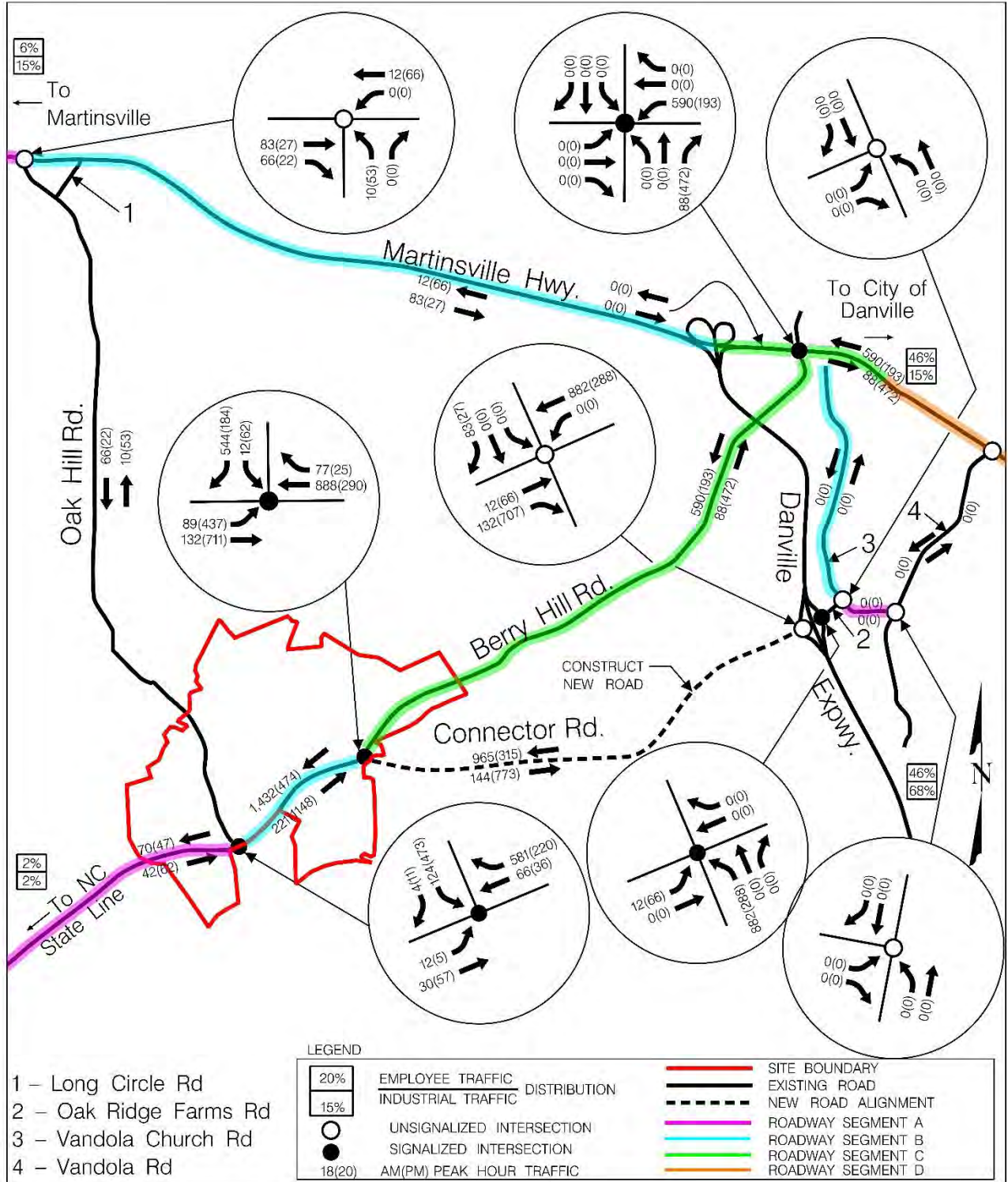
**Table XXIII**

5,000 Employees (Future Year 2032) - Total (Partial Build) Intersection LOS

Intersection	Type of Control	Movement Approach	AM Peak Hours		PM Peak Hours	
			Level of Service	Delay (sec/veh)	Level of Service	Delay (sec/veh)
Berry Hill Rd & Oak Hill Rd	Signalized	EB (L)	B	14.2	B	16.2
		EB (T)	B	15.3	B	19.3
		WB (T)	B	15.6	B	19.2
		WB (R )	A	1.3	A	0.3
		SB	A	7.9	B	18.2
		<b>Overall</b>	<b>A</b>	<b>6.2</b>	<b>B</b>	<b>14.7</b>
Long Circle Rd & Martinsville Hwy	Unsignalized	WB (L)	B	10.7	A	9.8
		NB	C	16.7	C	17.1
Berry Hill Rd & Martinsville Hwy	Signalized	EB (L)	B	13.4	B	10.8
		EB (T)	D	54.1	C	24.0
		EB (R )	A	0.3	A	0.2
		WB (L)	D	45.9	B	11.9
		WB (T)	B	10.2	B	14.8
		WB (R )	A	0.1	A	0.1
		NB (L)	D	43.4	C	33.4
		NB (LT)	D	43.2	C	33.4
		NB (R )	A	0.2	A	0.9
SB	E	56.4	C	23.9		
		<b>Overall</b>	<b>D</b>	<b>36.7</b>	<b>B</b>	<b>12.4</b>
Danville Expwy SB Ramps & Oak Ridge Farms Rd	Unsignalized	WB (L)	A	7.4	A	7.6
		SB	C	17.9	B	10.6
Danville Expwy NB Ramps & Oak Ridge Farms Rd	Signalized	EB (L)	B	20.0	B	10.9
		EB (T)	B	19.0	A	8.7
		WB (TR)	B	17.4	A	7.7
		NB (L)	B	14.5	B	12.4
		NB (LT)	B	14.5	B	12.5
NB (R )	A	0.0	A	1.9		
		<b>Overall</b>	<b>B</b>	<b>14.7</b>	<b>B</b>	<b>11.1</b>
Oak Ridge Farm Rd & Vandola Church Rd	Unsignalized	WB (L)	A	7.4	A	7.3
		NB	A	8.6	A	8.7
Vandola Church Rd & Vandola Dr	Unsignalized	NB (L)	A	7.5	A	7.3
		EB	A	9.0	A	8.9
Berry Hill Road & Connector Road	Signalized	EB (L)	E	75.8	D	38.0
		EB (T)	A	8.0	A	8.1
		WB (TR)	E	56.2	D	46.2
		SB (LR)	E	57.5	D	45.5
		SB (R )	B	19.2	A	4.9
		<b>Overall</b>	<b>D</b>	<b>49.1</b>	<b>C</b>	<b>26.0</b>

