CHAPTER 2. DESCRIPTION OF ALTERNATIVES CONSIDERED

The alternatives considered for the proposed project are described in this chapter. Each alternative is evaluated with respect to its ability to meet the purpose and need of the proposed action. A number of preliminary alternatives were developed and evaluated during the early phases of the project studies, including the No-Build Alternative, transportation system management alternatives, transportation demand management alternatives, and the build alternatives. A discussion of the alternatives considered for the proposed action, the process of elimination of those alternatives not determined reasonable and feasible, and the basis for the selection of the alternatives carried forward for detailed study are provided in this chapter.

2.1 NO-BUILD ALTERNATIVE

The No-Build Alternative assumes the local transportation system would evolve as currently planned, but without implementation of the proposed project. With the exception of routine maintenance, no change would take place along the existing corridors within the study area.

There are no right-of-way or construction costs associated with the No-Build Alternative. There would be no impacts to streams, wetlands, or other natural and cultural resources, and there would not be any residential or business impacts. However, the No-Build Alternative would not meet any of the purposes identified for the proposed action, nor would it solve or alleviate any of the needs described in Chapter 1. Additionally the No-Build Alternative is not consistent with adopted local, regional, and state transportation plans. Therefore, the No-Build Alternative is not considered a reasonable and feasible alternative for this project.

In accordance with NEPA (40 CFR 1502.14(d)) and FHWA guidelines, the No-Build Alternative is given full consideration and provides baseline conditions with which to compare the improvements and consequences associated with the alternatives carried forward for detailed study. The “No-Build” or “no project” alternative is always considered an option throughout the study. It cannot be ruled out until the various “build” alternatives’ effects have been thoroughly studied, and all comments from government agencies and the public fully considered and responded to. Consideration of the “No-Build” alternative assumes that the transportation network in the study area continues to develop as called for in the 2035 LRTP (FBRMPO 2010) but without this Asheville Connector project.

2.2 TRANSPORTATION SYSTEM MANAGEMENT ALTERNATIVES

The goal of Transportation System Management (TSM) is to maximize the efficiency of the existing transportation system, improve air quality, and enhance safety and mobility of vehicles and goods. This is achieved by coordinating all individual elements of the transportation system through regulatory and control policies. TSM measures enhance the operations of a facility through infrastructure, operational, and technological improvements while minimizing capital outlay and inconvenience to motorists.

2.2.1 OPERATIONAL IMPROVEMENTS

TSM measures focus on operational improvements that aim at minimizing inefficient travel and include, but are not limited to optimizing traffic signal timing, signal coordination, ramp metering, speed restrictions, access control, special events management strategies, incident

management, and turn prohibitions. TSM operational measures usually can be implemented easily and require little capital investment, relative to build alternatives.

The implementation of TSM operational improvements would not acceptably rectify the operational deficiencies along existing I-240. The corridor already has full access control and does not have any traffic signals along the route to optimize or coordinate.

2.2.2 PHYSICAL IMPROVEMENTS

TSM physical improvements include such measures as grade separations, adding turning lanes, intersection realignments, or installing new traffic signals. These physical improvements require greater capital investment than operational improvements; however, benefits of these physical improvements could be more substantial. Through the study area, existing I-240 is a controlled access, four-lane divided facility with no at-grade intersections to accommodate turn lanes. Striping, warning devices, and improved signing have been introduced and may provide safety benefits; however, these changes do not satisfy the long-term need for substantial additional capacity along the corridor.

The evaluation of both operational and physical TSM improvements shows these measures would not provide the additional capacity needed to improve the traffic operations along the corridor to an acceptable level. Additionally, the TSM Alternative would not meet the need for system linkage along the I-26 Corridor. Therefore, the TSM Alternative is not considered reasonable and feasible for this project.

2.3 TRANSPORTATION DEMAND MANAGEMENT ALTERNATIVES

Transportation demand management (TDM) is a term given to a variety of measures used to improve the efficiency of the existing transportation system. TDM addresses traffic congestion by reducing travel demand for the existing transportation system rather than increasing transportation capacity and focuses on alternatives such as ridesharing, flexible work schedules, telecommuting, guaranteed ride programs, bicycling, walking, and transit.

