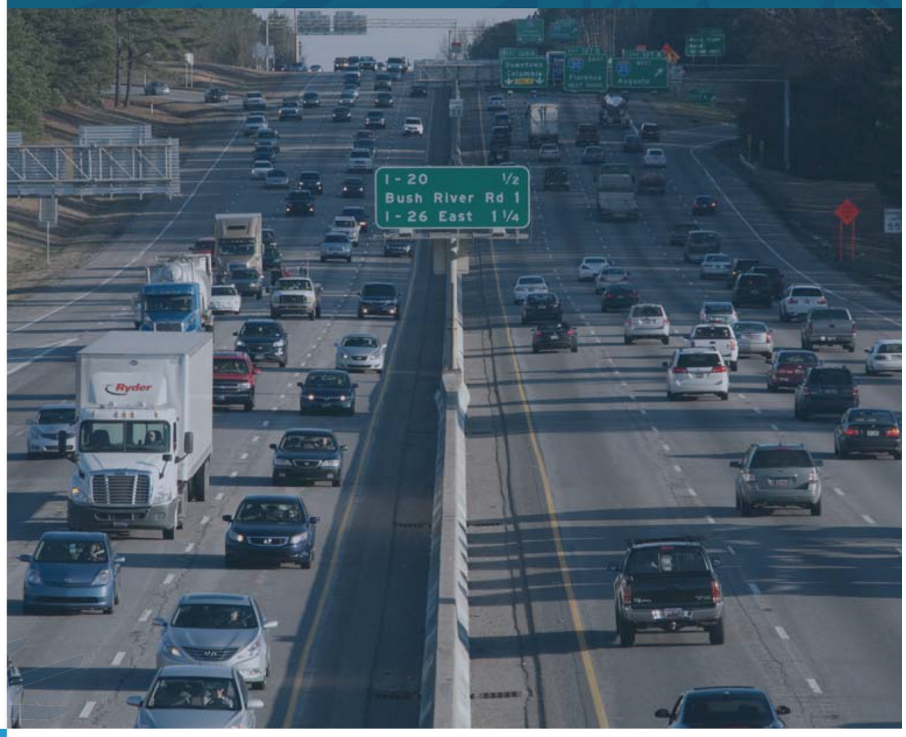
Appendix C—Alternatives Development and Screening Report

Part 1

CAROLINA
CROSSROADS
I-20/26/126 Corridor Project



Alternatives Development and Screening Report

Carolina Crossroads
I-20/26/126 Corridor Improvement Project
Lexington and Richland Counties, South Carolina

DEIS July 23, 2018

SCDOT
South Carolina Department of Transportation

U.S. Department of Transportation
Federal Highway Administration

Prepared for South Carolina Department of Transportation
and the Federal Highway Administration

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1 Introduction

The South Carolina Department of Transportation (SCDOT), in consultation with the Federal Highway Administration (FHWA), is studying alternatives to improve mobility and enhance traffic operations within the I-20/26/126 corridor in Columbia, South Carolina. This Alternative Development and Screening Report for the proposed Carolina Crossroads I-20/26/126 Corridor Improvement Project (Carolina Crossroads) was prepared according to the provisions of the National Environmental Policy Act (NEPA) and corresponding regulations and guidelines of the FHWA, the lead federal agency (23 Code of Federal Regulations [CFR] 771 and 40 CFR 1500–1508). This document also conforms to the requirements of SCDOT, the project sponsor and lead state agency.

Figure 1.1 Project study area

The purpose of this report is to summarize and present the results of the alternatives development and screening process for the proposed Carolina Crossroads Environmental Impact Statement (EIS) within the project study area. Referring to Figure 1.1 above, this project study area extends mainly along I-26 and includes portions of the intersecting interstate corridors of I-20 and I-126. Therefore, it includes nine interchanges along the I-26 mainline, two additional interchanges along I-20, and one additional interchange along I-126. An approximate 500-foot buffer was established along the project limits to define the study area, which formed the initial basis of examining existing conditions and to guide the alternatives development and screening process.

2 What are the basic steps of the alternatives analysis?

The alternatives development and screening process consisted of the following four basic steps:

- **Preliminary Screening:** First, a range of alternatives is developed that includes an initial list of alternatives that are general in nature. These alternatives are examined to see if they meet the primary purpose and need of the project using established evaluation criteria.
- **Level 1 Screening:** The alternatives that advance from preliminary screening are then evaluated against first-level (Level 1) screening criteria. In Level 1A of this step, alternatives are evaluated against the purpose and need as well as other screening criteria at a qualitative level, including whether the alternative(s) would result in:

    a. a reduction of conflict points on the I-20/26/126 corridor;
    b. improved traffic operations on the I-20/26/126 corridor;
    c. improved connections from the I-20/26/126 corridor;
    d. reduced/eliminated geometric deficiencies;
    e. and whether the alternative would result in interchanges along I-20/26/126 being under, at, or over capacity, based on general traffic parameters.

    The above criteria are essential to meeting the project purpose and need, and if an alternative is unable to meet them, it would be considered “fatally flawed”or not practicable. The Level 1A screening process for each preliminary interchange “Accessory Option” or AO, is described in detail in Section 3.3 of the *Carolina Crossroads Alternatives Traffic Analysis Technical Memo* and is summarized in Section 4.4 of this report. Those alternatives that are not fatally flawed would then move to Level 1B screening for a more detailed traffic analysis. Under this analysis, remaining alternatives would be evaluated for level-of-service, travel time benefits, volume to capacity benefits, and delay time.

- **Level 2 Screening:** Alternatives that advance to Level 2 screening will be evaluated against environmental constraints, construction feasibility, cost and the secondary purpose and need components, the ability to improve safety, improve freight mobility, and improve system linkages, while minimizing community and environmental impacts. Level 2 screening steps for mobility (travel time) and capacity (freeway density) are described in detail in Section 5.3 of the *Carolina Crossroads Alternatives Traffic Analysis Technical Memo*.
- **Level 3 Screening:** Those alternatives that advance through Level 2 screening will become the reasonable alternatives which will be evaluated in detail in the DEIS. The analysis process for the reasonable alternatives is found in Section 6.2 of the *Carolina Crossroads Alternatives Traffic Analysis Technical Memo*. At the conclusion of the DEIS, a Recommended Preferred Alternative will be established.

Figure 2.1 Alternatives analysis process

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3 What are the reasons that alternatives might get eliminated or carried forward?

The alternatives development and screening process described in this report provided critical information about how well an alternative satisfies the purpose of and need for the proposed Carolina Crossroads project and whether it is reasonable and feasible. The criteria used in all the first-, second-, and third-level screening analyses generated measures that allowed the SCDOT and the FHWA to systematically and objectively identify reasonable alternatives and screen out unreasonable alternatives.

NEPA regulations and guidance from FHWA and the Council on Environmental Quality (CEQ) stipulate that there are three primary reasons why an alternative might be determined to be not reasonable and eliminated from further consideration. Namely:

1) The alternative does not satisfy the purpose of and need for the project.
2) The alternative is determined to be not practical or feasible from a technical and/or economic standpoint.
3) The alternative substantially duplicates another alternative.

3.1 Meeting the purpose and need

Input from local communities, stakeholders, and agencies, coupled with field research and traffic analysis, helped SCDOT and FHWA develop the Purpose and Need of the Carolina Crossroads I-20/26/126 Corridor Project. The Purpose and Need explains why a project is necessary, what it should achieve, and it serves as the criteria in determining a range of project alternatives. An alternative must meet the Purpose and Need in order to be considered for further study.

The primary purpose of the proposed Carolina Crossroads project is to implement a transportation solution(s) that would improve mobility and enhance traffic operations by reducing existing traffic congestion within the I-20/26/126 corridor while accommodating future traffic needs. Secondary purposes of the proposed Carolina Crossroads project are to enhance safety throughout the corridor, improve freight mobility, and improve system linkages, while minimizing community and environmental impacts.

More detailed information about the purpose of the project and why it is needed can be reviewed in the Purpose and Need Report (SCDOT, June 28, 2018), attached herein by reference and available on the project website (www.scdotcarolinacrossroads.com).

3.2 Being practicable or feasible

NEPA requires that all reasonable alternatives be examined in the EIS (40 CFR §1502.14). Reasonable alternatives include those that are practicable or feasible from the technical and economic standpoint and using common sense.

3.3 Duplication of alternatives

Under CEQ/FHWA guidance, an alternative that is reasonable but has impacts and/or costs that are similar to another similar alternative(s) may be eliminated, even if it is otherwise reasonable. For example, if two alternatives follow a similar alignment and environmental impacts or costs would be comparable – i.e., neither provides better benefits than the other – one of them could be eliminated to reduce redundancy.

4 How will reasonable alternatives be determined?

4.1 Identification of range of alternatives

The Project Team used several methods to identify and develop the range of alternatives. In addition to suggestions from SCDOT staff and the Project Team members, the range of alternatives was also identified from previous traffic studies and plans (see Purpose and Need), from scoping comments, from stakeholder working group meetings and comments, and from public and agency input and comments.

A range of alternatives was developed and includes an initial list of alternatives which are general in nature, namely:

Alternative 1 – Make changes to the existing highway transportation corridor including I-20/26/126. Includes the AO preliminary interchange configurations described and evaluted in the *Carolina Crossroads Alternative Traffic Analysis Technical Memo*.

Alternative 2 – Establish a new transportation corridor, identified by the public as a "Northern Alignment".

Alternative 3 – Increase existing Transportation System Management (TSM) / Transportation Demand Management (TDM) strategies or add new TSM/TDM strategies such as intersection and signal improvements, signage and lighting, and general traffic flow improvements.

Alternative 4 – Additional Mass Transit within the project study area such as light rail, commuter rail, or Bus Rapid Transit (BRT).

Alternative 5 – No-Build Alternative

Alternative 6 – Widen Broad River Road

Alternative 7 – Widen St. Andrews Road

Figure 4.1 Range of alternatives

4.2 Preliminary screening of the range of alternatives

After the range of alternatives was established, each was compared against the purpose and need of the project. The results of the preliminary screening are summarized as follows and are further detailed in the sections that follow.

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Range of Alternatives Evaluation Would the Alternative satisfy Purpose & Need?	Metric	ALT 1 I-20/26/126 Existing Corridor Improvements	ALT 2 New Alignment (Northern Alignment)	ALT 3 Transportation System Management/Transportation Demand Management	ALT 4 Mass Transit	ALT 5 Do Nothing	ALT 6 Widen Broad River Road	ALT 7 Widen St. Andrews Road
Improve Local Mobility	Reduction in conflict points at/near interchange locations	✓	●	●	●	●	●	●
	Ability to improve traffic operations on mainline and local roads	✓	●	✓	●	●	●	●
	Ability to improve connections separate from mainline	✓	●	●	●	●	●	●
Enhance Traffic Operations	Reduce/eliminate geometric deficiencies	✓	●	●	●	●	●	●
Carry Forward to Level 1 Screening?		✓	●	●*	●*	✓**	●	●

* Components of TSM and/or Mass Transit may be carried forward as potential features of single/stand-alone alternatives
** The No-Build Alternative will be carried forward into Level 2 screening and into the EIS to establish the baseline for traffic and environmental conditions by which build alternatives can be compared.

Figure 4.2 Summary of preliminary screening results

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4.2.1 ALTERNATIVE 1 – EXISTING CORRIDOR IMPROVEMENTS

4.2.1.1 Why were existing corridor improvements included in the range of alternatives?

As noted in the purpose and need section, the current I-20/26/126 corridor does not meet current vehicular demands. In addition projected increases in population and employment will further increase travel demand within the corridor and will exacerbate congestion. High crash rates and fatality rates are attributed to extended periods of congestion throughout the corridor and abrupt driving maneuvers due to the multiple weaving movements at and adjacent to the system interchange at I-20. For these reasons, finding an up-to-date solution has become a statewide priority, and improvements to the existing I-20/26/126 Carolina Crossroads Corridor are therefore included in the range of alternatives.

4.2.1.2 Would making existing corridor improvements meet the purpose and need of the project?

Alternative 1 proposes that changes be made to the existing I-20/26/126 highway transportation corridor. This may include the addition of new lanes along the I-20/26/126 corridor and improvements to the existing interchanges along the corridor. Under preliminary screening, this alternative could meet the purpose and need of the project as improvements to the existing corridor could reduce congestion and impove mobililty. This alternative was advanced to Level 1 screening, and the project team subsequently developed mainline and interchange improvement options for Level 1 screening. The evaluation of these “Accessory Options” (AO) as interchange alternatives under Level 1A and 1B screening steps is described in detail in the *Carolina Crossroads AlternativesTraffic Analysis Technical Memo*. This process is also discussed in Sections 4.3 and 4.4 of this report.

4.2.2 ALTERNATIVE 2 – NORTHERN ALIGNMENT (ELIMINATED)

4.2.2.1 Why was the Northern Alignment included in the range of alternatives?

The Northern Alignment was included in the range of alternatives due to public desire as evidenced through public comments during project scoping. Additionally, the Northern Alignment has been included occasionally in previous planning studies in the region. For these two primary reasons, it was included in the range of alternatives for the Carolina Crossroads Project.

4.2.2.2 Would constructing a Northern Alignment meet the purpose and need of the project?

Alternative 2 proposes to construct a new facility for approximately 11 miles from near the Piney Grove Road interchange at I-26 to near the Killian Road interchange at I-77 (Figure 4.1). The route would begin east of the roundabout located at the intersection of Piney Grove Road with Piney Woods Road, continue along Piney Grove Road to east of Wil Stel Road, and be constructed on new alignment towards the northeast to the intersection of Broad River Road and Geology Road. The connector would then follow Geology Road to its terminus and continue to the north-northeast running parallel to an existing utility corridor that crosses the Broad River approximately 3.5 miles upstream of the existing I-20 bridge over the Broad River. The connector would

continue to the northeast utilizing portions of Harmon Road, Winterwood Road, and Duboard Boyle Road. The connector would intersect with roadways including SC 215 (Monticello Road), Crane Church Road, US 321 (Fairfield Road), Koon Store Road, and US 21 (Wilson Boulevard) before it ties into Killian Road to the west of its interchange with I-77. Under this alternative, two scenarios exist including an "arterial" option which would be classified as a four-lane divided principal arterial with potentially a 45 mph speed limit, and an "expressway" that would be classified as a four-lane expressway with limited access and a potentially 60 mph speed limit. The arterial would cross local roads at-grade with limited to no controllled access, whereas the expressway would have grade separated overpasses at intersecting roadways and provide access at interchanges for SC 215 (Monticello Road), US 321 (Fairfield Road), and US 21 (Wilson Boulevard) before it ties into Killian Road to the west of its interchange with I-77.

Traffic analysis indicates the construction of the Northern Alignment alternative, either as an expressway or an arterial, would have the potential to attract over 30,000 vehicles per day from the surrounding local network in the 2040 design year. However, the South Carolina Statewide Model (SCSWM) predicts that most of the traffic would be diverted from Broad River Road, and that only approximately four percent of the traffic would be diverted from I-26. If a comparable amount of traffic that would be diverted from Broad River Road were diverted from I-26, then approximately nine percent of the traffic from I-26 would be diverted to the Northern Alignment. Ultimately, the amount of traffic that would be eliminated from the I-20/26/126 Carolina Crossroads corridor through implementation of the Northern Alignment is not enough to reduce congestion and improve mobility within the corridor and thereby would not satisfy the purpose and need of the project. It also would not result in improved safety, improved freight mobility, or improved system connections. Therefore, the Northern Alignment would not be practicable and was eliminated from further consideration. However, it should be noted that the Northern Alignment may be reviewed and further evaluated under other SCDOT projects and/or studies.

4.2.3 ALTERNATIVE 3 – TSM/TDM (ELIMINATED)

4.2.3.1 Why was TSM/TDM included in the range of alternatives?

TSM would include options that improve efficiency and safety through lower cost improvements. Examples of TSM measures include improving signal timing, adding high occupancy vehicle lanes, adding turn lanes, etc. TDM focuses on regional strategies that would reduce travel demand by reducing the number of vehicle trips and vehicle miles traveled on a roadway, or redistributing this demand in space or time to decrease system deficiency. Examples of TDM strategies include encouraging drivers to carpool or ride the bus, and/or encouraging employers to allow non-standard work hours or telecommuting options for employees.

4.2.3.2 Would implementing TSM/TDM strategies meet the purpose and need of the project?

Given the current and future level of service (LOS), as well as the safety concerns throughout the corridor, TSM and TDM improvements could not adequately improve the corridor and meet purpose and need as a stand-alone alternative. In addition to implementing strategies, typical TDM activities would also include providing

contract funds to regional agencies to actively promoting ridesharing and the like, and would require a shift in commuter behavior throughout the region. For these reasons, this alternative would not be practicable and was eliminated from further consideration. However, elements of TSM and/or TDM could be incorporated into the reasonable alternatives and/or the recommended preferred alternative.

4.2.4 ALTERNATIVE 4 – MASS TRANSIT (ELIMINATED)

4.2.4.1 Why was mass transit included in the range of alternatives?

As evidenced by public desire to include mass transit in the project alternatives, mass transit options are a growing in interest in the Midlands region. In addition to public desire, FHWA also recommends that mass transit alternatives be considered on proposed highway projects in urbanized areas with populations of over 200,000 people (FHWA Technical Advisory 6640.8A). During project scoping, the public expressed an interest in examining mass transit, specifically passenger rail service, as a solution for the I-20/26/126 Carolina Crossroads project.

4.2.4.2 What mass transit infrastructure currently exists?

The primary transit provider in the region is the Central Midlands Regional Transit Authority (CMRTA), known locally as The COMET, providing fixed route bus service in Richland County and portions of Lexington County. CMRTA routes do not travel directly within the I-20/26/126 corridor, but they do parallel and/or cross it via major arterials such Broad River Road, Piney Grove Road and others (see Figure 4.3).

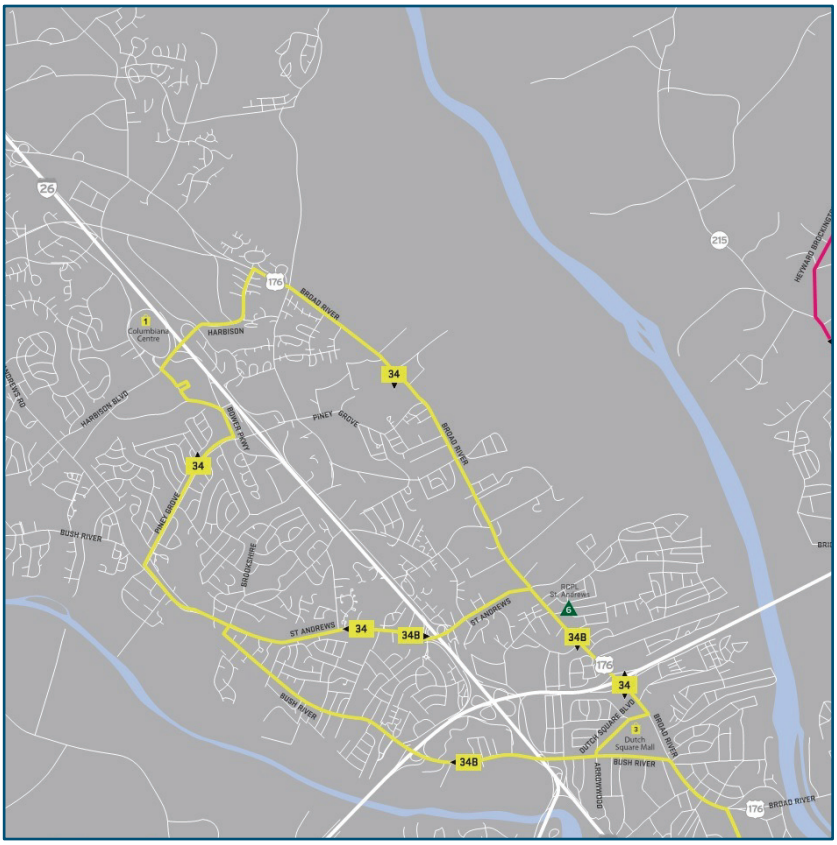

Figure 4.3 Existing mass transit network in vicinity of I-20/26/126 Carolina Crossroads Corridor (COMET, December 2016)

CMRTA is currently in the process of developing a plan for a more connected and accessible transit system, including development of high frequency service along high capacity corridors and limited stop express routes, as well as restructuring of service to lower density routes such as neighborhoods. Park-and-ride express routes are also being considered which would utilize the region's interstate highway network to service major employment sites and

events. The Northwest (I-26) Express and East (I-20) Richland Express routes are among the park-and-ride express routes to be evaluated by CMRTA.

4.2.4.3 Would expanding/improving the mass transit infrastructure meet the purpose and need of the project?

Put simply, expanding and/or improving mass transit infrastructure would not meet the purpose and need of the project if implemented as a stand-alone alternative. Approximately 133,600 vehicles travel through the Carolina Crossroads corridor each day. Best-case scenario commuter rail ridership projections are estimated at between 1,200 and 1,500 boardings daily. Compared to the number of vehicles that travel the Carolina Crossroads each day (approximately 133,600), elimination of 1,500 vehicles would offer a reduction of less than 2%. Therefore, implementation of mass transit would not be able to sufficiently reduce congestion or improve mobility within the project corridor. Additionally, the addition of mass transit would not enhance safety, nor improve freight mobility. In fact, freight mobility would likely compromise the commuter rail corridor identified adjacent to the project corridor which includes an active freight railroad line that could be impeded by the addition of passenger rail service to the same corridor. Additional information that informed this decision is included in the following subsections.

For these reasons, the mass transit alternative was not advanced as a stand-alone preliminary alternative for the Carolina Crossroads project as it would not be practicable. However, CMCOG and COATS' inclusion of mass transit in the region's LRTP and other plans and studies (summarized below) ensure commitments to it in the future. Additionally, elements of mass transit, such as addition of park-and-ride facilities for example, may be included in the reasonable alternatives and/or the recommended preferred alternative for the Carolina Crossroads corridor project.

4.2.4.3.1 Previous Studies Related to Mass Transit

Several studies have evaluated the feasibility of expanding/improving mass transit infrastructure in the Columbia region. In 2006, the Central Midlands COG published a Commuter Rail Feasibility Study to assess the feasibility of high-capacity transit modes such as commuter rail, light rail, and bus rapid transit, in the Central Midlands region. This study built on a previous study in which three corridors were identified for potential rail investment (CMCOG, 2000). One of the three corridors was a 48-mile Newberry to Columbia corridor that largely runs parallel to I-26 and US 76, within an active freight railroad corridor, adjacent to the I-26 portion of the Carolina Crossroads project corridor. The other two corridors – the Camden corridor and Batesburg-Leesville corridor – largely parallel I-20, but include only small sections of the Carolina Crossroads corridor. The following six criteria were evaluated to determine the feasibility of high-capacity transit within these corridors:

- potential ridership;
- access to stations and land use support;
- implementation costs;
- ease of implementation;
- public opinion; and

- comparison to peer systems.

The evaluation of these criteria revealed that each of the potential corridors has characteristics that would support implementation of high-capacity transit. Of the three, the Camden corridor scored the highest and was recommended for priority consideration. The Newberry corridor was not.

Many action items resulted from the study including securing local funding for transit, encouraging transit-oriented development, developing interim transit service in the corridors, educating the public on the benefits of transit, developing a regional transit model, coordinating with rail operators, and seeking a "champion" for transit in the region. CMCOG subsequently adopted the Commuter Rail Feasibility Study and the action items as a means for fostering the establishment of regional land use policies for future rail transit in the region.

In conjunction SCDOT's 2040 Multimodal Transportation Plan, the CMCOG developed the Central Midlands Regional Transit & Coordination Plan Update in 2008. As part of the update, CMCOG identified several studies for the CMRTA, including a commuter rail feasibility study, focusing on the three rail corridors identified in the aforementioned 2006 study. The 2008 update concluded that the region should strengthen local transit service and encourage transit-oriented/friendly development to prepare the region for future rail service. In addition, it was recommended that focus also be placed on implementing interim express bus service as an impetus for future higher-capacity services. The Commuter Rail Element of the 2040 LRTP incorporates by reference the CMCOG Commuter Rail Plan.

4.2.4.3.2 Other Considerations

In addition to the above, CMRTA has implemented a new approach to transit service that focuses on growing ridership by providing enhanced service to the existing bus system and attracting new customers. CMRTA routes do not travel directly within the I-20/26/126 corridor, but they do parallel and/or cross it via major arterials such Broad River Road, Piney Grove Road and others. CMRTA is currently in the process of developing a plan for a more connected and accessible transit system, including development of high frequency service along high capacity corridors and limited stop express routes, as well as restructuring of service to lower density routes such as neighborhoods. Park-and-ride express routes are also being considered which would utilize the region's interstate highway network to service major employment sites and events. The Northwest (I-26) Express and East (I-20) Richland Express routes are among the park-and-ride express routes to be evaluated by CMRTA.

In 2015, CMCOG completed a Regional Transit Needs Assessment and Feasibility Study to guide their efforts in providing greater transit access, more mobility options, and inclusion of rural communities. In this assessment, rail was ranked as a "best" option, but the implementation assessment, which factored in several elements including capital and operating costs, determined that it would be more realistic as a long-term option.

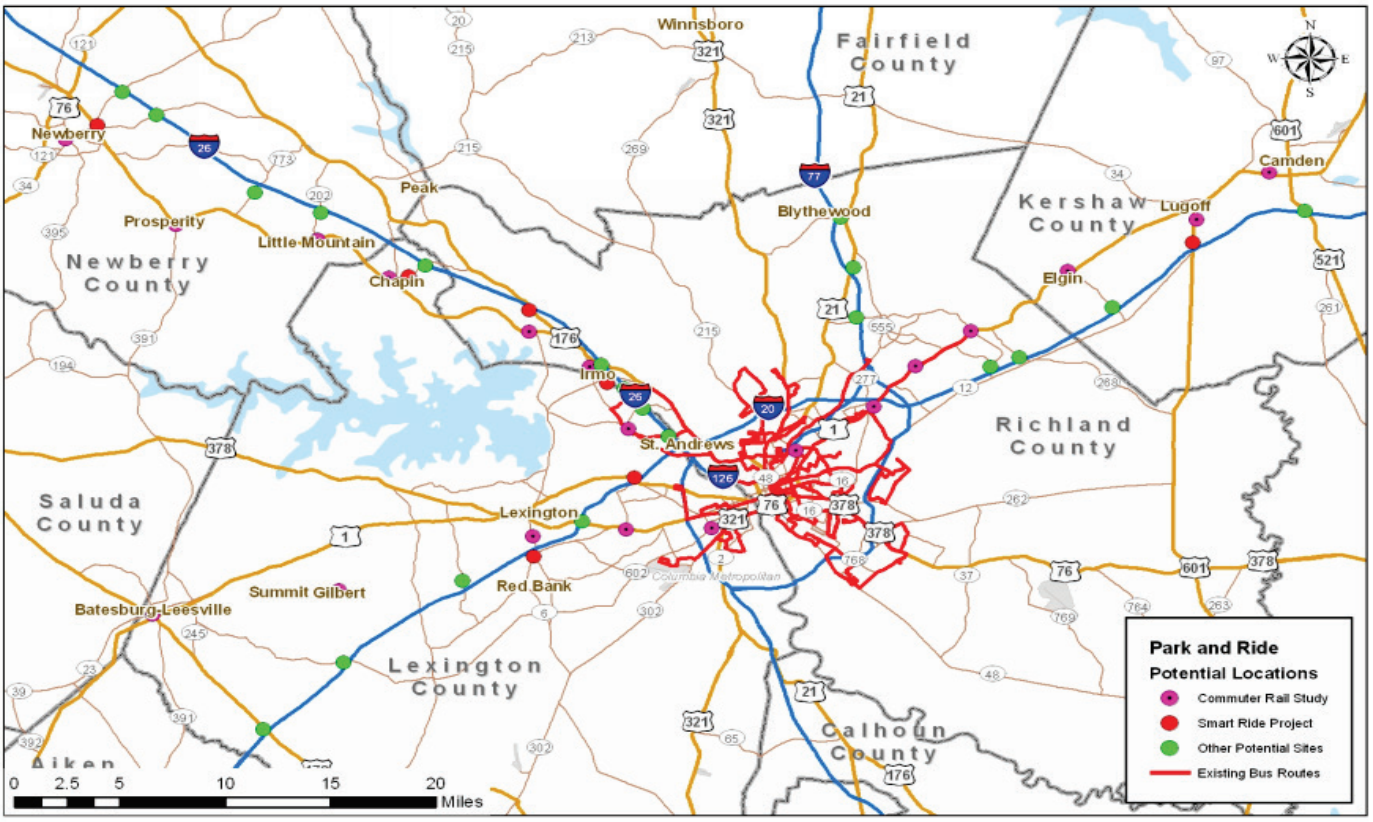

Figure 4.4 Potential park-and-ride facilities (image courtesy of CMRTA Park-and-Ride Study Final Report)

The Carolina Crossroads project team also met with representatives of the COMET to discuss mass transit and its applicability to the Carolina Crossroads project. The COMET, informed by the aforementioned studies and hands-on knowledge of the transit system suggests that premium transit, such as commuter rail, indicated that the region is not yet ready for premium transit due to cost and low ridership projections. The COMET personnel also noted that increased bus service would not provide the efficiencies needed to satisfy the purpose and need, evidenced by a best-case scenario in which a bus, carrying 40 passengers would take approximately 40 cars off of the Carolina Crossroads corridor. Relative to existing traffic counts, this diversion would be negligible in reducing traffic congestion. As noted, in lieu of premium transit at this time, CMRTA has a stronger interest in expanding the existing service. For example, in 2010, CMRTA completed a park-and-ride study to determine which areas and specific locations would be best suited for such facilities. The focus of the study was largely the corridors in the aforementioned Rail Feasibility Study, as well as sites identified by SCDOT in a separate SCDOT SmartRide Project study, and other locations identified by CMRTA. As evidenced in the adjacent graphic, many park-and-ride locations have been evaluated within the I-20/26/126 corridor, including the I-26 and Broad River Road interchange and the I-26 at St. Andrews Road interchange, which have been recommended for implementation. In addition, the COMET expressed interest in the addition of HOV lanes that could be utilized by buses, as well as signal priority for buses at congested intersections.

4.2.5 ALTERNATIVE 5 – NO-BUILD ALTERNATIVE

Under the provisions of NEPA, the effects of not implementing the proposed action must also be considered. The No-Build Alternative provides a baseline for comparing potential environmental impacts with the other reasonable alternatives. Analysis of the No-Build Alternative must discuss the existing conditions as well as what would be reasonably expected to occur in the foreseeable future if the proposed action was not constructed. For example, the No-Build Alternative must include transportation projects that can reasonably be expected to be in place for the design year. Reasonably foreseeable projects typically come from the fiscally constrained list of projects in the State Transportation Improvement Program (STIP) and in the local metropolitan planning organization (in this case CMCOG) long-range plan, as well as other programming documents from the municipalities in which the project occurs. Therefore, though the No-Build Alternative would not meet the purpose and need of the project, it will be carried forward as it provides the foundation for comparing the benefits and environmental impacts of the other alternatives.

4.2.6 ALTERNATIVE 6 – WIDEN BROAD RIVER ROAD (ELIMINATED)

4.2.6.1 Why was the widening of Broad River Road included in the range of alternatives?

Broad River Road (US 76/176) is a major arterial that largely runs parallel to I-26 on the eastern side. Many travelers utilize Broad River Road for local travel, as well as in lieu of I-26, particularly during times of heavy congestion. During the scoping process, the widening of Broad River Road was suggested as a potential alternative for improving the conditions on I-26.

The existing Broad River Road is a five-lane undivided roadway from the existing I-20 interchange to the north until the intersection with Lake Murray Boulevard. From Lake Murray Boulevard to Lykes Lane, existing Broad River Road is a two-lane undivided roadway. From Lykes Lane to approximately 0.4 mile east of the existing I-26 interchange, Broad River Road is a three-lane undivided roadway. Continuing north along existing Broad River Road, a five-lane undivided section exists to approximately 0.3 mile west of the existing I-26 interchange where Broad River Road transition to a two-lane undivided roadway section to Woodrow Street.

4.2.6.2 Would widening Broad River Road meet the purpose and need of the project?

This alternative proposes to widen Broad River to a five-lane section from the I-26/Broad River Road interchange to Lake Murray Boulevard and to a seven-lane section from Lake Murray Boulevard to Bush River Road. For the purposes of preliminary evaluation, it was assumed that all widening would be constructed based on a best-fit widening of the existing alignment of Broad River Road and all intersections along Broad River Road would be reconstructed to accommodate the additional lanes. This scenario was then inputted into the South Carolina Statewide Model (SCSWM) to assess the affect that these changes would have on traffic. The outputs suggest that the widening of Broad River Road is likely to divert some traffic from the I-26 corridor. The total amount of traffic eliminated from I-26 varies by segment, but ranges between 2 to 7 percent along the entirety of the I-26 corridor. Ultimately, the amount of traffic that would be eliminated from the I-20/26/126 Carolina Crossroads corridor through widening of Broad River Road is not enough to reduce congestion and improve mobility within the corridor and thereby would not satisfy the purpose and need of the project. It also would not result in

improved safety, improved freight mobility, or improved system connections. Therefore, the widening of Broad River Road would not be practicable and was eliminated from further consideration. It is also worth noting that widening Broad River Road would not be consistent with the Broad River Road Corridor and Community Master Plan (CMCOG, 2010).

4.2.7 ALTERNATIVE 7 – WIDEN ST. ANDREWS ROAD (ELIMINATED)

4.2.7.1 Why was the widening of St. Andrews Road included in the range of alternatives?

St. Andrews Road (S-32-36) is a major arterial that largely runs parallel to I-26 to the west of it. Many travelers utilize St. Andrews Road for local travel, as well as in lieu of I-26, particularly during times of heavy congestion. During the scoping process, the widening of St. Andrews Road was suggested as a potential alternative for improving the conditions on I-26.

The existing St. Andrews Road is a five-lane undivided roadway from Broad River Road to the existing I-26 interchange. From the existing I-26 interchange to approximately 0.4 mile west of, St. Andrews Road is a seven-lane undivided roadway. Continuing west along existing St. Andrews Road, a five-lane undivided section exists to Lake Murray Boulevard.

4.2.7.2 Would widening St. Andrews Road meet the purpose and need of the project?

This alternative proposes to construct approximately 5 miles of one additional through lane in each direction along the existing alignment of St. Andrews Road from Broad River Road to the intersection with Lake Murray Boulevard. For the purposes of preliminary evaluation, it was assumed that all widening would be constructed based on a best-fit widening of the existing alignment of St. Andrews Road and all intersections along St. Andrews Road would be reconstructed to accommodate the additional lanes. This scenario was then input into the South Carolina Statewide Model (SCSWM) to assess the affect that these changes would have on traffic. The outputs suggest that the widening of St. Andrews Road is likely to divert some traffic from the I-26 corridor. The total amount of traffic eliminated from I-26 varies by segment, but ranges between 1 to 3 percent along the entirety of the I-26 corridor. Ultimately, the amount of traffic that would be eliminated from the I-20/26/126 Carolina Crossroads corridor through widening of St. Andrews Road is not enough to reduce congestion and improve mobility within the corridor and thereby would not satisfy the purpose and need of the project. It also would not result in improved safety, improved freight mobility, or improved system connections. Therefore, the widening of St. Andrews Road would not be practicable and was eliminated from further consideration. However, it should be noted that the widening of St. Andrews Road may be reviewed and further evaluated under other Lexington County projects/studies.

4.3 Identification of preliminary alternatives – Level 1A

The alternatives within the Range of Alternatives that met the Purpose and Need were advanced as Preliminary Alternatives to Level 1A Screening. Alternative 1 –Existing Corridor Improvements, was the only alternative that advanced as a preliminary alternative. Alternative 5, the No-Build Alternative, was also carried forward.

Since the majority of the traffic congestion and safety concerns occur at or near to the interchange locations along the I-20/26/126 corridor, the project team opted to initially focus on the interchange locations by developing potential interchange improvement options, called "AOs" in the *Carolina Crossroads Alternatives Traffic Analysis Technical Memo*. This process is also discussed in Sections 4.3 and 4.4 of this report for each of the 12 interchanges located in the corridor. The project team selected potential interchange alternatives from common interchange types. These include the following, or variations of the following.

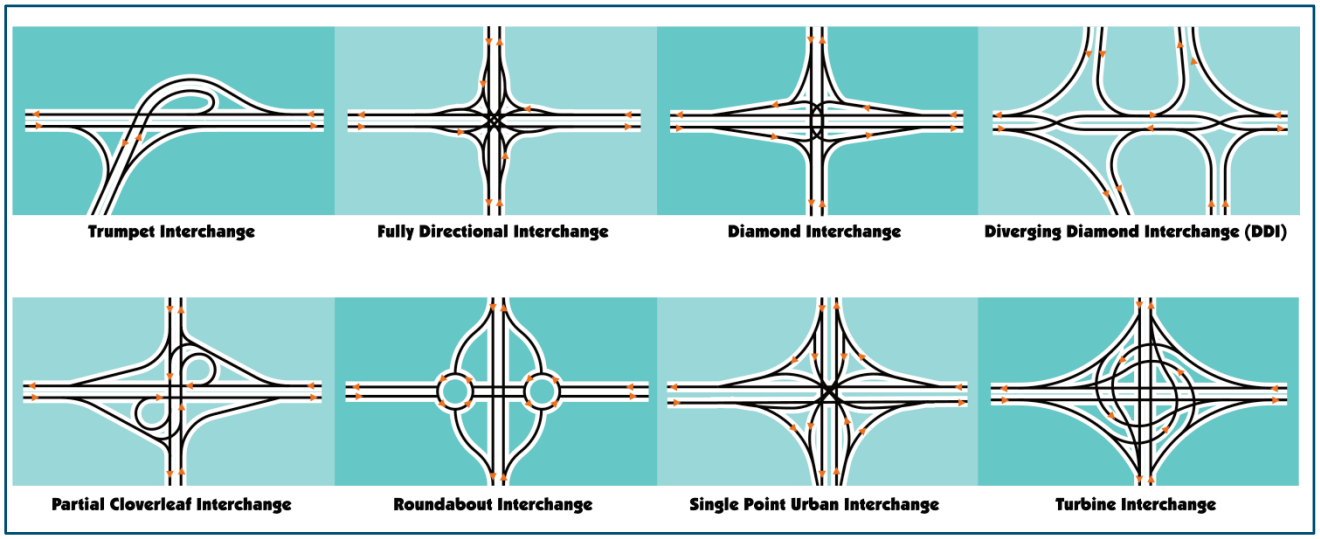

Figure 4.5 Preliminary interchange alternative designs

Trumpet Interchange: Trumpet interchanges are commonly used where one highway terminates at another highway and can take the place of a T-intersection. These involve at least one loop ramp connecting traffic either entering or leaving the terminating expressway with the far lanes of the continuous highway.

Fully Directional Interchange: Directional interchanges allow for all high speed direct movements from one facility to another and are particularly applicable for system interchanges. Directional interchanges may also incorporate loop ramps to accommodate traffic of lower-volume directional movements. The volume on a tight loop ramp (30-40 mph design speed) is limited to approximately 1,200 design hourly vehicles (DHV). Several agencies have constructed loop ramps with two lanes.

Diamond Interchange: Diamonds are the most common type of service interchange configuration and are generally applicable for a wide range of conditions. Diamond configurations have one-way diagonal ramps in each quadrant. As a result of the common usage of the diamond interchange, they have a high degree of driver familiarity. Traffic maneuvers at a diamond interchange are relatively uncomplicated. From a human factors perspective, an important desirable characteristic of the diamond interchange is that the turn movements from the crossroad and from the freeway exit ramps are "true" to the intended change in direction of travel. In other words, a driver makes a left turn at the interchange when desiring to make a left turn in travel direction. This desirable characteristic is consistent with

driver expectancy. In contrast, interchanges that utilize loop ramp configurations may confuse unfamiliar drivers since loop ramps require making a right turn at the interchange for a movement that would normally be considered as a left turn in their intended direction of travel. Diamond interchanges can be further categorized based upon the ramp separation distance, ramp terminal control strategy, and the crossroad cross-section.

Diverging Diamond Interchange: The DDI interchange is a new interchange design that is slowly gaining recognition as a viable interchange form that can improve traffic flow and reduce congestion. Similar to the design of a conventional diamond interchange, the DDI interchange differs in the way that the left and through movements navigate between the ramp terminals. The purpose of this interchange design is to accommodate left-turning movements onto arterials and limited-access highways while eliminating the need for a left-turn bay and signal phase at the signalized ramp terminals. A DDI interchange is expected to be beneficial in situations where high left-turn and through volumes contribute to high delays. The DDI interchange design enables the signal phases to be reduced by allowing movements from the ramps to proceed concurrently with the through movements on the crossroad. As a result, the signal-controlled crossovers operate with two-phase signal control compared to a conventional diamond interchange which normally has three-phase signal control. A DDI interchange has fewer conflict points compared to an equivalent diamond interchange, which can lead to fewer crashes. Another benefit of the DDI interchange is that it combines lane assignments for the left-turn and through movements on the bridge structure and therefore requires a narrower bridge structure compared to a conventional diamond interchange.

Partial Cloverleaf Interchange (Parclo): Parclos use one, two, or three loops to handle certain movements. Parclos are highly adaptable and can accommodate high traffic volumes, and parclo configurations are generally most applicable in situations where a specific left-turn movement pair has a comparatively high volume that would be operationally problematic on the ramp terminals of a diamond interchange. They are also advantageous when one or more quadrants must be avoided due to right-of-way restrictions. There are a variety of forms of parclos and common terminology describes them based on the location of the loops and if ramps are in four, three, or two quadrants.

Roundabout Interchange: The roundabout interchange uses the concept of roundabouts at the grade-separated interchange. In effect, the minor street through movements navigate through roundabouts. There can be two types of roundabout interchanges—double and single. The double roundabout version uses two roundabouts at the ramp terminals. The single roundabout type has a single large roundabout designed over the arterial and serves as the overpass for the turning movements.

Single Point Urban Interchange: The SPUI, a variant of the compressed diamond interchange, was developed in 1970 to improve traffic capacity and operations while requiring less right-of-way than the diamond interchange. The turning movements of the major road ramps and all the movements of the minor road are executed in one central area that is either on the overpass or underpass. Existing literature points out that SPUIs increase capacity and therefore accommodate more vehicles compared

to conventional diamond interchanges. Since a SPUI has one signalized intersection, it allows for a simpler phasing sequence for signal control. This also makes it easy for a SPUI to be coordinated with upstream and downstream signals.

Turbine Interchange: The turbine interchange proposes a two-level alignment with directional ramps that curve around a central bridge in a circular pattern. A bird's-eye view of the design gives the appearance of swirling ribbons, but this innovative design uses less right-of-way, contains smaller bridges with smaller columns, and reduces the impact on traffic as no long, offsite detours are required. Traffic safely transitions from one road to the other at speeds of up to 65 miles per hour (mph). In addition, the turbine design provides several advantages in addition to cost savings. The design has numerous smaller bridges, of which most are single-span structures. These bridges have smaller spans and bents than would have been used in the trumpet design, making their construction easier. Also, the majority of bridge construction with the turbine design occurs without affecting traffic, simplifying traffic control measures. The overall design leaves a smaller footprint, is simpler to maintain, and improves sight distance for drivers.

Each of the interchange options evaluated at the interchange locations are summarized in Appendix A – Alternative 1 – Existing Corridor Improvements (AO1 – AO54).

4.3.1 ALTERNATIVE 1 – MAINLINE INTERSTATE (I-26) ALTERNATIVES

The project team developed representative/holistic alternatives that encompassed all viable interchange options (AO1 – AO49) and capacity improvements on the mainline of I-26 between the interchanges within the project study area. Referring to Figure 1.1, the project study area extends mainly along I-26 and includes portions of the intersecting interstate corridors of I-20 and I-126. It includes nine interchanges along the I-26 mainline, two additional interchanges along I-20, and one additional interchange along I-126.

These capacity improvements are referred to as mainline interstate (I-26) alternatives and there were four: Mainline Six (6) -Lanes with Concrete Median (ML6cm), Mainline Eight (8) -Lanes with Concrete Median (ML8cm), Mainline Six (6) -Lanes with Collector/Distributor Lanes (ML6cd) and Mainline Eight (8) -Lanes with Collector/Distributor Lanes (ML8cd).

The interchange options operate independently within the I-20/26/126 corridor; however, when they are considered holistically with mainline interstate (I-26) alternatives the project team considered how traffic operated as a complete system within the I-20/26/126 corridor. For example, if there were hotspot intersections for an interchange option then it could be determined if there was an issue with the interchange option, or an issue with the overall mainline interstate (I-26) alternative design.

I-26 (US 176/Broad River Road to St. Andrews Road) – Existing Sections

The existing I-26 mainline from US 176/Broad River Road to St. Andrews Road is a six-lane divided roadway with a concrete median barrier wall. The mainline posted speed is 60 mph within this segment. There are two service interchanges within this segment of the existing I-26 mainline, Harbison Boulevard and Piney Grove Road. These

interchanges each have a four span bridge structure which carries the cross road traffic over existing I-26 mainline. Sections of the roadway have a concrete barrier wall along the outside shoulders of the existing I-26 mainline to shield the close frontage roads or ramps from the mainline traffic.

The existing I-26 mainline is a six-lane section with three 12-foot-wide travel lanes in each direction. The outside shoulder widths is 10-foot wide in the westbound direction and 12-foot wide in the eastbound direction. The inside shoulder widths in each direction varies from four-foot nine inches wide to six-foot wide and there is a center concrete median barrier that is 2.5 feet wide. In total, the existing I-26 mainline roadway width varies from 106 feet wide to 108.5 feet wide.

I-26 (US 176/Broad River Road to St. Andrews Road) – Mainline Alternatives (Proposed)

Two basic alternatives were considered for I-26 from US 176/Broad River Road to St. Andrews Road. One consists of six-lane roadway and the other an eight-lane roadway, both with a concrete median barrier. These two concepts are described futher below and are illustrated in Figure 4.6 (six to eight lanes, with concrete median barrier).

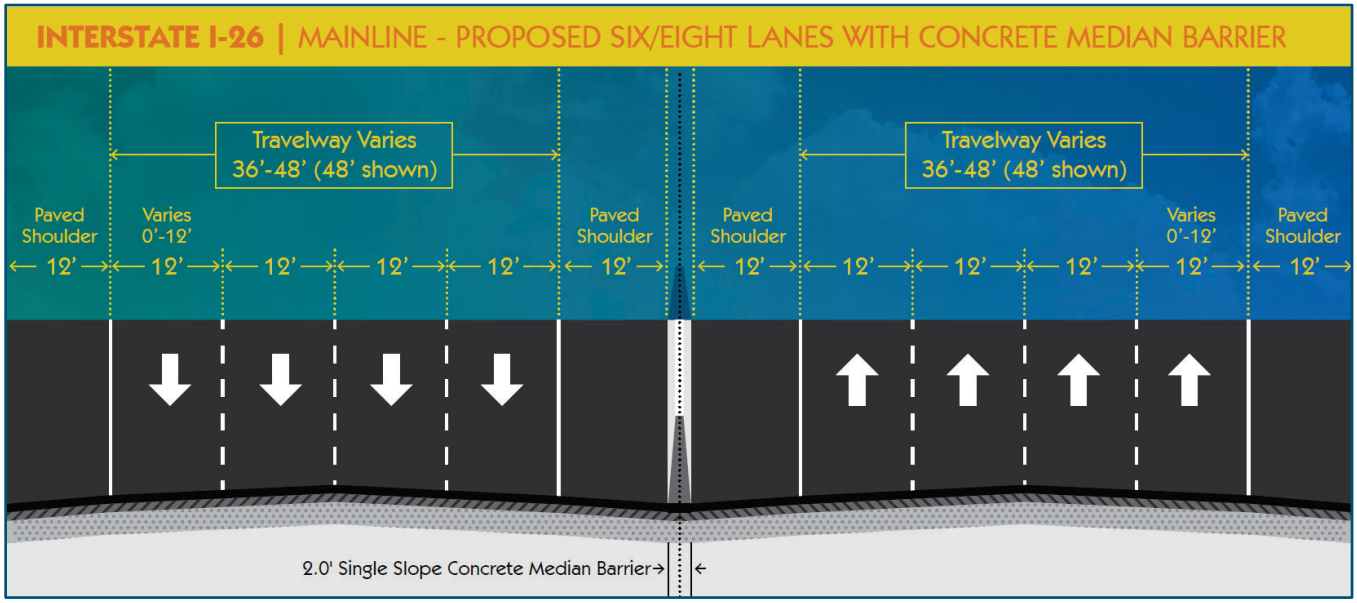

Figure 4.6 Proposed mainline alternative – six/eight-lanes with concrete median barrier

Mainline Six (6) -Lanes with Concrete Median Barrier (ML6cm)

This alternative consists of a proposed divided six-lane roadway centered on the existing I-26 mainline alignment. The roadway section is made up of three 12-foot-wide lanes in each direction with 12-foot-wide paved inside shoulders separated by concrete median barrier wall. Shoulders along the outside of the travel lanes would be paved 12 feet wide.

Mainline Eight (8) -Lanes with Concrete Median Barrier (ML8cm)

This alternative consists of a proposed divided eight-lane roadway centered on the existing I-26 mainline alignment. The roadway section is made up of four 12-foot-wide lanes in each direction with 12-foot-wide paved inside shoulders separated by concrete median barrier wall. Shoulders along the outside of the travel lanes would be paved 12 feet wide.

In addition, alternatives were also considered along portions of the I-26 mainline that consists of six to eight-lanes, with collector-distributor lanes. The collector-distributor lanes would provide access to and from the service interchanges. Both concepts are described futher below and are illustrated in Figure 4.7.

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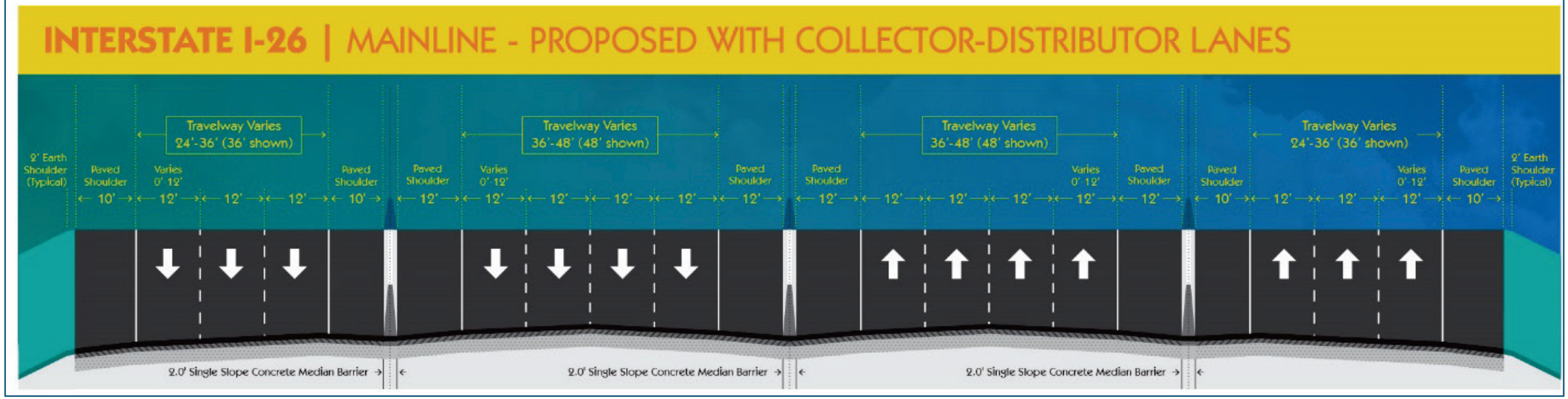

Figure 4.7 Proposed mainline alternative – collector-distributor lanes

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Mainline Six (6) -Lanes with Collector-Distributor Lanes (ML6cd)

This alternative consists of a divided six-lane roadway centered on the existing I-26 mainline alignment. The roadway section is made up of 3 – 12-foot lanes in each direction with 12-foot paved inside shoulders separated by concrete median barrier wall. Shoulders along the outside of the lanes would be paved 12-foot wide with a concrete barrier wall. Two to three 12-foot collector-distributor lanes would be separated from the barrier wall by a 10-foot paved shoulder. The collector-distributor lanes would provide access to and from the service interchanges. The collector-distributor lanes on I-26 eastbound begin west of St. Andrews Road and end on I-126 east of the I-26 split. The collector-distributor lanes on I-26 westbound begin east of the 126 split and end west of the St. Andrews Road interchange, before Piney Grove Road.

Mainline Eight (8) -Lanes with Collector-Distributor Lanes (ML8cd)

This alternative consists of a divided eight-lane roadway centered on the existing I-26 mainline alignment. The roadway section is made up of four 12-foot-wide lanes in each direction with 12-foot paved inside shoulders separated by concrete median barrier wall. Shoulders along the outside of the lanes would be paved 12-foot wide with a concrete barrier wall. Two to three 12-foot collector-distributor lanes would be separated from the barrier wall by a 10-foot paved shoulder. The collector-distributor lanes would provide access to and from the service interchanges. The collector-distributor lanes on I-26 eastbound begin west of St. Andrews Road and end on I-126 east of the I-26 split. The collector-distributor lanes on I-26 westbound begin east of the 126 split and end west of the St. Andrews Road interchange, before Piney Grove Road.

4.4 Screening of preliminary alternatives – Level 1A

After identification of the interchange options (AO1-AO49) and mainline alternatives described in Section 4.3, the project team began to closely evaluate the merits of each option with the goal of developing holistic, representative alternatives that encompass the entirety of the project corridor. The first step in this development was for the project team to compare all interchange options against the primary purpose and need (reduce congestion and improve mobility), to evaluate their merits, and to note any fatal flaws.

To evaluate whether each alternative addressed the purpose and need, Level 1A Screening uses five screening criteria. Namely, would the alternative:

1) Reduce the number of conflict points currently being experienced by users of the mainline and/or the crossing roadway?
2) Improve the operations on the mainline?
3) Improve the connections to/from the mainline?
4) Reduce geometric deficiencies currently on the mainline and/or crossing roadway?
5) Result in the interchange being under, at, or over capacity in the design year?

To further ascertain the merits of each interchange option, the project team also developed lists of pros and cons for each option. Pros and cons typically included, but was not limited to, the footprint, traffic operations,

and public feedback. With this exercise, the project team also noted any fatal flaws which could stem from the answers to the screening criteria and/or the pros/cons discussions. The project team then considered all of the aforementioned collectively to determine which interchange options would advance for consideration under the holistic preliminary alternatives. As noted on the following table, an interchange alternative did not have to meet all five Level 1A screening criteria, nor did it have to be free of fatal flaws to advance to Level 1B. In some instances, an interchange alternative was "on the bubble", usually because of traffic metrics. For example, an interchange alternative may have been over capacity, but only slightly. Since traffic information was preliminary at this stage, "on the bubble" instances coupled with other positive merits may have warranted carrying the interchange alternative forward for further evaluation. Decisions of whether to carry forward an interchange alternative are summarized in the following table. Through the pros/cons/fatal flaw exercise, 32 interchange options were carried forward, 5 were added (to account for no-action options and to accommodate the potential elimination of the I-126/Bush River Road interchange), and 16 were determined not to be practicable and were eliminated. The AO options added under this process were named AO50-AO54 and are included with the other 49 options in the following table. As previously mentioned, the development of each AO, along with the screening evaluation process, is described in detail within Section 3.3 of the *Carolina Crossroads Alternatives Traffic Analysis Technical Memo*. The results of that screening process are summarized as follows.

Table 4.1 Carolina Crossroads I-20/26/126 Corridor Improvements Alternatives Screening Level 1A

December 5, 2016

Alternative	Level 1A Screening Criteria					Additional Notes from Project Team Review			Carry Forward to Level 1B?	Decision Summary
Alternative 1 – Existing Corridor Improvements	**Reduction in conflict points?**	**Improve operations on mainline?**	**Improve connections from mainline?**	**Reduce geometric deficiencies?**	**Under/at/ over capacity in design year**	**Pros**	**Cons**	**Potential Fatal Flaw(s)**	**Yes/No**	
I-20 at Broad River Road (Exit 65)										
AO 1 I-20 @ Broad River DDI	Yes	No	Yes	No	Over	• Small footprint • Reduced signal phasing • Facilitates MOT • Rerouting of frontage road pulls traffic away from the interchange	• Construction phasing may present a challenge • Braided ramps add costs • Added OH signing • Undersized for design year • Need at least 3 lanes off westbound to northbound ramp, would have to widen Broad Rive Road • Each crossover location need 3 lanes each way • 6 lanes on the bridge then 2 to 3 lanes and then back down to two • High wall needed, not a preferred alternative for traffic needs	• Cannot fit the number of lanes needed back into Broad River Road • Does not address traffic operations or conflict points	**No**	• Fails on three of five screening criteria and does not address traffic operations or conflict points.
AO 2 I-20 @ Broad River Roundabouts	Yes	No	No	No	Over	• No signals required	• Two-lane roundabouts undesirable • More advanced signing required to navigate the roundabouts • Negative feedback from public • Constructability challenges	• Two-lane roundabouts are undesirable and can be challenging to navigate • No two-lane roundabouts work at current volume	**No**	• Fails on four of five screening criteria.

Alternative	Level 1A Screening Criteria					Additional Notes from Project Team Review			Carry Forward to Level 1B?	Decision Summary
Alternative 1 – Existing Corridor Improvements	**Reduction in conflict points?**	**Improve operations on mainline?**	**Improve connections from mainline?**	**Reduce geometric deficiencies?**	**Under/at/ over capacity in design year**	**Pros**	**Cons**	**Potential Fatal Flaw(s)**	**Yes/No**	
AO 3 I-20 @ Broad River SPUI	Yes	Yes	Yes	No	Over	• Small footprint • Best for traffic • Better traffic operations than DDI • Gets traffic off the interstate • Must have capacity on Broad River to clear the ramps • Will move traffic down BRR better	• Complex bridge design • Undersized for design year • Requires dual southbound left turn from BRR to eastbound onramp • Need 2 through lanes in each direction. • Will need 3 lanes down BRR • Must be signalized	• Even with improvements mentioned in cons, single-lane movements are still over capacity in design year	**Yes**	• Under capacity in all respects except for PM westbound ramp. Traffic control modifications may alleviate this. Other positive attributes of alternative warrant more detailed review of traffic in Level 1B screening.
AO 4 I-20 @ Broad River Stacked Diamond	No	Yes	Yes	No	Over	• Separate through movements from ramp movements • Reduce egress and ingress access along Broad River in the proximity of interchange • Through movement on BRR unsignalized • Capacity improvement on BRR	• High cost to construct • Constructability challenges • Lengthy improvements required on Broad River • Extensive signage	• Elevation Differences will be problematic in relation to vertical design • Connections to mainline not improved • Intersections (Marley Drive and Longcreek Drive) at end of separated through movements will fail under existing traffic; additional capacity needed through interchange area and along Broad River Road approaches	No	• Fails on three of five screening criteria; engineering design challenges likely

Alternative	Level 1A Screening Criteria					Additional Notes from Project Team Review			Carry Forward to Level 1B?	Decision Summary
Alternative 1 – Existing Corridor Improvements	**Reduction in conflict points?**	**Improve operations on mainline?**	**Improve connections from mainline?**	**Reduce geometric deficiencies?**	**Under/at/ over capacity in design year**	**Pros**	**Cons**	**Potential Fatal Flaw(s)**	**Yes/No**	
AO 5 I-20 @ Broad River Offset Lefts	Yes	TBD	Yes	No	At	• Reduce signal phasing for heavy movements from I-20 WB exit ramp turning left on Broad River • No left turn signal phase • Less complicated bridge than SPUI • Functions well with traffic needs • Get rid of left turn signal phase	• Need to introduce left turn lane further north on Broad River which could conflict with left turning traffic accessing the Shell gas station • Additional signing to inform traffic to get into the offset lane • Wider bridge required than with a traditional DDI • Large structure • Signal at end of ramp, no free flow • Additional Capacity needed on the offset left (three lanes) to improve flow of left turn traffic onto eastbound on-ramp (dual left turn lanes required) Will still experience queuing under existing traffic • Additional capacity needed by design year to accommodate SB traffic on Broad River Road; especially left turn to eastbound on-ramp		**Yes**	• Succeeds on three, possibly four, of screening criteria. Other positive attributes of alternative warrant more detailed review of traffic in Level 1B screening to determine benefit to mainline operations.
I-20 at Bush River Road (Exit 63)										
AO 6 I-20 @ Bush River DDI	Yes	Yes	Yes	Yes	Over	• Small foot print • Eliminate access or provide right in/right out from Berryhill Dr. to Bush River • Provide new overpass across I-20 via Executive Center Dr. and connect to Rockland Road to access Bush River • Less structure	• Difficult to achieve elevation for new frontage road bridge across I-20 • Exec Center Dr. would require full improvements to bring Berryhill Dr. to functional classification standards • Prox. of Berryhill intersection is substandard if left unrestricted • Merging issues at WB entrance ramp		**Yes**	• Meets four of five screening criteria. Positive attributes warrant more detailed review of traffic in Level 1B screening and detailed engineering design review.

Alternative	Level 1A Screening Criteria					Additional Notes from Project Team Review			Carry Forward to Level 1B?	Decision Summary
Alternative 1 – Existing Corridor Improvements	**Reduction in conflict points?**	**Improve operations on mainline?**	**Improve connections from mainline?**	**Reduce geometric deficiencies?**	**Under/at/ over capacity in design year**	**Pros**	**Cons**	**Potential Fatal Flaw(s)**	**Yes/No**	
AO 7 I-20 @ Bush River Offset Diamond	Yes	Yes	Yes	No	At	• Increase spacing between frontage road intersections and ramps • Maintain full movement on frontage roads	• Elevation challenges when tying directional ramps from I-26 to Bush River ramps • Limits 20/26 interchange alternatives • Extra structures • Driver expectancy • At Capacity under existing traffic during PM peak hour; additional capacity required (dual left turn lane to both on-ramps); • Will be at capacity in 2040 without additional capacity improvements to the dual left turn lanes; • Consider providing separate right turn lanes on Bush River Road and dual left turns on ramp approaches for design year. Additional capacity may be needed on westbound Bush River Road in the design year.		**Yes**	• Succeeds on four screening criteria. Other positive attributes of alternative warrant more detailed review of traffic in Level 1B screening.
AO 8 I-20 @ Bush River Partial Cloverleaf	Yes	Yes	Yes	Yes	Under	• Increased weaving distance • Reduce signalized intersections by aligning the loop/ramp with Berryhill Dr. • Traffic functionality • May not have problem with weave here • Long CD road for storage	• Loop ramps • Assuming frontage road intersection is removed opposite proposed loop ramp, should operate generally under capacity by design year • Additional improvement such as dual left turn lanes to/from westbound ramp and on eastbound off-ramp should be considered		**Yes**	• Succeeds on all five screening criteria.

Alternative	Level 1A Screening Criteria					Additional Notes from Project Team Review			Carry Forward to Level 1B?	Decision Summary
Alternative 1 – Existing Corridor Improvements	**Reduction in conflict points?**	**Improve operations on mainline?**	**Improve connections from mainline?**	**Reduce geometric deficiencies?**	**Under/at/ over capacity in design year**	**Pros**	**Cons**	**Potential Fatal Flaw(s)**	**Yes/No**	
AO 9 I-20 @ Bush River Roundabouts	Yes	No	No	No	Over	• Eliminate signals • Possibly eliminate roundabout at Berryhill Dr. and convert it to right in/ right out. Traffic needing to access interchange can go to furthest roundabout and use as U-turn	• Roundabouts too close to one another • Limited room for future expansion • Signing challenges	• Probable confusion in relation to driver expectancy • Roundabouts too closely spaced • High number of roundabouts within a short stretch • Two-lane roundabouts would fail under current traffic volumes	**No**	• Fails on four of five screening criteria; engineering design challenges likely
AO 10 I-20 @ Bush River SPUI	Yes	Yes	Yes	Yes	Over	• Small footprint • Increase distance from frontage road to ramps • Mainline function • One signal	• Complex bridge • Constructability • Exit places traffic west of Bush River interchange; an exit to Broad River Road east of the I-20/I-26 interchange should be reviewed. • Dual turn movements on all ramps • Limits 20/26 interchange • Extra structure • Driver expectancy issues • Westbound offramp may be large • Limited storage lane on Broad River		**Yes**	• Succeeds on four screening criteria. Other positive attributes of alternative warrant more detailed review of traffic in Level 1B screening.

Alternative	Level 1A Screening Criteria					Additional Notes from Project Team Review			Carry Forward to Level 1B?	Decision Summary
Alternative 1 – Existing Corridor Improvements	**Reduction in conflict points?**	**Improve operations on mainline?**	**Improve connections from mainline?**	**Reduce geometric deficiencies?**	**Under/at/ over capacity in design year**	**Pros**	**Cons**	**Potential Fatal Flaw(s)**	**Yes/No**	
I-26 at St. Andrews Road (Exit 106)										
AO 11 I-26 @ St. Andrews Road DDI	Yes	No	Yes	Yes	Over	• Addresses traffic congestion on St. Andrews Road by shifting heavy traffic to the side of the on ramps and reducing signal phasing • Structure size • Tight loops are eliminated	• Maintain short spacing between Burning Tree and ramps. • Only addresses WB off ramp	• Concerns with geometric design of braided ramp • Undersized for existing conditions at west bound ramp • Based on capacity, the DDI will be at over capacity for all movements in the design year • Not improving mainline	**No**	• Succeeds on four of five screening criteria. However, the alternative would not improve operations on the mainline and would be over capacity for all movements.
AO 12 I-26 @ St. Andrews Road Flyover	Yes	Yes	Yes	No	At	• Enhanced traffic flow using flyovers • Free flow • Can handle volume • Tight loops eliminated	• High cost due to high number of required structures • Burning tree conflict • Many structures required • Large footprint • Access from WB I-26 to Berryhill not provided. Realign Berryhill with Jamil to solve • Access from Burning tree Dr. to EB I-26 not provided • Fernandina road to 26E nonexistent	• Structures geometrics to be verified against standards and tie-ins • Decreasing local mobility by cutting off access to movements for frontage road traffic	**No**	• Succeeds on four of five screening criteria. However, the alternative would result in decreased mobility on local roads, and the number of structures needed would result in a large footprint.
AO 13 I-26 @ St. Andrews Road SPUI	Yes	Yes	Yes	Yes	Over	• Smaller footprint • Increased spacing between frontage roads and ramps • Tight loops eliminated • More space on this bridge than others	• Complex bridge • Extend length of bridge to accommodate CDs proposed to go under will add to complexity and cost • Not ranked in traffic CAPX run • MOT for culvert • Need dual lefts to eastbound and westbound on ramp for design traffic	• Will only work with dual lefts on ramps as noted in cons	**Yes**	• Succeeds on four of five screening criteria. Other positive attributes of alternative warrant more detailed review of traffic in Level 1B screening.

Alternative	Level 1A Screening Criteria					Additional Notes from Project Team Review			Carry Forward to Level 1B?	Decision Summary
Alternative 1 – Existing Corridor Improvements	**Reduction in conflict points?**	**Improve operations on mainline?**	**Improve connections from mainline?**	**Reduce geometric deficiencies?**	**Under/at/ over capacity in design year**	**Pros**	**Cons**	**Potential Fatal Flaw(s)**	**Yes/No**	
AO 14 I-26 @ St. Andrews Road Modified DDI	Yes	Yes	Yes	Yes	Over	• Similar benefits to other DDIs • Maintain locations of frontage roads • Construct interchange off alignment • Smaller footprint • MOT • Tight loops eliminated	• Extra wide bridge due to location of proposed on-ramp from St. Andrews Road to EB I-26 • Undersized for conditions with onramp movements • Proximity of signals at ramps and Woodland Hills intersection • Will need more lanes to meet capacity • Need dual left turn on westbound off-ramp; also need to facilitate movement of eastbound St. Andrews Road to eastbound on-ramp in morning peak hour. • In design year, DDI will be undersized; combining ramp movements by elimination of loop ramps requires additional capacity beyond that shown in original concept • Additional capacity likely needed across interchange on St. Andrews Road. Three lanes for westbound off left turn and two dedicated lanes for eastbound St. Andrews Road traffic to the eastbound on-ramp are likely needed.		**Yes**	• Succeeds on four of five screening criteria. Other positive attributes of alternative warrant more detailed review of traffic in Level 1B screening to determine if capacity issues can be resolved.

Alternative	Level 1A Screening Criteria					Additional Notes from Project Team Review			Carry Forward to Level 1B?	Decision Summary
Alternative 1 – Existing Corridor Improvements	**Reduction in conflict points?**	**Improve operations on mainline?**	**Improve connections from mainline?**	**Reduce geometric deficiencies?**	**Under/at/ over capacity in design year**	**Pros**	**Cons**	**Potential Fatal Flaw(s)**	**Yes/No**	
AO 15 I-26 @ St. Andrews Road DDI Frontage Connect	Yes	Yes	Yes	Yes	Over	• Similar benefits to other DDIs • Burning Tree is right in right out • Woodland Hills Road access detoured to Jamil • Roundabouts on frontage roads • Tight loops eliminated	• Two additional bridges for frontage roads • Four roundabouts required • Longer travel to access St. Andrews Road from and to frontage roads, specifically Woodland Hills • Footprint • Multilane roundabouts • Tunneling under St. Andrews Road • DDI ramps are undersized for traffic in current concept • Signalization needed at Fernandina Road/Burning Tree Road intersection to enhance southbound right turns access to westbound St. Andrews Road • Without additional capacity throughout the interchange, Fernandina traffic may back up into roundabouts and create gridlock along Fernandina Road; this could extend back to St. Andrews Road based on preliminary Synchro simulations using existing volumes		**Yes**	• Succeeds on four of five screening criteria. Other positive attributes of alternative warrant more detailed review of traffic in Level 1B screening to determine if capacity issues can be resolved.
AO 16 I-26 @ St. Andrews Road Split Ramp Roundabouts	Yes	Yes	Yes	Yes	Over	• Right in right out at frontage roads. Ensure left turns are allowed from WB St. Andrews Road to Burning Tree and WB St. Andrews Road to Woodland Hills • Reduce signal phasing at Woodland and I-26 EB ramps	• Complex bridge network including a forked bridge on the I-26 EB ramp • Use of portions of frontage road to access ramps • Driver expectancy • Signal required at Fernandina intersection with St. Andrews Road	• Single-lane Burning Tree Roundabout fails under existing traffic during both peak hours • Single-lane Fernandina Roundabout Fails under existing traffic during the afternoon peak hour	**Yes**	• Succeeds on four of five screening criteria. Design attributes require that the alternative be considered on a more holistic level with regards to traffic. Therefore, alternative warrants more detailed review of traffic in Level 1B

Alternative	Level 1A Screening Criteria					Additional Notes from Project Team Review			Carry Forward to Level 1B?	Decision Summary
Alternative 1 – Existing Corridor Improvements	**Reduction in conflict points?**	**Improve operations on mainline?**	**Improve connections from mainline?**	**Reduce geometric deficiencies?**	**Under/at/ over capacity in design year**	**Pros**	**Cons**	**Potential Fatal Flaw(s)**	**Yes/No**	
AO 48 I-26 @ St. Andrews Road Roundabouts	Yes	Yes	Yes	No	Over	• Use roundabouts to eliminate signals • Maintain all access points at frontage road	• Multilane roundabouts are confusing • Four multilane roundabouts on St. Andrews Road in close proximity of one another • Extensive signing requirement	• Two-lane roundabouts fail under existing traffic conditions	**No**	• Succeeds on three of five screening criteria. However, the failing traffic conditions on the roundabouts, coupled with drive-confusion associated with multilane roundabouts resulted in the alternative not carrying forward.
I-26 at I-20 (Exit 107/64)										
AO 17 I-26 @ I-20 Turbine	Yes	Yes	Yes	Yes	TBD	• Two-level interchange • Directional movements • No loops • 2 levels • Earthwork	• MOT With multiple movements • Going under existing interstate lanes • Drainage • Design speed • Approach prior to split to eastbound/westbound ramps is at capacity in the mornings at design year • AM/PM capacity for ramps on I20	• Tie in with Bush River Interchange at I-26	**Yes**	• Succeeds on four of the five screening criteria. Other positive attributes of alternative warrant more detailed review of traffic in Level 1B screening to determine capacity at design year.
AO 18 I-26 @ I-20 Directional with Interior Rights	Yes	Yes	Yes	Yes	TBD	• Small footprint • Main movement is addressed • Higher Speed movements	• Long flyover structures on 3rd level • Height and length of bridges • Pier placements • MOT concerns • Geometric		**Yes**	• Succeeds on four of the five screening criteria. Other positive attributes of alternative warrant more detailed review of traffic in Level 1B screening to determine capacity at design year.

Alternative	Level 1A Screening Criteria					Additional Notes from Project Team Review			Carry Forward to Level 1B?	Decision Summary
Alternative 1 – Existing Corridor Improvements	**Reduction in conflict points?**	**Improve operations on mainline?**	**Improve connections from mainline?**	**Reduce geometric deficiencies?**	**Under/at/ over capacity in design year**	**Pros**	**Cons**	**Potential Fatal Flaw(s)**	**Yes/No**	
AO 19 I-26 @ I-20 Directional with Loop & Ramp	Yes	Yes	Yes	Yes	TBD	• Increased capacity and traffic flow • MOT better than Alts 17/18	• Long flyover structures on 3rd level • Perpetuating a loop • MOT with one movement going under existing interstate lanes, loop, bridge length	• Tie in with Bush River interchange at I-26	**Yes**	• Succeeds on four of the five screening criteria. Other positive attributes of alternative warrant more detailed review of traffic in Level 1B screening to determine capacity at design year.
AO 20 I-26 @ I-20 Directional w/ 2 loops	Yes	Yes	Yes	Yes	TBD	• Increased capacity and traffic flow • Free flow, heavy movement • MOT	• Long Flyover structures on 3rd level • Perpetuating two loops • 2 loops • Long bridges	• Tie in with Bush River interchange at I-26	**Yes**	• Succeeds on four of the five screening criteria. Other positive attributes of alternative warrant more detailed review of traffic in Level 1B screening to determine capacity at design year.
AO 21 I-26 @ I-20 Turbine Braided directional w/ 2 loops	Yes	Yes	Yes	No	TBD	• Increased traffic flow • Addresses I-26 traffic	• Two-lane loop from WB I-20 to EB I-26, may need to change to one-lane • Complex structures • 2 loops • Relocating I-20 • Complex vertical profiles/potential grade issues • Gets tight at the I-26 EB through traffic	• Tie in with Bush River interchange at I-26 • Two-lane loop possibly geometrically deficient	**Yes**	• Succeeds on three of the five screening criteria. Turbine attributes require that the alternative be considered on a more holistic level with regards to traffic. Therefore, alternative warrants more detailed review of traffic in Level 1B screening to determine capacity at design year

Alternative	Level 1A Screening Criteria					Additional Notes from Project Team Review			Carry Forward to Level 1B?	Decision Summary
Alternative 1 – Existing Corridor Improvements	**Reduction in conflict points?**	**Improve operations on mainline?**	**Improve connections from mainline?**	**Reduce geometric deficiencies?**	**Under/at/ over capacity in design year**	**Pros**	**Cons**	**Potential Fatal Flaw(s)**	**Yes/No**	
AO 22 I-26 @ I-20 Semi-Directional w/ 2 Loops	Yes	Yes	Yes	No	TBD	• Increased capacity and traffic flow • Maintain some infrastructure • MOT	• Tighter curves • Maintain two loops	• Substandard curves • Need more lanes	**Yes**	• Succeeds on three of the five screening criteria. Design attributes require that the alternative be considered on a more holistic level with regards to traffic. Therefore, alternative warrants more detailed review of traffic in Level 1B screening to determine capacity at design year
I-26 at I-126/Bush River Road (Exit 108)										
AO 23 I-26 @ I-126/Bush River BR Offset Diamond	Yes	Yes	No	No	Over		• No access from I-126 to Bush River • Flyover ramps are tight • 3 levels • Potential weave issue • Stop conditions on the bridge • Westbound off-ramp traffic backs up under existing traffic conditions in PM peak hour. • Spacing between ramp intersection and Morninghill Drive intersection is short – causes coordination problems; • Westbound off-ramp approach is undersized for existing PM peak hour traffic • Capacity improvements needed to make this viable for existing traffic	• How to tie a ramp to the side of a bridge • Geometric constraints • Weave issue created on mainline	**No**	• Fails on three of five screening criteria. Does not improve connections from the mainline; does not reduce geometric deficiencies; and would be over capacity.

Alternative	Level 1A Screening Criteria					Additional Notes from Project Team Review			Carry Forward to Level 1B?	Decision Summary
Alternative 1 – Existing Corridor Improvements	**Reduction in conflict points?**	**Improve operations on mainline?**	**Improve connections from mainline?**	**Reduce geometric deficiencies?**	**Under/at/ over capacity in design year**	**Pros**	**Cons**	**Potential Fatal Flaw(s)**	**Yes/No**	
AO 24 I-26 @ I-126/Bush River 126 Semi-Directional Flyover	Yes	Yes	Yes	Yes	TBD	• Ability to construct bridges off alignment • No access to Bush River. Reduces conflict points and eliminates weaving between this interchange and the I-20/I-26 interchange.	• No Access to Bush River • Eliminating on/off ramps • What to do with Bush River under this scenario		**Yes**	• Succeeds on four of the five screening criteria. Other positive attributes of alternative warrant more detailed review of traffic in Level 1B screening to determine capacity at design year.
AO 25 I-26 @ I-126/Bush River CD Connections	No	Yes	No	No	TBD	• Maintain all access to Bush River • Keeps 26 as mainline	• Substandard geometry	• Substandard geometry • Potential Weave issues	**Yes**	• Fails on three of the five screening criteria. However, design attributes require that the alternative be considered on a more holistic level with regards to traffic. Therefore, alternative warrants more detailed review of traffic in Level 1B screening to determine capacity at design year

Alternative	Level 1A Screening Criteria					Additional Notes from Project Team Review			Carry Forward to Level 1B?	Decision Summary
Alternative 1 – Existing Corridor Improvements	**Reduction in conflict points?**	**Improve operations on mainline?**	**Improve connections from mainline?**	**Reduce geometric deficiencies?**	**Under/at/ over capacity in design year**	**Pros**	**Cons**	**Potential Fatal Flaw(s)**	**Yes/No**	
AO 26 I-26 @ I-126/Bush River Braided CD	Yes	Yes	Yes	No	At		• Complex bridges • Substandard geometry • No access from WB I-26 to Bush River • No access from WB I-126 to Bush River • Tight loops, complex structure • Tweaks needed for existing volumes; AM peak hour operates at capacity in design year. • PM Peak operates At Capacity under existing traffic. Requires additional improvements for design year. • Dual WB Left turn lane to on-ramps needed for existing traffic. • Additional through capacity needed on Bush River Road to accommodate design year traffic	• Geometry	**Yes**	• Succeeds on four of the five screening criteria. Additionally, design attributes require that the alternative be considered on a more holistic level with regards to traffic. Therefore, alternative warrants more detailed review of traffic in Level 1B screening to determine capacity at design year
I-126 at I-20 Connector										
AO 27 I-126 WB / I-20 Connector w/ Bush River	Yes	Yes	Yes	Yes	Under	• Replace movements at I-20/I-26 Interchange • Construct off alignment	• Significant structure required		**Yes**	• Succeeds on all five screening criteria.
AO 28 I-126 / 1-20 Connector w/ Bush River	Yes	Yes	Yes	Yes	Over	• Alternate access to Bush River from I-126 • Replace movements at I-20/I-26 interchange • Construct off alignment • Address I-26 accidents • Eliminates 2 interchanges • Connects I-26 and I-126	• Check loop speeds • Limited access issues • Railroad interface • Intersection at capacity under existing traffic with additional improvements (westbound dual left turn lanes to on-ramp, off-ramp dual left turn lanes) beyond those depicted in the kmz file	• Anticipated ramp volumes during PM peak hour for westbound left turn to on-ramp approaches 1,400 vehicles. An at-grade intersection is not likely to accommodate the existing traffic.	**Yes**	• Succeeds on four of the five screening criteria. Design attributes require that the alternative be considered on a more holistic level with regards to traffic. Therefore, alternative warrants more detailed review of traffic in Level 1B screening to determine capacity at design year

Alternative	Level 1A Screening Criteria					Additional Notes from Project Team Review			Carry Forward to Level 1B?	Decision Summary
Alternative 1 – Existing Corridor Improvements	**Reduction in conflict points?**	**Improve operations on mainline?**	**Improve connections from mainline?**	**Reduce geometric deficiencies?**	**Under/at/ over capacity in design year**	**Pros**	**Cons**	**Potential Fatal Flaw(s)**	**Yes/No**	
AO 29 I-126 / I-20 Southern Connector w/ Turbine	Yes	Yes	Yes	Yes	Under	• Replace movements at I-20/I-26 interchange • Construct off alignment	• Impacts to major utility corridor • Transmission line relocation • Combined 2-lane ramp from I-26 to EB I-126 has potential to be at capacity		**Yes**	• Succeeds on all five screening criteria.
I-26 at Piney Grove Road (Exit 104)										
AO 30 I-26 @ Piney Grove Existing Conf. Upgrade	No	Yes	Yes	No	Under	• Operates under capacity	• Poor traffic operations		**Yes**	• Succeeds on three of the five screening criteria. No fatal flaws.
AO 31 I-26 @ Piney Grove DDI	Yes	Yes	Yes	Yes	Under	• Operates under capacity • Could possibly cut back bridge structure • May only need single-lane lefts			**Yes**	• Succeeds on all five screening criteria.
AO 32 I-26 @ Piney Grove SPUI	Yes	Yes	Yes	Yes	Under	• Operates under capacity			**Yes**	• Succeeds on all five screening criteria.
AO 33 I-26 @ Piney Grove Roundabouts	Yes	No	No	Yes	Over	• Use of existing bridge overpass may be possible • Eliminates ramp intersection signalization	• Two-lane roundabouts require additional right-of-way • Over capacity at design year	• Two-lane roundabouts are not desirable	**No**	• Fails on three of the five screening criteria. Does not improve operations on the mainline; does not improve connections from the mainline; and would be over capacity.
AO 34 I-26 @ Piney Grove/Harbison Split Diamond	Yes	No	No	No	Under	• Operates under capacity • Retain existing bridges	• Must look at with Harbison, increased traffic from mainline to frontage roads • Need new 5-lanes at the eastern intersection which can back up to mainline	• Additional traffic from Piney Grove will put Harbison overcapacity	**No**	• Fails on three of five screening criteria; Piney Grove and Harbison interaction results in overcapacity scenarios.
I-26 at Harbison Boulevard (Exit 103)										
AO 35 I-26 @ Harbison Tight Diamond	No	Yes	Yes	Yes	Under	• Under capacity in design year • May retain existing bridge • Loop is removed	• Signal timing at ramp intersections must be coordinated		**Yes**	• Succeeds on four of the five screening criteria. No fatal flaws.