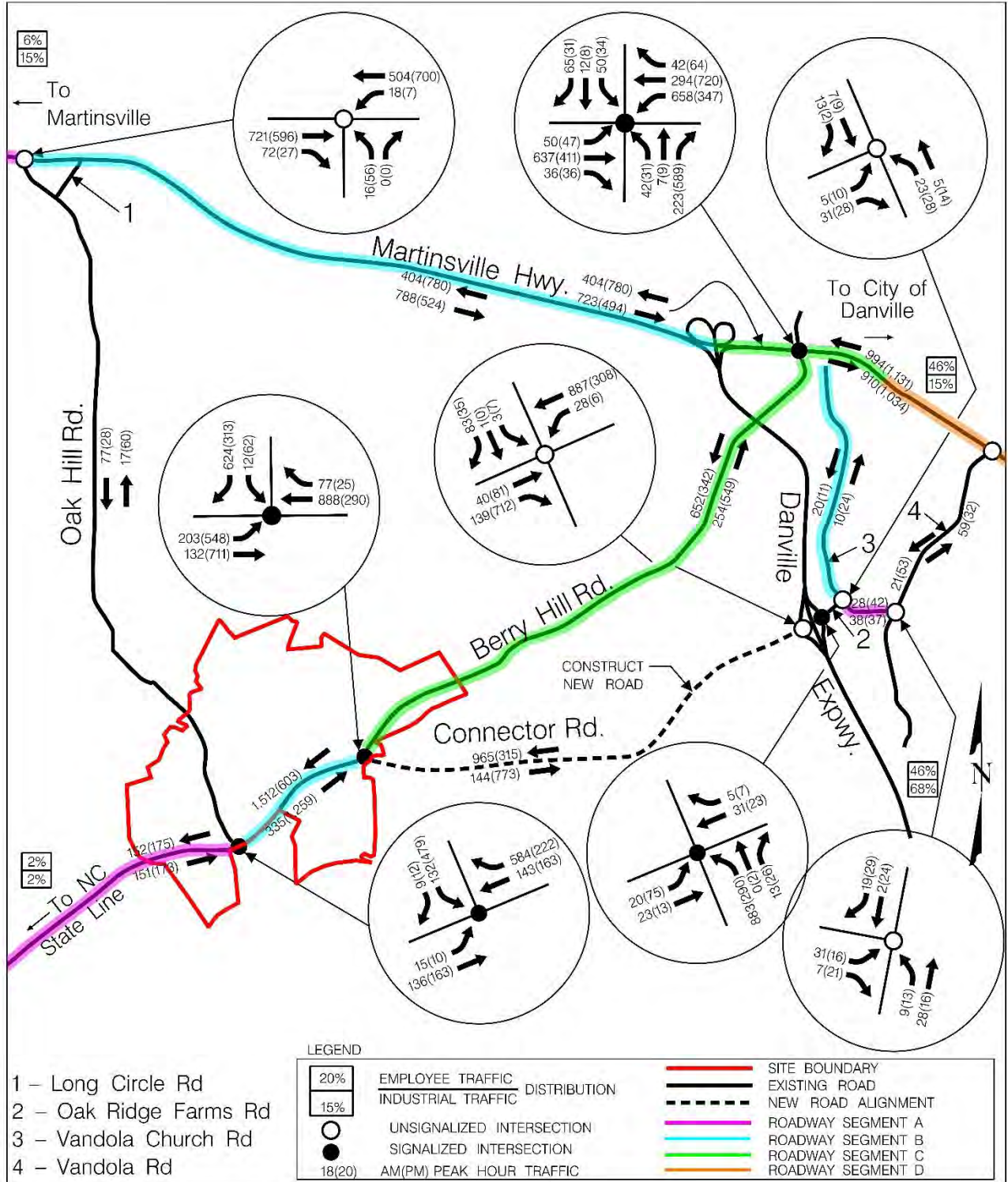


**Figure 19**  
5,000 Employees (Year 2032) Trip Distribution and Assignment

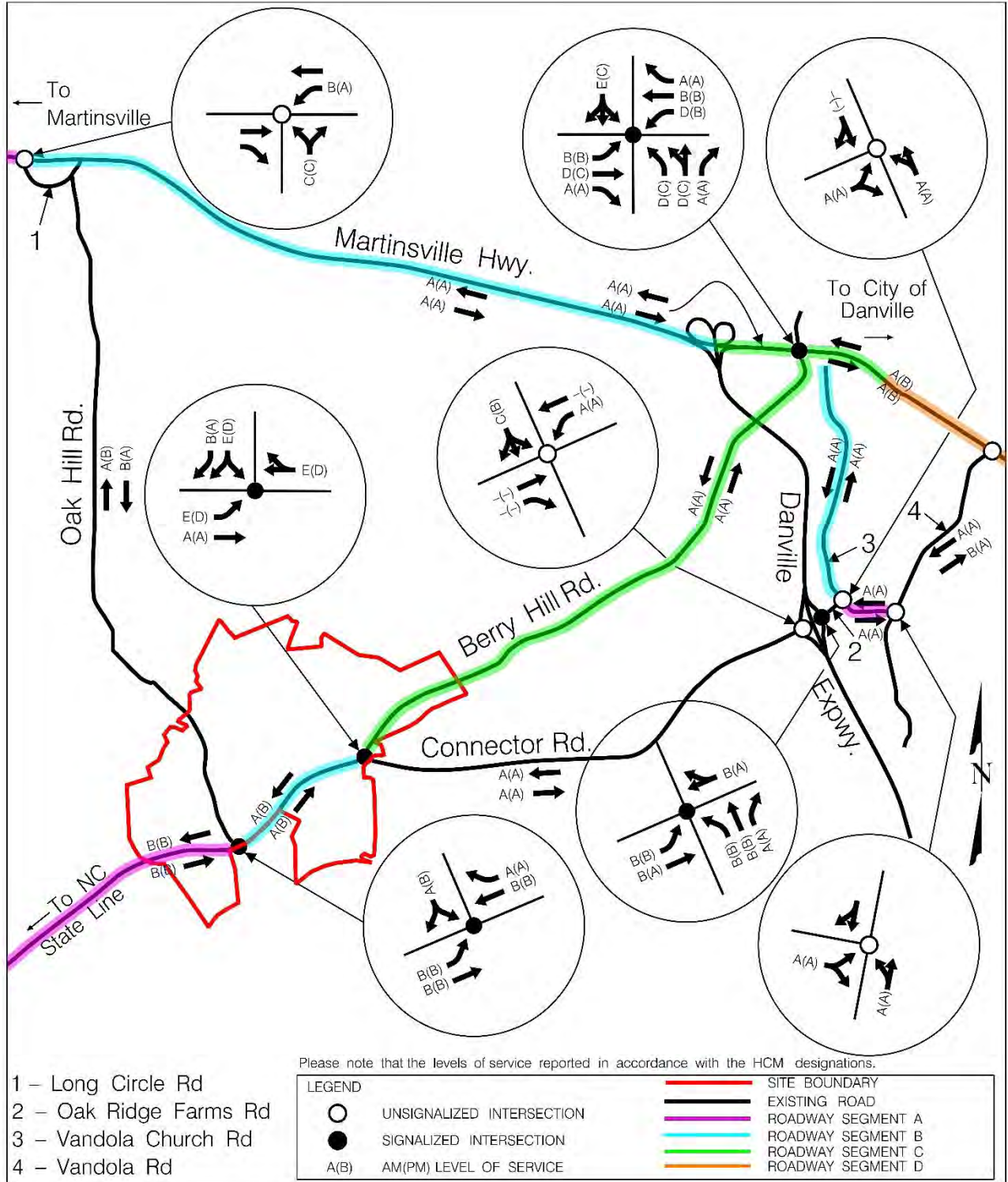




**Figure 20**  
5,000 Employees (Year 2032) Total Traffic

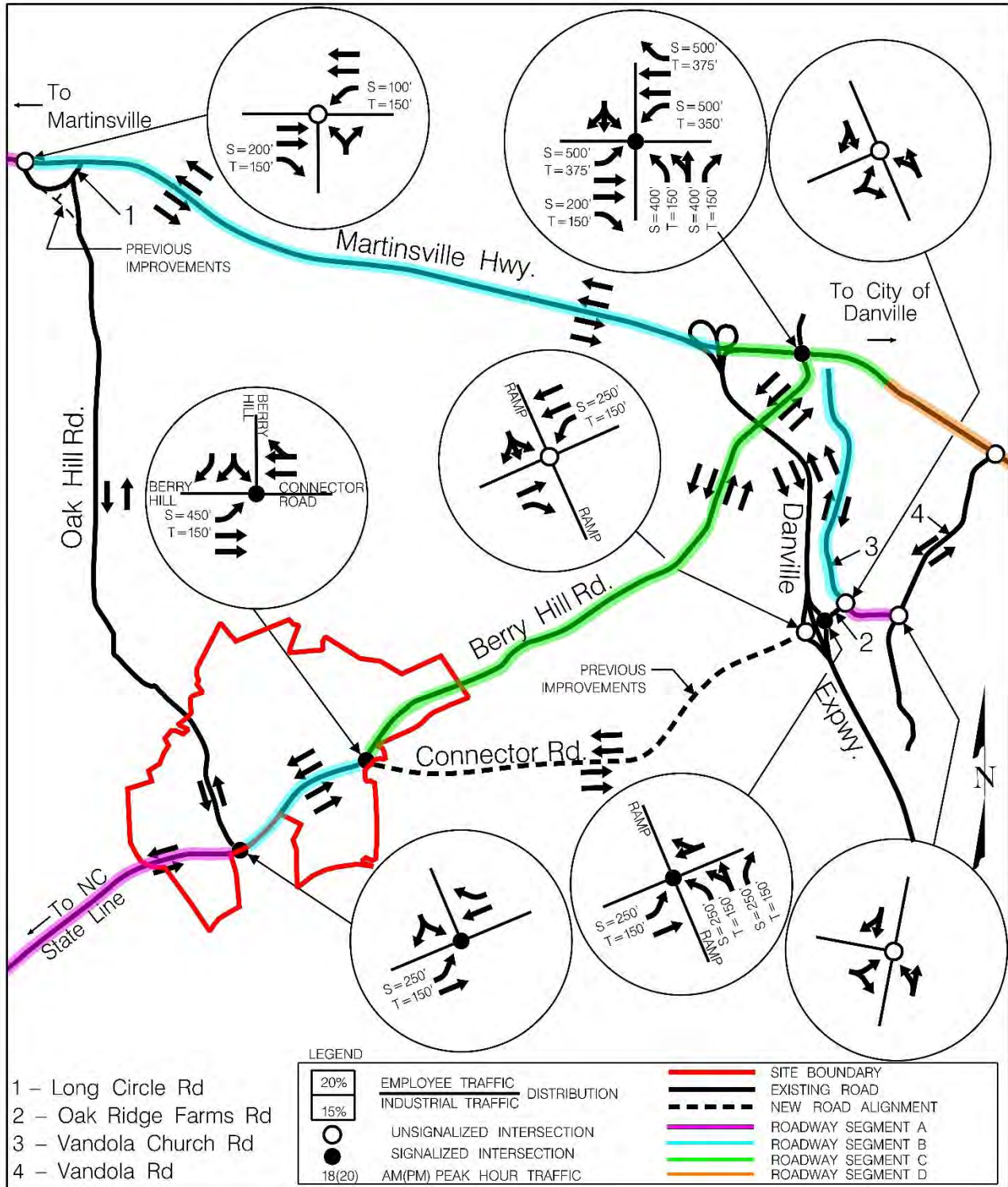


**Figure 21**  
5,000 Employees (Year 2032) Levels of Service





**Figure 22**  
5,000 Employees (Year 2032) Proposed Geometry



As indicated in the above analysis, all roadways and intersections have an acceptable level of service utilizing the proposed geometry. **Figure 22** depicts the proposed road improvements and associated intersection geometry presented within this partial build.

Due to the characteristics of Oak Hill Road (SR 862), the above analysis assumes that all industrial traffic originating from the west along Martinsville Highway will bypass Oak Hill Road and proceed to the Mega Site via Route 58 Bypass and the proposed Connector Road.

### 5.3.3 Full Build Network – 11,500 Employees

Additional road improvements with 11,500 employee (full build-out) trip distributions and assignments, **Figure 23**, and total traffic volume, **Figure 24**, are summarized below.

- Construct a directional ramp from NB Danville Expressway (SR 58 Bypass) to WB Connector Road and modify interchange to follow this ramp.
- Add southbound exit spur from SB Danville Expressway to westbound Connector Road.
- Add southbound entrance ramp from eastbound Connector Road to southbound Danville Expressway.
- Add left turn lane from WB Martinsville Highway (SR 58) to Berry Hill Road (US 311).
- Add a second left turn lanes and a right turn lane from the Connector Road to Berry Hill Road.
- Expand Berry Hill Road Section B into a 6 lane divided highway between the Connector Road and Oak Hill Road.
- Add a second right turn lane at the intersection of Berry Hill Road and Oak Hill Road, from Berry Hill Road to Oak Hill Road. Also at this intersection, add a left turn lane from Oak Hill Road to Berry Hill Road. Also, allow a left turn movement from the right turn lane on Oak Hill Road.
- Add one lane in each direction on Oak Hill Road north of Berry Hill Road within the boundaries of the Mega Site.
- Signal control expected at the following intersection:
  - Danville Expressway (SR 58 Bypass) SB Ramp and Oak Ridge Farms Road (the Connector Road).

As seen in **Figure 23**, the trip distributions and assignments for the AM and PM were changed around the intersection of Berry Hill Road and Martinsville Highway. It was assumed that as additional traffic was directed to the left turn lanes, from Martinsville Highway (Rte. 58 Bus.) to Berry Hill Road (US 311), the level of service of this intersection would degrade to a point where vehicles would bypass this left turn. Therefore, it was assumed that when the left turn volume reached an undesirable maximum level of service, a certain number of trips would pass through the intersection and utilize the Danville Expressway and the Connector Road in order to access the site. This same assumption was also applied to the intersection of the Connector Road and Berry Hill Road during the PM peak hour.

As in determining the existing and projected background LOS, the future total LOS for a two-lane and a multi-lane road were determined by the percent-time-spent-following (PTSF) and density respectively. The results of this analysis are summarized in and **Table XXV** and within **Figure 25**.



**Table XXIV**

11,500 Employees (Future Year 2047) Total Traffic Two-Lane Roadway LOS

Roadway Segment	EB or NB		WB or SB	
	PTSF (%) AM / PM	LOS AM / PM	PTSF (%) AM / PM	LOS AM / PM
Berry Hill Road (A)	57.6 / 62.2	C / C	61.0 / 61.0	C / C
Oak Hill Road	12.7 / 50.1	A / B	55.8 / 23.0	C / A
Oak Ridge Farms Road	42.0 / 23.8	B / A	5.5 / 33.0	A / A
Vandola Church Road (A)	25.5 / 33.2	A / A	35.1 / 30.1	A / A
Vandola Church Road (B)	13.5 / 34.7	A / A	34.3 / 17.5	A / A
Vandola Drive	43.6 / 24.6	B / A	16.2 / 39.4	A / A

**Table XXV**

11,500 Employees (Future Year 2047) Total Traffic Multi-Lane Roadway LOS

Roadway Segment	EB or NB		WB or SB	
	Density (pc/mi/ln) AM / PM	LOS AM / PM	Density (pc/mi/ln) AM / PM	LOS AM / PM
Martinsville Highway (A)	11.5 / 8.5	B / A	6.8 / 11.0	A / A
Martinsville Highway (B)	10.8 / 7.0	A / A	7.0 / 10.7	A / A
Martinsville Highway (C)	9.2 / 11.7	A / B	11.7 / 12.1	B / B
Martinsville Highway (D)	12.4 / 13.2	B / B	18.4 / 16.6	C / B
Danville Expressway	6.1 / 9.9	A / A	11.9 / 5.5	B / A
Berry Hill Road (B)	4.3 / 19.7	A / C	22.1 / 8.8	C / A
Berry Hill Road (C)	4.3 / 8.1	A / A	8.1 / 5.1	A / A
Connector Road	2.9 / 22.0	A / C	25.7 / 8.9	C / A

In addition to the roadway capacity analysis, an intersection capacity analysis was performed utilizing the total future peak hour traffic volumes from **Figure 24**. The results of the analysis are presented in **Table XXVI** and within **Figure 25**.