Commuters frequently are the focus of TDM actions because of their regular, predictable driving patterns, the possibilities of employer partnerships, and the opportunities for ridesharing programs. TDM tools, such as ridesharing and guaranteed ride programs, reduce congestion by increasing vehicle occupancy rates. Other TDM tools, such as flexible work schedules, move trips from peak congestion times to non-peak periods. Telecommuting allows people to work from home, reducing the number of trips. Encouraging alternate modes of transportation, such as bicycling and walking, also reduces trips.

Recently, the Asheville region has started emphasizing the use of TDM measures. Existing TDM measures in the area include the Strive Not to Drive program, which has been in place since 1991 (Land of Sky Regional Council 2007). This program encourages citizens to reduce car use for a one-week period per year and recently introduced a Car Free Friday event.

Another TDM program currently promoted by the City of Asheville and funded by the NCDOT Public Transportation Division is Share the Ride NC (www.sharetheridenc.org). The program allows participants to find carpool partners within the area they are traveling.

TDM is a valuable component of transportation planning in Asheville, but TDM measures alone would not meet the purpose and need for the project. TDM measures would not substantially

reduce peak hour traffic and would not provide adequate relief of congestion along the project facilities. Additionally, the TDM alternative would not provide the system linkage along the I-26 Corridor included in the project purposes. Therefore, TDM is not considered reasonable and feasible for this project.

2.4 MASS TRANSIT ALTERNATIVES

The Mass Transit Alternatives include bus or rail passenger service and could include the implementation of express lanes for transit vehicles. A major advantage of mass transit is that it can provide high-capacity, energy-efficient movement in densely traveled corridors. Additionally, it serves high and medium density areas by offering a low-cost option for automobile owners who do not wish to drive, as well as service to those without access to an automobile. Based on the 2007-2011 American Community Survey, less than one percent of workers in Buncombe County use public transportation as their primary method of transportation to work (*Demographic Analysis*, URS 2013). Three general types of mass transit alternatives are presented below with an assessment of the ability of these alternatives to meet the purpose and need summarized in Section 1.3.

2.4.1 BUS ALTERNATIVES

The most typical multi-modal transportation system in North Carolina involves a fixed route, fixed schedule bus system. Because the proposed project corridor serves both local and long distance trips, the evaluation of bus services that meet each need should be examined.

For regional and statewide users, Greyhound Lines, Incorporated (Greyhound) currently provides daily commercial bus service to Asheville. Greyhound operates five daily bus routes that pass through and stop in Asheville. Southeastern Stages operates one daily route between Asheville and Atlanta. There are no routes that go through Madison County, Hendersonville, Weaverville or Woodfin.

The ATS currently operates 17 bus routes within the city on a daily basis. Seven of the 17 routes provide service on roads that fall within the within the study area. Additionally, ATS has service to and from Black Mountain and the Asheville Airport (ATS 2014). Several other local mass transit systems also operate in the Asheville area, providing links to Black Mountain, Hendersonville, and Waynesville.

2.4.2 RAIL ALTERNATIVES

Any rail alternatives should be evaluated based on the ability to provide both local and long distance trips. Currently the only rail service in the Asheville area is freight service provided by Norfolk Southern Railways. Regular passenger train service to Asheville ended in 1975 and currently there is no passenger rail service in the area. A study to provide passenger service to Western North Carolina has been completed, but is currently delayed due to funding issues (NCDOT 2001). The recommended route would run from Asheville to Salisbury, with connections to long distance trains such as the Carolinian or a proposed New York-Atlanta service. One of the purposes of the proposed project is to complete a link in the I-26 system connecting Charleston, South Carolina, to I-81 in Tennessee. This link would traverse Buncombe County in the north-south direction, which would run perpendicular to the proposed passenger rail service.

The Land of Sky Regional Council identified transportation as being a first tier goal as part of their Economic Development Strategy. One of the objectives of this goal is to "provide 21st century multi-modal transportation to the entire Five-County transportation planning region, featuring light rail infrastructure and increased public transit options linking nodes of high-density development." As it currently stands, no studies have been initiated to evaluate the feasibility of any such routes. Therefore, with no planned rail service that would serve local trips or passenger rail that would serve north-south through trips, rail would not have the ability to meet the purpose and need of the project.

Due to the lack of planned rail service improvements that would adequately serve the travel demand generated in the study area, the use of rail alternatives is not feasible for the proposed action.