Alternative	Level 1A Screening Criteria					Additional Notes from Project Team Review			Carry Forward to Level 1B?	Decision Summary
Alternative 1 – Existing Corridor Improvements	**Reduction in conflict points?**	**Improve operations on mainline?**	**Improve connections from mainline?**	**Reduce geometric deficiencies?**	**Under/at/ over capacity in design year**	**Pros**	**Cons**	**Potential Fatal Flaw(s)**	**Yes/No**	
AO 36 I-26 @ Harbison DDI	Yes	TBD	Yes	Yes	Over	• May retain existing bridge • Loop is removed	• Fails in the afternoon design year • Many construction-related conflicts	• Must carry more lanes of traffic in crossover for afternoon design year	**No**	• Though the alternative succeeds on three of five screening criteria, this alternative was not carried forward due to the capacity deficiency, coupled with the availability of other potential viable alternatives at this interchange location.
AO 37 I-26 @ Harbison SPUI	Yes	TBD	Yes	Yes	Under	• Operates under capacity in design year • Loop is removed, reduces storage onto mainline	• Remove Existing Bridge, build new bridge – larger bridge footprint		**Yes**	• Succeeds on four of the five screening criteria. No fatal flaws.
AO 38 I-26 @ Harbison Roundabouts	Yes	No	No	Yes	Over	• Use of existing bridge overpass may be possible • Eliminates ramp intersection signalization	• Two-lane roundabouts require additional right-of-way • Over capacity at design year	• Two-lane roundabouts fail under existing traffic, will not meet design year standards	**No**	• Fails on three of the five screening criteria. Does not improve operations on the mainline; does not improve connections from the mainline; and would be over capacity.
AO 39 I-26 @ Harbison Offset SPUI	No	No	No	Yes	At/Over	• Longer ramp over I-26 may provide additional storage • Eliminates acquisition of restaurants in SE quadrant of interchange	• Westbound ramp that weaves is set at split phasing, can't run simultaneously • Long bridge over mainline	• At or over capacity in current configuration at design year • Potential to increase conflict points at the ramp termini with Harbison • WB and EB exit ramps are do not meet standard offsets from one-another, thus requiring split phasing signal	**No**	• Fails on four of the five screening criteria.

Alternative	Level 1A Screening Criteria					Additional Notes from Project Team Review			Carry Forward to Level 1B?	Decision Summary
Alternative 1 – Existing Corridor Improvements	**Reduction in conflict points?**	**Improve operations on mainline?**	**Improve connections from mainline?**	**Reduce geometric deficiencies?**	**Under/at/ over capacity in design year**	**Pros**	**Cons**	**Potential Fatal Flaw(s)**	**Yes/No**	
AO49 I-26@Harbison Do Nothing	No Change	No Change	No Change	Yes	TBD	• Improve ramp geometry • Reduce reconstruction need	• None	• None	**Yes**	• Positive attributes of the existing interchange configuration, including that traffic operates within acceptable ranges currently, warrant more detailed review of traffic in Level 1B screening.
I-26 at Lake Murray Boulevard (Exit 102)										
AO 40 I-26 @ Lake Murray DDI	Yes	No	Yes	No	Over			• Fails at eastbound ramps in afternoon at design year	**No**	• Fails on three of the five screening criteria. Does not improve operations on the mainline; does not reduce geometric deficiencies; and would be over capacity.
AO 41 I-26 @ Lake Murray Roundabouts	Yes	No	Yes	No	Over			• Two-lane roundabouts cannot handle existing traffic in afternoon peak.	**No**	• Fails on three of the five screening criteria. Does not improve operations on the mainline; does not reduce geometric deficiencies; and would be over capacity.
AO 42 I-26 @ Lake Murray Tight Diamond	Yes	Yes	Yes	Yes	Over		• Fails on westbound ramp at peak traffic in design year		**Yes**	• Succeeds on four of the five screening criteria. No fatal flaws.

Alternative	Level 1A Screening Criteria					Additional Notes from Project Team Review			Carry Forward to Level 1B?	Decision Summary
Alternative 1 – Existing Corridor Improvements	**Reduction in conflict points?**	**Improve operations on mainline?**	**Improve connections from mainline?**	**Reduce geometric deficiencies?**	**Under/at/ over capacity in design year**	**Pros**	**Cons**	**Potential Fatal Flaw(s)**	**Yes/No**	
AO 50 I-26 @ Lake Murray Do Nothing	No Change	No Change	No Change	Yes	TBD	• Reduced reconstruction • Traffic operates within acceptable ranges • Improved geometry on EB exit loop			**Yes**	• Added in order to provide a "no-change" option • Positive attributes of the existing interchange configuration, including that traffic operates within acceptable ranges currently, warrant more detailed review of traffic in Level 1B screening.
I-26 at Broad River Road (Exit 101)										
AO 43 I-26 @ Broad River DDI	Yes	No	Yes	Yes	Under	• Better than the tight diamond			**Yes**	• Succeeds on four of the five screening criteria. No fatal flaws.
AO 44 I-26 @ Broad River Roundabouts	Yes	No	Yes	No	Over			• Fails in the design year	**No**	• Fails on three of the five screening criteria. Does not improve operations on the mainline; does not reduce geometric deficiencies; and would be over capacity.
AO 45 I-26 @ Broad River Tight Diamond	Yes	No	Yes	No	Under		• Not as good as DDI		**Yes**	• Succeeds on three of the five screening criteria. No fatal flaws.

Alternative	Level 1A Screening Criteria					Additional Notes from Project Team Review			Carry Forward to Level 1B?	Decision Summary
Alternative 1 – Existing Corridor Improvements	**Reduction in conflict points?**	**Improve operations on mainline?**	**Improve connections from mainline?**	**Reduce geometric deficiencies?**	**Under/at/ over capacity in design year**	**Pros**	**Cons**	**Potential Fatal Flaw(s)**	**Yes/No**	
AO51 I-26@ Broad River Do Nothing	No Change	No Change	No Change	Yes	TBD	• Reduced reconstruction • Traffic Operates within acceptable ranges • Improved geometry on EB exit loop			**Yes**	• Added in order to provide a "no-change" option • Positive attributes of the existing interchange configuration, including that traffic operates within acceptable ranges currently, warrant more detailed review of traffic in Level 1B screening.
I-26 at Sunset Boulevard (Exit 110)										
AO 46 I-26 @ Sunset Boulevard EB ramp extension	No	Yes	Yes	No	Over	• Increased capacity • Could be constructed immediately	• Need to fix SPUI and put right turns under signal control.		**Yes**	• Succeeds on two of the five screening criteria. Other positive attributes of alternative, including the ability to provide longer storage/queuing space on the exit ramp, warrant more detailed review of traffic in Level 1B screening.
AO 47 I-26 @ Sunset Boulevard EB Hospital Direct Connect	No	Yes	Yes	No	Over	• Increased capacity • Can be constructed as a standalone project • Alternate access to hospital	• Need to fix SPUI and put right turns under signal control. • May have issue providing a direct connect to Hospital		**Yes**	• Succeeds on two of the five screening criteria. Other positive attributes of alternative, including the ability to provide longer storage/queuing space on the exit ramp, warrant more detailed review of traffic in Level 1B screening.

Alternative	Level 1A Screening Criteria					Additional Notes from Project Team Review			Carry Forward to Level 1B?	Decision Summary
Alternative 1 – Existing Corridor Improvements	**Reduction in conflict points?**	**Improve operations on mainline?**	**Improve connections from mainline?**	**Reduce geometric deficiencies?**	**Under/at/ over capacity in design year**	**Pros**	**Cons**	**Potential Fatal Flaw(s)**	**Yes/No**	
I-126 @ Colonial Life Boulevard										
AO52 I-126 @ Colonial Life Boulevard Tight diamond stop/signal controlled with braided ramps	No	Yes	Yes	No	TBD	• Added in order to provide full-access at Colonial Life as part of the relocation of the Bush River Road access on I-26 • Full access to Colonial Life Boulevard • Closure of exit 108 at Bush River	• Additional railroad bridge • Add two signals on CLB for the new ramps	• May not resolve traffic issue due to the closure of exit 108	**Yes**	• Succeeds on two of the five screening criteria. Other positive attributes of alternative, including the ability to provide additional access to Colonial Life Boulevard should the Bush River Road interchange exit be eliminated (under the I-26 at I-126/Bush River Road interchange options), warrant more detailed review of traffic in Level 1B screening.
AO53 I-126 @ Colonial Life Boulevard Diamond with free-flowing exit/entrance ramps to/from I-126 WB	No	Yes	Yes	No	TBD	• Added in order to provide full-access at Colonial Life as part of the relocation of the Bush River Road access on I-26 • Full access to CLB Closure of exit 108 at Bush River • Maintain free flowing exit/entrance ramp on EB I-126	• Additional railroad bridge • Add signal on CLB for the new ramps on EB I-126 • Railroad may need to be realigned at the river bend where it is getting close to I-126	• May not resolve traffic issue due to the closure of exit 108 • Railroad realignment could create and issue	**Yes**	• Succeeds on two of the five screening criteria. Other positive attributes of alternative, including the ability to provide additional access to Colonial Life Boulevard should the Bush River Road interchange exit be eliminated (under the I-26 at I-126/Bush River Road interchange options), warrant more detailed review of traffic in Level 1B screening.

Alternative	Level 1A Screening Criteria					Additional Notes from Project Team Review			Carry Forward to Level 1B?	Decision Summary
Alternative 1 – Existing Corridor Improvements	**Reduction in conflict points?**	**Improve operations on mainline?**	**Improve connections from mainline?**	**Reduce geometric deficiencies?**	**Under/at/ over capacity in design year**	**Pros**	**Cons**	**Potential Fatal Flaw(s)**	**Yes/No**	
AO54 I-126 @ Colonial Life Boulevard Tight Diamond no braided ramps	No	Yes	Yes	No	TBD	• Added in order to provide full-access at Colonial Life as part of the relocation of the Bush River Road access on I-26 • Full access to CLB Closure of exit 108 at Bush River Maintain free flowing exit/entrance ramp on EB I-126	• Additional railroad bridge on high skew • Add signals on CLB for the new ramps • Railroad may need to be realigned at the river bend where it is getting close to I-126	• May not resolve traffic issue due to the closure of exit 108 • Railroad realignment could create and issue	**Yes**	• Succeeds on two of the five screening criteria. Other positive attributes of alternative, including the ability to provide additional access to Colonial Life Boulevard should the Bush River Road interchange exit be eliminated (under the I-26 at I-126/Bush River Road interchange options), warrant more detailed review of traffic in Level 1B screening.

The elimination of 16 interchange options was the first major decision point in Level 1 screening. With the remaining interchange options, the project team then began to develop holistic or representative alternatives that could encompass all viable interchanges (interchange type) and capacity improvements (mainline alternatives). In other words, the project team began to develop entire single alternatives that encompass the entirety of the project corridor, along with potential interchange alternative combinations. Through this effort, nine representative alternatives were developed, and they are summarized with interchange alternative combinations as follows.

Representative Alternatives (RAs) were configured using a combination of interchange Accessory Options (AOs) at the proposed service and system interchanges. As the project progresses, individual service interchange AO concepts within the Recommended Preferred Alternative may be revised or replaced to address design, right-of-way, utility, traffic operations, and other impacts, resulting in updates to the RPA as part of the development of the FEIS/ROD.

Table 4.2 Representative Alternatives

Representative Alternative*	1	2	3	4	5	6	7	8	9
I-20/26/126 System/ System	**AO17 Turbine**	**AO18 Directional w/ Interior Rights**	**A021 Turbine Braided**	**AO22 Semi-Dir w/ 2 Loops**	**AO20 Turbine Directional**	**AO19 Directional w/ Loop & Ramp**	**AO27 E-W Connector**	**AO28 E-W Connector Bush River**	**AO29 REMOVE Southern Connector**
I-20/Broad	AO3	AO5	AO5	AO3	AO3	AO5	AO5	AO3	AO3
I-20/Bush	AO6	AO10	AO6	AO7	AO8 (5)	AO7	AO8	A28	A10
I-26/Bush	AO24	AO24	AO26	AO25	AO24	AO24	AO24	AO24	AO29
I-26/378	AO46	AO47	AO46	AO46	AO46	AO47	AO46	AO46	AO46
I-26/St. Andrews	AO13	AO14 (3)	AO16	AO15	AO13	AO14	AO13	AO13	AO15
I-26/Piney Grove	AO30	AO31	AO32	AO32	AO30	AO31	AO30	AO31	AO32
I-26/Harbison	AO35	AO37	AO49	AO35	AO35	AO37	AO49	AO35	AO49
I-26/Lake Murray	AO50	AO42	AO50	AO50	AO50	AO42	AO50	AO50	AO50
I-26/Broad	AO51	AO45	AO43	AO51	AO51	AO43	AO51	AO51	AO51
East-West Connector	NA	NA	NA	NA	NA	NA	AO27	AO28	AO29(2)

* Alternative 10 - 'No-build' or 'Do Nothing' Alternative is retained for comparison purposes.

4.5 Screening of representative alternatives – Level 1B

The nine representative alternatives (RAs) that were developed based on screening of AOs in Level 1A were carried forward into Level 1B and put through additional screening, this time analyzing more detailed traffic capacity and traffic operations information with comparison to the No-Build Alternative (RA10) and the primary purpose and need of the proposed project – reducing congestion by improving peak-period travel time in the corridor and improving local mobility. In Level 1B, Transmodeler was used to develop comprehensive traffic analysis models of the alternatives defined in Table 4.2. The methodology, analysis documentation, and detailed findings from the traffic analysis are described in Section 5.3 of the *Carolina Crossroads AlternativesTraffic Analysis Technical Memo*. A summary of the findings is found in Table 4.3 of this document. All RAs were evaluated in Level 1B screening based on their benefit to LOS on the interstate mainline segments in both the AM and PM peak period, as well as LOS across each interstate, merge and diverge at ramps, and intersections at or near the interchanges. Travel time through the interstate corridors, speed, volume-to-capacity (V/C) ratios, and driver delay also were evaluated as measures of effectiveness (MOEs). In addition, the project team carried over important elements of the Level 1A screening metrics. Since the Level 1A screening was completed on individual AOs, it was important to reassess the holistic alternatives under the Level 1A metrics to confirm that each of the RAs would provide reduced weaving movements, eliminate sub-standard ramps, eliminate left exits, reduce mainline through-lane shifts, and address sub-standard service interchange movements within the system interchanges. These reductions and/or eliminations of substandard geometry were key components to meeting the purpose and need of the project.

4.5.1 OVERVIEW OF REPRESENTATIVE ALTERNATIVES (RA1 – RA9)

The following sections describe RA1 through RA9. Additionally, RA1 through RA9 within the project study area are displayed in Appendix C of this document.

Representative Alternative 1 (RA1) - Turbine

RA1 includes widening of I-26 with one additional lane in each direction from US 176/Broad River Road to St. Andrews Road, proposed collector-distributor (CD) lanes, and interchange improvements from: Harbison Boulevard to US 378 on I-26; from the Saluda River to the Broad River on I-20; and from I-26 to Colonial Life Boulevard on I-126. Additionally, a proposed new full access interchange would be added at I-126 and Colonial Life Boulevard which upgrades the existing partial access interchange.

The proposed CD lanes on I-26 eastbound begin west of St. Andrews Road and end at the I-26/I-20 interchange junction. The proposed CD lanes on I-26 westbound begin east of the 126 split and end at the St. Andrews Road interchange, before Piney Grove Road. Proposed CD lanes on I-20 eastbound begin west of Bush River Road and end at the Broad River Road interchange. The proposed CD lanes on I-20 westbound begin at the Broad River Road interchange and end west of the Bush River Road interchange. The proposed CD lanes on I-20 eastbound and I-20 westbound west of Bush River Road would require a wider new I-20 bridge over the Saluda River.

A key feature of this representative alternative is the proposed turbine interchange at the I-26 and I-20 junction. A proposed turbine interchange consists of two roadway levels that traverse around a central bridge. A bird's-

eye view of this proposed interchange design gives the appearance of swirling ribbons, but this innovative interchange design uses less right-of-way, contains smaller bridges, allows traffic to travel from one interstate to the other at higher operating speeds, and improves driver sight distance.

Another feature of this alternative is the elimination of the existing interchange at I-26 and Bush River Road and instead providing access to Bush River Road from the full-access interchange at Colonial Life Boulevard. The existing flyover would be re-constructed from I-126 westbound to I-26 eastbound, and access to I-26 from I-20 would be provided by the I-20/Bush River Road interchange to the I-20/I-26 interchange. Additionally, I-20 traffic can access I-126 via the I-20/Bush River Road interchange along Bush River Road to Colonial Life Boulevard and the proposed new Colonial Life Boulevard interchange with I-126. By removing the direct connection between Bush River Road and I-26, traffic conflict points and weaving maneuvers between Bush River Road and the I-20/I-26 interchange would be eliminated, thereby reducing traffic congestion/disruption and improving traffic flow on I-26. Between the I-20/Bush River Road interchange and the I-26/I-20 interchange, there would be a new bridge crossing over I-20 to connect to Executive Center Drive as an east-west connector. With the exception of minor loop ramp improvements, the existing I-26 interchanges at both Lake Murray Boulevard and Broad River Road would both basically remain as-is since traffic currently operates within acceptable traffic capacity ranges and room to accommodate future I-26 widening under the bridges. Otherwise, existing interchanges elsewhere along the I-26/I-20/I-126 corridor would be reconstructed and upgraded via improved designs to better accommodate high traffic volumes entering the interstate network. The existing I-26 interchange with St. Andrews Road as well as the existing I-20 and Broad River Road interchange would be a proposed Single Point Urban Interchange (SPUI). The existing I-20 interchange with Bush River Road would be a proposed Diverging Diamond Interchange (DDI). The existing Harbison Boulevard interchange with I-26 will be reconstructed to a proposed Tight Urban Diamond interchange, removing the existing I-26 westbound loop to Harbison Boulevard. This existing loop typically experiences heavy queuing through the loop and into the exit ramp and I-26 mainline outside travel lane in peak hours, creating much of the delay and poor operation. The proposed interchange work will include a three-lane approach for the new I-26 westbound off ramp to Harbison Boulevard and a new two-lane entrance ramp to eastbound I-26 from Harbison Boulevard.

Representative Alternative 2 (RA2) – Directional with Interior Rights

RA2 includes widening of I-26 with one additional lane in each direction from US 176/Broad River Road to St. Andrews Road, proposed CD lanes, proposed new local roadway connections between St. Andrews Road and Bush River Road, and interchange improvements from: Harbison Boulevard to US 378 on I-26; from the Saluda River to the Broad River on I-20; and from I-26 to Colonial Life Boulevard on I-126. Additionally, a proposed new full access interchange would be added at I-126 and Colonial Life Boulevard which upgrades the existing partial access interchange in this location. The proposed CD lanes on I-26 eastbound begin west of St. Andrews Road and end on I-126 east of the I-26 split. The proposed CD lanes on I-26 westbound begin east of the 126 split and end west of the St. Andrews Road interchange, before Piney Grove Road. The proposed CD lanes on I-20 eastbound begin west of Bush River Road and end at the Broad River Road interchange. The proposed CD lanes on I-20 westbound begin at the Broad River Road interchange and end west of the Bush River Road interchange.

Proposed new local roadway connections would be provided between St. Andrews Road and Bush River Road so that traffic does not need to travel through the interchanges of I-26 and/or I-20.

A key feature of this representative alternative is the proposed directional interchange with interior rights at the I-26 and I-20 junction. A proposed directional interchange with interior rights consists of three roadway levels where directional ramps cross through the two existing interstate mainlines (directional ramps from I-20 to I-26), I-26 and I-20. An aerial view of this proposed interchange design gives the appearance of symmetrical and half-circular ramps, but this interchange design provides direct higher speed access for left-turning vehicles and eliminates weaving maneuvers from entering (merging) and exiting (diverging) vehicles on I-26 and I-20.

Another feature of this alternative is the elimination of the existing interchange at I-26 and Bush River Road and instead providing access to Bush River Road from the full-access interchange at Colonial Life Boulevard. The existing flyover would be re-constructed from I-126 westbound to I-26 eastbound, and access to I-26 from I-20 would be provided by the I-20/Bush River Road interchange to the I-20/I-26 interchange. Additionally, I-20 traffic can access I-126 via the I-20/Bush River Road interchange along Bush River Road to Colonial Life Boulevard and the proposed new Colonial Life Boulevard interchange with I-126. By removing the direct connection between Bush River Road and I-26, traffic conflict points and weaving maneuvers between Bush River Road and the I-20/I-26 interchange would be eliminated, thereby reducing traffic congestion/disruption and improving traffic flow on I-26. With the exception of minor loop ramp improvements, the existing I-26 interchange at US 176/Broad River Road would basically remain as-is since traffic currently operates within acceptable traffic capacity ranges and room to accommodate future I-26 widening under the bridge. Existing interchanges elsewhere along the I-26/I-20/I-126 corridor would be reconstructed and upgraded via improved designs to better accommodate high traffic volumes entering the interstate network. The most notable of the rest of the interchange improvements described, are the elimination of the loop ramps for left-turning vehicles.

Representative Alternative 3 (RA3) – Turbine Braided

Similar to RA1, RA3 includes widening of I-26 with one additional lane in each direction from US 176/Broad River Road to St. Andrews Road, proposed CD lanes, and interchange improvements from: Harbison Boulevard to US 378 on I-26; from the Saluda River to the Broad River on I-20; and from I-26 to Colonial Life Boulevard on I-126. Additionally, a proposed new interchange would be added at I-126 and Colonial Life Boulevard. The proposed CD lanes on I-26 eastbound begin west of St. Andrews Road and end at I-20. The proposed CD lanes on I-26 westbound begin east of the 126 split and end west of the St. Andrews Road interchange, before Piney Grove Road. The proposed CD lanes on I-20 eastbound begin west of Bush River Road and end at the Broad River Road interchange. The proposed CD lanes on I-20 westbound begin at the Broad River Road interchange and end west of the Bush River Road interchange.

A key feature of this representative alternative is the proposed turbine interchange at the I-26 and I-20 junction along with braided ramps over each other briefly through the middle of the proposed turbine interchange. A proposed turbine interchange consists of two roadway levels that traverse around a central bridge. A bird's-eye view of this proposed interchange design gives the appearance of circles with braided ramps over each other briefly through the middle of the proposed interchange, but this innovative interchange design uses less right-

of-way, allows traffic to travel from one interstate to the other at higher operating speeds, and improves driver sight distance. Another feature of this alternative is the complete re-design of the existing interchange at I-26 and Bush River Road. Instead, this alternative at I-26 and Bush River Road consists of a system of braided ramps and new flyovers. With the exception of minor loop ramp improvements, the existing I-26 interchange at Lake Murray Boulevard would basically remain as-is since traffic currently operates within acceptable traffic capacity ranges and room to accommodate future I-26 widening under the bridge. Also, worth noting is that the existing I-26 interchange at Broad River Road would convert to a DDI and this alternative would replace the existing I-20 and I-26 bridges over the railroad line and on I-126 approaching the Riverbanks Zoo. A connector bridge over I-20 between Bush River Road and I-26 is proposed to provide local network connectivity over I-20 without direct access to the freeway. Otherwise, existing interchanges elsewhere along the I-26/I-20/I-126 corridor would be reconstructed and upgraded via improved designs to better accommodate high traffic volumes entering the interstate network. The existing I-26 interchange with Piney Grove Road would be a proposed Single Point Urban Interchange (SPUI). The proposed I-26 interchange with St. Andrews Road (modified diamond interchange) would eliminate the loop ramps from I-26 and by doing so create greater spacing of signalized and unsignalized intersections along St. Andrews Road and improve the local roadway network connecting to St. Andrews Road.

Representative Alternative 4 (RA4) – Semi-Directional with Two Loops

RA4 was developed based on the previous design concept investigated by SCDOT in the 1970s. This concept included a system interchange at I-20/I-26 with semi-directional ramps and two loop ramps: one from westbound I-20 to eastbound I-26, and the other from eastbound I-20 to westbound I-26. Since the development of the initial system interchange concept, SCDOT has revisited and revised the concept. A recent version of the concept incorporates dedicated ramps that separate eastbound traffic traveling to I-26 and I-126, and includes a ramp system that combines eastbound on-ramp traffic from St. Andrews Road with traffic traveling from eastbound I-26 to the I-20 system ramps. East of the system interchange, eastbound on-ramp traffic from Bush River Road combines with the traffic continuing eastbound from St. Andrews Road before splitting onto separate ramps continuing eastbound on I-26 and I-126.

Similar to RA2, RA4 includes widening of I-26 with one additional lane in each direction from US 176/Broad River Road to St. Andrews Road, proposed CD lanes, proposed new local roadway connections between St. Andrews Road and Bush River Road, and interchange improvements from: Harbison Boulevard to US 378 on I-26; from the Saluda River to the Broad River on I-20; and from I-26 to Colonial Life Boulevard on I-126. The proposed CD lanes on I-26 eastbound begin west of St. Andrews Road and end at Bush River Road just west of the I-126/I-20 junction. The proposed CD lanes on I-26 westbound begin east of the 126 split and end at the St. Andrews Road interchange.

The proposed CD lanes on I-20 eastbound begin west of Bush River Road and end at the Broad River Road interchange. The proposed CD lanes on I-20 westbound begin at the Broad River Road interchange and end west of the Bush River Road interchange. The proposed CD lanes on I-20 eastbound and I-20 westbound west of Bush River Road would require a wider new I-20 bridge over the Saluda River. Proposed new local roadway connections would be provided between St. Andrews Road and Bush River Road so that traffic does not need to travel through the interchanges of I-26 and/or I-20.

A key feature of this representative alternative is the proposed semi-directional interchange with two loop ramps at the I-26 and I-20 junction. A proposed semi-directional interchange with two loop ramps consists of three roadway levels where directional ramps cross over the I-26 interstate mainline. An aerial view of this proposed interchange design gives the appearance of symmetrical and half-circular ramps, but this interchange design provides direct higher speed access for left-turning vehicles and eliminates most weaving maneuvers from entering (merging) and exiting (diverging) vehicles on I-26 and I-20.

Another feature of this alternative is the modification of the existing interchange at I-26 and Bush River Road to accommodate new CD roads and revised geometry to I-26 mainline lanes. Existing ramps to and from Bush River Road to I-26 will be realigned including development of a new I-26 entrance ramp from Bush River Road on new location. A new railroad overpass would also be built for this ramp. The existing flyover would be re-constructed from I-126 westbound to I-26 eastbound, and access to I-26 from I-20 would be provided by the I-20/Bush River Road interchange to the proposed I-26 and Bush River Road interchange. Additionally, I-20 traffic would still be able to access I-126 via the I-20/Bush River Road interchange along Bush River Road to the proposed I-26 and Bush River Road interchange. By modifying the connection between Bush River Road and I-26, traffic conflict points and weaving maneuvers between Bush River Road and the I-20/I-26 interchange would be eliminated, thereby reducing traffic congestion/disruption and improving traffic flow on I-26.

With the exception of minor loop ramp improvements, the existing I-26 interchanges at US 176/Broad River Road and Lake Murray Boulevard would basically remain as-is since traffic currently operates within acceptable traffic capacity ranges and room to accommodate future I-26 widening under the bridges. Existing interchanges elsewhere along the I-26/I-20/I-126 corridor would be reconstructed and upgraded via improved designs to better accommodate high traffic volumes entering the interstate network.

Representative Alternative 5 (RA5) – Turbine Directional

Similar to RA1, RA5 includes widening of I-26 with one additional lane in each direction from US 176/Broad River Road to St. Andrews Road, proposed CD lanes, and interchange improvements from: Harbison Boulevard to US 378 on I-26; from the Saluda River to the Broad River on I-20; and from I-26 to Colonial Life Boulevard on I-126. Additionally, a proposed new interchange would be added at I-126 and Colonial Life Boulevard. The proposed CD lanes on I-26 eastbound begin west of St. Andrews Road and end at the I-26/I-20 interchange junction. The proposed CD lanes on I-26 westbound begin east of the 126 split and end at the St. Andrews Road interchange, before Piney Grove Road.

The proposed CD lanes on I-20 eastbound begin west of Bush River Road and end at the Broad River Road interchange. The proposed CD lanes on I-20 westbound begin at the Broad River Road interchange and end west of the Bush River Road interchange. The proposed CD lanes on I-20 eastbound and I-20 westbound west of Bush River Road would require a wider new I-20 bridge over the Saluda River.

A key feature of this representative alternative is the proposed turbine directional interchange at the I-26 and I-20 junction. A proposed turbine directional interchange consists of three roadway levels that traverse around a central bridge. The third level is the directional ramps from I-26 to I-20. A bird's-eye view of this proposed

interchange design gives the appearance of half-circular ramps, but this innovative interchange design uses less right-of-way, allows traffic to travel from one interstate to the other at higher operating speeds, and improves driver sight distance.

Another feature of this alternative is the elimination of the existing interchange at I-26 and Bush River Road and instead providing access to Bush River Road from the full-access interchange at Colonial Life Boulevard. The existing flyover would be re-constructed from I-126 westbound to I-26 eastbound, and access to I-26 from I-20 would be provided by the I-20/Bush River Road interchange to the I-20/I-26 interchange. Additionally, I-20 traffic can access I-126 via the I-20/Bush River Road interchange along Bush River Road to Colonial Life Boulevard and the proposed new Colonial Life Boulevard interchange with I-126. By removing the direct connection between Bush River Road and I-26, traffic conflict points and weaving maneuvers between Bush River Road and the I-20/I-26 interchange would be eliminated, thereby reducing traffic congestion/disruption and improving traffic flow on I-26. In contrast to RA1, RA5 would provide I-20 left-turning traffic onto I-26 with loop ramps at the I-20/I-26 interchange. With the exception of minor loop ramp improvements, the existing I-26 interchanges at both Lake Murray Boulevard and Broad River Road would both basically remain as-is since traffic currently operates within acceptable traffic capacity ranges and room to accommodate future I-26 widening under the bridges. Otherwise, existing interchanges elsewhere along the I-26/I-20/I-126 corridor would be reconstructed and upgraded via improved designs to better accommodate high traffic volumes entering the interstate network.

Representative Alternative 6 (RA6) – Directional with Loop & Ramp

Similar to RA2, RA6 includes widening of I-26 with one additional lane in each direction from US 176/Broad River Road to St. Andrews Road, proposed CD lanes, proposed new local roadway connections between St. Andrews Road and Bush River Road, and interchange improvements from: Harbison Boulevard to US 378 on I-26; from west of the Saluda River to the Broad River on I-20; and from I-26 to Colonial Life Boulevard on I-126. Additionally, a proposed new interchange would be added at I-126 and Colonial Life Boulevard. The proposed CD lanes on I-26 eastbound begin west of St. Andrews Road and end on I-126 east of the I-26 split. The proposed CD lanes on I-26 westbound begin east of the 126 split and end west of the St. Andrews Road interchange, before Piney Grove Road. The proposed CD lanes on I-20 eastbound begin west of Bush River Road and end at the Broad River Road interchange. The proposed CD lanes on I-20 westbound begin at the Broad River Road interchange and end west of the Bush River Road interchange. Proposed new local roadway connections would be provided between St. Andrews Road and Bush River Road so that traffic does not need to travel through the interchange of I-26 and I-20. The proposed CD lanes on I-20 eastbound and I-20 westbound west of Bush River Road would require a wider new I-20 bridge over the Saluda River.

A key feature of this representative alternative is the proposed directional interchange with a loop and ramp from I-20 westbound to I-26 eastbound at the I-26 and I-20 junction. A proposed directional interchange with a loop and ramp consists of three roadway levels where directional ramps cross through the two existing interstate mainlines (directional ramps from I-26 to I-20), I-26 and I-20. An aerial view of this proposed interchange design gives the appearance of symmetrical and half-circular ramps, but this interchange design

provides direct higher speed access for left-turning vehicles and eliminates weaving maneuvers from entering (merging) and exiting (diverging) vehicles on I-26 and I-20.

Another feature of this alternative is the elimination of the existing interchange at I-26 and Bush River Road and instead providing access to Bush River Road from the full-access interchange at Colonial Life Boulevard. The existing ramp would be re-constructed from I-26 westbound to I-126 eastbound, and access to I-26 from I-20 would be provided by the I-20/Bush River Road interchange to the I-20/I-26 interchange. Additionally, I-20 traffic can access I-126 via the I-20/Bush River Road interchange along Bush River Road to Colonial Life Boulevard and the proposed new Colonial Life Boulevard interchange with I-126. By removing the direct connection between Bush River Road and I-26, traffic conflict points and weaving maneuvers between Bush River Road and the I-20/I-26 interchange would be eliminated, thereby reducing traffic congestion/disruption and improving traffic flow on I-26. Existing interchanges elsewhere along the I-26/I-20/I-126 corridor would be reconstructed and upgraded via improved designs to better accommodate high traffic volumes entering the interstate network. The proposed improvements to the existing I-26 and I-126 interchange would require new I-26 bridges over the Saluda River. The most notable of the rest of the interchange improvements described, are the elimination of the loop ramps for left-turning vehicles and conversion of three existing I-26 interchanges (Broad River Road, Piney Grove Road, and St. Andrews Road) to proposed diverging diamond interchange (DDI) configurations. Also, the existing I-26 and Harbison Boulevard interchange would be converted to a SPUI and the existing I-20 and Bush River Road interchange would be converted to an Offset SPUI.

Representative Alternative 7 (RA7) – E-W Connector

RA7 includes widening of I-26 with one additional lane in each direction from US 176/Broad River Road to St. Andrews Road, proposed CD lanes, and interchange improvements from: Harbison Boulevard to US 378 on I-26; from the Saluda River to the Broad River on I-20; and from I-26 to Colonial Life Boulevard on I-126. Additionally, a proposed new full access interchange would be added at I-126 and Colonial Life Boulevard upgrading the existing partial interchange in this location and a new offset interchange via ramp highway would be proposed paralleling the Saluda River. The ramp highway would be entirely bridged as this traverses the Saluda River floodplain. The proposed CD lanes on I-26 eastbound begin west of St. Andrews Road and end on I-126 east of the I-26 split. The proposed CD lanes on I-26 westbound begin east of the 126 split and end west of the St. Andrews Road interchange, before Piney Grove Road. The proposed CD lanes on I-20 eastbound begin west of Bush River Road and end at the Broad River Road interchange. The proposed CD lanes on I-20 westbound begin at the Broad River Road interchange and end west of the Bush River Road interchange. Between St. Andrews Road and Bush River Road, there would be proposed new local roadway connections so that traffic does not need to travel through the interchanges of I-26 and/or I-20.

A key feature of this representative alternative is the proposed directional interchange with a loop from I-20 westbound to I-26 eastbound at the I-26 and I-20 junction as well as a new location four-lane ramp highway (east-west) extending from I-20 west of Bush River Road to I-26 just south of the I-26/I-126 interchange. A proposed directional interchange with a loop ramp consists of three roadway levels where directional ramps cross through the two existing interstate mainlines (directional ramps from I-26 to I-20), I-26 and I-20. The new location east-west roadway provides additional connections from I-20 to the west with I-26 to the east and I-126

without having to travel through the proposed directional interchange at I-20 and I-26. A bird's-eye view of this proposed interchange design gives the appearance of symmetrical and half-circular ramps, but this interchange design provides direct higher speed access for left-turning vehicles and eliminates weaving maneuvers from entering (merging) and exiting (diverging) vehicles on I-26 and I-20.

Another feature of this alternative is the elimination of the existing interchange at I-26 and Bush River Road and providing access to a revised I-126 at Colonial Life Boulevard interchange. The existing I-26 westbound to I-126 eastbound ramp would be reconstructed. By removing the direct connection between Bush River Road and I-26, traffic conflict points and weaving maneuvers between Bush River Road and the I-20/I-26 interchange would be eliminated, thereby reducing traffic congestion/disruption and improving traffic flow on I-26. With the exception of minor loop ramp improvements, the existing I-26 interchanges at US 176/Broad River Road and Lake Murray Boulevard would basically remain as-is since traffic currently operates within acceptable traffic capacity ranges and room to accommodate future I-26 widening under the bridges. Existing interchanges elsewhere along the I-26/I-20/I-126 corridor would be reconstructed and upgraded via improved designs to better accommodate high traffic volumes entering the interstate network.

Representative Alternative 8 (RA8) – E-W Connector Bush River

Similar to RA7, RA8 includes widening of I-26 with one additional lane in each direction from US 176/Broad River Road to St. Andrews Road, proposed CD lanes, and interchange improvements from: Harbison Boulevard to US 378 on I-26; from the Saluda River to the Broad River on I-20; and from I-26 to Colonial Life Boulevard on I-126. Additionally, a proposed new interchange would be added at I-126 and Colonial Life Boulevard and a new offset interchange via ramp highway would be proposed paralleling the Saluda River. The proposed CD lanes on I-26 eastbound begin west of the St. Andrews Road interchange and end on I-126 at the I-26 split. The proposed CD lanes on I-26 westbound begin east of the 126 split and end west of the St. Andrews Road interchange, before Piney Grove Road. The proposed CD lanes on I-20 eastbound begin west of Bush River Road and end at the Broad River Road interchange. The proposed CD lanes on I-20 westbound begin at the Broad River Road interchange and end west of the Bush River Road interchange. Between St. Andrews Road and Bush River Road, there would be proposed new local roadway connections so that traffic does not need to travel through the interchanges of I-26 and/or I-20.

A key feature of this representative alternative a new location four-lane roadway (east-west) extending from I-20 west of Bush River Road to I-26 just south of the I-26/I-126 interchange with a new interchange at Bush River Road. The new location east-west roadway parallel to the Saluda River provides connections between I-20 and I-26 without having to travel through the proposed directional interchange at I-20 and I-26. A proposed directional interchange consists of three roadway levels where directional ramps cross through the two existing interstate mainlines (directional ramps from I-26 to I-20), I-26 and I-20. A bird's-eye view of this proposed interchange design gives the appearance of symmetrical and circular ramps, but this interchange design provides direct higher speed access for left-turning vehicles and eliminates weaving maneuvers from entering (merging) and exiting (diverging) vehicles on I-26 and I-20. Another feature of this alternative is the modification of the existing interchanges of Bush River Road at I-26 and I-20. The existing I-26 westbound to I-126 eastbound ramp would be relocated south of its current location. Access to I-126 from I-20 would be provided by the new

location roadway interchange. By adding the direct connection between I-126 and I-20, traffic conflict points and weaving maneuvers between Bush River Road and the I-20/I-26 interchange would be eliminated, thereby reducing traffic congestion/disruption and improving traffic flow on I-26. With the exception of minor loop ramp improvements, the existing I-26 interchanges at US 176/Broad River Road and Lake Murray Boulevard would basically remain as-is since traffic currently operates within acceptable traffic capacity ranges and room to accommodate future I-26 widening under the bridges. Existing interchanges elsewhere along the I-26/I-20/I-126 corridor would be reconstructed and upgraded via improved designs to better accommodate high traffic volumes entering the interstate network.

Representative Alternative 9 (RA9) – Southern Connector

RA9 includes widening of I-26 with one additional lane in each direction from US 176/Broad River Road to St. Andrews Road, and interchange improvements from: Harbison Boulevard to US 378 on I-26; from US 378 to the Broad River on I-20; and from I-26 to Colonial Life Boulevard on I-126. Additionally, a proposed new interchange would be added at I-126 and I-26 and a new location I-126 would be proposed paralleling south of the Saluda River along with the elimination of the existing cloverleaf interchange at the I-20 and I-26 junction.

A key feature of this representative alternative is the elimination of the existing cloverleaf interchange at the I-20 and I-26 junction and proposed new interchange at I-126 and I-26 along with a proposed new location four-lane roadway between I-20 and I-126. The proposed new I-126 and I-26 interchange would be a directional interchange consisting of three roadway levels where directional ramps cross through the two existing interstate mainlines (directional ramps from I-26 to I-126), I-126 and I-26. The new location east-west roadway parallel to the Saluda River provides additional connections between I-20 and I-26 and eliminates the need for several turning movements at the existing I-20 and I-26 interchange (full cloverleaf). A bird's-eye view of this proposed holistic alternative shows traffic movements being spread out over the new location roadway and new I-126 and I-26 interchange while providing direct higher speed access for left-turning vehicles and eliminates weaving maneuvers from entering (merging) and exiting (diverging) vehicles on I-26 and I-20. Another feature of this alternative is the modification of the existing interchange at I-26 and Bush River Road. Additionally, I-20 traffic can access I-126 via the new location east-west roadway. With the exception of minor loop ramp improvements, the existing I-26 interchanges at US 176/Broad River Road and Lake Murray Boulevard would basically remain as-is since traffic currently operates within acceptable traffic capacity ranges and room to accommodate future I-26 widening under the bridges. Existing interchanges elsewhere along the I-26/I-20/I-126 corridor would be reconstructed and upgraded via improved designs to better accommodate high traffic volumes entering the interstate network.

4.5.2 TRAFFIC CAPACITY AND OPERATIONS – LEVEL 1B SCREENING

To evaluate traffic capacity and operations for each Representative Alternative, microsimulation models were developed for each RA. Multiple simulation runs were performed for the design year (2040) morning (AM) and afternoon (PM) weekday peak hours. Operational measures of effectiveness (MOE) were calculated from the average of the multiple simulation run results. The simulations and resulting MOE were reviewed to identify traffic capacity deficiencies and traffic bottlenecks within the project study area.

The MOE considered for the Level 1B screening included level of service (LOS), travel time, volume/capacity ratio (V/C), speed, and driver delay. These MOE can be readily compared to aid in the evaluation of the Representative Alternatives. As the RA evaluation proceeded, V/C was determined to be a less reliable MOE since in saturated conditions the volume traveling through a freeway segment may decrease due to downstream congestion reducing flow and resulting in a lower V/C. Therefore, V/C was removed as an MOE in level 1B screening.

The average travel times and speeds for each of the individual segments were derived from the multiple simulation results for each RA. These results were combined to create a single through travel time and weighted average through speed for the eastbound and westbound interstate mainlines for the AM and PM peak hours for each RA. The results of the through speeds and travel times for each RA concept were compared to speeds and travel times for RA10, the No-Build Alternative.

Other elements that were considered for the Level 1B screening are best described in the context of the No-Build Alternative, RA10. RA9 was not evaluated using the MOE or the other evaluation elements. RA1 through RA8 were evaluated using the MOE and other evaluation elements. The evaluation of these RA with respect to RA10 are described below.

4.5.2.1 No-Build Alternative (RA10)

RA10 represents the No-Build Alternative. This alternative provides the basis for comparing and assessing the traffic capacity (LOS), travel times and average corridor through speed of the other Representative Alternatives. The travel times and average corridor through speeds are the baseline for comparison of the similar MOE for the other RA.

Other elements of the No-build network are recognized as adversely affecting capacity, travel time and speed in the corridor and were included in the Level 1B evaluation. These include:

- Weaving movements. Numerous weaving movements create turbulence on the mainline I-26 lanes between through traffic and traffic entering and exiting from the ramps, especially between the St. Andrews Road interchange and the I-26/I-126 system interchange. There are 59 separate weaving movements present in RA10.
- Existing mainline through lane shifts. Mainline through lane shifts occur where traffic entering the study area network on the I-26 mainline through lanes have to shift at least one lane in order to exit the study area network on the I-26 mainline through lanes.
- Service interchange movements within or in conflict with the system interchange. The Bush River Road service interchange on I-26, closely spaced between the I-20/I-26 and I-26/I-126 system interchanges, introduces weaving movements and complicates what should be relatively smooth, free-flowing movements between the system interchanges. Having a service interchange within the system interchange is perceived as a liability to network performance.
- Left exits from the mainline lanes. The configuration of the I-26/I-126 interchange is also perceived as contributing to reducing efficient movement of mainline traffic along I-26. In the eastbound direction, I-

126 has the appearance of continuity of mainline I-26, while the lanes continuing east as I-26 appear to be a two-lane exit ramp to the right of the mainline. In the westbound direction, the mainline lanes of westbound I-26 merge into three-lane of westbound I-126, with two lanes merging to the left of the two I-26 lanes, and one lane to the right. It is preferable to prioritize continuous mainline lanes on I-26 through the two system interchanges, rather than having the short I-126 spur appear to have priority over a major statewide interstate route running between Charleston and the North Carolina line.

4.5.2.2 RA9 – Level 1B Screening Summary (Eliminated)

RA9, through its elimination of the existing system interchange, introduced circuitous and substantially longer (in distance and travel time) travel patterns for many of the system-to-system movements between I-26 and I-20. The initial simulations of RA9 indicated traffic would be diverted off the interstate system onto the arterial roadway network via a service interchange for shorter, quicker travel. Traffic exiting the interstate system would travel along the arterial roadway network, and re-enter the interstate system at another service interchange. This has the effect of reducing the use of the proposed connector freeway and increasing traffic and congestion on the arterial networks and service interchanges.

Three examples of these longer, circuitous movements include:

- I-26 eastbound to I-20 eastbound: RA9 requires this network movement take 4.12 miles longer to complete than in RA10. In RA9, eastbound I-26 traffic would continue past the location of the existing I-20/I-26 system interchange, past Exit 108 (Bush River Road) through the existing I-26/I-126 system interchange, travel west along the proposed connector freeway to I-20, enter I-20 eastbound, pass Exit 63 (Bush River Road) before continuing eastbound on I-20 past the location of the existing I-20/I-26 system interchange. The initial traffic simulations indicate that instead of this movement, traffic would likely exit at Exit 108 (Bush River Road), travel west on Bush River Road, and enter I-20 eastbound at Exit 63 (Bush River Road).
- I-26 eastbound to I-20 westbound: RA9 requires this network movement take 1.40 miles longer to complete than in RA10. In RA9, eastbound I-26 traffic would continue past the location of the existing I-20/I-26 system interchange, past Exit 108 (Bush River Road) through the existing I-26/I-126 system interchange, travel west along the proposed connector freeway to I-20, and enter I-20 westbound. The initial traffic simulations indicate that instead of this movement, traffic would likely exit at Exit 108 (Bush River Road), travel west on Bush River Road, and enter I-20 westbound at Exit 63 (Bush River Road).
- I-20 westbound to I-26 westbound: RA9 requires this network movement to take 5.15 miles longer to complete than in RA10. In RA9, westbound I-20 traffic would continue past the location of the existing I-20/I-26 system interchange, past Exit 63 (Bush River Road) to the interchange with the proposed connector freeway. Traffic would then travel eastbound on the connector freeway, enter I-26 westbound, and travel to the west past the existing I-20/I-26 system interchange. The initial traffic simulations indicate that instead of this movement, traffic would exit I-20 at Exit 63 (Bush River Road), travel east on Bush River Road, and enter I-26 westbound from Bush River Road at Exit 108 (Bush River Road).

RA9 also introduces short weaving sections on I-20 between the proposed connector freeway interchange and the Exit 61 (Sunset Boulevard) service interchange.

Roadway design and traffic operations modifications would not remedy the lengthy circuitous travel introduced by RA9 or reduce the congestion or queuing issues along the arterials from the resulting diversion of traffic from the freeway system. Keeping some of the existing system interchange ramps to facilitate the higher volume system-to-system movements would change the intent of RA9, which is to eliminate ramps at the I-20/I-26 interchange. For these reasons, RA9 was deemed fatally flawed in terms of its ability to meet purpose and need, and therefore, it was eliminated from further consideration in the course of the Level 1B screening.

The remaining eight representative alternatives, RA1 through RA8, were evaluated against the RA10 No-Build Alternative to guide the selection of feasible RA to carry forward to Level 2 screening. This evaluation was based on a comparison of the MOE and other evaluation elements. Table 4.3 shows the results of the evaluation of improvements in LOS along the freeway segments, freeway off- and on-ramps, and arterial intersections at or near the service interchanges. The LOS evaluation incorporated weighed the respective elements: mainline segment LOS was 50 percent of the final value, while off- and on-ramps and intersections were weighted 40 percent and 10 percent respectively. The RA were also evaluated on the basis of travel time and average through speed along the mainline segments and compared against RA10.

The other evaluation elements, mainline weaving movements, left exits, mainline through-lane shifts, and the presence of service interchange movements with or conflicting with the system interchanges were also included in Table 4.3 since they are key components to meeting the purpose and need of the project.

In Table 4.3, improvements over the No-Build Alternative were highlighted in green, while those segments that performed worse than the No-Build Alternative were highlighted in red. Those that provided no significant change over the No-Build Alternative were highlighted in yellow.

For each Representative Alternative, a traffic analysis was completed for each section of the project area to determine the through times in 2040 based on the model design. These results were further broken into eastbound and westbound directions as well as time of day. The model results for each segment were summed to create a single time for the stretch of interstate at a given time and direction. These summed segment times were compared to RA10, the No-Build Alternative, which acted as a base case. These numbers are naturally weighted as they are based on total time, meaning the longer the stretch and mileage, the higher the values have the potential to be.

Average through speed improvements are based on a similar concept as the average through travel times in that the measurements were based off of specific traffic modeling and compared to the base model of RA10. The values for each of the MOE categories were inputted for the mainline segments in both directions for both the AM and PM peak periods.

Table 4.3 improvements over the No-Build Alternative were highlighted in green, while decreases as compared to the No-Build Alternative were highlighted in red. Those that provided neither an improvement nor a worse

condition –those that provided no change over the No-Build Alternative – were highlighted in yellow. Overall scores for each MOE were summed, and the same color-coding was applied.

In addition, the project team carried over important elements of the Level 1A screening metrics. Since the Level 1A screening was completed on individual interchange alternatives (AOs), it was important to reassess the holistic alternatives under the Level 1A metrics to confirm that each of the RAs would provide reduced weaving movements, eliminate sub-standard ramps, eliminate left exits, reduce mainline through-lane shifts, and address sub-standard service interchange movements within the system interchanges. These reductions and/or eliminations of substandard geometry were key components to meeting the purpose and need of the project.

After reviewing the outputs of the overall scores for each of the MOEs, those that provided an overall improvement over the No-Build Alternative were evident, as were those that did not.

A summary of the traffic analysis results for each RA is included in Table 4.3, and detailed traffic MOEs of RA1 through RA8 is included in Appendix B. In addition, exhibits for each RA are included in Appendix C. As previously mentioned, the Level 1B screening process is described fully in Section 5.3 of the *Carolina Crossroads Alternatives Traffic Analysis Technical Memo*.

Table 4.3 Level 1B Screening Criteria

Level 1B Screening Criteria	RA1		RA2		RA3		RA4		RA5		RA6		RA7		RA8		RA9	RA10	
LOS Improvement Mainline = 50%, Ramps = 40%,	17.8%		7.1%		13.1%		12.4%		11.4%		7.6%		18.0%		12.5%		*Eliminated*	0	
Difference in Through Travel Time 1 point = 1 minute. Rounded to nearest 0.5 min, Negative denotes longer travel times	RA1		RA2		RA3		RA4		RA5		RA6		RA7		RA8		RA9	RA10	
I-26	Difference	MM:SS	Difference	MM:SS	Difference	MM:SS	Difference	MM:SS	Difference	MM:SS	Difference	MM:SS	Difference	MM:SS	Difference	MM:SS		Difference	MM:SS
East AM Peak	14.5	10:40	10.5	14:38	12	13:01	14.5	10:27	14.5	10:38	12.5	12:27	15	10:09	13.5	11:31		0	24:55
East PM Peak	5	09:26	2.5	12:04	4.5	09:53	5	09:14	5	09:12	5	09:14	5	09:18	4.5	09:55	*Eliminated*	0	14:11
West AM Peak	0.5	08:41	0	09:16	0.5	08:41	0	08:53	0.5	08:44	-0.5	09:30	0.5	08:47	0	08:53		0	09:08
West PM Peak	13	11:13	11.5	13:02	12	12:25	15	09:23	14	10:27	13.5	10:48	13	11:30	14	10:34		0	24:08
I-20																			
East AM Peak	-1	08:00	-1	08:01	-3	10:06	-2.5	09:28	-3.5	10:34	-6	13:13	-11.5	18:27	-5	12:01		0	07:26
East PM Peak	0	06:52	-0.5	07:19	-0.5	07:26	0	07:05	0	07:02	-3.5	10:07	1	06:15	-0.5	07:11	*Eliminated*	0	06:56
West AM Peak	1.5	07:12	-5	13:13	0	08:24	1.5	07:04	1	07:24	0	08:27	1	07:32	1	07:32		0	08:13
West PM Peak	2.5	09:56	-5	16:46	-2.5	14:22	0	11:55	1.5	10:35	1.5	10:37	3	09:03	2.5	09:49		0	12:01
I-126																			
East AM Peak	-1	02:52	0	01:58	-1	02:53	0	02:08	-0.5	02:33	0	02:09	0	02:15	0	01:59		0	02:04
East PM Peak	-1	02:46	0	01:57	-0.5	02:20	0	02:08	-1	02:31	0	02:00	0	02:07	0	02:01	*Eliminated*	0	01:57
West AM Peak	0	02:02	0	02:08	0	02:17	0	02:08	0	02:08	0	02:13	-1.5	03:10	-0.5	02:25		0	02:07
West PM Peak	8	02:46	7	03:36	6.5	03:50	8	02:21	6.5	03:52	5	05:45	6.5	04:03	8	02:42		0	10:19
Total Travel Time Points	42		20		28		41.5		38		27.5		32		37.5		*Eliminated*	0	
Difference in Average Through Speed 1 point = 1 MPH, rounded to nearest MPH, Negative denotes slower speeds	RA1		RA2		RA3		RA4		RA5		RA6		RA7		RA8		RA9	RA10	
I-26	Difference	MPH	Difference	MPH	Difference	MPH	Difference	MPH	Difference	MPH	Difference	MPH	Difference	MPH	Difference	MPH		Difference	MPH
East AM Peak	27	49	14	36	18	40	27	49	27	49	21	43	29	51	23	45		0	22
East PM Peak	16	55	4	43	14	53	16	55	18	57	19	58	17	56	13	52	*Eliminated*	0	39
West AM Peak	3	57	1	55	2	56	1	55	2	56	0	54	1	55	0	54		0	54
West PM Peak	24	44	19	39	19	39	32	52	27	47	28	48	22	42	25	45		0	20
I-20																			
East AM Peak	-2	52	-4	50	-13	41	-10	44	-15	39	-22	32	-35	19	-19	35		0	54
East PM Peak	2	60	-4	54	-2	56	0	58	1	59	-17	41	-2	56	0	58	*Eliminated*	0	58
West AM Peak	5	56	-20	31	-3	48	6	57	2	53	-2	49	3	54	2	53		0	51
West PM Peak	5	40	-11	24	-7	28	-1	34	2	37	4	39	10	45	6	41		0	35
I-126																			
East AM Peak	-3	55	3	61	-10	48	-2	56	-5	53	-1	57	-1	57	-6	52		0	58
East PM Peak	-4	57	0	61	-1	60	-5	56	-7	54	0	61	-1	60	-10	51	*Eliminated*	0	61
West AM Peak	2	62	0	60	-1	59	0	60	-1	59	-1	59	-1	59	-1	59		0	60
West PM Peak	34	46	24	36	23	35	42	54	21	33	11	23	34	46	41	53		0	12
Total Through Speed Points	109		26		39		106		72		40		76		74		*Eliminated*	0	

LEGEND	Overall Improvement	No Improvement	Decrease in Performance

Level 1A: Reduce/Eliminate Geometric Deficiencies		RA1	RA2	RA3	RA4	RA5	RA6	RA7	RA8	RA9	RA10
Weaving Movements on Mainline	Number of remaining weaving movements.	14	9	22	14	14	9	16	9	*Eliminated*	59
Sub-standard Ramps	Includes ramp radius, acceleration length, speed, shared ramps, ramp spacing, and intersection spacing	0	0	0	0	0	0	0	0		13
Left Exits		0	0	0	1	0	0	0	0		1
Mainline Thru-lane-shifts	I-26 and I-20 only, I-126 is end of an interstate	0	0	0	1	0	0	1	2		4
Service Interchange Movements located within or in conflict with system interchanges		0	0	1	1	0	0	0	1	*Eliminated*	1

LEGEND	Elimination of Geometric Deficiencies	Reduction of Geometric Deficiencies	No Change in Geometric Deficiencies

Source: See MOE tables in Appendix B

4.5.2.3 RA1 – Level 1B Screening Summary

Of the eight RAs evaluated, RA1 showed the greatest improvement over the No-Build Alternative, through highly improved LOS, reduced travel times, and increased average through speeds within the mainline corridors. RA1 would reduce the number of mainline weaving movements from 59 in RA10 (No-build) to 14; and would relocate the left exit movement of I-126 eastbound from eastbound I-26 to a three-lane, right exit movement that begins within the modified I-20/I-26 system interchange. It would also eliminate the need for through traffic on I-26 to shift lanes, and would eliminate the service interchange movements at Exit 108 (Bush River Road). Due to these improvements, RA1 continued to Level 2 screening.

4.5.2.4 RA2 – Level 1B Screening Summary (Eliminated)

RA2 would have nine weaving movements along the mainline (the No-build would have 59), the fewest (along with RA6 and RA8) of all the RAs. The left exit movement of I-126 eastbound from eastbound I-26 would be relocated to a two-lane right exit movement that takes place just east of the St. Andrews Road (Exit 106) overpass. RA2 would also eliminate the need for through traffic on I-26 to shift lanes, and would eliminate the service interchange movements at Exit 108 (Bush River Road).

However, of the eight RAs, RA2 showed the worst overall LOS and performance improvement. RA2 would have the least reduction in travel time and would result in overall decreases in speed, particularly along westbound I-20. For these reasons, RA2 was not practicable and was eliminated in Level 1B screening.

4.5.2.5 RA3 – Level 1B Screening Summary (Eliminated)

Overall, RA3 had the third best improvement in LOS compared to the other RAs. However, travel time and speed improvement through the corridor were the third lowest, with an overall increase in average through speed. Travel speeds decreased on I-20 and I-126 compared to RA10.

RA3 would have 22 mainline weaving movements – the most of all the RAs. And while it would eliminate mainline through lane shifts and would relocate the left exit movement of I-126 eastbound to a three-lane ramp to the right of I-26 eastbound just west of the revised system interchange, the service interchange movements of Exit 108 (Bush River Road) would be maintained within the system interchanges. For these reasons, RA3 was not practicable and was eliminated in Level 1B screening.

4.5.2.6 RA4 – Level 1B Screening Summary (Eliminated)

RA4 had the fourth best improvement in LOS compared to the other RA. However, travel times and speeds were the second highest of the RA.

RA4 would have 14 mainline weaving movements (compared to the No-build which would have 59 weaving movements) – some of which, such as the weaving movement of eastbound I-20 traffic traveling to eastbound I-126, requires accomplishing a two-lane weaving movement in a short distance. RA4 would also maintain the left side departure of eastbound I-126 from eastbound I-26, similar to the existing condition in RA10. Because of this left side departure, one mainline through lane shift would be required to travel through the network. The service interchange at Exit 108 (Bush River Road) would remain within the system interchanges in RA4.

Despite the improvements in travel time and speed and the moderate improvement in overall LOS, the presence of multiple elements that are perceived as negatives to the operation and safety of the corridor resulted in RA4 not being practicable and being eliminated in Level 1B screening.

4.5.2.7 RA5 – Level 1B Screening Summary

Overall, RA5 had the third worst overall LOS improvements compared to the other RAs. In addition RA5 had the third highest improvement in mainline travel times, but the improvement in average through travel speed was third worst.

RA5 would have 14 mainline weaving movements (compared to the 59 in the No-Build Alternative). RA5 would eliminate the left side departure of eastbound I-126 from eastbound I-26, relocating it so it would exit with three lanes on the right side of eastbound I-26 within the revised system interchange. Mainline through lane shifts would be eliminated in RA5, as would the service interchange ramp movements within the system interchange.

Overall, RA5 was above average in terms of improvement compared to the other RAs. The greatest improvements of this alternative are with regards to through travel times, especially on the I-26 mainline, providing an overall travel time improvement of 20 minutes over the No-Build Alternative. This alternative also corrects geometric deficiencies while moderately improving overall level of service and speed through the corridor. For these reasons, RA5 continued to Level 2 screening.

4.5.2.8 RA6 – Level 1B Screening Summary (Eliminated)

RA6 had the second lowest LOS improvement, travel time improvement, and difference in average through speed on the mainline. Travel speeds on I-20 eastbound during the AM and PM peak hours would both decrease substantially in RA6.

There would be nine mainline weaving movements in RA6 (compared to 59 in the No-Build Alternative), and the left side exit of I-126 eastbound from I-26 eastbound would change to a three-lane, right-side exit within the footprint of the revised system interchange. There would be no mainline through lane shifts in RA6, and the service interchange ramp movements from Exit 108 (Bush River Road) would be eliminated within the system interchanges.

Due to the low level of improvement in overall LOS and travel time and the overall decrease in average through speed, RA6 was not practicable and was eliminated in Level 1B screening.

4.5.2.9 RA7 – Level 1B Screening Summary

Of all the RAs, RA7 had the best overall LOS improvement. However, it ranks fifth out of the RAs in terms of improvement in overall through travel time and fourth in terms of average through speed. RA7 had the second highest mainline weaving movements (16), compared to the No-build alternative (59). It would eliminate the left exit of I-126 eastbound from I-26 eastbound by relocating it as a three-lane, right side exit near the Bush River Road overpass. While the service interchange movements at Exit 108 (Bush River Road) would also be

eliminated in RA7, a mainline through lane shift is introduced west of St. Andrews Road. RA7 continued to Level 2 screening.

4.5.2.10 RA8 – Level 1B Screening Summary

RA8 had the fourth highest LOS Improvement and through travel time improvement, and the third highest improvement in average through speed. The addition of a connection to Bush River Road through the new alignment connecting I-126 and I-20 and removing connections to the mainlines contribute to the improvement. RA8, along with RA2 and RA6, had nine mainline weaving movements – the fewest of the RAs – compared to the No-build, which would have 59 weaving movements. The left side exit of I-126 eastbound from I-26 eastbound would be eliminated by relocating the I-126 exit to the Bush River Road overpass where it would exit with three lanes from the right side of I-26 eastbound. However, RA8 would not eliminate the service interchange movements for Bush River Road that fall within the I-26/I-126 system interchange limits, and would introduce two mainline through lane shifts to the network – one west of Bush River Road and one at the St. Andrews Road exit. RA8 continued to Level 2 screening.

In summary, a total of nine RAs were compared against the No-build (RA10) and five representative alternatives were eliminated in Level 1B screening. The eliminated RAs include RA2, RA3, RA4, RA6, and RA9. Four representative alternatives (RA1, RA5, RA7, and RA8) were carried forward into the Level 2 screening.

4.6 Screening of representative alternatives – Level 2

After screening of the interchange options (AO1-AO54) in Level 1A and representative alternatives (RA1-RA9) in Level 1B, the project team evaluated the remaining alternatives: RA1, RA5, RA7, and RA8 under Level 2 screening. See the *Carolina Crossroads Alternatives Traffic Analysis Technical Memo* (Appendix D) for details on the traffic components of Level 1A and 1B screenings. The Level 2 screening process was conducted to determine which alternatives that passed Level 1 screening were reasonable alternatives under NEPA and considered practicable under the Section 404(b)(1) guidelines.

The Reasonable Alternatives were determined by collectively evaluating the alternatives that were found to meet the purpose of and need for the project in Level 1 screening while also considering the degree to which these alternatives meet the purpose and need, their impacts to the natural and built environment, estimated project costs, logistical considerations, and overall feasibility.

During the Level 2 screening process, it was determined that none of the alternatives would avoid affecting the natural and built environment. The project study area contains urban and suburban areas, wetlands and streams. Because of the high density of these community and natural resources, the team found that, in all situations, avoiding or minimizing impacts to one resource would cause additional impacts to other resources. Given that no alternatives would avoid affecting the natural and built environment, each of the alternatives was evaluated to determine which alternatives would best meet the purpose of and need for the project with the lowest overall levels of impacts to the natural and built environment.

The Level 2 Screening Matrix presented in Appendix D of this document summarizes the Level 2 screening metrics and results for each of the four remaining RAs, including total number of residential or business acquisitions , community resources, natural resources, hazardous materials, traffic considerations, and other considerations. As shown in Appendix D, many of the Level 2 screening results were the same or similar for all of the alternatives evaluated. Because all of the alternatives were substantially the same for these screening criteria, these criteria were not used to differentiate between the alternatives during the Level 2 screening process. Generally, the environmental impact categories that show the greatest variance among the remaining RAs were property (residential, commercial and institutional), wetlands, streams/rivers, and floodplains. There generally were no appreciable differences in impacts among other categories, such as hazardous materials, community resources, constructability, etc. In addition, the public comments received after the public meeting on October 4, 2016, were largely focused on concerns for property impacts and natural resources impacts. Therefore, the potential impacts each of the RAs to properties, wetlands, stream, and floodplains were compared to determine which had the least overall environmental impacts. In addition, the degree for which the primary purpose and need was met, compatibility with land use plans, and costs were also considered. The methodology for evaluating impacts under each primary impact category is as follows:

Property Impacts - Using GIS aerial mapping, in evaluating property impacts for Level 2 screening, a full or partial acquisition was assigned to all parcels that fell within the design footprint of an RA. Generally, if greater than 50 percent of the parcel was within the design footprint, the property was counted as one that would require a full acquisition. If less than 50 percent of the parcel was within the design footprint, the property was considered as a partial acquisition. For this effort, apartment communities were counted as one impact since a single owner/tax identification number is assigned to the property. While individual unit impacts were not totaled, impacts to apartment communities were considered and are noted in each of the RA summaries below. This applies to storage units as well.

As property impacts were evaluated, potential impacts to Environmental Justice (EJ) communities was considered. At this level of review, EJ considerations were based on U.S. Census data, which revealed that properties with low income/minority populations would be impacted. However, there is no appreciable difference in impacts amongst the alternatives. A more detailed evaluation of impacts to EJ communities will be completed for the reasonable alternatives as part of the DEIS.

After the impacts were totaled for each of the RAs, they were compared to each other and shaded red, yellow or green, based on which RA had the most impacts (red), least impacts (green), or some level of impacts in between (yellow).

A more detailed evaluation of property impacts will be completed as part of the DEIS. A more detailed evaluation of acquisition needs will be conducted as part of the FEIS. At that time, exceptions to the aforementioned methodology will be considered for properties categorized as partial acquisitions if a component of the impacted property could result in the remainder of the property being unusable. For example, impacts to property access (e.g., the driveway), impacts to more than 25% of parking, or impacts to a structure/building on the property.

Wetland/Stream Impacts – For purposes of the Level 2 screening, waters of U.S. (WOUS) pertain to wetlands, streams and rivers identified within the project study area by the project team through use of US Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) and US Geographic Service (USGS) National Hydrography Dataset (NHD), both national, publically-available Geographic Information System (GIS) datasets. In evaluating impacts to WOUS for Level 2 screening, the GIS data was used to quantify potential impacts associated with each RA. While NWI data is accepted as reliable for planning purposes, it may not reflect actual conditions in the field and thus estimated impacts evaluated are not exact. In one case, the NWI and NHD provided overlapping information that was adjusted to better reflect the potential impacts to wetland and stream resources. The NWI data classifies the Saluda River as a Riverine wetland, while the NHD classifies the Saluda River as a river. Potential impacts to the Saluda River were quantified using the NHD only.

In addition, the quality of wetlands and streams was considered in the screening process, giving greater consideration to wetlands and streams that are of higher quality than to those that are of lesser quality. Higher quality resources are generally valued for their function, aesthetics, and wildlife.

Definitions of wetland and stream quality are based on characteristics outlined in the USACE, Charleston District *Guidelines for Preparing a Compensatory Mitigation Plan* (dated October 7, 2010). The USACE Charleston District Guidelines consider the type and existing condition when evaluating impacts to wetlands and streams. For the purposes of the level 2 screening, quality characteristics were assigned to NWI wetlands and NHD streams in ArcGIS based on understanding of the aquatic resources in the project area, NWI classification, and an interpretation of aerial photographs. The maps presented in Appendix E show the stream and wetland quality designations for each of the four remaining RAs. An approved Jurisdictional determination was not sought at this stage, thus the project team determined the appearance and characteristics of potentially jurisdictional wetlands and waters of the U.S. for the level 2 screening analysis. Wetland and stream quality was defined as follows:

Wetlands

- High quality:
    - Existing Condition: Fully functional wetlands that appear by the project team to be primarily undisturbed, or existing disturbances do not substantially alter important functions.
    - Type: Bottomland Hardwoods and Riverine systems, including headwaters and riparian zones.
- Medium Quality:
    - Existing Condition: Partially impaired wetlands that appear by the project team to have a partial or full loss of one or more functions. Examples include mixed pine-hardwood wetlands, scrub-shrub wetlands, segmented and/or ditched wetlands.
    - Type: Seeps and bogs, Depressions, Pocosins and Bays, Savannahs and Flatwoods
- Low Quality:
    - Existing Condition: Impaired or very impaired wetlands that appear by the project team to have a permanent loss of one or more functions. Examples include stormwater basins, clear-cut wetlands, and permanently cleared utility corridors.
    - Type: Man-made lakes and ponds, impoundments.

Streams

- High quality:
  - Existing Condition: Fully functional streams that appear by the project team to be primarily undisturbed with stable, vegetated stream banks, and riparian buffers. Streams with listed species, trout streams, and streams identified as highly diverse are considered fully-functional.
  - Type: Headwater streams (1st and 2nd Order) designated as blue line on the USGS topographic maps
- Medium Quality:
  - Existing Condition: Partially impaired streams that appear by the project team to have limited human-influence or natural disturbance, resulting in a partial loss of one or more functions. Some channelization and piping may be present.
  - Type: All other streams and rivers represented by solid or dashed blue lines on the USGS topographic maps.
- Low Quality:
  - Existing Condition: Impaired or very impaired streams that appear by the project team to have unvegetated stream banks and severe loss of function. Streams with significant human-influence or natural disturbance. Primarily piped or channelized tributaries, or tributaries with minimal to no riparian buffer.
  - Type: Streams designated by dashed blue lines on the USGS topographic maps.

A detailed assessment of wetland and stream conditions, type, and functions using USACE Charleston District Guidelines will occur during Section 404 permitting.

Stream impacts within impaired waterbodies and Total Maximum Daily Load (TMDL) watersheds were also considered. According to SCDHEC's 2016 Section 303(d) List of Impaired Waters, Station S-298 on the Saluda River is impaired for recreational uses because of *E. coli* levels. Station S-507 on Stoop Creek and Station S-260 on Kinley Creek are impaired for aquatic life uses based on macroinvertebrate community data. Two TMDLs have been developed within the vicinity of the proposed project:

- A TMDL for fecal coliform bacteria in the Broad River.
- A TMDL for fecal coliform bacteria in the Lower Saluda River and tributaries Kinley Creek and Twelve mile Creek.

While transportation projects are not known to increase the levels of *E. coli* or other fecal coliform bacteria, construction over impaired waterbodies would require detailed stormwater design and coordination with SCDHEC to ensure the proposed project does not further contribute to impairments or TMDLs.

While there are no national designations of Wild or Scenic Rivers within the project area, the Level 2 screening also considers whether the RA is consistent with the *South Carolina Scenic Rivers Act of 1989* and *Lower Saluda Scenic River Corridor Plan Update (December 2000)*. The Lower Saluda River is designated in the Act as a state scenic river for its recreational opportunities and cold water trout fisheries. According to the Scenic Rivers Act, there may be no construction of roads paralleling the river within the limits of a scenic easement or public

access area. According to the *Lower Saluda Scenic River Corridor Plan*, there are existing easements on properties owned by South Carolina Electric & Gas (SCE&G) along the Saluda River that were also considered.

Floodplain Impacts – In evaluating floodplain impacts for level 2 screening, Federal Emergency Management Administration (FEMA) flood insurance rate maps were reviewed. Crossings of FEMA regulated floodplains by RAs were counted and used to determine the extent of potential impacts to floodplains under each RA. An assessment of the anticipated level of FEMA coordination was then assigned to each RA based on whether impacts to regulatory floodways or Zone AE floodplains are anticipated. No other types of floodplains were identified within any of the RAs potential impact areas.

- Zone AE Floodplains with FEMA Regulatory Floodways

A FEMA "Regulatory Floodway" is a waterway and the adjacent land areas that must be reserved in order to discharge for the base flood without cumulatively increasing the water surface elevation. In these zones, FEMA only permits new developments or construction that result in no rise to the base flood elevation.

- Zone AE Floodplains

Zone AE floodplains are Special Flood Hazard Areas shown on a community's Flood Insurance Rate Map (FIRM) where base flood elevations have been established. In these zones, FEMA only permits new developments or construction that result in less than 1-foot of base flood elevation rise.

While the proposed RAs would likely span floodplains with bridges, crossing floodways and floodplains typically requires additional detailed hydraulic studies and design considerations. Modifications within Regulatory Floodways or Zone AE floodplains may require a Conditional Letter of Map Revision (CLOMR) or Letter of Map Revision (LOMR), which is FEMA's modification to an effective FIRM, or Flood Boundary and Floodway Map, or both. Coordination with FEMA for LOMR or CLOMR approval would take approximately 12 months for each crossing. LOMR and CLOMR reviews may be conducted concurrently for multiple crossings.

The Saluda River is a dam-controlled water body. SCE&G, as a licensee of the Federal Energy Regulatory Commission (FERC), operates the Lake Murray dam releases. Coordination with SCE&G and FERC would also be required to incorporate dam release information into hydraulic studies and design considerations.

Extent to which Purpose and Need is met – As discussed in preceding sections of this document, during Level 1B screening each RA was evaluated for its ability to meet the primary purpose and need of the proposed project, which is to implement a transportation solution(s) that would improve mobility and enhance traffic operations by reducing existing traffic congestion within the I-20/26/126 corridor while accommodating future traffic needs. Only those RAs that were determined to meet the primary purpose and need were retained and moved forward for Level 2 screening. During Level 2 screening, the performance in Level 1B for each of the remaining RAs was compared to each other. Those RAs that showed the most improvement in overall traffic metrics were rated as “substantially meets” and the remainder were rated as “moderately meets” primary purpose and need. Those that did not meet the purpose and need never advanced to this stage of the screening process, and therefore, none of the RAs met that rating.

Consistency with Local/Regional Land Use Plans – The project team evaluated each RA to determine how consistent it would be with the local transportation and land use plans of the cities and counties that would be affected by the alternative's footprint. Local/regional land use plans reviewed included:

- Moving the Midlands, 2040 Long Range Transportation Plan
- Lexington County Comprehensive Plan
- 2015 Richland County Comprehensive Plan
- Plan Columbia: Land Use Plan
- Lower Saluda Scenic River Corridor Plan Update

Cost – A cost risk assessment was developed for each RA with a 70% confidence assigned to estimated costs after incorporating risk mitigation. This overall estimated cost was used as a basis of cost comparison among the RAs in Level 2 screening. Each RA was compared and highlighted red (highest costs) or green (lowest costs) based on how each compared to the others. In other words, the RA with the lowest cost was highlighted green, the RA with the highest cost was highlighted red, and those in between were highlighted yellow.

The following discussion summarizes the Level 2 screening results for environmental impacts associated with RA1, RA5, RA7, and RA8.

4.6.1 RA1

4.6.1.1 Property Impacts

RA1 would impact approximately 281 parcels (41 full and 240 partial), most of which (203) are business parcels at interchange locations. Approximately 62 residential parcels would be impacted (15 full and 47 partial), mostly in the vicinity of the I-20/26 interchange and mostly to apartment complex communities, including, Crossroads Apartment Homes, Crestmont Apartments, Three Rivers Apartments, two properties owned by Monument St. Andrews and Stoney Creek. The remaining parcel impacts (16) would be to institutional parcels (4 full and 12 partial), including three educational properties: (former) ITT Technical Institute, ECPI, and Kenneth Shuler School of Cosmetology; and two places of worship: Columbia Zen Buddhist Priory and Word of God Church and Ministries. While the total parcels impacted overall is tied with RA8 for the lowest of the four alternatives, with the lowest number of residential impacts, it is tied with RA5 for the highest institutional impacts. RA1 would also impact approximately 6,177 feet of the Three Rivers Greenway/Saluda Greenway project, which could constitute a Section 4(f) encroachment. Impacts to other land classified as parks/rec were determined to not constitute Section 4(f) takes by Edwards Pitman in a 2015 study. If this alternative becomes a reasonable alternative, the possible Section 4(f) encroachment would be further evaluated and addressed as part of the DEIS.

Table 4.4 Summary of Potential Property Impacts, RA1

	Residential	Business	Institutional	Total
Full acquisition	15	22	4	41
Partial acquisition	47	181	12	240
Total impacts	62	203	16	281

4.6.1.2 Wetlands Impacts

Approximately 3.97 acres of wetlands would be impacted by RA1, most of which are characterized as low or medium quality wetlands (Appendix E). Potential impacts would occur to low quality ponds that were impounded or excavated, or medium quality forested/shrub wetlands. In general, forested/shrub wetlands are temporarily flooded, with surface water being present for brief periods. Approximately 0.76 acre of high quality forested wetland would be impacted by RA1.

Table 4.5 Summary of Potential Wetland Impacts (in acres), RA1

	RA1
Low quality	1.43
Medium quality	1.78
High quality	0.76
Total impacts	3.97

4.6.1.3 Stream/River Impacts

RA1 would cross the Saluda River, Senn Branch, Stoop Creek, and Moccasin Branch. The remainder of the crossings would be of unnamed creeks and tributaries. In total, 21 separate waterbodies would be crossed a total of 36 times, for a total of 15,384 linear feet of potential stream impacts.

Potential stream impacts associated with RA1 would occur within impaired waterbodies and/or TMDL watersheds. RA1 would have 36 crossings of streams and rivers listed as impaired on the SCDHEC 303(d) list and 11 crossings of streams within TMDL watersheds. While many of the river and stream crossings would occur in areas of existing crossings, construction over impaired waterbodies would require detailed stormwater design and coordination with SCDHEC to ensure the proposed project does not further contribute to impairments or TMDLs.

Most of the stream impacts for RA1 would occur on low quality streams that have been disturbed, piped, or channelized in the past (Appendix E). Forested, riparian buffers are typically not present on these types of streams. Approximately 5,793 linear feet of impact would occur to medium quality streams that have had minimal past disturbance and have some forested buffers. RA1 would impact approximately 1,376 linear feet of high-quality streams. Of the high quality impacts, approximately 961 linear feet are the Saluda River, which is a state scenic river and would likely be bridged. Crossings of the Saluda River may be widened to accommodate

additional lanes, and RA1 would cross scenic easements near the I-20/I-26 interchange with new ramps. RA1 does not include new river crossings or parallel roadways and would result in minimal visual impacts to river users. Therefore, RA1 would not conflict with the *Lower Saluda Scenic River Corridor Plan* and the *South Carolina Scenic Rivers Act of 1989*. A portion of Senn Branch was also characterized as high quality and would be impacted by RA1.

Table 4.6 Summary of Potential Stream and River Impacts (in linear feet), RA1

	RA1
Low quality	8,215
Medium quality	5,793
High quality	1,376
Total impacts	15,384

4.6.1.4 Floodplain Impacts

RA1 would cross approximately 67.71 acres of floodplains associated with the Saluda River, Broad River, Senn Branch, Stoop Creek, Moccasin Branch, and unnamed tributaries to Kinley Creek. Floodplain crossings predominantly occur near the Saluda River and the I-20/I-26 interchange. Approximately 41.25 acres of potential floodplain impacts are classified as Zone AE, while the remaining 26.46 acres are classified as Zone AE regulated floodways. While all of the floodplain crossings would occur in areas of existing crossings, detailed flood studies of stream and river crossings would be required as part of the final roadway design.

Table 4.7 Summary of Potential Floodplain Impacts (in acres), RA1

	RA1
Zone AE floodplains	41.25
Zone AE regulatory floodway	26.46
Total floodplains	**67.71**

Table 4.8 Potential Floodplain and/or Floodway Crossings, RA1

	RA1
Saluda River	2
Stoop Creek	2
Senn Branch	1
Tributaries to Kinley Creek	2
Moccasin Creek	1
Broad River	1
Total crossings	**9**

4.6.1.5 Cost

The overall cost for RA1, based on year of expenditure dollars, is estimated at $1,460.5 million. This represents the lowest cost of the four RAs advanced to Level 2 screening. See Table 4.24 for a summary of the Level 2 screening results.

4.6.1.6 Consistency with Local/Regional Land Use Plans

Regional and local land use and transportation plans were reviewed for information pertaining to land use and the transportation network. RA1 is not in conflict with these plans.

4.6.1.7 Purpose and Need

As shown in the level 1B screening matrix (Table 4.3), RA1 was one of the best performing of the RAs in terms of overall traffic metrics. Therefore, for the purposes of the Level 2 screening, it was determined that RA1 substantially meets the primary purpose and need for the project and it was rated as such.

4.6.1.8 RA1 Summary

By comparison to other RAs, RA1 has an average number of full property impacts and the second lowest partial property impacts. It has among the lowest wetland, stream, and floodplain impacts. In addition, RA1 has the lowest estimated costs of the four RAs. Because the overall environmental impacts are among the lowest of the four RAs, coupled with its high performance in traffic metrics, it is recommended that RA1 be retained as a reasonable alternative and carried forward into the DEIS for further evaluation.

4.6.2 RA5

4.6.2.1 Property Impacts

RA5 was determined to impact 291 parcels (34 full and 257 partial), including 70 residential parcels (10 full and 60 partial), 205 business parcels (22 full and 183 partial), and 16 institutional parcels (2 full and 14 partial). This is the second highest of the four alternatives, though it has the highest impact to businesses. RA5 will not impact large portions of any neighborhoods. Partial acquisitions of 7 multi-family dwellings include two parcels of Crossroads Apartment Homes, Willow Creek Apartments, Crestmont Apartments, Three Rivers Apartments, Monument St. Andrews and Stoney Creek. There is to be one full acquisition of a Monument St. Andrews property as it is impacted by more than 50 percent. Partial acquisitions of three educational properties include (former) ITT Technical Institute, ECPI, and Kenneth Shuler School of Cosmetology. Partial acquisitions of two storage facilities include Hawthorne Midway Columbia Storage and Four SAC Self-Storage. Partial acquisition of two places of worship includes Columbia Zen Buddhist Priory and Word of God Church and Ministries. RA5 would also impact approximately 6,177 feet of the Three Rivers Greenway/Saluda Greenway project, which could constitute a Section 4(f) encroachment. Impacts to other land classified as parks/rec were determined to not constitute Section 4(f) takes by Edwards Pitman in a 2015 study. If this alternative becomes a reasonable alternative, the possible Section 4(f) encroachment would be further evaluated and addressed as part of the DEIS.

Table 4.9 Summary of Potential Property Impacts, RA5

	Residential	Business	Institutional	Total
Full acquisition	10	22	2	34
Partial acquisition	60	183	14	257
Total impacts	**70**	**205**	**16**	**291**

4.6.2.2 Wetland Impacts

RA5 would impact approximately 3.75 acres of wetlands, most of which are characterized as low or medium quality wetlands (Appendix E). Potential impacts would occur to low quality ponds that were impounded or excavated, or medium quality forested/shrub wetlands. Approximately 0.76 acre of high quality forested wetland would be impacted by RA5.

Table 4.10 Summary of Potential Wetland Impacts (in acres), RA5

	RA5
Low quality	1.21
Medium quality	1.78
High quality	0.76
Total impacts	**3.75**

4.6.2.3 Streams/Rivers Impacts

RA5 would cross the Saluda River, Senn Branch, Stoop Creek, and Moccasin Branch. The remainder of the crossings are of unnamed creeks and tributaries. RA5 would impact fewer streams than the other RAs. In total, 21 separate water bodies are crossed a total of 31 times for a total of 15,182 linear feet of potential impact.

Potential stream impacts associated with RA5 would occur within impaired waterbodies and/or TMDL watersheds. RA5 would have 31 crossings of streams and rivers listed as impaired on the SCDHEC 303(d) list and 11 crossings of streams within TMDL watersheds. While many of the river and stream crossings would occur in areas of existing crossings, construction over impaired waterbodies would require detailed stormwater design and coordination with SCDHEC to ensure the proposed project does not further contribute to impairments or TMDLs.