**Table XXVI**

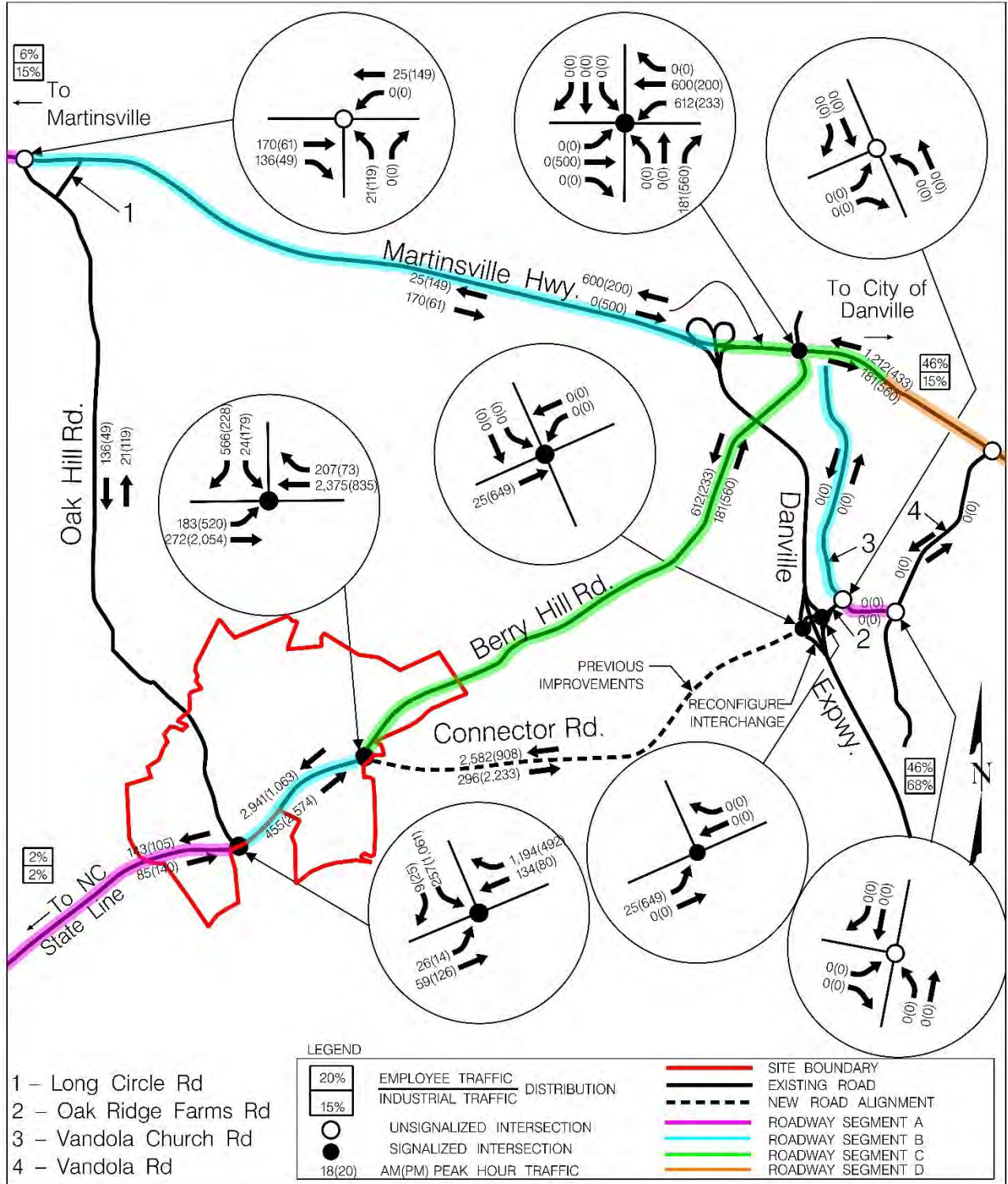
11,500 Employees (Future Year 2047) Total Traffic Intersection LOS

Intersection	Type of Control	Movement Approach	AM Peak Hours		PM Peak Hours	
			Level of Service	Delay (sec/veh)	Level of Service	Delay (sec/veh)
Berry Hill Rd & Oak Hill Rd	Signalized	EB (L)	B	18.5	C	20.2
		EB (T)	B	16.7	C	20.9
		WB (T)	B	17.2	C	20.4
		WB (R )	A	1.0	A	0.2
		SB (LR)	A	6.3	B	12.3
		<b>Overall</b>	<b>A</b>	<b>5.4</b>	<b>B</b>	<b>11.4</b>
Long Circle Rd & Martinsville Hwy	Unsignalized	WB (L)	B	12.1	B	10.5
		NB	C	22.4	D	27.3
Berry Hill Rd & Martinsville Hwy	Signalized	EB (L)	B	12.5	B	19.7
		EB (T)	D	36.2	C	26.9
		EB (R )	A	0.3	A	0.2
		WB (L)	D	38.4	D	36.0
		WB (T)	B	17.8	B	14.0
		WB (R )	A	0.1	A	0.1
		NB (L)	D	40.8	D	40.0
		NB (LT)	D	40.6	D	39.9
		NB (R )	A	0.4	A	1.2
		SB	D	46.0	D	34.1
		<b>Overall</b>	<b>C</b>	<b>26.1</b>	<b>B</b>	<b>18.2</b>
Danville Expwy SB Ramps & Oak Ridge Farms Rd	Signalized	EB (T)	A	2.0	A	1.6
		WB (LT)	A	2.1	A	1.6
		SB (LT)	B	13.4	B	16.5
		<b>Overall</b>	<b>A</b>	<b>2.6</b>	<b>A</b>	<b>1.8</b>
Danville Expwy NB Ramps & Oak Ridge Farms Rd	Signalized	EB (L)	A	0.1	A	2.6
		EB (T)	A	0.0	A	0.0
		WB (TR)	A	0.0	A	0.0
		<b>Overall</b>	<b>A</b>	<b>0.0</b>	<b>A</b>	<b>2.4</b>
Oak Ridge Farm Rd & Vandola Church Rd	Unsignalized	WB (L)	A	7.4	A	7.3
		NB	A	8.5	A	8.6
Vandola Church Rd & Vandola Dr	Unsignalized	NB (L)	A	7.5	A	7.4
		EB	A	9.1	A	9.0
Berry Hill Road & Connector Road	Signalized	EB (L)	E	59.4	C	30.7
		EB (T)	A	1.2	A	9.8
		WB (T)	C	21.6	C	25.7
		WB (R )	A	1.8	A	6.3
		SB (L)	D	38.4	D	37.2
		SB (R )	A	1.1	A	0.4
		<b>Overall</b>	<b>B</b>	<b>18.8</b>	<b>B</b>	<b>16.5</b>

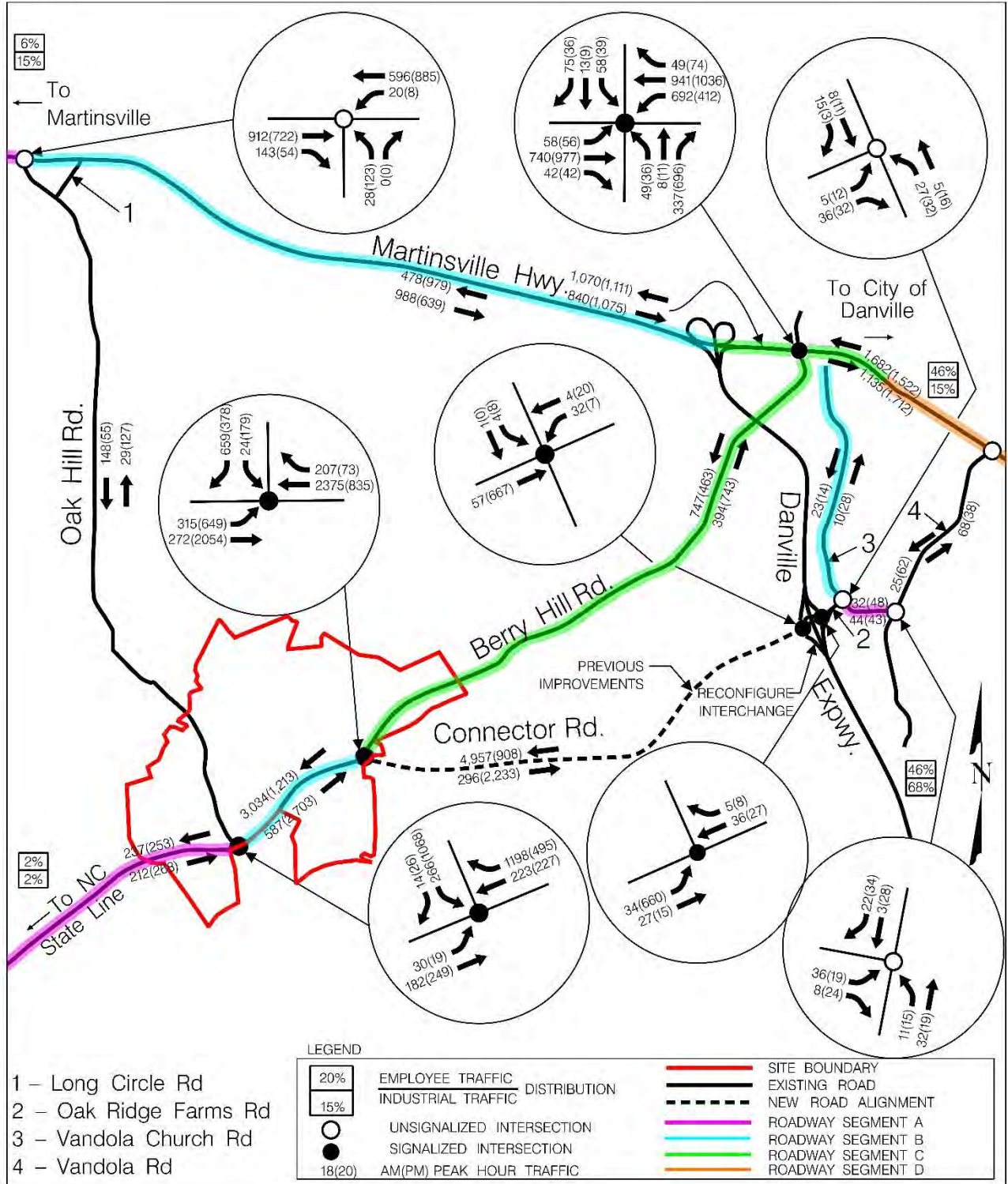
As indicated in the above tables, the majority of the roadways and intersections exhibit an acceptable level of service utilizing the proposed geometry. Berry Hill Road from the Connector Road to Oak Hill Road has a level of service of D in the westbound direction in the AM. Therefore, there is a possibility that this road will require additional improvements to support the full growth of the Mega Site. **Figure 26** depicts the proposed road improvements and associated intersection geometry presented within this full build.

Due to the characteristics of Oak Hill Road (SR 862), the above analysis assumes that all industrial traffic originating from the west along Martinsville Highway will bypass Oak Hill Road and proceed to the Mega Site via Route 58 Bypass and the proposed Connector Road.