2.4.3 TRANSIT EXPRESS LANE ALTERNATIVES

Conventional bus service and fixed guideway rail transit are not the only types of mass transit that are present across the United States. Bus Rapid Transit (BRT) is an emerging technique of providing transit service in urban areas. BRT involves coordinated improvements in a transit system's infrastructure, equipment, operations, and technology that give preferential treatment to buses on urban roadways. BRT is not a single type of transit system; rather it encompasses a variety of approaches, including buses using express lanes as either exclusive busways or high occupancy vehicle (HOV) lanes with other vehicles. BRT service also improves bus service on city arterial streets. Busways, special roadways designed for the exclusive use of buses, can be totally separate roadways or operate within highway rights-of-way separated from other traffic by barriers (United States General Accounting Office 2001).

The use of BRT along the freeway corridors within the study area would not provide substantial benefit as the freeways are radial routes and the routes would likely need to run along the arterials to serve the urban core of Asheville. Additionally, the use of express lanes along the freeway would require reconstruction of the interstate due to the existing median width not being adequate to provide express lanes. Conversion of an existing lane to an express lane is not possible because NCDOT and FHWA do not endorse the conversion of existing general-purpose lanes to HOV lanes or express lanes. Therefore, the use of BRT and/or express transit lanes would not be a feasible alternative for the proposed action.

One transit alternative that may be possible in the project study area is a bus on shoulder system (BOSS). A BOSS allows authorized buses to operate on the shoulders of selected freeways at low speeds during periods of congestion in order to bypass traffic and maintain transit schedules. A BOSS could be evaluated in the corridor, but if a BOSS was implemented, it is not anticipated that the ridership numbers would be high enough to make an impact on traffic.

2.4.4 ABILITY OF MASS TRANSIT ALTERNATIVES TO MEET PURPOSE AND NEED

Mass transit alternatives would either not be feasible or alone would not attract sufficient ridership to alleviate projected congestion along the project corridor. The *Asheville Travel Model* already takes into account transit ridership in the projected traffic volumes for the proposed project (Martin/Alexiou/Bryson, PLLC 2004a). The logit choice model from the *French Broad River Metropolitan Planning Organization Travel Demand Model* (Martin/Alexiou/Bryson, PLLC 2007) shows 0.5% of trips using transit in 2035, indicating a transit alternative would take a substantial shift in mode choice in order to meet the purpose and need of the project. Mass

transit alternatives would neither meet the project purposes related to system linkage along the I-26 Corridor. Therefore, mass transit measures implemented alone are not considered reasonable and feasible for this project.

2.5 BUILD ALTERNATIVES

2.5.1 LOGICAL TERMINI/INDEPENDENT UTILITY

FHWA regulations (23 CFR 771.111(f)) state that in order to ensure meaningful evaluation of alternatives and to avoid commitments to transportation improvements before they are fully evaluated, a project must: "connect logical termini and be of sufficient length to address environmental matters on a broad scope; not restrict consideration of alternatives for other reasonably foreseeable transportation improvements; and have independent utility or independent significance."

The build alternatives for the proposed project begin at the I-26/I-40/I-240 interchange and end at the US 19-23-70 interchange with SR 1781 (Broadway).

The I-26 Asheville Connector Project would provide a needed link in the I-26 Corridor by improving and constructing a multi-lane freeway, part on new location, from I-26 southwest of Asheville to US 19-23-70 (Future I-26) in northwest Asheville. About two-thirds of the project is related to improvements to I-240 on the west side of Asheville.

The eastern terminus of the proposed action is located just south of and includes improvements to the I-26/I-40/I-240 interchange in southwest Asheville, which is the western terminus of the I-26 Widening Project (NCDOT Project No. I-4400/I-4700). This end point for the eastern terminus was chosen in order to include improvements to the I-240 system interchange and the related improvements to I-240 in the same project.

The western terminus of the proposed action is the US 19-23-70 and I-240 interchange, which is the eastern terminus of the US 19-23 (Future I-26) Improvements Project (NCDOT Project No. A-0010A). This end point for the western terminus was chosen in order to connect the existing I-26 Corridor with the future I-26 Corridor (US 19-23-70), and to reduce congestion on the I-240/US 19-23 interchange east of the French Broad River, thereby reducing congestion on I-240 on the north side of Asheville. The eastern and western termini of the project are shown on Figure 1-2.

Although there are two transportation improvement projects adjacent to the proposed action, the US 19-23 (Future I-26) Improvements Project (NCDOT Project No. A-0010A) and the I-26 Widening Project (NCDOT Project No. I-4400/I-4700), the proposed action has logical termini and independent utility.