Most of the stream impacts for RA5 would occur on low quality streams that have been previously disturbed, piped, or channelized, and have little to no forested, riparian buffers (Appendix E). Approximately 5,401 linear feet of impact would occur to medium quality streams that have had minimal past disturbance and have some forested buffers. RA5 would impact approximately 1,321 linear feet of high-quality streams. Of the high quality impacts, approximately 895 linear feet are the Saluda River, which is a state scenic river and would likely be bridged. Crossings of the Saluda River may be widened to accommodate additional lanes, and RA5 would cross scenic easements near the I-20/I-26 interchange with new ramps. RA5 does not include new river crossings or parallel roadways and would result in minimal visual impacts to river users. Therefore, RA5 would not conflict

with the *Lower Saluda Scenic River Corridor Plan* and the *South Carolina Scenic Rivers Act of 1989*. A portion of Senn Branch was also characterized as high quality and would be impacted by RA5.

Table 4.11 Summary of Potential Stream and River Impacts (in linear feet), RA5

	RA5
Low quality	8,460
Medium quality	5,401
High quality	1,321
Total impacts	**15,182**

4.6.2.4 Floodplains Impacts

RA5 would cross approximately 68.17 acres of floodplains associated with the Saluda River, Broad River, Senn Branch, Stoop Creek, Moccasin Branch, and unnamed tributaries to Kinley Creek. Floodplain crossings predominantly occur near the Saluda River and the I-20/I-26 interchange. Approximately 41.95 acres of potential floodplain impacts are classified as Zone AE, while the remaining 26.22 acres are classified as Zone AE regulated floodways. While all of the floodplain crossings would occur in areas of existing crossings, detailed flood studies of stream and river crossings would be required as part of the final roadway design.

Table 4.12 Summary of Potential Floodplain Impacts (in acres), RA5

	RA5
Zone AE floodplains	41.95
Zone AE regulatory floodway	26.22
Total floodplains	**68.17**

Table 4.13 Potential Floodplain and/or Floodway Crossings, RA5

	RA5
Saluda River	2
Stoop Creek	2
Senn Branch	1
Tributaries to Kinley Creek	2
Moccasin Creek	1
Broad River	1
Total crossings	**9**

4.6.2.6 Cost

The overall cost for RA5, based on year of expenditure dollars, is estimated at $1,535.0 million. This represents the second lowest cost of the four RAs advanced to Level 2 screening.

4.6.2.7 Consistency with Local/Regional Land Use Plans

Regional and local land use and transportation plans were reviewed for information pertaining to land use and the transportation network. RA5 is not in conflict with these plans.

4.6.2.8 Purpose and Need

As shown in the level 1B screening matrix (Table 4.3), RA1 was the best performing of the RAs in terms of overall traffic metrics. Therefore, for the purposes of the level 2 screening, it was determined that RA1 substantially meets the primary purpose while the other RAs, including RA5, moderately meets the purpose and need.

4.6.2.9 RA5 Summary

By comparison to other RAs, RA5 has the lowest full property impacts, but the highest partial property impacts. It has the lowest wetland and stream impacts, as well as the second lowest floodplain impacts. In addition, RA5 has the second lowest estimated costs of the four RAs. Because the overall environmental impacts are among the lowest of the four RAs, coupled with its average performance in traffic metrics, it is recommended that RA5 be retained as a reasonable alternative and carried forward into the DEIS for further evaluation.

4.6.3 RA7

4.6.3.1 Property Impacts

RA7 would impact 312 parcels (61 full and 251 partial), including 102 residential parcels (32 full and 70 partial), 196 business parcels (24 full and 172 partial), and 14 institutional parcels (5 full and 9 partial). The overall total of property impacts is the second highest of any of the four RAs and has the highest amount of overall residential parcel impacts. RA7 would not impact large portions of any neighborhoods; however, partial acquisitions of 11 multi-family dwellings would occur and include two parcels owned by Crossroads Apartment Homes, Lakeside Apartments, Willow Creek Apartments, Crestmont Apartments, Three Rivers Apartments, two properties under Monument St. Andrews, Stoney Creek, and two properties under Presbyterian Home of South Carolina. Partial acquisitions of three educational properties include (former) ITT Technical Institute, ECPI, and Kenneth Shuler School of Cosmetology. Partial acquisition of one storage facility includes Hawthorne Midway Columbia Storage and the full acquisition of Four SAC Self-Storage as over 50 percent of the property would be impacted. Partial acquisitions include Word of God Church and Ministries, and a large concrete/paving facility.

RA7 would also impact approximately 6,823 feet of the Three Rivers Greenway/Saluda Greenway project, which could constitute a Section 4(f) encroachment. Impacts to other land classified as parks/rec were determined to not constitute Section 4(f) takes by Edwards Pitman in a 2015 study. If this alternative becomes a reasonable alternative, the Section 4(f) encroachment would be further evaluated and addressed as part of the DEIS.

Table 4.14 Summary of Potential Property Impacts, RA7

	Residential	Business	Institutional	Total
Full acquisition	32	24	5	61
Partial acquisition	70	172	9	251
Total impacts	**102**	**196**	**14**	**312**

4.6.3.2 Wetlands Impacts

Approximately 12.67 acres of wetlands would be impacted by RA7, which are the most impacted wetlands compared to the other RAs. Potential impacts would occur to approximately 1.38 acres of low quality ponds that were impounded or excavated. Most of the potential wetland impacts, approximately 7.28 acres, would occur to medium quality ponds and forested/shrub wetlands (Appendix E). Approximately 4.01 acres of impacts would occur to high quality forested wetlands. Many of the impacts would occur in medium and high quality wetlands near the Saluda River, where a new alignment alternative would connect I-20 and I-26. RA7 would require the greatest amount of wetland mitigation compared to the other RAs.

Table 4.15 Summary of Potential Wetland Impacts (in acres), RA7

	RA7
Low quality	1.38
Medium quality	7.28
High quality	4.01
Total impacts	**12.67**

4.6.3.3 Streams/Rivers Impacts

RA7 would cross the Saluda River, Senn Branch, Stoop Creek, and Moccasin Branch. The remainder of the crossings is of unnamed creeks and tributaries. In total, 24 separate water bodies are crossed a total of 31 times for a total of 15,448 linear feet of potential stream impacts.

Potential stream impacts associated with RA7 would occur within impaired waterbodies and/or TMDL watersheds. RA7 would have 35 crossings of streams and rivers listed as impaired on the SCDHEC 303(d) list and 11 crossings of streams within TMDL watersheds. Because of the new four-lane ramp highway extending from I-20 to I-26, the construction of RA7 along the Saluda River and over Stoop Creek would require greater coordination with SCDHEC to ensure the new ramp highway does not further contribute to impairments or conflict with TMDLs.

Most of the stream impacts for RA7 would occur on low quality streams that have been previously disturbed, piped, or channelized, and have little to no forested, riparian buffers (Appendix E). Approximately 5,205 linear feet of impact would occur to medium quality streams that have had minimal past disturbance and have some forested buffers. RA7 would impact approximately 2,268 linear feet of high-quality streams, which is over 800 more linear feet of high quality stream impact compared to RA1 and RA5. Of the high quality impacts,

approximately 895 linear feet are the Saluda River, which is a state scenic river and would likely be bridged. RA7 includes a new four-lane ramp highway (east-west) extending from I-20 to I-26, which would be constructed parallel to the Saluda River, mostly within scenic easements, and would have visual effects for river users. Because of these scenic impacts, RA7 would be inconsistent with the *Lower Saluda Scenic River Corridor Plan* and the *South Carolina Scenic Rivers Act of 1989*. A portion of Senn Branch and Stoop Creek were also characterized as high quality and would be impacted by RA7.

Table 4.16 Summary of Potential Stream and River Impacts (in linear feet), RA7

	RA7
Low quality	7,974
Medium quality	5,205
High quality	2,268
Total impacts	**15,448**

4.6.3.4 Floodplains Impacts

RA7 would cross approximately 125.36 acres of floodplains, which is the most of any of the four RAs. The floodplains are located along the Saluda River, Broad River, Senn Branch, Stoop Creek, Moccasin Branch, and unnamed tributaries to Kinley Creek. Approximately 40.86 acres of potential floodplain impacts are classified as Zone AE, while the remaining 84.5 acres are classified as Zone AE regulated floodways. Most of the floodplain crossings would occur in areas of existing crossings and detailed flood studies of stream and river crossings would be required as part of the final roadway design. Coordination with SCE&G and FERC would be required for the two existing Saluda River floodway crossings.

The new four-lane ramp highway (east-west) extending from I-20 west of Bush River Road to I-26 would be constructed parallel to the Saluda River. The new ramp highway is located entirely within the FEMA regulated floodway of the Saluda River and results in an additional crossing of the Stoop Creek floodplain. The proposed parallel crossing and new Stoop Creek crossing would require flood modeling and coordination with FEMA and FERC beyond typical timeframes and would potentially take 18 to 24 months for LOMR or CLOMR approvals.

Table 4.17 Summary of Potential Floodplain Impacts (in acres), RA7

	RA7
Zone AE floodplains	40.86
Zone AE regulatory floodway	84.5
Total floodplains	**125.36**

Table 4.18 Potential Floodplain and/or Floodway Crossings, RA7

	RA7
Saluda River	3
Stoop Creek	3
Senn Branch	1
Tributaries to Kinley Creek	1
Moccasin Creek	1
Broad River	1
Total crossings	**10**

4.6.3.5 Cost

The overall cost for RA7, based on year of expenditure dollars, is estimated at $1,947.5 million. This represents the second highest cost of the four RAs advanced to Level 2 screening.

4.6.3.6 Consistency with Local/Regional Land Use Plans

RA7 would not be consistent with city, county, or regional transportation or land use plans. The unique alignment section of RA7 that includes a new alignment between I-20 and I-26 would not be consistent with any city, county, or regional transportation or land use plans. RA7 would locate a new interstate highway in a predominantly undeveloped area and would impact the planned Saluda Riverwalk by placing a new alignment interstate over a planned recreational trail resulting in a 4(f) encroachment. Specifically, RA7 has a proposed 4(f) encroachment of 1,522 linear feet on the Saluda Riverwalk and the segment currently under construction. The Saluda Riverwalk project is funded by the Richland County Transportation Penny Program.

4.6.3.7 Purpose and Need

As shown in the level 1B screening matrix (Table 4.3), RA1 was the best performing of the RAs in terms of overall traffic metrics with RA4 a close second. Therefore, for the purposes of the level 2 screening, it was determined that RA1 substantially meets the primary purpose, while the other RAs moderately meet the purpose and need.

4.6.3.8 RA7 Summary

By comparison to other RAs, RA7 has the highest impact to property including 11 multifamily dwellings. It has the highest wetlands impacts and the second highest impacts to streams/rivers which are anticipated to require extensive permitting and compensatory mitigation under the CWA as administered by the USACE. RA7 also involves the most crossings of floodplains due to construction of a proposed new alignment alternative within the Saluda River and Stoop Creek floodways which would require extensive coordination with FEMA, SCE&G, and FERC. Construction of a new alignment parallel to the Saluda River would be inconsistent with the *Lower Saluda Scenic River Corridor Plan* and the *South Carolina Scenic Rivers Act of 1989*. The aforementioned impacts, combined with the potential constraints to permitting that could result in significant delays and given that RA7 is the second most expensive among all RA's at an estimated cost of $1,947.5 million dollars, RA7 is determined to be not prudent.

4.6.4 RA8

4.6.4.1 Property Impacts

RA8 would impact 281 parcels (44 full and 237 partial), including 82 residential parcels (20 full and 62 partial), 187 business parcels (20 full and 167 partial), and 12 institutional parcels (4 full and 8 partial). RA8 is tied with RA1 for the lowest number of parcels impacted, but has the second highest residential parcels impacted. RA8 will not impact large portions of any neighborhoods. Partial acquisitions of eight multi-family dwellings include two parcels owned by Crossroads Apartment Homes, Willow Creek Apartments, Crestmont Apartments, Three Rivers Apartments, two parcels owned by Monument St. Andrews, and Stoney Creek. Partial acquisitions of three educational properties include (former) ITT Technical Institute, ECPI, and Kenneth Shuler School of Cosmetology. Partial acquisitions of two storage facilities include Hawthorne Midway Columbia Storage and Four SAC Self-Storage. Partial acquisitions of two places of worship include Columbia Zen Buddhist Priory and Word of God Church and Ministries. Partial acquisition of a large concrete/paving facility would also be required, and the CSX railroad would be impacted as well.

RA8 would also impact approximately 5,946 feet of the Three Rivers Greenway/Saluda Greenway project, which could constitute a Section 4(f) encroachment. Impacts to other land classified as parks/rec were determined to not constitute Section 4(f) takes by Edwards Pitman in a 2015 study. If this alternative becomes a reasonable alternative, the Section 4(f) encroachment would be further evaluated and addressed as part of the DEIS.

Table 4.19 Summary of Potential Property Impacts, RA8

	Residential	Business	Institutional	Total
Full acquisition	62	20	4	44
Partial acquisition	20	167	8	237
Total impacts	**82**	**187**	**12**	**281**

4.6.4.2 Wetlands Impacts

RA8 would impact approximately 9.70 acres of wetlands, which is much higher than any of the other RAs, except for RA7. Potential impacts would occur to approximately 1.19 acres of low quality ponds that were impounded or excavated. Most of the potential wetland impacts, approximately 4.73 acres, would occur to medium quality ponds and forested/shrub wetlands (Appendix E). Approximately 3.78 acres of impacts would occur to high quality forested wetlands. Many of the impacts would occur in medium and high quality wetlands near the Saluda River, where a new alignment alternative would connect I-20 and I-26. With the exception of RA7, RA8 would require more wetland mitigation compared to the other RAs.

Table 4.20 Summary of Potential Wetland Impacts (in acres), RA8

	RA8
Low quality	1.19
Medium quality	4.73
High quality	3.78
Total impacts	9.70

4.6.4.3 Streams/Rivers Impacts

RA8 would impact the most linear feet of streams and rivers. RA8 would cross the Saluda River, Senn Branch, Stoop Creek, and Moccasin Branch. The remainder of the crossings is of unnamed creeks and tributaries. In total, 25 separate water bodies are crossed a total of 37 times for a total of 18,116 linear feet.

Potential stream impacts associated with RA8 would occur within impaired waterbodies and TMDL watersheds. RA8 would have 36 crossings of streams and rivers listed as impaired on the SCDHEC 303(d) list and 11 crossings of streams within TMDL watersheds. Because of the new four-lane ramp highway and interchange, the construction of RA8 along the Saluda River and over Stoop Creek would require greater coordination with SCDHEC to ensure the new ramp highway does not further contribute to impairments or TMDLs.

Most of the stream impacts for RA8 would occur on low quality streams that have been previously disturbed, piped, or channelized, and have little to no forested, riparian buffers (Appendix E). Approximately 5,857 linear feet of impact would occur to medium quality streams that have had minimal past disturbance and have some forested buffers. RA8 would impact approximately 3,471 linear feet of high-quality streams, which is the greatest impact to high quality streams and rivers. Of the high quality impacts, approximately 895 linear feet are the Saluda River, which is a state scenic river and would likely be bridged. RA8 includes a new four-lane ramp highway (east-west) extending from I-20 to I-26 and Bush River Road interchange, which would be constructed parallel to the Saluda River. However, the new route would avoid most scenic easements between I-20 and I-26, but would cross scenic easements near the I-20/I-26 interchange with new ramps. RA8 would have visual effects on river users, but to a lesser extent than RA7 because the new roadway and interchange are shifted north. Because of these scenic impacts, RA8 would be inconsistent with the *Lower Saluda Scenic River Corridor Plan*. A portion of Senn Branch was also characterized as high quality and would be impacted by RA8.

Table 4.21 Summary of Potential Stream and River Impacts (in linear feet), RA8

	RA8
Low quality	8,788
Medium quality	5,857
High quality	3,471
Total impacts	18,116

4.6.4.4 Floodplains Impacts

RA8 would cross approximately 121.27 acres of floodplains, which is the second most of any of the four RAs. The floodplains are located along the Saluda River, Broad River, Senn Branch, Stoop Creek, Moccasin Branch, and unnamed tributaries to Kinley Creek. Approximately 64.55 acres of potential floodplain impacts are classified as Zone AE, while the remaining 56.72 acres are classified as Zone AE regulated floodways. Most of the floodplain crossings would occur in areas of existing crossings and detailed flood studies of stream and river crossings would be required as part of the final roadway design. Coordination with SCE&G and FERC would be required for the two existing Saluda River floodway crossings.

The new four-lane ramp highway (east-west) extending from I-20 west of Bush River Road to I-26 would be constructed parallel to the Saluda River, with the portion between I-26 and the Bush River Road interchange located over Stoop Creek. The new ramp highway and Bush River Road interchange are located partially within the FEMA regulated floodway of the Saluda River. The new interchange would be located entirely in the floodway for Stoop Creek. The proposed parallel crossing and new Stoop Creek crossing would require extensive flood modeling and coordination with FEMA and FERC beyond typical timeframes and would potentially take 18 to 24 months for LOMR or CLOMR approvals.

Table 4.22 Summary of Potential Floodplain Impacts (in acres), RA8

	RA8
Zone AE floodplains	64.55
Zone AE regulatory floodway	56.72
Total floodplains	**121.27**

Table 4.23 Potential Floodplain and/or Floodway Crossings, RA8

	RA7
Saluda River	3
Stoop Creek	3
Senn Branch	1
Tributaries to Kinley Creek	1
Moccasin Creek	1
Broad River	1
Total crossings	**10**

4.6.4.5 Cost

The overall cost for RA8, based on year of expenditure dollars, is estimated at $1,968.9 million. This represents the highest cost of the four RAs advanced to Level 2 screening.

4.6.4.6 Consistency with Local/Regional Land Use Plans

RA8 would not be consistent with city, county, or regional transportation or land use plans. The unique alignment section of RA8 that includes a new alignment between I-20 and I-26 would not be consistent with any city, county, or regional transportation or land use plans. RA8 would locate a new interstate highway in a predominantly undeveloped and industrial area and would also impact the planned Saluda Riverwalk by placing a new alignment interstate over a planned recreational trail resulting in a 4(f) encroachment. Specifically, RA8 would impact the planned Saluda Riverwalk by placing a new alignment interstate in close proximity to a planned recreational trail. RA8 has a proposed 4(f) encroachment of 750 linear feet on a future planned segment of the Saluda Riverwalk. The Saluda Riverwalk project is funded by the Richland County Transportation Penny Program.

4.6.4.7 Purpose and Need

As shown in the level 1B screening matrix (Table 4.3), RA1 was one of the best performing of the RAs in terms of overall traffic metrics. Therefore, for the purposes of the level 2 screening, it was determined that RA1 substantially meets the primary purpose while the other RAs including RA8, moderately meets the purpose and need.

4.6.4.8 RA8 Summary

By comparison to other RAs, RA8 is tied with RA1 for the lowest impacts to property. However, RA8 would have significant impact to businesses along Bush River Road and to the existing CSX Railway. It has the second highest wetlands impacts and the highest impacts to streams/rivers which are anticipated to require extensive permitting and compensatory mitigation under the CWA as administered by the USACE. RA8 also involves the second most crossings of floodplains due to construction of a proposed new alignment alternative within the Saluda River floodway and Stoop Creek floodways which would require extensive coordination with FEMA, SCE&G, and FERC. Construction of a new alignment and interchange parallel to the Saluda River would be inconsistent with the *Lower Saluda Scenic River Corridor Plan*. Combined with the potential constraints to permitting that could result in significant delays and given that RA8 is the most expensive among all RA's at an estimated cost of $1,968.9 million dollars, RA8 is determined to be not prudent.

4.6.5 LEVEL 2 SCREENING RESULTS

A summary of the Level 2 screening results for the most prominent resource categories among RAs 1, 5, 7, and 8 is provided in Table 4.24**.**

Table 4.24 Summary of Results for Level 2 Screening

LOW MEDIUM HIGH ✓ Moderate ✓✓ High — Marginal

Level 2 Screening Results		RA 01	RA 05	RA 07	RA 08
How many properties does this alternative impact?	Full Acquisitions*	41	34	61	44
	Partial Acquisitions*	240	257	251	237
How many acres of wetlands does this alternative impact?	Total Acres**	3.97	3.75	12.67	9.7
	% High Quality	19%	20%	32%	39%
How many linear feet of streams are impacted?	Total Linear Feet**	15,384	15,182	15,477	18,116
	% High Quality	9%	9%	14%	19%
How many acres of floodplains are crossed?	Total Acres***	67.71	68.17	125	121
	% Zone AE Floodway	39%	38%	68%	47%
What is the estimated project cost? (billions)		$1.46	$1.54	$1.95	$1.97
How many acres of public open space and parks are impacted?		2.84	2.84	1.3	0.35
Does this meet local/ regional land use plans?		YES	YES	NO	NO
Improvement on Traffic and Operations (Level of Service)		✓✓	✓	✓✓	✓
Improvement to Through Travel Time		✓✓	✓✓	—	✓✓
Improvement to Through Speed		✓✓	✓	✓	✓
Reduces or Eliminates Geometric Deficiencies		YES	YES	YES	YES
Carried Forward to Level 3 Screening – DEIS		YES	YES	NO	NO

* Property impacts in the Level 2 Matrix reflect desktop level review

** Stream and wetland impacts in Level 2 Screening are dependent on NHD and NWI datasets

***Floodplain impacts in Level 2 Screening represent all floodplains within the proposed right-of-way

Representative Alternatives 1 and 5 move forward

Representative Alternatives 7 and 8 are eliminated

Following completion of Level 2 screening and reviewing of the outputs, natural breaks in the data were apparent. Specifically,

RA7 – Not prudent or practicable, highest property impacts, highest wetlands impacts, second highest impacts to streams/rivers, highest impacts to floodplains from construction of new alignment alternative within the Saluda River floodway; not compatible with land use plans; visual impacts to state scenic river (Saluda); second most expensive RA.

RA8- Not prudent or practicable, second highest property impacts including significant impact to businesses along Bush River Road and to CSX Railroad; second highest wetlands impacts, highest impacts to streams/rivers, second highest impacts to floodplains from construction of new alignment alternative within the Saluda River floodway; not compatible with land use plans; visual impacts to state scenic river (Saluda); most expensive RA.

Based on the impact assessment results, it was recommended that RA7 and RA8 be eliminated. Reasonable Alternatives recommended to be carried forward into the Level 3 Screening were RA1 and RA5, as well as RA10 (No-Build) for comparison purposes.

4.7 Screening of reasonable alternatives – Level 3

RA1 and RA5 were presented to the public at the Reasonable Alternatives Public Information Meeting on September 19, 2017. Following the public meeting, the project team began to further evaluate RA1 and RA5 in consideration of public comments received. In addition, the design team went through a process to refine RA1 and RA5 in an attempt to achieve more functional traffic operations and/or refine designs to minimize impacts. While refinements did not seek to holistically modify an entire alternative, the process did result in minor adjustments to RA1 and RA5.

RA1, henceforth referred to as RA1 Modified, was adjusted to use a partial cloverleaf interchange design at the I-20/Bush River Road interchange, instead of a diverging diamond interchange design. In addition a bridge across I-26 at Tram Road/Beatty Road, between the Piney Grove Road and St. Andrews Road interchanges was added to both alternatives and the modified alternatives. Initially, the Tram Road bridge was a modification that was considered following the public meeting referenced above. Its benefits to traffic flow were deemed by the project team to be worth considering in all Level 3 alternatives. All adjustments and modifications are listed below:

4.7.1 RA1 MODIFIED – TURBINE WITH PARTIAL CLOVERLEAF AT I-20/BUSH RIVER ROAD

- Proposed turbine interchange at the I-26 and I-20 junction, which eliminates all loop ramps in the interchange.
- Widening I-26 with one additional lane in each direction from US 176/Broad River Road to I-126.
- New collector-distributor lanes.
- Improve Tram Road by providing overpass of I-26.

- Relocation of the existing interchange at I-26 and Bush River Road. By removing the direct connection between Bush River Road and I-26, traffic con-flict points and weaving maneuvers between Bush River Road and the I-20/I-26 interchange would be eliminated.
- Traffic that normally would have used Bush River Road at I-26 would now use the interchange at Colonial Life Boulevard that will be reconfigured reconfigured to provide access to each direction of I-126.
- Interchange improvements at each interchange from Harbison Boulevard to US 378I-126 on
- I-26; from Bush River Road to Broad River Road on I-20; and from I-26 to Colonial Life Boulevard on I-126.

RA5, henceforth referred to as RA5 Modified, was adjusted to use a diverging diamond interchange design at the I-20/Bush River Road interchange, instead of a partial cloverleaf design. In addition, a bridge across I-26 at Tram Road/Beatty Road, between the Piney Grove Road and St. Andrews Road interchanges was added to both alternatives. All adjustments and modifications are listed below:

4.7.2 RA5 MODIFIED – TURBINE DIRECTIONAL WITH DIVERGING DIAMOND AT I-20/BUSH RIVER ROAD

- The widening of I-26 with one additional lane in each direction from US 176/Broad River Road to I-126.
- New collector-distributor lanes.
- Interchange improvements at each interchange from: Harbison Boulevard to I-126 on I-26; from Bush River Road to Broad River Road on I-20; and from I-26 to Colonial Life Boulevard on I-126.
- Improve Tram Road by providing overpass of I-26.
- The proposed turbine directional interchange at the I-26 and I- 20 junction, which eliminates 2 loop ramps and recongures the other loop ramps in the interchange. A proposed turbine directional interchange consists of three roadway levels that traverse around a central bridge. The third level is the directional ramps from I-26 to I-20.
- The relocation of the existing interchange at I-26 and Bush River Road and instead providing access to Bush River Road from the full-access interchange at Colonial Life Boulevard. By removing the direct connection between Bush River Road and I-26, traffic conflict points and weaving maneuvers between Bush River Road and the I-20/I-26 interchange would be eliminated, thereby reducing traffic congestion/disruption and improving traffic flow on I- 26.

After the development of RA1 Modified and RA5 Modified, the project team used Level 3 screening to compare whether Modified Level 3 RAs (RA1 Modified and RA5 Modified) met the purpose and need of the proposed project better than the original Level 3 RAs (RA1 and RA5). Therefore, RA1 was compared to RA1 Modified and RA5 was compared to RA5 Modified with Level 3 Screening Criteria of mobility and environmental impacts. Due to the minor design changes, there was no need to compare the Modified Level 3 RAs and the original Level 3 RAs holistically. Again, as with Level 1B and Level 2, Transmodeler was used to refine the remaining Reasonable

Alternatives for traffic analysis purposes. The Level 3 screening process is detailed in Section 6.2 of the *Carolina Crossroads Alternatives Traffic Analysis Technical Memo* (Appendix D).

A wetland and stream delineation was also completed for the Reasonable Alternatives during the Level 3 screening process. A delineation study determines the location and extent of wetlands and streams within the project study area by conducting field reviews of soils, vegetation, and hydrology; thus providing more complete and accurate information than NWI and NHD data. For this screening, all wetland impacts were considered as fill except for the Saluda River. The detailed studies identified more waters of the US (WOUS) in the Level 3 screening. These WOUS would be similar for all alternatives given the topography and the similarity of alternatives. The USACE has provided a Preliminary Jurisdictional Determination (PJD) that identified approximate locations and boundaries of on-site wetlands and streams that are presumed to be subject to regulatory jurisdiction.

As the screening process was ongoing, each alternative was being refined as well. The overall project footprints increased to account for probable locations for stormwater retention ponds. This process resulted in an overall increase in affected properties from Level 2 to Level 3.

Table 4.25 Summary of Mobility Results for Level 3 Screening

HIGH MEDIUM LOW

Level 3 Screening Criteria		No-Build	Alternative 1		Alternative 1 (Mod.)		Alternative 5 Mod		Alternative 5 (Mod.)	
		MPH	Difference from No-Build	MPH	MPH	MPH	Difference from No-Build	MPH	Difference from No-Build	MPH
Average Travel Speed Through Corridor	I-26 from Exit 101 to Exit 110 EB AM (See Figure 1)	29	28	57	29	58	25	54	28	57
	I-26 from Exit 101 to I-126 EB AM (See Figure 2)	31	16	47	16	47	20	51	16	47
	I-26 from Exit 101 to I-20 Exit 68 EB AM (See Figure 3)	32	11	43	12	44	18	50	12	44
	I-26 from Exit 101 to I-20 Exit 61 EB AM (See Figure 4)	33	23	56	23	56	22	55	24	57
	I-20 from Exit 68 to I-26 Exit 110 EB AM (See Figure 5)	41	13	54	12	53	9	50	11	52
	I-20 from Exit 61 to Exit 68 EB AM (See Figure 6)	45	4	49	4	49	-10	35	2	47
	I-20 from Exit 61 to I-126 EB AM (See Figure 7)	41	6	47	2	43	-10	31	3	44
	I-26 from Exit 101 to Exit 110 EB PM (See Figure 8)	37	26	63	26	63	26	63	26	63
	I-26 from Exit 110 to Exit 101 WB PM (See Figure 9)	31	29	60	29	60	28	59	28	59
	I-126 End to Exit 101 WB PM (See Figure 10)	33	19	52	19	52	15	48	16	49
	I-20 from Exit 68 to I-26 Exit 101 WB PM (See Figure 11)	38	9	47	9	47	9	47	8	46
	I-20 from Exit 61 to I-26 Exit 101 WB PM (See Figure 12)	49	7	56	6	55	8	57	8	57
	I-26 from Exit 110 to I-20 Exit 68 WB PM (See Figure 13)	27	27	54	27	54	26	53	26	53
	I-20 from Exit 68 to I-26 Exit 110 EB PM (See Figure 14)	22	20	42	20	42	17	39	17	39
	I-20 from Exit 68 to Exit 61 WB PM (See Figure 15)	38	10	48	10	48	7	45	6	44
	I-126 End to I-20 Exit 61 WB PM (See Figure 16)	30	18	48	18	48	12	42	13	43
	Freeway Segments	334,754	12,066	348,820	11,374	346,127	8,032	342,786	9,980	344,733
	Vehicle miles traveled	476,429	158,343	634,772	156,019	632,448	138,688	615,117	145,633	622,062
	Vehicle hours traveled	16,865	399	17,264	568	17,433	461	17,326	269	17,134
	VMT/VHT	28.2	8.5	36.8	8.0	36.3	7.3	35.5	8.1	36.3

For the mobility comparison between the four Reasonable Alternatives (RA1, RA1 Modified, RA5, and RA5 Modified) listed in Table 4.25 above, green (high) shading is best, yellow shading designates the middle (medium) value(s), and red shading (low) is the lower or worst value of the four. It should be noted that this shading was a ranking one through four and independent of the small or large time differences in mobility. This comparison decision was made because freeway segments were compared and each freeway segment is different in terms of length and typical section.

- RA1 had 11 high speed freeway segments (average travel speed through corridor in mph), four medium speed freeway segments and one low speed freeway segment.
- RA1 Modified had 10 high speed freeway segments (average travel speed through corridor in mph), five medium speed freeway segments and one low speed freeway segment.
- RA5 had six high speed freeway segments (average travel speed through corridor in mph), five medium speed freeway segments and five low speed freeway segments.
- RA5 Modified had three high speed freeway segments (average travel speed through corridor in mph), 11 medium speed freeway segments and two low speed freeway segments.

When comparing RA1 versus RA1 Modified for mobility, natural breaks in the data were apparent. RA1 had more higher-speed freeway segments than RA1 Modified, 11 compared to 10. Both RA1 and RA1 Modified had one lower speed freeway segment.

When comparing RA5 versus RA5 Modified for mobility, RA5 had more higher-speed freeway segments than RA5 Modified, six compared to three. However, RA5 also had eight lower speed freeway segments and RA5 Modified had only three lower speed freeway segments.

Table 4.26 Summary of Environmental Impacts for Level 3 Screening

LOW MEDIUM HIGH

Environmental Impacts		RA 01	RA 01 MOD.	RA 05	RA 05 MOD.
Property Impacts Full Aquisitions	Single Family	22	22	23	23
	Multi-Family (# of units)	62	62	134	134
	Commercial	33	35	39	37
	Institutional	3	3	3	3
Partial Acquistions	Residential	36	36	39	39
	Commercial	190	194	182	197
Section 4(f) Sites Impacted		0	0	0	0
Historical Impacts		0	0	0	0
Wetland Impacts	Fill (acres)	6.55	6.63	6.69	6.89
	Ponds	0.02	0.02	0.02	0.02
Stream Impacts	Linear feet	15750	15727	16496	16600
	Scenic River (Saluda)	961	961	961	961
	303(d) Impaired (# of crossings)	36	36	31	32
Floodplains*	Zone AE	31.84	32.81	41.03	42.14
	Zone AE Floodway	18.21	17.52	26.36	26.32
Water Quality	High Quality Streams	14%	14%	17%	17%
	Wetlands	36%	35%	35%	34%
Community Impacts	Columbiana	NO	NO	NO	NO
	Seven Oaks	NO	NO	NO	NO
	Saluda	NO	NO	NO	NO
	Riverbanks	NO	NO	NO	NO
	Harbison	NO	NO	NO	NO
	St. Andrews	NO	NO	NO	NO
	Broad	NO	NO	NO	NO
Environmental Justice	Census Blocks (# of blocks)	25	24	23	24
Hazardous Material Sites		18	18	18	18
Implementation Cost (Billions)		1.461	1.465	1.535	1.543

*Floodplain impacts in Level 3 Screening are based on proposed project construction limits + 30' buffer at Saluda and 20' buffer in all other locations

For the environmental impacts comparison between the four Reasonable Alternatives (RA1, RA1 Modified, RA5, and RA5 Modified) listed in Table 4.26 above, the color shading scale is the same where green shading is the best or lowest environmental impacts. The higher numbers signify a larger or higher impact and therefore they are red shaded.

- RA1 had 20 low environmental impact categories, three medium environmental impact categories and three higher environmental impact categories. It had the lowest implementation cost (billions).
- RA1 Modified had 20 low environmental impact categories, five medium environmental impact categories and one higher environmental impact category.
- RA5 had 17 low environmental impact categories, three medium environmental impact categories and six higher environmental impact categories.
- RA5 Modified had 14 low environmental impact categories, four medium environmental impact categories and eight higher environmental impact categories. It had the highest implementation cost (billions).

When comparing RA1 versus RA1 Modified for environmental impacts, RA1 and RA1 Modified had the lowest environmental impact categories, a total of 20. RA1 had three higher environmental impact categories and RA1 Modified had one higher environmental impact category.

When comparing RA5 versus RA5 Modified for environmental impacts, RA5 had the lowest environmental impact categories with a total of 17 and RA5 Modified had 14. RA5 had six higher environmental impact categories and RA5 Modified had eight higher environmental impact categories.

Based on the mobility comparison and the environmental impacts, it was recommended that RA1 Modified and RA5 be eliminated. In terms of comparing mobility of reasonable alternatives RA1, RA1 Modified, RA5, and RA5 Modified, RA1 had higher freeway segment speeds (mph) in total compared to RA1 Modified and RA5 Modified had higher freeway segment speeds (mph) in total compared to RA5. The detailed environmental impact analysis from the Level 3 Screening, illustrated that there were minimal differences associated with comparing the Reasonable Alternatives, RA1 versus RA1 Modified and RA5 versus RA5 Modified.

4.8 Final screening of reasonable alternatives – Level 3

As part of the Level 3 screening, the two Reasonable Alternatives (RA1 and RA5 Modified) were assessed using the Level 3 screening metrics. Specifically, the two Reasonable Alternatives were analyzed based on traffic MOEs and the extent to which they meet the primary purpose and need of the proposed project, as evaluated in the *Carolina Crossroads Alternatives Traffic Analysis Technical Memo* (Appendix D). These MOEs included LOS, travel time benefits, and delay time. RA1 would have a higher mobility, meaning lower average travel time through corridor and higher average speed through corridor compared to RA5 Modified. Through the detailed traffic analysis, it was determined that RA1 would best meet the purpose and need of reducing congestion and improving mobility while minimizing impacts.

During Level 3 screening a Relocation Study (Appendix H) was completed as part of the final screening process. Refined alternative designs were used to refine impacts using GIS aerial mapping and by conducting field reviews of each potentially impacted property. Property impacts were assessed by category (residential, commercial or institutional) and refined to determine impacts by parcel, unit, and number of tenets (Table 4.27).

Through detailed environmental analysis, while environmental impacts would be very similar, RA1 would have the least property impacts in regards to full acquisitions, the least wetland impacts (acres), and the lowest construction cost compared to RA5 Modified. Therefore, RA1 had slightly better or less environmental impacts compared to RA5 Modified.

A summary of the Level 3 Screening Analysis for the two Reasonable Alternatives (RA1 and RA5 Modified) is shown in the following table.

Table 4.27 Summary of Results for Level 3 Screening

Level 3 Screening Criteria		No-Build	Alternative 1 Turbine with Diverging Diamond at I-20/Bush River Road PREFERRED		Alternative 5 (Modified) Directional with Diverging Diamond at I-20/Bush River Road	
	Average Travel Time Through Corridor	Minutes and Seconds	Difference from No-Build	Minutes and Seconds	Difference from No-Build	Minutes and Seconds
Improve Mobility and Enhance Traffic Operations	I-26 from Exit 101 to Exit 110 EB AM	28:25	13:55	14:30	13:57	14:28
	I-26 from Exit 101 to I-126 End EB AM	28:19	08:41	19:39	08:39	19:40
	I-26 from Exit 101 to I-20 Exit 68 EB AM	29:48	06:50	22:59	08:45	21:03
	I-26 from Exit 101 to I-20 Exit 61 EB AM	29:12	12:04	17:08	12:11	17:01
	I-20 from Exit 68 to I-26 Exit 110 EB AM	13:13	02:15	10:58	02:46	10:27
	I-20 from Exit 61 to Exit 68 EB AM	14:57	00:16	14:41	00:38	14:19
	I-20 from Exit 61 to I-126 End EB AM	15:12	01:18	13:54	00:04	15:08
	I-26 from Exit 101 to Exit 110 EB PM	22:18	09:10	13:07	09:07	13:11
	I-26 from Exit 110 to Exit 101 WB PM	26:36	12:44	13:51	12:27	14:09
	I-126 End to Exit 101 WB PM	26:53	09:18	17:36	08:00	18:53
	I-20 from Exit 68 to I-26 Exit 101 WB PM	24:26	03:52	20:34	04:23	20:02
	I-20 from Exit 61 to I-26 Exit 101 WB PM	20:25	02:32	17:54	02:45	17:41
	I-26 from Exit 110 to I-20 Exit 68 WB PM	18:56	08:43	10:13	09:19	09:37
	I-20 from Exit 68 to I-26 Exit 110 EB PM	24:43	10:45	13:58	10:38	14:05
	I-20 from Exit 68 to Exit 61 WB PM	17:36	02:46	14:51	02:28	15:08
	I-126 End to I-20 Exit 61 WB PM	22:05	08:08	13:56	06:31	15:34

Alternative with most improvement

Level 3 Screening Criteria		No-build	Alternative 1 Turbine with Diverging Diamond at I-20/Bush River Road PREFERRED		Alternative 5 (Modified) Directional with Diverging Diamond at I-20/Bush River Road	
Improve Mobility and Enhance Traffic Operations	Average Speed Through Corridor	MPH	Difference from No-Build	MPH	Difference from No-Build	MPH
	I-26 from Exit 101 to Exit 110 EB AM	29	28	57	28	57
	I-26 from Exit 101 to I-126 EB AM	31	16	47	16	47
	I-26 from Exit 101 to I-20 Exit 68 EB AM	32	11	43	12	44
	I-26 from Exit 101 to I-20 Exit 61 EB AM	33	23	56	24	57
	I-20 from Exit 68 to I-26 Exit 110 EB AM	41	13	54	11	52
	I-20 from Exit 61 to Exit 68 EB AM	45	4	49	2	47
	I-20 from Exit 61 to I-126 End EB AM	41	6	47	3	44
	I-26 from Exit 101 to Exit 110 EB PM	37	26	63	26	63
	I-26 from Exit 110 to Exit 101 WB PM	31	29	60	28	59
	I-126 End to Exit 101 WB PM	33	19	52	16	49
	I-20 from Exit 68 to I-26 Exit 101 WB PM	38	9	47	8	46
	I-20 from Exit 61 to I-26 Exit 101 WB PM	49	7	56	8	57
	I-26 from Exit 110 to I-20 Exit 68 WB PM	27	27	54	26	53
	I-26 from I-20 Exit 68 to Exit 110 EB PM	22	20	42	17	39
	I-20 from Exit 68 to Exit 61 WB PM	38	10	48	6	44
	I-126 End to I-20 Exit 61 WB PM	30	18	48	13	43
	Vehicle miles traveled	476,429	158,343	634,772	145,633	622,062
	Vehicle hours traveled	16,865	399	17,264	269	17,134
	VMT/VHT	28.2	8.5	36.8	8.1	36.3

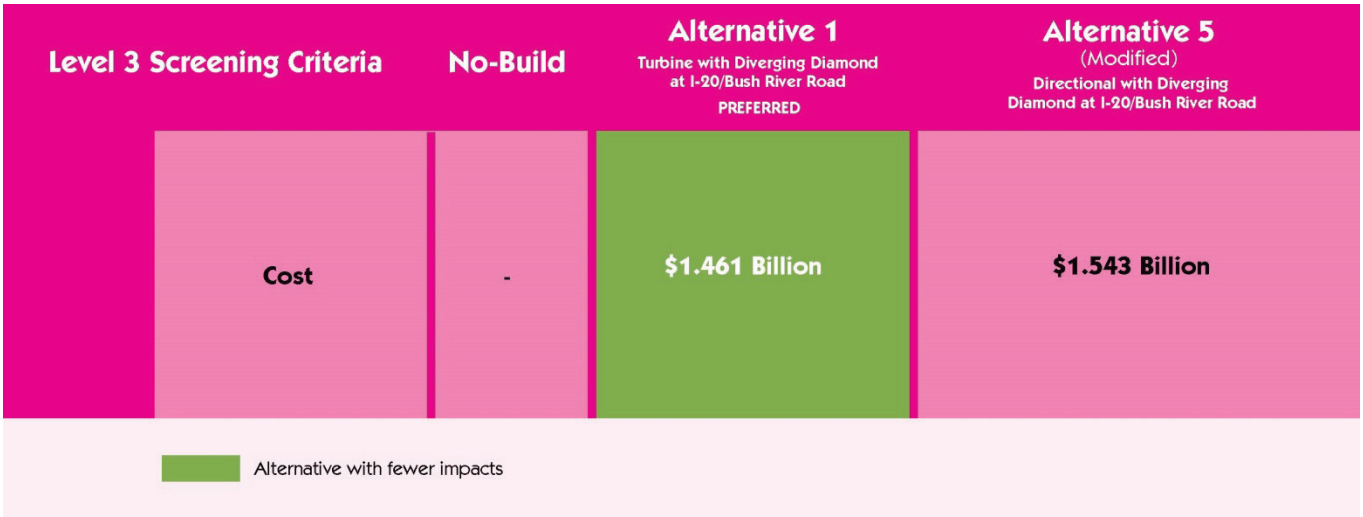
Alternative with fewer impacts

Minimize Environmental Impacts

Level 3 Screening Criteria		No-Build	Alternative 1 Turbine with Diverging Diamond at I-20/Bush River Road PREFERRED	Alternative 5 (Modified) Directional with Diverging Diamond at I-20/Bush River Road
Property Impacts				
Full Acquisitions	Single Family	-	20	20
	Multi-Family (# of units)	-	90	164
	Commercial	-	48	53
	Institutional	-	4	4
Partial Acquisitions	Residential	-	36	39
	Commercial	-	190	197
Section 4(f) Sites Impacted		-	0 (de minimis)	0 (de minimis)
Historical Impacts		-	0	0
Wetland Impacts*	Fill (acres)	-	6.55	6.89
	Ponds	-	0.02	0.02
Stream Impacts* (linear feet)		-	15,750	16,600
Floodplains** (acres)	Zone AE	-	15.94	16.64
	Zone AE - Floodway	-	6.97	7.05
Water Quality	High Quality Streams	-	14%	17%
	Wetlands	-	36%	34%
Community Impacts				
Columbiana				
Seven Oaks				
Saluda				
Riverbanks				
Harbison				
St. Andrews				
Broad				
Environmental Justice Census Blocks (# of blocks)		-	No	No
		-	25	24
Potentially Impacted Noise Receivers	Residential	-	1,864	1,827
	Business	-	4	6
	Other	-	24	25
Hazardous Material Sites		-	18	18

*Wetland and stream calculations made using preliminary jurisdictional determination
*Wetland and stream calculations reflect impacts from proposed project and do not include existing impacts
**Floodplain impacts in Level 3 Screening are based on proposed project construction limits + 30' buffer at Saluda and 20' buffer in all other locations

Alternative with fewer impacts
Low Impact
Medium Impact
Mobility, Access and Safety
Land Use
Visual/Aesthetics
Noise (# impacted receptors)
Neighborhoods
Community Services



4.9 Recommended Preferred Alternative

Both Reasonable Alternatives (RA1 and RA5 Modified) would meet the purpose and need of the project. When comparing the detailed traffic analysis, detailed environmental analysis, input from the public and from elected officials, input from resource and regulatory agencies, constructability factors, and construction costs, the Reasonable Alternative that would best satisfy the purpose and need while minimizing impacts would be **RA1**.

For these reasons, RA1 is the Recommended Preferred Alternative (RPA). The full analysis of the Reasonable Alternatives are detailed in Chapter 4.0: Existing Conditions and Environmental Consequences.

This RPA concept, RA1, has been screened and selected based on its overall benefits to traffic flow throughout the region and on findings of a comprehensive environmental impact evaluation. As the design process continues into the FEIS and ROD, further refinements to design elements may take place and could result in modifications to roadway alignments, interchange configurations, and other geometric elements. Conceptual maps showing the RPA are included in Appendix C.

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Appendix A—Alternative 1 – Existing Corridor Improvements (AO1-AO54)

I-20 AT BROAD RIVER ROAD

Existing Do Nothing Alternative

The existing interchange of I-20 and Broad River Road is classified as a conventional diamond interchange configuration, and the intersections of Broad River Road and the I-20 entrance/exit ramps are under signal control. The existing I-20 westbound exit ramp to Broad River Road is a two-lane exit ramp that diverges into four lanes at the signalized intersection, two for left-turning traffic movements and two for right-turning traffic movements. The existing I-20 eastbound off-ramp to Broad River Road is a one-lane exit ramp that diverges into three lanes, one for right turns, one for left turns, and one for straight through movements. Broad River Road is a four-lane thoroughfare through this conventional diamond interchange configuration.

Additionally, a local interstate frontage road called Garner Lane is located at this interchange area. The existing roadway alignment of Garner Lane does not meet current roadway design standards and the access this local road provides to I-20 via is undesirable. Traffic signal delays and traffic congestion occur on both Broad River Road and along the existing I-20 mainline during peak hours. The following alternatives have been evaluated to address traffic congestion on Broad River Road and existing I-20 and to address the existing roadway alignment of Garner Lane.

Key Highlights

- Traffic signal delays occur
- Traffic congestion occurs

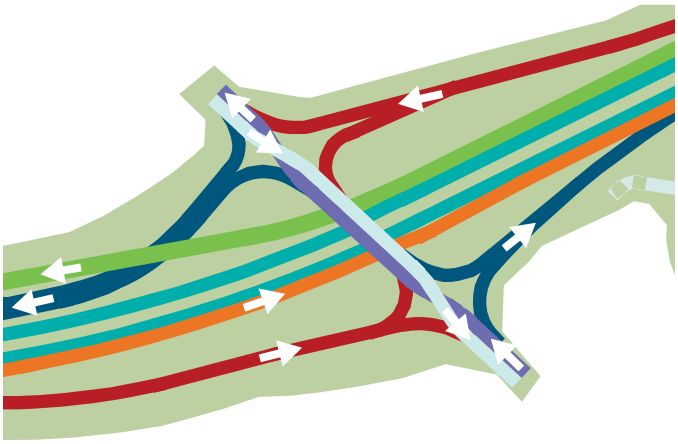
Figure 1: I-20 at Broad River, Existing Condition

I-20 AT BROAD RIVER ROAD

AO1 Diverging Diamond Interchange

This alternative proposes to revise the existing conventional diamond interchange to a diverging diamond interchange (DDI). This alternative may reduce traffic signal delays as well as the lengths of the existing left turn lanes on the Broad River Road bridge over existing I-20. In addition, DDIs require a smaller interchange configuration area than the conventional diamond interchange configurations, thus reducing potential impacts to adjacent properties.

Revising the existing conventional diamond interchange to a DDI would eliminate the Garner Lane access to I-20 eastbound and would re-align Garner Lane to connect with Longcreek Drive to the south.



Key Highlights

- Reduced traffic signal delays
- Smaller footprint

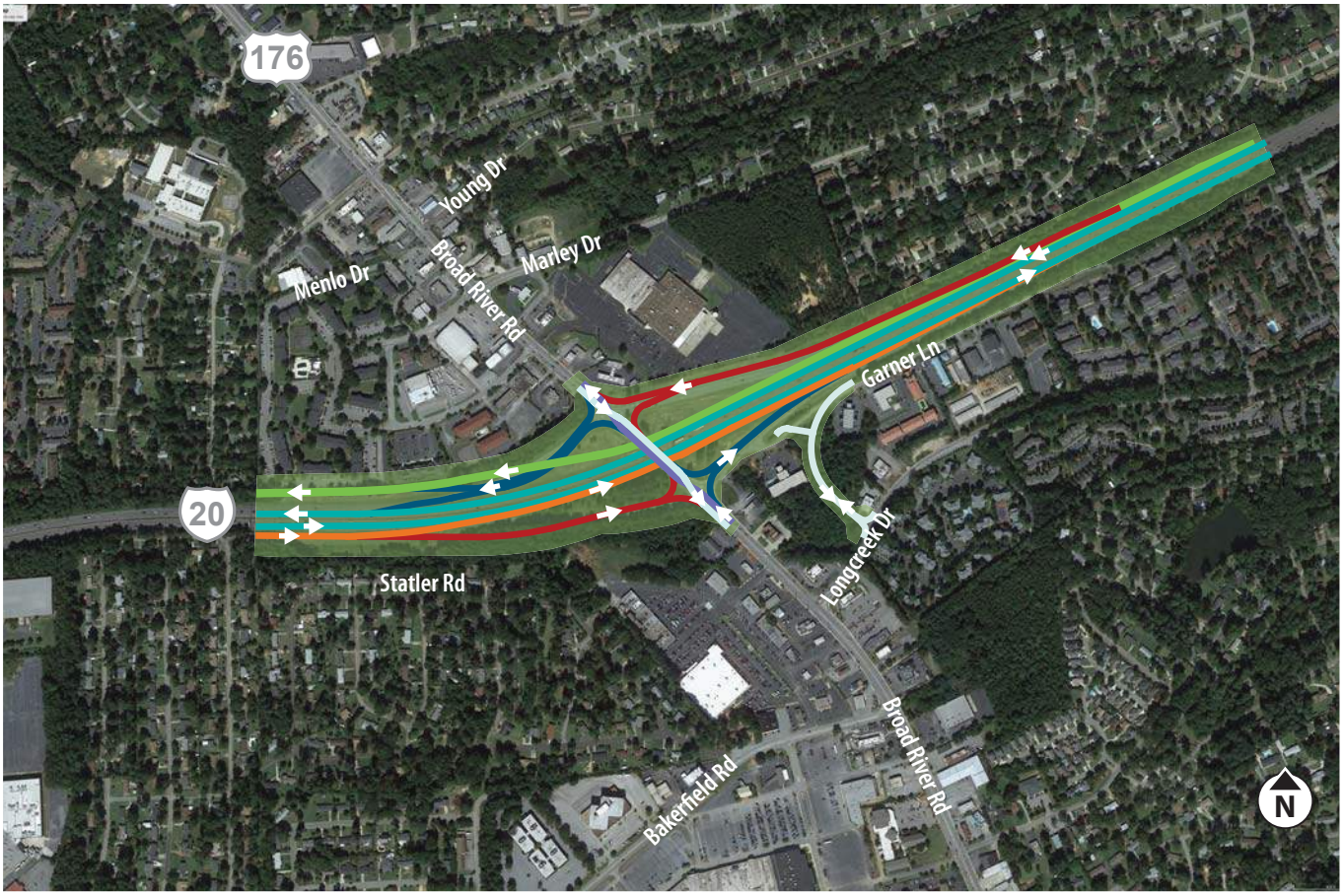


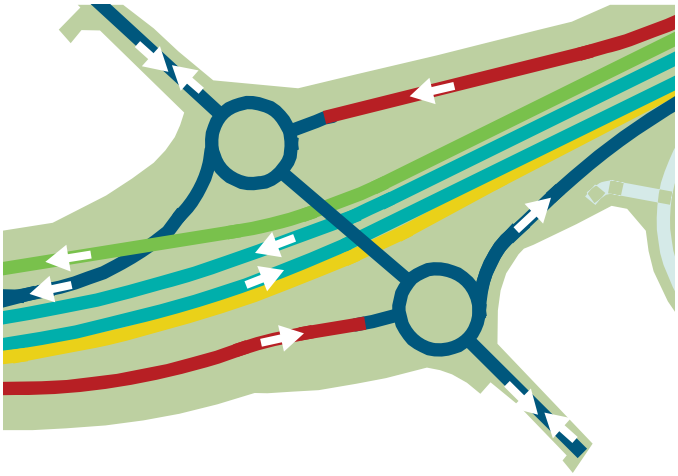
Figure 2: I-20 at Broad River, Diverging Diamond Interchange

I-20 AT BROAD RIVER ROAD

AO2 Multilane Roundabouts

As part of this alternative, the existing traffic signals at the I-20 entrance/exit ramps on Broad River Road would be replaced with multilane roundabouts. Roundabouts could enhance traffic flow through these intersections by promoting continuous flow of traffic that would not be required to stop at traffic signals. Based on the number of existing lanes on Broad River Road and the I-20 entrance/exit ramps, it would be necessary to construct multilane roundabouts.

Revising the interchange to include roundabouts would eliminate the Garner Lane access to I-20 eastbound and would be realigned to connect with Longcreek Drive to the south.



Key Highlights

- Promotes continuous flow of traffic
- No stopping at traffic signals

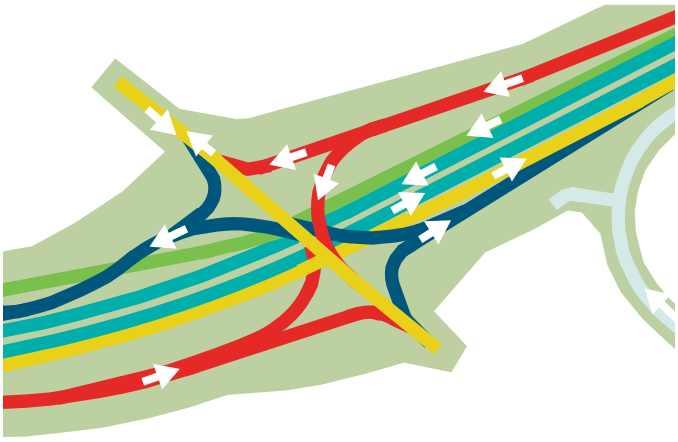
Figure 3: I-20 at Broad River, Roundabouts

I-20 AT BROAD RIVER ROAD

AO3 Single Point Urban Interchange (SPUI)

This alternative proposes to covert the existing conventional diamond interchange to a single point urban interchange (SPUI). This alternative also may reduce the interchange configuration area and increase traffic operational efficiency by allowing opposing left turns to proceed at the same time. The I-20 westbound off-ramp would remain a multilane facility, providing two left-turn lanes and two right-turn lanes.

Revising the existing conventional diamond interchange to a SPUI would eliminate the direct access of Garner Lane to the westbound on- ramp, and Garner Lane would be realigned to connect with Longcreek Drive to the south.



Key Highlights

- Smaller footprint
- Improved traffic operations

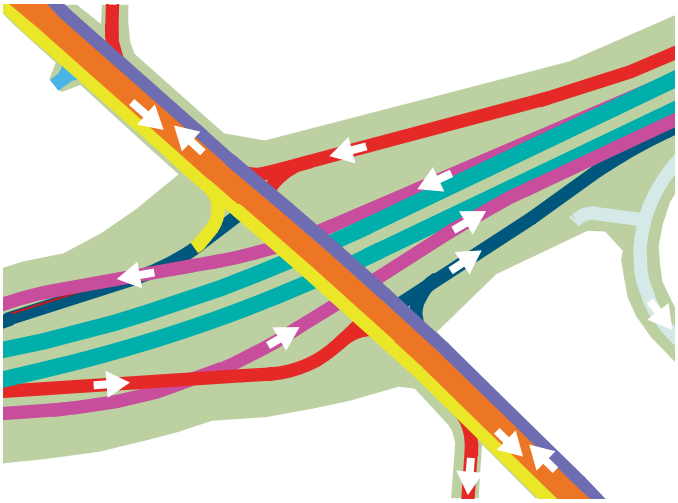
Figure 4: I-20 at Broad River, SPUI

I-20 AT BROAD RIVER ROAD

AO4 Stacked Diamond

For this alternative, two-level bridges spanning I-20 would be constructed on Broad River Road. The top level bridge would carry the through movements on Broad River Road that need to access I-20 or adjacent properties within the interchange area. Access roads to adjacent properties within the interchange area would be converted to right-in/right-out movements. The lower level bridge would be at the same level as the existing Broad River Road bridge over I-20 and would be utilized to access I-20, as well as adjacent properties within the interchange area.

Revising the existing conventional diamond interchange to a two-level diamond interchange would eliminate the direct access to Garner Lane to the westbound on-ramp, and Garner Lane would be realigned to connect with Longcreek Drive to the south.



Key Highlights

- More efficient through movements
- Safety and efficiency improved

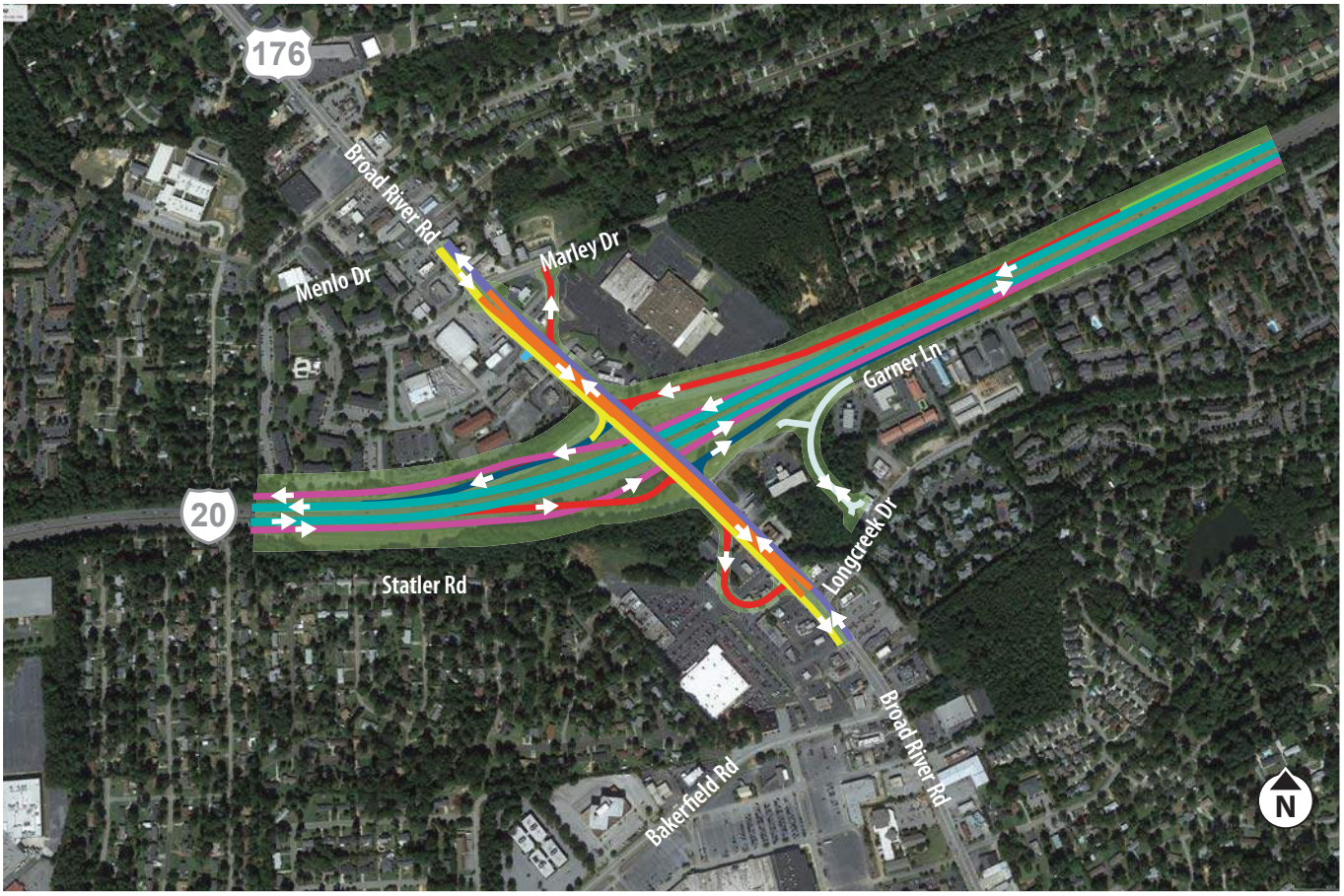
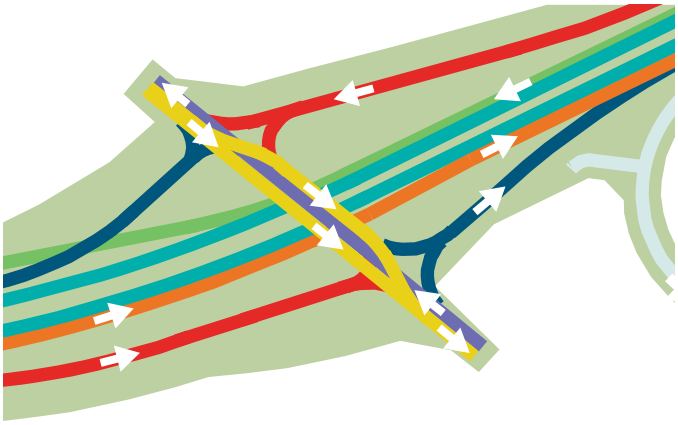


Figure 5: I-20 at Broad River, Stacked Diamond

I-20 AT BROAD RIVER ROAD

AO5 Offset Left

This alternative is similar to the DDI alternative described in AO1 except with AO5, the two southbound lanes of Broad River Road would be shifted to the east of the northbound lanes across the bridge, while the northbound lanes remain as is. This alternative would provide an opportunity for phased construction of an offset DDI interchange configuration by leaving traffic on the existing lanes while the new southbound lanes are constructed.



Key Highlights

- Reduces traffic signal delays
- Smaller footprint
- Phased construction

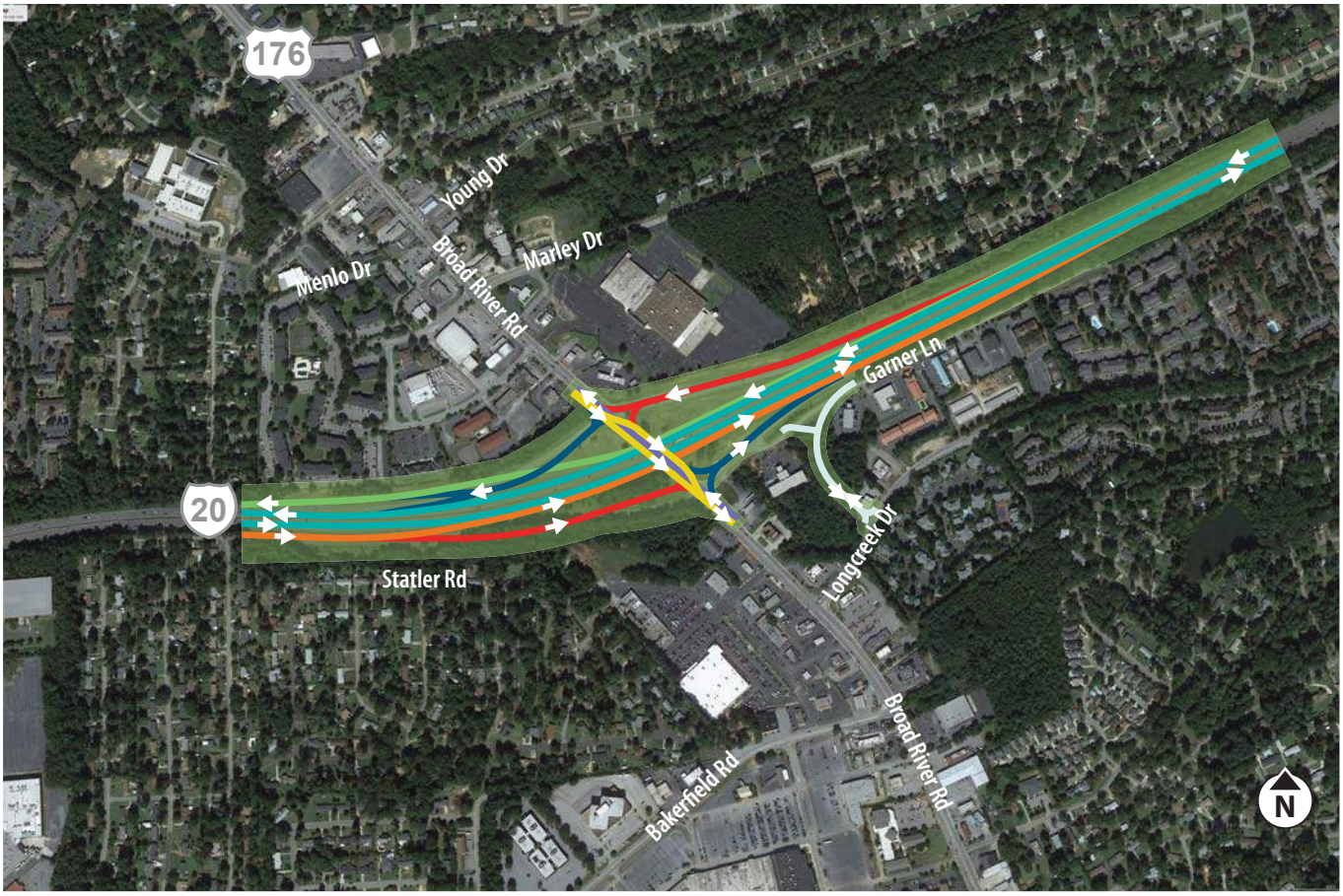


Figure 6: I-20 at Broad River, Offset Left

I-20 AT BUSH RIVER ROAD

Existing Do Nothing Alternative

The existing interchange of I-20 and Bush River Road is classified as a conventional diamond interchange configuration with a single loop ramp for I-20 eastbound access from Bush River Road. The intersections of Bush River Road and the I-20 entrance/exit ramps are under signal control, and traffic flow is interrupted by the proximity of the intersection of Berryhill Drive/Bush River Road to the I-20 westbound exit ramp and the intersection of Rockland Road/Bush River Road to the I-20 eastbound entrance ramp. The existing exit ramps from both I-20 westbound and eastbound to Bush River Road are one-lane exit ramps that diverge into two turn lanes at Bush River Road. The entrance ramp to I-20 eastbound is a single lane loop. Bush River Road is a four-lane thoroughfare through this interchange area. Traffic signal delays and traffic congestion occur on both Bush River Road and along the existing I-20 mainline during peak hours. The following alternatives have been evaluated to address traffic congestion on Bush River Road and existing I-20.

Key Highlights

- Traffic flow is interrupted
- Traffic signal delays occur
- Traffic congestion occurs

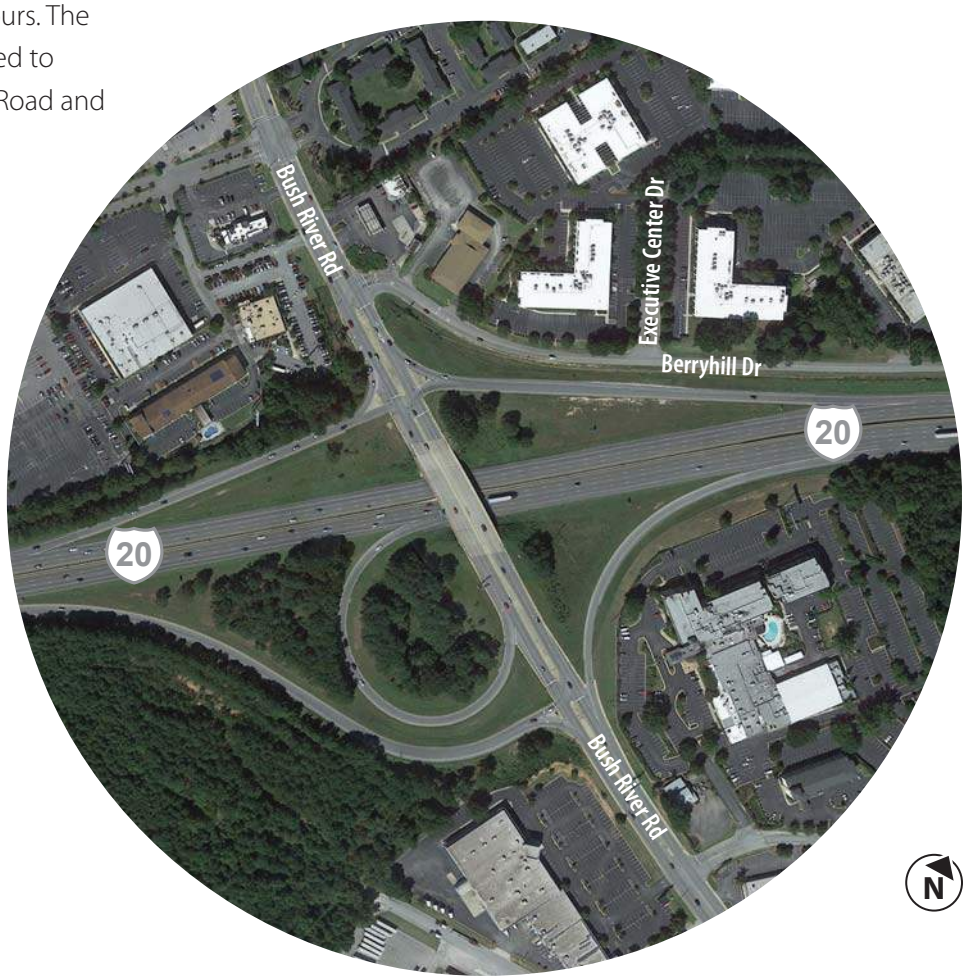


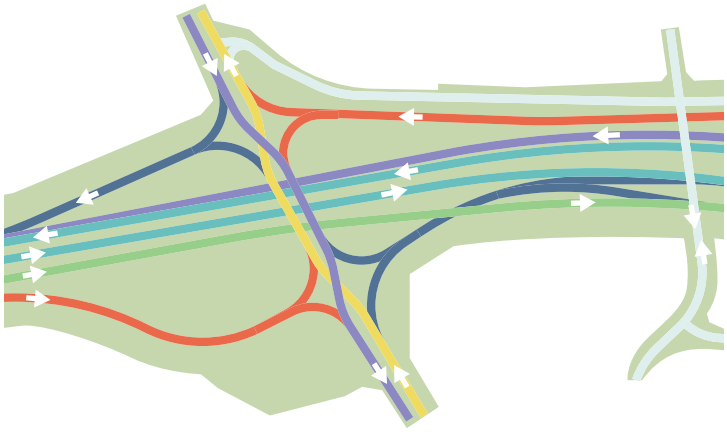
Figure 7: I-20 at Bush River, Existing Condition

I-20 AT BUSH RIVER ROAD

AO6 Diverging Diamond Interchange

This alternative proposes to revise the existing conventional diamond interchange configuration to a DDI. This alternative may reduce traffic signal delays, and would utilize the existing location of the I-20 entrance/exit ramps on Bush River Road for all quadrants of the interchange except for the southwest quadrant. In the southwest quadrant, the existing loop ramp would be eliminated and the exit ramp from I 20 eastbound to Bush River Road would be realigned.

Relative to the Berryhill Drive/Bush River Road intersection impacts traffic flow on the I-20 westbound exit ramp, this alternative would convert this existing intersection to right in/right out from/to Bush River Road and proposes adding a bridge across I-20 via the eastern leg of Executive Drive to connect with Rockland Road, thereby allowing traffic to access I-20 from Berryhill Drive.



Key Highlights

- Reduces traffic signal delays
- Safety and efficiency improved
- Provides more direct access to I-20

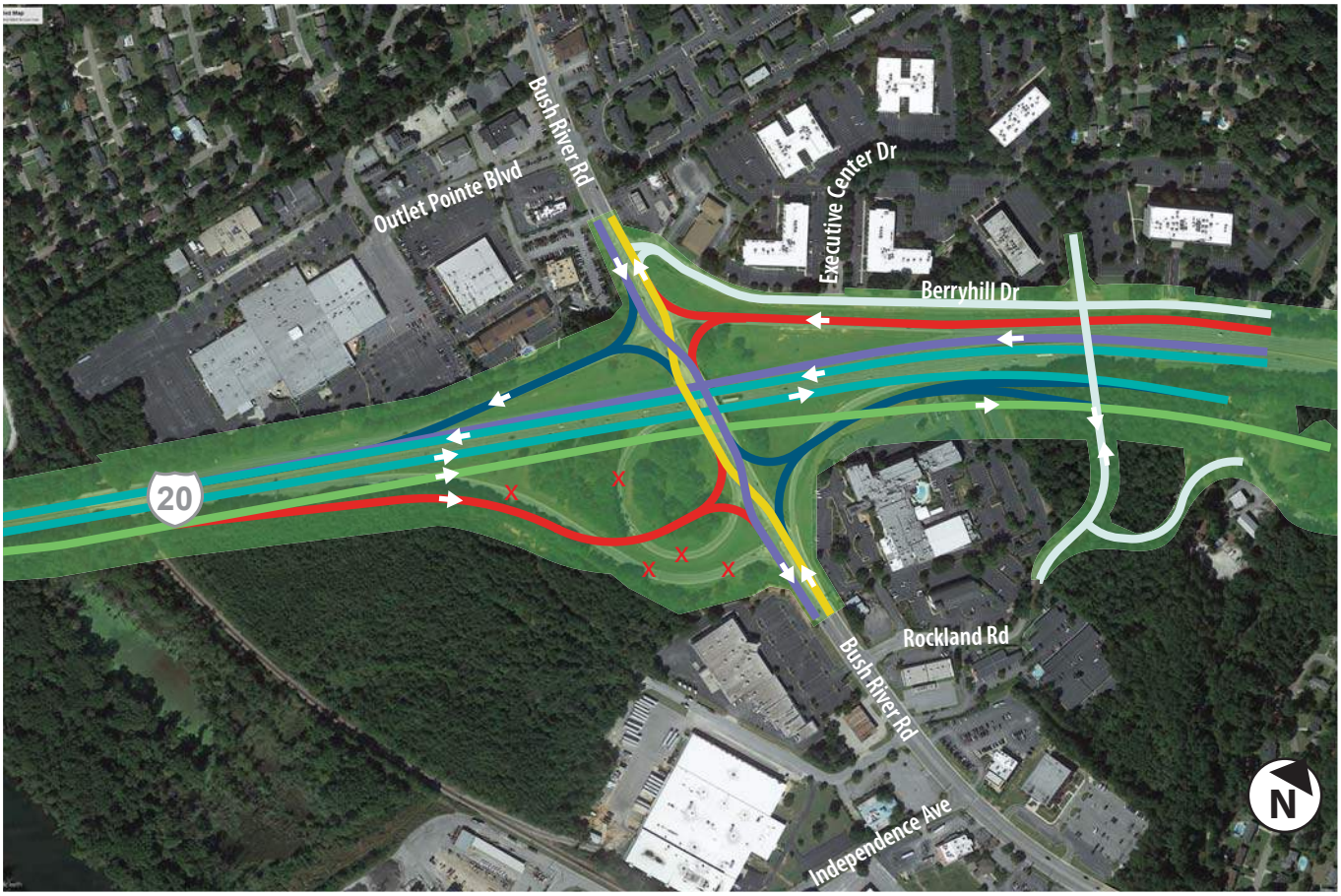
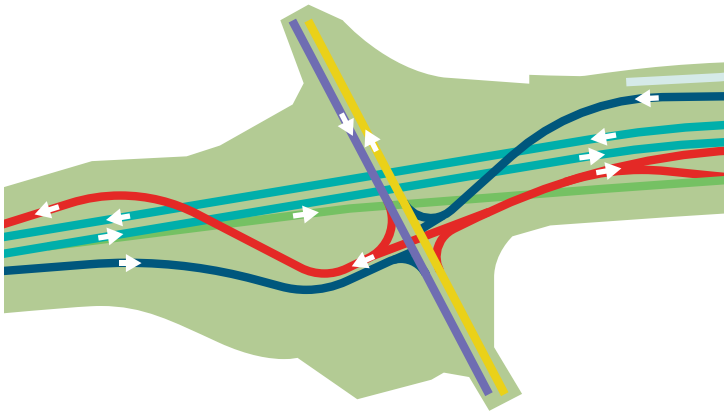


Figure 8: I-20 at Bush River, Diverging Diamond Interchange

I-20 AT BUSH RIVER ROAD

AO7 Offset Diamond

This alternative proposes an offset diamond interchange. Due to the close proximity of Rockland Road to the I-20 eastbound entrance and exit ramps and the close proximity of Berryhill Drive to the I-20 westbound entrance/exit ramps, this alternative would place all entrance and exit ramps (four total) at a single point to the south of I-20, thus increasing the spacing between the ramp termini and the intersecting local roads. Under this scenario, the I-20 westbound exit ramp would diverge from the existing I-20 mainline, then flyover existing I-20 before tying in to Bush River Road. Similarly, the entrance ramp from Bush River Road to I-20 westbound would start at Bush River Road across from the newly designed exit ramp, then flyover existing I-20 before tying in to I-20 west of Bush River Road. The I-20 westbound off-ramp would likely encroach on portions of Berryhill Drive; therefore, it would be realigned to the north.



Key Highlights

- Improved spacing between ramp and local roads
- Full movements on frontage roads

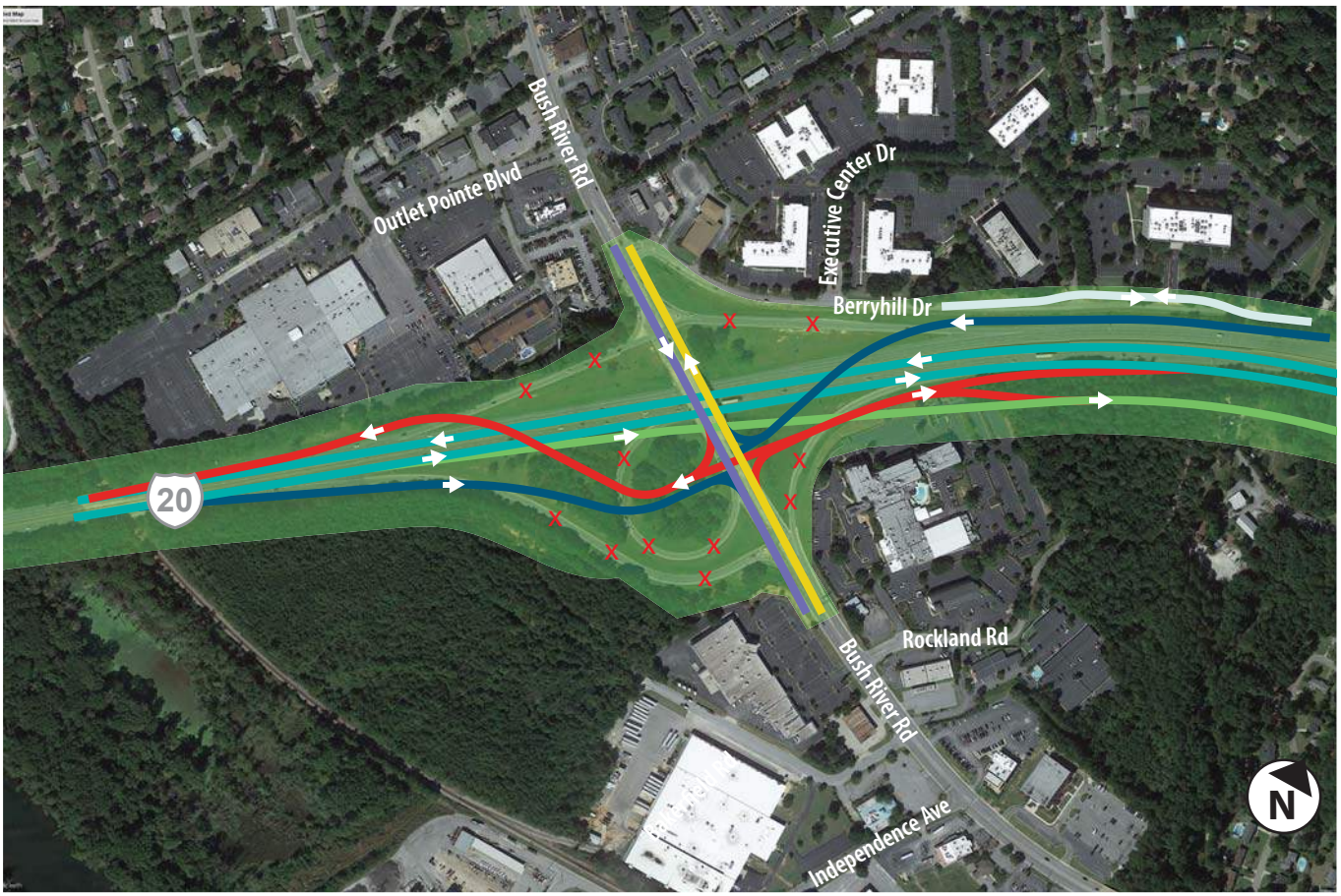
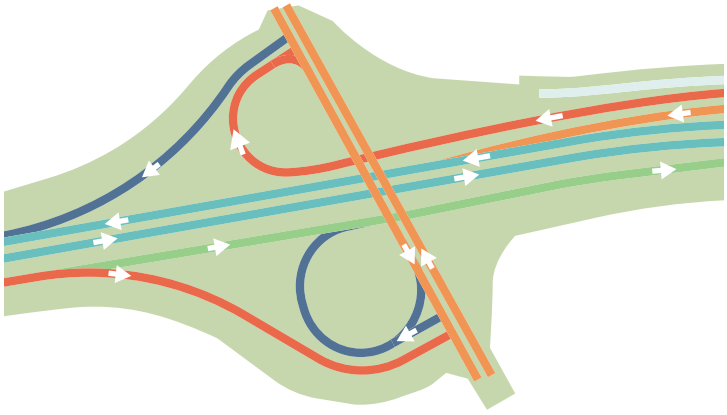


Figure 9: I-20 at Bush River, Offset Diamond

I-20 AT BUSH RIVER ROAD

AO8 Partial Cloverleaf Interchange

This alternative converts the existing interchange into a partial cloverleaf interchange by removing the I-20 westbound exit ramp and eastbound entrance ramp and replacing them with an I-20 westbound exit and eastbound entrance loops, and eastbound exit and westbound entrance ramps. The ramp and loop in the I-20 westbound direction would align with Berryhill Drive, thus consolidating two close spaced signalized intersections into a single signalized intersection. This interchange alternative would also increase the distance between the existing I-20/I-26 interchange and the I-20/Bush River Road interchange, thereby providing greater weaving distance for vehicles to maneuver between lanes.