**Figure 23**  
11,500 Employees (Year 2047) Trip Distribution and Assignment

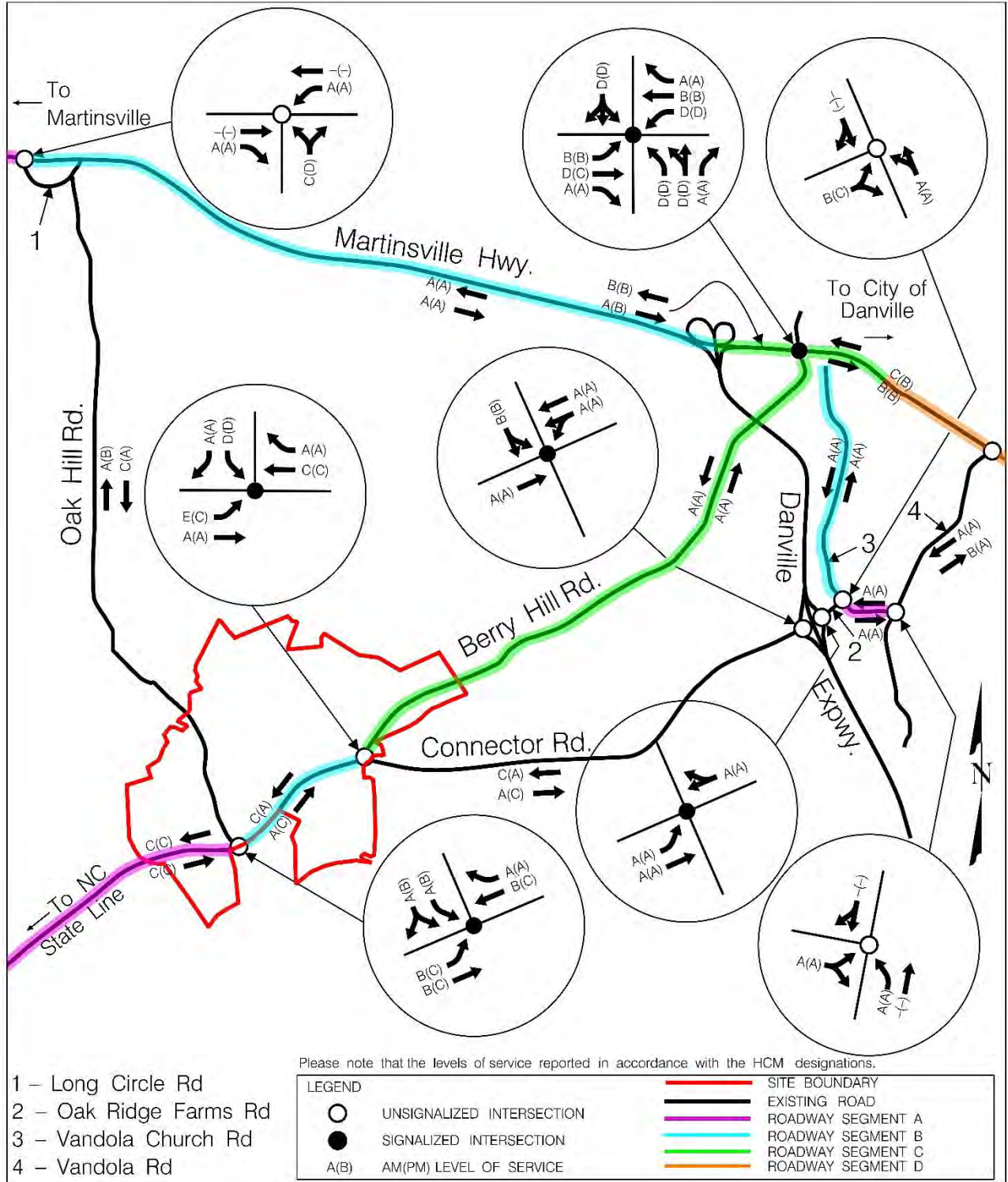


**Figure 24**  
11,500 Employees (Year 2047) Total Traffic

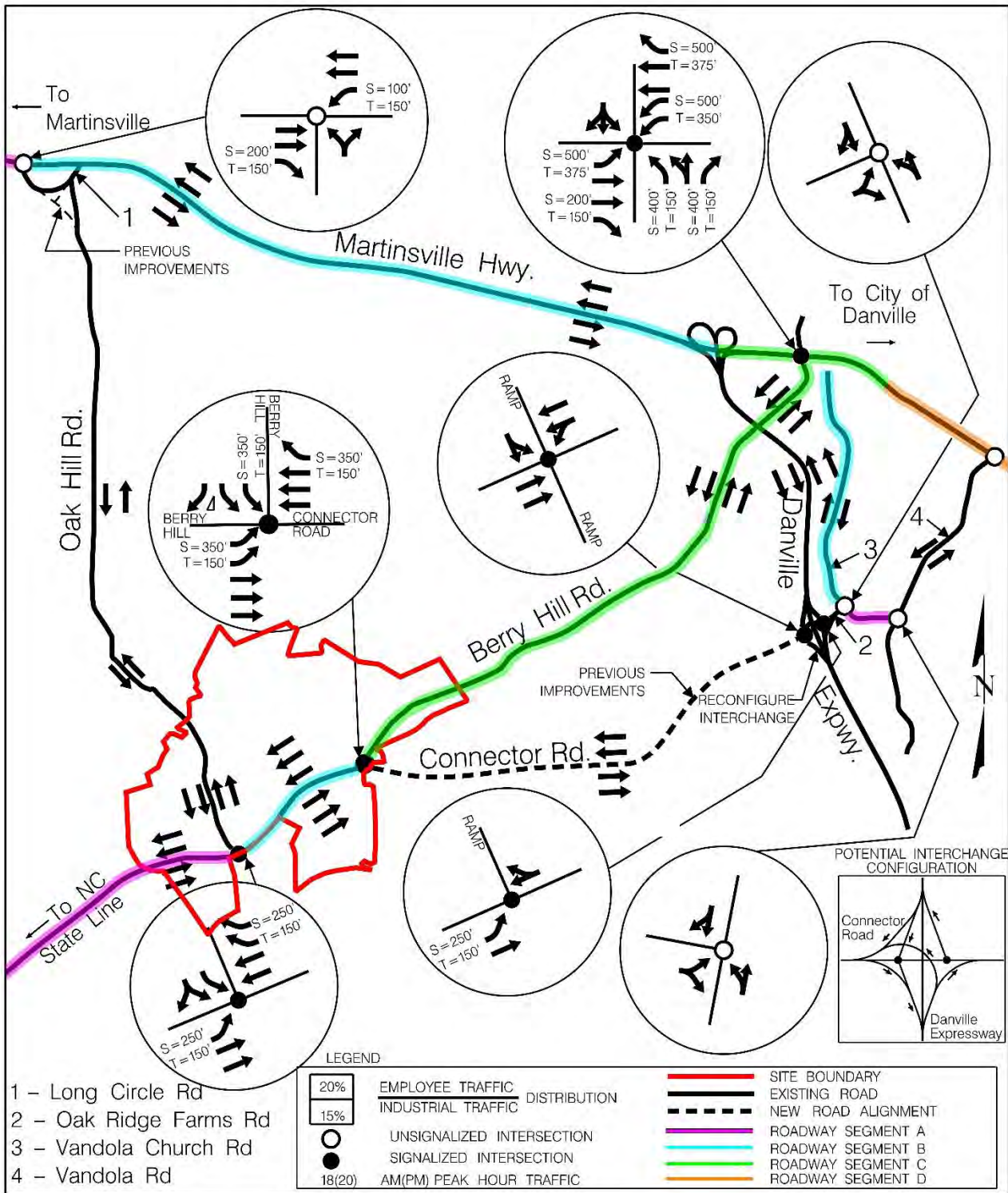




**Figure 25**  
11,500 Employees (Year 2047) Levels of Service



**Figure 26**  
11,500 Employees (Year 2047) Proposed Geometry



## 6 CONNECTOR ROAD

The 2009 Transportation Plan determined that the Connector Road is the preferred alternative. Based on feedback from the MPO and VDOT, further analysis of this alternative is desired; specifically three options that focus on the alignment's connection with Berry Hill Road. With each option, the Connector Road will become the major thru movements as you approach Berry Hill Road. It is recommended that the existing Berry Hill Road be realigned such that the northern section of Berry Hill Road be realigned to intersect the Connector Road at a T intersection.

After reviewing the potential alignments of the Connector Road, it became apparent that from the existing interchange to the west there is little variation in options for the first mile of the proposed Connector Road due to existing properties and geographical features, as seen in **Figure 27**. From there, the variations in the route options differ greatly as described below and can be seen in **Figure 27**.

### 6.1 Option 1

Option 1 consists of the shortest alignment, at approximately 2 miles of new construction, to connect Berry Hill Road to the existing Oak Ridge Farms Road interchange. The benefits of Option 1 are as follows:

- Shortest Alignment
- Least number of stream crossings
- Least amount of property impacts
- Ties to Mega Site Farthest East, not impacting pod development

While the impacts to properties, streams, and physical features are reduced with this option, the amount of improvements along Berry Hill Road are significantly increased. The final build out of the Mega Site is projected to require Berry Hill Road to be a six lane roadway between the intersection with the Connector Road and Oak Hill Road. The distance required for this major improvement is approximately 2.3 miles.

### 6.2 Option 2

Option 2 consists of approximately 2.5 miles of new construction to connect Berry Hill Road to the existing Oak Ridge Farms Road interchange. The benefits of Option 2 are as follows:

- Connects to Berry Hill Road in the middle of the Mega Site
- Minimizes remnant parcels

The amount of improvements needed on Berry Hill Road for final build out are required for approximately 1.5 miles. This option does have one additional stream crossing when compared to the other two options.

### 6.3 Option 3

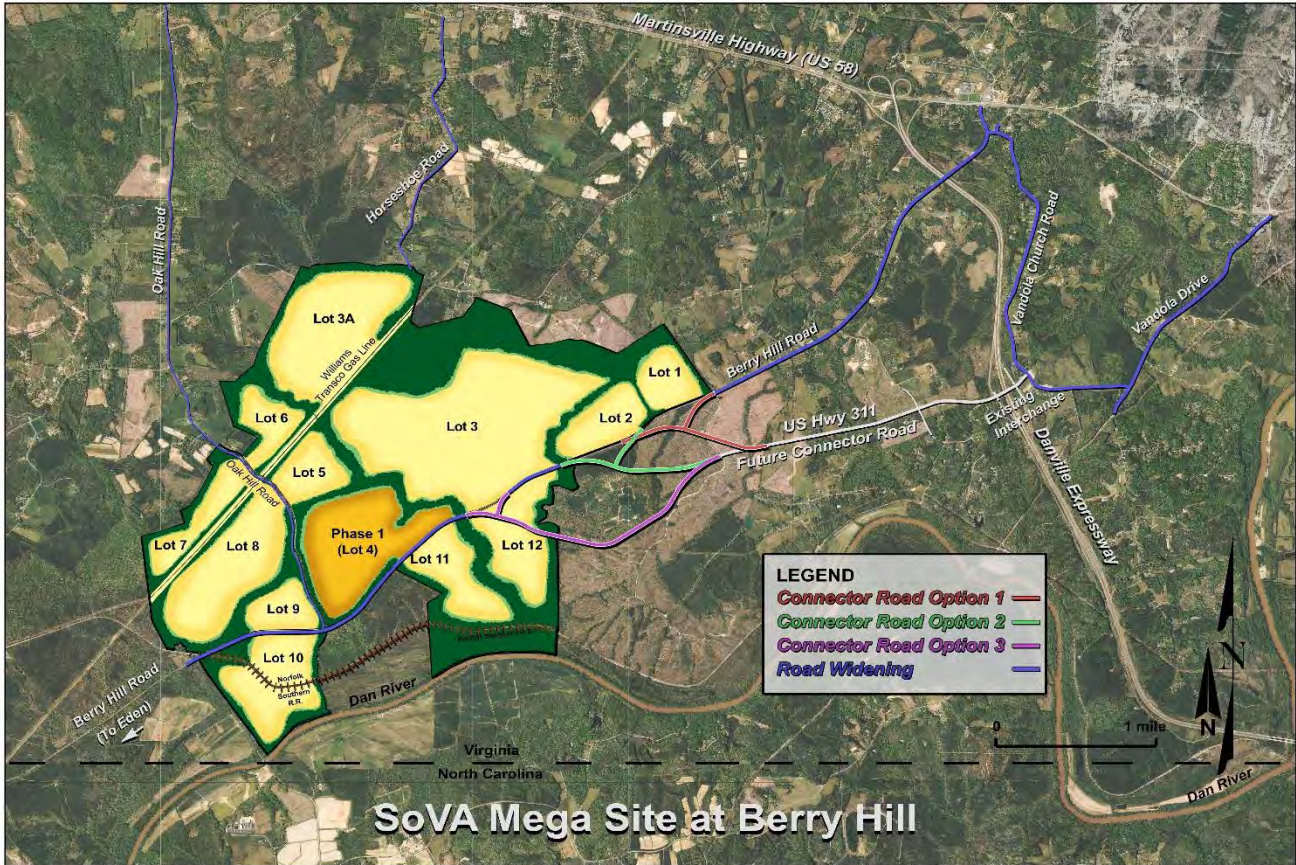
Option 3 consists of approximately 3.5 miles of new construction to connect Berry Hill Road to the existing Oak Ridge Farms Road interchange. The benefits of Option 3 are as follows:

- Connects to Berry Hill Road at the first pod anticipated to be developed
- Least amount of reconstruction of Berry Hill Road

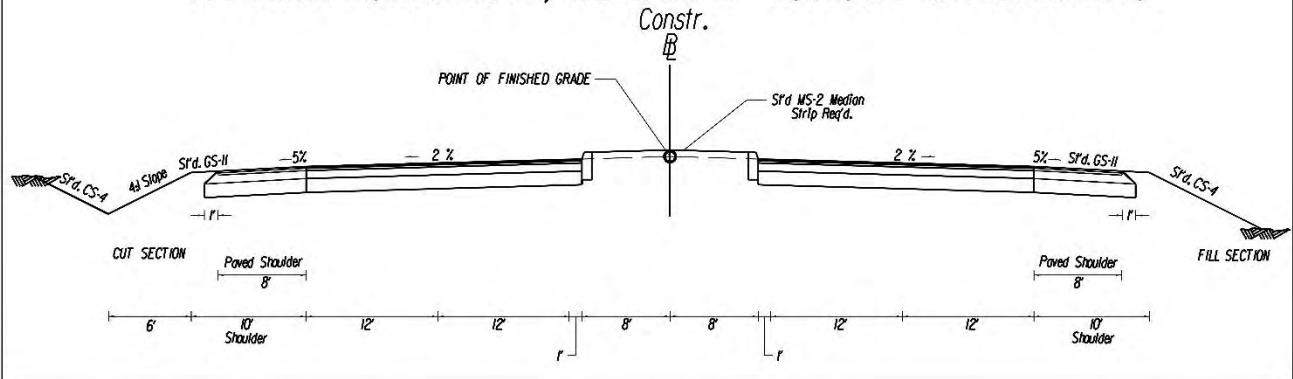
The amount of improvements needed on Berry Hill Road for final build out are required for approximately 0.8 miles. This option has more greenfield property impacts than the other two options.



**Figure 27**  
Connector Road Options



**TYPICAL SECTION (ULTIMATE)  
CONNECTOR ROAD  
(4-LANE ROADWAY, ST'D.GS-2 - RURAL COLLECTOR)**





## 6.4 Cost Comparison

The options as identified in the above sections were compared based on total length of road improvements and type of road improvements. **Table XXVII**, **Table XXVIII**, and **Table XXIX** summarizes the comparison below:

**Table XXVII**  
2,500 Employees Opinion of Cost Comparison

Factors for Comparison of Connector Road Options	Units	Rate	Option 1		Option 2		Option 3	
			Quantity	Total	Quantity	Total	Quantity	Total
<b>Connector Road Costs (Smart Scale Phase 2 Application):</b>								
<b>Preliminary Engineering (PE)</b>								
NEPA				\$1,500,000		\$1,500,000		\$1,500,000
Engineering Design		15%		\$2,195,820		\$2,547,180		\$3,201,900
<b>Total Connector Road PE Costs</b>				<b>\$3,695,820</b>		<b>\$4,047,180</b>		<b>\$4,701,900</b>
<b>Right of Way and Utility Relocation (RW)</b>								
<b>Total Connector Road RW Costs</b>		<b>30%</b>		<b>\$4,391,640</b>		<b>\$5,094,360</b>		<b>\$6,403,800</b>
<b>Construction (CN)</b>								
Connector Road - 4 lane grading, 2 Lane paved	Mile	\$5,856,000	2.3	\$13,468,800	2.7	\$15,811,200	3.5	\$20,496,000
Berry Hill Tie-in - 2 Lane	Mile	\$3,200,000	0.3	\$960,000	0.3	\$960,000	0.2	\$640,000
Transit - Bus Stop	EA	\$150,000	1	\$150,000	1	\$150,000	1	\$150,000
Bicycle Signage	EA	\$5,000	12	\$60,000	12	\$60,000	12	\$60,000
Construction Inspection (CEI)		15%		\$2,195,820		\$2,547,180		\$3,201,900
<b>Total Connector Road CN Costs</b>				<b>\$16,834,620</b>		<b>\$19,528,380</b>		<b>\$24,547,900</b>
<b>Total Connector Road Costs (Smart Scale Phase 2 Application)</b>								
PE - Preliminary Engineering*				\$3,695,820		\$4,047,180		\$4,701,900
RW - Right of Way and Utility Relocation				\$4,391,640		\$5,094,360		\$6,403,800
CN - Construction				\$16,834,620		\$19,528,380		\$24,547,900
Contingencies		20%		\$2,927,760		\$3,396,240		\$4,269,200
<b>Total Connector Road (Smart Scale) Costs</b>				<b>\$27,849,840</b>		<b>\$32,066,160</b>		<b>\$39,922,800</b>
<b>Additional Improvements (Berry Hill Road):</b>								
<b>Preliminary Engineering (PE)</b>								
<b>Total Additional Improvements PE Costs (Eng. Design)</b>		<b>15%</b>		<b>\$1,392,000</b>		<b>\$1,200,000</b>		<b>\$912,000</b>
<b>Right of Way and Utility Relocation (RW)</b>								
<b>Total Additional Improvements RW Costs</b>		<b>30%</b>		<b>\$2,784,000</b>		<b>\$2,400,000</b>		<b>\$1,824,000</b>
<b>Construction (CN)</b>								
Reconfigure Oak Hill Rd/Long Circle	Mile	\$3,200,000	0.7	\$2,240,000	0.7	\$2,240,000	0.7	\$2,240,000
Berry Hill Rd (B) - 4 Lane Total, 2 new lanes	Mile	\$3,200,000	2.2	\$7,040,000	1.8	\$5,760,000	1.2	\$3,840,000
Construction Inspection (CEI)		15%		\$1,392,000		\$1,200,000		\$912,000
<b>Total Additional Improvements CN Costs</b>				<b>\$10,672,000</b>		<b>\$9,200,000</b>		<b>\$6,992,000</b>
<b>Total Additional Improvements Costs (Future Smart Scale Application)</b>								
PE - Preliminary Engineering*				\$1,392,000		\$1,200,000		\$912,000
RW - Right of Way and Utility Relocation				\$2,784,000		\$2,400,000		\$1,824,000
CN - Construction				\$10,672,000		\$9,200,000		\$6,992,000
Contingencies		20%		\$1,856,000		\$1,600,000		\$1,216,000
<b>Total Additional Improvements Costs</b>				<b>\$16,704,000</b>		<b>\$14,400,000</b>		<b>\$10,944,000</b>
<b>Total Opinion of Costs for 2,500 Employee Improvements:</b>								
Connector Road (including NEPA)				\$29,349,840		\$33,566,160		\$41,422,800
Additional Improvements				\$16,704,000		\$14,400,000		\$10,944,000
<b>Total Opinion of Costs for 2,500 Employees Improvements</b>				<b>\$46,053,840</b>		<b>\$47,966,160</b>		<b>\$52,366,800</b>

\* NEPA process and documentation for this phase is planned to be funded outside of the Smart Scale Application

**Table XXVIII**

5,000 Employees Opinion of Cost Comparison

Factors for Comparison of Connector Road Options	Units	Rate	Option 1		Option 2		Option 3	
			Quantity	Total	Quantity	Total	Quantity	Total
<b>Preliminary Engineering (PE)</b>								
NEPA Update				\$250,000		\$250,000		\$250,000
Engineering Design		15%		\$3,882,750		\$4,362,750		\$5,082,750
<b>Total Connector Road PE Costs</b>				<b>\$4,132,750</b>		<b>\$4,612,750</b>		<b>\$5,332,750</b>
<b>Right of Way and Utility Relocation (RW)</b>								
<b>Total Connector Road RW Costs</b>		<b>30%</b>		<b>\$7,765,500</b>		<b>\$8,725,500</b>		<b>\$10,165,500</b>
<b>Construction (CN)</b>								
Connector Road - 2 Lane Paving	Mile	\$3,200,000	2.3	\$7,360,000	2.7	\$8,640,000	3.5	\$11,200,000
Bridge Construction - new 2 Lane	SF	\$235	35,000	\$8,225,000	35,000	\$8,225,000	35,000	\$8,225,000
Berry Hill Rd (C) - 4 Lane Total, 2 new lanes	Mile	\$3,200,000	2.6	\$8,320,000	3.2	\$10,240,000	3.9	\$12,480,000
Left and Right Turn Lanes from Oak Hill Rd to Berry Hill Rd	EA	\$300,000	1	\$300,000	1	\$300,000	1	\$300,000
Left Turn Lane from WB Martinsville Hwy to Berry Hill Rd	EA	\$280,000	1	\$280,000	1	\$280,000	1	\$280,000
Left Turn Lane from Connector Rd to NB Berry Hill Rd	EA	\$280,000	1	\$280,000	1	\$280,000	1	\$280,000
Right Turn Lane from SB Berry Hill Rd to WB Connector Rd	EA	\$145,000	1	\$145,000	1	\$145,000	1	\$145,000
Signalization	EA	\$325,000	3	\$975,000	3	\$975,000	3	\$975,000
Construction Inspection (CEI)		15%		\$3,882,750		\$4,362,750		\$5,082,750
<b>Total Improvements CN Costs</b>				<b>\$25,885,000</b>		<b>\$29,085,000</b>		<b>\$33,885,000</b>
<b>Total Opinion of Costs for 5,000 Employee Improvements:</b>								
PE - Preliminary Engineering				\$4,132,750		\$4,612,750		\$5,332,750
RW - Right of Way and Utility Relocation				\$7,765,500		\$8,725,500		\$10,165,500
CN - Construction				\$25,885,000		\$29,085,000		\$33,885,000
Contingencies		20%		\$5,177,000		\$5,817,000		\$6,777,000
<b>Total Opinion of Costs for 5,000 Employees Improvements</b>				<b>\$42,960,250</b>		<b>\$48,240,250</b>		<b>\$56,160,250</b>