The A-0010A Project is north of and immediately adjacent to the proposed action. The northern portion of the proposed action is proposed on new location from I-240 to the tie-in with US 19-23-70 just south of the interchange at Exit 25 where the A-0010A Project ends. The tie-in points for the I-2513 new location alternatives are south of Exit 25 and do not restrict the consideration of alternatives for improvements to Exit 25 or the widening of US 19-23-70 as proposed in the A-0010A Project.

The eastern portion of the proposed action includes improvements to the I-26/I-40/I-240 interchange. The I-4400/I-4700 Project is located south of and immediately adjacent to the

proposed action and will widen I-26 up to the I-26/I-40/I-240 interchange, which is a logical dispersion point for traffic. The improvements to the I-26/I-40/I-240 interchange included in the proposed action do not restrict consideration of alternatives for the widening of and improvements to I-26 as proposed in the I-4400/I-4700 Project.

The proposed action's termini, with interstate to interstate interchanges at both ends are logical endpoints. The proposed project would not require immediate transportation improvements beyond the termini or along the connecting facilities. Locations where the project's termini connect to, or adjoin other STIP projects, are logical endpoints because the proposed project serves different purposes and would have independent needs from the other projects. Thus, the proposed project has independent utility and its construction would be a useful and reasonable expenditure of funds, even if no additional transportation improvements in the area are made. The proposed project is of sufficient length to allow for evaluation of alternatives and environmental issues on a broad basis and would neither restrict consideration of alternatives nor prohibit implementation of other reasonably foreseeable transportation improvement projects. Further, as described in *Asheville Region Cumulative Impacts Study*, NCDOT has considered the indirect and cumulative effects of the proposed action in combination with proposed projects I-4400, I-4700, I-4759, A-0010A.

2.5.2 DESIGN FEATURES

The following sections present the design criteria, typical sections, access control, and project study area established for the development of the build alternatives. Additionally, a section detailing the timeframe in which the build alternatives were developed for the proposed project is included.

2.5.2.1 Design Criteria

Roadway design criteria used to develop the build alternatives for the proposed project are presented in Table 2-1. The criteria were developed based on the following design standards and take into account the proposed project's functional classification and design speed:

- AASHTO – *A Policy on Geometric Design of Highways and Streets*, 2011 Edition
- AASHTO – *A Policy on Design Standards – Interstate System*, January 2005 Edition
- NCDOT – *Roadway Design Manual 2006*, as amended (NCDOT 2006b)

It is expected that incidental bicycle and pedestrian improvements will be included in the final design of the project. These facilities should be designed using the *AASHTO Guide for the Development of Bicycle Facilities,* 2012 edition.

2.5.2.2 Typical Sections

The first step in the development of a typical section for the build alternatives is to determine the number of lanes required for the proposed project. The best approach for determining the required number of lanes is through the use of the methods presented in the 2010 HCM (TRB 2010). Design determinations for which the HCM is used most commonly involve decisions on the number of lanes, or the amount of space needed to operate a facility at a desired LOS. For freeway facilities, the discussion of the number of lanes is based on the total number of lanes in both directions; for example, a six-lane freeway has three lanes in each direction.

Table 2-1: Roadway Design Criteria

Design Element	Roadway	Design Criteria
Design Speed	Interstates	
	I-26	60 mph
	I-26/I-240 combined	60 mph
	I-240	50 mph
	I-40	65 mph
	Freeway to Freeway Interchange Connections	
	I-40 & I-26 Collector/Distributors	60 mph
	I-40 EB To I-26 WB/I-240 EB Ramp	50 mph
	I-40 EB To I-26 EB Ramp	60 mph
	I-40 WB To I-26 WB/I-240 EB Ramp	40 mph
	I-40 WB To I-26 EB Ramp	60 mph
	I-40 WB To I-26 EB Loop	30 mph
	I-26 WB To I-40 WB Ramp	60 mph
	I-26 WB To I-40 EB Ramp	50 mph
	I-26 EB/I-240 WB To I-40 WB Ramp	60 mph
	I-26 EB/I-240 WB To I-40 EB Ramp	50 mph
	I-26 EB/I-240 WB To I-40 EB Loop	30 mph
	I-26 WB/I-240 EB To I-240 EB	50 mph
	I-240 WB To I-26 EB/I-240 WB	50 mph
	Freeway to Crossroad Interchange Connections	
	Ramps	50 mph
	Loops	25 mph
	Interchange Connections	
	SR 1781 (Broadway)	40 mph
	US 19-23-70	60 mph
	US 19-23-74A (Patton Avenue)	50 mph
	US 19-23 Bus. (Haywood Road)	40 mph
	SR 3556 (Amboy Road)	40 mph
	NC 191 (Brevard Road) at I-26/I-240	40 mph
	NC 191 (Brevard Road) at I-40	50 mph
	Cross Street	
	All cross streets	In accordance with functional classification
Right-of-Way Width		Variable to maintain construction and maintenance
Lane Width	Freeway	12 feet
	Ramp – single lane	16 feet
	Loop – single lane	20 feet
	Cross Street	12 feet (desirable)