Key Highlights

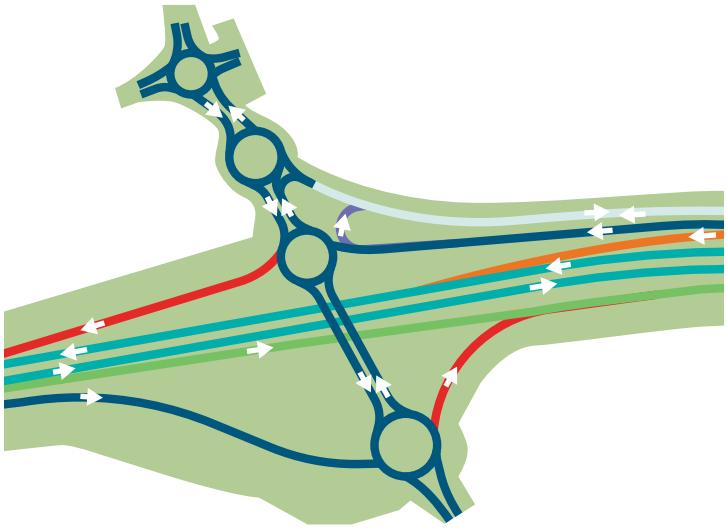
- Consolidates two close spaced intersections
- Increases distance between interchanges
- Provides greater weaving distances

Figure 10: I-20 at Bush River, Partial Cloverleaf

I-20 AT BUSH RIVER ROAD

AO9 Roundabouts

Under this alternative, the existing traffic signals at the interchange on Bush River Road would be replaced with roundabouts at the ramp terminals and at the Outlet Pointe Boulevard / E. Meadow Court / Bush River Road intersection. Roundabouts may improve traffic congestion by promoting continuous traffic flow since vehicles would not be required to stop at traffic signals. Berryhill Drive would be converted to a right in/right out intersection.



Key Highlights

- Promotes continuous flow of traffic
- No stopping at traffic signals
- Right in/right out intersections

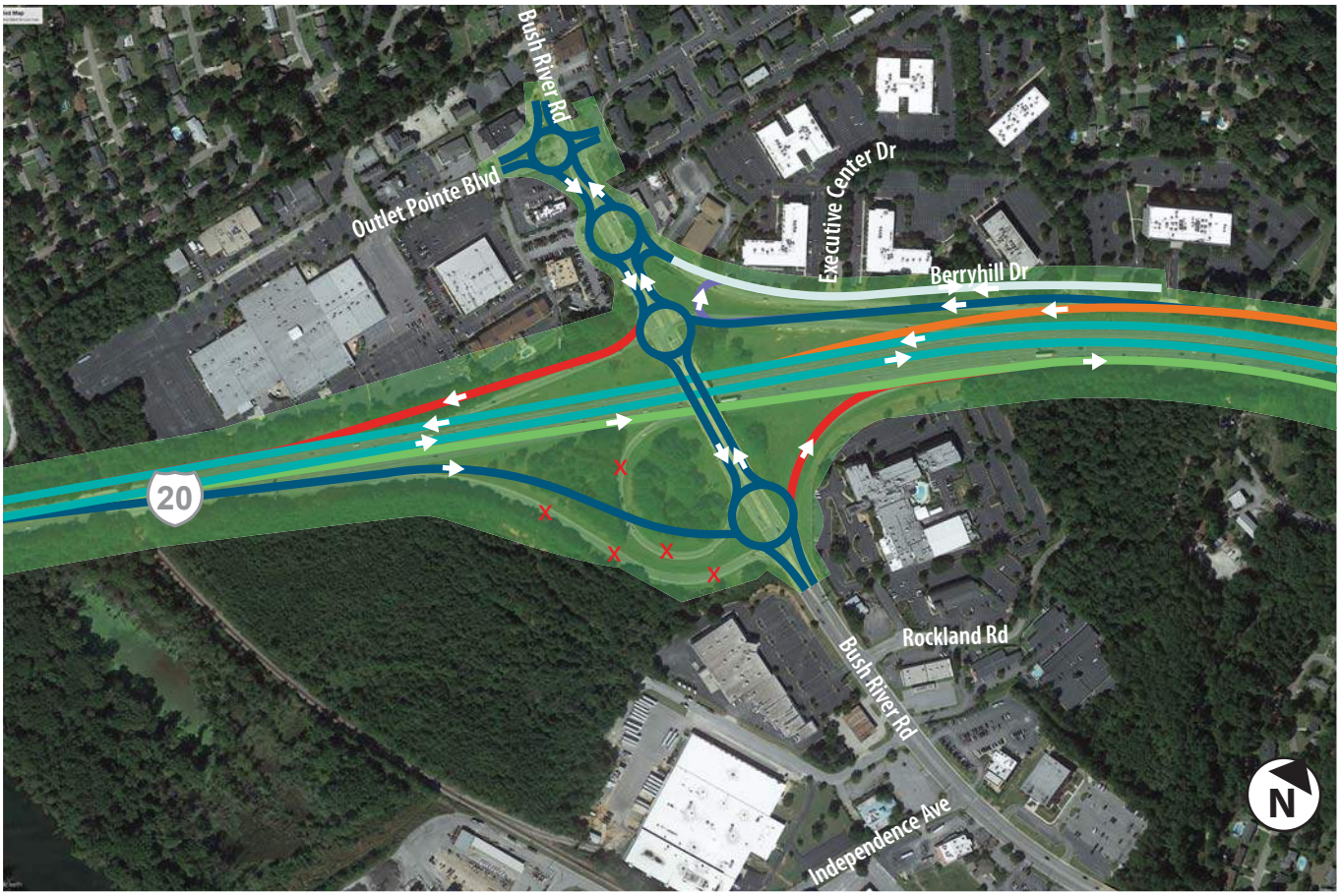
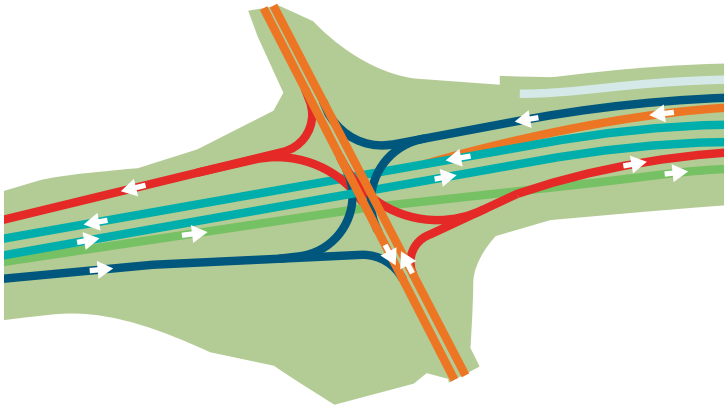


Figure 11: I-20 at Bush River, Roundabouts

I-20 AT BUSH RIVER ROAD

AO10 Single Point Urban Interchange (SPUI)

This alternative proposes to covert the existing interchange to a SPUI and would likely reduce the interchange configuration area and increase operational efficiency by allowing opposing left turns to proceed at the same time. By compressing the ramps closer to each other, the roadway distance from the existing interchange to Berryhill Dr. and Rockland Rd. is increased which would likely reduce traffic congestion.



Key Highlights

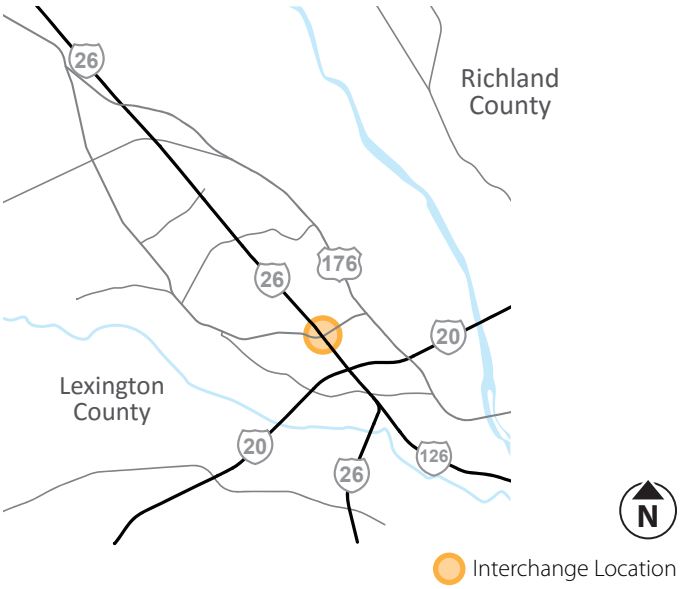
- Smaller footprint
- Improved traffic operations
- Improved spacing between ramp and local roads

Figure 12: I-20 at Bush River, SPUI

I-26 AT ST. ANDREWS ROAD

Existing Do Nothing Alternative

The existing interchange at I-26 and St. Andrews Road is a partial cloverleaf with loop ramps in two adjacent quadrants (north side of the existing interchange) and several frontage roads adjacent or near to the entrance/exit ramps for all four quadrants of the existing interchange. These frontage roads through the interchange area can be accessed via St. Andrews Road at signalized intersections. Traffic movements to and from I-26 eastbound and westbound entrance/exit ramps can be in conflict with weaving traffic trying to access the frontage roads. Additionally, numerous commercial businesses, restaurants, and hotels exist on both sides of the interchange area and are accessed via St. Andrews Road.



Key Highlights

- Frontage roads too close to entrance/exit ramps
- Weaving traffic conflicts
- Business access a challenge

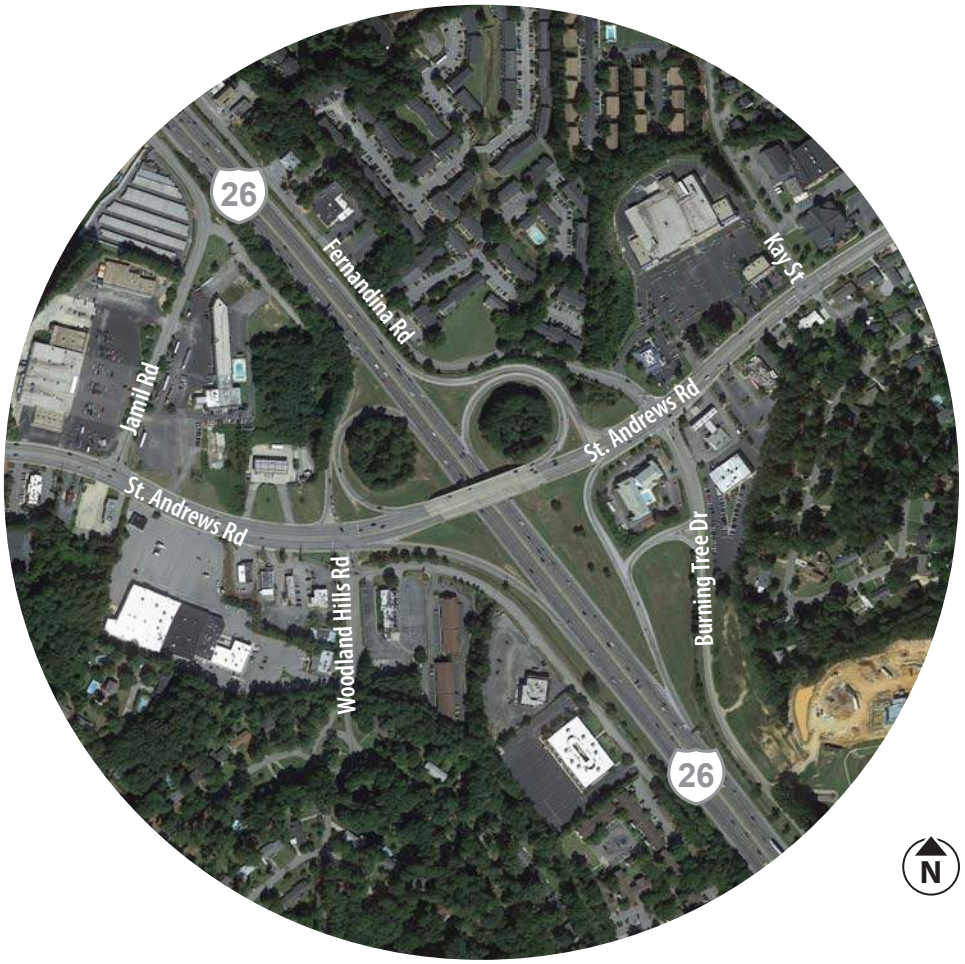
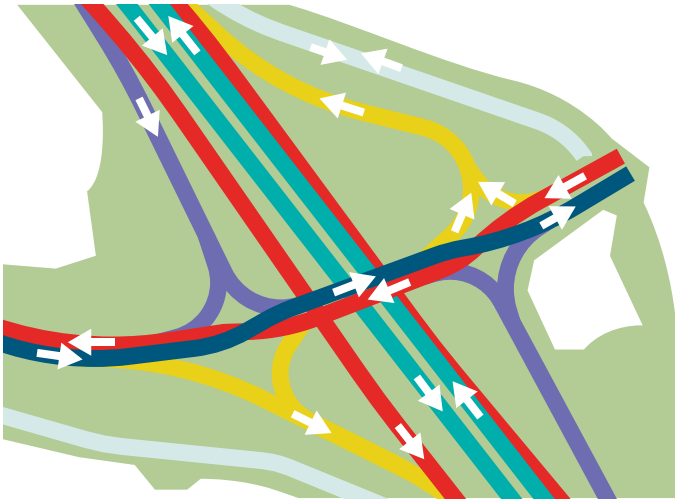


Figure 13: I-26 at St. Andrews, Existing Condition

I-26 AT ST. ANDREWS ROAD

AO11 Diverging Diamond Interchange (DDI)

This alternative proposes to convert the existing partial clover leaf interchange to a DDI. The I-26 westbound exit loop ramp and I-26 eastbound entrance loop ramp would be removed and the ramps would be realigned to intersect the new DDI configuration. Berryhill Drive which connects to St. Andrews Road via Woodland Hills Road just south of the interchange would be realigned further south to increase the intersection spacing from the ramps. The realignment of the I-26 westbound entrance ramp would require shifting Fernandina Road further north. The existing connection between the I-26 westbound exit ramp and Burning Tree Drive would be retained to avoid introducing additional traffic congestion at the intersection of St. Andrews Road/Fernandina Road/Burning Tree Drive.



Key Highlights

- Increased intersection spacing
- Avoids additional traffic congestion
- Tight loops eliminated

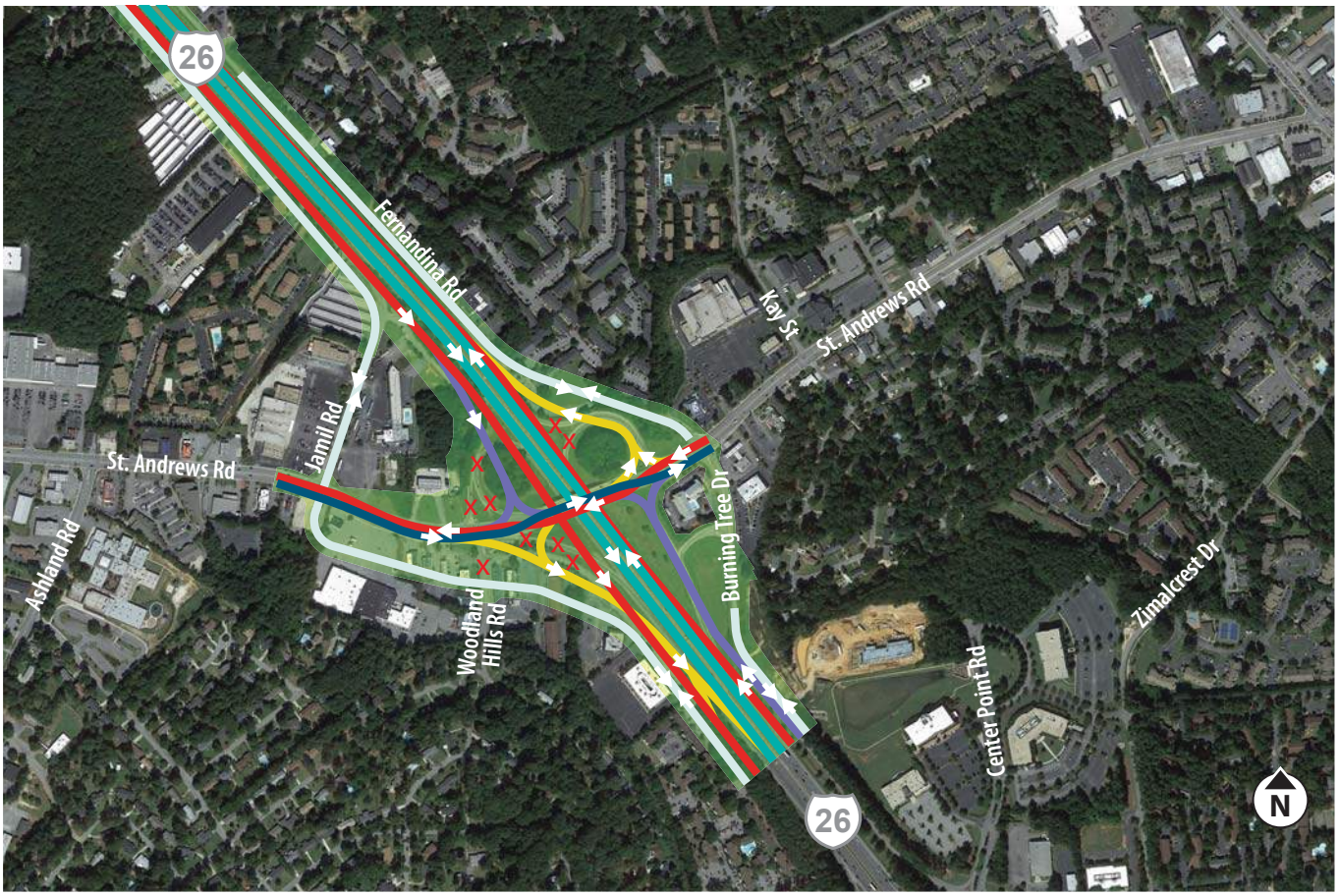


Figure 14: I-26 at St. Andrews, Diverging Diamond Interchange

I-26 AT ST. ANDREWS ROAD

AO12 Flyover Ramp and Realigned Roadways

This alternative would provide a proposed flyover entrance ramp from southbound and northbound St. Andrews Road to I-26 eastbound. A flyover exit ramp from I-26 westbound to southbound St. Andrews Road, along with another ramp off the flyover exit ramp to access northbound St. Andrews Road would also be included with this alternative. The existing entrance and exit loops would be eliminated and replaced with controlled access ramps. Berryhill Drive would be realigned further south to increase the spacing from the interchange area and Fernandina Road would be realigned to go under the interchange and join with Burning Tree Drive east of the interchange. Access from the westbound I-26 exit ramp to northbound and southbound St. Andrews Road and vice versa would be via at-grade signalized intersections.

Key Highlights

- Existing loops replaced with controlled access ramps
- Increases intersection spacing
- Tight loops eliminated

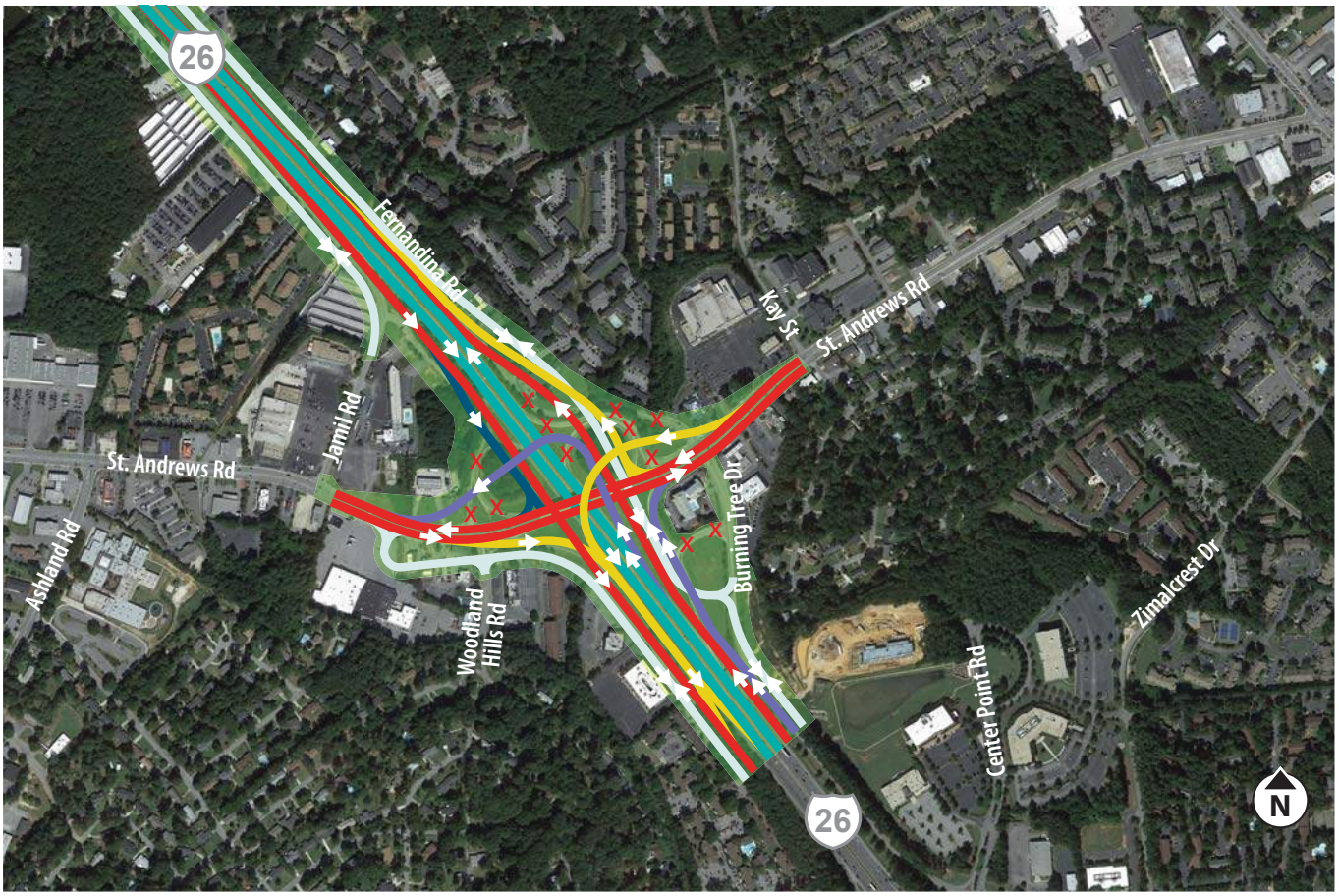


Figure 15: I-26 at St. Andrews, Flyover

I-26 AT ST. ANDREWS ROAD

AO13 Single Point Urban Interchange (SPUI)

This alternative proposes to replace the existing partial cloverleaf interchange configuration with a SPUI interchange. Doing so would reduce the interchange configuration area and increase interchange efficiency by allowing opposing left turns to proceed at the same time. All side roads connecting to St. Andrews Road would remain unchanged. Existing exit and entrance ramps would be realigned and the partial cloverleaf loops would be removed.

Key Highlights

- Smaller footprint
- Increases interchange efficiency
- Tight loops eliminated

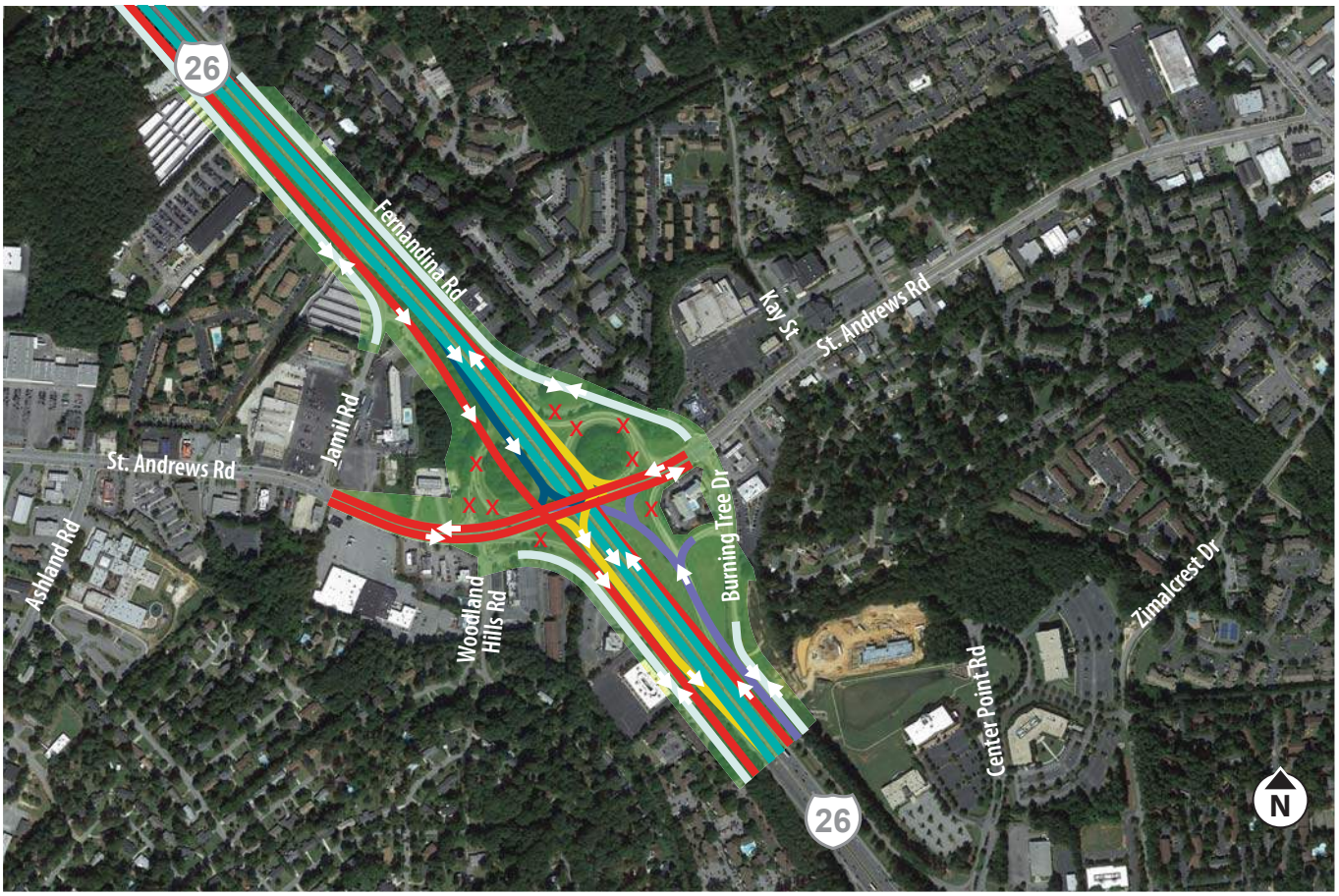
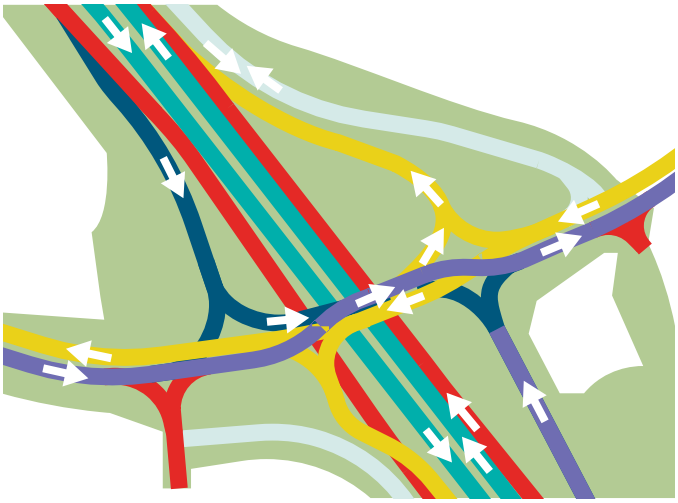


Figure 16: I-26 at St. Andrews, SPUI

I-26 AT ST. ANDREWS ROAD

AO14 Modified DDI

This alternative proposes to revise the current partial cloverleaf interchange to an offset DDI, which would shift the St. Andrews Road alignment to the west of its current location. The entrance/exit ramps would be realigned, shifting them closer to I-26 to reduce the interchange configuration area and to eliminate the loop ramps in two adjacent quadrants. Fernandina Road would be realigned and the existing roadway curves would be flattened. Due to the close proximity of one signalized intersection of the DDI, the Woodland Hills intersection would also be a two-phased traffic signal. To accomplish this, the traffic entering St Andrews Road from Woodland Hills Road would only be allowed to turn right.



Key Highlights

- Entrance/exit ramps closer to I-26
- Smaller footprint
- Improved safety
- Tight loops eliminated

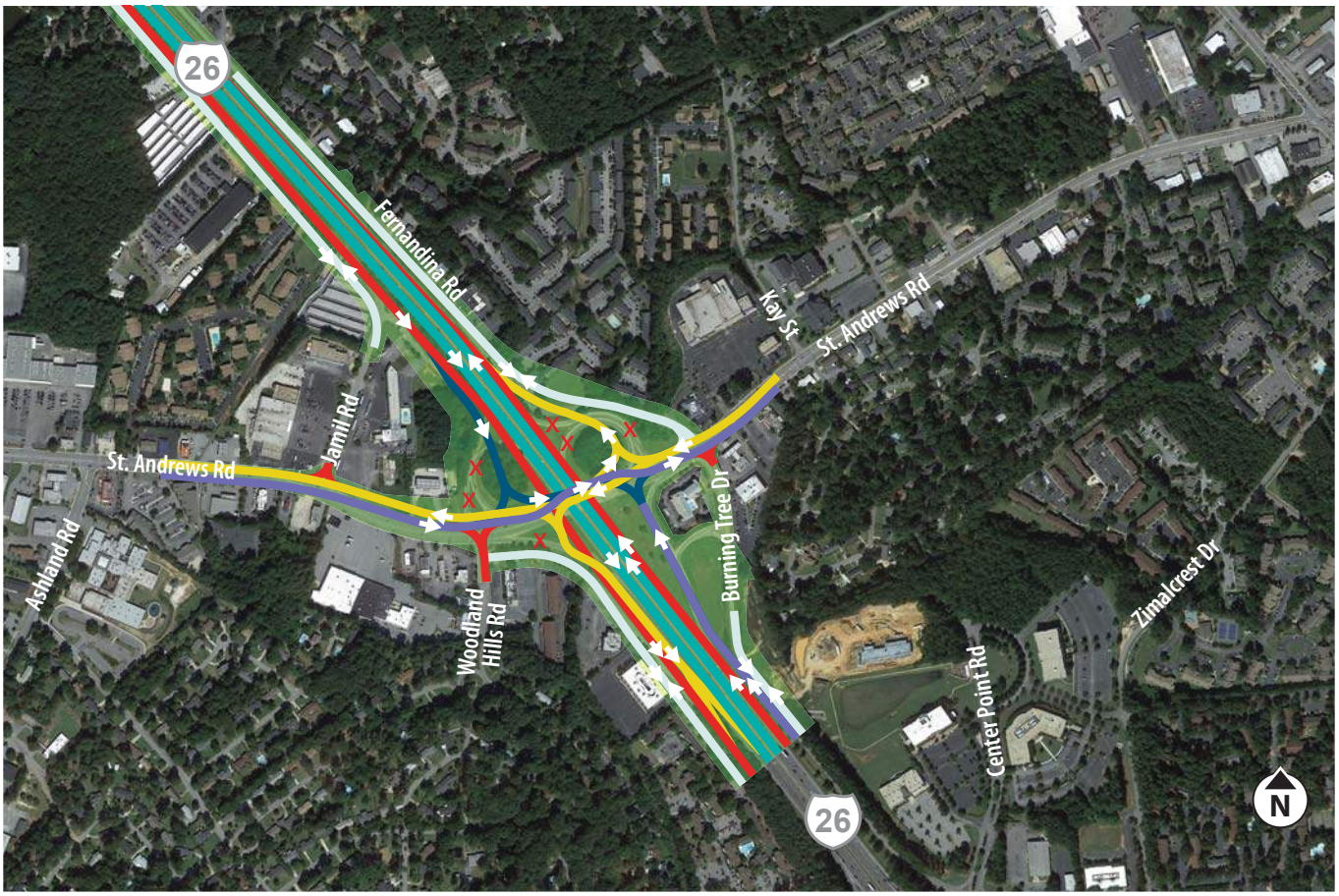
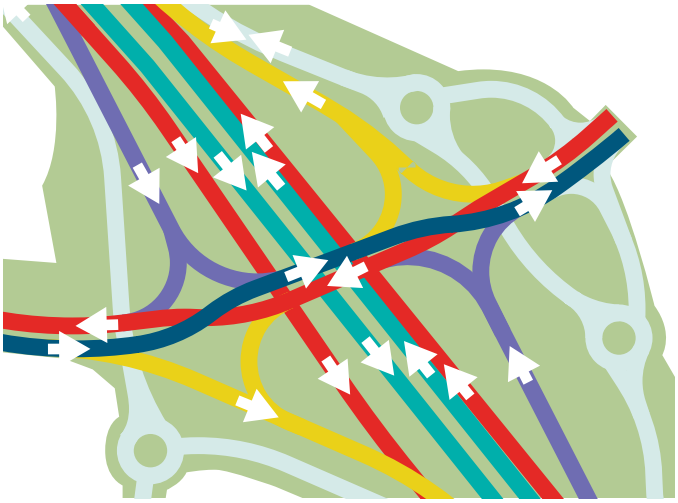


Figure 17: I-26 at St. Andrews, Modified DDI

I-26 AT ST. ANDREWS ROAD

AO15 DDI Frontage Connect

This alternative focuses on eliminating left turn movements from St. Andrews Road to I-26 and to the frontage roads of Burning Tree Drive, Fernandina Road, Woodland Hills Road and Berryhill Drive. Along Burning Tree Drive, a roundabout would be constructed just before St. Andrews Road. To split the traffic into two directions; one would tie to St. Andrews Road (at-grade) and the other would go over St. Andrews Road. Once traffic crosses over St. Andrews Road onto Fernandina Road, another roundabout would be utilized. On the west side of the interchange, two options would be considered. One option would be to extend Berryhill Drive and create a multi-legged intersection where Jamil Road currently intersects St. Andrews Road. The other option would be to grade separate Woodland Hills Road over St. Andrews Road and connect it to Jamil Road. Roundabouts would be options to connect the frontage roads to one another instead of signalized intersections.



Key Highlights

- Eliminates left turn movements
- Improves safety
- Tight loops eliminated

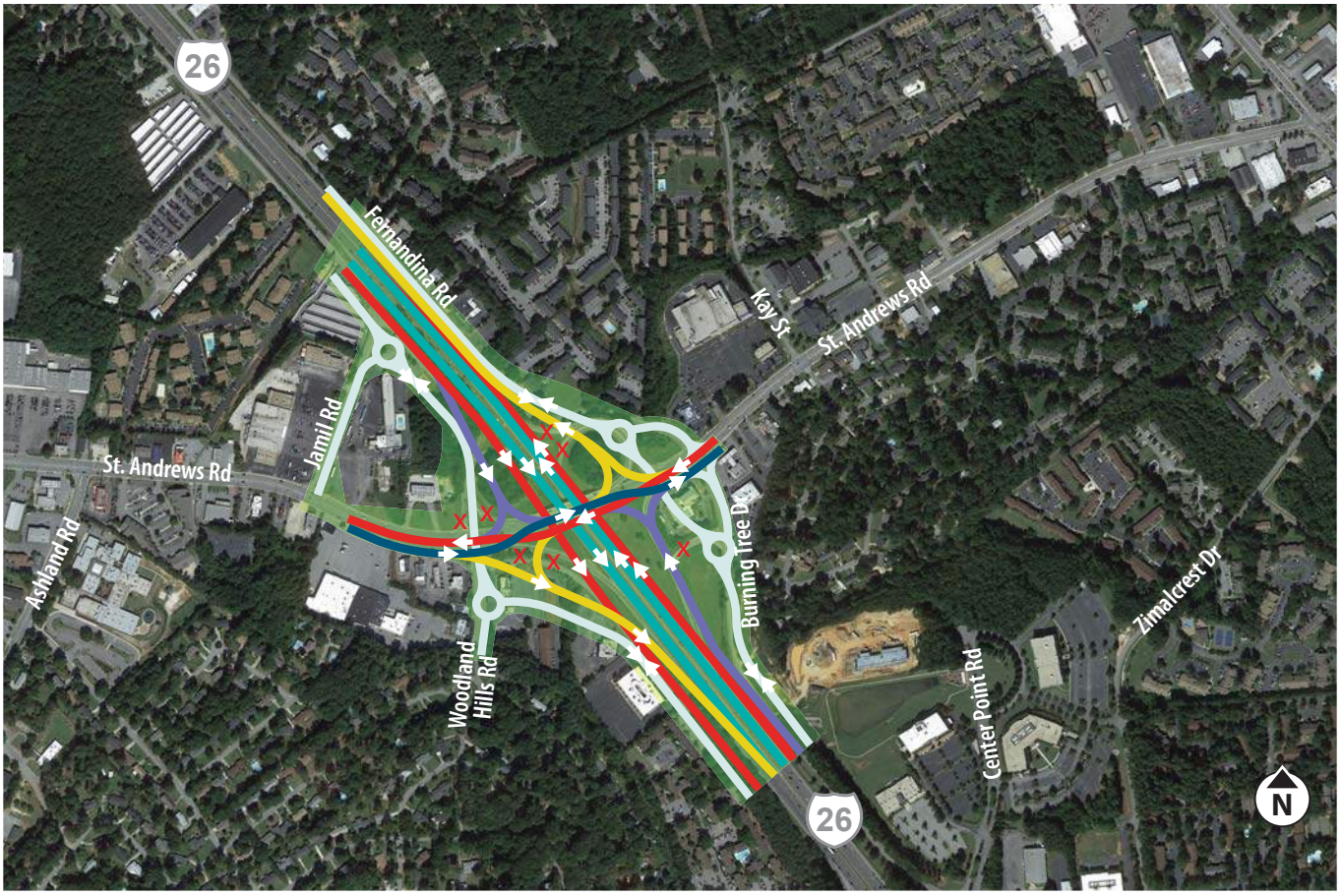


Figure 18: I-26 at St. Andres, DDI Frontage Connect

I-26 AT ST. ANDREWS ROAD

AO16 Ramp Roundabouts

This alternative would combine a network of ramps, collector-distributor (CD) roads, and roundabouts to improve the interchange and frontage roads circulation. St. Andrews Road over existing I-26 would be widened to allow for a U-turn lane along the St. Andrews Road bridge over existing I-26, which would be used to eliminate left turn movements from the frontage roads of Woodland Hills Road, Burning Tree Drive and Fernandina Road to St. Andrews Road.

Instead of signalized intersections, roundabouts would be added on Fernandina Road, Burning Tree Drive, and Jamil Road to access the proposed ramps as well as the frontage roads. A three-legged intersection would be provided for the exit ramp from I-26 eastbound and the entrance ramp to I-26 eastbound. The purpose of this design would be to reduce the traffic signal cycle time and the traffic signal phasing at the intersection.

Key Highlights

- Improves interchange and frontage roads circulation
- Eliminates left turn movements
- Reduces traffic signal cycle time

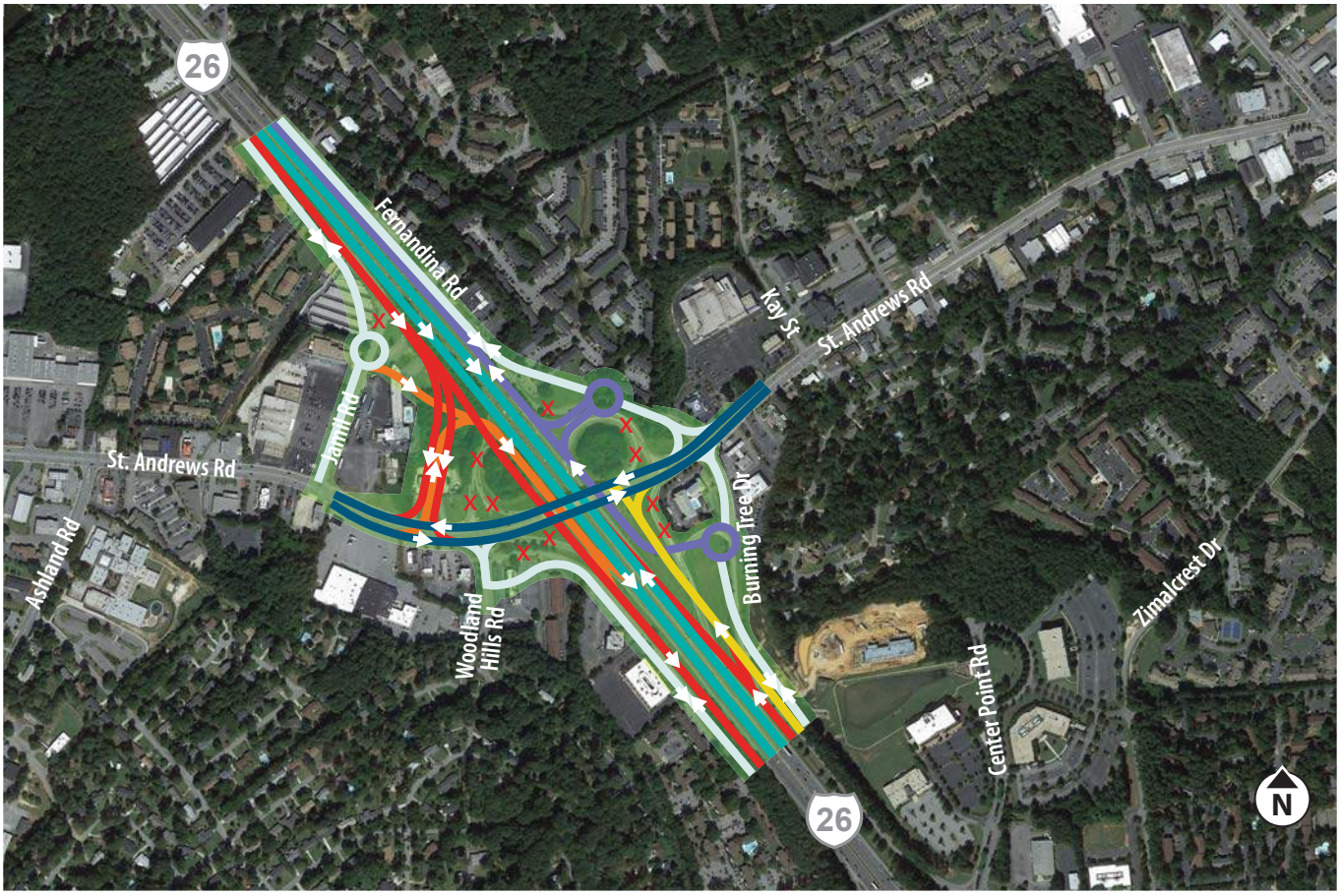


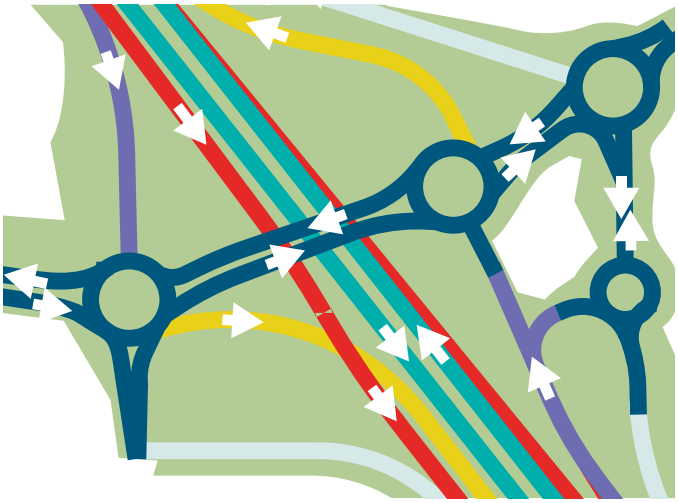
Figure 19: I-26 at St. Andrews, Ramp Roundabouts

I-26 AT ST. ANDREWS ROAD

AO48 Roundabout Interchange

The existing St Andrews Road interchange would be converted into a conventional diamond interchange with two multilane roundabouts at the ramp terminals (roundabout interchange). Multilane roundabouts would also be constructed at the St. Andrews Road/Jamil Road intersection as well as the St. Andrews Road/Fernandina Road/Burning Tree Drive intersection. A single lane roundabout would be constructed at the westbound exit ramp spur at Burning Tree Drive.

Additional ROW would likely be required in the vicinity of the roundabouts.



Key Highlights

- Continuous traffic flow
- Maintains access points

Figure 20: I-26 at St. Andrews, Roundabouts

I-26 AT I-20

Existing Do Nothing Alternative

The existing I-26/I-20 interchange is a full cloverleaf interchange where all the left turn movements are made via loop ramps (one per quadrant of the interchange). At this location, I-26 encompasses four lanes in each direction, and I-20 encompasses three lanes in each direction, with single lane entrance/exit ramps within the full cloverleaf interchange. Traffic congestion and merging and/or weaving conflicts occur on both interstates at this interchange location during the morning and afternoon peak periods. The following alternatives have been evaluated to address this traffic congestion.

Key Highlights

- Traffic congestion
- Merging and/or weaving conflicts

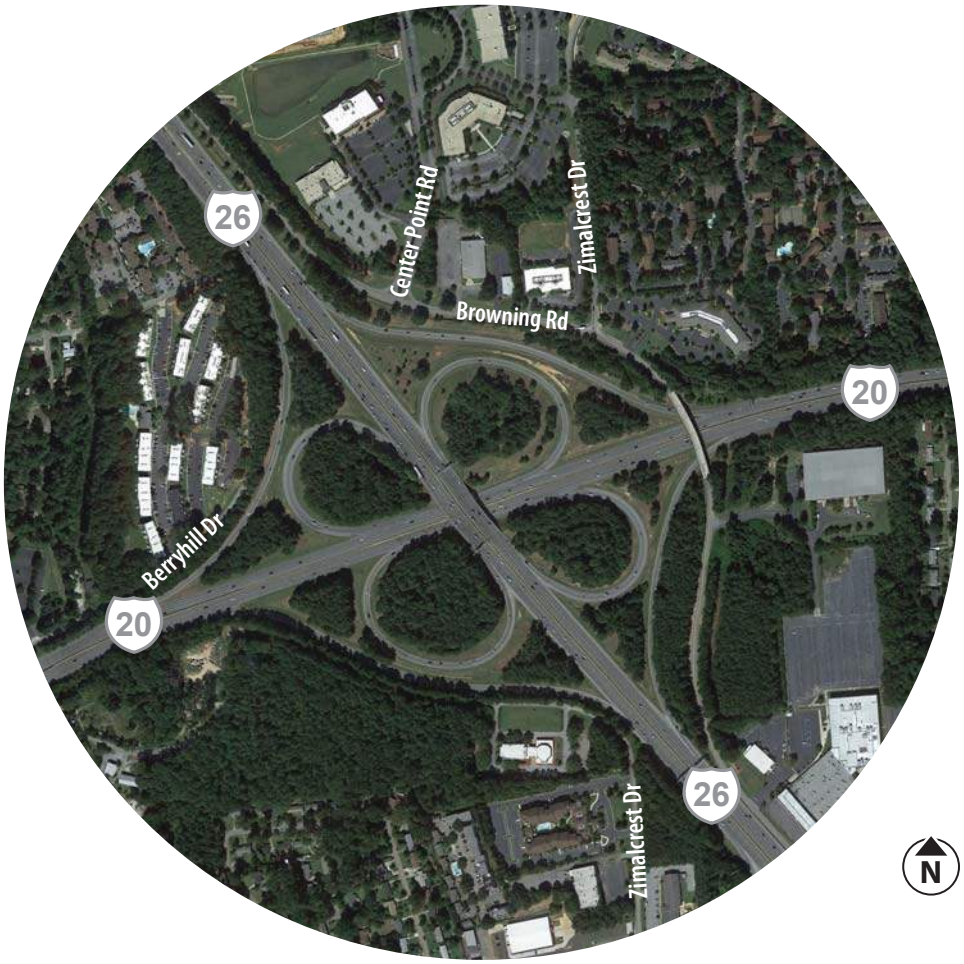


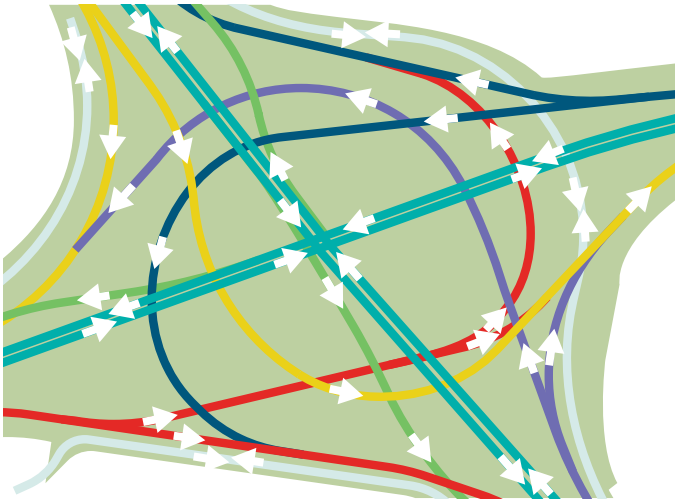
Figure 21: I-26 at I-20, Existing Condition

I-26 AT I-20

AO17 Turbine Interchange

The turbine interchange alternative would provide semi-directional traffic movements for all freeway-to-freeway movements at the I-26/I-20 interchange. A single lane exit ramp and single lane entrance ramp for each direction on I-26 and I-20 would be provided, simplifying the existing traffic conflict points.

Due to the larger interchange configuration area of a turbine interchange, many of the frontage roads would need to be relocated. Browning Road would shift farther east, and a new longer bridge over existing I-20 would be constructed to the east of the existing bridge. Berryhill Drive would be relocated on new alignment to the west, between the existing apartment complex to Executive Center Drive. The Rockland Road/Frontage Road/Zimalcrest Drive would also be relocated.



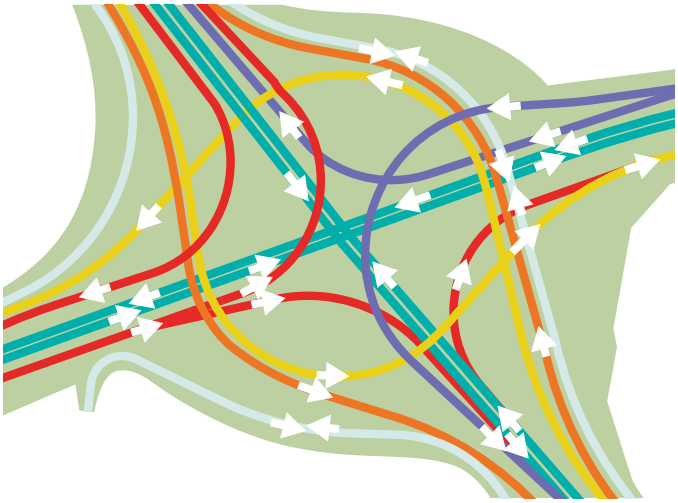
Key Highlights

- Less conflict points
- No loops

Figure 22: I-26 at I-20, Turbine

I-26 AT I-20

AO18 Directional with Interior Rights



In the existing full cloverleaf interchange, all the right turning ramp movements are on the outside of the loop ramp (one loop ramp per interchange quadrant). This alternative proposes to relocate those right turn ramp movements to the inside of the loop ramps. All freeway to freeway movements would be provided directly from either the I-26 or I-20 mainlines. Collector-distributor (CD) lanes would be provided along I-26 for the adjacent interchanges (Bush River Road and St. Andrews Road) only.

Key Highlights

- Right turn ramp movements relocated
- Freeway to freeway movements are direct
- Collector-distributor (CD) lanes provided
- Smaller footprint

Along I-26 eastbound near Fairway Lane would be the proposed exit for the I-26 eastbound to I-20 eastbound movement. This would be a semi-directional movement that would go over (flyover) the I-20 mainline and go eastward under the I-26 mainline before eventually merging with the I-26 westbound to I-20 eastbound interior right ramp. The combined ramp would merge onto I-20 near Morninghill Drive. The subsequent exit on I-26 eastbound would be the interior right ramp to I-20 westbound. This exit would be approximately 600 feet west of the I-26 mainline over I-20 bridges. The interior right ramp would run parallel to I-20, merging first with the I-26 westbound to I-20 westbound directional flyover and then with the I-20 westbound mainline. On the east side of the I-20 mainline would be two entrance ramps to I-26 eastbound; the first from the interior right from I-20 eastbound and the second from the directional flyover from I-20 westbound. An I-26 east collector-distributor road system would run between the local frontage roads (Berryhill Drive and Frontage Road/Zimalcrest Drive) and the I-26 eastbound to I-20 eastbound semi-directional ramp.

The I-26 westbound to I-20 westbound semi-directional ramp would exit I-26 at the existing ITT Technical Institute complex, and go over I-20 and under I-26 before merging with the aforementioned I-26 eastbound to I-20 westbound interior right ramp. The next exit on I-26 westbound would be 750 feet east of the I-20 mainline and would be the interior right ramp for I-20 eastbound. This interior right ramp would merge with the semi-directional I-26 eastbound to I-20 eastbound ramp. Just west of I-20 would be the entrance interior right ramp from I-20 westbound, followed by the entrance ramp from the semi-directional flyover from I-20 eastbound. As with the I-26 east direction, a collector-distributor lane system with service interchange access would be located between the Browning Road/Burning Tree Road frontage system and the I-26 westbound to I-20 westbound semi-directional ramp. On I-20 eastbound, the I-26 exit would occur near Executive Center Drive and run parallel to I-20 until passing over the I-26 eastbound collector-distributor road and I-26 eastbound to I-20 eastbound ramp. The ramp would then split, with I-26 eastbound traffic staying right on an interior ramp and I-26 westbound traffic staying left on a flyover on a third level over the I-26 over I-20 bridges. The flyover would go over the I-20 westbound to I-26 westbound ramp, then over I-26

I-26 AT I-20

AO18 Directional with Interior Rights

westbound to I-20 westbound semi-directional ramp, and would tie to the I-26 westbound mainline near Center Point Road. Near the I-20 eastbound to I-26 exit ramp would be a braided entrance ramp from Bush River Road. Between I-26 and Broad River Road would be another set of braided Broad River Road bound exit ramp and entrance ramp from I-26.

In the same location as the aforementioned Broad River Road/I-26 braided ramps would be the same type of braided ramps for the I-20 westbound direction; with the I-26 traffic exiting from I-20 first and braiding with the Broad River Road entrance ramp before that entrance ramp would merge with I-20 westbound. The I-26 exit ramp would split prior to the existing the Browning Road overpass. The right split would be for the I-26 eastbound traffic, as this ramp would flyover all ramps, with the I-20 and I-26 mainlines eventually tying to I-26 eastbound near the existing SC Education Association property. The left split would continue parallel to I-20 and would become the interior right ramp that would tie to the I-26 west mainline just west of the I-26 over I-20 bridges. On I-20 westbound, in the vicinity of the existing I-26 eastbound entrance ramp, would be the exit ramp for Bush River Road. This exit ramp would braid with the previously-described I-26 to I-20 westbound entrance ramp.

Under this alternative, all frontage roads on both sides of I-26 would need to be relocated due to the wider interchange configuration of the I-26 corridor.

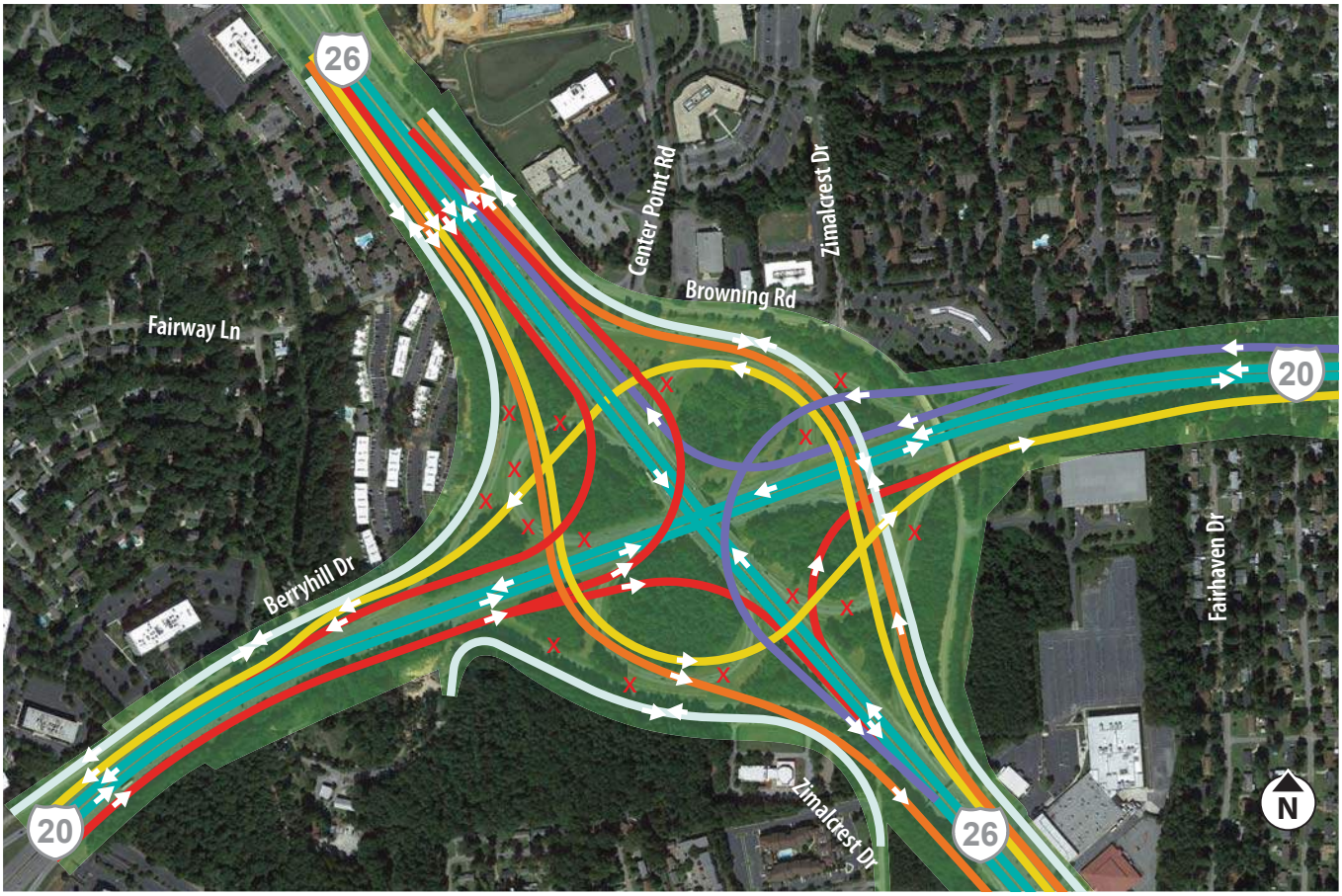
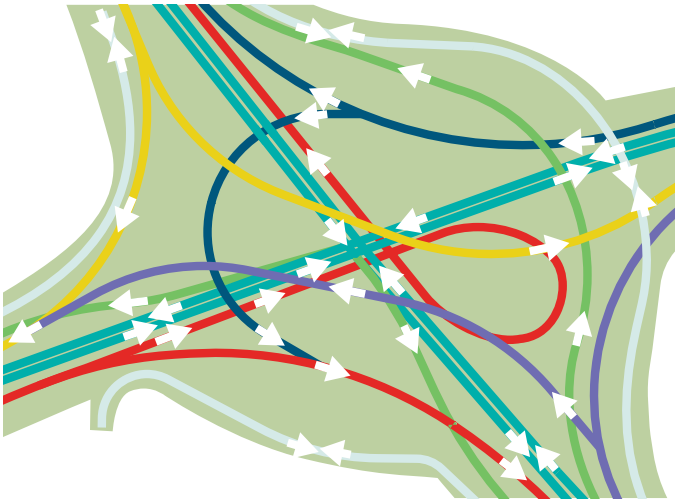


Figure 23: I-26 at I-20, Directional Interior Rights

I-26 AT I-20

AO19 Directional with loop and ramp

This alternative proposes to provide all access between the I-20 and I-26 freeways on collector-distributor roads. This interchange layout would provide a consistent layout along the I-26 corridor. For I-20 eastbound and westbound, the collector-distributor ramp would split the I-26 directional split. The collector-distributor ramps would offer a more consistent radius through the ramp as compared to the existing "S" style ramp. The eastbound left split would continue to be parallel to the I-20 mainline, crossing under the I-26 mainline and then looping to I-26 near the existing loop locations. This loop would stay parallel to the I-26 mainline before merging with the right split ramp from the I-20 westbound direction. For I-20 westbound, the left split would cross under the I-26 mainline, then over the I-20 mainline, then merge from the left into the I-20 eastbound to I-26 eastbound ramp. Once merged, the new collector-distributor ramp would parallel I-26 eastbound.



Key Highlights

- Freeway access via collector-distributor roads
- Provides consistent layout along corridor
- Simplifies ramp layouts

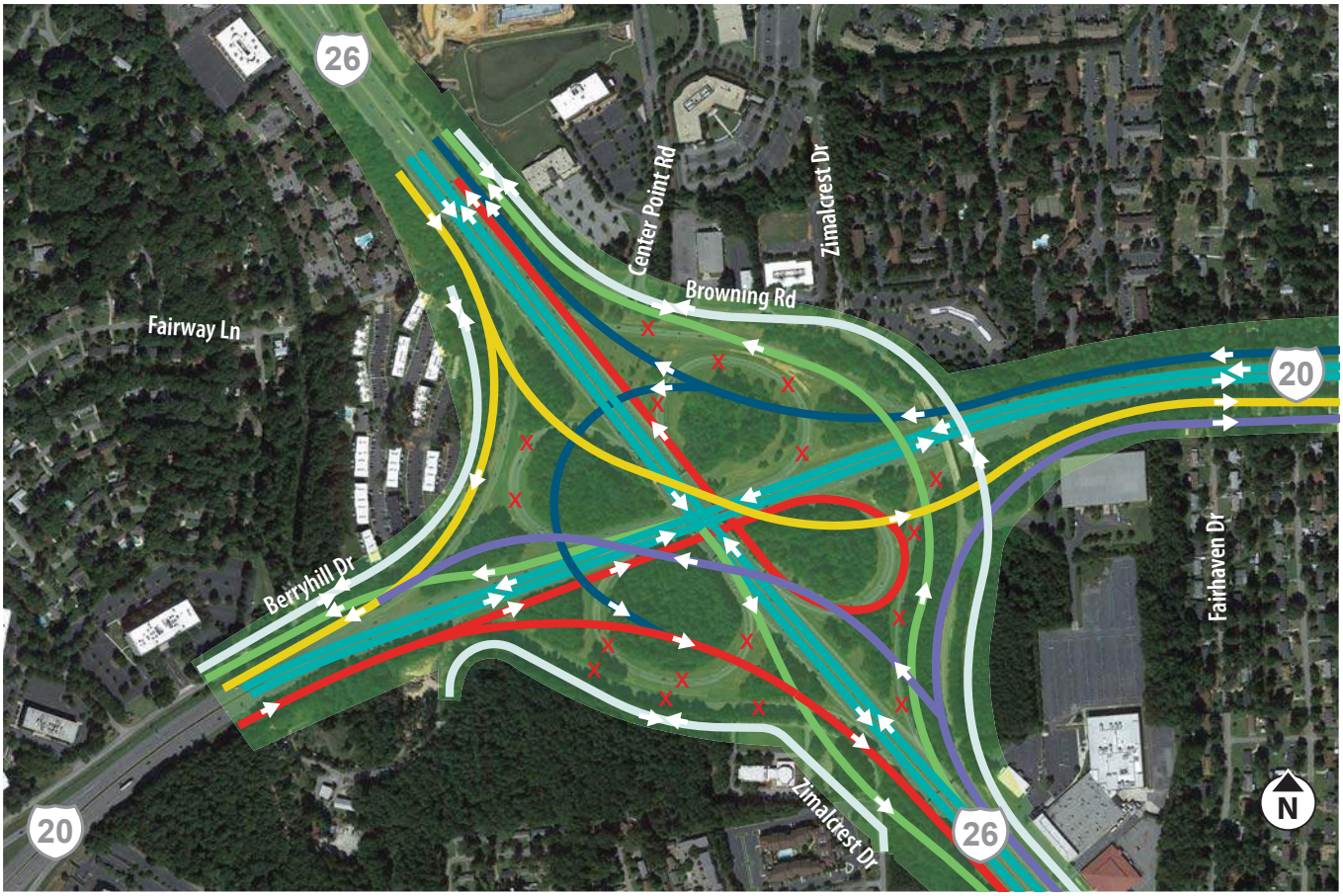


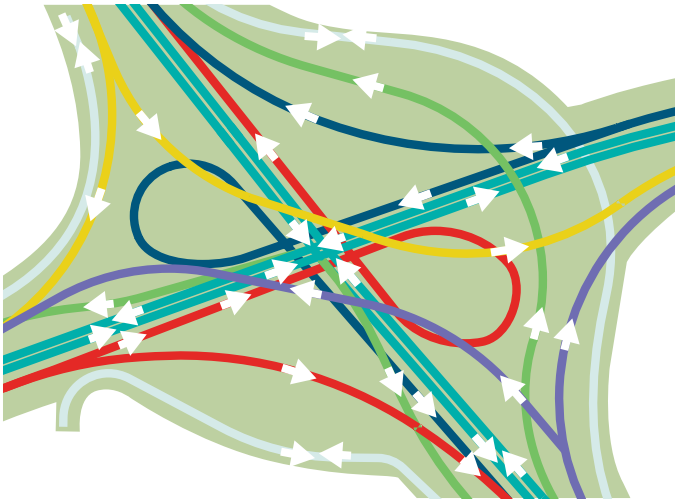
Figure 24: I-26 at I-20, Directional with Loop and Ramp

I-26 AT I-20

AO20 Directional with two loops

This alternative proposes to provide full access between the I-20 and I-26 freeways on collector-distributor roads. This interchange configuration would provide a consistent layout along each freeway. For I-26, the collector-distributor lanes would split the I-20 directional split with the left split being a semi-directional flyover ramp that pass over the I-26 over I-20 bridges.

For I-20, each collector-distributor ramp would also split the I-26 directional split. The right split ramp would offer a more consistent radius through the ramp as compared to the existing "S" style ramps. The left split would continue to be parallel to the I-20 mainline, crossing under the I-26 mainline and then looping to I-26 near the existing loop locations. These loops would stay parallel to the I-26 mainline before merging with the right split ramp from the opposite I-20 direction.



Key Highlights

- Full access between the I-20 and I-26 freeways
- Provides consistent layout along corridor
- Simplifies ramp layouts
- Collector-distributor lanes provided

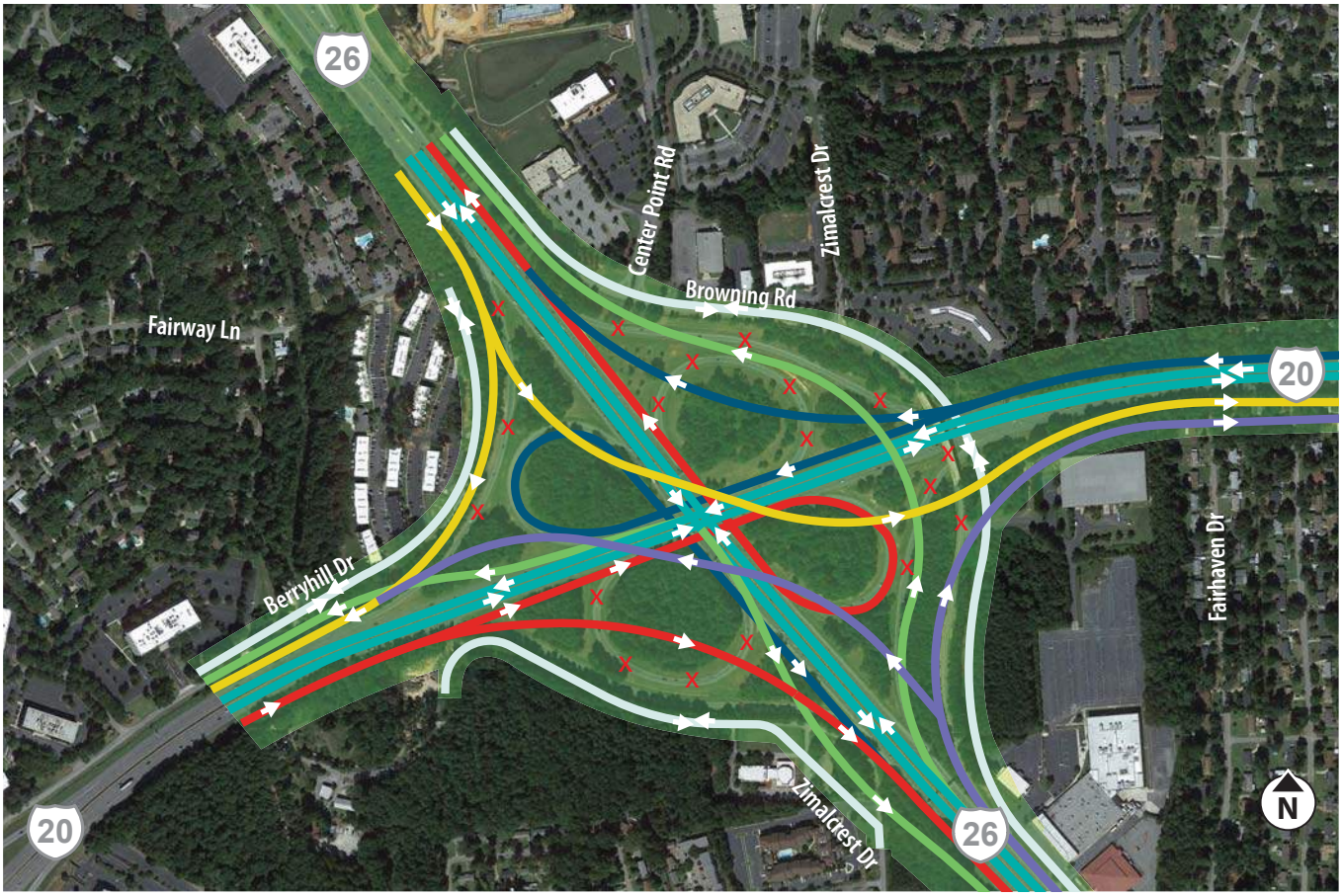
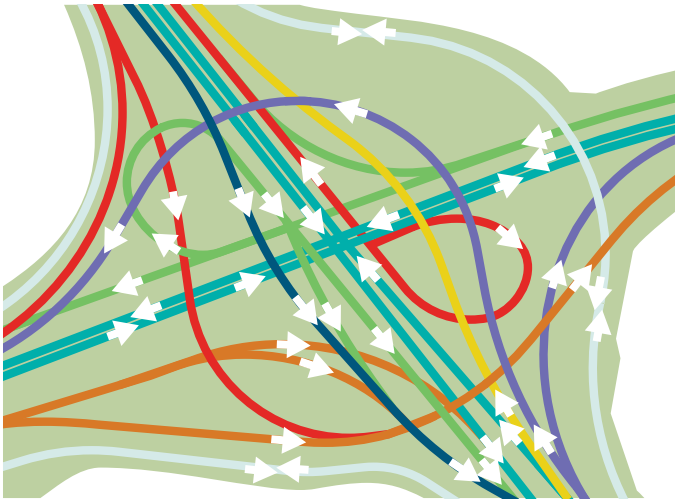


Figure 25: I-26 at I-20, Directional 2 Loops

I-26 AT I-20

AO21 Braided Directional with two loops

This alternative is simliar to AO20 except that in this alternative, the focus of design improvements looks solely on the I-26 corridor. Collector-distributor lanes are added in each direction on I-26 from north of St Andrews Rd to south of I-126.



Key Highlights

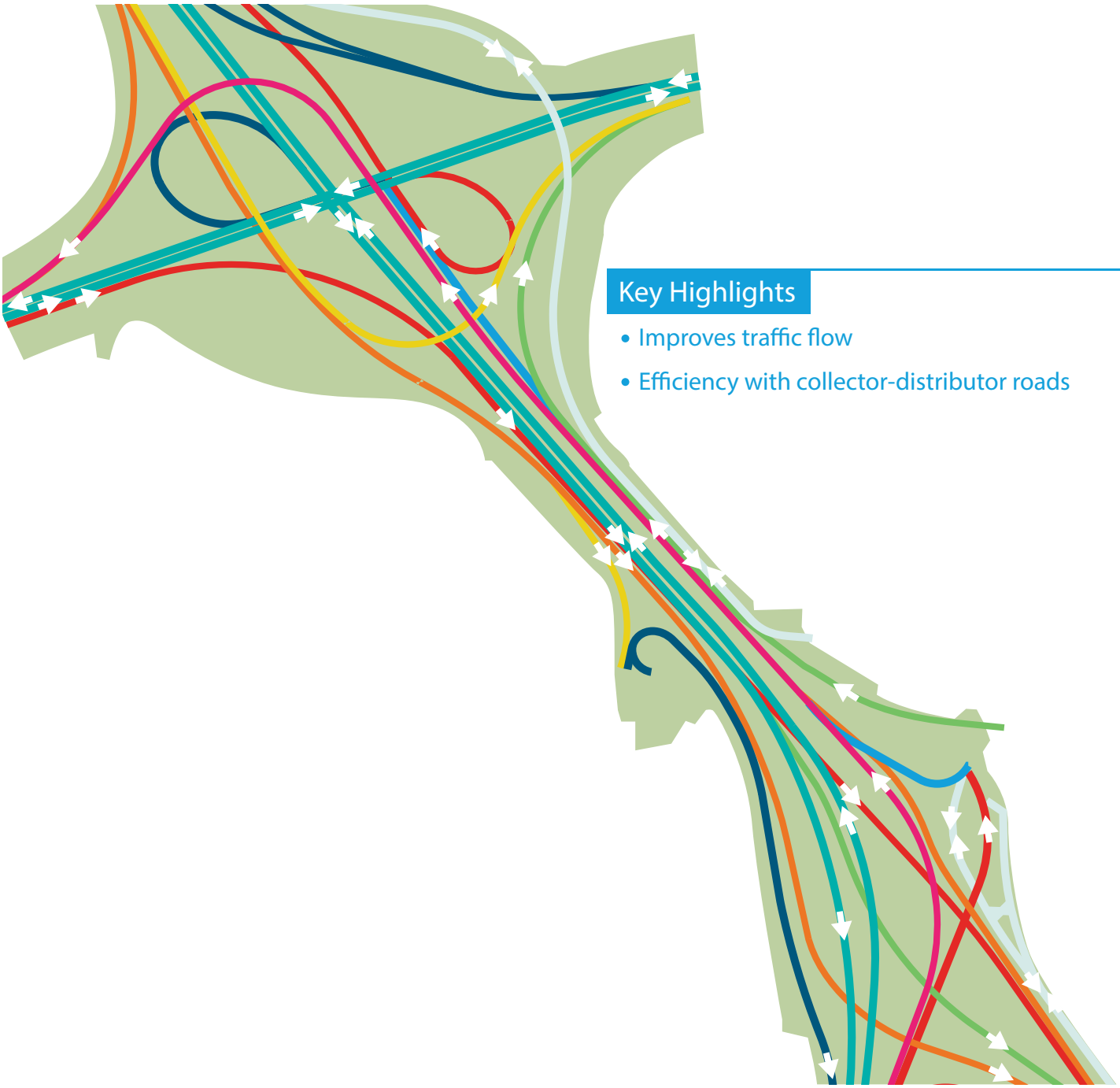
- Design improvements solely on I-26 corridor
- Collector-distributor lanes added

Figure 26: I-26 at I-20, Braided directional, 2 loops

I-26 AT I-20

AO22 Semidirectional Interchange with two loops

The I-26 / I-20 Semi-directional with two loops would provide semi-directional ramps for the heaviest volume movements in the system to system interchange. Due to the proximity of adjacent interchanges in each direction on I-20 and I-26, all mainline legs that approach the system interchange have collector-distributor roads.



Key Highlights

- Improves traffic flow
- Efficiency with collector-distributor roads

I-26 AT I-20

AO22 Semidirectional Interchange with two loops

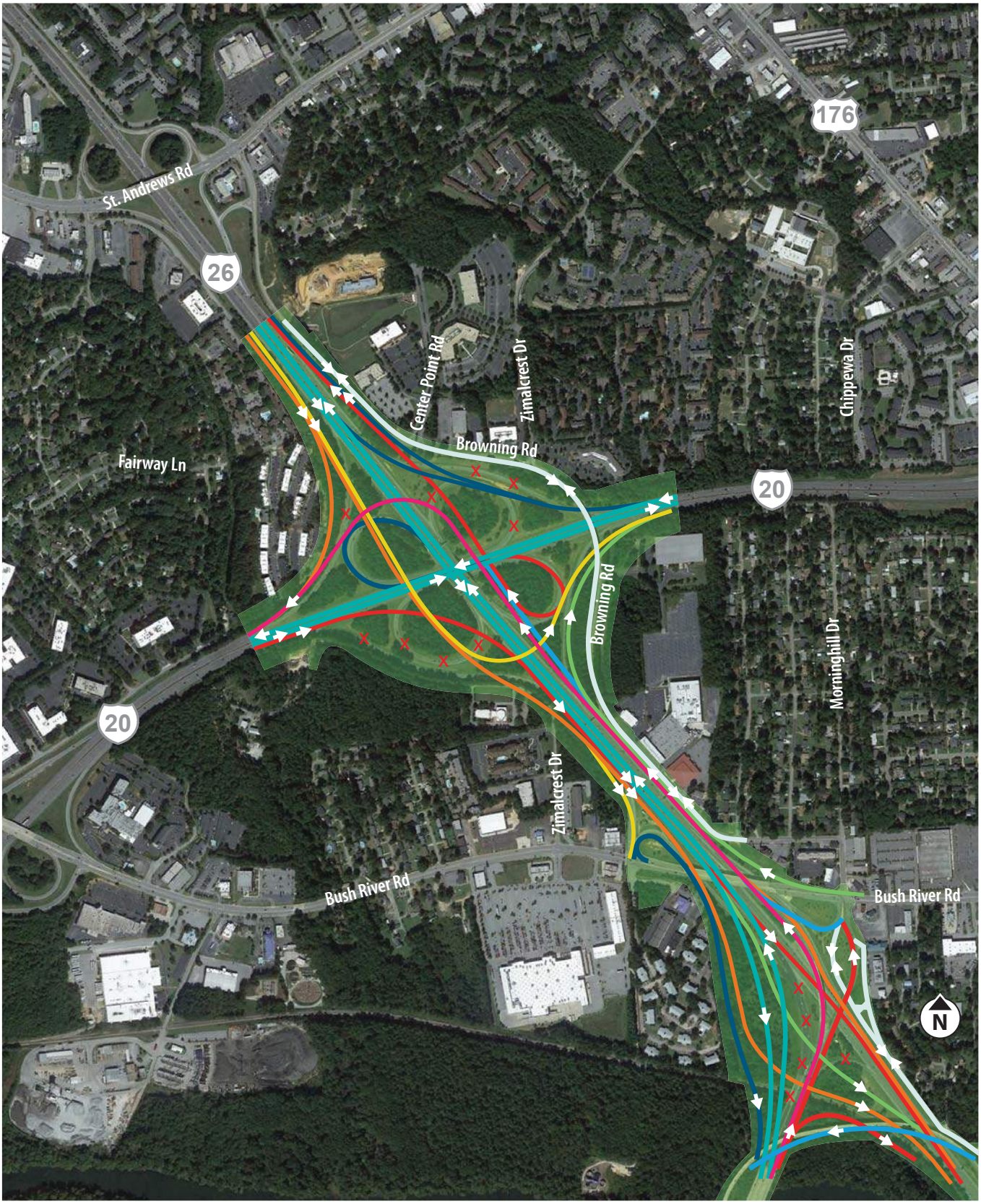


Figure 27: I-26 at I-20, Semi Directional 2 Loops

I-26 AT BUSH RIVER ROAD

Existing Do Nothing Alternative

The existing interchange of I-26 and Bush River Road is classified as a partial cloverleaf. I-26 eastbound is a four-lane section at this location, with the outermost lane accommodating both the traffic entering eastbound I-26 from I-20 and the traffic existing eastbound I-26 to Bush River Road. I-26 westbound traffic access the Bush River Road interchange near to where I-126 merges with I-26. Traffic congestion and weaving conflicts currently exist along the I-26 mainline, the I-20 mainline, and the I-126 mainline at this interchange location. The following alternatives have been evaluated to address these issues.

Key Highlights

- Conflict points
- Geometric defeciencies

Figure 28: I-26 at Bush River, Existing Condition

I-26 AT BUSH RIVER ROAD

AO23 Offset Diamond Interchange

This alternative proposes to replace the existing partial cloverleaf at I-26 and Bush River Road with an offset diamond interchange configuration.

On I-26, the mainline travel lanes would be reconstructed to be the through movement (on the left) through the Bush River Road and I-126 interchanges. CD lanes are anticipated on the I-26 corridor from the I-20 interchange. Heading west on I-26, there would be an exit to I-126 eastbound and an exit to Bush River Road that bridges over the I-126 travel lanes. The I-126 westbound lanes would have an exit to CD lanes. The I-26 East exit would be relocated further west. This exit would tie to the eastbound entrance ramp from Bush River Road on the left. The I-126 west mainline would merge with the I-26 westbound mainline just south of the new Bush River Road bridge.