**Table XXIX**

## 11,500 Employees Opinion of Cost Comparison

Factors for Comparison of Connector Road Options	Units	Rate	Option 1		Option 2		Option 3	
			Quantity	Total	Quantity	Total	Quantity	Total
<b>Preliminary Engineering (PE)</b>								
NEPA Update				\$250,000		\$250,000		\$250,000
Engineering Design		15%		\$4,315,200		\$4,220,700		\$3,835,200
<b>Total Connector Road PE Costs</b>				<b>\$4,565,200</b>		<b>\$4,470,700</b>		<b>\$4,085,200</b>
<b>Right of Way and Utility Relocation (RW)</b>								
<b>Total Connector Road RW Costs</b>		<b>30%</b>		<b>\$8,630,400</b>		<b>\$8,441,400</b>		<b>\$7,670,400</b>
<b>Construction (CN)</b>								
Berry Hill Rd (B) - 6 Lane Total, 2 new lanes	Mile	\$3,200,000	2.2	\$7,040,000	1.8	\$5,760,000	1.2	\$3,840,000
Exit Ramp Spur from SB Danville Expwy Ramp to WB Connector Rd	EA	\$280,000	1	\$280,000	1	\$280,000	1	\$280,000
SB Entrance Ramp from EB Connector to SB Danville Expwy	EA	\$280,000	1	\$280,000	1	\$280,000	1	\$280,000
Left Turn Lane from Connector Rd to NB Berry Hill Rd	EA	\$280,000	1	\$280,000	1	\$280,000	1	\$280,000
Right Turn Lane from Connector Rd to NB Berry Hill Rd	EA	\$145,000	1	\$145,000	1	\$145,000	1	\$145,000
Right Turn Lane from Berry Hill Rd to Oak Hill Rd	EA	\$145,000	1	\$145,000	1	\$145,000	1	\$145,000
Left Turn Lane from Oak Hill Rd to Berry Hill Rd	EA	\$280,000	1	\$280,000	1	\$280,000	1	\$280,000
Oak Hill Rd (within limits of Mega Site) - 4 Lane total, 2 new lanes	Mile	\$3,200,000	1	\$3,200,000	1	\$3,200,000	1	\$3,200,000
Interchange Improvements	EA	\$8,568,000	1	\$8,568,000	1	\$8,568,000	1	\$8,568,000
Interchange Improvements - New Bridge	SF	\$235	35,000	\$8,225,000	35,000	\$8,225,000	35,000	\$8,225,000
Signalization	EA	\$325,000	1	\$325,000	1	\$975,000	1	\$325,000
Construction Inspection (CEI)		15%		\$4,315,200		\$4,220,700		\$3,835,200
<b>Total Improvements CN Costs</b>				<b>\$28,768,000</b>		<b>\$28,138,000</b>		<b>\$25,568,000</b>
<b>Total Opinion of Costs for 11,500 Employee Improvements:</b>								
PE - Preliminary Engineering				\$4,565,200		\$4,470,700		\$4,085,200
RW - Right of Way and Utility Relocation				\$8,630,400		\$8,441,400		\$7,670,400
CN - Construction				\$28,768,000		\$28,138,000		\$25,568,000
Contingencies		20%		\$5,753,600		\$5,627,600		\$5,113,600
<b>Total Opinion of Costs for 11,500 Employees Improvements</b>				<b>\$47,717,200</b>		<b>\$46,677,700</b>		<b>\$42,437,200</b>

Note: Opinion of costs are based on historical data and current market conditions as of March, 2018. An inflation factor of 4% should be applied to costs in subsequent years.

## 6.5 Connector Road Environmental Review

VDOT conducted an environmental desktop review of the area proposed with the Connector Road. Below is a summary of the potential environmental resources within the proposed project area. The full desktop review can be found in the Appendix.

**Table XXX** summarizes potential environmental issues and recommendations for addressing possible impacts to those resources. Other environmental resources may exist within the proposed project area that are not included in the table.

**Table XXX**  
Environmental Review Summary

Resources/Issue	Comments
Agricultural and Forest Districts, Prime Farmland and Soil	<p>VDOT GIS Integrator utilized U.S. Department of Agriculture (USDA) and Natural Resource Conservation Service (NRCS) metadata for Agricultural and Forestal Districts. The data identified no agricultural or forestal districts within the project area.</p> <p>VDOT GIS Integrator utilized USDA and NRCS metadata for soils identifying prime farmland. The data identified approximately half of the project area as prime farmland. The prime farmland is predominantly located along the Dan River, Trotters Creek, east of Burton Road, north and south of SC 961 and surrounding SC 1262 and SC 1261. Coordination with NRCS may be necessary when a preferred route is identified.</p> <p>VDOT GIS Integrator utilized USDA and NRCS metadata for hydric soils. The data identified hydric soils (Chenneby Loam) along the northern border of the Dan River, and along Trotters Creek and McGuff Creek. Hydric soils were mapped crossing Berry Hill Road along Trotters Creek.</p>
Cultural Resources	VDOT GIS Integrator utilized Virginia Department of Historic Resources (DHR) metadata. The data identified five (5) known archeological sites within the western side of project area, specifically between Trotters Creek and McGuff Creek. In addition, the data identified nine (9) known architecture sites within the project area, of which most were located along Berry Hill Road (US 311). Mapped resources are to be used as general reference. The absence of mapped resources does not mean resources are not present in the project area; it could be attributed to a lack of survey information. A Phase I survey should be conducted once a preferred route is identified.
FEMA	VDOT GIS Integrator utilized FEMA metadata. The data identified Floodplain Zone AE along the Dan River, Trotters Creek and McGuff Creek corridors.
Geology	VDOT GIS Integrator utilized Virginia Department of Mines, Minerals and Energy (DMME) metadata. The data identified sandstone, siltstone, shale & coal interbedded north of Berry Hill Road (US 311), sandstone – undifferentiated south of Berry Hill Road (US 311), and conglomerate – mixed class west of US 58.
Hazardous Materials	VDOT GIS Integrator utilized Virginia Department of Environmental Quality (DEQ) and U.S. Environmental Protection Agency (EPA) metadata for known hazardous materials. The data identified no known hazardous materials issues within the project area. The lack of mapped issues does not constitute a clean site as the area may not have been surveyed. Acquisitions of land that contains hazardous material will require, at a minimum, a Phase I Environmental Site Assessment (ESA). Additionally, acquisition of residential or commercial buildings with lead-based paint and/or asbestos-containing, and/or Recognized Environmental Condition (REC) building materials would be considered an issue for the project and further investigation may be warranted.
Surface Water Intake Watersheds	VDOT GIS Integrator utilized the Virginia Department of Health (VDH), Office of Drinking Water metadata. The data identified the Dan River intake watershed intersecting the US 58 corridor at the SC 1260 intersection.
Threatened and Endangered Species/Wildlife and Waterfowl Refuges	The U.S. Fish and Wildlife Service (USFWS) database (IPaC) listed the Federally Threatened (FT) Northern Long-eared Bat (NLEB), and the Federally Endangered (FE) Roanoke Loggerch as possibly occurring within the project area. The Virginia Department of Game and Inland Fisheries (VDGIF) listed the FE James Spiny mussel, the FE Roanoke Loggerch and the FT NLEB within 2 miles of the project area. Of these listed species, the James spiny mussel was listed as confirmed to occur within the project area. The VDGIF did not list any mapped observations of FE or FT species within the project area. The absence of mapped species observation does not mean FE or FT species are not present. The absence may be because a survey was not conducted. Additionally, the USFWS did not list any designated critical habitat. No wildlife or waterfowl refuges are located within the project corridor.
Waters of the U.S., including wetlands	<p>VDOT GIS Integrator utilized the USFWS National Wetland Inventory (NWI) metadata. The data identified mapped wetlands north of the Dan River and along Trotters Creek and McGuff Creek. In addition, several unnamed tributaries to the Dan River are located within the project area. Mapped streams and wetlands are to be used as general reference. The absence of mapped streams and wetlands does not mean additional resources are not present onsite; a potential cause of the absence could be that a survey was not conducted. A Waters of the U.S. (WOUS)/wetland delineation should be conducted once a preferred route is identified.</p> <p>VDOT GIS Integrator utilized the Virginia DCR metadata. The data identified the Dan River as a scenic river.</p>
Water Quality Permits	This roadway will likely encounter headwater streams and associated wetland areas. Permitting scenarios will vary depending on verification of wetland and stream locations and the location of construction activities. In comparison to similar projects, impacts usually will fit general water quality permits from both the DEQ and the U.S. Army Corps of Engineers (USACE).
Well and Septic	Well and septic locations within the project corridor are not known at this time. A request for records of locations should be submitted to the health department once a preferred route is identified. There is a potential for a complete parcel take if a septic system is required to be removed, and an alternative field and/or public utilities hookup cannot be provided.



## 7 RECOMMENDATIONS AND OBSERVATIONS

### 7.1 Roadway Network

Based on the analysis discussed in the above sections it is expected that traffic generated from the Mega Site during the assumed build-out year 2047 will have a major impact to the local traffic conditions. Consequently, it is Dewberry's opinion that the following road improvement alternatives should be considered.

#### 7.1.1 Oak Hill Road (SR 862)

Oak Hill Road (SR 862) is the more natural direct route for employee traffic originating from the west along the Martinsville Highway (SR 58) corridor to the Mega Site. In addition, Oak Hill Road (SR 862) via Long Circle may not require improvements at the intersection with Martinsville Highway (SR 58); a summary of general improvements along the current alignment of Oak Hill Road (SR 862) are as follows:

- Correct isolated horizontal and vertical geometry deficiencies as preliminarily identified in Figure 15.
- Widen the existing road 2 feet for each direction and add standard shoulders and ditches. See typical section as presented in **Figure 13**.
- Reconfigure a new intersection with Martinsville Highway (SR 58) bypassing Long Circle.

As development of the Mega Site progresses, the alignment of Oak Hill Road should be evaluated. In addition to the improvements listed above; consideration should be given to abandoning Oak Hill Road within the Mega Site.

#### 7.1.2 Vandola Drive/Vandola Church Road (SR 870 & SR 872)

After discussions with the MPO, the Vandola Drive and Vandola Church Road currently serves as a shortcut for the travelling public transitions from Riverside Drive in Danville to the Danville Expressway. As it currently serves as a shortcut, no significant increase to traffic on these roads are anticipated in relation to the build outs of the Mega Site. Currently being used as a shortcut indicates that at times, traffic may increase due to congestion on Martinsville Highway, Berry Hill Road, or the Danville Expressway and improvements to the existing horizontal and vertical geometry are needed to safely and efficiently move this traffic through the area. A summary of general improvements on Vandola Church Road (SR 872) are identified in **Figure 14** and as follows:

- Correct isolated horizontal and vertical geometry deficiencies.
- Widen the existing road, both sections in each direction, and add standard shoulders and ditches.
- Reconfigure a new intersection with Berry Hill Road bypassing the substandard skewed intersection.
- Reconfigure a new intersection with Vandola Drive.

#### 7.1.3 Main Access

Berry Hill Road (US 311) will serve as the primary access within the boundary of the Mega Site. However, once outside the boundary there are several alternatives for the extension of the main access road that will accommodate the necessary capacity. The capacity to accommodate the future build out levels can be achieved through improvements to Berry Hill Road and surrounding roadways and intersections as well as the construction of the Connector Road. The Connector Road will be the primary access outside the boundaries of the Mega Site via a 4-lane divided highway in accordance with a VDOT Rural Minor Arterial (GS-2) from the Danville Expressway (SR 58 Bypass). Along with the construction of the Connector Road, several improvements throughout the roadway network have been recommended as noted above.

## 7.2 Project Phasing

As illustrated in the above sections the road network required to support the size and location of the Mega Site is a large investment. This investment should be carried out based on need depending on how and when the Mega Site is developed. Below is a probable construction phasing plan.

### 7.2.1 2,500 Employees Level

- Build the Connector Road as a two-lane minor arterial highway road that will serve as the primary route for industrial traffic and for through traffic originating from the south.
- Add a new intersection on the Connector Road and construct a diversion road from Berry Hill Road (US 311) north to the new intersection.
- Expand Berry Hill Road Segment B to a four-lane divided minor arterial highway.
- Modify the existing intersection of Oak Hill Road and Long Circle, in order to allow for a more direct path to the Mega Site.

### 7.2.2 5,000 Employees Level

- Expand the Connector Road to a four-lane divided minor arterial highway.
- Expand Berry Hill Road Segment C to a four-lane divided minor arterial highway.
- Add left and right turn lanes to Berry Hill Road (US 311) at the intersection with Oak Hill Road (SR 862).
- Restripe Danville Expressway (SR 58 Bypass) NB Ramp at terminal to provide an exclusive left and a shared left-thru-right turn lane.
- Add a left turn lane from the Connector Road to Northbound Berry Hill Road.
- Add a right turn lane from SB Berry Hill Road onto westbound Connector Road. Keep shared left-right approach from SB Berry Hill Road.
- Signal control expected at the following intersections:
  - The Connector Road and Berry Hill Road (US 311)
  - Danville Expressway (SR 58 Bypass) NB Ramp and Oak Ridge Farm Road (the Connector Road).
  - Oak Hill Road and Berry Hill Road.