Key Highlights

- Reduces conflict points
- Improves operations

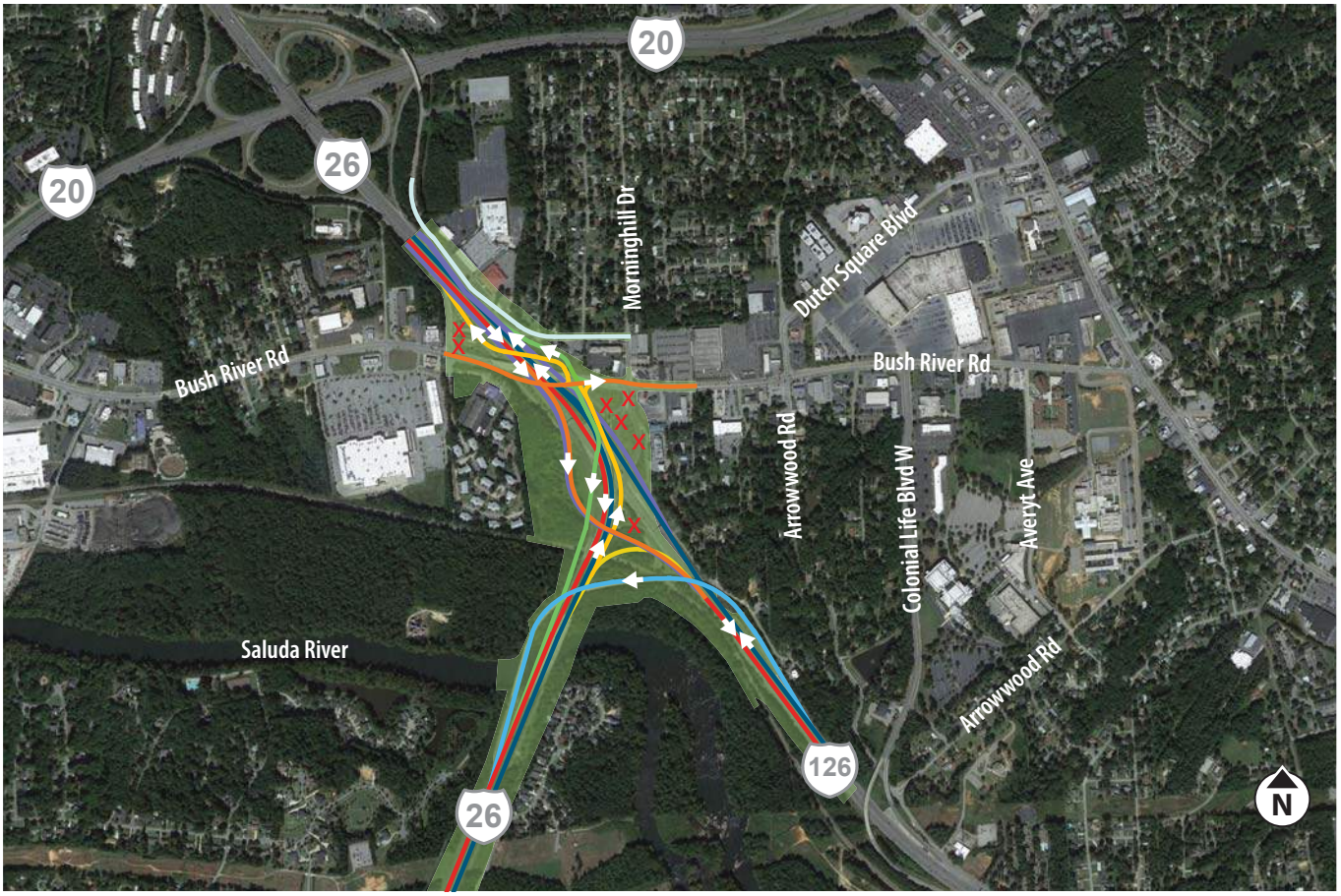


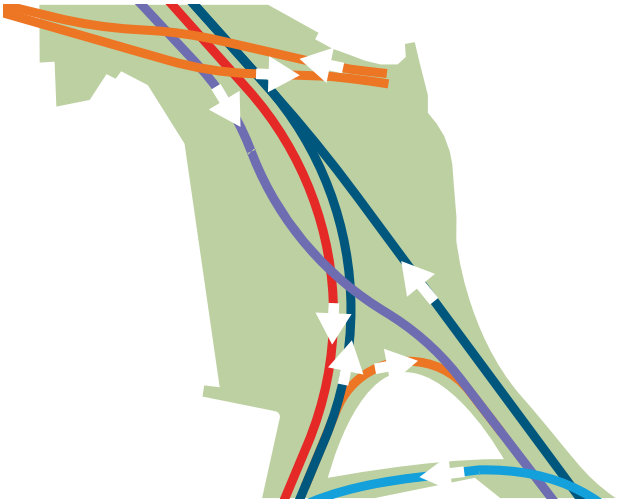
Figure 29: I-26 at Bush River, Offset Diamond

I-26 AT BUSH RIVER ROAD

AO24 Semi Directional Flyover

In this alternative, access to Bush River Road would be eliminated and a new semi-directional flyover would be provided from I-126 westbound to I-26 eastbound.

Bush River Road bridges would be reconstructed as two separate bridges off existing alignment, one for each direction of travel. Access to I-26 would be provided via the I-20/Bush River Road interchange to the I-20/I-26 interchange. I-26 mainline lanes would be reconstructed to be the through movement (on the left). From I-26 westbound, the exit to I-126 eastbound would be nearly identical to the existing condition. The exit ramp from I-126 westbound to I-26 east would exit near the location of the I-26 westbound to I-126 eastbound ramp merge. The exit ramp would tie in with the I-26 eastbound lanes prior to the Saluda River.



Key Highlights

- Minimizes traffic disruption
- Through movements provided on I-26

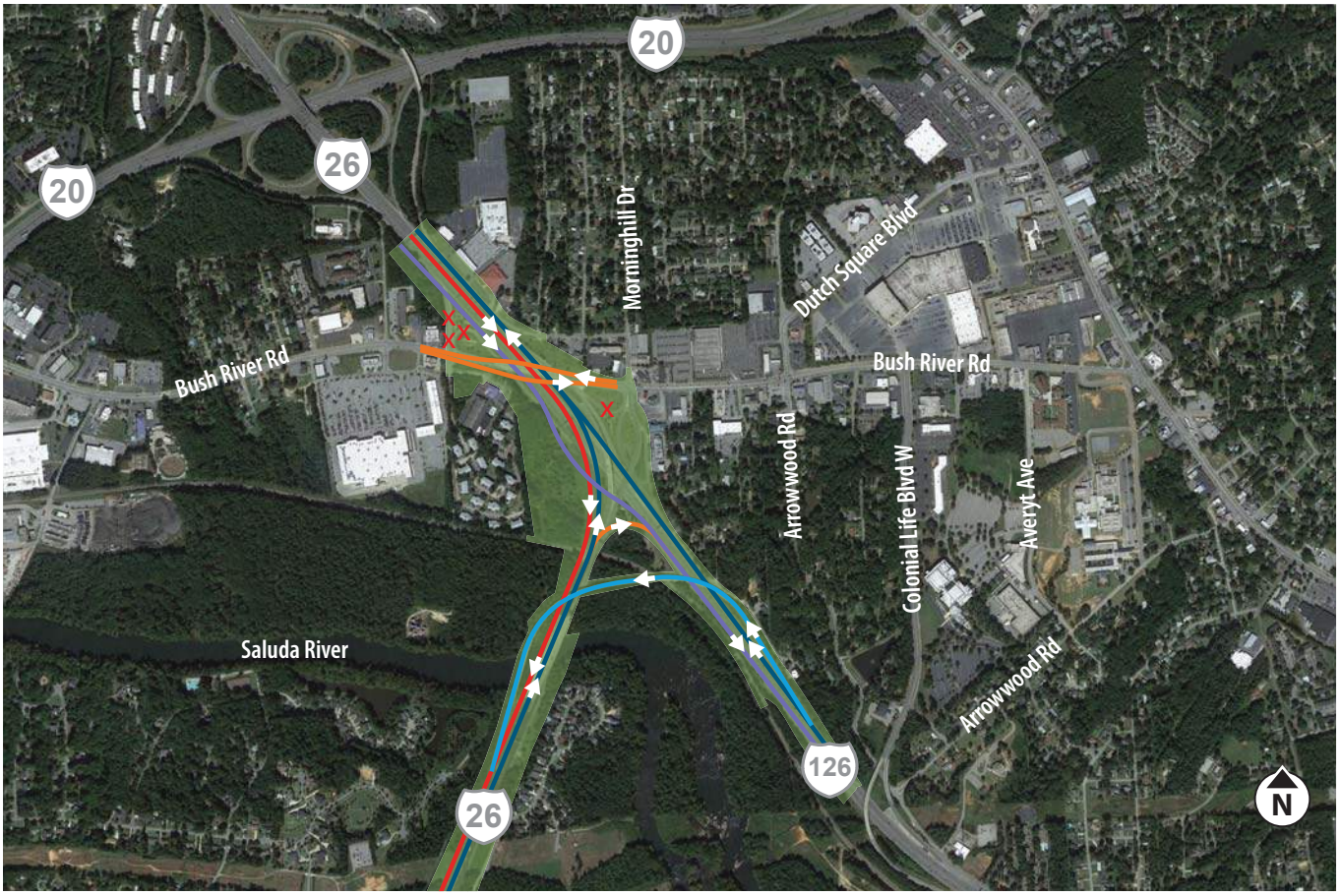
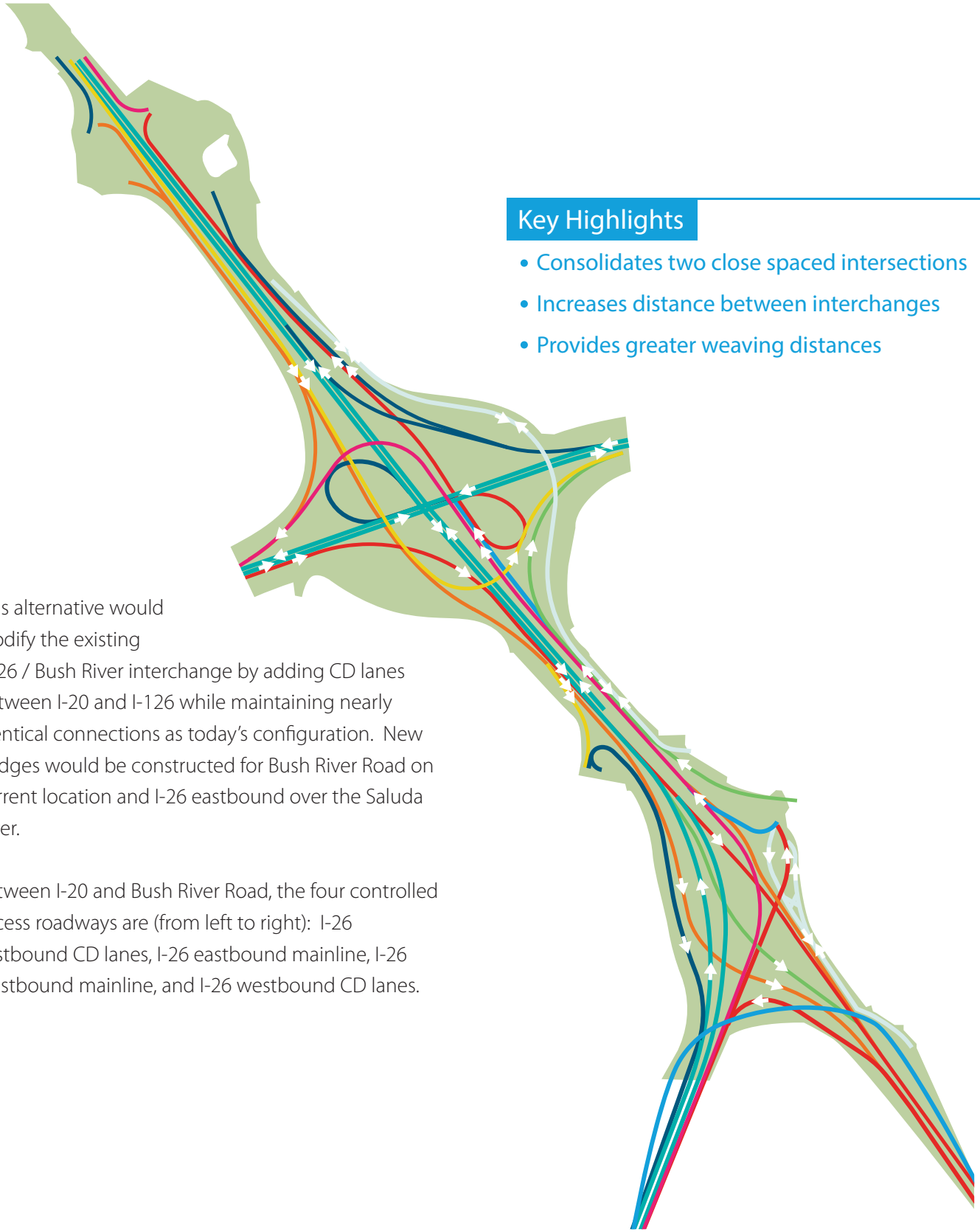


Figure 30: I-26 at Bush River, Semi Directional Flyover

I-26 AT BUSH RIVER ROAD

AO25 CD Connections



Key Highlights

- Consolidates two close spaced intersections
- Increases distance between interchanges
- Provides greater weaving distances

This alternative would modify the existing I-126 / Bush River interchange by adding CD lanes between I-20 and I-126 while maintaining nearly identical connections as today's configuration. New bridges would be constructed for Bush River Road on current location and I-26 eastbound over the Saluda River.

Between I-20 and Bush River Road, the four controlled access roadways are (from left to right): I-26 eastbound CD lanes, I-26 eastbound mainline, I-26 westbound mainline, and I-26 westbound CD lanes.

I-26 AT BUSH RIVER ROAD

AO25 CD Connections

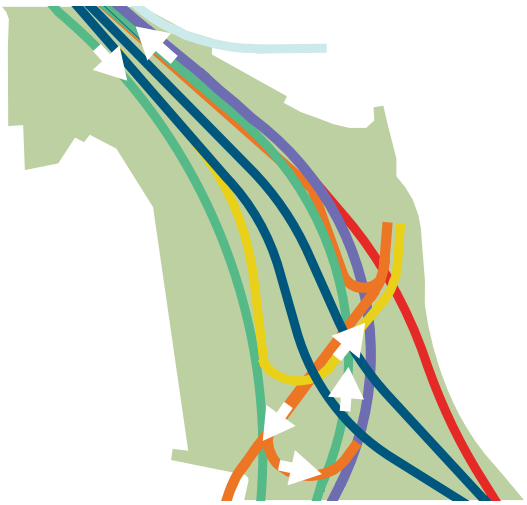
Figure 31: I-26 at Bush River, CD Connections

I-26 AT BUSH RIVER ROAD

AO26 Braided CD Interchange Modification

The Bush River Braided CD alternative would provide revised access to the Bush River Road interchange by eliminating the ramps on the westbound side of the interchange, and realigning the traffic to the Morningside Drive intersection or the revised Colonial Life Blvd interchange.

North of the Bush River Road interchange along the I-26 mainline, traffic would be divided into four controlled-access sections. From left to right is: I-26 eastbound to Charleston lanes; I-126 eastbound to Columbia lanes; I-26 westbound to Spartanburg lanes; and I-26 westbound CD lanes to I-20. All movements entering I-26 from Bush River Road would occur at the Bush River Road and Morninghill Drive intersection.



Key Highlights

- Promotes continuous flow of traffic
- No stopping at traffic signals
- Right in/right out intersections

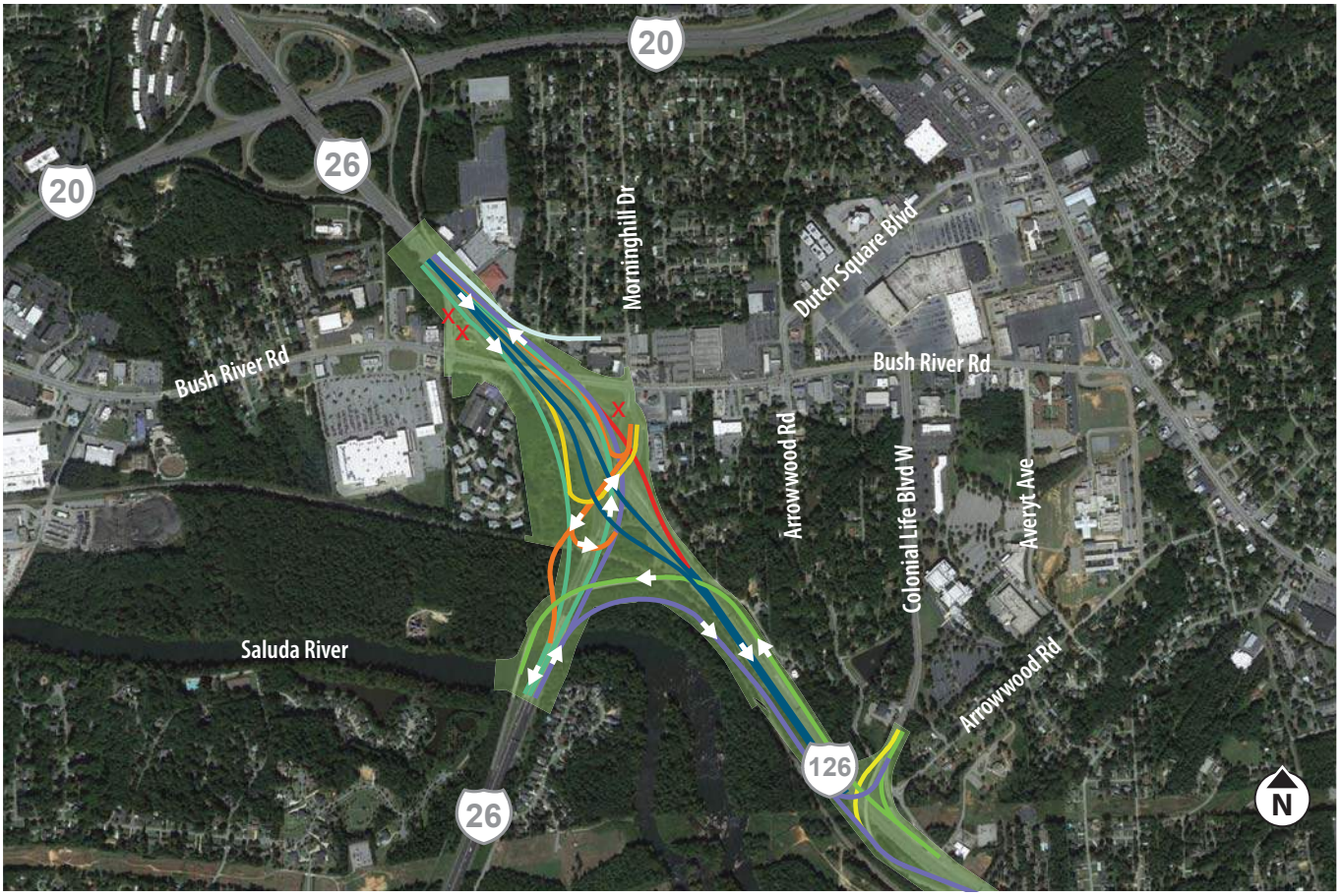
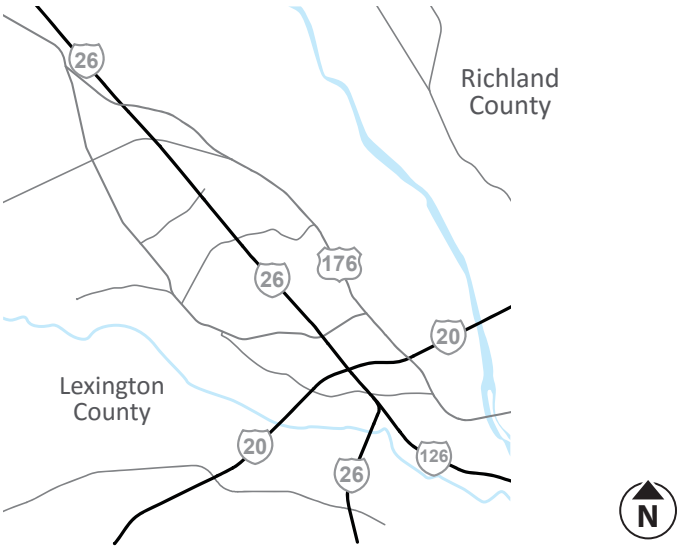


Figure 32: I-26 at Bush River, Braided CD Interchange Modification

I-126/I-20 CONNECTOR

Existing Do Nothing Alternative

There currently is no interchange between I-20 and I-126 as these two interstates do not intersect one another. Access to I-126 from I-20 is made via the I-20/I-26 interchange, and vice versa. The existing I-26/I-20 interchange is a full cloverleaf interchange as described previously. Traffic congestion and merging and/or weaving conflicts occur on both interstates at this interchange location during the morning and afternoon peak periods. The following alternatives have been evaluated to address this traffic congestion by proposing a direct connection between I-20 and I-126.



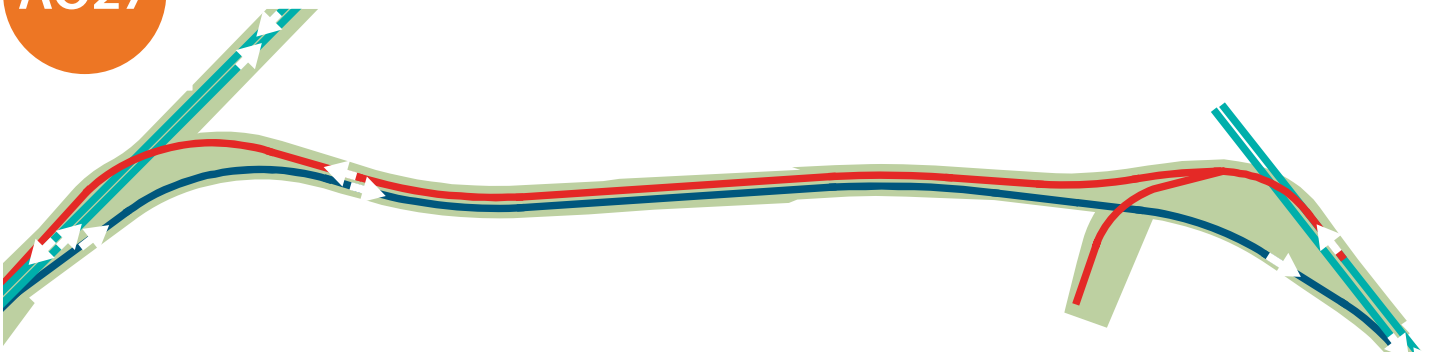
Key Highlights

- No direct connection between I-20 and I-126
- Congestion and merging/weaving conflicts at the I-20/I-26 interchange

Figure 33: I-126/I-20, Existing Condition

I-126/I-20 CONNECTOR

AO27 Direct Connector



This alternative proposes to directly connect I-126 with existing I-20 to and from the west only, thereby reducing the traffic volumes through the I-26/I-20 interchange. The alignment would connect with the existing I-126 westbound exit to I-26 eastbound ramp and continue parallel between the Saluda River and CSX Railroad track to existing I-20. New ramps would be constructed on existing I-20 to and from the west only between Bush River Road and Sunset Boulevard.

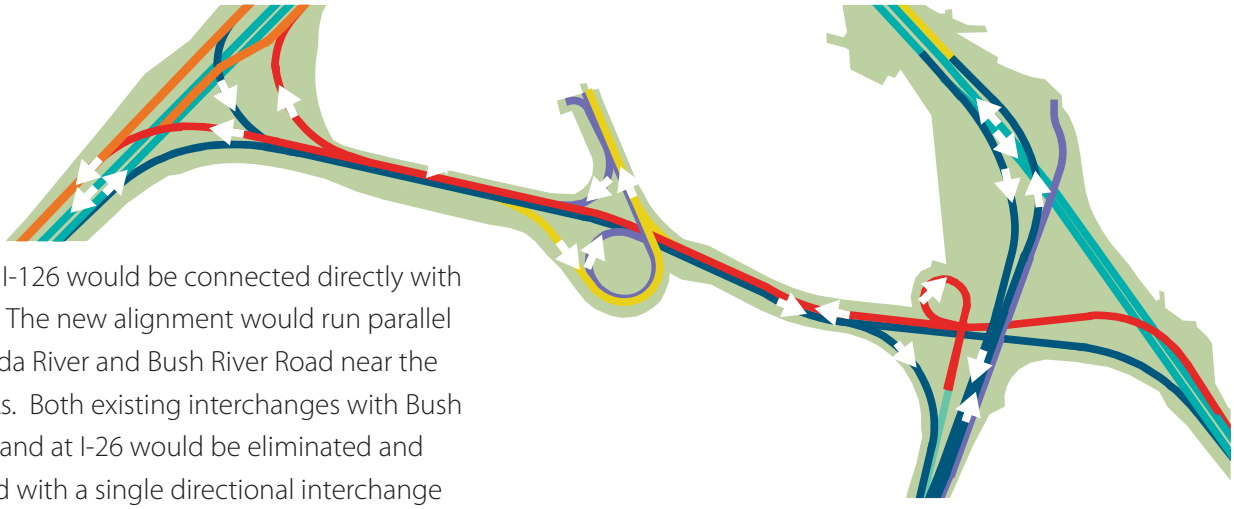
Key Highlights

- Directly connects I-126 with I-20
- Reduces traffic volumes

Figure 34: I-126 / I-20, Direct Connector

I-126/I-20 CONNECTOR

AO28 Connector with Bush River



In this alternative, I-126 would be connected directly with full access to I-20. The new alignment would run parallel between the Saluda River and Bush River Road near the CSX Railroad tracks. Both existing interchanges with Bush River Road at I-20 and at I-26 would be eliminated and would be replaced with a single directional interchange with the new connector (the I-26 east and I-126 traffic from I-20).

This connector would allow for simplified turning and weaving movements at the I-20/I-26 interchange as some traffic movements would be directed to use the new connector (the I-26 east and I-126 traffic from I-20).

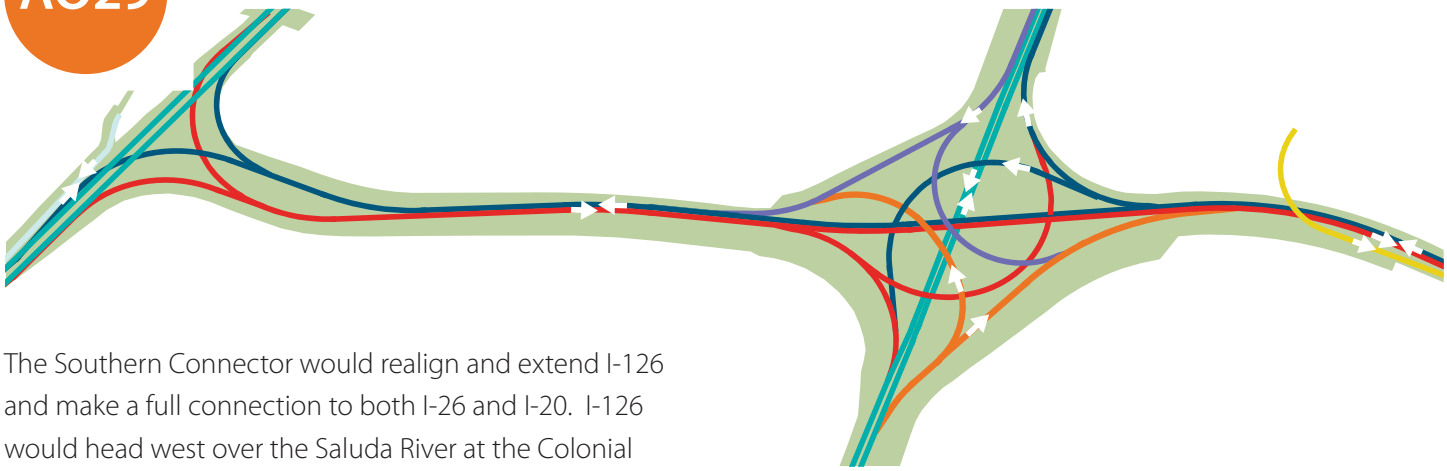
Key Highlights

- Directly connects I-126 with I-20
- Bush River Road interchanges eliminated
- Simplified turning and weaving movements

Figure 35: I-126 / I-20, Bush River

I-126/I-20 CONNECTOR

AO29 Directional Interchange



The Southern Connector would realign and extend I-126 and make a full connection to both I-26 and I-20. I-126 would head west over the Saluda River at the Colonial Life Boulevard interchange and run parallel to the transmission power lines south of the Saluda River. A new full service interchange could be constructed with I-26 between the existing I-126 and Sunset Boulevard interchanges. At I-20, a three-legged directional interchange could be constructed with future ability to extend the freeway further west if desired.

Key Highlights

- I-126 connects to I-26 and I-20
- New full service interchange
- Future expansion

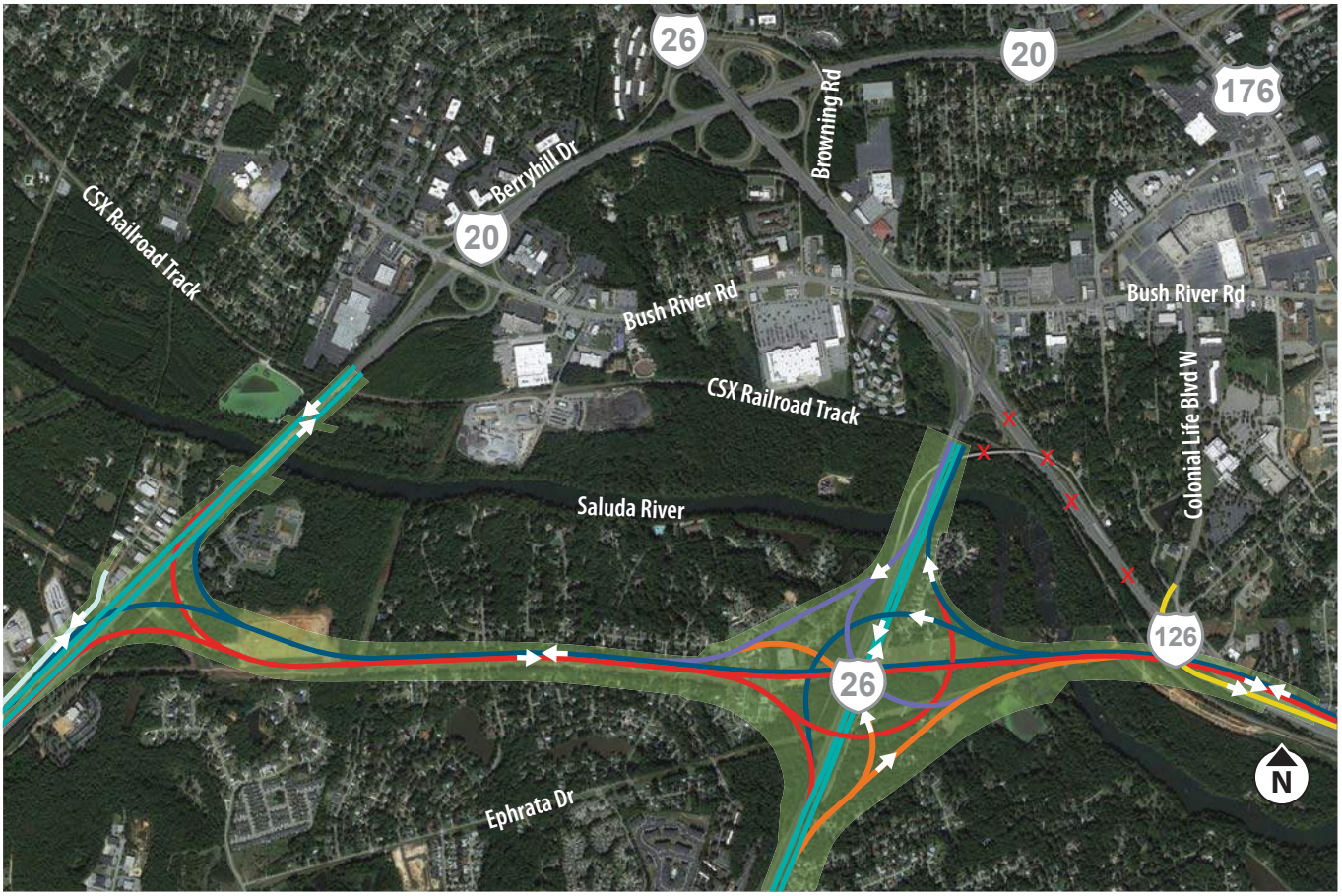


Figure 36: I-126 / I-20 Directional Interchanges

I-26 AT PINEY GROVE ROAD

Existing Do Nothing Alternative

The existing interchange of I-26 and Piney Grove Road is classified as a conventional diamond interchange configuration with left turn lanes for I-26 eastbound or I-26 westbound access from Piney Grove Road. The intersections of Piney Grove Road and the I-26 entrance/exit ramps are under signal control, and traffic flow is interrupted by the proximity of the intersection of Bower Parkway/Jamil Road/Piney Grove Road to the I-26 westbound exit ramp and the intersection of Fernandina Road/Piney Grove Road to the I-26 eastbound entrance ramp. The existing exit ramps from both I-26 westbound and eastbound to Piney Grove Road are one-lane exit ramps that diverge into three turn lanes at Piney Grove Road (dual left-turn lanes and a single right-turn lane for each intersection). The entrance ramp to I-26 eastbound is a single lane entrance ramp. Piney Grove Road is a four-lane thoroughfare through this interchange area. Traffic signal delays and traffic congestion occur on both Piney Grove Road and along the existing I-26 mainline during peak hours. The following alternatives have been evaluated to address traffic congestion on Piney Grove Road and existing I-26.

Key Highlights

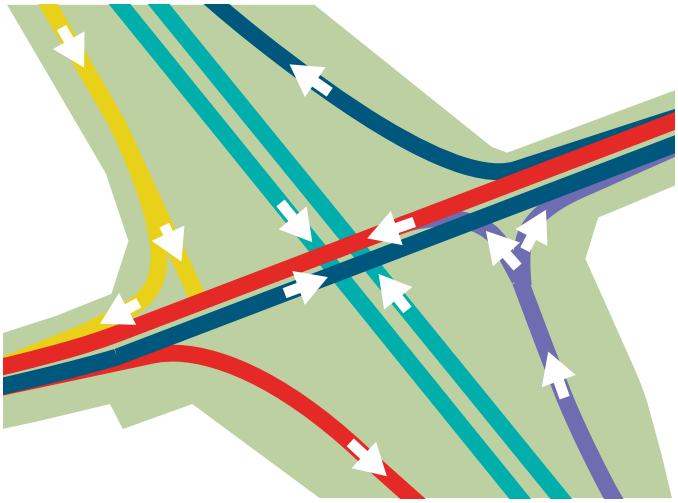
- Traffic flow is interrupted
- Traffic signal delays
- Traffic congestion

Figure 37: I-26 at Piney Grove, Existing Condition

I-26 AT PINEY GROVE ROAD

AO30 Existing Improvements

This alternative proposes to maintain the existing interchange configuration. This alternative has the potential to maintain the existing roadway structure carrying Piney Grove Road over I-26 if the structure can accommodate the mainline improvements of providing an eight-lane section from St. Andrews Road to Lake Murray Boulevard. With the proposed I-26 mainline expansion, the entrance and exit-ramps to and from Piney Grove Road would need to be upgraded to tie in to the new I-26 through lanes. This alternative would add turn lanes to the signal-controlled intersections of the entrance/exit ramp terminals with Piney Grove Road to improve traffic operations.



Key Highlights

- Improves existing interchange configuration
- Upgrades entrance and exit-ramps
- Improves traffic operations

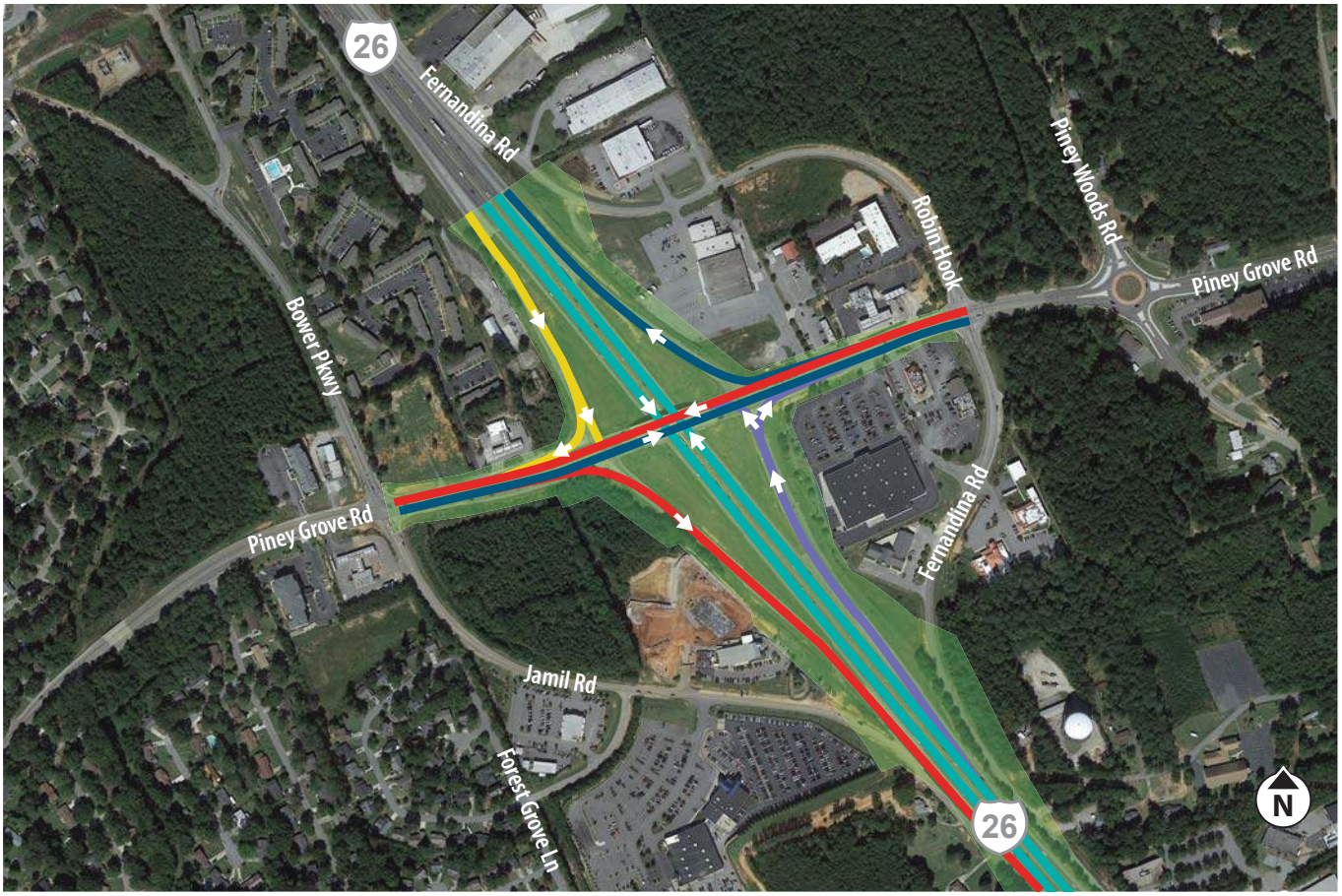
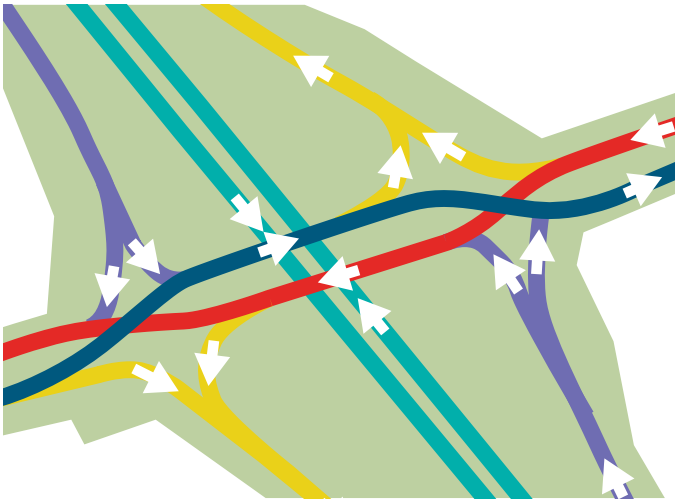


Figure 38: I-26 at Piney Grove, Existing Improvements

I-26 AT PINEY GROVE ROAD

AO31 Diverging Diamond Interchange (DDI)

This alternative proposes to convert the existing interchange to a diverging diamond interchange (DDI) inclusive of traffic signal control. This alternative has the potential to utilize a portion of the existing bridge carrying Piney Grove Road over I-26 if the proposed bridge structure can accommodate the proposed I-26 mainline reconfiguration of providing an eight-lane section from St. Andrews Road to Lake Murray Boulevard. The proposed bridge structure would be widened or a separate bridge structure would be necessary to accommodate the proposed DDI configuration. For the proposed interchange ramps, they would generally follow the existing interchange ramp alignments; however, they would be reconstructed to match I-26 mainline improvements. For access control, a raised median would be installed between Jamil Road and Fernandina Road to facilitate the crossover movements through the proposed DDI interchange.



Key Highlights

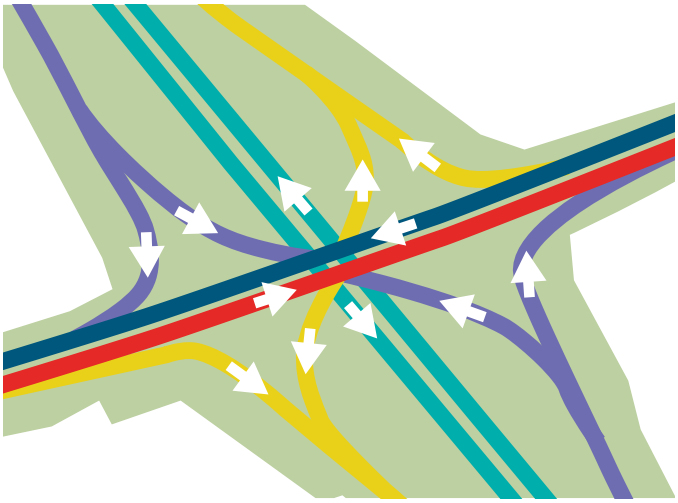
- Utilizes existing bridge
- Interchange ramps reconstructed
- Access control provided

Figure 39: I-26 at Piney Grove, Diverging Diamond Interchange

I-26 AT PINEY GROVE ROAD

AO32 Single Point Urban Interchange (SPUI)

This alternative proposes to convert the existing conventional diamond interchange to a single point urban interchange (SPUI). This alternative would require a new larger bridge structure over I-26 to accommodate the proposed single point signalized intersection. Entrance and exit ramps would generally follow their existing alignments, but would be reconstructed to match I-26 mainline improvements of providing an eight-lane section from St. Andrews Road to Lake Murray Boulevard. For access control, a raised median would be installed on existing Piney Grove Road within the interchange configuration.



Key Highlights

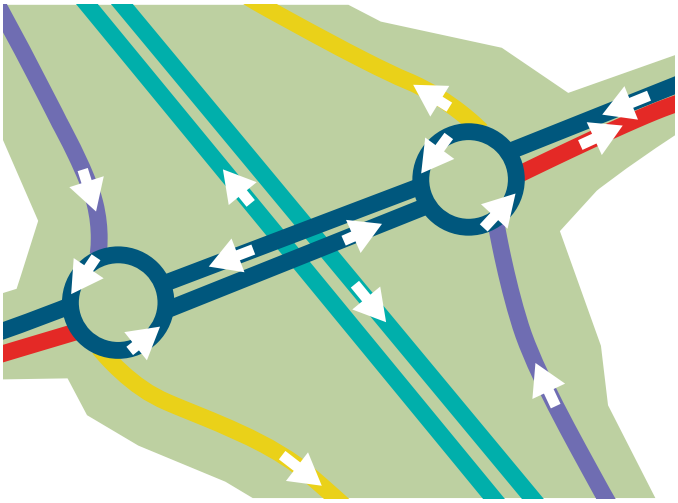
- New larger bridge required
- Interchange ramps reconstructed
- Access control provided

Figure 40: I-26 at Piney Grove, SPUI

I-26 AT PINEY GROVE ROAD

AO33 Roundabouts

This alternative proposes to convert existing northbound and southbound I-26 ramp terminals to multi-lane roundabout intersections. Roundabouts may improve traffic congestion by promoting continuous traffic flow since vehicles would not be required to stop at traffic signals. Right-turn bypass lanes would be constructed to remove high volume right-turn movements from the roundabout intersections. Splitter islands would be constructed on all Piney Grove Road approaches to the roundabouts. This alternative has the potential to utilize a portion of the existing bridge structure carrying Piney Grove Road over I-26 if the bridge structure can accommodate the I-26 mainline improvements of providing an eight-lane section from St. Andrews Road to Lake Murray Boulevard. Existing interchange ramp alignments would be re-aligned to connect to the roundabouts lane geometry.



Key Highlights

- Continuous traffic flow
- Removes high volume right-turn movements

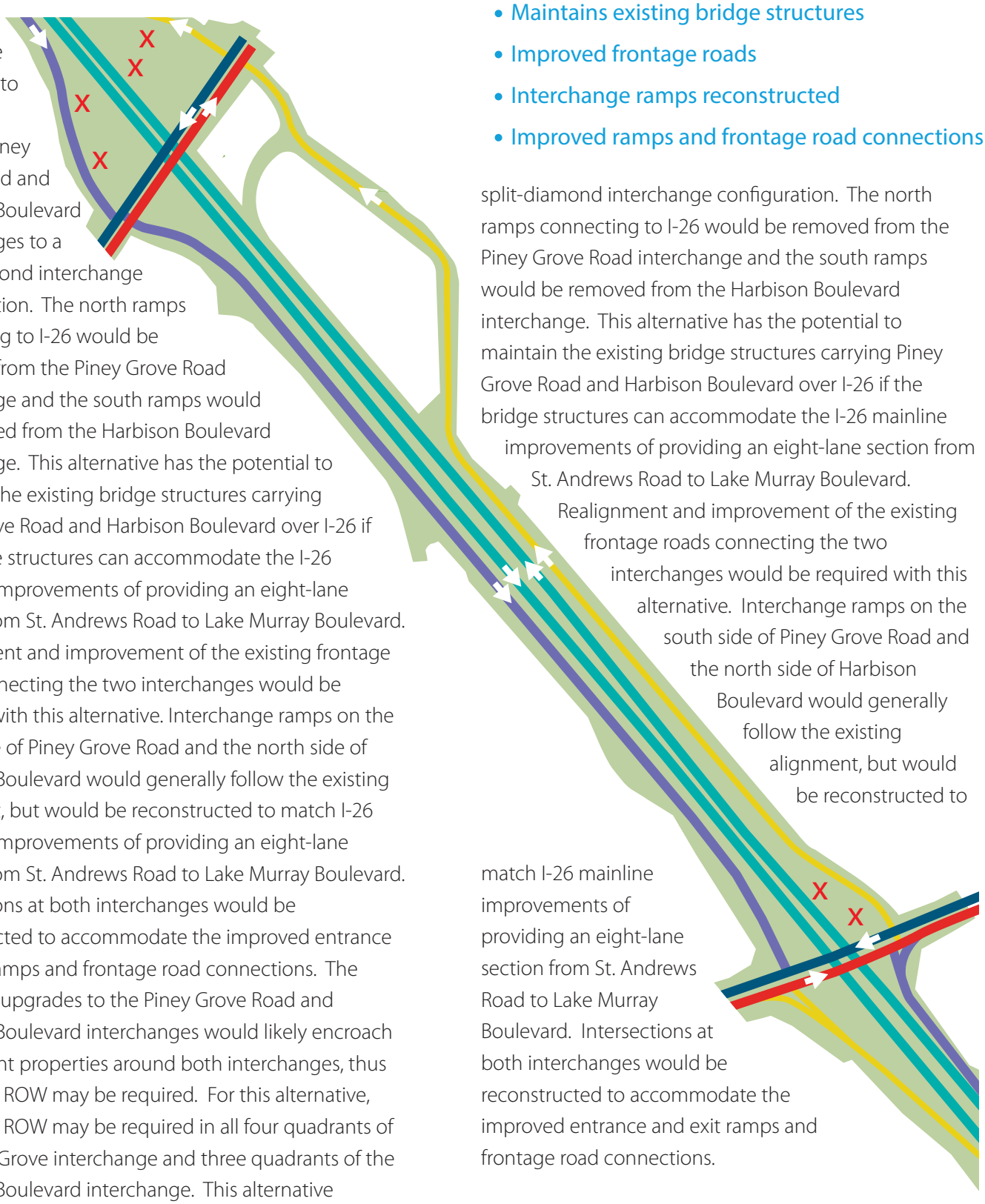
Figure 41: I-26 at Piney Grove, Roundabouts

I-26 AT PINEY GROVE ROAD

AO34 Split Diamond

Key Highlights

- Maintains existing bridge structures
- Improved frontage roads
- Interchange ramps reconstructed
- Improved ramps and frontage road connections



This alternative proposed to convert existing Piney Grove Road and Harbison Boulevard interchanges to a split-diamond interchange configuration. The north ramps connecting to I-26 would be removed from the Piney Grove Road interchange and the south ramps would be removed from the Harbison Boulevard interchange. This alternative has the potential to maintain the existing bridge structures carrying Piney Grove Road and Harbison Boulevard over I-26 if the bridge structures can accommodate the I-26 mainline improvements of providing an eight-lane section from St. Andrews Road to Lake Murray Boulevard. Realignment and improvement of the existing frontage roads connecting the two interchanges would be required with this alternative. Interchange ramps on the south side of Piney Grove Road and the north side of Harbison Boulevard would generally follow the existing alignment, but would be reconstructed to match I-26 mainline improvements of providing an eight-lane section from St. Andrews Road to Lake Murray Boulevard. Intersections at both interchanges would be reconstructed to accommodate the improved entrance and exit ramps and frontage road connections. The proposed upgrades to the Piney Grove Road and Harbison Boulevard interchanges would likely encroach on adjacent properties around both interchanges, thus additional ROW may be required. For this alternative, additional ROW may be required in all four quadrants of the Piney Grove interchange and three quadrants of the Harbison Boulevard interchange. This alternative proposed to convert existing Piney Grove Road and Harbison Boulevard interchanges to a proposed split-diamond interchange configuration. The north ramps connecting to I-26 would be removed from the Piney Grove Road interchange and the south ramps would be removed from the Harbison Boulevard interchange. This alternative has the potential to maintain the existing bridge structures carrying Piney Grove Road and Harbison Boulevard over I-26 if the bridge structures can accommodate the I-26 mainline improvements of providing an eight-lane section from St. Andrews Road to Lake Murray Boulevard. Realignment and improvement of the existing frontage roads connecting the two interchanges would be required with this alternative. Interchange ramps on the south side of Piney Grove Road and the north side of Harbison Boulevard would generally follow the existing alignment, but would be reconstructed to match I-26 mainline improvements of providing an eight-lane section from St. Andrews Road to Lake Murray Boulevard. Intersections at both interchanges would be reconstructed to accommodate the improved entrance and exit ramps and frontage road connections.

I-26 AT PINEY GROVE ROAD

AO34 Split Diamond

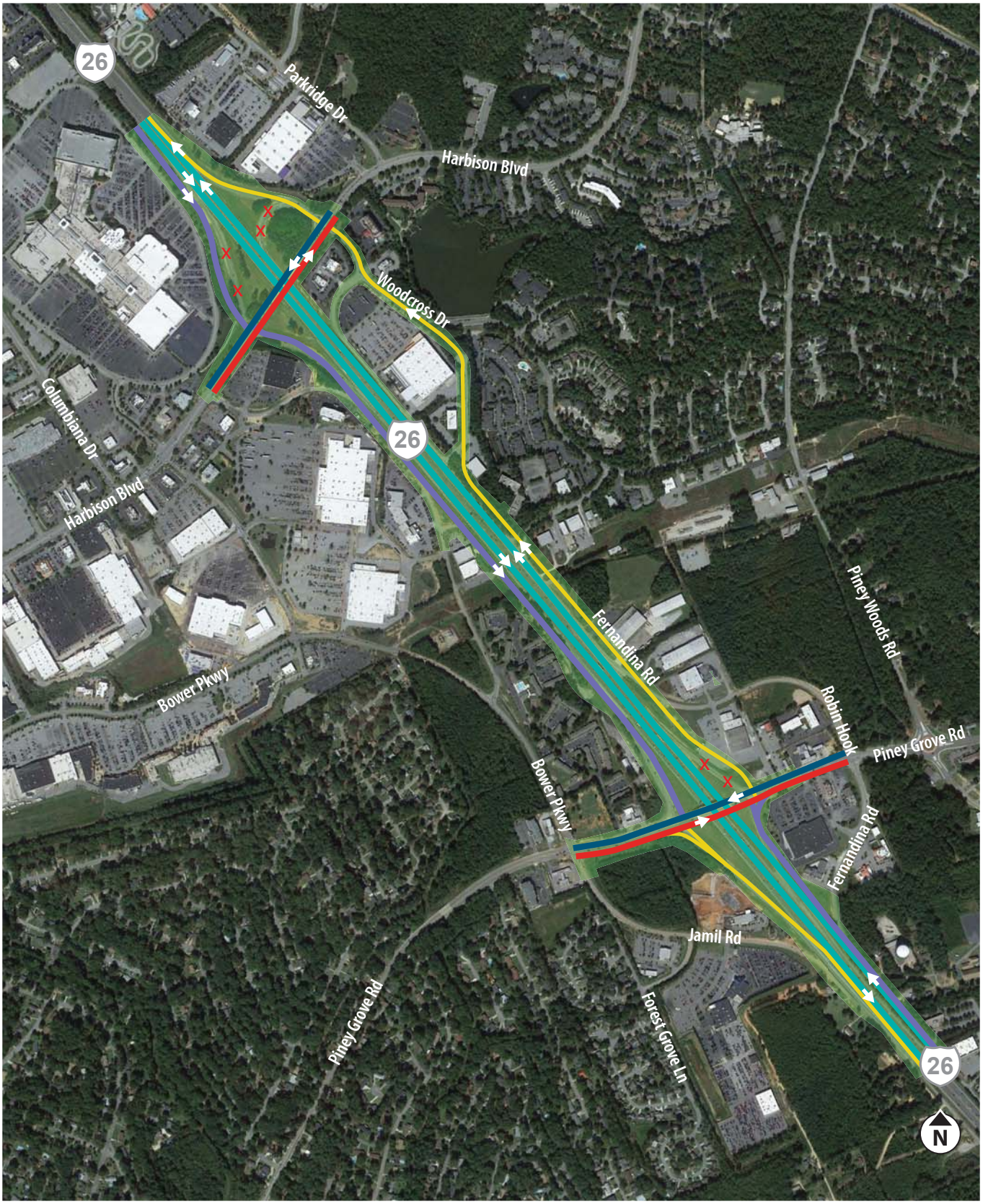


Figure 42: I-26 at Piney Grove, Split Diamond

I-26 AT HARBISON BOULEVARD

Existing Do Nothing Alternative

The existing interchange of I-26 and Harbison Boulevard is classified as a partial cloverleaf interchange configuration with one exit loop ramp for I-26 westbound access to Harbison Boulevard. The intersections of Harbison Boulevard and the I-26 entrance/exit ramps are under signal control, and traffic flow is interrupted by the proximity of the intersection of Saturn Parkway to the I-26 westbound exit ramp and the intersection of Parkridge Drive to the I-26 eastbound entrance ramp. The existing exit ramp from I-26 eastbound to Harbison Boulevard is a one-lane exit ramp that diverges into two turn lanes at Harbison Boulevard (single left-turn lane and a single right-turn lane). The entrance ramp to I-26 eastbound is a single lane entrance ramp. The existing exit ramp from I-26 westbound to Harbison Boulevard is a one-lane exit ramp that diverges into three turn lanes at Harbison Boulevard (single left-turn lane, single through lane, and a single right-turn lane). The entrance ramp to I-26 westbound is a single lane entrance ramp. Harbison Boulevard is a four-lane thoroughfare through this interchange area. Traffic signal delays and traffic congestion occur on both Harbison Boulevard and along the existing I 26 mainline during peak hours. The following alternatives have been evaluated to address traffic congestion on Harbison Boulevard and existing I-26.

Key Highlights

- Traffic flow interrupted
- Traffic signal delays
- Traffic congestion

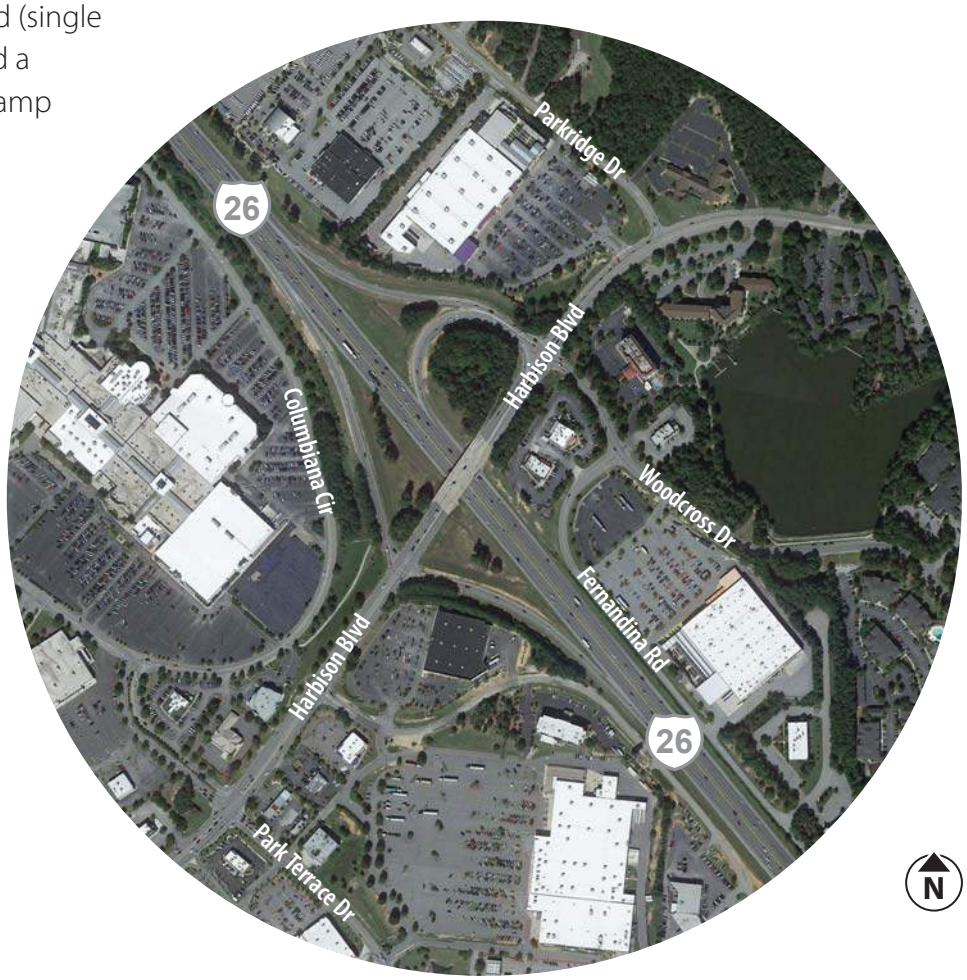
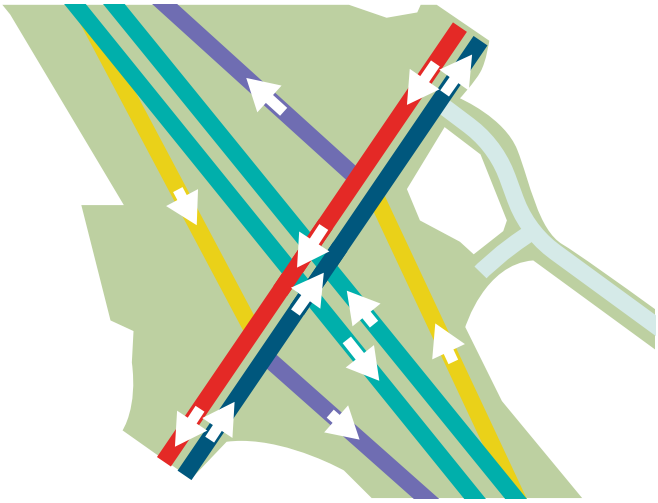


Figure 43: I-26 at Harbison Boulevard, Existing Condition

I-26 AT HARBISON BOULEVARD

AO35 Tight Diamond

This alternative would convert existing partial cloverleaf interchange to a proposed tight diamond interchange configuration. This alternative has the potential to utilize a portion of the existing bridge structure carrying Harbison Boulevard over I-26 if it can accommodate the mainline improvements of providing an eight-lane section from St. Andrews Road to Lake Murray Boulevard. With the proposed I-26 mainline expansion, the entrance and exit-ramps to and from Harbison Boulevard would need to be upgraded to tie-in to the new I-26 through lanes. Proposed interchange ramps for the northbound direction would be reconfigured as diamond interchange ramps.



Key Highlights

- Utilizes the existing bridge structure
- Entrance and exit ramps upgraded

Figure 44: I-26 at Harbison Boulevard, Tight Diamond

I-26 AT HARBISON BOULEVARD

AO36 Diverging Diamond Interchange

This alternative would convert the existing interchange to a diverging diamond interchange inclusive of traffic signal control. This alternative has the potential to utilize a portion of the existing bridge structure carrying Harbison Boulevard over I-26 if it can accommodate the mainline improvements of providing an eight-lane section from St. Andrews Road to Lake Murray Boulevard. The proposed bridge structure would be widened or a separate bridge structure would be necessary to accommodate the proposed DDI configuration. The intersection at Woodcross Drive would be reconfigured with limited turning movements. For access control, a raised median would be installed between Saturn Parkway and Woodcross Drive facilitate the crossover movements through the interchange.

Key Highlights

- Utilizes a portion of existing bridge
- Improved interchange ramps
- Access control provided

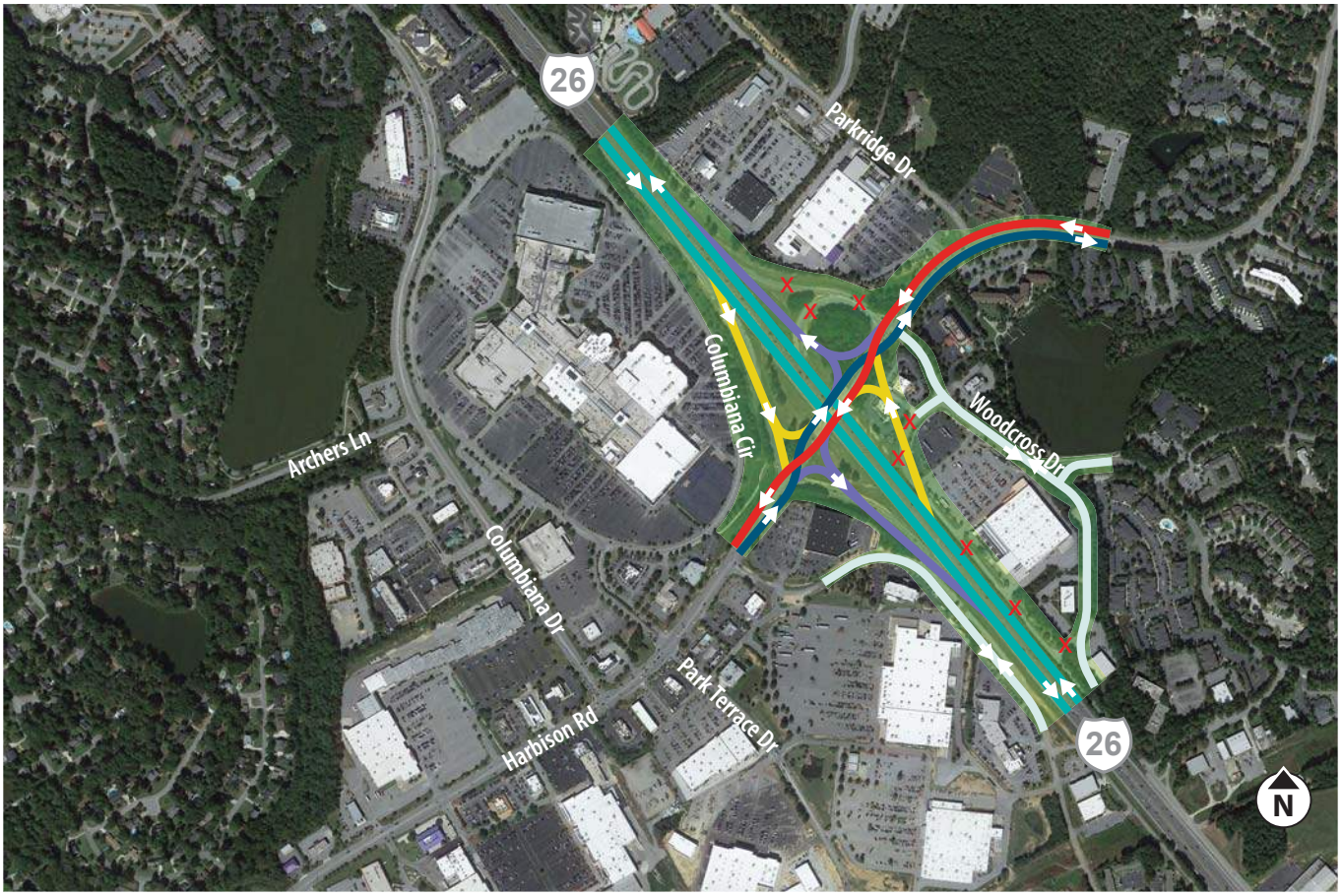
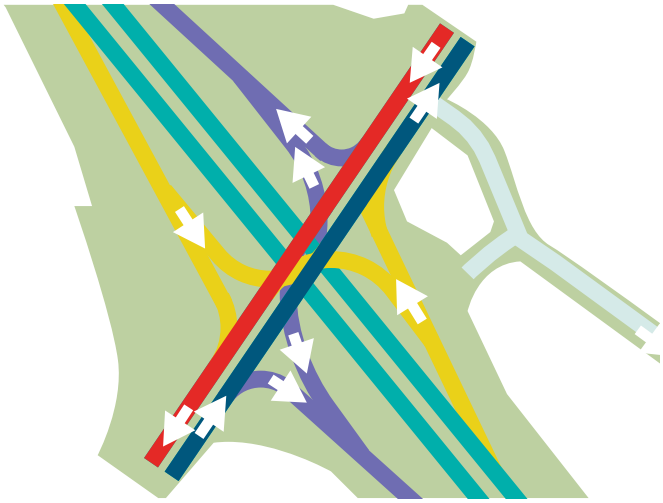


Figure 45: I-26 at Harbison Boulevard, Diverging Diamond Interchange

I-26 AT HARBISON BOULEVARD

AO37 Single Point Urban Interchange (SPUI)

This alternative proposes to convert the existing partial cloverleaf interchange to a single point urban interchange (SPUI). This alternative would require a new larger bridge structure over I-26 to accommodate the proposed single point signalized intersection. Entrance and exit ramps would be reconfigured as diamond interchange ramps. For access control, a raised median would be installed on existing Harbison Boulevard within the interchange configuration.



Key Highlights

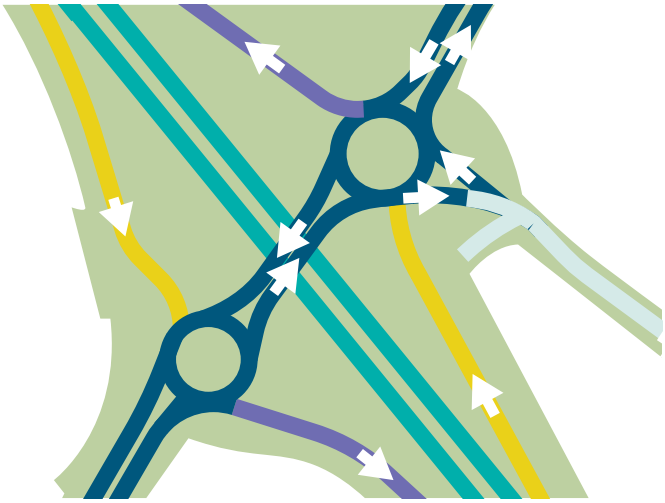
- New larger bridge structure
- Entrance and exit ramps upgraded
- Access control provided

Figure 46: I-26 at Harbison Boulevard, SPUI Interchange

I-26 AT HARBISON BOULEVARD

AO38 Roundabouts

This alternative proposes to convert existing northbound and southbound I-26 ramp terminals to multi-lane roundabout intersections. Roundabouts may improve traffic congestion by promoting continuous traffic flow since vehicles would not be required to stop at traffic signals. Entrance and exit ramps would be reconfigured as diamond interchange ramps. Woodcross Drive would connect to the northbound ramp terminal roundabout. Right-turn bypass lanes would be constructed to remove high volume right-turn movements from the roundabout intersections. This alternative has the potential to utilize a portion of the existing bridge structure carrying Harbison Boulevard over I-26 if it can accommodate the mainline improvements of providing an eight-lane section from St. Andrews Road to Lake Murray Boulevard.



Key Highlights

- Continuous traffic flow
- Entrance and exit ramps upgraded
- high volume right-turn movements removed
- Utilizes existing bridge structure

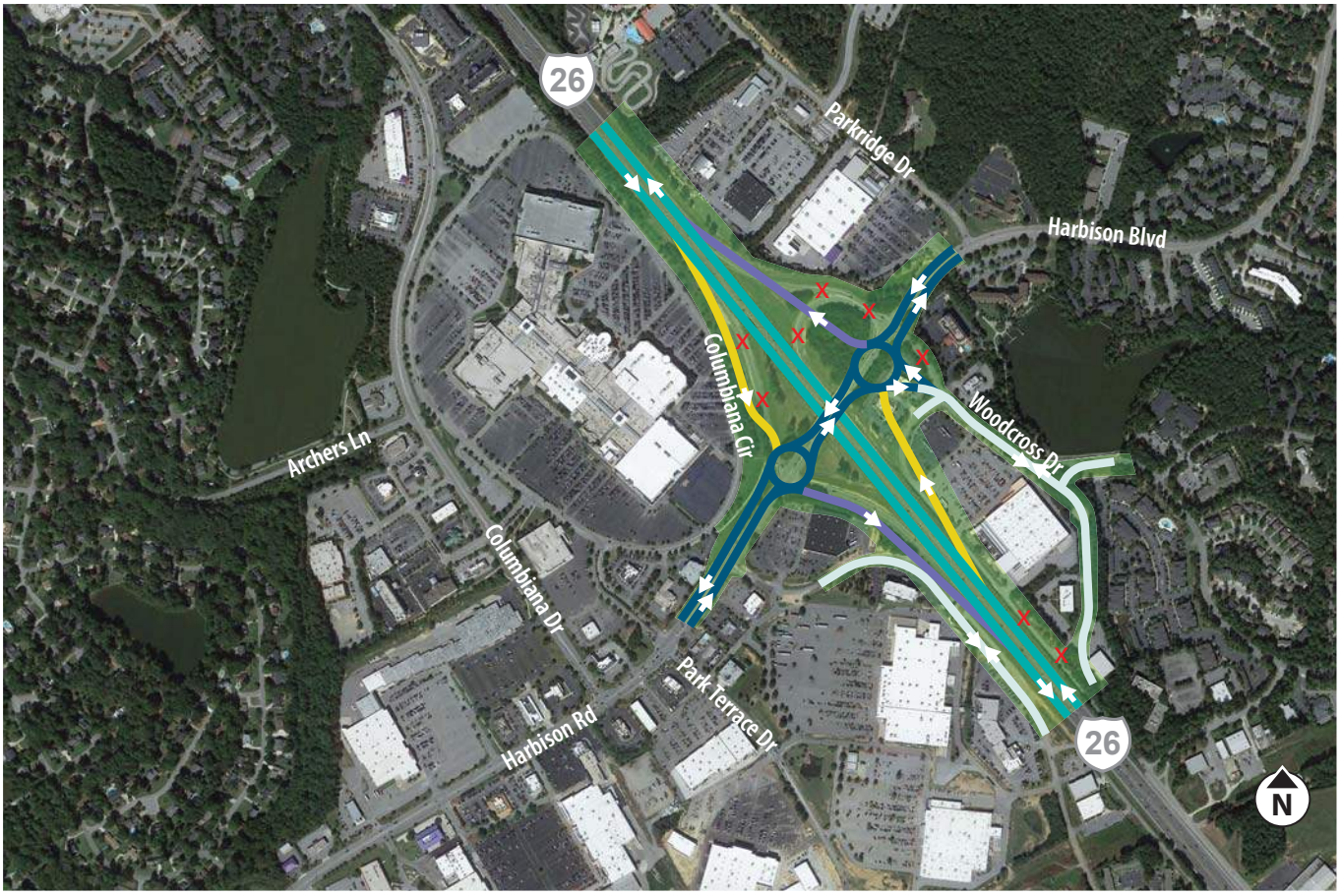


Figure 47: I-26 at Harbison Boulevard, Roundabouts

I-26 AT HARBISON BOULEVARD

AO39 Offset SPUI

This alternative proposes to convert the existing partial cloverleaf interchange to a single point urban interchange (SPUI) with a single point intersection on the west side of existing I-26. The existing I-26 northbound off ramp would be carried over both directions of I-26 on a flyover bridge structure. The single point intersection would accommodate both the I-26 southbound ramps and the I-26 northbound off ramp traffic. An I-26 northbound on ramp is proposed to be constructed as a diamond interchange configuration.

Key Highlights

- Additional queuing room
- Reduces conflict points
- Reduces geometric defeciences

Figure 48: I-26 at Harbison Boulevard, Offset SPUI

I-26 AT LAKE MURRAY BOULEVARD

Existing Do Nothing Alternative

The existing interchange of I-26 and Lake Murray Boulevard is classified as a partial cloverleaf interchange configuration with single lane exit loop ramps for I-26 eastbound or westbound access (left-turns) to Lake Murray Boulevard. The intersection of Lake Murray Boulevard and the I-26 eastbound entrance ramp is unsignalized, and traffic flow is interrupted by the proximity of the signalized intersection of the Columbiana Drive and Lake Murray Boulevard to the I-26 eastbound entrance ramp. The intersection of Lake Murray Boulevard and the I-26 westbound entrance ramp is unsignalized. The existing exit ramp from I-26 eastbound to Lake Murray Boulevard heading west and north is a one-lane exit ramp that is a right-turn only lane. The entrance ramp to I-26 eastbound is a single lane entrance ramp to the existing I-26 eastbound mainline. The existing exit ramp from I-26 westbound to Lake Murray Boulevard heading east and south is a single lane exit ramp that is a right-turn only lane. The entrance ramp to I-26 westbound is a single lane entrance ramp.

Lake Murray Boulevard is a five-lane SC route (SC 60) through this interchange area. Traffic signal delays and traffic congestion occur on both Lake Murray Boulevard and along the existing I 26 mainline during peak hours. The following alternatives have been evaluated to address traffic congestion on Lake Murray Boulevard and existing I-26.

Key Highlights

- Traffic flow interrupted
- Traffic signal delays
- Traffic congestion

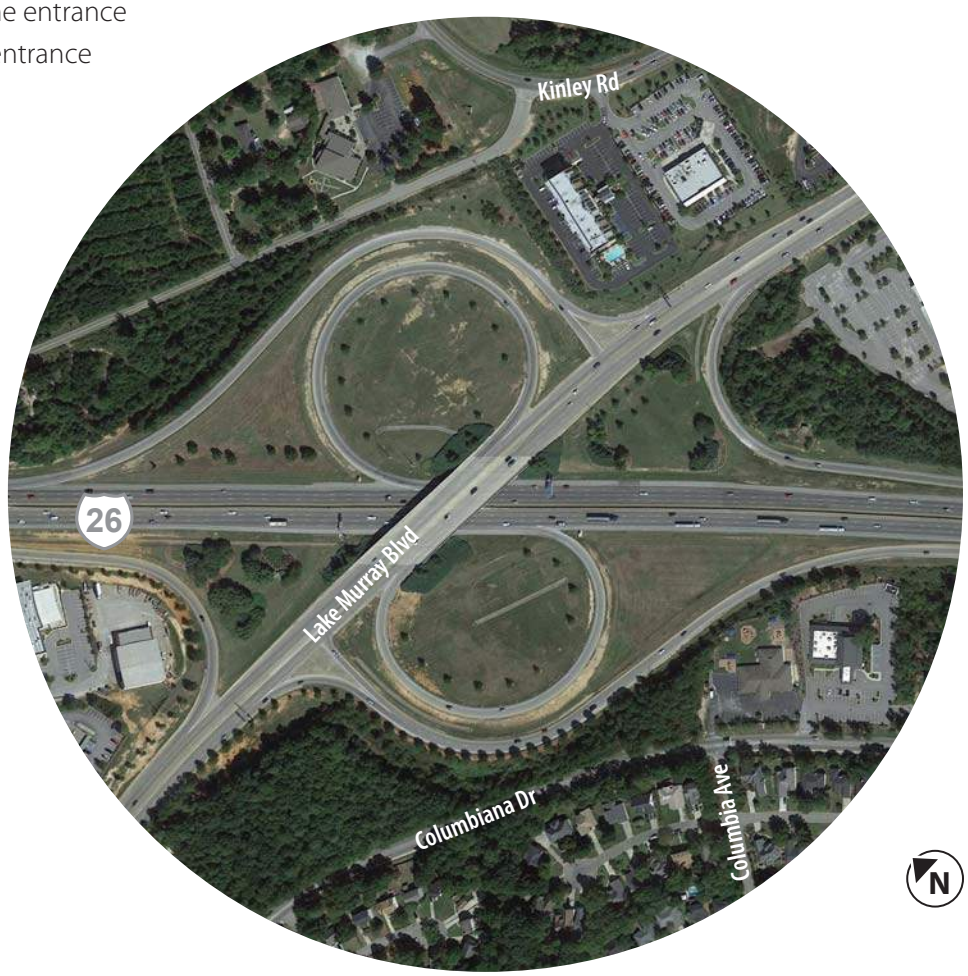
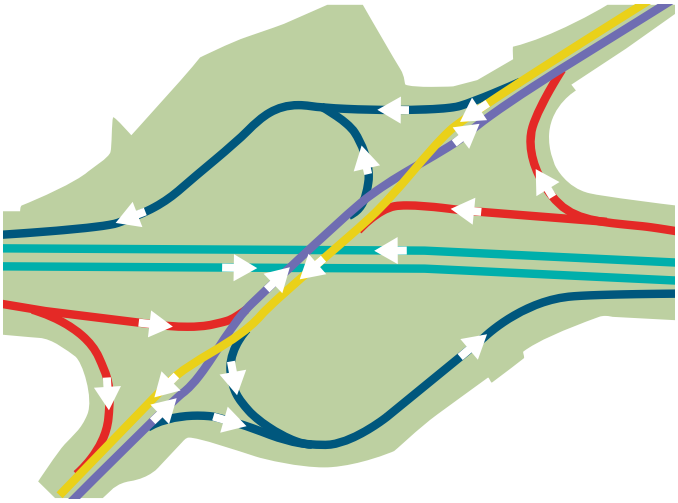


Figure 49: I-26 at Lake Murray, Existing Condition

I-26 AT LAKE MURRAY BOULEVARD

AO40 Diverging Diamond Interchange

This alternative proposes to convert the existing partial cloverleaf interchange to a diverging diamond interchange with signal control. This alternative has the potential to utilize the existing bridge structure carrying Lake Murray Boulevard over existing I-26 if it can accommodate the mainline improvements of providing an eight-lane section from St. Andrews Road to Lake Murray Boulevard. Otherwise, the proposed bridge structure may need to be widened to accommodate the DDI configuration. Proposed interchange ramps for both the southbound and northbound directions would be reconfigured as diamond interchange ramps and constructed within the existing interchange configuration of the partial cloverleaf ramps. The signalized intersections at Kinley Road/Parkridge Drive and Columbiana Drive would be synchronized with the new diamond interchange ramp traffic signals.



Key Highlights

- Utilizes existing bridge structure
- Interchange ramps improved
- Synchronized signals

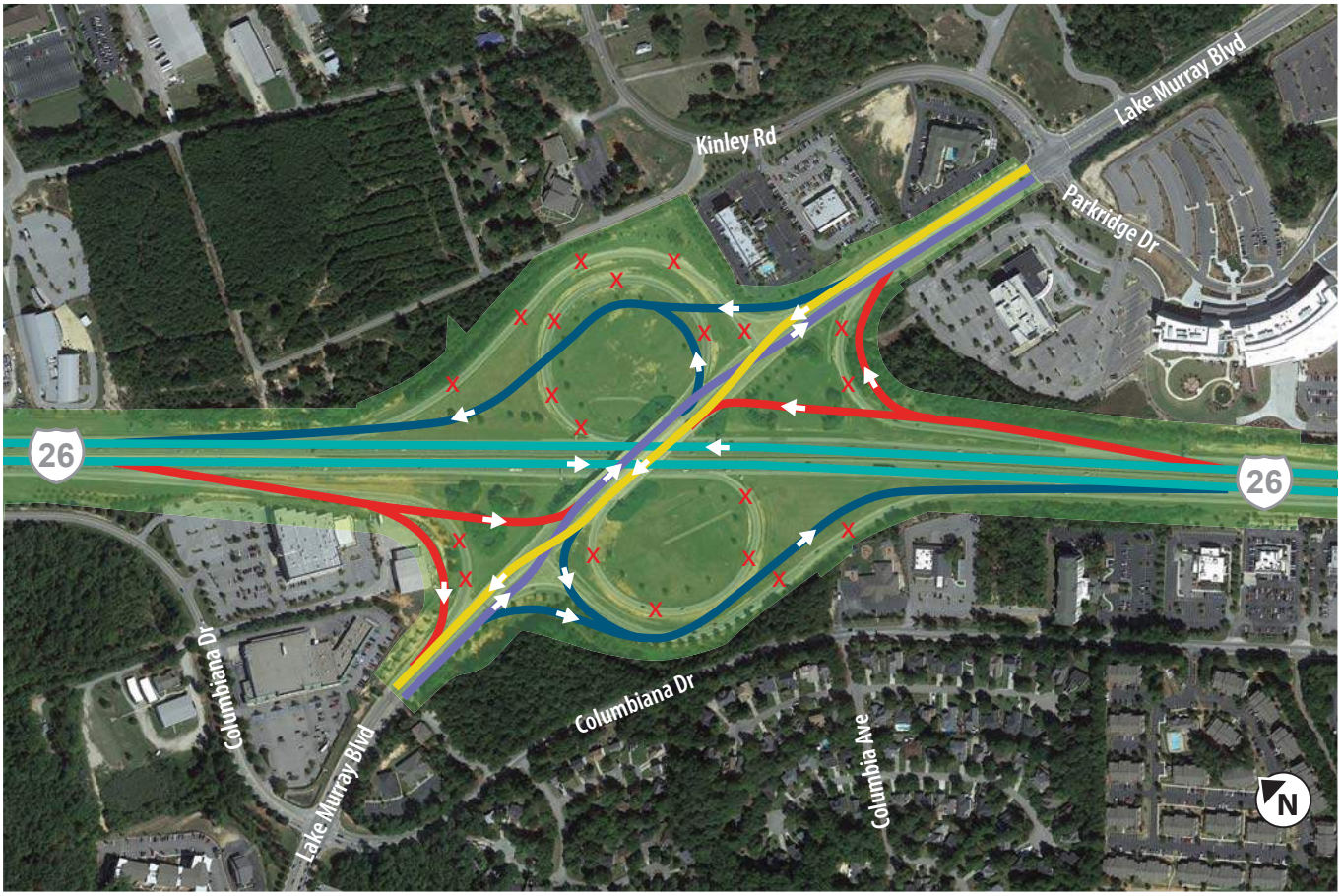
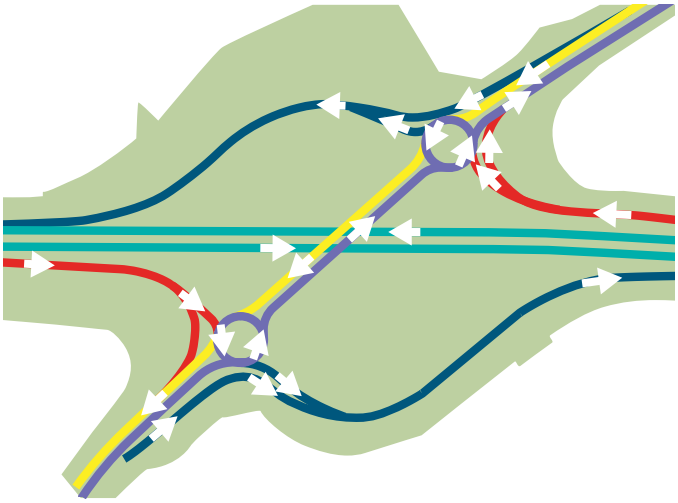


Figure 50: I-26 at Lake Murray, Diverging Diamond Interchange

I-26 AT LAKE MURRAY BOULEVARD

AO41 Roundabouts

This alternative proposes to convert the existing northbound and southbound I-26 ramp terminals within the existing partial cloverleaf interchange to multilane roundabout intersections. Roundabouts may improve traffic congestion by promoting continuous traffic flow since vehicles would not be required to stop at traffic signals. Entrance and exit ramps would be reconfigured as diamond interchange ramps. Right-turn bypass lanes would be constructed to remove high volume right-turn movements from the roundabout intersections. Splitter islands would be constructed on all Lake Murray Boulevard approaches to the roundabouts. This alternative will use the existing bridge. Diamond interchange ramps would be re-aligned to connect to the roundabouts roadway geometry.



Key Highlights

- Continuous traffic flow
- Entrance and exit ramps improved
- High volume right-turn movements removed
- Would use the existing bridge

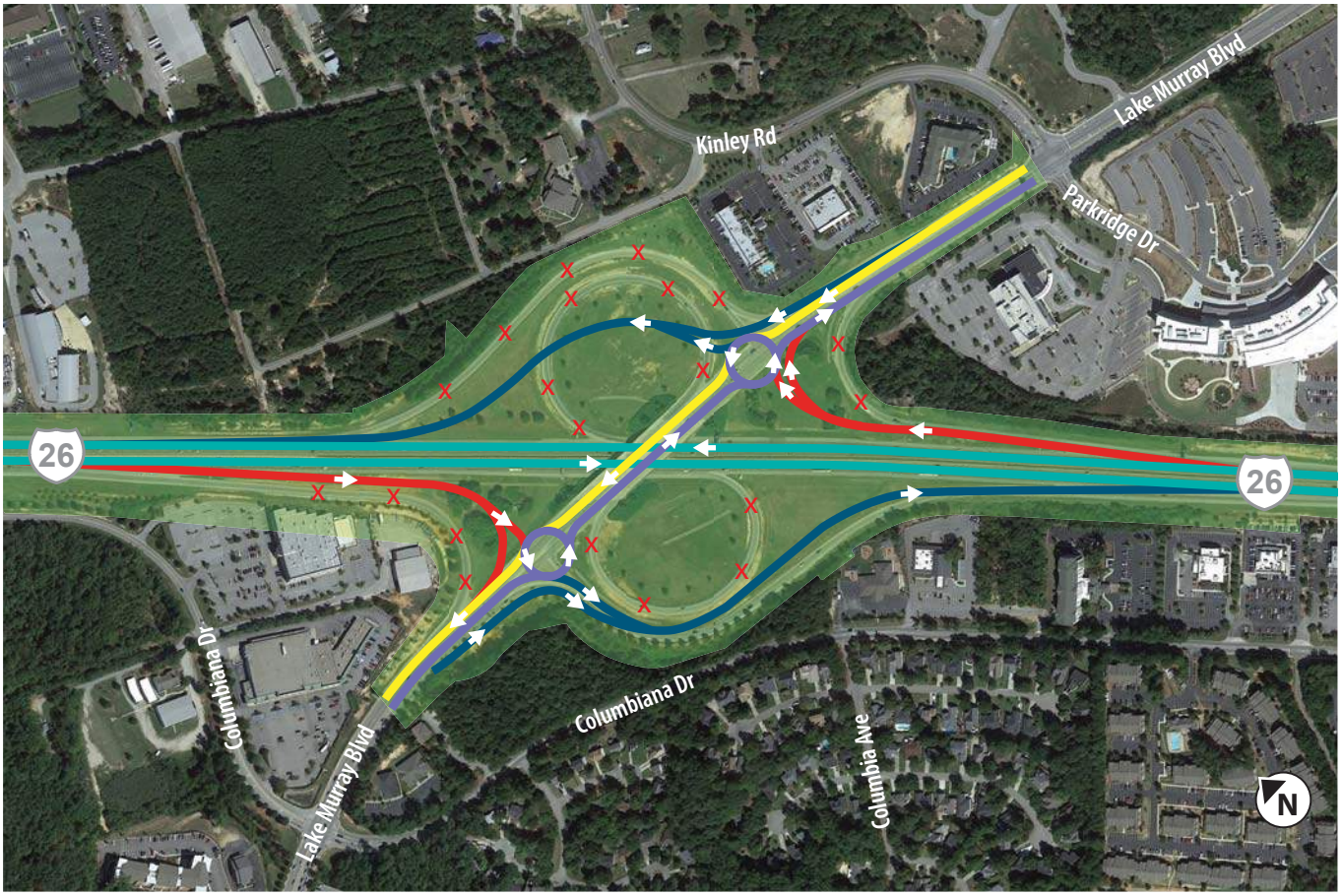
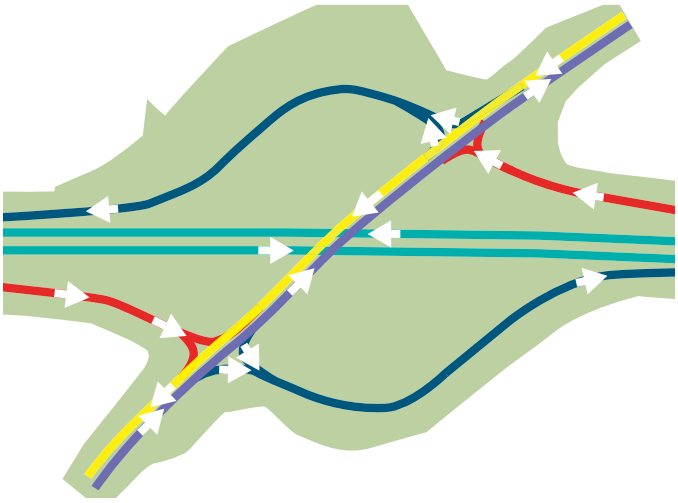


Figure 51: I-26 at Lake Murray, Roundabouts

I-26 AT LAKE MURRAY BOULEVARD

AO42 Tight Diamond Interchange

This alternative proposes to convert existing partial cloverleaf interchange to a tight diamond interchange configuration. This alternative would utilize the existing bridge carrying Lake Murray Boulevard over I-26. Entrance and exit ramps for the both the southbound and northbound directions would be reconfigured as diamond interchange ramps and signal locations would be relocated to new diamond interchange ramp intersections.



Key Highlights

- Would use existing bridge structure
- Entrance and exit ramps improved

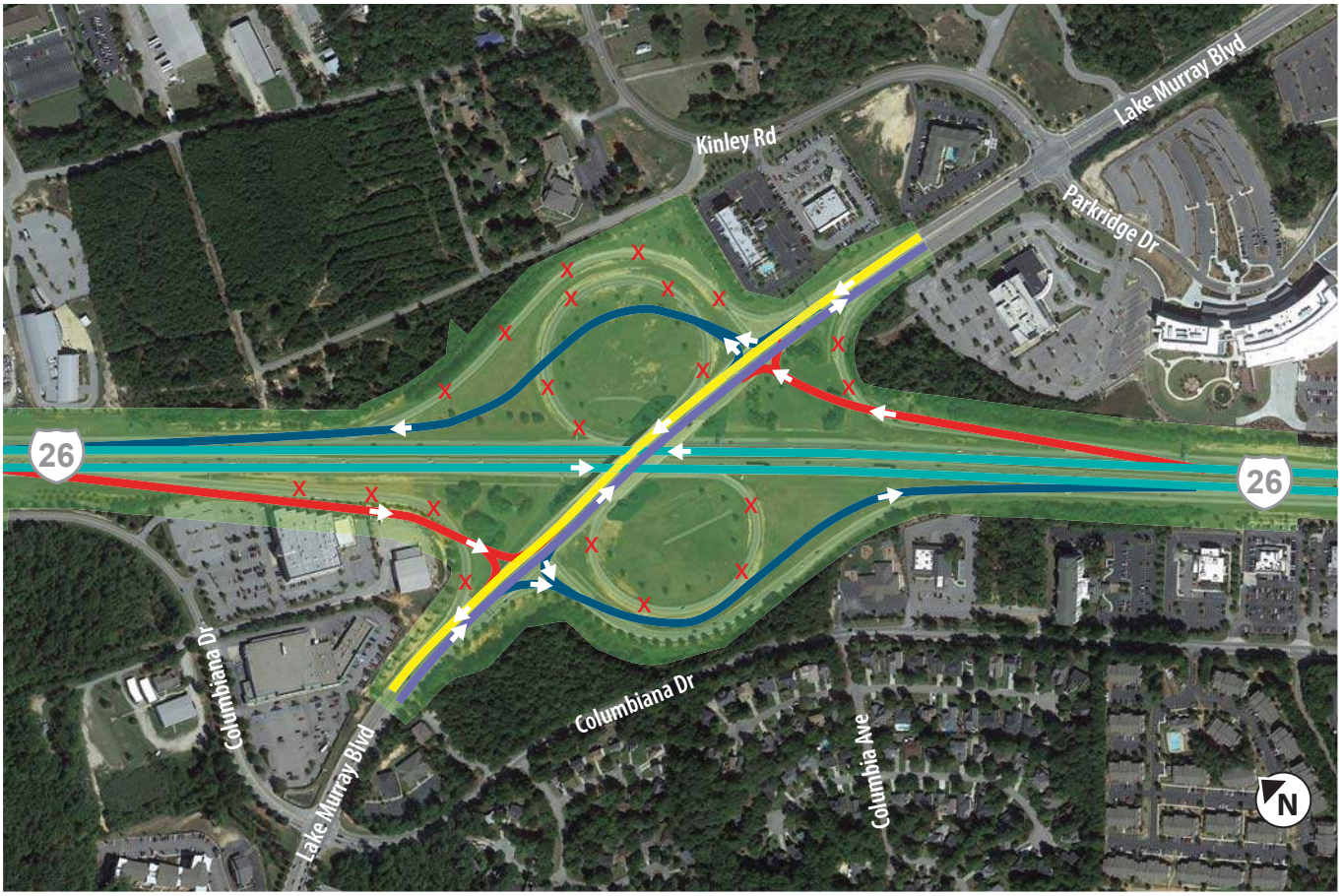


Figure 52: I-26 at Lake Murray, Diamond Interchange

I-26 AT BROAD RIVER ROAD

Existing Do Nothing Alternative

The existing interchange of I-26 and Broad River Road is classified as a partial cloverleaf interchange configuration with single lane exit loop ramps for I-26 eastbound or westbound access (left-turns) to Broad River Road. The intersection of Broad River Road and the I-26 eastbound entrance ramp is under signal control, and traffic flow is interrupted by the proximity of the signalized intersection of the Columbiana Drive and Broad River Road to the I-26 eastbound entrance ramp. The intersection of Broad River Road and the I-26 westbound entrance ramp is unsignalized. The existing exit ramp from I-26 eastbound to Broad River Road heading west and north is a one-lane exit ramp that is a right-turn only lane. The entrance ramp to I-26 eastbound is a two-lane entrance ramp that merges to single lane near the existing I-26 eastbound mainline. The existing exit ramp from I-26 westbound to Broad River Road heading east and south is a single lane exit ramp that is a right-turn only lane. The entrance ramp to I-26 westbound is a single lane entrance ramp.

Broad River Road is a five-lane US route (US 176) through this interchange area. Traffic signal delays and traffic congestion occur on both Broad River Road and along the existing I- 26 mainline during peak hours. The following alternatives have been evaluated to address traffic congestion on Broad River Road and existing I-26.

Key Highlights

- Traffic flow interrupted
- Traffic signal delays
- Traffic congestion

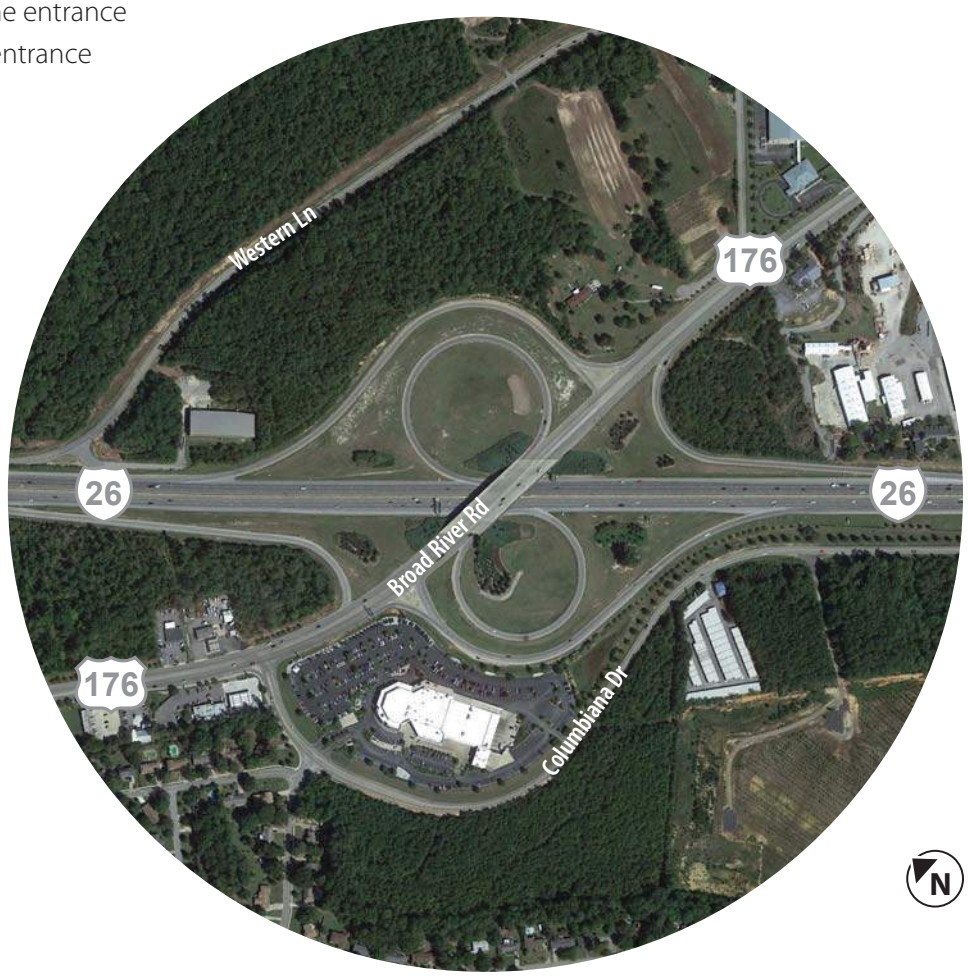
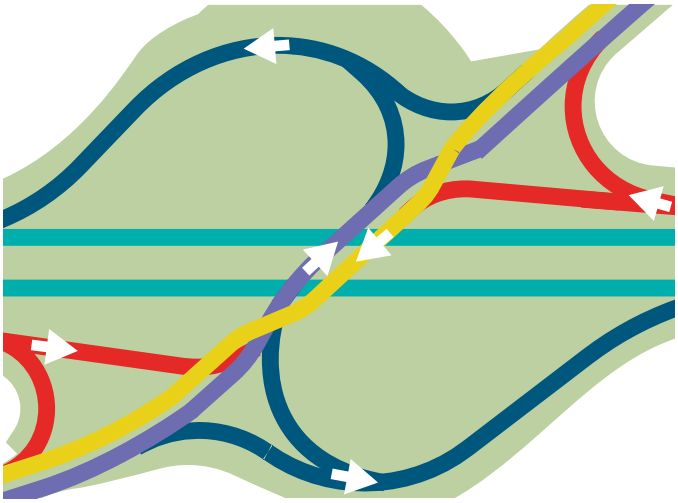


Figure 53: I-26 at Broad River Road, Existing Condition

I-26 AT BROAD RIVER ROAD

AO43 Diverging Diamond Interchange

This alternative proposes to convert the existing partial cloverleaf interchange to a diverging diamond interchange with signal control. This alternative has the potential to utilize the existing bridge structure carrying Broad River Road over existing I-26 but widening of the bridge structure may be necessary. Entrance and exit ramps for both the southbound and northbound directions would be reconfigured as diamond interchange ramps and likely constructed within the existing interchange configuration of the partial cloverleaf ramps. The signalized intersections at Western Lane and Columbiana Drive would be sychronized with the new diamond interchange ramp traffic signals.



Key Highlights

- Utilizes existing bridge structure
- Entrance and exit ramps improved
- Synchronized signals

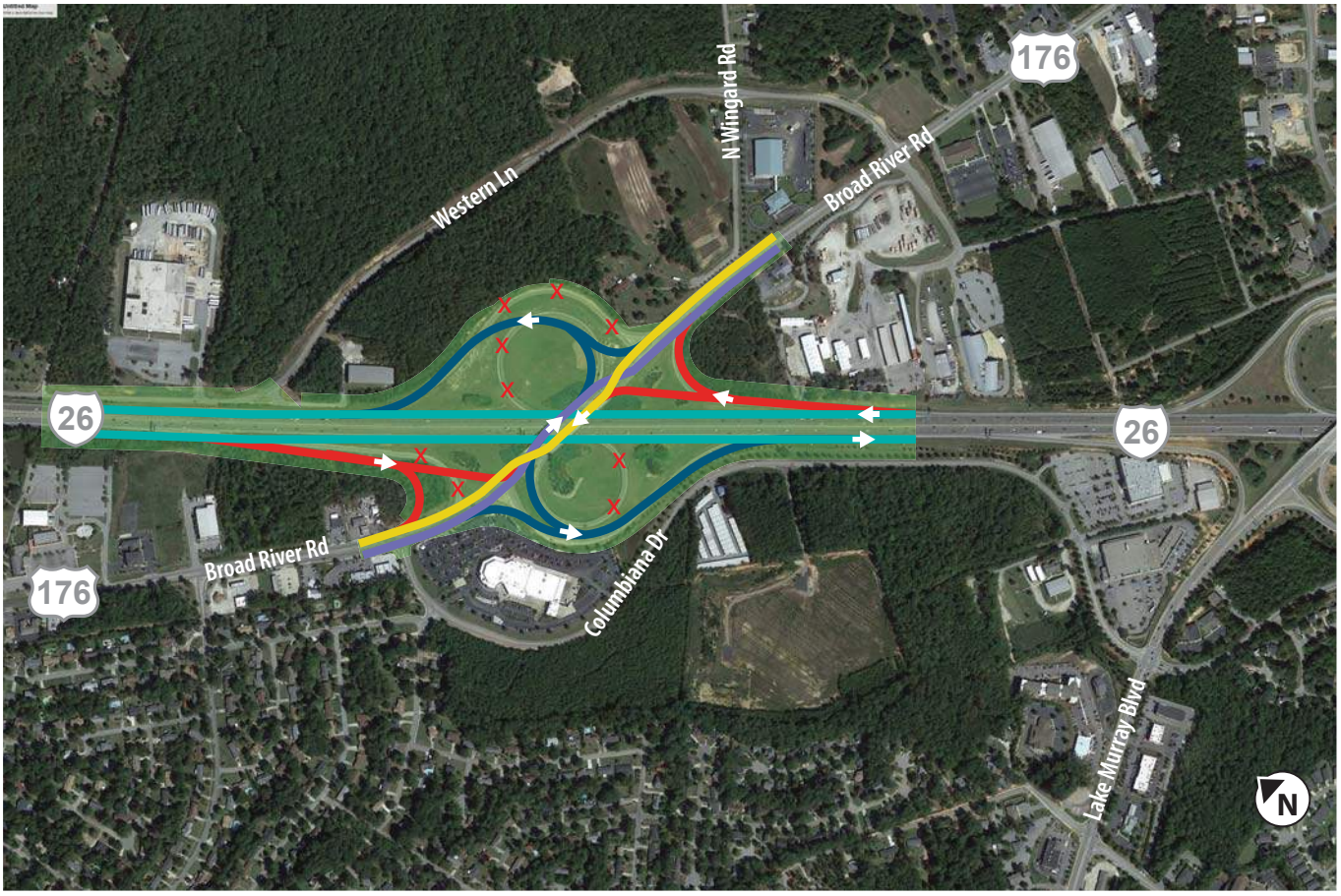
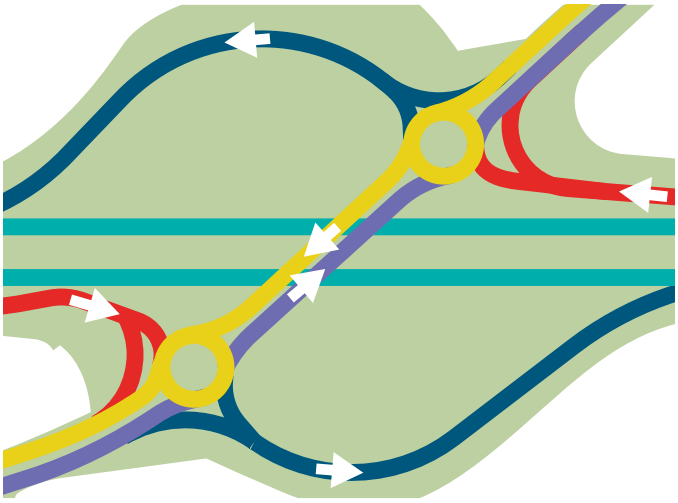


Figure 54: I-26 at Broad River Road, Diverging Diamond Interchange

I-26 AT BROAD RIVER ROAD

AO44 Roundabouts

This alternative proposes to convert the existing northbound and southbound I-26 ramp terminals within the existing partial cloverleaf interchange to multilane roundabout intersections. Roundabouts may improve traffic congestion by promoting continuous traffic flow since vehicles would not be required to stop at traffic signals. Entrance and exit ramps would be reconfigured as diamond interchange ramps. Right-turn bypass lanes would be constructed to remove high volume right-turn movements from the roundabout intersections. Splitter islands would be constructed on all Broad River Road approaches to the roundabouts. This alternative will use the existing bridge. Diamond interchange ramps would be re-aligned to connect to the roundabouts roadway geometry.



Key Highlights

- Continuous traffic flow
- Entrance and exit ramps improved
- High volume right-turn movements removed
- Uses existing bridge structure

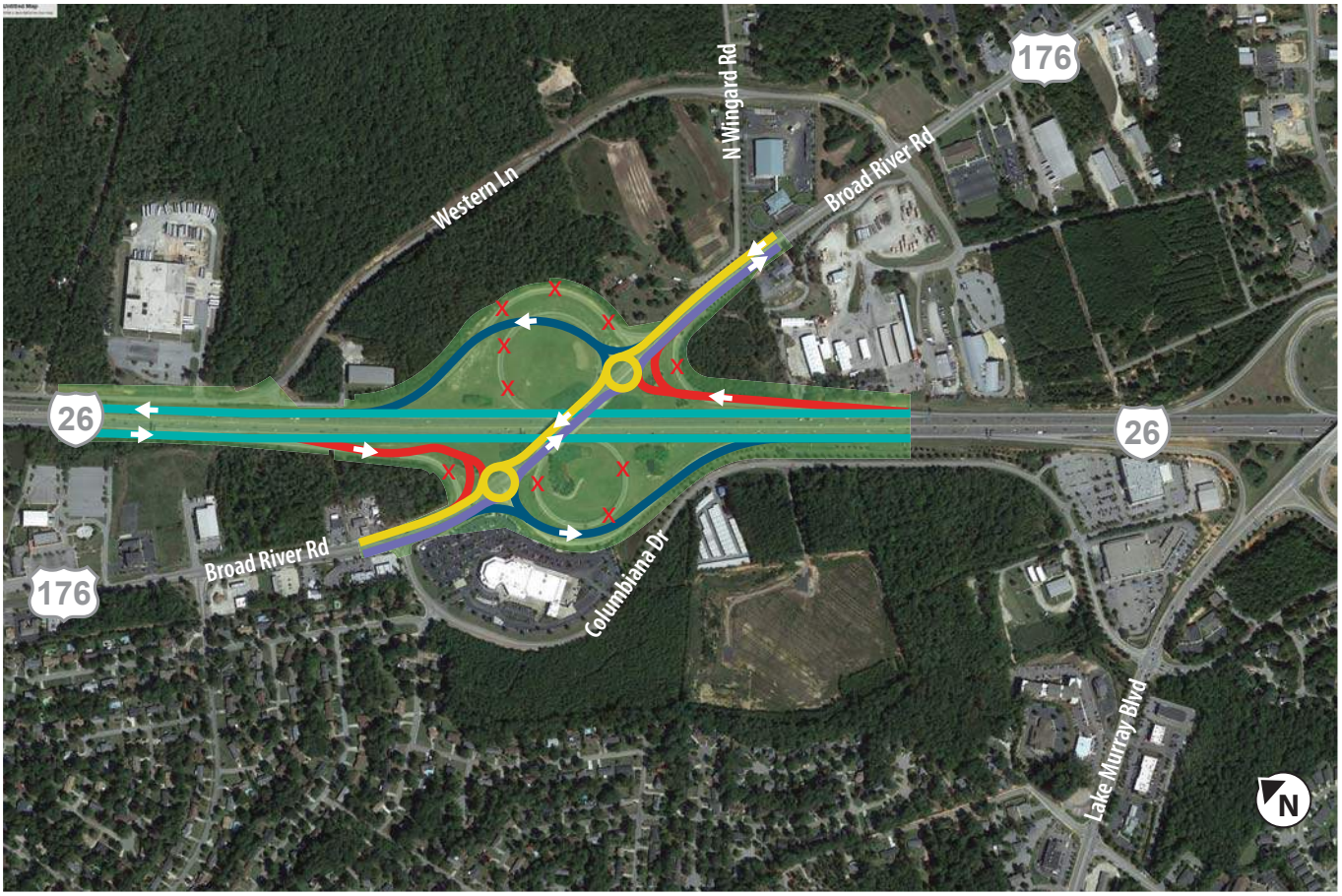
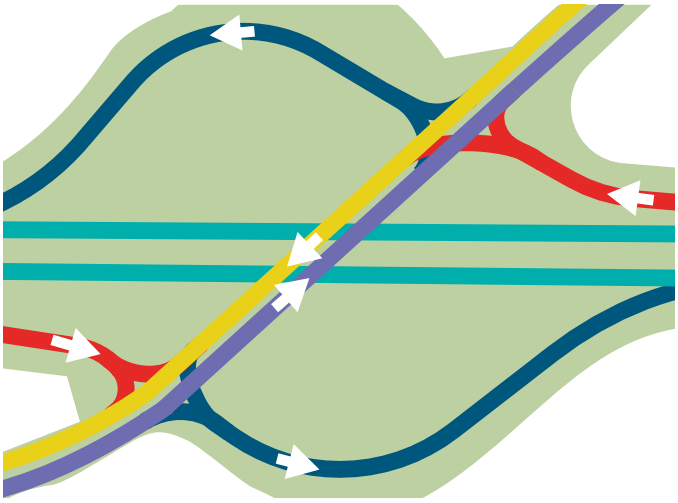


Figure 55: 1-26 at Broad River Road, Roundabouts

I-26 AT BROAD RIVER ROAD

AO45 Tight Diamond Interchange

This alternative proposes to convert existing partial cloverleaf interchange to a tight diamond interchange configuration. This alternative would utilize the existing bridge carrying Broad River Road over I-26. Entrance and exit ramps for the both the southbound and northbound directions would be reconfigured as diamond interchange ramps and signal locations would be relocated to new diamond interchange ramp intersections.



Key Highlights

- Uses existing bridge structure
- Entrance and exit ramps improved

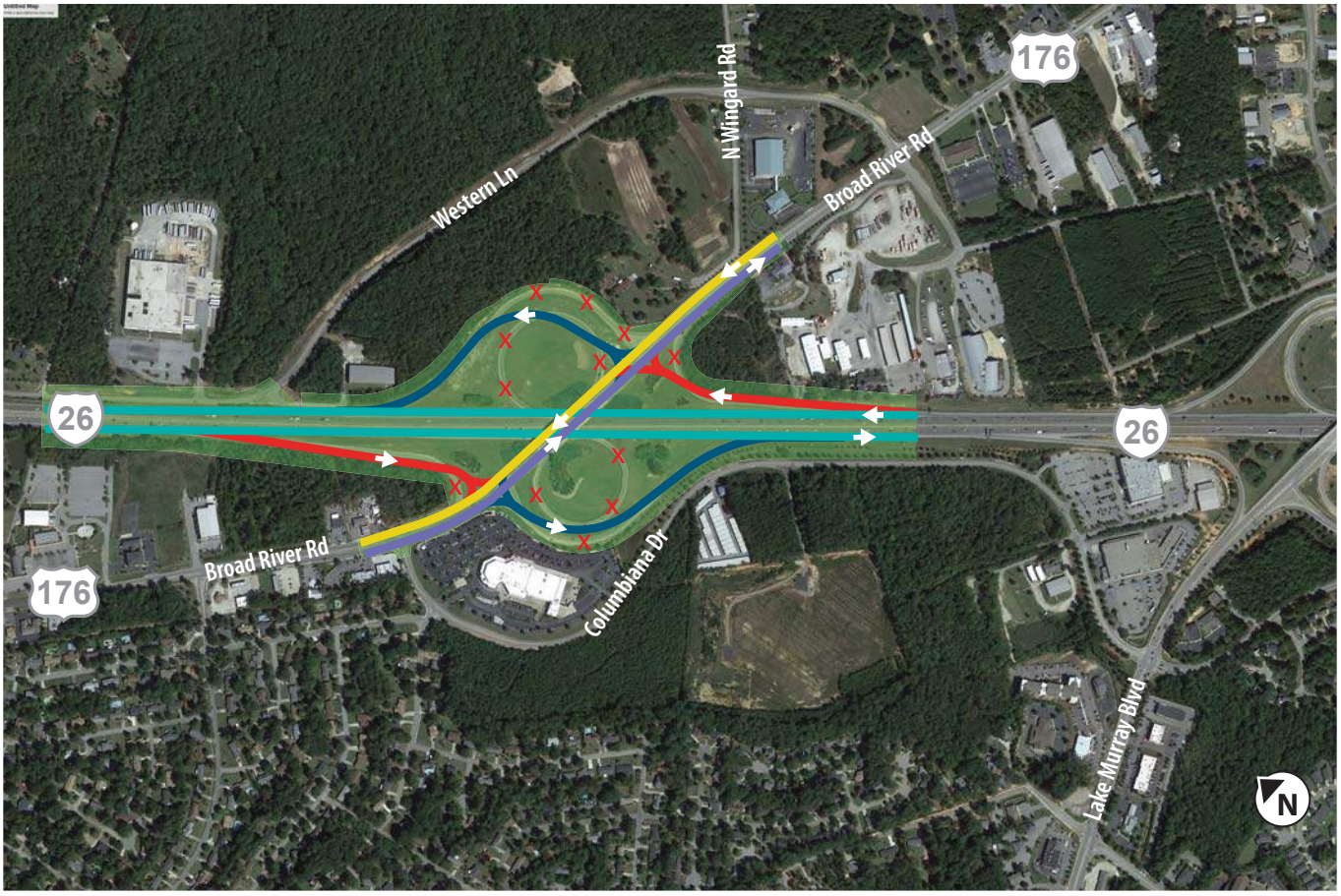


Figure 56: 1-26 at Broad River Road, Tight Diamond Interchange

I-26 AT SUNSET BOULEVARD

Existing Do Nothing Alternative

The existing interchange of I-26 and Sunset Boulevard (US 378) is a diamond interchange, and the intersections of Sunset Boulevard and the I-26 entrance/exit ramps are under signal control. The existing I-26 eastbound exit ramp to Sunset Boulevard is a one-lane ramp that diverges into three lanes at the signalized intersection, one for right-turning traffic movements and two for left-turning movements. The existing I-26 westbound exit ramp to Sunset Boulevard is a one-lane exit ramp that diverges into three lanes at the signalized intersection, one for right-turning traffic movements and two for left-turning movements. Sunset Boulevard is a four-lane thoroughfare through the interchange, with additional turning lanes to access I-26. Frontage roads and commercial driveways are adjacent or near to the entrance/exit ramps, and traffic flow is interrupted by the proximity of the intersection of Oakwood Drive, Harbor Drive, and Hospital Drive. Traffic signal delays and traffic congestion occur on Sunset Boulevard and I-26, particularly eastbound, during peak hours. The following alternatives have been evaluated to address traffic congestion on Sunset Boulevard and I-26.

Key Highlights

- Traffic Congestion
- Traffic signal delays

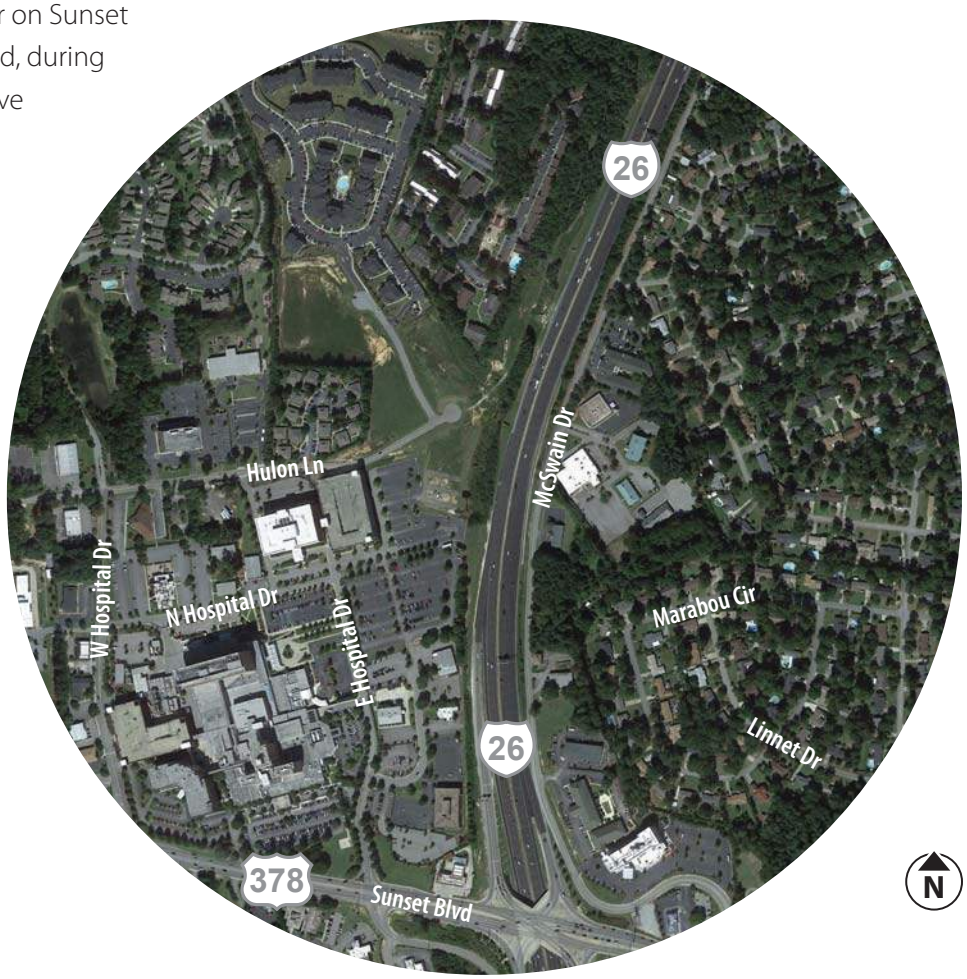
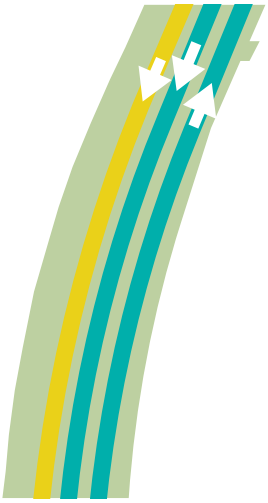


Figure 57: I-26 at Sunset Boulevard, Existing Condition

I-26 AT SUNSET BOULEVARD

AO46 Eastbound Exit Ramp extension

This alternative proposes to extend the existing eastbound exit ramp at Sunset Boulevard. The existing ramp experiences traffic congestion due to the high traffic volumes during peak periods. The ramp extension would provide additional queuing length on the ramp to prevent vehicles from backing up onto the I-26 mainline and causing further congestion on the I-26 mainline.



Key Highlights

- Additional queuing room
- Reduces congestion

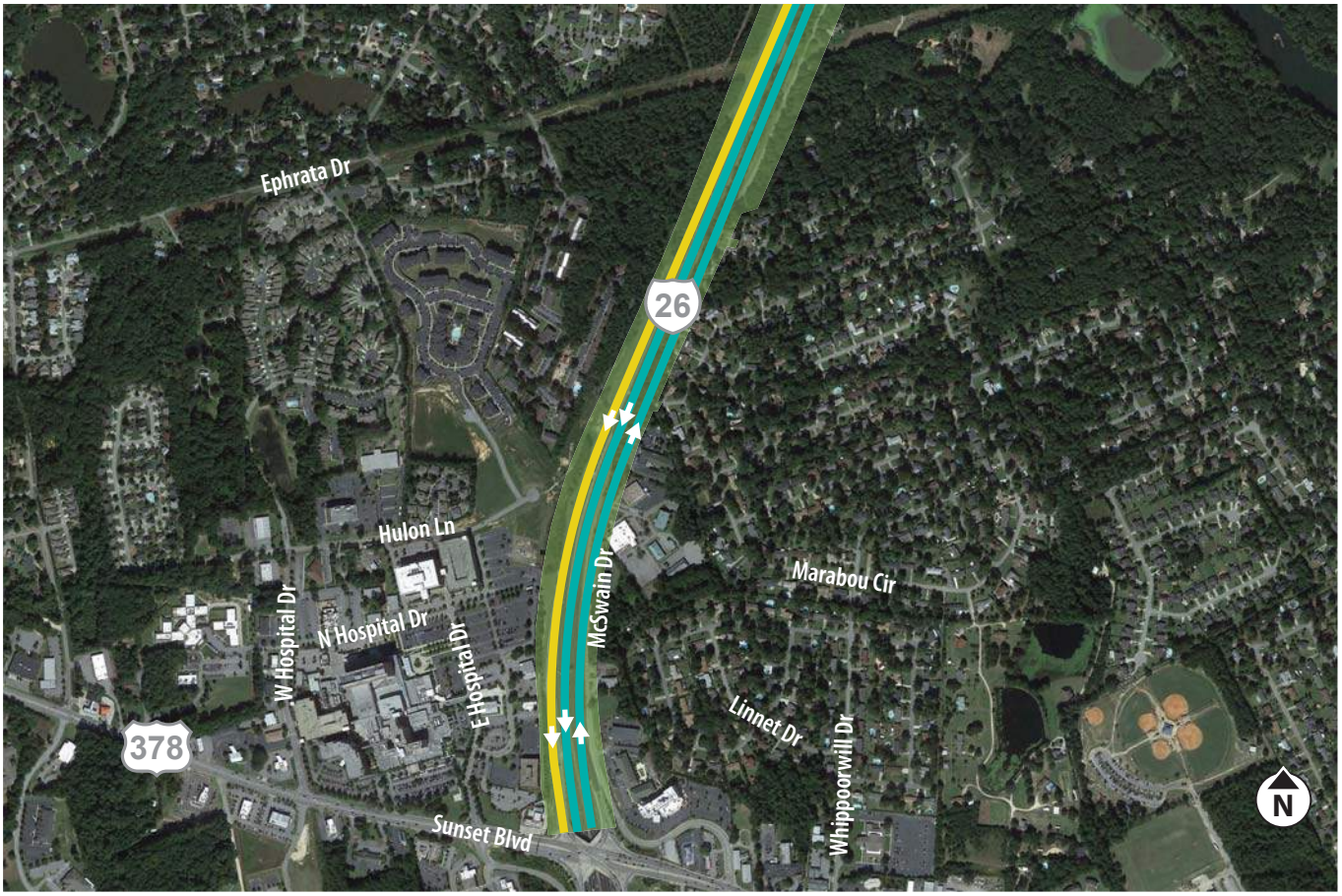
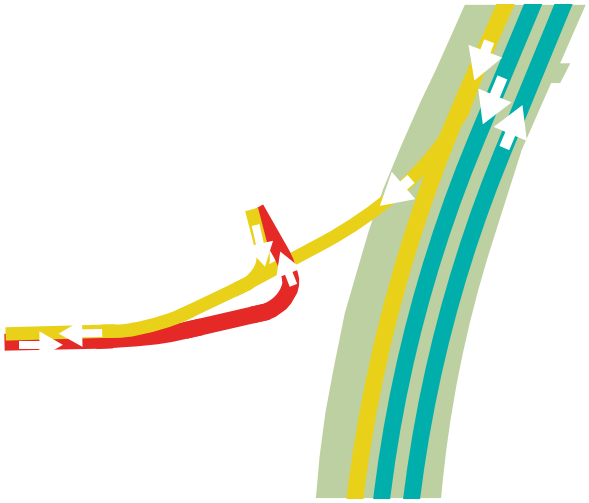


Figure 58: I-26 at Sunset Boulevard, EB Exit Ramp extension

I-26 AT SUNSET BOULEVARD

AO47 Eastbound Exit Ramp Hospital Direct Connect

In this alternative, the same exit ramp extension from AO46 is shown. Additionally, a direct connection to the hospital would be provided from the ramp to Hulon Lane. The ramp extension would provide additional queuing length on the ramp to prevent vehicles from backing up onto the I-26 mainline; and the direct connection to the hospital would reduce the amount of traffic at the Sunset Boulevard signal as much of the traffic is exiting at Sunset Boulevard to access the hospital. The Hulon Lane eastbound would be realigned near the Two Mac Lane intersection to reduce potential wrong way movements on the exit ramp.



Key Highlights

- Additional queuing room
- Reduces congestion
- Direct connection to hospital

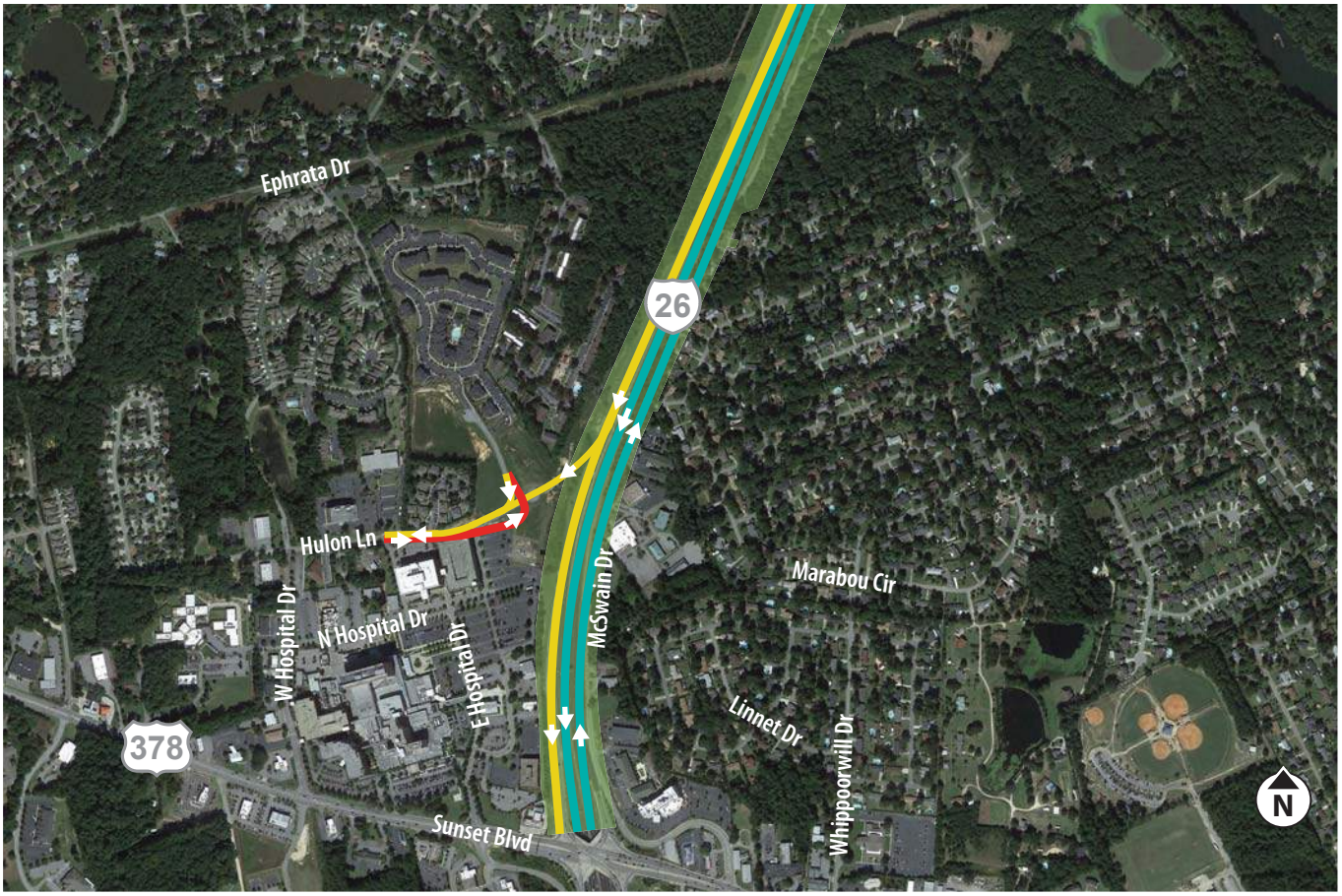


Figure 59: I-26 at Sunset Boulevard, EB Exit Ramp Hospital Direct Connect

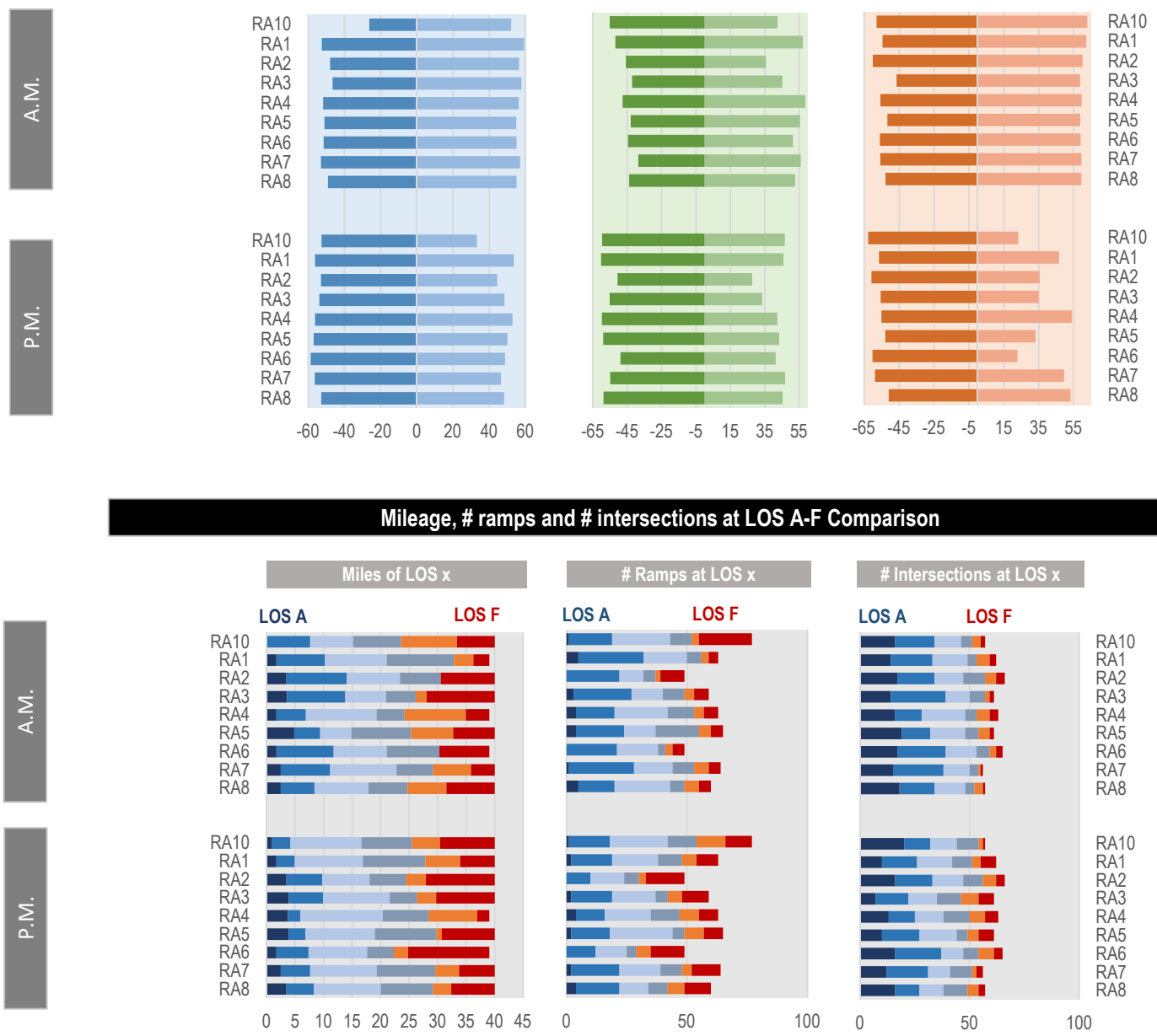
Appendix B—Traffic Analysis Results by Facility and Detailed MOEs for RA1 through RA10

Carolina Crossroads - Traffic Analysis Results by Facility
HDR

8/10/2017

Alternative Travel Time (min) Comparison

Alternative Average Speed (mph) Comparison



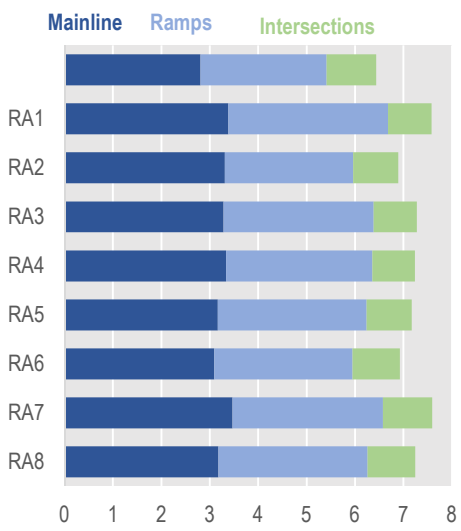
Mileage, # ramps and # intersections at LOS A-F Comparison

For the mainlines, the operational score is based on the mileage experiencing various LOS values (summed for A.M. and P.M.). For ramps (merge/diverge) and intersections, the score is based on the number of junctions experiencing various LOS values. These scores are summed and normalized to an ideal score of 10.0. **Larger values are better.**

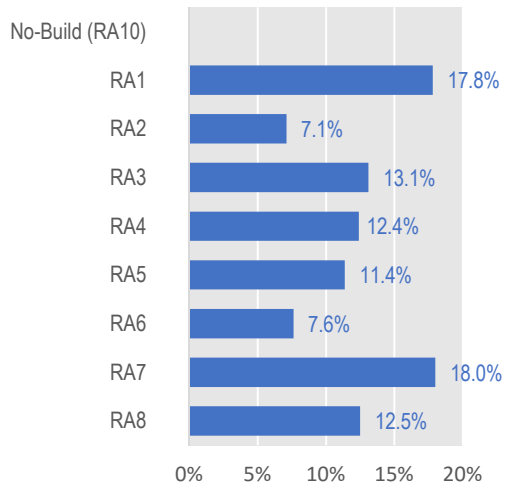
LOS values are given the following weightings:

A=5, B=4, C=3, D=2, E=1, F=0.

Overall Operational Score



Improvement over No-Build



RA1 - LOS and Density

Mainline

Segment	RA1 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-26 Eastbound						
Exit 101 to Exit 102	C	21.4	0.46	C	18.1	0.37
Exit 102 to Exit 103	C	26.0	0.61	C	23.1	0.52
Exit 103 to Exit 104	C	25.8	0.53	C	22.0	0.47
Exit 104 to Exit 107/Exit 106	E	35.6	0.60	C	24.3	0.53
Exit 107/106 to I-26 Split	F	77.9	0.52	E	36.8	0.43
I-26 to I-126	C	25.5	0.56	B	16.8	0.38
I-26 Split to Exit 110	C	18.6	0.40	F	45.2	0.46
I-26 Westbound						
Exit 110 to Exit 108	C	19.6	0.44	C	20.6	0.48
I-126 to I-26	C	22.0	0.46	C	22.7	0.51
I-26 Mege to Exit 106	B	15.7	0.34	D	28.8	0.59
Exit 106 to Exit 104	D	29.2	0.55	F	63.4	0.89
Exit 104 to Exit 103	C	22.1	0.38	D	33.1	0.63
Exit 103 to Exit 102	B	15.6	0.42	D	29.0	0.73
Exit 102 to Exit 101	B	14.2	0.29	D	26.9	0.57

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

RA1 - LOS and Density

Mainline

Segment	RA1 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-20 Eastbound						
west of Exit 61	E	44.5	0.60	C	25.7	0.41
Exit 61 to Exit 63	F	46.8	0.74	C	22.4	0.54
Exit 63 to Exit 68	D	30.5	0.56	D	28.3	0.53
I-20 Westbound						
Exit 68 to Exit 65	D	30.4	0.79	E	39.8	0.86
Exit 65 to Exit 63	A	6.6	0.16	A	6.4	0.20
Exit 63 to Exit 61	B	13.8	0.30	F	81.8	0.54
west of Exit 61	B	17.3	0.26	E	37.9	0.53

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

Mainline

Segment	RA1 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-126 Eastbound						
I-26 to Colonial Life Blvd	C	19.9	0.55	C	18.5	0.40
Colonial Life Blvd to Greystone Blvd	C	25.8	0.62	B	15.9	0.40
Greystone Blvd to Huger St	D	28.8	0.60	B	15.9	0.38
I-126 Westbound						
Huger St to Greystone Blvd	B	14.9	0.36	D	31.3	0.73
Greystone Blvd to Colonial Life Blvd	B	16.4	0.34	E	38.4	0.75
Colonial Life Blvd to I-26	-	-	-	D	26.7	0.64

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

RA1 - LOS and Density

Merge

Segment	RA1 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-26 Eastbound						
Exit 101	C	21.4	0.46	B	18.1	0.37
Exit 102	C	23.4	0.49	C	22.0	0.42
Exit 103	C	25.8	0.53	C	22.0	0.47
Exit 104	E	35.6	0.50	C	24.3	0.44
Exit CD Road	F	77.9	0.52	E	36.8	0.43
Exit 107 (From I-20)	B	12.6	0.27	B	15.5	0.29
Exit 108 (I-126)	B	18.6	0.32	F	45.2	0.37
Exit 110	B	18.3	0.36	B	19.1	0.42
I-26 Westbound						
Exit 110	B	18.6	0.44	B	19.0	0.48
Exit 108 (I-126)	B	15.3	0.34	C	26.6	0.59
Exit 107 (From I-20)	B	20.0	0.36	F	98.3	0.58
Exit 106	C	26.6	0.45	F	73.8	0.72
Exit 104	B	14.2	0.38	C	20.2	0.63
Exit 103	B	15.6	0.33	D	29.0	0.59
Exit 102	B	14.2	0.29	C	26.9	0.57
Exit 101	B	11.4	0.24	C	22.1	0.45

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

RA1 - LOS and Density

Merge

Segment	RA1 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-20 Eastbound						
Exit 61 Loop	C	24.1	0.46	B	16.4	0.35
Exit 61	F	46.8	0.56	C	22.4	0.40
Exit 65	D	30.5	0.45	D	28.3	0.42
Exit 65 (From CD)	B	15.2	0.36	B	16.8	0.32
Exit 68	C	26.2	0.51	D	28.1	0.53
I-20 Westbound						
Exit 68	D	30.4	0.60	E	39.8	0.65
Exit 65 (From CD)	A	6.6	0.16	A	6.4	0.20
Exit 63 (From CD)	A	9.7	0.21	C	20.2	0.35
Exit 63	B	11.9	0.24	F	46.7	0.45
Exit 61 Loop	A	8.8	0.18	B	14.5	0.38
Exit 61	B	12.5	0.20	D	29.0	0.40

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

Merge

Segment	RA1 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-126 Eastbound						
Colonial Life Blvd	C	21.7	0.50	B	14.3	0.32
Greystone Blvd	C	26.3	0.60	B	13.1	0.38
I-126 Westbound						
Colonial Life Blvd	A	8.9	0.27	C	22.1	0.66
Greystone Blvd	B	16.4	0.34	E	38.4	0.75

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

RA1 - LOS and Density

Diverge

Segment	RA1 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-26 Eastbound						
Exit 101	C	23.5	0.48	B	18.1	0.38
Exit 101 Loop	B	17.7	0.37	B	13.5	0.29
Exit 102	C	21.4	0.46	B	18.1	0.37
Exit 102 Loop	C	20.1	0.43	B	16.5	0.35
Exit 103	C	23.4	0.60	C	22.2	0.52
Exit 104	C	25.8	0.53	C	22.0	0.47
Exit 106	F	89.1	0.54	D	29.9	0.50
Exit 107	F	45.3	0.56	C	26.7	0.53
Exit 110	B	19.2	0.40	F	48.2	0.45
I-26 Westbound						
Exit 110	D	28.9	0.45	F	65.1	0.49
Exit 107/I-126	C	20.2	0.44	C	21.1	0.48
Exit 106	B	14.0	0.34	C	25.1	0.59
Exit 104	C	26.7	0.44	F	73.6	0.71
Exit 103	B	14.2	0.38	C	21.3	0.63
Exit 102	B	18.7	0.41	D	34.5	0.73
Exit 102 Loop	B	16.5	0.31	C	27.0	0.57
Exit 101	B	14.2	0.29	C	26.9	0.57
Exit 101 Loop	B	10.9	0.26	C	22.1	0.52

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

RA1 - LOS and Density

Diverge

Segment	RA1 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-20 Eastbound						
Exit 61	D	29.2	0.44	B	18.5	0.31
Exit 63/64/65	C	22.8	0.43	B	17.0	0.32
Exit 68	E	38.2	0.71	D	32.5	0.70
I-20 Westbound						
Exit 68	E	39.6	0.79	F	66.1	0.81
Exit 65	D	33.2	0.38	E	43.1	0.43
Exit 65 (CD Road to I-26)	C	25.0	0.33	D	29.0	0.39
Exit 63	A	6.7	0.16	A	6.4	0.20
Exit 61	D	28.9	0.30	F	68.7	0.53

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

Diverge

Segment	RA1 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-126 Eastbound						
Colonial Life Boulevard	B	19.9	0.55	B	18.5	0.40
Greystone Boulevard	C	22.0	0.49	B	14.6	0.32
I-126 Westbound						
Greystone Boulevard	B	17.1	0.36	D	32.1	0.73
Colonial Life Boulevard	B	15.3	0.27	E	42.7	0.60
Colonial Life Boulevard to I-26 EB	B	13.3	0.30	E	38.1	0.68
Exit 107 (I-20)	B	11.2	0.27	D	29.5	0.66

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

RA1 - Travel Times Between External Zone Pairs

Segments	Length (mi)	Travel Time (mm:ss)		Average Speed (mph)	
		AM	PM	AM	PM
I-26 EB from West of Exit 101					
To I-26 EB (east of Exit 110)	13.84	18:45	13:28	44.3	61.7
To I-20 WB (west of Exit 61)	16.11	21:29	20:16	45.0	47.7
To I-20 EB (east of Exit 68)	15.64	25:59	19:08	36.1	49.1
To I-126 EB (Greystone Blvd)	14.78	21:21	14:56	41.5	59.4
I-26 WB from East of Exit 110					
To I-26 WB (west of Exit 110)	13.85	13:14	23:26	62.8	35.5
To I-20 EB (east of Exit 68)	8.40	10:26	11:09	48.3	45.2
I-20 EB from West of Exit 61					
To I-20 EB (east of Exit 68)	11.10	16:41	10:33	39.9	63.1
To I-26 WB (west of Exit 101)	16.64	22:33	29:08	44.3	34.3
To I-126 EB (east of Greystone Blvd)	10.33	17:37	11:03	35.2	56.1
I-20 WB from East of Exit 68					
To I-20 WB (east of Exit 61)	11.10	10:52	15:47	61.3	42.2
To I-26 EB (east of Exit 110)	8.92	10:13	13:51	52.4	38.7
To I-26 WB (west of Exit 101)	15.29	16:21	29:35	56.1	31.0
I-126 WB from East of Greystone Blvd					
To I-26 WB (wast of Exit 101)	14.75	14:43	26:40	60.2	33.2
To I-20 WB (west of Exit 61)	10.64	11:03	15:24	57.8	41.5

RA1 - Intersection Capacity Analysis

Node #	Intersection Name	AM		PM	
		LOS	Delay	LOS	Delay
Exit 101					
100000391	Broad River Road (US 176) at Columbiana Drive / Lordship Lane	B	17.7	A	4.0
100000150	Broad River Road (US 176) at I-26 EB Off-ramp[1]	B	15.2	F	85.1
100000151	Broad River Road (US 176) at I-26 EB On-ramp	A	3.9	A	4.4
100000160	Broad River Road (US 176) at I-26 WB On-ramp[2]	A	1.9	A	2.3
4	Broad River Road (US 176) at Western Lane	B	11.6	A	9.1
Exit 102					
100000395	Lake Murray Boulevard (SC 60) at Columbiana Drive	C	34.5	E	63.3
100000510	Lake Murray Boulevard (SC 60) at I-26 EB On-Ramp[2]	A	2.3	A	9.1
100000169	Lake Murray Boulevard (SC 60) at I-26 WB On-Ramp[2]	A	2.5	B	13.8
100000401	Lake Murray Boulevard (SC 60) at Parkridge Drive / Kinley Road	B	14.7	C	20.2
Exit 103					
100000364	Harbison Boulevard (S-757) at Columbiana Drive	B	15.1	B	11.4
100000365	Harbison Boulevard (S-757) at Park Terrace Drive / Columbiana Circle	A	7.4	C	26.2
100000362	Harbison Boulevard (S-757) at Saturn Parkway	A	5.2	B	11.9
104	Harbison Boulevard (S-757) at I-26 EB Ramps	B	16.0	B	11.7
99	Harbison Boulevard (S-757) at I-26 WB Ramps	C	20.5	D	42.1
100000165	Harbison Boulevard (S-757) at Woodcross Drive	B	19.9	D	40.5
Exit 104					
100000353	Piney Grove Road at Bower Parkway / Jamil Road	E	69.8	D	48.7
71	Piney Grove Road at I-26 EBR Off-ramp [1]	C	31.0	C	31.3
100000174	Piney Grove Road at I-26 EB Ramps	B	18.2	C	24.0
100000177	Piney Grove Road at I-26 WB Ramps	B	11.1	B	10.3
89	Piney Grove Road at I-26 WBR Off-ramp [1]	C	28.2	C	24.2
100000399	Piney Grove Road at Fernandina Road	C	24.3	D	35.8
Exit 106					
100000348	St. Andrews Road at Jamil Road	B	19.1	B	12.8
127	St. Andrews Road at Woodland Hills Road	B	13.9	A	8.8
40	St. Andrews Road at I-26 SPUI Intersection	D	30.6	E	41.2
100000182	St. Andrews Road at I-26 WBR Off-ramp	F	173.6	F	200.3
100000358	St. Andrews Road at Fernandina Road/Burning Tree Drive	C	17.2	D	30.0
100000354	St. Andrews Road at Kay Street / Chartwell Road	C	30.1	B	13.8
Exit 108					
100000256	Bush River Road at Zimalcrest Drive	A	9.6	A	9.1
100000898	Bush River Road at Driveway	A	4.2	A	5.3
100000252	Bush River Road at Morninghill Drive	C	22.9	C	21.3
100000184	Bush River Road at Arrowwood Road	B	16.2	B	19.4
Exit 110					
100000186	Sunset Boulevard (US 378) at E. Hospital Drive / Harbor Drive	D	45.1	F	159.4
100000093	Sunset Boulevard (US 378) at I-26 EBR Off-Ramp[1]	E	46.3	F	79.9
100000903	Sunset Boulevard (US 378) at I-26 Single Point Ramps Intersection	C	22.4	C	31.7
100000902	Sunset Boulevard (US 378) at I-26 WBR Off-Ramp[1]	D	33.6	F	55.6
100000163	Sunset Boulevard (US 378) at Chris Drive / McSwain Drive	A	6.8	F	80.0
Exit 63					
14	Bush River Road at Berryhill Drive[1]	B	10.4	B	17.4
134	Bush River Road at I-20 WB Ramps DDI Intersection	B	10.3	B	12.8
48	Bush River Road at I-20 EB Ramps DDI Intersection	B	11.2	B	10.5
120	Bush River Road at Rockland Road	A	5.7	B	14.7
100000255	Bush River Road at Independence Avenue	B	17.0	C	20.7
Exit 65					
100000187	Broad River Road at Marley Drive / Briargate Circle	D	44.7	C	34.8
54	Broad River Road at I-20 WB Ramps	C	26.4	B	13.5
79	Broad River Road at I-20 Single Point Ramps Intersection	C	31.3	C	31.6
100000190	Broad River Road at I-20 EB Ramps[1]	E	78.3	D	43.8
100000195	Broad River Road at Longcreek Drive	A	5.1	A	4.2
Additional Intersections					
100000012	Broad River Road (US 176) at Kinley Road	E	60.8	D	38.1
100000037	Broad River Road (US 176) at Harbison Boulevard	B	14.0	C	23.2
100000049	Broad River Road (US 176) at Piney Woods Road / Lost Creek Drive	C	22.1	C	20.5
100000068	Broad River Road (US 176) at Piney Grove Road	A	5.3	B	10.4
100000339	Broad River Road (US 176) at St. Andrews Road	F	131.7	D	44.5
100000349	Broad River Road (US 176) at St. Andrews Parkway	C	33.8	C	21.1
100000344	Broad River Road (US 176) at Seminole Road / Young Drive	F	92.7	E	73.1
41	Broad River Road (US 176) at Dutch Square Boulevard	A	6.3	C	27.3
100000046	Broad River Road (US 176) at Bush River Road	C	27.3	E	71.2
100000266	Broad River Road (US 176) at Greystone Boulevard	B	12.3	B	14.6
100000265	Greystone Boulevard at Stoneridge Drive	C	23.9	D	48.9
100000188	Greystone Boulevard at I-126 WB Ramps[1]	E	37.2	C	21.3
100000185	Greystone Boulevard at I-126 EB Ramps[1]	C	25.0	F	70.6
100000262	Bush River Road at Colonial Life Boulevard	B	18.0	C	22.8
100000897	Colonial Life Boulevard at West Colonial Life Road[1]	E	37.2	A	4.1
100000374	Park Terrance Drive at Bower Parkway	A	8.7	B	11.2

[1] **Intersection unsignalized under all scenarios; worst approach LOS and delay reported.**

[2] **Delay unable to be processed per HCM 2010 methodology; Average control delay reported.**

RA1 - Mainline Travel Time Summary for I-26, I-20, I-126

Segments	Eastbound					Westbound				
	Length (mi)	Travel Time (mm:ss)		Average Speed (mph)		Length (mi)	Travel Time (mm:ss)		Average Speed (mph)	
		AM	PM	AM	PM		AM	PM	AM	PM
I-26 between Exit 101 and Exit 110										
Exit 101 to Exit 102 (Lake Murray Boulevard)	0.76	00:46	00:45	58.6	60.4	0.90	00:54	00:58	59.9	56.5
Exit 102 to Exit 103 (Harbison Boulevard)	1.21	01:15	01:13	58.3	59.8	1.04	01:01	01:07	61.3	55.9
Exit 103 to Exist 104 (Piney Grove Road)	0.89	00:56	00:53	56.9	59.6	0.95	00:57	01:00	60.3	56.5
Exit 104 to Exit 107 (I-20)/ Exit106 (St. Andrews Road)	1.74	02:33	01:52	41.0	56.0	2.43	03:01	05:16	48.3	27.7
Exit 106 to I-26/I-126 Split	1.23	02:21	01:31	31.2	48.2	0.69	00:41	00:45	60.5	54.9
I-26 to I-126	1.22	01:14	01:15	59.4	58.3	0.73	00:42	00:42	62.8	62.8
I-26/I-126 Split to Exit 110 (Sunset Boulevard)	1.63	01:35	01:56	61.8	50.7	1.47	01:25	01:26	62.5	61.7
Total	**8.67**	**10:40**	**09:26**	**48.7**	**55.2**	**8.21**	**08:41**	**11:13**	**56.7**	**43.9**
I-20 between Exit 61 and Exit 68										
Exit 61 to Exit 63/64	1.83	02:42	01:50	40.7	59.8	2.32	02:26	04:31	18.7	30.8
Exit 63/64 to Exit 65	2.55	02:29	02:26	61.4	62.6	1.39	01:21	01:19	33.7	63.6
Exit 65 to Exist 68 (Monticello Road)	2.51	02:49	02:36	53.6	58.1	2.99	03:25	04:07	13.3	43.5
Total	**6.89**	**08:00**	**06:52**	**51.7**	**60.2**	**6.69**	**07:12**	**09:56**	**55.8**	**40.4**
I-126 between I-26 and Greystone Blvd										
I-26 to Colonial Life Blvd	1.13	01:20	01:18	50.8	52.0	0.97	00:56	01:08	48.4	51.4
Colonial Life Blvd to Greystone Blvd	1.49	01:32	01:28	58.3	61.1	1.13	01:06	01:37	41.4	41.8
Total	**2.61**	**02:52**	**02:46**	**54.8**	**56.8**	**2.11**	**02:02**	**02:46**	**62.1**	**45.8**

RA1 - Mainline Volumes

I-26 Mainline	Volume			
	AM		PM	
	EB	WB	EB	WB
Location				
west of Exit 101 (Broad River Road)	4,623	2,861	3,610	5,433
Exit 101 to Exit 102 (Lake Murray Boulevard)	5,494	3,540	4,415	6,899
Exit 102 to Exit 103 (Harbison Boulevard)	5,809	3,991	4,989	7,045
Exit 103 to Exist 104 (Piney Grove Road)	6,413	4,559	5,639	7,584
Exit 104 to Exit 106 (St. Andrews Road/CD Road)	7,188	4,946	6,380	7,987
Exit 106 to Exit 107	5,852	3,182	4,810	5,788
I-26 to I-26	2,044	2,189	2,258	2,454
Exit 108 to Exit 110 (Sunset Boulevard)	3,191	2,189	3,437	2,454
southeast of Exit 110	3,451	4,299	4,016	4,762

I-20 Mainline	Volume			
	AM		PM	
	EB	WB	EB	WB
Location				
west of Exit 61 (Sunset Boulevard)	4,285	1,884	2,971	3,819
Exit 61 to Exit 63 (Bush River Road/CD Road)	5,302	2,920	3,870	5,206
Exit 63 to Exit 65 (Broad River Road)	2,240	1,976	1,596	2,386
Exit 65 to Exit 68 (Monticello Road)	5,363	5,714	5,059	6,200
east of Exit 68	4,886	5,737	5,091	5,856

I-126 Mainline	Volume			
	AM		PM	
	EB	WB	EB	WB
Location				
I-26 to Colonial Life Blvd	4,946	1,932	3,583	4,628
I-126 to I-26 WB	-	1,932	-	4,628
I-126 from Colonial Life Blvd to Greystone Blvd	5,947	3,229	3,810	7,181
I-126 from Greystone Blvd to Huger St	5,741	3,439	3,679	6,968

RA1 - Major Arterial Travel Times

Location	Eastbound					Westbound				
	Length (mi)	Travel Time (mm:ss)		Average Speed (mph)		Length (mi)	Travel Time (mm:ss)		Average Speed (mph)	
		AM	PM	AM	PM		AM	PM	AM	PM
Broad River Road (west of Exit 101 to Greystone Blvd)	6.7	26:55	19:38	15.0	20.6	7.3	18:59	19:56	23.1	22.0
Lake Murray Boulevard (west of Exit 102 to Broad River Road)	1.5	03:51	05:01	23.9	18.3	1.5	03:27	04:08	25.4	21.2
Harbison Boulevard (west of Exit 103 to Broad River Road)	1.1	03:14	04:13	20.5	15.8	1.1	03:04	03:37	21.6	18.4
Piney Grove Road (west of Exit 104 to Broad River Road)	1.5	04:38	04:13	20.0	22.0	1.5	06:35	04:56	14.1	18.8
St. Andrews Road (west of Exit 106 to Broad River Road)	1.0	08:56	04:29	6.9	13.8	1.0	04:31	04:18	13.7	14.4
Bush River Road (west of Exit 63 to Broad River Road)	2.0	05:59	06:10	20.0	19.4	2.0	05:54	05:53	20.6	20.6
Location	Northbound					Southbound				
	Length (mi)	Travel Time (mm:ss)		Average Speed		Length (mi)	Travel Time		Average Speed	
		AM	PM	AM	PM		AM	PM	AM	PM
Colonial Life Boulevard (I-126 Ramps to Bush River Road)	0.6	01:47	02:00	21.3	18.9	0.6	02:30	02:31	15.1	15.0

RA2 - LOS and Density

Mainline

Segment	RA2 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-26 Eastbound						
Exit 101 to Exit 102	F	76.1	0.57	B	17.0	0.44
Exit 102 to Exit 103	B	14.1	0.52	C	18.6	0.51
Exit 103 to Exit 104	B	12.1	0.51	C	23.9	0.60
Exit 104 to Exit 106	F	139.9	0.52	F	114.4	0.58
Exit 106 to Exit 107	B	12.1	0.24	B	13.1	0.24
I-26 to I-26	B	13.2	0.41	B	13.6	0.43
Exit 108 to Exit 110	C	21.0	0.53	C	21.3	0.60
I-26 Westbound						
Exit 110 to Exit 108	D	26.5	0.48	C	24.6	0.53
I-126 Diverge to I-126 Merge	B	12.5	0.23	B	13.2	0.30
Exit 107 to Exit 106	C	19.4	0.38	F	57.1	0.58
Exit 106 to Exit 104	C	19.4	0.39	F	74.8	0.59
Exit 104 to Exit 103	C	23.4	0.48	F	58.2	0.72
Exit 103 to Exit 102	B	16.5	0.43	C	23.0	0.64
Exit 102 to Exit 101	B	13.9	0.40	D	33.8	0.62

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

RA2 - LOS and Density

Mainline

Segment	RA2 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-20 Eastbound						
west of Exit 61	F	46.3	0.62	C	25.4	0.41
Exit 61 to Exit 63	F	59.3	0.66	E	40.8	0.57
Exit 63 to Exit 65	A	10.9	0.24	A	7.9	0.16
Exit 65 to Exit 68	D	33.0	0.73	D	32.1	0.73
I-20 Westbound						
Exit 68 to Exit 65	F	101.6	0.62	F	108.3	0.66
Exit 65 to Exit 63	A	8.2	0.17	A	9.0	0.21
Exit 63 to Exit 61	D	29.3	0.39	F	86.2	0.68
west of Exit 61	C	18.1	0.27	E	36.2	0.52

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

Mainline

Segment	RA2 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-126 Eastbound						
I-26 to Colonial Life Blvd	B	14.1	0.57	B	12.2	0.47
Colonial Life Blvd to Greystone Blvd	C	21.6	0.55	B	16.0	0.41
Greystone Blvd to Huger St	C	24.8	0.56	B	15.0	0.37
I-126 Westbound						
Huger St to Greystone Blvd	B	16.0	0.37	D	30.9	0.73
Greystone Blvd to Colonial Life Blvd	B	16.3	0.35	F	58.1	0.75
Colonial Life Blvd to I-26	B	12.8	0.27	D	29.7	0.60

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

RA2 - LOS and Density

Diverge

Segment	RA2 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-26 Eastbound						
Exit 101	D	30.5	0.67	C	20.2	0.50
Exit 102	F	76.1	0.55	B	17.0	0.44
Exit 103	B	15.6	0.52	C	20.3	0.51
Exit 104	B	12.5	0.41	C	24.0	0.48
Exit 106	F	139.9	0.52	F	114.4	0.58
Exit 110	C	24.2	0.53	C	24.0	0.60
I-26 Westbound						
Exit 110	D	30.8	0.46	E	40.0	0.49
Exit 108 (CD Road/I-126)	C	26.5	0.48	C	24.6	0.53
Exit 104	C	27.2	0.47	F	80.6	0.67
Exit 103	C	22.9	0.50	F	65.2	0.71
Exit 102	B	16.6	0.43	C	23.1	0.64
Exit 101	B	14.0	0.40	D	34.1	0.62

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

RA2 - LOS and Density

Diverge

Segment	RA2 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-20 Eastbound						
Exit 61	E	35.4	0.46	B	18.5	0.31
Exit 63	F	55.6	0.51	E	40.8	0.43
Exit 68	E	42.5	0.80	E	37.7	0.73
I-20 Westbound						
Exit 68	F	84.1	0.69	F	131.1	0.61
Exit 65	F	88.0	0.49	F	98.3	0.50
Exit 61	F	51.6	0.37	F	95.1	0.66

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

Diverge

Segment	RA2 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-126 Eastbound						
Colonial Life Boulevard	B	14.1	0.43	B	12.2	0.35
Greystone Boulevard	B	19.3	0.44	B	15.6	0.32
I-126 Westbound						
Greystone Boulevard	B	18.4	0.37	D	33.4	0.73
Colonial Life Boulevard	C	21.0	0.35	F	70.2	0.75

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

RA2 - LOS and Density

Merge

Segment	RA2 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-26 Eastbound						
Exit 101	F	76.1	0.57	B	17.0	0.44
Exit 102	B	14.1	0.42	B	18.6	0.41
Exit 103	B	12.1	0.41	C	23.9	0.48
Exit 104	F	125.3	0.47	F	98.9	0.50
Exit CD Road	F	139.9	0.52	F	114.4	0.58
Exit 107 (From I-20)	B	13.2	0.31	B	13.6	0.33
Exit 108 (I-126)	C	21.0	0.40	C	21.3	0.45
Exit 110	B	14.8	0.34	C	21.2	0.45
I-26 Westbound						
Exit 110	D	28.1	0.38	C	27.6	0.42
Exit 108 (I-126)	B	18.1	0.31	D	29.0	0.56
Exit 107 (From I-20)	B	19.4	0.38	F	57.1	0.59
Exit 106	B	19.4	0.39	F	74.8	0.59
Exit 104	C	27.2	0.47	F	80.6	0.67
Exit 103	B	16.5	0.34	C	23.0	0.51
Exit 102	B	13.9	0.32	D	33.8	0.49
Exit 101	B	18.3	0.33	C	25.8	0.53

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

RA2 - LOS and Density

Merge

Segment	RA2 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-20 Eastbound						
Exit 61 Loop	C	27.1	0.44	B	19.5	0.36
Exit 65	D	29.6	0.48	C	27.2	0.44
Exit 68	D	29.9	0.57	D	30.1	0.55
I-20 Westbound						
Exit 68	F	82.6	0.53	F	99.2	0.50
Exit 64 (From CD)	B	10.0	0.19	C	24.7	0.33
Exit 63	B	13.4	0.23	F	63.1	0.42
Exit 61	B	13.6	0.20	D	29.4	0.39

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

Merge

Segment	RA2 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-126 Eastbound						
Colonial Life Blvd	C	20.5	0.55	B	14.1	0.41
Greystone Blvd	C	23.3	0.56	B	12.2	0.37
I-126 Westbound						
Greystone Blvd	B	18.3	0.35	F	58.0	0.76
Colonial Life Blvd	B	10.3	0.27	F	61.8	0.62

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

RA2 - Travel Times Between External Zone Pairs

Segments	Length (mi)	Travel Time (mm:ss)		Average Speed (mph)	
		AM	PM	AM	PM
I-26 EB from West of Exit 101					
To I-26 EB (east of Exit 110)	13.86	21:19	14:39	39.0	56.8
To I-20 WB (west of Exit 61)	16.07	27:54	22:11	34.6	43.5
To I-20 EB (east of Exit 68)	15.55	27:48	18:52	33.6	49.4
To I-126 EB (Greystone Blvd)	14.81	29:30	18:28	30.1	48.1
I-26 WB from East of Exit 110					
To I-26 WB (west of Exit 101)	13.87	13:23	15:21	62.2	54.2
To I-20 EB (east of Exit 68)	8.45	09:31	09:50	53.2	51.6
I-20 EB from West of Exit 61					
To I-20 EB (east of Exit 68)	11.10	17:19	10:57	38.4	60.8
To I-26 WB (west of Exit 101)	16.28	22:56	22:08	42.6	44.1
To I-126 EB (east of Greystone Blvd)	10.36	24:10	13:11	25.7	47.1
I-20 WB from East of Exit 68					
To I-20 WB (east of Exit 61)	11.10	15:34	23:38	42.8	28.2
To I-26 EB (east of Exit 110)	8.61	16:26	22:50	31.4	22.6
To I-26 WB (west of Exit 101)	15.35	21:06	30:42	43.6	30.0
I-126 WB from East of Greystone Blvd					
To I-26 WB (west of Exit 101)	14.75	14:52	19:02	59.5	46.5
To I-20 WB (west of Exit 61)	10.67	11:05	16:08	57.8	39.7