### 7.2.3 11,500 Employees Level

- Construct a directional ramp from NB Danville Expressway (SR 58 Bypass) to WB Connector Road and modify interchange to follow this ramp.
- Add southbound exit spur from SB Danville Expressway to westbound Connector Road.
- Add southbound entrance ramp from eastbound Connector Road to southbound Danville Expressway.
- Add dual left turn lanes and a right turn lane from the Connector Road to Berry Hill Road.
- Expand Berry Hill Road Section B into a 6 lane divided highway between the Connector Road and Oak Hill Road.

- Add another right turn lane at the intersection of Berry Hill Road and Oak Hill Road, from Berry Hill Road to Oak Hill Road. Also at this intersection, add a left turn lane Oak Hill Road to Berry Hill Road. Also, allow a left turn movement from the right turn lane on Oak Hill Road.
- Add one lane in each direction on Oak Hill Road north of Berry Hill Road within the boundaries of the Mega Site.
- Signal control expected at the following intersection:
  - Danville Expressway (SR 58 Bypass) SB Ramp and Oak Ridge Farms Road (the Connector Road).

### 7.3 Further Observations and Recommendations

In addition to the above, Dewberry recommends the following:

- As other developments are proposed within the vicinity of the Mega Site, further evaluation should be performed to identify the capacity impacts of the proposed road network and the direct impact to the future development potential of the Mega Site.
- The existing interchange of Oak Ridge Farm Road and the Danville Bypass (SR 58 Bypass) should be monitored and evaluated with each development proposal for the Mega Site or any adjacent development.
- Site entrances to each development within the Mega Site should be located in accordance with the latest edition of the VDOT Access Management Guidelines.
- The use of internal road networks should be encouraged to distribute traffic evenly across several points of access to each development within the Mega Site. The internal road network should be constructed in accordance with VDOT's Secondary Street Acceptance Requirements.
- Future signalization has been proposed to increase the LOS at intersections exhibiting poor LOS as stop control intersections. However, it should be noted that a signal should not be installed until warranted in accordance with the latest edition of the Manual on Uniform Traffic Control Devices.
- The proposed Mega Site will not be a significant generator for pedestrian or bicycle trips internally or externally of the Mega Site. The 2018 West Piedmont Regional Bicycle Plan identified a route that borders the Mega Site as part of the Beaches to Bluegrass Priority Corridor. The parts of this plan that overlap the study area of this plan are:
  - Oak Hill Road between Huntington Trail and Ed Hardy Road.
  - Berry Hill Road between Loomfixer Lake Road and Bachelor Farm Road
  - Oak Ridge Farms Road between the Connector Road and Vandola Church Road
  - Vandola Church Road between Oak Ridge Farms Road and Vandola Road
  - Vandola Road between Vandola Church Road and Riverside Drive (Route 58)

Bicycle accommodations are included in the opinion of costs provided in Section 6.4 as a separate line item to be considered in review of all options of the Connector Road. These accommodations and estimates are based on the assumptions that roadways in this study that overlap the Beaches to Bluegrass Route receive "Share the Road" signage. The proposed shoulders along the Connector Road are proposed to be 8 feet which are adequate to accommodate bicyclists. Only the signage is proposed.

- Public transit options such as bus transportation from the City of Danville should be explored. Opportunities exist within the Mega Site to strategically locate transit amenities to support this.

## 8 PUBLIC PARTICIPATION

### 8.1 Public Participation Summary

#### Danville-Pittsylvania Metropolitan Planning Organization (MPO) Study

##### Update of Southern Virginia Mega Site at Berry Hill Transportation Plan

On Thursday, June 21, 2018 the Danville Metropolitan Planning Organization (MPO) held a citizen's information meeting from 5:00 pm to 7:00 pm at Brosville Elementary School, 195 Bulldog Lane, Danville, Virginia to receive comments and to provide information to the public on a study updating the Southern Virginia Mega Site at Berry Hill Transportation Plan. The meeting was attended by forty citizens plus an additional 11 persons representing the MPO, study consultant Dewberry, the Virginia Department of Transportation, and the news media. Sign-In sheets from the meeting have been included in this report as **Figure 28**, **Figure 29**, and **Figure 30**. Eight formal written comments on the study were submitted by persons either attending the meeting or in response to the public notification prior to the meeting date. Copies of these written comments are incorporated as a part of the study and are hereby included in the public participation section.

Prior to the citizen's information meeting, the MPO held a property owners meeting on May 31st at the Brosville/Cascade Public Library for persons/businesses directly impacted by right-of-way acquisition determined necessary for the Berry Hill Connector Road. Seven property owners directly impacted by right-of-way acquisition were each notified accordingly and invited to attend this meeting by an individual letter sent via certified mail. Ten persons representing four of the seven property owners attended this meeting with the MPO, VDOT, and the Dewberry consultant team.

On June 7th an advertisement announcing the meeting appeared in the Danville Register & Bee. Also, on June 7th a news release distributed via email announcing the meeting was submitted to local/regional news media serving Danville and Pittsylvania County including newspapers, radio and television. Additionally the meeting date was listed on the website calendars of the City of Danville, Pittsylvania County and the West Piedmont Planning District/Danville MPO. A reporter for the Danville Register & Bee attended the meeting and wrote an article which is also included in the study public participation section. A draft copy of the study was posted on the WPPDC/Danville MPO website and a hard copy of the study was placed on public display at the Brosville/Cascade Public Library.

Prior to the citizen's information meeting as a part of its Title VI responsibility for public outreach, the MPO reached out to its citizen's advisory committee and twelve different agencies serving underrepresented or disadvantaged populations in the City of Danville and Pittsylvania County. Information on this transportation study and accessing its content were provided to these persons and/or agencies inviting them to comment on the study and extending them an invitation to attend the public meeting. In response to these overtures the MPO did not receive any formal written comments or input.



Figure 28

June 21, 2018 CIM Sign In Sheet, 1 of 3

PLEASE SIGN IN

Name (Please Print)	Phone Number/ E-Mail Address	Mailing Address
John & Donna Tomer	jacks.tomers@gmail.com	561 Rocky Knoll Ln. Danville, VA 24541
Beth Cooke	Blade200@hotmail.com	808 Rocky Knoll Ln Danville VA 24541
GUS DUBER		119 FOX HOLLOW DR 24541
Dennis & Jackie Minter		438 Rocky Knoll Lane 24541
Annie Baswell	dsabeswells4@yahoo.com	401 Barkeler Hall Farm Rd 24541
Jennifer Holley	jholley4@hotmail.com	675 Rocky Knoll Lane 24541
Wayne Thibodeaux	wthibodeaux@registerbee.com	
Mike Jones	waicman@chromarable.com	601 Rocky Knoll Ln 24541
BRACKEN JAMES	bracken.james@comcast.net	392 Buford Rd. Danville, VA 24541
Keat Skelton	skelton@denrilva.gov	201 Cathy Dr. Danville, VA 24540
MARK BOYER	MJ.BOYER@CAVEWOOD.NET	183 BUFORD RD DVA 24541
Wayne Holley		675 Rocky Knoll Ln DVA 24541
DAVID HOBAN	DHOBANE WPPDC.ORG	Po Box 5266 Martinsville, VA 24115

Southern Virginia Mega Park at Berry Hill Connector Road Study Citizen's Information Meeting  
 June 21, 2018, Brosville Elementary School

Figure 29

June 21, 2018 CIM Sign In Sheet, 2 of 3

PLEASE SIGN IN

Name (Please Print)	Phone Number/ E-Mail Address	Mailing Address
Sherry Moss	434-656-6551	1105 Cotton Patch Rd Gretna, VA 24551
Kenneth Moss	434-656-6551	1105 Cotton Patch Rd Gretna, VA 24551
DIANNE McMAHON	434-770-1701	965 Mt. Hermon Cir DANVILLE VA 24540
RON McMAHON	434-770-2556	965 Mt. Hermon Cir DANVILLE VA 24540
Jacque Davis	434-250-2092	608 Rocky Knoll Lane Danville 24541
Frank Boach	336-932-1544	695 Bachelor Hall Farm Rd
Greg Sides	434-432-7974	P.O. Box 426, Chestnut, VA 24531
Rick Youngblood	434-856-8331	4219 A-2 SEWANE, HUNTERSVILLE, VA 24501
Virginia Laubinger	434-655-0177	780 Rocky Knoll Lane Danville VA 24541
Carol Mell	434-685-3081	961 Duncan Dr. Danville, VA 24541
Andrew Mills	434-685-3081	961 Duncan Dr. Danville VA 24541
Sager Tharmon	434-882-1220	100 Oak Ridge Lane Danville 24541
Laurea Dudley	434-710-9883	975 Rocky Knoll Lane Danville, VA 24541
Chris Dudley	434-517-3591	975 Rocky Knoll Lane Danville, VA 24541
Richard Hollis	434-429-2946	692 Rocky Knoll Ln Danville 24541

Southern Virginia Mega Park at Berry Hill Connector Road Study Citizen's Information Meeting  
 June 21, 2018, Brosville Elementary School



Figure 30

June 21, 2018 CIM Sign In Sheet, 3 of 3

PLEASE SIGN IN

Name (Please Print)	Phone Number/ E-Mail Address	Mailing Address
Diane G Harris	434-250-4456 hourseyc@centurylink.net	644 Rocky Knoll Lane Danville, Va 24541
Harold L. Harris	"	"
David Rakes	WPPDC	
MATT THOMAS	DEWBERRY	
Cathy Ciles	434-685-3743	285 Bachelor Hall Farm Rd Danville 24541
Sherry Garrett	336-432-0441 sguerratt60@gmail.com	314 Lloyd Street, ELAN, NC 27218
Jean Kim Key	434-685-1813	901 Rocky Knoll Ln Dan Va 24541
Linda Sanders	434 203 0025	120 S. River Rd Cascade Va 24069
Colleen & Nancy Allen	434-685-8237	255 Bachelor Hall Farm Rd. Danville 24541
RON SCARCE	434-685-1813	2133 STONTWELL RD DANVILLE VA.
Don RICHARDSON	434 685 1746	216 POSTY KROCC " "
MARY "	" "	" "
Brian Denevert	799-5019 dunevob@danville va.gov	407 Patton St Danville 24541
Don & Deborah O'Dell	685-7829 comovae@attmossable.com	490 Rocky Knoll Lane Danville Va
Quelith Alan Moss	comovae@attmossable.com	
Marvin Moss	685-7370	1289 Buford Rd. Danville Va

Southern Virginia Mega Park at Berry Hill Connector Road Study Citizen's Information Meeting  
June 21, 2018, Brosville Elementary School

## 8.2 Public Comments

The following pages include Public Comments received after the June 21, 2018 Citizen's Information Meeting.



**David R. Hoback**

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**From:** Adam Dailey <jad0624@gmail.com>  
**Sent:** Monday, June 25, 2018 2:41 PM  
**To:** David R. Hoback  
**Subject:** Berry Hill Connection

Dear Mr. Hoback,

My name is J. Adam Dailey, I am a physician in Danville Va. I moved here with my wife and two young children almost 3 years ago. Having been raised in Hillsborough NC, we fell in love with the quite, peaceful neighborhoods and family values of the Danville town.

Those family values, the quite and the peaceful neighborhoods are now in danger. We recently bought our first home off Berry Hill road. It is on a street named rocky knoll. I own 15 acres that backs up to the river. In buying the property I dreamt of my children playing in the woods, fishing in the dan river. I envisioned them dodging bees in the field instead of traffic. I imagined my wife and I growing old, sitting on the porch, listening to birds and the wind rustle the trees.

Your proposed plans of a connector between berry hill and oak ridge farms will end that. While I can certainly appreciate the benefits of an improved economy and less employment, I feel that the adverse effects far outweigh those benefits.