RA2 - Intersection Capacity Analysis

Node #	Intersection Name	AM		PM	
		LOS	Delay	LOS	Delay
Exit 101					
106	Broad River Road (US 176) at Columbiana Drive / Lordship Lane	C	28.1	A	10.0
108	Broad River Road (US 176) at I-26 EBR Off-ramp[1]	A	0.8	A	0.1
101	Broad River Road (US 176) at I-26 EB Ramps	B	18.2	B	11.7
104	Broad River Road (US 176) at I-26 WB Ramps	B	16.9	C	22.9
100000522	Broad River Road (US 176) at I-26 WBR Off-ramp[1]	A	5.7	A	2.8
4	Broad River Road (US 176) at Western Lane	C	30.1	B	11.9
Exit 102					
100000395	Lake Murray Boulevard (SC 60) at Columbiana Drive	D	52.8	F	98.8
103	Lake Murray Boulevard (SC 60) at I-26 EB Off-Ramp	B	17.1	A	9.4
100000169	Lake Murray Boulevard (SC 60) at I-26 WB Ramps	C	30.7	D	45.4
100000516	Lake Murray Boulevard (SC 60) at I-26 WBR Off-Ramp[1]	A	0.6	A	6.8
100000401	Lake Murray Boulevard (SC 60) at Parkridge Drive / Kinley Road	C	24.3	C	33.1
Exit 103					
100000364	Harbison Boulevard (S-757) at Columbiana Drive	C	32.4	A	9.7
100000365	Harbison Boulevard (S-757) at Park Terrace Drive / Columbiana Circle	A	6.8	C	27.4
100000362	Harbison Boulevard (S-757) at Saturn Parkway	B	10.3	A	8.3
112	Harbison Boulevard (S-757) at I-26 EBR Off-Ramp	A	2.5	A	2.8
121	Harbison Boulevard (S-757) at I-26 SPUI Interchange	D	37.6	D	38.9
99	Harbison Boulevard (S-757) at I-26 WBR Off-Ramp	A	3.4	B	14.7
100000165	Harbison Boulevard (S-757) at Woodcross Drive	B	17.1	C	28.9
Exit 104					
100000353	Piney Grove Road at Bower Parkway / Jamil Road	F	82.1	E	65.6
152	Piney Grove Road at West DDI Intersection	B	15.8	B	18.2
100000174	Piney Grove Road at I-26 EBL Off-Ramp	A	0.6	B	10.4
123	Piney Grove Road at I-26 WBL Off-Ramp	B	16.4	B	11.2
154	Piney Grove Road at East DDI Interchange	C	22.2	B	14.2
100000399	Piney Grove Road at Fernandina Road	C	26.4	D	36.2
Exit 106					
100000348	St. Andrews Road at Jamil Road	E	60.4	D	44.2
100000178	St. Andrews Road at West DDI Intersection	B	19.5	B	14.2
54	St. Andrews Road at I-26 EBL Off-Ramp	A	0.2	A	0.3
45	St. Andrews Road at I-26 WBL Off-Ramp	A	8.5	A	6.5
142	St. Andrews Road at East DDI Intersection	B	11.0	B	19.5
100000354	St. Andrews Road at Kay Street / Chartwell Road	C	27.9	E	56.2
Exit 108					
100000256	Bush River Road at Zimalcrest Drive	B	10.3	B	11.0
100000898	Bush River Road at Driveway	A	6.4	A	4.0
100000252	Bush River Road at Morninghill Drive	B	19.1	C	21.6
100000184	Bush River Road at Arrowwood Road	C	27.2	C	21.7
Exit 110					
100000186	Sunset Boulevard (US 378) at E. Hospital Drive / Harbor Drive	F	148.1	D	35.6
100000093	Sunset Boulevard (US 378) at I-26 EBR Off-Ramp[1]	E	46.4	E	45.9
100000903	Sunset Boulevard (US 378) at I-26 Ramps	C	26.5	C	24.0
100000902	Sunset Boulevard (US 378) at I-26 WBR Off-Ramp[1]	D	29.2	F	50.1
100000163	Sunset Boulevard (US 378) at Chris Drive / McSwain Drive	A	5.8	D	35.4
Exit 63					
171	Bush River Road at Outlet Pointe Boulevard / E Meadow Court	B	11.4	C	30.3
164	Bush River Road at I-20 EBR Off-Ramp	B	10.5	A	5.1
64	Bush River Road at I-20 SPUI Interchange	D	36.0	D	37.1
100000142	Bush River Road at I-20 WBR Off-Ramp	A	5.3	A	4.4
100000255	Bush River Road at Independence Avenue	D	50.2	E	64.5
Exit 65					
100000187	Broad River Road at Marley Drive / Briargate Circle	C	32.3	C	21.6
91	Broad River Road at I-20 WB Ramps	D	42.4	D	48.2
37	Broad River Road at I-20 WBL Off-Ramp	A	4.8	A	3.6
98	Broad River Road at I-20 EB Ramps	B	17.9	B	18.4
100000195	Broad River Road at Longcreek Drive	A	1.4	A	5.8
Additional Intersections					
100000012	Broad River Road (US 176) at Kinley Road	E	66.6	E	60.2
100000037	Broad River Road (US 176) at Harbison Boulevard	D	37.3	B	19.4
100000049	Broad River Road (US 176) at Piney Woods Road / Lost Creek Drive	C	31.1	C	20.7
100000068	Broad River Road (US 176) at Piney Grove Road	D	46.4	B	12.3
100000339	Broad River Road (US 176) at St. Andrews Road	F	207.4	E	55.3
100000349	Broad River Road (US 176) at St. Andrews Parkway	B	11.5	B	14.6
100000344	Broad River Road (US 176) at Seminole Road / Young Drive	E	74.5	C	34.3
41	Broad River Road (US 176) at Dutch Square Boulevard	A	5.7	D	45.2
100000046	Broad River Road (US 176) at Bush River Road	F	93.7	F	120.2
100000266	Broad River Road (US 176) at Greystone Boulevard	B	15.9	B	18.9
100000265	Greystone Boulevard at Stoneridge Drive	D	37.9	C	33.1
100000188	Greystone Boulevard at I-126 WB Ramps	A	4.6	A	1.6
100000185	Greystone Boulevard at I-126 EB Ramps[1]	E	42.5	F	67.9
100000262	Bush River Road at Colonial Life Boulevard	B	16.7	C	20.9
166	Colonial Life Boulevard at West Colonial Life Road[1]	A	7.7	C	17.4
163	Colonial Life Boulevard at I-126 EB Ramps	C	20.4	B	15.0
100000374	Park Terrance Drive at Bower Parkway	D	51.2	B	13.6

[1] **Intersection unsignalized under all scenarios; worst approach LOS and delay reported.**

[2] **Delay unable to be processed per HCM 2010 methodology; Average control delay reported.**

RA2 - Mainline Travel Time Summary for I-26, I-20, I-126

Segments	Eastbound					Westbound				
	Length (mi)	Travel Time (mm:ss)		Average Speed (mph)		Length (mi)	Travel Time (mm:ss)		Average Speed (mph)	
		AM	PM	AM	PM		AM	PM	AM	PM
I-26 between Exit 101 and Exit 110										
Exit 101 to Exit 102 (Lake Murray Boulevard)	0.76	01:16	00:45	36.1	60.8	1.23	01:11	01:23	62.0	53.1
Exit 102 to Exit 103 (Harbison Boulevard)	1.15	01:09	01:08	59.5	60.3	1.08	01:03	01:08	61.2	57.1
Exit 103 to Exist 104 (Piney Grove Road)	0.95	00:58	01:00	58.8	57.7	0.85	00:51	01:24	59.4	36.3
Exit 104 to Exit 106 (St. Andrews Road)	1.78	07:00	04:56	15.2	21.6	1.39	01:45	03:50	47.4	21.6
Exit 106 to I-126	2.55	02:46	02:46	55.6	55.5	2.61	03:02	03:56	51.6	39.9
I-126 to Exit 110 (Sunset Boulevard)	1.53	01:29	01:30	61.8	61.5	1.31	01:23	01:21	57.1	58.1
Total	**8.72**	**14:38**	**12:04**	**35.8**	**43.4**	**8.46**	**09:16**	**13:02**	**54.8**	**38.9**
I-20 between Exit 61 and Exit 68										
Exit 61 to Exit 63/64/65 (Bush River Road)	1.52	02:42	02:14	33.7	40.9	4.08	04:41	06:07	52.3	40.0
Exit 63/64/65 to Exit 68 (Monticello Road)	5.11	05:18	05:06	57.8	60.2	2.71	08:33	10:39	19.0	15.3
Total	**6.63**	**08:01**	**07:19**	**49.7**	**54.3**	**6.79**	**13:13**	**16:46**	**30.8**	**24.3**
I-126 between I-26 and Greystone Blvd										
I-26 to Colonial Life Blvd	0.59	00:36	00:35	58.9	60.3	0.99	01:01	01:42	57.8	34.9
Colonial Life Blvd to Greystone Blvd	1.40	01:22	01:22	61.3	61.4	1.14	01:06	01:54	62.0	36.1
Total	**1.99**	**01:58**	**01:57**	**60.5**	**61.1**	**2.13**	**02:08**	**03:36**	**60.0**	**35.5**

RA2 - Volumes

I-26 Mainline	Volume			
	AM		PM	
	EB	WB	EB	WB
Location				
west of Exit 101 (Broad River Road)	4,816	3,211	3,608	5,118
Exit 101 to Exit 102 (Lake Murray Boulevard)	5,438	3,839	4,246	5,918
Exit 102 to Exit 103 (Harbison Boulevard)	4,997	4,130	4,886	6,098
Exit 103 to Exist 104 (Piney Grove Road)	4,937	4,634	5,777	6,903
Exit 104 to Exit 106 (St. Andrews Road/CD Road)	5,027	5,298	5,612	7,900
Exit 106 to Exit 107	1,629	5,141	1,646	7,885
I-126 Diverge to I-126 Merge	2,944	1,687	3,122	2,170
Exit 108 to Exit 110 (Sunset Boulevard)	3,813	4,601	4,330	5,067
southeast of Exit 110	3,234	4,388	4,309	4,774

I-20 Mainline	Volume			
	AM		PM	
	EB	WB	EB	WB
Location				
west of Exit 61 (Sunset Boulevard)	4,437	1,952	2,948	3,763
Exit 61 to Exit 63 (Bush River Road/CD Road)	4,748	2,797	4,110	4,918
Exit 63 to Exit 65 (Broad River Road)	2,312	1,236	1,577	1,491
Exit 65 to Exit 68 (Monticello Road)	5,751	4,488	5,246	4,785
east of Exit 68	5,268	5,215	5,273	4,522

I-126 Mainline	Volume			
	AM		PM	
	EB	WB	EB	WB
Location				
I-26 to Colonial Life Blvd	3,748	1,829	3,118	4,079
I-126 from Colonial Life Blvd to Greystone Blvd	5,274	3,322	3,899	7,218
I-126 from Greystone Blvd to Huger St	5,390	3,514	3,564	7,003

RA2 - Major Arterial Travel Times

Location	Eastbound					Westbound				
	Length (mi)	Travel Time (mm:ss)		Average Speed (mph)		Length (mi)	Travel Time (mm:ss)		Average Speed (mph)	
		AM	PM	AM	PM		AM	PM	AM	PM
Broad River Road (west of Exit 101 to Greystone Blvd)	7.9	45:12	25:03	10.4	18.8	7.9	22:32	28:59	20.9	16.3
Lake Murray Boulevard (west of Exit 102 to Broad River Road)	1.5	06:54	06:18	13.4	14.7	1.5	04:11	04:31	21.1	19.6
Harbison Boulevard (west of Exit 103 to Broad River Road)	1.1	04:15	04:58	15.3	13.1	1.1	03:20	03:22	19.4	19.2
Piney Grove Road (west of Exit 104 to Broad River Road)	1.6	06:00	05:10	15.6	18.1	1.6	07:19	05:30	12.8	17.1
St. Andrews Road (west of Exit 106 to Broad River Road)	1.0	04:27	06:24	13.7	9.5	1.0	04:41	05:30	13.0	11.0
Bush River Road (west of Exit 63 to Broad River Road)	2.0	07:47	07:58	15.1	14.7	2.0	06:36	08:00	17.8	14.7
Location	Northbound					Southbound				
	Length (mi)	Travel Time (mm:ss)		Average Speed		Length (mi)	Travel Time		Average Speed	
		AM	PM	AM	PM		AM	PM	AM	PM
Colonial Life Boulevard (I-126 Ramps to Bush River Road)	0.7	02:15	02:40	17.5	14.7	0.7	02:21	02:15	16.7	17.4

Mainline

Segment	RA3 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-26 Eastbound						
Exit 101 to Exit 102	C	24.3	0.52	C	18.1	0.37
Exit 102 to Exit 103	B	17.4	0.86	B	15.8	0.71
Exit 103 to Exit 104	D	31.7	0.55	C	21.5	0.46
Exit 104 to Exit 106	F	94.4	0.58	E	43.2	0.51
Exit 106 to Exit 107	D	31.9	0.48	C	20.6	0.35
I-26 to I-26	C	23.4	0.54	C	22.2	0.49
Exit 108 to Exit 110	A	0.0	0.51	A	0.0	0.53
I-26 Westbound						
Exit 110 to Exit 108	C	21.0	0.46	C	23.9	0.53
I-126 Diverge to I-126 Merge	B	15.2	0.31	B	15.1	0.35
Exit 107 to Exit 106	B	15.8	0.28	C	25.9	0.47
Exit 106 to Exit 104	D	27.8	0.48	F	98.0	0.70
Exit 104 to Exit 103	B	17.7	0.71	F	69.5	0.94
Exit 103 to Exit 102	B	14.3	0.38	C	18.2	0.58
Exit 102 to Exit 101	B	17.3	0.35	C	24.6	0.53

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

Mainline

Segment	RA3 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-20 Eastbound						
west of Exit 61	F	46.0	0.61	C	25.7	0.41
Exit 61 to Exit 63	F	54.6	0.78	C	23.9	0.56
Exit 63 to Exit 64	B	15.5	0.32	B	11.4	0.22
Exit 64 to Exit 65	B	13.6	0.25	A	9.6	0.16
Exit 65 to Exit 68	F	52.2	0.63	D	33.8	0.56
I-20 Westbound						
Exit 68 to Exit 65	F	47.9	0.59	F	52.2	0.64
Exit 65 to Exit 64	A	3.7	0.18	A	5.1	0.24
Exit 64 to Exit 63	A	8.3	0.23	C	23.8	0.40
Exit 63 to Exit 61	B	15.4	0.34	F	110.7	0.50
west of Exit 61	C	19.8	0.43	E	36.4	0.78

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

Mainline

Segment	RA3 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-126 Eastbound						
I-26 to Colonial Life Blvd	E	37.9	0.77	B	16.7	0.44
Colonial Life Blvd to Greystone Blvd	C	20.9	0.70	B	14.0	0.41
Greystone Blvd to Huger St	D	33.5	0.67	B	16.3	0.39
I-126 Westbound						
Huger St to Greystone Blvd	C	19.9	0.37	D	32.4	0.73
Greystone Blvd to Colonial Life Blvd	B	16.1	0.35	F	52.3	0.78
Colonial Life Blvd to I-26	E	42.7	0.81	F	66.4	0.80

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

Merge

Segment	RA3 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-26 Eastbound						
Exit 101	C	24.3	0.52	B	18.1	0.37
Exit 102	B	17.4	0.86	B	15.8	0.71
Exit 103	B	15.9	0.46	B	16.6	0.39
Exit 104	F	87.0	0.48	E	36.2	0.42
Exit 106	D	31.9	0.48	C	20.6	0.35
Exit 107	C	20.4	0.33	B	17.9	0.30
Exit 108	B	20.0	0.47	C	20.8	0.46
Exit 108 (I-126)	C	25.0	0.41	C	22.9	0.43
Exit 110	B	19.0	0.40	C	23.0	0.47
I-26 Westbound						
Exit 110	B	18.2	0.37	C	21.4	0.43
Exit 108 (I-126)	B	15.8	0.28	C	25.9	0.47
Exit 107	D	28.3	0.39	F	72.9	0.59
Exit 106	C	23.5	0.40	F	79.2	0.60
Exit 104	B	17.7	0.71	F	69.5	0.94
Exit 103	B	14.3	0.38	B	18.2	0.58
Exit 102	B	17.3	0.35	C	24.6	0.53
Exit 101	B	19.3	0.34	C	26.9	0.54

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

Merge

Segment	RA3 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-20 Eastbound						
Exit 61 Loop	F	74.7	0.51	B	18.9	0.38
Exit 61	F	56.3	0.59	C	22.9	0.42
Exit 63/64	C	21.6	0.44	C	21.2	0.37
Exit 65	E	37.5	0.52	D	30.8	0.45
Exit 68	D	30.5	0.59	D	30.3	0.56
I-20 Westbound						
Exit 68	E	40.3	0.61	F	49.4	0.65
Exit 65	A	3.7	0.14	A	5.1	0.19
Exit 64 WB	A	8.3	0.23	C	23.8	0.40
Exit 64 EB	B	12.5	0.25	E	44.5	0.39
Exit 63	B	12.3	0.27	F	95.4	0.42
Exit 61	B	15.8	0.22	D	32.2	0.39
Exit 61	B	15.8	0.22	D	32.2	0.39

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

Merge

Segment	RA3 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-126 Eastbound						
Colonial Life Blvd	C	20.9	0.56	B	14.0	0.32
Greystone Blvd	D	28.5	0.68	B	14.4	0.39
I-126 Westbound						
Greystone Blvd	B	16.1	0.28	F	52.3	0.62

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

Diverge

Segment	RA3 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-26 Eastbound						
Exit 101	C	21.6	0.50	B	16.0	0.37
Exit 102	C	24.3	0.52	B	18.1	0.37
Exit 102 Loop	B	19.9	0.47	B	14.3	0.35
Exit 103	B	17.4	0.86	B	15.8	0.71
Exit 104	D	28.7	0.55	B	17.7	0.46
Exit 106/107	F	91.8	0.57	E	41.8	0.50
Exit 108	C	26.7	0.54	B	14.8	0.33
I-26 to I-26	D	31.9	0.48	C	20.6	0.35
Exit 110	C	25.2	0.51	C	22.9	0.53
I-26 Westbound						
Exit 110	F	64.6	0.45	E	36.2	0.49
Exit 107/I-126	B	17.7	0.36	B	19.9	0.43
Exit 106	B	15.8	0.28	C	25.9	0.47
Exit 104	C	27.5	0.45	E	41.6	0.65
Exit 103	B	17.7	0.71	F	69.5	0.94
Exit 102	B	16.4	0.62	C	23.3	0.97
Exit 102 Loop	B	15.2	0.34	C	20.6	0.53
Exit 101	B	17.3	0.35	C	24.6	0.53

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

Diverge

Segment	RA3 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-20 Eastbound						
Exit 61	D	33.8	0.46	C	20.6	0.31
Exit 63/64/65	C	20.6	0.46	B	16.2	0.34
Exit 64 Loop	A	8.7	0.25	A	7.6	0.18
Exit 68	E	44.5	0.83	E	35.3	0.74
I-20 Westbound						
Exit 68	E	42.7	0.81	F	66.4	0.80
Exit 65	F	64.2	0.47	F	69.8	0.51
Exit 64/63	D	31.4	0.35	D	32.9	0.40
Exit 61	D	30.6	0.34	F	100.0	0.46

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

Diverge

Segment	RA3 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-126 Eastbound						
Greystone Blvd	C	22.2	0.56	B	14.7	0.32
I-126 Westbound						
Greystone Blvd	B	19.9	0.37	D	32.4	0.73
Colonial Life Blvd	B	16.2	0.28	F	53.2	0.61

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

RA3 - Travel Times Between External Zone Pairs

Segments	Length (mi)	Travel Time (mm:ss)		Average Speed (mph)	
		AM	PM	AM	PM
I-26 EB from West of Exit 101					
To I-26 EB (east of Exit 110)	13.82	20:30	13:33	40.4	61.2
To I-20 WB (west of Exit 61)	16.07	24:21	23:13	39.6	41.5
To I-20 EB (east of Exit 68)	15.61	25:50	17:32	36.2	53.4
To I-126 EB (Greystone Blvd)	14.78	23:01	15:01	38.5	59.1
I-26 WB from East of Exit 110					
To I-26 WB (west of Exit 101)	13.85	13:27	23:29	61.8	35.4
To I-20 EB (east of Exit 68)	8.44	10:31	09:27	48.1	53.6
I-20 EB from West of Exit 61					
To I-20 EB (east of Exit 68)	11.09	18:23	11:08	36.2	59.8
To I-26 WB (west of Exit 101)	16.71	22:57	30:59	43.7	32.4
To I-126 EB (east of Greystone Blvd)	10.35	18:53	10:54	32.9	57.0
I-20 WB from East of Exit 68					
To I-20 WB (east of Exit 61)	11.10	11:40	17:48	57.1	37.4
To I-26 EB (east of Exit 110)	9.03	11:27	14:37	47.3	37.1
To I-26 WB (west of Exit 101)	15.34	17:18	32:02	53.2	28.7
I-126 WB from East of Greystone Blvd					
To I-26 WB (west of Exit 101)	14.75	15:03	27:44	58.8	31.9
To I-20 WB (west of Exit 61)	10.72	11:12	18:37	57.4	34.5

RA3 - Intersection Capacity Analysis

Node #	Intersection Name	AM		PM	
		LOS	Delay	LOS	Delay
Exit 101					
100000391	Broad River Road (US 176) at Columbiana Drive / Lordship Lane	A	0.0	A	3.4
67	Broad River Road (US 176) at I-26 EBR Off-ramp[1]	B	14.7	C	19.5
174	Broad River Road (US 176) at West DDI Intersection	B	17.1	B	17.6
100000151	Broad River Road (US 176) at I-26 EBL Off-ramp	B	11.0	A	8.9
108	Broad River Road (US 176) at I-26 WBL Off-ramp	B	15.1	B	16.5
173	Broad River Road (US 176) at East DDI Intersection	B	16.1	C	20.3
4	Broad River Road (US 176) at Western Lane	B	18.4	C	24.0
Exit 102					
100000395	Lake Murray Boulevard (SC 60) at Columbiana Drive	D	36.6	F	82.0
100000510	Lake Murray Boulevard (SC 60) at I-26 EB On-Ramp[2]	A	2.8	A	4.8
100000169	Lake Murray Boulevard (SC 60) at I-26 WB On-Ramp[2]	A	2.4	A	5.9
100000401	Lake Murray Boulevard (SC 60) at Parkridge Drive / Kinley Road	B	16.5	C	24.7
Exit 103					
100000364	Harbison Boulevard (S-757) at Columbiana Drive	B	14.3	B	14.1
100000365	Harbison Boulevard (S-757) at Park Terrace Drive / Columbiana Circle	A	8.9	C	30.3
100000362	Harbison Boulevard (S-757) at Saturn Parkway	A	9.0	B	12.9
118	Harbison Boulevard (S-757) at I-26 EB Ramps	C	34.2	B	16.9
113	Harbison Boulevard (S-757) at I-26 WB Ramps / Woodcross Drive	B	17.5	D	36.7
Exit 104					
100000353	Piney Grove Road at Bower Parkway / Jamil Road	D	48.6	E	56.8
100000497	Piney Grove Road at I-26 EB Ramps	D	52.7	D	35.2
128	Piney Grove Road at I-26 SPUI Interchange	D	38.1	D	42.7
38	Piney Grove Road at I-26 WB Ramps	D	52.2	D	54.6
100000399	Piney Grove Road at Fernandina Road	C	33.8	D	47.0
Exit 106					
93	St. Andrews Road at Jamil Road	B	18.7	B	19.2
167	St. Andrews Road at I-26 EB Ramps	B	15.0	C	20.2
100000182	St. Andrews Road at I-26 WB Ramps	C	23.9	D	41.8
98	St. Andrews Road at I-26 WBR Off-Ramp	B	14.4	C	23.2
37	St. Andrews Road at Fernandina Road / Burning Tree Drive	C	21.8	E	73.8
100000354	St. Andrews Road at Kay Street / Chartwell Road	B	19.3	B	16.3
Exit 108					
100000256	Bush River Road at Zimalcrest Drive	A	7.9	A	5.9
100000898	Bush River Road at Driveway	A	3.3	A	7.3
100000252	Bush River Road at EB Ramp/Morninghill Drive	C	31.2	E	71.3
100000184	Bush River Road at Arrowwood Road	B	14.4	E	57.3
Exit 110					
100000186	Sunset Boulevard (US 378) at E. Hospital Drive / Harbor Drive	B	11.8	D	39.7
100000093	Sunset Boulevard (US 378) at I-26 EBR Off-Ramp[1]	E	39.0	E	37.8
100000903	Sunset Boulevard (US 378) at I-26 Ramps	C	25.8	C	29.9
100000902	Sunset Boulevard (US 378) at I-26 WBR Off-Ramp[1]	F	66.7	F	54.7
100000163	Sunset Boulevard (US 378) at Chris Drive / McSwain Drive	C	26.5	D	39.9
Exit 63					
14	Bush River Road at Berryhill Drive[1]	A	9.4	B	14.9
61	Buish River Road at West DDI Intersection (I-20 EB Ramps)	B	12.1	B	13.8
48	Bush River Road at East DDI Intersection (I-20 WB Ramps)	B	10.5	B	14.0
147	Bush River Road at Rockland Road	A	6.1	B	15.6
136	Bush River Road at Independence Avenue	C	24.3	C	26.9
Exit 65					
100000187	Broad River Road at Marley Drive / Briargate Circle	B	17.8	C	20.2
57	Broad River Road at I-20 WB Ramps	B	15.2	C	26.3
141	Broad River Road at I-20 EB Ramps	B	14.8	B	18.2
100000195	Broad River Road at Longcreek Drive	A	4.3	A	8.3
Additional Intersections					
100000012	Broad River Road (US 176) at Kinley Road	E	67.5	F	81.8
100000037	Broad River Road (US 176) at Harbison Boulevard	B	18.4	E	68.1
100000049	Broad River Road (US 176) at Piney Woods Road / Lost Creek Drive	C	25.0	F	91.5
100000068	Broad River Road (US 176) at Piney Grove Road	A	4.9	B	18.8
100000339	Broad River Road (US 176) at St. Andrews Road	D	37.6	E	69.4
100000349	Broad River Road (US 176) at St. Andrews Parkway	B	12.2	C	22.0
100000344	Broad River Road (US 176) at Seminole Road / Young Drive	A	9.1	F	86.2
41	Broad River Road (US 176) at Dutch Square Boulevard	A	6.2	C	29.3
100000046	Broad River Road (US 176) at Bush River Road	C	24.3	D	36.4
100000266	Broad River Road (US 176) at Greystone Boulevard	B	12.6	B	15.0
100000265	Greystone Boulevard at Stoneridge Drive	C	25.2	E	62.1
100000188	Greystone Boulevard at I-126 WB Ramps[1]	F	54.3	D	33.4
100000185	Greystone Boulevard at I-126 EB Ramps[1]	D	28.2	F	75.6
100000262	Bush River Road at Colonial Life Boulevard	B	18.3	D	44.6
100000897	Colonial Life Boulevard at West Colonial Life Road[1]	A	8.8	F	256.3
100000374	Park Terrance Drive at Bower Parkway	B	11.7	B	17.0

[1] **Intersection unsignalized under all scenarios; worst approach LOS and delay reported.**

[2] **Delay unable to be processed per HCM 2010 methodology; Average control delay reported.**

RA3 - Mainline Travel Time Summary for I-26, I-20, I-126

Segments	Eastbound					Westbound				
	Length (mi)	Travel Time (mm:ss)		Average Speed (mph)		Length (mi)	Travel Time (mm:ss)		Average Speed (mph)	
		AM	PM	AM	PM		AM	PM	AM	PM
I-26 between Exit 101 and Exit 110										
Exit 101 to Exit 102 (Lake Murray Boulevard)	0.83	00:51	00:49	59.2	60.7	0.87	00:53	00:54	59.2	57.8
Exit 102 to Exit 103 (Harbison Boulevard)	#N/A	01:15	01:13	#N/A	#N/A	#N/A	00:50	00:53	#N/A	#N/A
Exit 103 to Exist 104 (Piney Grove Road)	0.91	01:06	00:56	49.9	58.3	#N/A	01:13	02:10	#N/A	#N/A
Exit 104 to Exit 106 (St. Andrews Road)	1.69	05:04	02:28	20.0	41.0	2.53	03:05	05:45	49.3	26.5
Exit 106/107 to Exit 108 (I-26/Bush River Road)	0.96	01:32	01:12	37.8	48.0	-	-	-	-	-
Exit 108/107 to Exit 106 (St Andrews Road)	-	-	-	-	-	1.02	01:04	01:07	57.6	54.9
Exit 108 to Exit 110 (Sunset Boulevard)	2.92	03:14	03:14	54.2	54.3	-	-	-	-	-
Exit 110 to Exit 108/107 (I-20)	-	-	-	-	-	1.61	01:36	01:36	60.7	60.2
Total	**#N/A**	**13:01**	**09:53**	**#N/A**	**#N/A**	**#N/A**	**08:41**	**12:25**	**#N/A**	**#N/A**
I-20 between Exit 61 and Exit 68										
Exit 61 to Exit 63 (Bush River Road)	1.82	03:28	01:51	31.5	59.0	-	-	-	-	-
Exit 63/64 to Exit 61 (Sunset Blvd)	-	-	-	-	-	3.42	03:45	08:55	54.7	23.0
Exit 63 to Exit 64 (I-26)	1.23	01:27	01:26	50.8	51.5	-	-	-	-	-
Exit 65 to Exit 63/64 (I-26)	-	-	-	-	-	0.36	00:34	00:31	37.5	41.3
Exit 64 to Exit 68 (Monticello Road)	3.82	05:11	04:09	44.2	55.1	-	-	-	-	-
Exit 68 to Exit 65 (Broad River Road)	-	-	-	-	-	#N/A	04:05	04:56	#N/A	#N/A
Total	**6.87**	**10:06**	**07:26**	**40.8**	**55.4**	**#N/A**	**08:24**	**14:22**	**#N/A**	**#N/A**
I-126 between I-26 and Greystone Blvd										
I-26 to Exit 108(Bush River Road)	0.34	00:27	00:24	44.2	49.8	-	-	-	-	-
Colonial Life Boulevard to Exit 107 (I-20)	-	-	-	-	-	1.11	01:10	02:02	57.3	32.9
Exit 108 to Greystone Blvd	1.97	02:26	01:56	48.8	61.5	-	-	-	-	-
Greystone Blvd to Colonial Life Blvd	-	-	-	-	-	#N/A	01:06	01:48	#N/A	#N/A
Total	**2.31**	**02:53**	**02:20**	**48.0**	**59.5**	**#N/A**	**02:17**	**03:50**	**#N/A**	**#N/A**

RA3 - Mainline Volumes

I-26 Mainline	Volume			
	AM		PM	
	EB	WB	EB	WB
Location				
west of Exit 101 (Broad River Road)	4,811	3,285	3,592	5,194
Exit 101 to Exit 102 (Lake Murray Boulevard)	6,205	4,165	4,470	6,330
Exit 102 to Exit 103 (Harbison Boulevard)	6,193	4,500	5,106	6,997
Exit 103 to Exist 104 (Piney Grove Road)	6,620	5,113	5,567	6,775
Exit 104 to Exit 106 (St. Andrews Road)	6,932	5,436	6,062	7,858
Exit 106 to Exit 107 (I-20)	6,425	5,257	4,696	7,938
I-126 Diverge to I-126 Merge	3,917	2,241	3,544	2,551
Exit 108 to Exit 110 (Sunset Boulevard)	4,609	4,379	4,790	5,116
southeast of Exit 110	3,841	4,335	4,534	4,733

I-20 Mainline	Volume			
	AM		PM	
	EB	WB	EB	WB
Location				
west of Exit 61 (Sunset Boulevard)	4,420	2,061	2,957	3,745
Exit 61 to Exit 63 (Bush River Road)	5,590	3,246	4,061	4,794
Exit 63 to Exit 64 (I-26)	2,853	2,075	2,005	3,570
Exit 64 to Exit 65 (Broad River Road)	2,218	1,590	1,462	2,175
Exit 65 to Exit 68 (Monticello Road)	6,071	5,707	5,336	6,100
east of Exit 68	5,682	5,855	5,359	5,787

I-20 Mainline	Volume			
	AM		PM	
	EB	WB	EB	WB
Location				
I-126/I-26 Split	5,517	1,937	3,197	4,357
I-126 from I-26 to Colonial Life Blvd	5,501	2,615	3,197	5,903
I-126 from Colonial Life Blvd to Greystone Blvd	6,759	3,396	3,889	7,452
I-126 from Greystone Blvd to Huger St	6,469	3,524	3,779	6,992

RA3 - Major Arterial Travel Times

Location	Eastbound					Westbound				
	Length (mi)	Travel Time (mm:ss)		Average Speed (mph)		Length (mi)	Travel Time (mm:ss)		Average Speed (mph)	
		AM	PM	AM	PM		AM	PM	AM	PM
Broad River Road (west of Exit 101 to Greystone Blvd)	7.1	20:58	25:13	20.2	16.8	6.4	19:42	20:01	19.3	19.0
Lake Murray Boulevard (west of Exit 102 to Broad River Road)	1.6	03:58	04:14	23.6	22.1	1.5	03:41	04:05	24.2	21.8
Harbison Boulevard (west of Exit 103 to Broad River Road)	1.1	03:11	03:36	20.8	18.5	1.1	03:47	03:16	17.3	20.0
Piney Grove Road (west of Exit 104 to Broad River Road)	1.7	05:07	04:24	19.5	22.6	1.7	05:40	04:41	17.6	21.3
St. Andrews Road (west of Exit 106 to Broad River Road)	1.0	06:50	07:37	8.7	7.8	1.0	03:40	04:02	16.2	14.7
Bush River Road (west of Exit 63 to Broad River Road)	2.1	04:26	04:48	28.5	26.4	1.8	05:40	08:23	19.2	13.0
Location	**Northbound**					**Southbound**				
	Length (mi)	Travel Time (mm:ss)		Average Speed		Length (mi)	Travel Time		Average Speed	
		AM	PM	AM	PM		AM	PM	AM	PM
Colonial Life Boulevard (I-126 Ramps to Bush River Road)	0.4	01:28	02:36	15.7	8.9	0.4	00:51	01:00	29.8	25.6

Mainline

Segment	RA4 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-26 Eastbound						
Exit 101 to Exit 102	C	22.8	0.56	C	22.8	0.56
Exit 102 to Exit 103	D	26.6	0.66	C	23.5	0.53
Exit 103 to Exit 104	D	28.6	0.57	C	22.6	0.46
Exit 104 to Exit 106	E	44.7	0.57	C	23.8	0.46
Exit 106 to Exit 107	F	108.0	0.55	D	29.1	0.39
I-26 to I-26	E	39.2	0.74	E	38.6	0.70
Exit 108 to Exit 110	C	21.4	0.43	C	22.0	0.47
I-26 Westbound						
Exit 110 to Exit 108	C	19.8	0.46	C	21.6	0.53
I-26 to I-26	D	26.4	0.43	C	23.0	0.50
Exit 107 to Exit 106	C	24.5	0.31	C	25.2	0.51
Exit 106 to Exit 104	D	27.2	0.50	E	37.6	0.74
Exit 104 to Exit 103	C	21.8	0.43	D	31.5	0.65
Exit 103 to Exit 102	C	20.2	0.48	E	36.1	0.76
Exit 102 to Exit 101	C	18.4	0.36	D	27.5	0.57

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

Mainline

Segment	RA4 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-20 Eastbound						
west of Exit 61	F	45.9	0.61	C	25.6	0.41
Exit 61 to Exit 63	F	68.7	0.75	C	23.2	0.54
Exit 63 to Exit 64	B	14.4	0.33	A	10.7	0.24
Exit 64 to Exit 65	B	12.7	0.30	A	9.2	0.20
Exit 65 to Exit 68	E	42.3	0.62	D	34.5	0.56
I-20 Westbound						
Exit 68 to Exit 65	E	38.5	0.48	E	41.6	0.51
Exit 65 to Exit 64	A	7.9	0.22	A	7.8	0.26
Exit 64 to Exit 63	A	9.6	0.16	B	12.1	0.23
Exit 63 to Exit 61	C	19.2	0.44	F	99.8	0.72
west of Exit 61	C	20.3	0.29	E	36.7	0.52

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

Mainline

Segment	RA4 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-126 Eastbound						
I-26 to Colonial Life Blvd	B	17.2	0.51	A	9.8	0.28
Colonial Life Blvd to Greystone Blvd	C	23.7	0.71	C	21.6	0.41
Greystone Blvd to Huger St	E	44.7	0.67	B	15.9	0.39
I-126 Westbound						
Huger St to Greystone Blvd	B	16.2	0.37	D	29.7	0.71
Greystone Blvd to Colonial Life Blvd	B	17.1	0.36	D	34.3	0.76
Colonial Life Blvd to I-26	-	-	-	-	-	-

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

Merge

Segment	RA4 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-26 Eastbound						
Exit 101	C	24.1	0.51	B	17.8	0.37
Exit 102	C	26.5	0.53	C	23.4	0.42
Exit 103	D	28.6	0.58	C	22.6	0.46
Exit 104	C	22.2	0.55	B	18.4	0.43
Exit 106	F	108.0	0.55	D	29.1	0.39
Exit 107 Loop	F	125.0	0.64	F	47.6	0.47
Exit 107 (CD Road From I-20)	F	89.1	0.77	F	51.0	0.55
Exit 108	C	22.8	0.56	C	22.8	0.56
Exit 108 (From I-126)	C	21.4	0.43	C	22.0	0.47
Exit 110	B	17.5	0.39	C	21.1	0.46
I-26 Westbound						
Exit 110	B	19.0	0.47	C	20.8	0.53
Exit 108 (I-126)	C	24.5	0.31	C	25.2	0.51
Exit 107 (From I-20)	C	25.8	0.41	E	36.7	0.61
Exit 106	C	27.0	0.42	E	36.3	0.62
Exit 104	C	21.8	0.43	D	31.5	0.65
Exit 103	C	20.2	0.38	E	36.1	0.61
Exit 102	B	18.4	0.36	C	27.5	0.57
Exit 101	B	19.3	0.28	F	48.2	0.47

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

Merge

Segment	RA4 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-20 Eastbound						
Exit 61 Loop	F	69.2	0.50	B	17.4	0.36
Exit 61	F	74.1	0.57	C	21.4	0.41
Exit 63	A	8.6	0.33	A	8.2	0.24
Exit 64	B	15.2	0.39	B	18.9	0.35
Exit 65	E	41.5	0.51	D	30.6	0.45
Exit 68	D	31.6	0.59	D	29.5	0.55
I-20 Westbound						
Exit 68	D	30.7	0.61	E	41.0	0.65
Exit 64 (From CD from I-26)	B	11.1	0.23	E	42.6	0.40
Exit 63	B	19.5	0.26	F	96.7	0.45
Exit 61 Loop	A	9.2	0.20	B	13.7	0.37
Exit 61	B	15.3	0.22	D	29.3	0.39

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

Merge

Segment	RA4 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-126 Eastbound						
Exit 108 (From I-26 WB)	B	17.2	0.51	A	9.8	0.28
Colonial Life Blvd	C	23.7	0.71	C	21.6	0.41
Greystone Blvd	D	31.2	0.68	B	12.2	0.39
I-126 Westbound						
Greystone Blvd	B	17.1	0.36	D	34.3	0.76

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

Diverge

Segment	RA4 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-26 Eastbound						
Exit 101	C	24.8	0.50	B	17.7	0.38
Exit 101 Loop	B	17.9	0.39	B	13.6	0.29
Exit 102	C	24.1	0.51	B	17.8	0.37
Exit 102 Loop	C	21.6	0.47	B	16.9	0.35
Exit 103	C	26.6	0.66	C	23.5	0.53
Exit 104	D	28.6	0.57	C	22.6	0.46
Exit 106/107	E	44.7	0.57	C	23.8	0.46
Exit 108 (To I-26 and to I-126)	F	47.7	0.77	D	31.2	0.55
Exit 110	C	21.4	0.43	C	22.0	0.47
I-26 Westbound						
Exit 110	D	32.9	0.46	F	67.6	0.48
Exit 108/107/106	C	23.0	0.31	C	25.1	0.35
Exit 104	D	30.1	0.47	D	33.6	0.69
Exit 103	C	21.8	0.43	D	31.5	0.65
Exit 102	C	20.2	0.48	E	36.3	0.76
Exit 102 Loop	B	18.4	0.37	D	28.2	0.58
Exit 101	B	18.4	0.36	C	27.5	0.57
Exit 101 Loop	B	13.8	0.32	C	21.1	0.52

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

Diverge

Segment	RA4 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-20 Eastbound						
Exit 61	D	30.4	0.46	B	18.5	0.31
Exit 63/64	D	34.9	0.45	B	15.3	0.32
Exit 65	A	8.9	0.33	A	8.0	0.24
Exit 68	E	39.9	0.82	F	47.1	0.73
I-20 Westbound						
Exit 68	E	41.2	0.81	F	68.4	0.80
Exit 65	D	32.5	0.40	E	40.9	0.43
Exit 64	D	30.9	0.36	C	27.9	0.37
Exit 63	A	8.0	0.22	A	7.7	0.26
Exit 61	C	20.5	0.33	F	99.5	0.52

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

Diverge

Segment	RA4 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-126 Eastbound						
Greystone Boulevard	C	24.0	0.57	C	23.0	0.33
I-126 Westbound						
Greystone Boulevard	C	23.4	0.37	D	31.0	0.71
Colonial Life Boulevard	B	18.4	0.35	E	36.4	0.76
To I-26 EB	B	13.7	0.25	D	28.2	0.55

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

RA4 - Travel Times Between External Zone Pairs

Segments	Length (mi)	Travel Time (mm:ss)		Average Speed (mph)	
		AM	PM	AM	PM
I-26 EB from West of Exit 101					
To I-26 EB (east of Exit 110)	13.84	20:54	13:50	39.7	60.0
To I-20 WB (west of Exit 61)	16.07	23:00	21:52	41.9	44.1
To I-20 EB (east of Exit 68)	15.56	25:45	18:53	36.3	49.4
To I-126 EB (Greystone Blvd)	14.77	21:27	14:34	41.3	60.8
I-26 WB from East of Exit 110					
To I-26 WB (west of Exit 110)	13.86	13:48	24:25	60.3	34.1
To I-20 EB (east of Exit 68)	8.46	11:38	11:49	43.7	43.0
I-20 EB from West of Exit 61					
To I-20 EB (east of Exit 68)	11.10	18:04	10:47	36.9	61.8
To I-26 WB (west of Exit 101)	16.76	25:10	29:49	40.0	33.7
To I-126 EB (east of Greystone Blvd)	10.43	20:00	11:11	31.3	55.9
I-20 WB from East of Exit 68					
To I-20 WB (east of Exit 61)	11.10	10:55	16:48	61.1	39.7
To I-26 EB (east of Exit 110)	9.02	12:38	14:12	42.8	38.1
To I-26 WB (west of Exit 101)	15.29	16:38	29:46	55.2	30.8
I-126 WB from East of Greystone Blvd					
To I-26 WB (wast of Exit 101)	14.75	15:16	27:10	58.0	32.6
To I-20 WB (west of Exit 61)	10.61	10:51	16:25	58.7	38.8

RA4 - Intersection Capacity Analysis

Node #	Intersection Name	AM		PM	
		LOS	Delay	LOS	Delay
Exit 101					
100000391	Broad River Road (US 176) at Columbiana Drive / Lordship Lane	C	22.5	B	11.0
100000150	Broad River Road (US 176) at I-26 EB Off-ramp[1]	C	19.2	D	36.9
100000151	Broad River Road (US 176) at I-26 EB On-ramp	A	9.1	A	5.0
100000160	Broad River Road (US 176) at I-26 WB On-ramp[2]	A	2.2	A	2.2
4	Broad River Road (US 176) at Western Lane	C	24.4	D	39.9
Exit 102					
100000395	Lake Murray Boulevard (SC 60) at Columbiana Drive	D	47.9	F	92.7
100000510	Lake Murray Boulevard (SC 60) at I-26 EB On-Ramp[2]	A	2.8	A	3.8
100000520	Lake Murray Boulevard (SC 60) at I-26 WB On-Ramp[2]	A	2.8	A	3.8
100000401	Lake Murray Boulevard (SC 60) at Parkridge Drive / Kinley Road	B	16.7	B	17.9
Exit 103					
100000364	Harbison Boulevard (S-757) at Columbiana Drive	B	14.0	B	11.6
100000365	Harbison Boulevard (S-757) at Park Terrace Drive / Columbiana Circle	A	3.7	C	23.5
100000362	Harbison Boulevard (S-757) at Saturn Parkway	A	3.3	A	4.4
100000173	Harbison Boulevard (S-757) at I-26 EB Ramps	B	19.9	B	16.2
100000503	Harbison Boulevard (S-757) at I-26 EB On-Ramp[1]	A	0.0	A	0.0
136	Harbison Boulevard (S-757) at I-26 WB On-Ramp[1]	A	0.0	A	0.0
99	Harbison Boulevard (S-757) at I-26 WB Ramps	C	21.7	D	36.3
100000165	Harbison Boulevard (S-757) at Woodcross Drive	B	17.9	D	41.2
Exit 104					
100000174	Piney Grove Road at Bower Parkway / Jamil Road	C	34.6	E	59.6
100000463	Piney Grove Road at I-26 EBR Off-Ramp[1]	B	11.6	F	87.8
46	Piney Grove Road at I-26 Ramps	C	28.0	C	33.9
54	Piney Grove Road at I-26 WBR Off-Ramp[1]	F	69.1	E	41.2
100000177	Piney Grove Road at Fernandina Road	C	34.8	D	39.4
Exit 106					
100000348	St. Andrews Road at Jamil Road	B	12.1	D	35.4
69	St. Andrews Road at I-26 EBR Off-Ramp[1]	B	16.2	B	13.0
100000178	St. Andrews Road at West DDI Intersection	C	19.2	D	25.2
104	St. Andrews Road at I-26 EBL Off-Ramp	C	19.6	B	11.7
131	St. Andrews Road at I-26 WBL Off-Ramp	C	20.0	C	20.9
100000182	St. Andrews Road at East DDI Intersection	C	20.6	B	11.2
100000900	St. Andrews Road at I-26 WBR Off-Ramp	A	7.9	A	5.3
110	St. Andrews Road at Fernandina Road/Burning Tree Drive	F	52.8	F	146.0
100000354	St. Andrews Road at Kay Street / Chartwell Road	E	57.2	E	55.7
Exit 108					
100000256	Bush River Road at Zimalcrest Drive	A	8.9	A	9.7
30	Bush River Road at I-26 EB Ramps/Days Inn Driveway	D	35.0	C	27.2
100000252	Bush River Road at Morninghill Drive	C	21.0	C	35.0
100000184	Bush River Road at Arrowwood Road	C	21.9	C	30.3
Exit 110					
100000186	Sunset Boulevard (US 378) at E. Hospital Drive / Harbor Drive	E	56.9	E	71.0
100000093	Sunset Boulevard (US 378) at I-26 EBR Off-Ramp[1]	E	42.1	E	44.4
100000903	Sunset Boulevard (US 378) at I-26 Ramps	C	25.6	C	24.8
100000902	Sunset Boulevard (US 378) at I-26 WBR Off-Ramp[1]	E	47.7	F	58.7
100000163	Sunset Boulevard (US 378) at Chris Drive / McSwain Drive	A	4.2	C	27.6
Exit 63					
14	Bush River Road at Frontage Road	C	20.2	D	46.1
8	Bush River Road at I-20 Single Point Ramps Intersection	D	45.7	E	56.0
52	Bush River Road at Independence Avenue	B	16.2	B	15.7
Exit 65					
100000187	Broad River Road at Marley Drive / Briargate Circle	C	33.2	C	28.0
100000189	Broad River Road at I-20 WBR Off-Ramp	B	10.5	B	10.4
79	Broad River Road at I-20 Single Point Ramps Intersection	D	37.3	D	36.5
100000190	Broad River Road at I-20 EBR Off-Ramp	A	4.8	A	8.4
100000195	Broad River Road at Longcreek Drive	A	4.8	A	4.2
Additional Intersections					
100000012	Broad River Road (US 176) at Kinley Road	E	69.7	F	116.2
100000037	Broad River Road (US 176) at Harbison Boulevard	B	18.3	B	16.4
100000049	Broad River Road (US 176) at Piney Woods Road / Lost Creek Drive	C	24.2	C	24.4
100000068	Broad River Road (US 176) at Piney Grove Road	A	5.3	A	7.8
100000339	Broad River Road (US 176) at St. Andrews Road	F	112.3	D	36.5
100000349	Broad River Road (US 176) at St. Andrews Parkway	C	32.3	B	15.1
100000344	Broad River Road (US 176) at Seminole Road / Young Drive	E	67.2	D	35.7
41	Broad River Road (US 176) at Dutch Square Boulevard	A	6.1	C	30.9
100000046	Broad River Road (US 176) at Bush River Road	D	50.5	C	29.9
100000266	Broad River Road (US 176) at Greystone Boulevard	B	12.6	B	12.4
100000265	Greystone Boulevard at Stoneridge Drive	C	22.9	E	62.1
100000188	Greystone Boulevard at I-126 WB Ramps[1]	F	56.2	D	26.2
100000185	Greystone Boulevard at I-126 EB Ramps[1]	C	24.9	F	74.6
100000262	Bush River Road at Colonial Life Boulevard	B	17.8	C	23.4
100000374	Park Terrance Drive at Bower Parkway	A	9.1	A	6.7

[1] **Intersection unsignalized under all scenarios; worst approach LOS and delay reported.**

[2] **Delay unable to be processed per HCM 2010 methodology; Average control delay reported.**

RA4 - Mainline Travel Time Summary for I-26, I-20, I-126

Segments	Eastbound					Westbound				
	Length (mi)	Travel Time (mm:ss)		Average Speed (mph)		Length (mi)	Travel Time (mm:ss)		Average Speed (mph)	
		AM	PM	AM	PM		AM	PM	AM	PM
I-26 between Exit 101 and Exit 110										
Exit 101 to Exit 102 (Lake Murray Boulevard)	0.78	00:48	00:46	59.0	61.0	0.90	00:54	00:58	59.8	56.3
Exit 102 to Exit 103 (Harbison Boulevard)	1.21	01:16	01:13	57.6	59.4	1.02	01:01	01:10	59.8	52.2
Exit 103 to Exist 104 (Piney Grove Road)	0.90	00:59	00:56	55.3	58.3	0.97	00:59	01:03	59.4	55.3
Exit 104 to Exit 106 (St. Andrews Road)	1.75	02:13	01:55	47.4	54.8	1.63	01:55	01:59	50.9	49.2
Exit 106 to I-126 Split	1.63	02:55	02:06	33.4	46.6	1.80	02:16	02:22	47.8	45.7
I-126 to Exit 110 (Sunset Boulevard)	2.20	02:17	02:18	57.8	57.3	1.81	01:48	01:52	60.6	58.4
Total	**8.47**	**10:27**	**09:14**	**48.6**	**55.0**	**8.13**	**08:53**	**09:23**	**54.9**	**51.9**
I-20 between Exit 61 and Exit 68										
Exit 61 to Exit 63 (Bush River Road)	1.77	03:51	01:48	27.6	58.9	2.32	02:20	06:17	20.1	22.1
Exit 63 to Exit 65 (Broad River Road)	1.47	01:23	01:22	63.8	64.5	1.38	01:19	01:19	35.7	63.0
Exit 65 to Exit 68 (Monticello Road)	3.63	04:14	03:55	51.4	55.6	3.00	03:25	04:19	13.7	41.8
Total	**6.87**	**09:28**	**07:05**	**43.6**	**58.1**	**6.70**	**07:04**	**11:55**	**57.0**	**33.8**
I-126 between I-26 and Greystone Blvd										
I-26 to Colonial Life Blvd	1.22	01:19	01:14	55.1	59.3	1.00	01:02	01:07	45.0	53.6
Colonial Life Blvd to Greystone Blvd	0.77	00:49	00:54	56.2	51.0	1.12	01:05	01:14	43.2	54.2
Total	**1.98**	**02:08**	**02:08**	**55.6**	**55.8**	**2.11**	**02:08**	**02:21**	**59.7**	**53.9**

RA4 - Mainline Volumes

I-26 Mainline	Volume			
	AM		PM	
	EB	WB	EB	WB
Location				
west of Exit 101 (Broad River Road)	4,816	3,352	3,614	5,391
Exit 101 to Exit 102 (Lake Murray Boulevard)	6,093	4,302	4,448	6,785
Exit 102 to Exit 103 (Harbison Boulevard)	6,337	4,590	5,052	7,299
Exit 103 to Exist 104 (Piney Grove Road)	6,894	5,167	5,548	7,757
Exit 104 to Exit 106 (St. Andrews Road/CD Road)	7,830	5,666	6,257	8,322
Exit 106 to Exit 107	6,149	3,438	4,356	5,779
I-26 to I-26	3,317	1,722	3,139	2,001
I-26 to I-126	5,367	1,746	3,043	3,794
Exit 108 to Exit 110 (Sunset Boulevard)	4,168	4,455	4,514	5,066
southeast of Exit 110	3,707	4,407	4,391	4,603

I-20 Mainline	Volume			
	AM		PM	
	EB	WB	EB	WB
Location				
west of Exit 61 (Sunset Boulevard)	4,422	2,104	2,959	3,743
Exit 61 to Exit 63 (Bush River Road/CD Road)	5,449	3,155	3,892	5,060
Exit 63 to Exit 64 (Broad River Road)	3,200	1,566	2,267	2,185
	2,849	2,121	1,916	2,512
Exit 65 to Exit 68 (Monticello Road)	6,055	5,770	5,348	6,167
east of Exit 68	5,686	5,815	5,231	5,803

I-126 Mainline	Volume			
	AM		PM	
	EB	WB	EB	WB
Location				
I-26 to Colonial Life Blvd	6,145	2,984	3,397	6,540
I-126 from Colonial Life Blvd to Greystone Blvd	6,839	3,408	3,913	7,305
I-126 from Greystone Blvd to Huger St	6,523	3,534	3,719	6,797

RA4 - Major Arterial Travel Times

Location	Eastbound					Westbound				
	Length (mi)	Travel Time (mm:ss)		Average Speed (mph)		Length (mi)	Travel Time (mm:ss)		Average Speed (mph)	
		AM	PM	AM	PM		AM	PM	AM	PM
Broad River Road (west of Exit 101 to Greystone Blvd)	6.8	25:36	24:56	16.0	16.4	7.4	17:51	21:25	24.8	20.7
Lake Murray Boulevard (west of Exit 102 to Broad River Road)	1.5	04:10	04:25	22.0	20.8	1.5	03:09	03:46	27.8	23.2
Harbison Boulevard (west of Exit 103 to Broad River Road)	1.1	02:54	03:32	22.8	18.7	1.1	02:33	03:42	25.8	17.8
Piney Grove Road (west of Exit 104 to Broad River Road)	1.5	04:45	04:32	19.2	20.2	1.5	04:33	04:45	20.1	19.2
St. Andrews Road (west of Exit 106 to Broad River Road)	1.1	06:06	04:57	10.4	12.8	1.1	06:28	07:22	10.0	8.8
Bush River Road (west of Exit 63 to Broad River Road)	1.9	08:00	07:36	13.9	14.6	1.9	06:05	08:20	18.3	13.3
Location	**Northbound**					**Southbound**				
	Length (mi)	Travel Time (mm:ss)		Average Speed		Length (mi)	Travel Time		Average Speed	
		AM	PM	AM	PM		AM	PM	AM	PM
Colonial Life Boulevard (I-126 Ramps to Bush River Road)	0.6	01:27	01:38	23.5	21.0	0.6	01:55	01:43	17.8	20.0

RA5 - LOS and Density

Mainline

Segment	RA5 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-26 Eastbound						
Exit 101 to Exit 102	D	31.5	0.61	B	17.7	0.37
Exit 102 to Exit 103	D	34.6	0.75	C	23.4	0.52
Exit 103 to Exit 104	D	31.2	0.63	C	24.6	0.48
Exit 104 to Exit 107/Exit 106	F	46.0	0.72	C	25.3	0.53
Exit 107/106 to I-26 Split	F	60.3	0.78	B	17.8	0.50
I-126 Diverge to I-126 Merge	D	26.6	0.54	D	26.3	0.53
I-26 Split to Exit 110	C	23.2	0.45	D	27.0	0.51
I-26 Westbound						
Exit 110 to Exit 108	C	21.5	0.47	C	23.1	0.53
I-126 Diverge to I-126 Merge	D	34.8	0.60	D	30.7	0.66
I-26 Mege to Exit 106	C	21.6	0.39	D	29.5	0.60
Exit 106 to Exit 104	D	27.8	0.58	F	59.6	0.82
Exit 104 to Exit 103	D	27.6	0.42	D	33.7	0.58
Exit 103 to Exit 102	C	22.9	0.47	D	29.9	0.67
Exit 102 to Exit 101	B	17.2	0.35	C	23.1	0.51

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

RA5 - LOS and Density

Mainline

Segment	RA5 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-20 Eastbound						
west of Exit 61	F	46.1	0.61	C	25.6	0.41
Exit 61 to Exit 63	D	27.9	0.45	C	19.2	0.33
Exit 63 to Exit 65	A	10.7	0.25	A	7.5	0.17
Exit 65 to Exit 68	F	48.3	0.84	D	33.2	0.74
I-20 Westbound						
Exit 68 to Exit 65	E	42.5	0.81	F	68.6	0.80
Exit 65 to Exit 63	E	43.2	0.80	F	49.6	0.84
Exit 63 to Exit 61	A	9.0	0.19	A	10.5	0.25
west of Exit 61	B	17.3	0.36	F	91.7	0.55

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

Mainline

Segment	RA5 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-126 Eastbound						
I-26 to Colonial Life Blvd	E	36.9	0.73	C	21.1	0.40
Colonial Life Blvd to Greystone Blvd	D	32.7	0.75	C	19.3	0.41
Greystone Blvd to Huger St	E	37.7	0.69	B	16.2	0.39
I-126 Westbound						
Huger St to Greystone Blvd	B	16.0	0.37	D	30.9	0.73
Greystone Blvd to Colonial Life Blvd	B	16.5	0.36	F	53.1	0.71
Colonial Life Blvd to I-26	A	10.8	0.30	E	41.1	0.61

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

RA5 - LOS and Density

Merge

Segment	RA5 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-26 Eastbound						
Exit 101	D	31.5	0.61	B	17.7	0.37
Exit 102	D	31.9	0.60	C	23.0	0.41
Exit 103	D	31.2	0.63	C	24.6	0.49
Exit 104	D	34.0	0.61	C	23.3	0.44
Exit 106	F	60.3	0.63	B	17.8	0.40
Exit 107 (From I-20)	C	27.0	0.54	C	27.3	0.53
Exit 108 (I-126)	C	23.2	0.45	C	27.0	0.51
Exit 110	B	19.1	0.39	C	22.8	0.47
I-26 Westbound						
Exit 110	C	21.4	0.38	C	23.6	0.42
Exit 108 (I-126)	C	25.9	0.49	D	32.5	0.72
Exit 107 (From I-20)	C	21.7	0.40	E	40.6	0.58
Exit 106	C	25.6	0.39	F	70.6	0.57
Exit 104	B	14.9	0.42	B	17.6	0.58
Exit 103	B	18.9	0.38	C	24.1	0.53
Exit 102	B	17.2	0.35	C	23.1	0.51
Exit 101	B	15.4	0.28	C	24.1	0.46

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

RA5 - LOS and Density

Merge

Segment	RA5 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-20 Eastbound						
Exit 61 Loop	F	103.1	0.49	B	18.0	0.37
Exit 61	F	81.7	0.57	C	21.5	0.42
Exit 65	F	47.9	0.52	C	27.5	0.45
Exit 65 (From CD)	B	16.8	0.34	B	17.8	0.29
Exit 68	D	32.0	0.60	D	31.2	0.56
I-20 Westbound						
Exit 68	D	34.4	0.61	E	42.7	0.64
Exit 65	A	5.6	0.15	A	6.3	0.20
Exit 64 (From CD)	A	9.9	0.21	B	12.0	0.27
Exit 63 (From CD)	B	11.4	0.25	B	18.9	0.37
Exit 63	B	15.3	0.29	F	66.9	0.45
Exit 61 Loop	A	8.9	0.21	B	14.1	0.38
Exit 61	B	15.3	0.22	D	33.0	0.41

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

Merge

Segment	RA5 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-126 Eastbound						
Colonial Life Blvd	D	30.7	0.60	C	23.3	0.33
Greystone Blvd	D	32.7	0.70	B	13.2	0.39
I-126 Westbound						
Colonial Life Blvd	B	15.2	0.29	E	37.9	0.58
Greystone Blvd	B	10.8	0.30	E	41.1	0.61

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

RA5 - LOS and Density

Diverge

Segment	RA5 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-26 Eastbound						
Exit 101	D	33.5	0.64	B	17.4	0.38
Exit 101 Loop	C	26.1	0.50	B	14.9	0.29
Exit 102	D	31.5	0.61	B	17.7	0.37
Exit 102 Loop	C	27.7	0.56	B	17.8	0.35
Exit 103	D	32.0	0.75	C	23.1	0.52
Exit 104	D	31.2	0.63	C	24.6	0.48
Exit 106 (CD Road to I-20)	D	34.9	0.72	C	25.2	0.53
Exit 106	C	22.0	0.64	B	13.0	0.42
Exit 107 (CD Road to I-126)	F	57.9	0.78	C	26.2	0.50
Exit 110	C	23.2	0.45	C	27.0	0.51
I-26 Westbound						
Exit 110	D	30.2	0.46	F	53.7	0.50
Exit 107/I-126	D	29.9	0.47	D	31.9	0.53
Exit 106/CD Road	D	29.4	0.49	F	53.2	0.72
Exit 104	C	23.6	0.46	F	49.6	0.66
Exit 103	B	16.2	0.42	C	20.1	0.58
Exit 102	B	19.1	0.47	C	24.4	0.67
Exit 102 Loop	B	17.7	0.35	C	22.2	0.52
Exit 101	B	17.2	0.35	C	23.1	0.51
Exit 101 Loop	B	13.6	0.32	B	18.7	0.49

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

RA5 - LOS and Density

Diverge

Segment	RA5 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-20 Eastbound						
Exit 61	D	30.9	0.46	B	18.4	0.31
Exit 63/64	C	24.2	0.45	C	21.0	0.33
Exit 68	E	43.4	0.84	E	36.8	0.74
I-20 Westbound						
Exit 68	E	42.5	0.81	F	68.6	0.80
Exit 65	E	35.9	0.40	E	41.8	0.42
Exit 64 (CD Road to I-26)	C	26.5	0.35	C	25.5	0.38
Exit 63 (CD Road)	A	6.1	0.19	A	6.7	0.24
Exit 61	E	35.1	0.36	F	75.9	0.53

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

Diverge

Segment	RA5 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-126 Eastbound						
Colonial Life Boulevard	E	36.9	0.73	C	21.1	0.40
Greystone Boulevard	D	31.0	0.60	C	24.7	0.33
I-126 Westbound						
Greystone Boulevard	B	18.0	0.37	D	33.1	0.73
Colonial Life Boulevard	B	15.4	0.29	E	43.6	0.57
Colonial Life Boulevard to I-26 EB	B	14.6	0.31	F	56.5	0.65
Exit 107 (I-20)	B	10.8	0.30	E	41.1	0.61

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

RA5 - Travel Times Between External Zone Pairs

Segments	Length (mi)	Travel Time (mm:ss)		Average Speed (mph)	
		AM	PM	AM	PM
I-26 EB from West of Exit 101					
To I-26 EB (east of Exit 110)	13.84	15:30	13:23	53.6	62.1
To I-20 WB (west of Exit 61)	16.07	17:24	19:02	55.4	50.6
To I-20 EB (east of Exit 68)	15.39	18:22	16:01	50.3	57.7
To I-126 EB (Greystone Blvd)	14.78	17:20	14:29	51.2	61.2
I-26 WB from East of Exit 110					
To I-26 WB (west of Exit 101)	13.85	13:16	14:48	62.7	56.2
To I-20 EB (east of Exit 68)	8.40	09:57	09:43	50.7	51.9
I-20 EB from West of Exit 61					
To I-20 EB (east of Exit 68)	11.10	18:52	10:47	35.3	61.8
To I-26 WB (west of Exit 101)	16.71	23:54	19:34	42.0	51.2
To I-126 EB (east of Greystone Blvd)	10.37	19:52	11:19	31.3	54.9
I-20 WB from East of Exit 68					
To I-20 WB (east of Exit 61)	11.10	11:11	16:27	59.6	40.5
To I-26 EB (east of Exit 110)	9.05	10:50	14:13	50.1	38.2
To I-26 WB (west of Exit 101)	15.33	16:01	21:24	57.4	43.0
I-126 WB from East of Greystone Blvd					
To I-26 WB (west of Exit 101)	14.75	14:29	18:36	61.1	47.6
To I-20 WB (west of Exit 61)	10.46	10:55	16:01	57.5	39.2

RA5 - Intersection Capacity Analysis

Node #	Intersection Name	AM		PM	
		LOS	Delay	LOS	Delay
Exit 101					
100000391	Broad River Road (US 176) at Columbiana Drive / Lordship Lane	C	21.6	D	38.5
100000150	Broad River Road (US 176) at I-26 EB Off-ramp[1]	C	21.4	C	18.8
100000151	Broad River Road (US 176) at I-26 EB On-ramp	A	8.1	A	6.0
100000160	Broad River Road (US 176) at I-26 WB On-ramp[2]	A	2.1	A	1.9
4	Broad River Road (US 176) at Western Lane	B	10.9	B	10.2
Exit 102					
100000395	Lake Murray Boulevard (SC 60) at Columbiana Drive	E	59.3	E	72.6
100000510	Lake Murray Boulevard (SC 60) at I-26 EB On-Ramp[2]	A	3.3	A	3.1
100000169	Lake Murray Boulevard (SC 60) at I-26 WB On-Ramp[2]	A	2.3	A	3.2
100000401	Lake Murray Boulevard (SC 60) at Parkridge Drive / Kinley Road	B	16.6	C	23.4
Exit 103					
100000364	Harbison Boulevard (S-757) at Columbiana Drive	B	13.8	B	10.5
100000365	Harbison Boulevard (S-757) at Park Terrace Drive / Columbiana Circle	A	7.9	C	32.6
100000362	Harbison Boulevard (S-757) at Saturn Parkway	A	2.8	C	21.1
8	Harbison Boulevard (S-757) at I-26 EB Ramps	C	21.8	B	14.0
99	Harbison Boulevard (S-757) at I-26 WB Ramps	B	19.9	C	28.9
100000165	Harbison Boulevard (S-757) at Woodcross Drive	C	31.0	C	28.7
Exit 104					
100000353	Piney Grove Road at Bower Parkway / Jamil Road	E	65.3	E	73.2
83	Piney Grove Road at EBR Off-Ramp	A	0.0	A	0.0
100000174	Piney Grove Road at I-26 EB Ramps	C	26.0	C	24.9
100000177	Piney Grove Road at I-26 WB Ramps	B	13.1	B	18.6
89	Piney Grove Road at WBR Off-Ramp	A	0.0	A	0.0
100000399	Piney Grove Road at Fernandina Road	C	31.5	D	41.3
Exit 106					
100000348	St. Andrews Road at Jamil Road	C	22.7	A	9.4
100000182	St. Andrews Road at Woodland Hill Road	D	40.1	B	10.3
98	St. Andrews Road at I-26 SPUI	C	27.4	C	32.8
100000900	St. Andrews Road at I-26 WBR Off-Ramp[2]	C	15.8	C	21.1
100000358	St. Andrews Road at Burning Tree Drive/Fernandina Road	D	52.9	C	33.7
100000354	St. Andrews Road at Kay Street / Chartwell Road	F	81.3	B	14.8
Exit 108					
100000256	Bush River Road at Zimalcrest Drive	A	9.1	A	9.6
30	Bush River Road at Days Inn Driveway	A	4.6	A	8.7
100000252	Bush River Road at Morninghill Drive	C	21.3	B	19.5
100000184	Bush River Road at Arrowwood Road	C	20.1	B	18.6
Exit 110					
100000186	Sunset Boulevard (US 378) at E. Hospital Drive / Harbor Drive	C	27.2	E	60.0
100000093	Sunset Boulevard (US 378) at I-26 EBR Off-Ramp[1]	E	37.4	F	66.1
100000903	Sunset Boulevard (US 378) at I-26 Ramps	C	26.1	C	25.2
100000902	Sunset Boulevard (US 378) at I-26 WBR Off-Ramp[1]	E	45.2	F	54.3
100000163	Sunset Boulevard (US 378) at Chris Drive / McSwain Drive	A	3.6	B	15.6
Exit 63					
100000446	Bush River Road at Berryhill Drive/WB On-Ramp	B	14.6	B	16.6
118	Bush River Road at I-20 EBL Off-Ramp	A	9.0	B	14.6
21	Bush River Road at I-20 EBR Off-Ramp[1]	A	1.9	C	20.9
100000255	Bush River Road at Independence Avenue	B	12.1	B	19.4
Exit 65					
100000187	Broad River Road at Marley Drive / Briargate Circle	B	15.3	C	26.3
100000189	Broad River Road at I-20 WB Ramps	A	8.8	B	10.2
79	Broad River Road at I-20 Single Point Ramps Intersection	C	31.3	C	28.4
100000190	Broad River Road at I-20 EB Ramps[1]	B	14.2	F	68.1
100000195	Broad River Road at Longcreek Drive	A	5.1	A	5.8
Additional Intersections					
100000012	Broad River Road (US 176) at Kinley Road	E	58.4	F	114.1
100000037	Broad River Road (US 176) at Harbison Boulevard	D	41.3	D	39.4
100000049	Broad River Road (US 176) at Piney Woods Road / Lost Creek Drive	C	28.8	D	37.0
100000068	Broad River Road (US 176) at Piney Grove Road	A	5.8	B	14.5
100000339	Broad River Road (US 176) at St. Andrews Road	C	28.6	D	40.8
100000349	Broad River Road (US 176) at St. Andrews Parkway	B	10.4	B	14.7
100000344	Broad River Road (US 176) at Seminole Road / Young Drive	A	9.3	C	29.7
41	Broad River Road (US 176) at Dutch Square Boulevard	A	7.5	E	70.1
100000046	Broad River Road (US 176) at Bush River Road	D	47.5	F	105.1
100000266	Broad River Road (US 176) at Greystone Boulevard	B	13.7	B	13.6
100000265	Greystone Boulevard at Stoneridge Drive	C	26.9	C	34.5
100000188	Greystone Boulevard at I-126 WB Ramps[1]	F	91.8	E	42.6
100000185	Greystone Boulevard at I-126 EB Ramps[1]	D	34.9	F	95.0
100000262	Bush River Road at Colonial Life Boulevard	B	15.2	C	21.2
100000897	Colonial Life Boulevard at West Colonial Life Road[1]	A	1.3	F	332.5
100000374	Park Terrance Drive at Bower Parkway	B	12.1	B	12.1

[1] **Intersection unsignalized under all scenarios; worst approach LOS and delay reported.**

[2] **Delay unable to be processed per HCM 2010 methodology; Average control delay reported.**

RA5 - Mainline Travel Time Summary for I-26, I-20, I-126

Segments	Eastbound					Westbound				
	Length (mi)	Travel Time (mm:ss)		Average Speed (mph)		Length (mi)	Travel Time (mm:ss)		Average Speed (mph)	
		AM	PM	AM	PM		AM	PM	AM	PM
I-26 between Exit 101 and Exit 110										
Exit 101 to Exit 102 (Lake Murray Boulevard)	0.76	00:49	00:45	55.6	60.1	1.00	01:01	01:03	58.8	57.3
Exit 102 to Exit 103 (Harbison Boulevard)	1.21	01:19	01:13	55.4	59.7	0.86	00:51	00:55	60.1	56.7
Exit 103 to Exist 104 (Piney Grove Road)	0.89	00:58	00:54	54.8	59.5	0.95	00:57	00:59	60.0	57.6
Exit 104 to Exit 107 (I-20) / Exit 106 (St. Andrews Road)	1.77	02:18	01:51	46.2	57.7	2.80	03:04	04:32	54.7	37.0
Exit 106 to I-26/I-126 Split	1.22	02:13	01:26	33.0	51.0	0.32	00:25	00:30	46.3	38.7
I-26 to I-126	1.23	01:25	01:26	51.8	51.7	0.73	00:59	01:00	44.3	43.6
I-26/I-126 Split to Exit 110 (Sunset Boulevard)	1.60	01:35	01:37	60.7	59.3	1.46	01:27	01:28	60.5	59.5
Total	**8.68**	**10:38**	**09:12**	**49.0**	**56.6**	**8.11**	**08:44**	**10:27**	**55.7**	**46.6**
I-20 between Exit 61 and Exit 68										
Exit 61 to Exit 63/64	1.81	04:34	01:53	23.9	57.7	2.16	02:21	04:30	19.3	28.8
Exit 63/64 to Exit 65	2.58	02:29	02:26	62.0	63.4	1.36	01:17	01:17	35.2	63.8
Exit 65 to Exit 68 (Monticello Road)	2.52	03:31	02:43	43.0	55.7	3.00	03:46	04:47	12.0	37.6
Total	**6.91**	**10:34**	**07:02**	**39.2**	**58.9**	**6.52**	**07:24**	**10:35**	**52.9**	**37.0**
I-126 between I-26 and Greystone Blvd										
I-26 to Colonial Life Blvd	0.76	00:57	00:54	47.9	50.9	0.98	01:02	02:08	43.7	27.6
Colonial Life Blvd to Greystone Blvd	1.49	01:36	01:37	55.7	55.1	1.12	01:06	01:44	41.2	38.6
Total	**2.25**	**02:33**	**02:31**	**52.8**	**53.6**	**2.10**	**02:08**	**03:52**	**58.9**	**32.5**

RA5 - Mainline Volumes

I-26 Mainline	Volume			
	AM		PM	
	EB	WB	EB	WB
Location				
west of Exit 101 (Broad River Road)	6,171	3,330	3,612	5,489
Exit 101 to Exit 102 (Lake Murray Boulevard)	7,288	4,164	4,466	6,133
Exit 102 to Exit 103 (Harbison Boulevard)	7,228	4,543	4,961	6,422
Exit 103 to Exist 104 (Piney Grove Road)	7,548	5,064	5,808	6,999
Exit 104 to Exit 106 (St. Andrews Road/CD Road)	8,652	5,577	6,377	7,915
Exit 106 to Exit 107	7,065	3,517	4,536	5,413
I-126 Diverge to I-126 Merge	3,653	2,297	3,569	2,522
Exit 108 to Exit 110 (Sunset Boulevard)	4,306	4,484	4,865	5,086
southeast of Exit 110	3,779	4,414	4,519	4,811

I-20 Mainline	Volume			
	AM		PM	
	EB	WB	EB	WB
Location				
west of Exit 61 (Sunset Boulevard)	4,414	2,133	2,942	3,885
Exit 61 to Exit 63 (Bush River Road/CD Road)	5,401	3,469	4,003	5,235
Exit 63 to Exit 65 (Broad River Road)	2,403	1,842	1,590	2,353
Exit 65 to Exit 68 (Monticello Road)	6,070	5,734	5,353	6,079
east of Exit 68	5,742	5,839	5,368	5,778

I-126 Mainline	Volume			
	AM		PM	
	EB	WB	EB	WB
Location				
I-26 to Colonial Life Blvd	6,564	2,845	3,604	5,868
I-126 from Colonial Life Blvd to Greystone Blvd	7,231	3,452	3,964	6,837
I-126 from Greystone Blvd to Huger St	6,646	3,560	3,771	7,013

RA5 - Major Arterial Travel Times

Location	Eastbound					Westbound				
	Length (mi)	Travel Time (mm:ss)		Average Speed (mph)		Length (mi)	Travel Time (mm:ss)		Average Speed (mph)	
		AM	PM	AM	PM		AM	PM	AM	PM
Broad River Road (west of Exit 101 to Greystone Blvd)	7.9	20:05	25:12	23.5	18.7	7.9	23:16	29:26	20.3	16.0
Lake Murray Boulevard (west of Exit 102 to Broad River Road)	1.5	04:37	04:20	19.9	21.2	1.5	04:11	03:50	21.0	22.9
Harbison Boulevard (west of Exit 103 to Broad River Road)	1.1	03:28	04:35	19.0	14.4	1.1	03:13	03:17	20.5	20.1
Piney Grove Road (west of Exit 104 to Broad River Road)	1.5	05:05	04:29	18.3	20.7	1.5	07:48	04:22	11.9	21.3
St. Andrews Road (west of Exit 106 to Broad River Road)	1.0	05:52	03:58	10.5	15.4	1.0	08:51	04:27	6.9	13.8
Bush River Road (west of Exit 63 to Broad River Road)	2.0	07:02	08:03	17.2	15.0	2.0	06:04	06:12	19.9	19.5
Location	Northbound					Southbound				
	Length (mi)	Travel Time (mm:ss)		Average Speed		Length (mi)	Travel Time		Average Speed	
		AM	PM	AM	PM		AM	PM	AM	PM
Colonial Life Boulevard (I-126 Ramps to Bush River Road)	0.6	01:59	02:33	19.4	15.1	0.6	02:39	02:28	14.5	15.6

RA6 - LOS and Density

Mainline

Segment	RA6 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-26 Eastbound						
Exit 101 to Exit 102	D	31.2	0.43	B	16.9	0.36
Exit 102 to Exit 103	C	24.7	0.56	C	22.3	0.49
Exit 103 to Exit 104	B	15.4	0.53	C	19.8	0.53
Exit 104 to Exit 106	F	135.2	0.56	F	80.8	0.57
Exit 106 to Exit 107	B	12.2	0.24	B	12.9	0.24
I-26 to I-26	C	23.0	0.48	C	24.1	0.49
Exit 108 to Exit 110	C	18.9	0.40	C	21.9	0.48
I-26 Westbound						
Exit 110 to Exit 108	C	21.3	0.45	C	23.3	0.51
I-126 Diverge to I-126 Merge	D	33.5	0.36	F	112.8	0.42
Exit 107 to Exit 106	C	19.3	0.30	C	25.7	0.50
Exit 106 to Exit 104	D	30.2	0.55	F	48.9	0.86
Exit 104 to Exit 103	C	20.2	0.47	F	61.5	0.80
Exit 103 to Exit 102	C	21.0	0.40	E	43.7	0.75
Exit 102 to Exit 101	B	15.3	0.30	C	25.4	0.55

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

RA6 - LOS and Density

Mainline

Segment	RA6 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-20 Eastbound						
west of Exit 61	F	46.3	0.59	C	25.8	0.41
Exit 61 to Exit 63	F	97.4	0.65	F	84.1	0.51
Exit 63 to Exit 65	B	12.6	0.30	A	9.8	0.22
Exit 65 to Exit 68	D	34.0	0.76	D	32.4	0.73
I-20 Westbound						
Exit 68 to Exit 65	F	69.7	0.53	F	93.0	0.63
Exit 65 to Exit 63	A	9.3	0.19	B	12.2	0.27
Exit 63 to Exit 61	B	16.1	0.42	F	82.3	0.69
west of Exit 61	B	17.7	0.26	E	37.2	0.52

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

Mainline

Segment	RA6 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-126 Eastbound						
I-26 to Colonial Life Blvd	D	29.6	0.73	C	19.3	0.48
Colonial Life Blvd to Greystone Blvd	C	25.1	0.62	B	15.2	0.39
Greystone Blvd to Huger St	D	26.9	0.59	B	15.4	0.37
I-126 Westbound						
Huger St to Greystone Blvd	B	14.5	0.34	D	30.6	0.73
Greystone Blvd to Colonial Life Blvd	B	17.1	0.33	F	81.8	0.66
Colonial Life Blvd to I-26	-	-	-	-	-	-

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

RA6 - LOS and Density

Merge

Segment	RA6 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-26 Eastbound						
Exit 101	D	31.2	0.43	B	16.9	0.36
Exit 102	B	18.6	0.45	B	16.7	0.39
Exit 103	B	15.4	0.43	B	19.8	0.42
Exit 104	E	43.2	0.45	C	26.4	0.45
Exit CD Road	B	10.5	0.23	B	12.6	0.25
Exit 107 (From I-20)	B	16.5	0.36	B	17.2	0.36
Exit 108 (I-126)	B	18.9	0.40	C	21.9	0.48
Exit 110	B	17.9	0.36	C	23.5	0.46
I-26 Westbound						
Exit 110	C	21.7	0.36	C	22.4	0.41
Exit 108 (I-126)	B	19.3	0.30	C	25.7	0.50
Exit 107 (From I-20)	C	26.6	0.36	F	49.3	0.56
Exit 106	C	25.7	0.44	E	39.8	0.70
Exit 104	C	20.2	0.38	F	61.5	0.64
Exit 103	B	15.9	0.32	E	37.9	0.60
Exit 102	B	15.3	0.30	C	25.4	0.55
Exit 101	B	13.1	0.25	C	22.5	0.45

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

RA6 - LOS and Density

Merge

Segment	RA6 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-20 Eastbound						
Exit 61 Loop	F	85.7	0.43	E	38.4	0.38
Exit 65	C	27.2	0.46	C	26.4	0.44
Exit 68	C	26.8	0.54	D	29.3	0.55
I-20 Westbound						
Exit 68	C	21.8	0.74	F	45.7	0.86
Exit 64 (From CD)	B	11.8	0.22	E	35.2	0.37
Exit 63	B	15.0	0.25	F	69.9	0.44
Exit 61	B	14.0	0.19	D	33.0	0.39

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

Merge

Segment	RA6 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-126 Eastbound						
Colonial Life Blvd	C	20.7	0.62	B	13.1	0.39
Greystone Blvd	C	22.9	0.59	B	12.7	0.37
I-126 Westbound						
Greystone Blvd	B	17.1	0.33	F	81.8	0.66

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

RA6 - LOS and Density

Diverge

Segment	RA6 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-26 Eastbound						
Exit 101	C	26.2	0.49	B	16.2	0.37
Exit 102	D	31.2	0.43	B	16.9	0.36
Exit 103	C	23.0	0.56	C	20.3	0.49
Exit 104	B	14.5	0.43	B	16.8	0.42
Exit 106	F	135.2	0.56	F	80.8	0.57
Exit 110	B	18.9	0.40	C	21.9	0.48
I-26 Westbound						
Exit 110	C	27.1	0.42	F	66.2	0.48
Exit 108 (CD Road/I-126)	C	27.6	0.36	D	29.0	0.41
Exit 107/Exit 106	B	19.3	0.30	C	25.7	0.50
Exit 104	C	26.2	0.44	E	41.4	0.69
Exit 103	C	20.7	0.47	F	61.8	0.80
Exit 102	B	16.1	0.40	E	39.4	0.75
Exit 101	B	15.3	0.30	C	25.4	0.55

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

RA6 - LOS and Density

Diverge

Segment	RA6 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-20 Eastbound						
Exit 61	F	47.3	0.44	C	21.4	0.31
Exit 63	F	95.5	0.48	F	79.2	0.38
Exit 68	E	37.8	0.76	D	33.5	0.73
I-20 Westbound						
Exit 68	E	37.7	0.74	F	66.3	0.81
Exit 65	F	69.7	0.53	F	93.0	0.63
Exit 61	D	32.5	0.41	F	83.8	0.67

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

Diverge

Segment	RA6 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-126 Eastbound						
Colonial Life Boulevard	C	27.8	0.55	B	18.2	0.36
Greystone Boulevard	C	21.0	0.49	B	13.4	0.31
I-126 Westbound						
Greystone Boulevard	B	16.4	0.34	F	48.4	0.72
Colonial Life Boulevard	B	17.1	0.33	F	81.8	0.66

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

RA6 - Travel Times Between External Zone Pairs

Segments	Length (mi)	Travel Time (mm:ss)		Average Speed (mph)	
		AM	PM	AM	PM
I-26 EB from West of Exit 101					
To I-26 EB (east of Exit 110)	13.86	19:53	13:30	41.8	61.6
To I-20 WB (west of Exit 61)	16.14	27:44	20:54	34.9	46.3
To I-20 EB (east of Exit 68)	15.42	28:04	17:47	33.0	52.0
To I-126 EB (Greystone Blvd)	14.77	24:26	15:30	36.3	57.2
I-26 WB from East of Exit 110					
To I-26 WB (west of Exit 101)	13.87	13:51	24:13	60.0	34.4
To I-20 EB (east of Exit 68)	8.44	09:38	10:04	52.5	50.3
I-20 EB from West of Exit 61					
To I-20 EB (east of Exit 68)	11.10	19:34	11:39	34.0	57.1
To I-26 WB (west of Exit 101)	16.72	26:53	30:18	37.3	33.1
To I-126 EB (east of Greystone Blvd)	10.36	22:42	16:18	27.4	38.1
I-20 WB from East of Exit 68					
To I-20 WB (east of Exit 61)	11.10	11:13	15:52	59.4	42.0
To I-26 EB (east of Exit 110)	8.91	11:36	14:44	46.1	36.3
To I-26 WB (west of Exit 101)	15.30	17:35	30:12	52.2	30.4
I-126 WB from East of Greystone Blvd					
To I-26 WB (west of Exit 101)	14.75	15:16	29:36	58.0	29.9
To I-20 WB (west of Exit 61)	10.46	10:56	18:02	57.4	34.8

RA6 - Intersection Capacity Analysis

Node #	Intersection Name	AM		PM	
		LOS	Delay	LOS	Delay
Exit 101					
106	Broad River Road (US 176) at Columbiana Drive / Lordship Lane	C	31.7	B	19.5
167	Broad River Road (US 176) at I-26 EBR Off-ramp	A	2.4	A	0.6
166	Broad River Road (US 176) at West DDI Intersection	B	12.8	B	10.8
105	Broad River Road (US 176) at I-26 EBL Off-ramp	A	7.7	A	5.3
181	Broad River Road (US 176) at I-26 WBL Off-ramp	B	11.0	B	16.7
113	Broad River Road (US 176) at East DDI Intersection	B	15.3	B	16.7
4	Broad River Road (US 176) at Western Lane	B	10.3	A	6.8
Exit 102					
100000395	Lake Murray Boulevard (SC 60) at Columbiana Drive	E	78.6	F	126.6
103	Lake Murray Boulevard (SC 60) at I-26 EB On-Ramp	B	13.1	B	13.4
100000169	Lake Murray Boulevard (SC 60) at I-26 WB On-Ramp	B	12.0	B	13.6
100000401	Lake Murray Boulevard (SC 60) at Parkridge Drive / Kinley Road	C	21.6	B	19.1
Exit 103					
100000364	Harbison Boulevard (S-757) at Columbiana Drive	B	16.8	B	11.4
100000365	Harbison Boulevard (S-757) at Park Terrace Drive / Columbiana Circle	A	9.1	C	28.6
100000362	Harbison Boulevard (S-757) at Saturn Parkway	A	8.4	A	7.8
121	Harbison Boulevard (S-757) at I-26 SPUI Interchange	D	39.6	D	43.5
115	Harbison Boulevard (S-757) at I-26 WBR Ramp	A	3.5	A	3.5
100000165	Harbison Boulevard (S-757) at Woodcross Drive	C	23.2	C	27.1
Exit 104					
100000353	Piney Grove Road at Bower Parkway / Jamil Road	F	82.9	E	62.2
173	Piney Grove Road at West DDI Intersection	B	15.9	C	20.5
122	Piney Grove Road at I-26 EBL Off-Ramp	B	12.4	B	18.1
123	Piney Grove Road at I-26 WBL Off-Ramp	B	16.1	B	12.9
171	Piney Grove Road at East DDI Interchange	C	22.2	B	16.3
162	Piney Grove Road at I-26 WBR Off-Ramps	A	1.7	A	1.4
100000399	Piney Grove Road at Fernandina Road	C	23.1	D	40.9
Exit 106					
100000348	St. Andrews Road at Jamil Road	D	47.8	E	62.2
100000178	St. Andrews Road at I-26 EBR Off-Ramp	A	0.6	A	1.7
193	St. Andrews Road at West DDI Intersection	C	21.1	B	15.3
195	St. Andrews Road at I-26 EBL Off-Ramp	A	6.8	A	2.9
48	St. Andrews Road at I-26 WBL Off-Ramp	A	5.8	A	6.0
62	St. Andrews Road at East DDI Intersection	A	8.4	A	9.9
142	St. Andrews Road at I-26 WBR Off-Ramp	B	11.1	B	12.9
100000354	St. Andrews Road at Kay Street / Chartwell Road	B	19.6	E	77.8
Exit 108					
100000256	Bush River Road at Zimalcrest Drive	A	7.9	A	9.1
30	Bush River Road at Driveway	A	3.4	A	3.8
100000252	Bush River Road at Morninghill Drive	B	19.1	C	20.1
100000184	Bush River Road at Arrowwood Road	B	18.5	B	18.5
Exit 110					
100000186	Sunset Boulevard (US 378) at E. Hospital Drive / Harbor Drive	F	103.7	E	63.7
100000093	Sunset Boulevard (US 378) at I-26 EBR Off-Ramp[1]	D	32.2	E	47.1
100000903	Sunset Boulevard (US 378) at I-26 Ramps	C	25.8	C	24.7
100000902	Sunset Boulevard (US 378) at I-26 WBR Off-Ramp[1]	E	44.3	F	54.9
100000163	Sunset Boulevard (US 378) at Chris Drive / McSwain Drive	A	6.7	D	46.8
Exit 63					
14	Bush River Road at Berryhill Drive	B	10.0	C	32.3
81	Bush River Road at I-20 Ramps	D	37.2	D	39.6
100000255	Bush River Road at Independence Avenue	B	15.3	D	47.9
Exit 65					
100000187	Broad River Road at Marley Drive / Briargate Circle	C	31.8	B	19.6
91	Broad River Road at I-20 WB Ramps	C	29.6	C	33.5
37	Broad River Road at I-20 WBL Off-Ramp	A	4.1	A	6.4
95	Broad River Road at I-20 EB Ramps	B	13.0	A	9.7
72	Broad River Road at Longcreek Drive	A	5.4	A	6.8
Additional Intersections					
100000012	Broad River Road (US 176) at Kinley Road	D	36.8	D	41.9
100000037	Broad River Road (US 176) at Harbison Boulevard	C	33.9	B	16.7
100000049	Broad River Road (US 176) at Piney Woods Road / Lost Creek Drive	C	26.6	B	19.9
100000068	Broad River Road (US 176) at Piney Grove Road	B	16.5	A	7.5
100000339	Broad River Road (US 176) at St. Andrews Road	F	125.2	E	75.5
100000349	Broad River Road (US 176) at St. Andrews Parkway	A	9.7	B	14.6
100000344	Broad River Road (US 176) at Seminole Road / Young Drive	B	16.9	C	32.4
41	Broad River Road (US 176) at Dutch Square Boulevard	A	6.3	C	21.7
100000046	Broad River Road (US 176) at Bush River Road	C	26.2	E	72.3
100000266	Broad River Road (US 176) at Greystone Boulevard	B	11.3	B	15.0
100000265	Greystone Boulevard at Stoneridge Drive	C	22.6	B	18.8
100000188	Greystone Boulevard at I-126 WB Ramps[1]	E	35.0	D	34.6
100000185	Greystone Boulevard at I-126 EB Ramps[1]	C	22.9	F	63.7
100000262	Bush River Road at Colonial Life Boulevard	B	16.3	C	31.9
100000897	Colonial Life Boulevard at West Colonial Life Road[1]	B	12.5	F	1619.7
100000374	Park Terrance Drive at Bower Parkway	D	46.9	B	12.1

[1] **Intersection unsignalized under all scenarios; worst approach LOS and delay reported.**

[2] **Delay unable to be processed per HCM 2010 methodology; Average control delay reported.**

RA6 - Mainline Travel Time Summary for I-26, I-20, I-126

Segments	Eastbound					Westbound				
	Length (mi)	Travel Time (mm:ss)		Average Speed (mph)		Length (mi)	Travel Time (mm:ss)		Average Speed (mph)	
		AM	PM	AM	PM		AM	PM	AM	PM
I-26 between Exit 101 and Exit 110										
Exit 101 to Exit 102 (Lake Murray Boulevard)	0.83	01:03	00:48	47.3	62.4	1.26	01:13	01:16	62.1	59.5
Exit 102 to Exit 103 (Harbison Boulevard)	1.19	01:12	01:10	59.6	61.1	1.06	01:02	01:15	61.3	51.2
Exit 103 to Exist 104 (Piney Grove Road)	0.96	00:58	00:58	59.4	59.8	0.86	00:52	01:26	59.5	35.9
Exit 104 to Exit 106 (St. Andrews Road)	1.70	04:48	01:53	21.3	54.5	2.03	02:32	02:57	48.1	41.3
Exit 106 to Exit 107 (I-20)	1.90	02:07	02:07	53.9	53.9	1.12	01:21	01:24	49.7	48.0
Exit 108 to I-26	1.08	01:11	01:10	54.8	55.5	0.77	01:00	01:00	46.6	46.5
I-26 to Exit 110 (Sunset Boulevard)	1.20	01:08	01:09	63.5	62.6	1.47	01:30	01:30	58.9	58.6
Total	**8.86**	**12:27**	**09:14**	**42.7**	**57.6**	**8.57**	**09:30**	**10:48**	**54.2**	**47.6**
I-20 between Exit 61 and Exit 68										
Exit 61 to Exit 63 (Bush River Road)	1.96	08:08	05:15	14.5	22.5	1.45	01:42	04:01	51.0	21.6
Exit 63 to Exit 65	2.52	02:20	02:17	65.0	66.1	2.73	02:30	02:38	65.5	62.4
Exit 65 to Exit 68 (Monticello Road)	2.49	02:46	02:35	54.1	57.9	2.65	04:15	03:59	37.4	40.0
Total	**6.98**	**13:13**	**10:07**	**31.7**	**41.4**	**6.83**	**08:27**	**10:37**	**48.5**	**38.6**
I-126 between I-26 and Greystone Blvd										
I-26 to Colonial Life Blvd	0.63	00:43	00:40	53.4	57.5	1.01	01:05	02:48	55.7	21.7
Colonial Life Blvd to Greystone Blvd	1.40	01:26	01:20	58.7	62.9	1.16	01:07	02:57	62.2	23.7
Total	**2.04**	**02:09**	**02:00**	**56.9**	**61.1**	**2.18**	**02:13**	**05:45**	**59.0**	**22.7**

RA6 - Volumes

I-26 Mainline	Volume			
	AM		PM	
	EB	WB	EB	WB
Location				
west of Exit 101 (Broad River Road)	4,733	2,975	3,580	5,370
Exit 101 to Exit 102 (Lake Murray Boulevard)	5,121	3,583	4,307	6,569
Exit 102 to Exit 103 (Harbison Boulevard)	5,370	3,851	4,708	7,170
Exit 103 to Exist 104 (Piney Grove Road)	5,123	4,499	5,093	7,662
Exit 104 to Exit 106 (St. Andrews Road/CD Road)	5,433	4,974	5,394	7,816
Exit 106 to Exit 107	1,593	4,084	1,644	6,695
I-126 Diverge to I-126 Merge	3,266	2,186	3,280	2,549
Exit 108 to Exit 110 (Sunset Boulevard)	3,858	4,363	4,597	4,940
southeast of Exit 110	3,415	4,034	4,415	4,684

I-20 Mainline	Volume			
	AM		PM	
	EB	WB	EB	WB
Location				
west of Exit 61 (Sunset Boulevard)	4,229	1,856	2,977	3,767
Exit 61 to Exit 63 (Bush River Road/CD Road)	4,646	3,028	3,686	4,983
Exit 63 to Exit 65 (Broad River Road)	2,143	1,371	1,557	1,978
Exit 65 to Exit 68 (Monticello Road)	5,537	5,340	5,243	6,214
east of Exit 68	5,146	5,344	5,251	5,804

I-126 Mainline	Volume			
	AM		PM	
	EB	WB	EB	WB
Location				
I-26 to Colonial Life Blvd	4,832	1,903	3,197	4,153
I-126 to I-26 WB	-	2,623	-	5,641
I-126 from Colonial Life Blvd to Greystone Blvd	4,836	3,162	3,201	6,305
I-126 from Greystone Blvd to Huger St	5,683	3,251	3,594	6,870

RA6 - Major Arterial Travel Times

Location	Eastbound					Westbound				
	Length (mi)	Travel Time (mm:ss)		Average Speed (mph)		Length (mi)	Travel Time (mm:ss)		Average Speed (mph)	
		AM	PM	AM	PM		AM	PM	AM	PM
Broad River Road (west of Exit 101 to Greystone Blvd)	5.7	26:04	18:59	13.1	18.0	4.3	19:00	18:43	13.6	13.8
Lake Murray Boulevard (west of Exit 102 to Broad River Road)	1.2	06:49	05:03	10.2	13.8	1.2	03:55	05:12	18.1	13.6
Harbison Boulevard (west of Exit 103 to Broad River Road)	0.8	04:16	03:49	10.8	12.1	0.8	03:51	03:27	12.0	13.4
Piney Grove Road (west of Exit 104 to Broad River Road)	1.8	05:26	03:10	20.2	34.7	1.8	03:08	03:14	35.5	34.3
St. Andrews Road (west of Exit 106 to Broad River Road)	0.7	05:01	04:19	8.7	10.1	1.4	04:22	03:46	19.2	22.2
Bush River Road (west of Exit 63 to Broad River Road)	3.5	06:36	06:48	32.1	31.1	3.5	06:26	09:53	32.9	21.4
Location	**Northbound**					**Southbound**				
	Length (mi)	Travel Time (mm:ss)		Average Speed		Length (mi)	Travel Time		Average Speed	
		AM	PM	AM	PM		AM	PM	AM	PM
Colonial Life Boulevard (I-126 Ramps to Bush River Road)	0.4	01:58	02:11	11.6	10.4	0.4	01:28	01:21	15.5	16.8

RA7 - Mainline - LOS and Density

Mainline

Segment	RA7 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-26 Eastbound						
Exit 101 to Exit 102	C	23.5	0.49	C	18.3	0.37
Exit 102 to Exit 103	D	27.6	0.63	C	22.6	0.51
Exit 103 to Exit 104	C	22.8	0.53	C	20.1	0.45
Exit 104 to Exit 106	E	40.6	0.64	D	31.5	0.55
Exit 106 to Exit 107	D	28.5	0.55	B	14.5	0.41
I-26 to I-26	C	20.3	0.44	C	19.1	0.43
Exit 108 to Exit 110	C	23.6	0.51	C	21.4	0.49
I-26 Westbound						
Exit 110 to Exit 108	C	18.0	0.41	C	24.7	0.52
I-126 Diverge to I-126 Merge	C	21.6	0.46	F	52.3	0.64
Exit 107 to Exit 106	C	25.3	0.28	D	34.5	0.52
Exit 106 to Exit 104	D	28.6	0.44	F	78.2	0.71
Exit 104 to Exit 103	C	20.2	0.37	E	35.4	0.64
Exit 103 to Exit 102	C	19.1	0.42	F	51.7	0.79
Exit 102 to Exit 101	B	14.9	0.31	D	26.3	0.57

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

RA7 - Mainline - LOS and Density

Mainline

Segment	RA7 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-20 Eastbound						
west of Exit 61	E	44.7	0.59	C	25.7	0.41
Exit 61 to EW	C	22.8	0.50	B	15.8	0.35
EW to Exit 63	B	16.0	0.35	C	19.8	0.27
Exit 63 to Exit 64	A	10.3	0.23	A	7.3	0.16
Exit 64 to Exit 65	F	86.1	0.30	C	23.5	0.31
Exit 65 to Exit 68	F	116.0	0.43	D	33.6	0.56
I-20 Westbound						
Exit 68 to Exit 65	E	36.4	0.77	E	40.1	0.86
Exit 65 to Exit 64	A	1.5	0.11	A	2.2	0.17
Exit 64 to Exit 63	A	5.9	0.14	A	9.3	0.21
Exit 63 to EW	B	11.8	0.27	C	21.5	0.48
EW to Exit 61	B	12.7	0.24	D	34.7	0.45
west of Exit 61	B	16.6	0.26	F	52.3	0.56

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

Mainline

Segment	RA7 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-126 Eastbound						
I-26 to Colonial Life Blvd	C	23.5	0.52	B	17.4	0.36
Colonial Life Blvd to Greystone Blvd	D	28.4	0.65	B	16.0	0.39
Greystone Blvd to Huger St	D	33.2	0.61	B	16.0	0.39
I-126 Westbound						
Huger St to Greystone Blvd	B	15.2	0.36	D	30.4	0.72
Greystone Blvd to Colonial Life Blvd	B	12.7	0.27	D	27.3	0.60
Colonial Life Blvd to I-26	B	17.3	0.25	F	131.5	0.51

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

RA7 - Mainline - LOS and Density

Merge

Segment	RA7 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-26 Eastbound						
Exit 101	C	23.5	0.49	B	18.3	0.37
Exit 102	C	21.0	0.51	B	17.3	0.41
Exit 103	C	22.8	0.44	C	20.1	0.38
Exit 104	C	21.8	0.51	B	18.2	0.43
Exit 106	D	28.5	0.55	B	14.5	0.41
Exit 107 Loop	F	66.2	0.56	B	19.8	0.43
Exit 107	B	16.2	0.38	B	15.3	0.37
East West Connector	B	16.0	0.37	B	16.7	0.42
Exit 110	B	17.3	0.36	C	23.0	0.47
I-26 Westbound						
Exit 110	B	13.3	0.35	B	17.0	0.44
I-26 to I-26	C	21.6	0.42	F	54.4	0.67
Exit 107	D	29.0	0.31	E	38.9	0.51
Exit 106	E	35.4	0.32	F	72.4	0.53
Exit 104	B	15.0	0.37	C	22.9	0.64
Exit 103	B	18.2	0.33	F	50.2	0.64
Exit 102	B	14.9	0.31	C	26.3	0.57
Exit 101	B	13.4	0.24	C	21.7	0.45

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

RA7 - Mainline - LOS and Density

Merge

Segment	RA7 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-20 Eastbound						
Exit 61 Loop	E	43.4	0.54	C	23.1	0.38
Exit 61	C	25.2	0.63	B	16.1	0.44
Exit 65	F	108.0	0.32	C	24.1	0.37
Exit 68	B	16.3	0.37	D	29.3	0.56
I-20 Westbound						
Exit 68	D	33.8	0.59	E	44.9	0.65
Exit 65	A	1.5	0.11	A	2.2	0.17
Exit 63	B	13.0	0.22	C	22.0	0.38
East West Connector	B	12.7	0.20	D	34.7	0.38
Exit 61	B	14.4	0.20	F	63.1	0.44

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

Merge

Segment	RA7 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-126 Eastbound						
Colonial Life Blvd	C	21.6	0.52	B	10.8	0.31
Greystone Blvd	D	31.8	0.62	B	14.8	0.39
I-126 Westbound						
Greystone Blvd	B	12.7	0.27	C	27.3	0.60

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

RA7 - Mainline - LOS and Density

Diverge

Segment	RA7 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-26 Eastbound						
Exit 101	B	19.1	0.48	B	14.4	0.38
Exit 101 Loop	B	11.1	0.37	A	8.0	0.29
Exit 102	C	23.5	0.49	B	18.3	0.37
Exit 102 Loop	B	18.6	0.45	B	12.5	0.35
Exit 103	C	20.5	0.50	B	16.8	0.41
Exit 104	C	22.8	0.53	C	20.1	0.45
Exit 106	E	35.2	0.64	D	33.0	0.55
Exit 107	E	35.2	0.64	D	33.0	0.55
Exit 108	F	66.2	0.55	B	19.8	0.43
I-26 to I-26	C	20.3	0.44	B	19.1	0.43
East West Connector	B	19.1	0.43	C	22.3	0.54
Exit 110	B	16.0	0.37	B	16.7	0.42
I-26 Westbound						
Exit 110	D	28.1	0.44	D	29.3	0.50
Exit 108	B	18.0	0.41	C	24.7	0.52
Exit 107	C	21.6	0.42	F	54.4	0.67
Exit 104	E	35.9	0.44	F	75.8	0.70
Exit 103	B	16.6	0.36	C	26.6	0.64
Exit 102	B	18.8	0.41	F	51.5	0.79
Exit 102 Loop	B	18.8	0.31	D	31.5	0.60
Exit 101	B	14.9	0.31	C	26.3	0.57
Exit 101 Loop	B	14.0	0.27	C	20.7	0.51

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

RA7 - Mainline - LOS and Density

Diverge

Segment	RA7 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-20 Eastbound						
Exit 61	D	32.4	0.45	C	21.0	0.31
East West Connector	C	22.5	0.42	B	16.8	0.29
Exit 63	D	34.2	0.33	D	32.1	0.39
Exit 64	C	24.2	0.35	F	60.1	0.27
Exit 65	C	24.2	0.35	F	60.1	0.27
Exit 68	F	129.6	0.44	E	37.4	0.74
I-20 Westbound						
Exit 68	E	39.2	0.79	F	66.2	0.81
Exit 65	F	72.6	0.45	F	66.2	0.51
Exit 64	D	34.2	0.33	D	32.1	0.39
Exit 63	D	34.2	0.33	D	32.1	0.39
Exit 61	B	13.8	0.30	F	50.7	0.52

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

Diverge

Segment	RA7 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-126 Eastbound						
Greystone Blvd	C	23.8	0.51	B	13.2	0.31
I-126 Westbound						
Greystone Blvd	B	19.6	0.36	E	37.9	0.72
Colonial Life Blvd	B	12.7	0.27	C	27.3	0.60

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

RA7 - Travel Times Between External Zone Pairs

Segments	Length (mi)	Travel Time (mm:ss)		Average Speed (mph)	
		AM	PM	AM	PM
I-26 EB from West of Exit 101					
To I-26 EB (east of Exit 110)	13.86	18:59	13:29	43.8	61.7
To I-20 WB (west of Exit 61)	16.15	21:15	19:20	45.6	50.1
To I-20 EB (east of Exit 68)	15.49	29:51	16:37	31.1	55.9
To I-126 EB (Greystone Blvd)	14.77	20:58	14:50	42.3	59.8
I-26 WB from East of Exit 110					
To I-26 WB (west of Exit 101)	13.89	13:56	24:13	59.8	34.4
To I-20 EB (east of Exit 68)	8.49	17:30	10:18	29.1	49.5
I-20 EB from West of Exit 61					
To I-20 EB (east of Exit 68)	11.11	23:56	10:41	27.8	62.3
To I-26 WB (west of Exit 101)	16.58	22:12	29:20	44.8	33.9
To I-126 EB (east of Greystone Blvd)	9.76	17:07	10:37	34.2	55.2
I-20 WB from East of Exit 68					
To I-20 WB (east of Exit 61)	11.29	11:28	16:31	59.0	41.0
To I-26 EB (east of Exit 110)	9.06	11:53	14:05	45.7	38.6
To I-26 WB (west of Exit 101)	15.29	17:29	30:01	52.5	30.6
I-126 WB from East of Greystone Blvd					
To I-26 WB (west of Exit 101)	14.76	14:54	26:54	59.4	32.9
To I-20 WB (west of Exit 61)	10.25	10:43	15:49	57.4	38.9

RA7 - Intersection Capacity Analysis

Node #	Intersection Name	AM		PM	
		LOS	Delay	LOS	Delay
Exit 101					
100000391	Broad River Road (US 176) at Columbiana Drive / Lordship Lane	C	21.8	A	9.7
100000150	Broad River Road (US 176) at I-26 EB Off-ramp[1]	C	19.8	D	33.3
100000151	Broad River Road (US 176) at I-26 EB On-ramp	B	10.4	A	5.9
100000160	Broad River Road (US 176) at I-26 WB On-ramp[2]	A	2.4	A	1.8
4	Broad River Road (US 176) at Western Lane	B	10.4	B	10.7
Exit 102					
100000395	Lake Murray Boulevard (SC 60) at Columbiana Drive	D	40.8	D	43.4
100000510	Lake Murray Boulevard (SC 60) at I-26 EB On-Ramp[2]	A	3.7	A	3.0
100000169	Lake Murray Boulevard (SC 60) at I-26 WB On-Ramp[2]	A	2.5	A	4.0
100000401	Lake Murray Boulevard (SC 60) at Parkridge Drive / Kinley Road	B	13.7	B	13.9
Exit 103					
100000364	Harbison Boulevard (S-757) at Columbiana Drive	B	12.3	B	17.8
100000365	Harbison Boulevard (S-757) at Park Terrace Drive / Columbiana Circle	A	4.8	C	32.8
100000362	Harbison Boulevard (S-757) at Saturn Parkway	A	3.8	B	15.3
99	Harbison Boulevard (S-757) at I-26 EB Ramps	B	18.2	C	20.7
100000165	Harbison Boulevard (S-757) at I-26 WB Ramps / Woodcross Drive	B	15.4	D	46.2
100000398	Harbison Boulevard (S-757) at Parkridge Drive[2]	A	9.4	D	28.0
Exit 104					
100000353	Piney Grove Road at Bower Parkway / Jamil Road	D	51.7	D	50.9
100000174	Piney Grove Road at I-26 EB Ramps	B	15.4	C	24.0
100000177	Piney Grove Road at I-26 WB Ramps	B	10.6	B	14.1
100000399	Piney Grove Road at Fernandina Road	B	15.2	C	31.8
Exit 106					
100000348	St. Andrews Road at Jamil Road	B	13.0	A	7.7
100000178	St. Andrews Road at Woodland Hills Road	A	5.6	A	8.1
100000180	St. Andrews Road at I-26 Ramps SPUI	C	24.3	D	41.8
100000358	St. Andrews Road at Fernandina Road / Burning Tree Drive	B	15.8	C	31.5
100000354	St. Andrews Road at Kay Street / Chartwell Road	B	18.6	B	13.1
Exit 108					
100000256	Bush River Road at Zimalcrest Drive	B	10.8	A	9.0
100000898	Bush River Road at I-26 EB Off-Ramp / Driveway	A	7.1	A	9.0
100000252	Bush River Road at Morninghill Drive	C	22.0	B	18.0
100000184	Bush River Road at Arrowwood Road	B	16.8	B	16.3
Exit 110					
100000186	Sunset Boulevard (US 378) at E. Hospital Drive / Harbor Drive	A	7.0	B	16.5
100000093	Sunset Boulevard (US 378) at I-26 EBR Off-Ramp[1]	C	18.8	D	27.1
100000903	Sunset Boulevard (US 378) at I-26 Ramps	C	25.9	C	22.9
100000902	Sunset Boulevard (US 378) at I-26 WBR Off-Ramp[1]	A	9.0	B	10.7
100000163	Sunset Boulevard (US 378) at Chris Drive / McSwain Drive	A	2.6	B	15.9
Exit 63					
100000446	Bush River Road at Berryhill Drive/WB Ramps	B	14.1	B	16.8
49	Bush River Road at I-20 EB Off-Ramp	C	20.1	B	13.1
100000255	Bush River Road at Independence Avenue	B	12.5	B	16.0
Exit 65					
100000187	Broad River Road at Marley Drive / Briargate Circle	C	31.3	C	21.8
110	Broad River Road at I-20 WB Ramps	D	42.8	C	29.3
100000190	Broad River Road at I-20 EB Ramps / Garner Lane	B	11.9	B	15.2
100000195	Broad River Road at Longcreek Drive	A	5.1	A	4.4
Additional Intersections					
100000012	Broad River Road (US 176) at Kinley Road	D	44.0	E	71.2
100000037	Broad River Road (US 176) at Harbison Boulevard	B	17.4	B	15.4
100000049	Broad River Road (US 176) at Piney Woods Road / Lost Creek Drive	C	30.4	C	20.1
100000068	Broad River Road (US 176) at Piney Grove Road	A	4.4	A	7.6
100000339	Broad River Road (US 176) at St. Andrews Road	C	33.2	D	40.5
100000349	Broad River Road (US 176) at St. Andrews Parkway	B	10.4	B	14.6
100000344	Broad River Road (US 176) at Seminole Road / Young Drive	B	16.1	C	29.4
41	Broad River Road (US 176) at Dutch Square Boulevard	A	6.1	D	52.0
100000046	Broad River Road (US 176) at Bush River Road	C	27.7	E	61.9
100000266	Broad River Road (US 176) at Greystone Boulevard	B	14.3	B	14.4
100000265	Greystone Boulevard at Stoneridge Drive	C	25.0	D	39.6
100000188	Greystone Boulevard at I-126 WB Ramps[1]	F	60.3	F	50.3
100000185	Greystone Boulevard at I-126 EB Ramps[1]	E	40.0	F	99.9
100000262	Bush River Road at Colonial Life Boulevard	B	18.9	B	17.9
100000897	Colonial Life Boulevard at West Colonial Life Road[1]	A	7.8	F	2361.5
100000374	Park Terrance Drive at Bower Parkway	B	11.0	A	6.6

[1] Intersection unsignalized under all scenarios; worst approach LOS and delay reported.

[2] Delay unable to be processed per HCM 2010 methodology; Average control delay reported.

RA7 - Mainline Travel Time Summary for I-26, I-20, I-126

Segments	Eastbound					Westbound				
	Length (mi)	Travel Time (mm:ss)		Average Speed (mph)		Length (mi)	Travel Time (mm:ss)		Average Speed (mph)	
		AM	PM	AM	PM		AM	PM	AM	PM
I-26 between Exit 101 and Exit 110										
Exit 101 to Exit 102 (Lake Murray Boulevard)	0.83	10:06	00:51	0.7	59.1	0.82	48:30	00:53	1.0	55.6
Exit 102 to Exit 103 (Harbison Boulevard)	1.21	00:00	01:13	0.6	60.0	0.89	58:55	01:17	0.9	41.2
Exit 103 to Exist 104 (Piney Grove Road)	0.88	33:20	00:53	0.6	59.3	1.16	23:45	01:15	0.8	55.6
Exit 106 to Exit 107 (I-20)[1]	1.74	06:17	01:58	0.4	53.0	2.13	47:48	04:24	0.6	29.0
Exit 107 to Exit 106 (St. Andrews Road)	0.51	03:00	00:38	0.5	48.4	0.64	47:18	00:56	0.8	40.7
Exit 106 to I-26	1.15	32:17	01:27	0.3	47.5	0.41	22:13	00:48	1.1	30.4
I-26 to EW Connector	1.41	30:11	01:23	0.9	61.5	0.76	49:03	00:47	0.9	58.2
EW Connector to Exit 110 (Sunset Boulevard)	0.95	43:53	00:55	1.3	61.8	1.19	10:32	01:10	1.0	61.6
Total	**8.69**	**39:05**	**09:18**	**0.6**	**56.0**	**7.98**	**08:04**	**11:30**	**0.8**	**41.6**
I-20 between Exit 61 and Exit 68										
Exit 61 to EW Connector	1.52	37:55	01:34	0.6	58.4	0.81	41:55	01:46	1.2	27.4
EW Connector to Exit 63 (Bush River Road)	0.28	21:20	00:23	0.8	45.0	0.90	35:28	00:55	1.5	59.0
Exit 63 to Exit 65 (Broad River Road)	1.26	10:05	01:12	0.6	62.8	2.05	15:02	02:05	1.6	59.0
Exit 65 to Exit 68 (Monticello Road)	2.74	27:30	03:06	0.2	53.0	2.97	32:03	04:17	0.5	41.6
Total	**5.80**	**36:50**	**06:15**	**0.3**	**55.7**	**6.73**	**04:28**	**09:03**	**0.8**	**44.6**
I-126 between I-26 and Greystone Blvd										
I-26 to Colonial Life Boulevard	0.63	51:49	00:41	0.7	55.0	2.23	57:05	03:08	2.3	42.6
Colonial Life Boulevard to Greystone Blvd	1.51	18:33	01:26	0.7	62.8	0.86	43:43	00:55	1.2	56.4
Total	**2.13**	**10:22**	**02:07**	**0.7**	**60.3**	**3.09**	**40:48**	**04:03**	**1.8**	**45.7**
E-W Connector										
I-20 to I-26	1.03	35:50	01:09	1.7	53.7	1.31	06:26	01:28	12.3	54.0
Total	**1.03**	**35:50**	**01:09**	**1.7**	**53.7**	**1.31**	**06:26**	**01:28**	**12.3**	**54.0**

[1] I-26 EB Exit 107 prior to Exit 106

RA7 - Volumes

I-26 Mainline	Volume			
	AM		PM	
	EB	WB	EB	WB
Location				
west of Exit 101 (Broad River Road)	4,619	2,731	3,616	4,170
Exit 101 to Exit 102 (Lake Murray Boulevard)	5,907	3,674	4,426	6,878
Exit 102 to Exit 103 (Harbison Boulevard)	6,044	3,994	4,868	7,592
Exit 103 to Exist 104 (Piney Grove Road)	6,344	4,396	5,407	7,704
Exit 104 to Exit 106 (St. Andrews Road)	7,255	4,973	6,224	7,953
Exit 106 to Exit 107 (I-20)	6,178	5,072	4,599	8,288
I-126 Diverge to I-126 Merge	3,192	3,057	3,082	4,255
Exit 108 to Exit 110 (Sunset Boulevard)	3,637	3,978	3,508	5,036
southeast of Exit 110	3,462	4,259	4,525	4,813

I-20 Mainline	Volume			
	AM		PM	
	EB	WB	EB	WB
Location				
west of Exit 61 (Sunset Boulevard)	4,276	1,863	2,959	4,032
Exit 61 to East West Connector	6,031	2,898	4,223	5,417
East West Connector to Exit 63 (Bush River Road)	4,171	2,588	3,275	4,599
Exit 63 to Exit 64 (I-26)	2,223	1,338	1,530	2,058
Exit 64 to Exit 65 (Broad River Road)	2,192	1,358	1,533	2,069
Exit 65 to Exit 68 (Monticello Road)	4,161	5,556	5,345	6,175
east of Exit 68	3,507	5,697	5,328	5,801

I-126 Mainline	Volume			
	AM		PM	
	EB	WB	EB	WB
Location				
I-126 from I-26 to Colonial Life Blvd	5,017	2,419	3,470	4,930
I-126 from Colonial Life Blvd to Greystone Blvd	6,210	3,224	3,702	7,206
I-126 from Greystone Blvd to Huger St	5,873	3,439	3,737	6,950

RA7 - Major Arterial Travel Times

Location	Eastbound					Westbound				
	Length (mi)	Travel Time (mm:ss)		Average Speed (mph)		Length (mi)	Travel Time (mm:ss)		Average Speed (mph)	
		AM	PM	AM	PM		AM	PM	AM	PM
Broad River Road (west of Exit 101 to Greystone Blvd)	6.8	10:26	19:17	1.1	21.1	7.3	19:52	20:40	1.7	21.2
Lake Murray Boulevard (west of Exit 102 to Broad River Road)	1.5	07:56	03:44	1.4	24.5	1.5	27:57	03:39	3.1	24.0
Harbison Boulevard (west of Exit 103 to Broad River Road)	1.1	27:43	05:33	2.4	12.0	1.1	35:19	02:59	1.9	22.3
Piney Grove Road (west of Exit 104 to Broad River Road)	1.6	51:30	04:01	1.8	23.5	1.6	58:16	05:44	1.6	16.5
St. Andrews Road (west of Exit 106 to Broad River Road)	0.9	32:54	06:01	0.6	9.4	0.9	56:13	03:16	1.0	17.2
Bush River Road (west of Exit 63 to Broad River Road)	2.0	15:24	07:47	0.9	15.7	2.0	58:16	05:38	2.1	21.7
Location	Northbound					Southbound				
	Length (mi)	Travel Time (mm:ss)		Average Speed		Length (mi)	Travel Time		Average Speed	
		AM	PM	AM	PM		AM	PM	AM	PM
Colonial Life Boulevard (I-126 Ramps to Bush River Road)	0.6	15:08	01:42	2.5	22.1	0.6	21:32	01:48	1.7	20.7

RA8 Mainline - LOS and Density

Mainline

Segment	RA8 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-26 Eastbound						
Exit 101 to Exit 102	D	26.0	0.52	C	19.2	0.37
Exit 102 to Exit 103	D	30.7	0.68	C	26.0	0.54
Exit 103 to Exit 104	D	27.1	0.75	C	21.1	0.58
Exit 104 to Exit 106	D	27.2	0.67	C	20.5	0.52
Exit 106 to Exit 107	C	25.2	0.58	B	13.3	0.40
I-126 Diverge to I-126 Merge	B	12.5	0.29	B	13.3	0.28
Exit 108 to Exit 110	F	54.4	0.36	D	27.4	0.39
I-26 Westbound						
Exit 110 to Exit 108	C	22.4	0.48	C	23.0	0.52
I-126 Diverge to I-126 Merge	C	25.4	0.52	C	22.6	0.54
Exit 107 to Exit 106	C	21.9	0.39	D	33.3	0.63
Exit 106 to Exit 104	E	35.9	0.63	F	58.2	0.90
Exit 104 to Exit 103	C	22.8	0.51	F	45.8	0.83
Exit 103 to Exit 102	C	23.3	0.48	F	46.5	0.78
Exit 102 to Exit 101	B	16.2	0.36	C	20.4	0.56

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

RA8 Mainline - LOS and Density

Mainline

Segment	RA8 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-20 Eastbound						
west of Exit 61	F	46.0	0.61	C	25.6	0.41
Exit 61 to Exit 63	F	63.6	0.57	C	22.6	0.42
Exit 63 to Exit 64	A	9.6	0.22	A	7.5	0.16
Exit 64 to Exit 65	B	11.5	#DIV/0!	A	8.7	#DIV/0!
Exit 65 to Exit 68	F	54.3	0.63	D	34.4	0.56
I-20 Westbound						
Exit 68 to Exit 65	E	39.6	0.81	E	41.1	0.86
Exit 65 to Exit 64	A	8.8	0.19	A	9.8	0.23
Exit 64 to Exit 63	A	8.8	0.19	A	9.8	0.23
Exit 63 to Exit 61	C	19.8	0.25	F	69.7	0.40
west of Exit 61	C	20.3	0.29	F	50.4	0.56

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

Mainline

Segment	RA8 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-126 Eastbound						
I-26 to Colonial Life Blvd	D	29.1	0.63	B	14.3	0.32
Colonial Life Blvd to Greystone Blvd	D	30.4	0.70	B	17.1	0.39
Greystone Blvd to Huger St	E	37.3	0.68	B	15.7	0.38
I-126 Westbound						
Huger St to Greystone Blvd	B	15.9	0.37	D	30.5	0.72
Greystone Blvd to Colonial Life Blvd	B	17.1	0.37	D	34.7	0.78
Colonial Life Blvd to I-26	B	16.8	0.34	D	30.8	0.71

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

RA8 Mainline - LOS and Density

Merge

Segment	RA8 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-26 Eastbound						
Exit 101	C	26.0	0.52	B	19.2	0.37
Exit 102	C	26.4	0.55	C	25.9	0.43
Exit 103	C	27.1	0.60	C	21.1	0.47
Exit 104	C	27.2	0.67	C	20.5	0.52
Exit 106	C	25.2	0.58	B	13.3	0.40
E-W Connector	B	13.1	#DIV/0!	B	13.3	#DIV/0!
E-W Connector	F	48.8	0.31	C	24.1	0.32
Exit 110	B	17.9	0.40	C	21.4	0.45
I-26 Westbound						
Exit 110	B	17.1	0.39	B	18.2	0.42
Exit 107	C	27.7	0.41	E	35.7	0.59
Exit 106	E	39.5	0.51	F	78.3	0.73
Exit 104	C	22.8	0.41	F	45.8	0.66
Exit 103	B	18.1	0.38	E	36.6	0.63
Exit 102	B	16.2	0.36	C	20.4	0.56

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

RA8 Mainline - LOS and Density

Merge

Segment	RA8 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-20 Eastbound						
Exit 61 Loop	F	152.2	0.48	B	18.3	0.37
Exit 61	F	88.1	0.57	C	23.6	0.42
Exit 63/64	C	22.5	0.45	B	19.0	0.36
Exit 65	F	64.4	#DIV/0!	D	33.2	#DIV/0!
Exit 68	D	31.5	0.60	D	30.0	0.56
I-20 Westbound						
Exit 68	D	31.8	0.81	E	41.3	0.86
Exit 65	A	4.3	0.15	A	4.8	0.18
Exit 64	A	7.1	0.19	B	10.7	0.25
Exit 63	C	20.2	0.21	F	62.9	0.35
Exit 61	B	16.4	0.22	F	47.9	0.43

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

Merge

Segment	RA8 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-126 Eastbound						
Colonial Life Blvd	C	22.7	0.56	B	15.9	0.31
Greystone Blvd	D	34.7	0.69	B	12.9	0.38
I-126 Westbound						
Greystone Blvd	B	14.1	0.30	D	28.5	0.62

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

RA8 Mainline - LOS and Density

Diverge

Segment	RA8 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-26 Eastbound						
Exit 101	C	21.2	0.50	B	15.3	0.37
Exit 101 Loop	B	12.1	0.39	A	7.7	0.29
Exit 102	C	26.0	0.52	B	19.2	0.37
Exit 102 Loop	B	19.3	0.47	B	13.4	0.35
Exit 103	C	26.2	0.68	C	27.5	0.54
Exit 104	D	30.4	0.75	C	23.2	0.58
Exit 106	B	16.6	0.58	B	15.9	0.44
Exit 107	E	40.0	0.71	D	33.6	0.56
Exit 108	D	29.9	0.58	B	13.9	0.40
Exit 110	F	74.9	0.43	F	52.8	0.47
I-26 Westbound						
Exit 110	F	60.3	0.45	F	68.4	0.47
Exit 108	B	13.1	0.33	B	13.3	0.35
Exit 107	C	22.3	#DIV/0!	C	20.6	#DIV/0!
Exit 106	C	25.5	#DIV/0!	D	31.8	#DIV/0!
Exit 106 Loop	C	27.7	0.41	E	35.7	0.59
Exit 104	E	40.2	0.50	F	76.8	0.72
Exit 103	C	22.9	0.51	F	45.9	0.83
Exit 102	C	20.1	0.48	E	43.6	0.78
Exit 102 Loop	C	20.8	0.36	D	32.4	0.59
Exit 101	B	16.2	0.36	C	20.4	0.56
Exit 101 Loop	B	12.6	0.32	B	15.4	0.51

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

RA8 Mainline - LOS and Density

Diverge

Segment	RA8 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-20 Eastbound						
Exit 61	D	33.5	0.46	C	20.8	0.31
Exit 63	C	25.7	0.45	B	19.1	0.34
Exit 64	A	7.0	0.25	A	9.2	0.21
Exit 65	A	7.0	0.25	A	9.2	0.21
Exit 68	E	42.9	0.83	E	40.3	0.74
I-20 Westbound						
Exit 68	E	41.9	0.81	F	66.8	0.81
Exit 65	E	35.2	#DIV/0!	E	41.8	#DIV/0!
Exit 64	A	7.1	0.19	B	10.7	0.25
Exit 63	C	20.2	0.21	F	62.9	0.35
Exit 61	C	25.3	0.37	F	79.3	0.59

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

Diverge

Segment	RA8 Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-126 Eastbound						
Greystone Blvd	C	24.5	0.56	C	20.0	0.31
I-126 Westbound						
Greystone Blvd	B	17.7	0.37	D	31.0	0.72
Colonial Life Blvd	B	14.5	0.30	D	29.1	0.62

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

RA8 - Travel Times Between External Zone Pairs

Segments	Length (mi)	Travel Time (mm:ss)		Average Speed (mph)	
		AM	PM	AM	PM
I-26 EB from West of Exit 101					
To I-26 EB (east of Exit 110)	13.85	19:29	13:39	42.6	60.9
To I-20 WB (west of Exit 61)	16.08	21:57	19:28	44.0	49.6
To I-20 EB (east of Exit 68)	15.53	23:31	16:31	39.6	56.4
To I-126 EB (Greystone Blvd)	14.77	21:23	15:09	41.4	58.5
I-26 WB from East of Exit 110					
To I-26 WB (west of Exit 101)	13.87	14:24	25:40	57.8	32.4
To I-20 EB (east of Exit 68)	8.47	10:52	09:40	46.8	52.6
I-20 EB from West of Exit 61					
To I-20 EB (east of Exit 68)	11.10	19:41	10:45	33.8	62.0
To I-26 WB (west of Exit 101)	16.59	24:38	29:32	40.4	33.7
To I-126 EB (east of Greystone Blvd)	9.93	20:23	10:57	29.2	54.4
I-20 WB from East of Exit 68					
To I-20 WB (east of Exit 61)	11.10	11:03	15:51	60.3	42.0
To I-26 EB (east of Exit 110)	9.60	13:51	14:59	41.6	38.4
To I-26 WB (west of Exit 101)	15.29	16:53	31:00	54.3	29.6
I-126 WB from East of Greystone Blvd					
To I-26 WB (west of Exit 101)	14.75	15:00	27:03	59.0	32.7
To I-20 WB (west of Exit 61)	9.98	10:23	14:03	57.6	42.6

RA8 - Mainline Travel Time Summary for I-26, I-20, I-126

Segments	Eastbound					Westbound				
	Length (mi)	Travel Time (mm:ss)		Average Speed (mph)		Length (mi)	Travel Time (mm:ss)		Average Speed (mph)	
		AM	PM	AM	PM		AM	PM	AM	PM
I-26 between Exit 101 and Exit 110										
Exit 101 to Exit 102 (Lake Murray Boulevard)	0.76	00:47	00:46	57.4	59.2	0.83	00:53	00:56	57.1	53.4
Exit 102 to Exit 103 (Harbison Boulevard)	1.26	01:20	01:21	57.0	56.0	1.05	01:03	01:19	60.0	47.9
Exit 103 to Exist 104 (Piney Grove Road)	0.85	00:56	00:53	54.4	58.0	0.79	00:48	01:00	59.5	47.7
Exit 106 to Exit 107 (I-20)[1]	1.75	02:11	01:59	48.2	53.2	1.99	02:35	03:32	46.3	33.8
Exit 107 to Exit 106 (St. Andrews Road)	0.30	00:22	00:22	47.9	49.2	0.86	01:05	01:12	47.3	43.1
Exit 106 to Exit 108 (Bush River Road)	0.96	01:22	01:13	41.7	47.1	-	-	-	-	-
Exit 108 to I-26	0.39	00:31	00:30	44.8	47.3	-	-	-	-	-
I-26 to EW Connector	0.78	00:45	00:45	62.2	61.9	0.80	00:52	00:53	55.2	54.4
EW Connector to Exit 110 (Sunset Boulevard)	1.53	03:15	02:07	28.2	43.3	1.64	01:37	01:42	60.5	57.8
Total	**8.57**	**11:31**	**09:55**	**44.7**	**51.8**	**7.96**	**08:53**	**10:34**	**53.8**	**45.2**
I-20 between Exit 61 and Exit 68										
Exit 61 to EW Connector	1.76	05:05	01:49	20.7	58.0	1.12	01:36	03:08	41.9	21.5
EW Connector to Exit 63 (CD to I-20)	0.41	00:24	00:25	61.3	60.0	2.36	02:12	02:14	64.5	63.8
Exit 63 to Exit 65 (Broad River Road)	2.25	02:24	02:09	56.2	63.0	0.21	00:14	00:14	52.7	53.6
Exit 65 to Exit 68 (Monticello Road)	2.54	04:07	02:49	37.0	54.3	3.00	03:30	04:14	51.5	42.5
Total	**6.96**	**12:01**	**07:11**	**34.8**	**58.1**	**6.69**	**07:32**	**09:49**	**53.3**	**40.9**
I-126 between I-26 and Greystone Blvd										
I-26 to Colonial Life Boulevard	1.05	01:15	01:11	50.6	53.6	1.26	01:19	01:25	57.3	53.3
Colonial Life Boulevard to Greystone Blvd	0.67	00:44	00:50	55.1	48.4	1.12	01:06	01:16	61.6	53.0
Total	**1.73**	**01:59**	**02:01**	**52.2**	**51.4**	**2.38**	**02:25**	**02:42**	**59.3**	**53.1**
I-126 between I-26 and Greystone Blvd										
I-20 to I-26	1.02	01:09	01:06	52.8	55.2	1.24	01:19	01:22	56.6	54.6
Total	**2.74**	**03:08**	**03:07**	**52.4**	**52.8**	**3.63**	**03:44**	**04:03**	**58.3**	**53.6**

[1] I-26 EB Exit 107 prior to Exit 106

RA8 - Intersection Capacity Analysis

Node #	Intersection Name	AM		PM	
		LOS	Delay	LOS	Delay
Exit 101					
100000391	Broad River Road (US 176) at Columbiana Drive / Lordship Lane	B	10.5	C	23.1
100000150	Broad River Road (US 176) at I-26 EB Off-ramp[1]	C	20.2	D	29.8
100000151	Broad River Road (US 176) at I-26 EB On-ramp	B	12.7	A	8.5
100000160	Broad River Road (US 176) at I-26 WB On-ramp[2]	A	2.1	A	2.2
4	Broad River Road (US 176) at Western Lane	B	12.9	A	9.9
Exit 102					
100000395	Lake Murray Boulevard (SC 60) at Columbiana Drive	C	24.0	E	59.1
100000510	Lake Murray Boulevard (SC 60) at I-26 EB On-Ramp[2]	A	4.3	A	6.2
100000169	Lake Murray Boulevard (SC 60) at I-26 WB On-Ramp[2]	A	3.5	A	6.7
100000401	Lake Murray Boulevard (SC 60) at Parkridge Drive / Kinley Road	D	47.2	D	41.0
Exit 103					
100000364	Harbison Boulevard (S-757) at Columbiana Drive	B	15.6	B	16.6
100000365	Harbison Boulevard (S-757) at Park Terrace Drive / Columbiana Circle	A	8.8	D	47.3
100000362	Harbison Boulevard (S-757) at Saturn Parkway	A	8.2	E	66.7
99	Harbison Boulevard (S-757) at I-26 EB Ramps	C	24.2	E	61.7
100000165	Harbison Boulevard (S-757) at I-26 WB Ramps / Woodcross Drive	B	15.9	D	45.1
Exit 104					
100000353	Piney Grove Road at Bower Parkway / Jamil Road	C	30.0	D	43.0
94	Piney Grove Road at West DDI Intersection	A	8.7	B	11.2
138	Piney Grove at EB I-26 Off-Ramp	A	3.2	A	5.9
140	Piney Grove Road at East DDI Intersection	A	9.0	A	5.5
137	Piney Grove at WB I-26 Off-Ramp (RT)	A	3.1	A	2.2
108	Piney Grove at WB I-26 Off-Ramp (LT)	B	10.1	A	6.5
100000399	Piney Grove Road at Fernandina Road	C	26.3	D	36.6
Exit 106					
100000348	St. Andrews Road at Jamil Road	B	12.1	C	27.8
100000178	St. Andrews Road at Woodland Hills Road	A	5.7	A	8.2
100000180	St. Andrews Road at I-26 Ramps SPUI	C	25.9	C	33.1
100000358	St. Andrews Road at Fernandina Road / Burning Tree Drive	B	17.3	C	26.3
100000354	St. Andrews Road at Kay Street / Chartwell Road	C	30.6	B	14.5
Exit 108					
100000256	Bush River Road at Zimalcrest Drive	B	11.9	A	9.7
100000252	Bush River Road at Morninghill Drive/I-26 Ramps	C	26.8	C	30.6
100000184	Bush River Road at Arrowwood Road	B	12.0	C	21.0
Exit 110					
100000186	Sunset Boulevard (US 378) at E. Hospital Drive / Harbor Drive	F	97.8	F	91.3
100000093	Sunset Boulevard (US 378) at I-26 EBR Off-Ramp[1]	E	43.4	E	43.4
100000903	Sunset Boulevard (US 378) at I-26 Ramps	C	28.8	C	27.6
100000902	Sunset Boulevard (US 378) at I-26 WBR Off-Ramp[1]	B	14.1	C	24.9
100000163	Sunset Boulevard (US 378) at Chris Drive / McSwain Drive	B	13.9	B	19.4
Exit 63					
100000446	Bush River Road at Berryhill Drive	A	8.6	B	16.3
49	Bush River Road at I-20 Ramps	A	6.4	A	9.7
100000255	Bush River Road at Independence Avenue	C	20.1	C	31.1
Exit 65					
100000187	Broad River Road at Marley Drive / Briargate Circle	C	25.3	B	17.3
126	Broad River Road at I-20 WB Ramps	A	6.4	A	5.0
100000190	Broad River Road at I-20 SPUI	D	36.1	D	37.2
110	Broad River Road at I-20 EB Ramps / Garner Lane	A	1.4	A	2.5
100000195	Broad River Road at Longcreek Drive	A	5.3	A	4.8
Additional Intersections					
100000012	Broad River Road (US 176) at Kinley Road	E	58.6	F	116.6
100000037	Broad River Road (US 176) at Harbison Boulevard	B	17.0	B	14.8
100000049	Broad River Road (US 176) at Piney Woods Road / Lost Creek Drive	D	36.9	C	33.0
100000068	Broad River Road (US 176) at Piney Grove Road	A	5.6	A	6.3
100000339	Broad River Road (US 176) at St. Andrews Road	C	31.9	D	50.2
100000349	Broad River Road (US 176) at St. Andrews Parkway	A	6.1	B	12.7
100000344	Broad River Road (US 176) at Seminole Road / Young Drive	B	19.6	E	59.4
41	Broad River Road (US 176) at Dutch Square Boulevard	B	10.2	B	18.0
100000046	Broad River Road (US 176) at Bush River Road	C	33.0	D	54.2
100000266	Broad River Road (US 176) at Greystone Boulevard	B	11.8	B	12.1
100000265	Greystone Boulevard at Stoneridge Drive	C	27.9	C	31.0
100000188	Greystone Boulevard at I-126 WB Ramps[1]	E	35.1	D	33.5
100000185	Greystone Boulevard at I-126 EB Ramps[1]	D	26.0	F	89.8
100000262	Bush River Road at Colonial Life Boulevard	E	59.6	D	49.3
100000374	Park Terrance Drive at Bower Parkway	A	8.0	B	12.9

[1] Intersection unsignalized under all scenarios; worst approach LOS and delay reported.

[2] Delay unable to be processed per HCM 2010 methodology; Average control delay reported.

RA8 Mainline - Volume

I-26 Mainline	Volume			
	AM		PM	
	EB	WB	EB	WB
Location				
west of Exit 101 (Broad River Road)	4,807	3,349	3,594	5,554
Exit 101 to Exit 102 (Lake Murray Boulevard)	6,248	4,329	4,482	6,761
Exit 102 to Exit 103 (Harbison Boulevard)	6,557	4,583	5,173	7,514
Exit 103 to Exist 104 (Piney Grove Road)	7,212	4,860	5,612	7,968
Exit 104 to Exit 106 (St. Andrews Road)	7,997	5,654	6,256	8,100
Exit 106 to Exit 107 (I-20)	6,548	3,519	4,498	5,675
I-126 Diverge to I-126 Merge	2,073	3,442	2,038	3,566
Exit 108 to Exit 110 (Sunset Boulevard)	4,364	4,604	4,621	5,035
southeast of Exit 110	3,796	4,358	4,362	4,570

I-20 Mainline	Volume			
	AM		PM	
	EB	WB	EB	WB
Location				
west of Exit 61 (Sunset Boulevard)	4,412	2,097	2,969	4,032
Exit 61 to Exit 63 (Bush River Road)	5,459	3,588	4,050	5,757
Exit 63 to Exit 64 (I-26)	2,154	1,784	1,529	2,169
Exit 64 to Exit 65 (Broad River Road)	2,155	1,784	1,531	2,169
Exit 65 to Exit 68 (Monticello Road)	6,065	5,825	5,335	6,180
east of Exit 68	5,711	5,854	5,347	5,827

I-126 Mainline	Volume			
	AM		PM	
	EB	WB	EB	WB
Location				
I-126 from I-26 to Colonial Life Blvd	4,245	3,243	2,184	6,795
I-126 from Colonial Life Blvd to Greystone Blvd	6,672	3,543	3,771	7,454
I-126 from Greystone Blvd to Huger St	6,530	3,550	3,675	6,920

RA8 - Major Arterial Travel Times

Location	Eastbound					Westbound				
	Length (mi)	Travel Time (mm:ss)		Average Speed (mph)		Length (mi)	Travel Time (mm:ss)		Average Speed (mph)	
		AM	PM	AM	PM		AM	PM	AM	PM
Broad River Road (west of Exit 101 to Greystone Blvd)	6.7	19:09	20:44	21.1	19.5	6.2	17:36	18:05	21.2	20.6
Lake Murray Boulevard (west of Exit 102 to Broad River Road)	1.5	03:45	05:52	24.4	15.6	1.5	03:27	04:18	25.4	20.4
Harbison Boulevard (west of Exit 103 to Broad River Road)	1.1	03:16	08:58	19.9	7.3	1.1	03:16	04:13	19.9	15.5
Piney Grove Road (west of Exit 104 to Broad River Road)	1.5	04:46	04:36	19.5	20.2	1.6	05:12	05:12	18.0	18.0
St. Andrews Road (west of Exit 106 to Broad River Road)	0.9	04:59	06:45	11.1	8.2	0.9	03:38	04:13	15.1	13.1
Bush River Road (west of Exit 63 to Broad River Road)	2.0	06:22	07:20	18.8	16.4	2.0	09:52	10:03	12.2	11.9
Location	Northbound					Southbound				
	Length (mi)	Travel Time (mm:ss)		Average Speed		Length (mi)	Travel Time		Average Speed	
		AM	PM	AM	PM		AM	PM	AM	PM
Colonial Life Boulevard (I-126 Ramps to Bush River Road)	0.5	01:40	01:36	17.1	17.7	0.5	00:46	00:48	37.2	35.4

RA10 (No Build)

Mainline

Segment	RA10 (No Build) Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-20 Eastbound						
west of Exit 61	E	44.6	0.62	C	25.7	0.41
Exit 61 to Exit 63	D	32.2	0.75	C	23.8	0.54
Exit 63 to Exit 64	C	19.1	0.52	B	15.6	0.41
Exit 64 to Exit 65	C	24.7	0.73	D	29.0	0.60
Exit 65 to Exit 68	E	37.8	0.81	D	31.1	0.67
I-20 Westbound						
Exit 68 to Exit 65	E	40.5	0.78	F	70.3	0.80
Exit 65 to Exit 64	F	66.2	0.60	F	71.0	0.62
Exit 64 to Exit 63	D	27.8	0.32	D	29.4	0.46
Exit 63 to Exit 61	B	15.8	0.41	D	32.8	0.67
west of Exit 61	B	15.2	0.27	E	38.9	0.53

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

RA10 (No Build)

Mainline

Segment	RA10 (No Build) Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-20 Eastbound						
west of Exit 61	E	44.6	0.62	C	25.7	0.41
Exit 61 to Exit 63	D	32.2	0.75	C	23.8	0.54
Exit 63 to Exit 64	C	19.1	0.52	B	15.6	0.41
Exit 64 to Exit 65	C	24.7	0.73	D	29.0	0.60
Exit 65 to Exit 68	E	37.8	0.81	D	31.1	0.67
I-20 Westbound						
Exit 68 to Exit 65	E	40.5	0.78	F	70.3	0.80
Exit 65 to Exit 64	F	66.2	0.60	F	71.0	0.62
Exit 64 to Exit 63	D	27.8	0.32	D	29.4	0.46
Exit 63 to Exit 61	B	15.8	0.41	D	32.8	0.67
west of Exit 61	B	15.2	0.27	E	38.9	0.53

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

Mainline

Segment	RA10 (No Build) Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-126 Eastbound						
I-26 to Colonial Life Blvd	D	30.8	0.75	B	16.6	0.42
Colonial Life Blvd to Greystone Blvd	B	17.4	0.62	A	9.1	0.36
Greystone Blvd to Huger St	D	31.6	0.61	B	15.6	0.38
I-126 Westbound						
Huger St to Greystone Blvd	B	14.8	0.36	F	72.8	0.61
Greystone Blvd to Colonial Life Blvd	B	15.3	0.34	F	109.0	0.55
Colonial Life Blvd to I-26	C	21.7	0.46	F	121.5	0.68

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

RA10 (No Build)

Merge

Segment	RA10 (No Build) Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-26 Eastbound						
Exit 101	F	116.8	0.51	C	22.6	0.45
Exit 102	F	112.6	0.50	D	31.5	0.51
Exit 103	F	100.7	0.71	F	55.6	0.74
Exit 104	F	79.7	0.60	F	54.2	0.63
Exit 106 Loop	F	53.2	0.71	E	42.9	0.61
Exit 106	F	95.4	0.67	E	39.6	0.64
Exit 107 Loop	F	53.2	0.71	E	42.9	0.61
Exit 107	F	85.5	0.69	F	46.1	0.55
Exit 108	D	33.2	0.47	F	70.0	0.50
Exit 108 (I-126)	C	22.9	0.52	F	62.8	0.57
Exit 110	B	15.6	0.37	B	19.3	0.44
I-26 Westbound						
Exit 110	B	14.8	0.35	F	67.6	0.33
Exit 108 (I-126)	E	38.4	0.55	F	187.3	0.60
Exit 108	C	26.8	0.50	F	133.3	0.57
Exit 107 Loop	C	27.9	0.50	F	119.5	0.57
Exit 107	D	30.5	0.57	F	122.0	0.60
Exit 106	C	24.5	0.59	E	36.3	0.68
Exit 104	B	18.7	0.51	D	33.5	0.63
Exit 103	B	19.9	0.45	E	39.9	0.62
Exit 102	B	15.1	0.39	C	25.4	0.57
Exit 101	A	9.2	0.33	B	20.0	0.49

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

RA10 (No Build)

Merge

Segment	RA10 (No Build) Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-20 Eastbound						
Exit 61 Loop	C	21.5	0.49	B	15.4	0.35
Exit 61	C	27.4	0.56	B	19.3	0.41
Exit 63 Loop	C	20.3	0.51	B	17.6	0.39
Exit 63	B	18.8	0.42	B	15.4	0.33
Exit 64 Loop	D	32.5	0.55	D	32.7	0.47
Exit 64	C	23.9	0.54	D	28.7	0.45
Exit 65	D	34.6	0.61	C	27.0	0.50
Exit 68	C	27.4	0.57	C	27.1	0.52
I-20 Westbound						
Exit 68	C	26.3	0.80	F	58.5	0.82
Exit 65	F	66.2	0.45	F	71.0	0.46
Exit 64 Loop	C	21.1	0.37	C	26.3	0.42
Exit 64	C	27.8	0.32	D	29.4	0.46
Exit 63	B	12.1	0.31	C	24.3	0.50
Exit 61	B	12.1	0.20	E	35.1	0.40

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

Merge

Segment	RA10 (No Build) Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-126 Eastbound						
Colonial Life Blvd	B	17.4	0.62	A	9.1	0.36
Greystone Blvd	C	21.4	0.61	B	11.5	0.38
I-126 Westbound						
Greystone Blvd	B	12.6	0.28	F	66.9	0.46

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

RA10 (No Build)

Diverge

Segment	RA10 (No Build) Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-26 Eastbound						
Exit 101	F	110.9	0.62	C	22.2	0.50
Exit 101 Loop	F	96.9	0.43	B	16.0	0.36
Exit 102	F	116.8	0.51	C	22.6	0.45
Exit 102 Loop	F	106.4	0.46	C	20.4	0.43
Exit 103	F	109.2	0.65	D	32.3	0.68
Exit 104	F	97.9	0.70	F	55.2	0.74
Exit 106	F	62.6	0.62	E	37.3	0.67
Exit 107	F	95.4	0.67	E	39.6	0.64
Exit 107 Loop	F	53.2	0.71	E	42.9	0.61
Exit 108	F	85.5	0.69	F	46.1	0.55
I-26 to I-26	F	53.8	0.82	F	58.0	0.62
Exit 110	C	22.5	0.39	F	81.7	0.39
I-26 Westbound						
Exit 110	D	30.7	0.45	F	85.5	0.42
Exit 108	C	26.8	0.50	F	133.3	0.57
Exit 107	C	26.8	0.50	F	133.3	0.57
Exit 107 Loop	C	27.9	0.50	F	119.5	0.57
Exit 106	D	30.5	0.57	F	122.0	0.60
Exit 106 Loop	C	26.0	0.62	F	93.7	0.71
Exit 104	D	30.1	0.74	E	40.9	0.85
Exit 103	B	18.8	0.51	D	29.9	0.63
Exit 102	B	19.9	0.60	E	40.3	0.83
Exit 102 Loop	B	18.8	0.41	C	28.0	0.59
Exit 101	B	15.1	0.39	C	25.4	0.57
Exit 101 Loop	B	11.2	0.36	C	21.5	0.53

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

RA10 (No Build)

Diverge

Segment	RA10 (No Build) Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-20 Eastbound						
Exit 61	D	33.1	0.46	C	20.9	0.31
Exit 63	F	53.0	0.75	C	27.8	0.54
Exit 64	B	19.1	0.52	B	15.6	0.41
Exit 64 Loop	D	32.5	0.55	D	32.7	0.47
Exit 65	C	24.7	0.54	D	29.0	0.45
Exit 68	E	40.8	0.81	D	29.4	0.67
I-20 Westbound						
Exit 68	E	36.1	0.80	F	77.6	0.76
Exit 65	C	23.1	0.58	C	25.5	0.60
Exit 64	F	66.8	0.59	F	71.6	0.61
Exit 64 Loop	C	21.1	0.37	C	26.3	0.42
Exit 63	C	27.8	0.32	D	29.4	0.46
Exit 61	C	20.7	0.41	F	76.9	0.67

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

Diverge

Segment	RA10 (No Build) Conditions					
	AM Peak Hour			PM Peak Hour		
	LOS[1]	Density[2]	v/C	LOS[1]	Density[2]	v/C
I-126 Eastbound						
Greystone Blvd	C	26.3	0.50	B	13.5	0.28
I-126 Westbound						
Greystone Blvd	B	17.6	0.36	F	81.9	0.59
Colonial Life Blvd	B	12.2	0.34	F	67.6	0.55

[1] Per Highway Capacity Manual 2010 criteria.

[2] Density expressed as PCE/per mile/per lane.

RA10 (No Build) - Travel Times Between External Zone Pairs

Segments	Length (mi)	Travel Time (mm:ss)		Average Speed (mph)	
		AM	PM	AM	PM
I-26 EB from West of Exit 101					
To I-26 EB (east of Exit 110)	13.87	26:18	16:55	31.6	49.2
To I-20 WB (west of Exit 61)	16.10	27:22	18:54	35.3	51.1
To I-20 EB (east of Exit 68)	15.79	28:18	17:53	33.5	53.0
To I-126 EB (Greystone Blvd)	14.76	26:44	16:27	33.1	53.9
I-26 WB from East of Exit 110					
To I-26 WB (west of Exit 101)	13.89	13:57	26:15	59.7	31.8
To I-20 EB (east of Exit 68)	8.47	09:20	18:20	54.4	27.7
I-20 EB from West of Exit 61					
To I-20 EB (east of Exit 68)	11.10	16:52	10:47	39.5	61.7
To I-26 WB (west of Exit 101)	16.68	21:33	20:29	46.4	48.8
To I-126 EB (east of Greystone Blvd)	10.38	17:13	10:52	36.2	57.3
I-20 WB from East of Exit 68					
To I-20 WB (east of Exit 61)	11.10	11:06	17:49	60.0	37.4
To I-26 EB (east of Exit 110)	9.04	11:53	17:51	45.6	30.4
To I-26 WB (west of Exit 101)	15.32	16:43	23:59	55.0	38.3
I-126 WB from East of Greystone Blvd					
To I-26 WB (west of Exit 101)	14.75	14:41	26:49	60.2	33.0
To I-20 WB (west of Exit 61)	10.84	11:09	21:54	58.3	29.7

RA10 (No Build) - Intersection Capacity Analysis

Node #	Intersection Name	AM		PM	
		LOS	Delay	LOS	Delay
Exit 101					
100000391	Broad River Road (US 176) at Columbiana Drive / Lordship Lane	C	22.5	C	22.8
100000150	Broad River Road (US 176) at I-26 EB Off-ramp[1]	B	16.3	B	15.5
100000151	Broad River Road (US 176) at I-26 EB On-ramp	A	1.5	A	3.5
100000160	Broad River Road (US 176) at I-26 WB On-ramp[2]	A	1.7	A	1.7
4	Broad River Road (US 176) at Western Lane	A	6.4	A	5.5
Exit 102					
100000395	Lake Murray Boulevard (SC 60) at Columbiana Drive	D	37.8	D	37.5
100000510	Lake Murray Boulevard (SC 60) at I-26 EB On-Ramp[2]	A	2.7	A	2.7
100000169	Lake Murray Boulevard (SC 60) at I-26 WB On-Ramp[2]	A	2.2	A	2.4
100000401	Lake Murray Boulevard (SC 60) at Parkridge Drive / Kinley Road	C	24.6	C	21.0
Exit 103					
100000364	Harbison Boulevard (S-757) at Columbiana Drive	B	14.9	B	13.1
100000365	Harbison Boulevard (S-757) at Park Terrace Drive / Columbiana Circle	B	11.8	C	30.0
100000362	Harbison Boulevard (S-757) at Saturn Parkway	A	0.9	A	4.8
100000173	Harbison Boulevard (S-757) at I-26 EB Ramps	B	10.1	A	8.3
100000165	Harbison Boulevard (S-757) at I-26 WB Ramps / Woodcross Drive	C	34.1	D	43.7
100000398	Harbison Boulevard (S-757) at Parkridge Drive	A	8.6	B	11.8
Exit 104					
100000353	Piney Grove Road at Bower Parkway / Jamil Road	C	34.5	C	29.6
100000175	Piney Grove Road at I-26 EB Ramps	B	15.7	A	3.7
100000177	Piney Grove Road at I-26 WB Ramps	C	27.7	A	9.6
100000399	Piney Grove Road at Fernandina Road	C	31.2	C	33.1
Exit 106					
100000348	St. Andrews Road at Jamil Road	A	7.3	A	2.6
100000178	St. Andrews Road at I-26 EB Ramps / Woodland Hills Road	B	11.1	B	12.5
100000182	St. Andrews Road at I-26 WB Ramps[2]	A	3.9	A	4.2
100000358	St. Andrews Road at Fernandina Road / Burning Tree Drive	B	17.8	C	26.8
100000354	St. Andrews Road at Kay Street / Chartwell Road	D	53.2	C	25.8
Exit 108					
100000256	Bush River Road at Zimalcrest Drive	B	14.3	B	10.9
100000898	Bush River Road at I-26 EB Off-Ramp / Driveway	C	23.9	E	59.1
100000252	Bush River Road at Morninghill Drive	C	28.5	D	41.8
100000184	Bush River Road at Arrowwood Road	B	17.4	C	21.8
Exit 110					
100000186	Sunset Boulevard (US 378) at E. Hospital Drive / Harbor Drive	B	17.4	A	9.6
100000093	Sunset Boulevard (US 378) at I-26 EBR Off-Ramp[1]	E	47.7	E	43.5
100000903	Sunset Boulevard (US 378) at I-26 Ramps	C	24.8	C	24.8
100000902	Sunset Boulevard (US 378) at I-26 WBR Off-Ramp[1]	E	45.7	C	24.9
100000163	Sunset Boulevard (US 378) at Chris Drive / McSwain Drive	A	4.5	A	6.9
Exit 63					
14	Bush River Road at Berryhill Drive	B	19.3	B	13.1
100000139	Bush River Road at I-20 WB Ramps	B	10.1	A	7.0
100000142	Bush River Road at I-20 EB Off-Ramp	A	4.6	A	9.6
-	Bush River Road at Rockland Road[1]	-	-	-	-
100000255	Bush River Road at Independence Avenue	B	10.3	B	11.8
Exit 65					
100000187	Broad River Road at Marley Drive / Briargate Circle	D	44.1	D	35.8
100000189	Broad River Road at I-20 WB Ramps	D	46.2	D	53.5
100000190	Broad River Road at I-20 EB Ramps / Garner Lane	B	10.0	A	9.6
100000195	Broad River Road at Longcreek Drive	A	5.0	A	4.4
Additional Intersections					
100000012	Broad River Road (US 176) at Kinley Road	E	62.4	D	48.0
100000037	Broad River Road (US 176) at Harbison Boulevard	B	12.9	A	9.2
100000049	Broad River Road (US 176) at Piney Woods Road / Lost Creek Drive	C	24.1	B	13.5
100000068	Broad River Road (US 176) at Piney Grove Road	A	4.6	A	3.8
100000339	Broad River Road (US 176) at St. Andrews Road	F	138.7	D	35.8
100000349	Broad River Road (US 176) at St. Andrews Parkway	A	9.1	A	9.0
100000344	Broad River Road (US 176) at Seminole Road / Young Drive	E	69.6	C	30.2
41	Broad River Road (US 176) at Dutch Square Boulevard	A	7.3	D	42.6
100000046	Broad River Road (US 176) at Bush River Road	F	110.5	D	44.0
100000266	Broad River Road (US 176) at Greystone Boulevard	B	12.9	B	11.9
100000265	Greystone Boulevard at Stoneridge Drive	C	20.9	B	15.7
100000188	Greystone Boulevard at I-126 WB Ramps[1]	D	32.5	B	13.5
100000185	Greystone Boulevard at I-126 EB Ramps[1]	C	24.4	F	52.0
100000262	Bush River Road at Colonial Life Boulevard	B	19.0	B	18.0
100000897	Colonial Life Boulevard at West Colonial Life Road[1]	A	8.1	C	16.9
100000374	Park Terrance Drive at Bower Parkway	B	10.3	D	44.9

[1] **Intersection unsignalized under all scenarios; worst approach LOS and delay reported.**

[2] **Delay unable to be processed per HCM 2010 methodology; Average control delay reported.**

RA10 (No Build) - Mainline Travel Time Summary for I-26, I-20, I-126

Segments	Eastbound					Westbound				
	Length (mi)	Travel Time (mm:ss)		Average Speed (mph)		Length (mi)	Travel Time (mm:ss)		Average Speed (mph)	
		AM	PM	AM	PM		AM	PM	AM	PM
I-26 between Exit 101 and Exit 110										
Exit 101 to Exit 102 (Lake Murray Boulevard)	1.10	03:59	01:08	16.6	58.4	0.91	00:54	00:58	61.4	56.8
Exit 102 to Exit 103 (Harbison Boulevard)	1.29	05:35	01:22	13.9	56.4	0.76	00:45	00:53	60.6	51.0
Exit 103 to Exist 104 (Piney Grove Road)	0.83	03:25	01:23	14.6	36.0	1.23	01:14	01:27	60.1	51.1
Exit 104 to Exit 106 (St. Andrews Road)	2.20	06:00	03:32	22.0	37.4	1.99	02:18	03:01	51.9	39.5
Exit 106 to Exit 107 (I-20)	0.53	01:40	00:47	18.9	40.6	0.72	00:57	03:46	45.5	11.5
Exit 107 to Exit 108 (Bush River Road)	0.60	01:23	00:57	25.9	37.4	0.20	00:16	01:10	45.7	10.6
Exit 108 to I-26	0.42	00:39	00:46	38.9	33.3	0.02	00:02	00:08	40.3	9.0
I-26 to Exit 110 (Sunset Boulevard)	2.21	02:14	04:16	59.7	31.1	2.37	02:43	12:45	52.4	11.2
Total	**9.18**	**24:55**	**14:11**	**22.1**	**38.8**	**8.20**	**09:08**	**24:08**	**53.9**	**20.4**
I-20 between Exit 61 and Exit 68										
Exit 61 to Exit 63 (Bush River Road)	2.01	02:14	02:02	53.9	59.4	2.23	02:08	03:11	31.0	42.0
Exit 63 to Exit 64 (I-26)	0.73	00:45	00:44	58.7	59.5	0.74	00:47	00:52	84.1	51.8
Exit 64 to Exit 65 (Broad River Road)	0.82	00:54	00:58	54.8	50.6	1.12	01:52	01:54	35.4	35.6
Exit 65 to Exit 68 (Monticello Road)	3.16	03:33	03:11	53.3	59.4	2.93	03:26	06:04	19.2	28.9
Total	**6.72**	**07:26**	**06:56**	**54.2**	**58.2**	**7.03**	**08:13**	**12:01**	**51.3**	**35.1**
I-126 between I-26 and Greystone Blvd										
Exit 108 to Colonial Life Boulevard	1.22	01:16	01:10	57.7	62.8	1.14	01:10	05:45	56.7	11.9
Colonial Life Boulevard to Greystone Blvd	0.77	00:48	00:47	58.2	58.7	0.98	00:57	04:34	69.0	12.9
Total	**1.99**	**02:04**	**01:57**	**57.9**	**61.1**	**2.13**	**02:07**	**10:19**	**60.2**	**12.4**

RA10 (No Build) - Volumes

I-26 Mainline	Volume			
	AM		PM	
	EB	WB	EB	WB
Location				
west of Exit 101 (Broad River Road)	4,461	3,138	3,586	4,707
Exit 101 to Exit 102 (Lake Murray Boulevard)	4,851	3,737	4,342	5,482
Exit 102 to Exit 103 (Harbison Boulevard)	4,671	4,349	4,874	5,963
Exit 103 to Exist 104 (Piney Grove Road)	5,005	4,924	5,308	6,066
Exit 104 to Exit 106 (St. Andrews Road)	5,594	5,313	5,992	6,137
Exit 106 to Exit 107 (I-20)	7,554	6,384	7,248	6,763
I-126 Diverge to I-126 Merge	2,721	2,901	2,779	2,308
Exit 108 to Exit 110 (Sunset Boulevard)	3,738	4,201	3,904	3,715
southeast of Exit 110	3,515	4,291	4,244	4,091

I-20 Mainline	Volume			
	AM		PM	
	EB	WB	EB	WB
Location				
west of Exit 61 (Sunset Boulevard)	4,436	1,918	2,941	3,823
Exit 61 to Exit 63 (Bush River Road)	5,414	2,945	3,898	4,831
Exit 63 to Exit 64 (I-26)	5,001	3,064	3,908	4,423
Exit 64 to Exit 65 (Broad River Road)	5,231	4,307	4,341	4,457
Exit 65 to Exit 68 (Monticello Road)	5,811	5,617	4,847	5,729
east of Exit 68	5,521	5,736	5,001	5,506

I-126 Mainline	Volume			
	AM		PM	
	EB	WB	EB	WB
Location				
I-126/I-26 Split	4,658	2,074	2,764	3,072
I-126 from I-26 to Colonial Life Blvd	5,421	2,528	3,053	3,641
I-126 from Colonial Life Blvd to Greystone Blvd	5,983	3,308	3,418	5,309
I-126 from Greystone Blvd to Huger St	5,895	3,474	3,629	5,892

RA10 - Major Arterial Travel Times

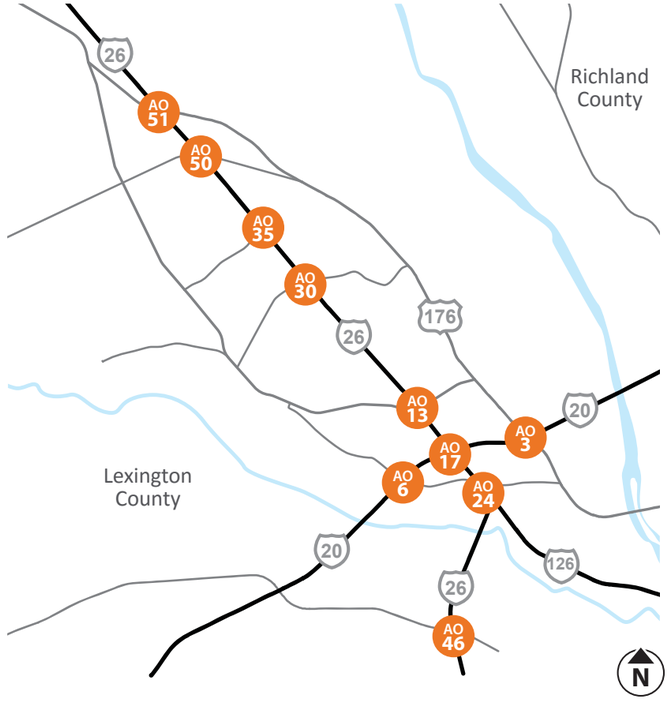
Location	Eastbound					Westbound				
	Length (mi)	Travel Time (mm:ss)		Average Speed (mph)		Length (mi)	Travel Time (mm:ss)		Average Speed (mph)	
		AM	PM	AM	PM		AM	PM	AM	PM
Broad River Road (west of Exit 101 to Greystone Blvd)	6.8	19:08	23:22	21.3	17.4	6.8	25:01	27:28	16.3	14.8
Lake Murray Boulevard (west of Exit 102 to Broad River Road)	1.5	04:37	04:38	19.9	19.8	1.5	03:08	04:25	27.9	19.8
Harbison Boulevard (west of Exit 103 to Broad River Road)	1.1	03:49	03:51	17.6	17.5	1.1	06:04	03:32	11.1	19.1
Piney Grove Road (west of Exit 104 to Broad River Road)	1.6	05:26	04:38	17.4	20.4	1.6	07:48	04:46	12.2	19.9
St. Andrews Road (west of Exit 106 to Broad River Road)	1.0	13:27	04:06	4.3	14.2	1.0	03:13	05:29	18.2	10.7
Bush River Road (west of Exit 63 to Broad River Road)	2.0	09:01	08:02	13.5	15.1	2.0	06:14	10:34	19.5	11.5
Location	Northbound					Southbound				
	Length (mi)	Travel Time (mm:ss)		Average Speed		Length (mi)	Travel Time		Average Speed	
		AM	PM	AM	PM		AM	PM	AM	PM
Colonial Life Boulevard (I-126 Ramps to Bush River Road)	0.5	00:31	02:16	54.8	12.6	0.5	01:23	00:49	20.7	35.0

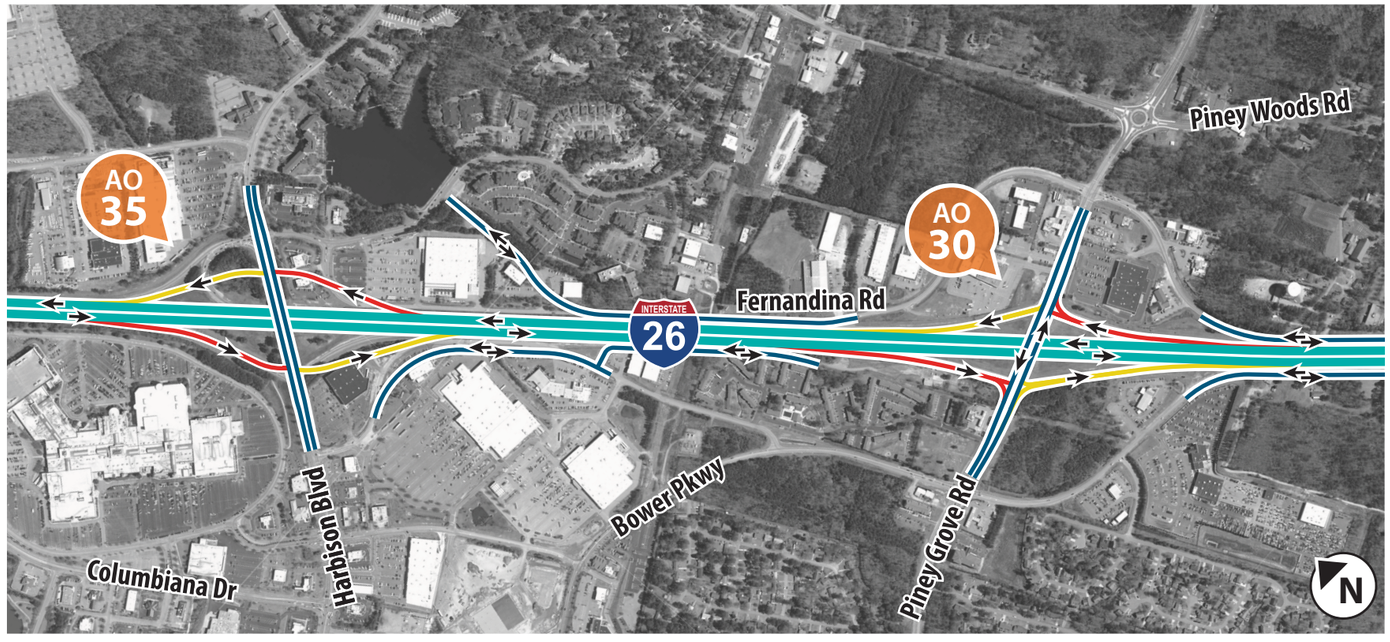
Appendix C—Representative Alternatives (RA1-RA9) and Recommended Preferred Alternative (Sheets 1-11)

REPRESENTATIVE ALTERNATIVE 1

Key Features Include:

- The proposed turbine interchange at the I-26 and I-20 junction, which eliminates all loop ramps in the interchange.
- Widening I-26 with one additional lane in each direction from US 176/Broad River Road to I-126.
- New collector-distributor lanes.
- The elimination of the existing interchange at I-26 and Bush River Road. By removing the direct connection between Bush River Road and I-26, traffic conflict points and weaving maneuvers between Bush River Road and the I-20/I-26 interchange would be eliminated.
- Traffic that normally would have used Bush River Road at I-26 would now use the interchange at Colonial Life Boulevard that will be reconfigured to provide access to each direction of I-126.
- Interchange improvements at each interchange from Harbison Boulevard to US 378 on I-26; from Bush River Road to Broad River Road on I-20; and from I-26 to Colonial Life Boulevard on I-126.





REPRESENTATIVE ALTERNATIVE 1

LEGEND

- Main Interstate
- Connector
- On-ramp
- Off-ramp
- New Roadway

AO 1 — Interchange Alternative

→ Travel Direction