I was recently awarded the best physician in Danville. I'm not sure it was due to any increase in medical knowledge above my peers. I won it because I subscribe to traditional family values and put people above money. I am hoping that you will provide my family and my neighbors with the same. This route will ruin our neighborhood, it will uproot families and it will destroy the dream that so many of us have worked so hard for.

Sincerely,

J. Adam Dailey MD

My family and I reside at 675 Rocky Knoll Lane and we oppose the proposed Berry Hill connector road. Twenty years ago, we purposefully purchased 60 acres of land on a dead end road to build our home. We enjoy the sights and sounds of wildlife and our pets have freedom to roam. The Rocky Knoll Lane/Buford Road area is a well -maintained, quiet, rural environment. Our neighborhood is comprised of families who share our sentiments regarding peace and tranquility; a four lane divided high way is a threat to our lifestyle.

At the meeting last evening, the explanation given regarding construction of a new road was that widening Berry Hill Road to the extent necessary would require the acquisition of too many properties and would be cost prohibitive. Berry Hill Road is already a thoroughfare; everyone who lives there chose to do so. Residents of our neighborhood did not choose to live within sight and sound of a truck route. I urge you to reconsider the construction of a connector road when there is an existing alternative available.

Respectfully,

Jennifer B. Holley  
675 Rocky Knoll Lane  
Danville, Virginia 24541

**David R. Hoback**

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**From:** Beth Cooke <bcooke2010@hotmail.com>  
**Sent:** Thursday, June 21, 2018 8:49 PM  
**To:** David R. Hoback  
**Subject:** mega site connector study

Mr. Hoback,

I attended the information meeting tonight and am still in shock regarding this entire situation and the plans for a connector road to a Mega Park that has no inhabitant's and no prospects for any. I am a home owner that will be directly affected by this road and in know way do I want this project to happen.

If not for an observerant neighbor I would not know anything about this plan. I don't think there has been proper notification about the project. In what world does It make sense to build an new road impacting numerous homeowners when there is already a perfectly good road 200 yards away? Why would any reasonable and sane person want to spend 46 million dollars to build a road to a mega park that has no one there? It is unfathomable that any man with an ounce of common sense would even draw up these plans to begin with, the connector to Berry Hill Rd. should have been built when the by pass was originally planned and off ramps could have come off , where it goes over Berry Hill now. The quickest with the least cost is to come off the by pass at Berry Hill and direct traffic on the road there. Why is that decision so difficult?

Under no circumstance will any of my neighbors support this plan and we will protest for as long as we need too. Do not under estimate the power of the little man!

If there was some slim chance something big would come to the Mega Park, I could see making Berry Hill Rd wider, but I don't forsee anything that big coming any time soon. Danville doesn't have the work force to sustain a huge employer, the education level, the internet capability, the schools, etc....

This neighborhood we live in is quiet and beautiful with the river behind our house and to put a road in and destroy the property values and the beauty of the area, for no reason is ridiculous! There is a perfectly good road already there!!!

I just want to voice my very vocal NO to this whole plan and I am adamantly against it.

Thank You  
Beth Cooke

Sent from [Mail](#) for Windows 10

**David R. Hoback**

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**From:** Jack <jack.tomer@gmail.com>  
**Sent:** Thursday, June 21, 2018 10:37 PM  
**To:** David R. Hoback  
**Subject:** Mega Site connector meeting follow up

Mr. Hoback:

We met this evening at the Brosville school and would I like to voice my concerns in regards to the connector road study

- 1) I feel that the projected job creation is exaggerated and would require numerous manufacturing facilities to be built to reach the projected goal of 7500 employees making this connector unnecessary and decades away from being needed if at all
- 2) Since the majority of manufacturing facilities are under 500 employees it's not hard to see that reaching 7500 would require years of marketing and build out
- 3) since the closing of the Miller Brewery in Eden the traffic flow reduction on Berry Hill Rd would offset any foreseeable future build out on the mega site
- 4) Since it is now parceled out into individual sites the projection of future growth needs to be re-evaluated and this connector road may not ever be required 5) Since it is now a parceled out site when and if one of the sites gets developed it no longer should be considered mega and is now just another cluster of industrial sites that are scattered all over this country making it a tougher marketing play with no major north south interstate or even an east west that is closer then 40 miles
- 6) To destroy a peaceful rural community on the hopes of future development of a site that was poorly chosen, was not marketable as originally planned, and now trying to be parceled out does not speak well of our state and local government
- 7) For years now this area has over promised and under delivered on job creation and I see no reason that this will change and if it does it will be years in the making as there is no knight in shining armor that is going to build a facility to employ thousands of workers Berry Hill road is more then adequate to handle any additional traffic especially if you consider the reduction in traffic since the closings of Eden manufacturing facilities over the last few years

I look forward to receiving the detailed map document we discussed this evening

If you were to canvass the members of our community you would not find any who are in favor of this project. I just happen to be more vocal

Thanks for your time this evening  
Best regards  
Jack Tomer

Sent from my iPhone



**David R. Hoback**

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**From:** Lars Laubinger <larsandginny@gmail.com>  
**Sent:** Friday, June 22, 2018 8:58 AM  
**To:** David R. Hoback  
**Subject:** Southern VA Mega Site Connector Road Study

Mr. Hoback,

Thank you for allowing me some time to consolidate my thoughts regarding last night's informative session at Brosville elementary School. As I mentioned last night, I have reviewed the plan as posted on your web site and would like to document my concerns and observations.

First of all, it was impossible for my husband and I to discern details of the connector road's specific location on the maps in the document. Those you displayed last night helped because they were larger, but I'd recommend from this point on that you replace those images with maps that show houses and property lines. I'd also recommend that all those who attended last night's meeting be included in future meetings so that we can follow the process and continue to have input. This is critical to all of us on Rocky Knoll Lane - even those of us who do not have property dramatically impacted by the Connector Road.

Secondly, my concerns about the Connector Road:

1. I find it illogical that any planning would have reached this stage - it has been 10 years since the original "planning" went into building a connector road. In that time conditions have changed, more houses have been built in our neighborhood, the demographics have changed so there is more traffic on Buford Road, etc. I feel that a road planned 10 years ago needs to be reassessed.
2. There were three options for the Connector Road to connect with the Berry Hill Road - but ONLY ONE option for the connector road itself. I understand that the positioning of the road was based on minimal impact to the land and minimal cost, but there are definitely other options that would impact fewer people.
3. When I drove home from Brosville last night I noted the "exit" off of 58E to the Danville ByPass. I checked on the internet but could find no reference in the time I had to look, but it reminded me that Danville currently has 3/4 of the By-Pass completed. We are still missing the NW quadrant. As a planner, can you tell me when, if ever, that component would be built? I ask this because, if I was an industry thinking of building in the Mega Park, I would want to go both south and north. Having a DIRECT road to the By-Pass via the Berry Hill Road at the 58 interchange - rather than a connector road that takes me south before it connects to go north makes a lot more sense.
4. Your statement that the Berry Hill Road was not chosen as the main route due to the cost and environmental impact does not make sense to me. The road already exists and widening it would impact some houses in the first mile, but once you drive past the interchange with Buford/Loomfixer Lake Road there are practically no houses. It seems illogical that the cost of using the Berry Hill Road would be more than all of the work that needs to be done to build the connector road. I'd like to see, in detail, the cost breakdown of those two ways to get to the Mega Site as well as a comparison of environmental impacts.
5. Buford Road is so small it doesn't even have a middle line! Yet it handles all of the traffic that our neighborhood generates - on Rocky Knoll Lane alone there are 20+ houses. The "plan" I heard from two different WPPD individuals last night is to have an "improved traffic interchange" where the connector road crosses Buford! Again, that seems illogical and impractical for all of us who travel Buford daily. An overpass if the road has to be built? But a traffic light???? Ridiculous!

**David R. Hoback**

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**From:** Barbara Hudson <bh60201@yahoo.com>  
**Sent:** Monday, June 11, 2018 6:11 PM  
**To:** David R. Hoback  
**Cc:** Barbara Hudson  
**Subject:** Connector road with Berry Hill Failed mega Park

I have watched this travesty from its beginning, when bonds were issue in secret, creating debt that taxpayers knew nothing about. This is what is called Econ-Pocketing; the money just disappears into a black hole that we think are people's pockets. Not mentioning names. But the whole plan was cooked up with NO due diligence: you would think that before spending millions of dollars in debt that taxpayers would have go pay, that a study would have been done to see if such a "mega" park was needed. Obviously NOT, there was never any need for this boondoggle. This was merely an opportunity to collect a skim for whatever would go undetected. We are dealing with a bunch of criminals from Danville and Pittsylvania county who are, themselves, individually profiting from this huge mistake. To add more money to this scandal shouldn't be done. Danville and Pittsylvania County have thrown more money into unrealizable economic "deelopemets" that never developed. Either there is a kick-back process involved in all the failures, or there is skim. Danville has often refused to go after the failures, even when the failures are obvious scammers and could be found. Why? I think it's because the bribes were already paid and Danville politicians couldn't go after recovery of funds stolen, because the scheme would be revealed in litigation. The Danville--Pittsylvania RIFA is a huge scam. And Pittsylvania County is about to go into another one in the northern part of the county. Mark my words: its a no-starter, no due diligence, no need, no studies. Just another huge oppotunity for politicians to get rich.

# Comments

## Southern Virginia Mega Site Connector Road Study

Name (optional): \_\_\_\_\_ E-mail (optional): \_\_\_\_\_

↓  
Resident of Rocky Knoll Lane Danville, Va 24541

I would like to voice my displeasure at the proposed connector road as ~~was~~ discussed at the Citizen Input Meeting. First of all, I was unaware of any connector road coming through our neighborhood until 3 days ago. I feel that it will certainly make a huge negative impact on our property values which we need to be compensated for if in fact this goes through. Also, I have concern for the impact on the environment and wildlife that will be affected. There are several wet lands that will be involved as well. All of us on Rocky Knoll Lane live here for a reason - for the beauty and peace and tranquility of the area. ~~However~~ All of those reasons will no longer exist. In addition, there will be a safety issue regarding the ~~residents~~ having to cross a 4 lane highway as it crosses Buford Road. Please take these things into consideration!

Comments may be submitted to: David Hoback, MPO Administrator, P.O. Box 5268, Martinsville, VA 24115. Phone: (276) 638-3987  
E-mail: Dhoback@wppdc.org, by June 21, 2018.

The Danville-Pittsylvania MPO is committed to ensuring no person is excluded from participation in, or denied the benefits of its services on the basis of race, color, or national origin, as protected by Title VI of the Civil Rights Act of 1964. If you need further information on these policies or special assistance for persons with disabilities or limited English proficiency to attend and participate in this meeting, please contact the MPO.



# Comments

## Southern Virginia Mega Site Connector Road Study

Name (optional): \_\_\_\_\_ E-mail (optional): \_\_\_\_\_

I live on Rocky Knoll Lane.

This is the first we are hearing about this connector road. (6-21-18) It would certainly change our quiet neighborhood. We would see and hear traffic from our front door. We moved here for the peaceful atmosphere. Will there be studies on the environment? on the impact on our peaceful neighborhood? I hope it is not all about the money!

Comments may be submitted to: David Hoback, MPO Administrator, P.O. Box 5268, Martinsville, VA 24115. Phone: (276) 638-3987  
E-mail: Dhoback@wppdc.org, by June 21, 2018.

*The Danville-Pittsylvania MPO is committed to ensuring no person is excluded from participation in, or denied the benefits of its services on the basis of race, color, or national origin, as protected by Title VI of the Civil Rights Act of 1964. If you need further information on these policies or special assistance for persons with disabilities or limited English proficiency to attend and participate in this meeting, please contact the MPO.*