Design Element	Roadway	Design Criteria
Shoulder Width	I-26	14 feet outside (12 paved)/12 feet inside paved to barrier
	I-26/I-240 combined	14 feet outside (12 paved)/12 feet inside paved to barrier
	I-40	14 feet outside (12 paved)/10 feet inside paved to barrier
	Ramp	14 feet (4 feet paved) without guardrail
	Loop	12 feet desirable (4 feet paved)
Median Width	I-26	26 to 35 feet with median barrier
	I-26/I-240 Combined	26 to 35 feet with median barrier
	I-40	22 feet with median barrier
Vertical Grades		In accordance with AASHTO design standards based on rolling terrain
Super-elevation Rate[a]	Freeway	e_{max} = 8 percent
	Bridges	e_{max} = 6 percent
Vertical Clearance		16 feet

Source: AASHTO 2005; AASHTO 2011; NCDOT 2006b.

[a] Super-elevation rate (emax) is the maximum slope from one side of a highway to the other on a curve; helps with banking.

The minimum LOS for the proposed project was determined (as described in Section 1.8.1.2) to be LOS D. This is the same LOS standard used by other similar nearby projects, such as Project A-0010A (Future I-26, north of Asheville) and Project I-4400/I-4700 (I-26, south of Asheville). The determination of the number of lanes for the proposed project is based on the traffic volume that can be accommodated on the facility such that it meets LOS D or better. The traffic volume used in the analysis of traffic operations is the peak hour traffic volume for the roadway. The peak hour volume is adjusted to a flow rate based on terrain, heavy vehicle percentage, driver familiarity, and roadway characteristics. The flow rate is then used to calculate the density and LOS for the roadway.

To determine the number of lanes required, the peak hour volumes for the roadway are compared to the maximum volumes that can be accommodated for each lane configuration and LOS. More detailed information regarding how the forecast was used to prepare peak hour volumes for operation analysis is discussed in the *Traffic Operations Technical Memorandum* (URS 2010c). More information regarding the traffic operations analysis is included in Section 2.7. The maximum peak hour volumes for each LOS and lane configuration are presented in Table 2-2.

The next step in determining the number of travel lanes is to compare the projected peak hour volumes for the build alternatives to the maximum peak hour volume to achieve at least LOS D. A detailed analysis of the traffic operations for each of the build alternatives is presented in Section 2.7. In order to determine the number of lanes for the typical section, only a single build alternative, determined to be representative of the project, was evaluated. Alternative 3 was determined to be the most representative of the build alternatives because the traffic volumes were generally between the high and low values for the build alternatives being considered. Table 2-3 presents a summary of the traffic volumes for the build alternative for both AM and PM peak hours and the number of lanes required to meet the LOS D criteria. The minimum

number of lanes was determined based on the highest peak hour volume (either AM or PM peak hour) for each roadway segment (including both directions of the freeway).

Table 2-2: Maximum Peak Hour Volumes to Achieve LOS

Typical Section	Level of Service (Vehicles Per Hour)				
	A	B	C	D	E
Four-lane	1,000	1,640	2,380	3,050	3,510
Six-lane	1,510	2,470	3,570	4,570	5,260
Eight-lane	2,010	3,290	4,760	6,100	7,020
Ten-lane	2,520	4,120	5,950	7,620	8,770
Analysis Values: Peak Hour Factor = 0.90 Terrain – Rolling Truck Percentage – 8 percent Driver Population Adjustment = 0.95 Measured Free Flow Speed = 60 mph					

Source: *I-26 Connector Traffic Capacity Analysis Memorandum* (URS 2010f).

Table 2-3: Minimum Number of Lanes Required for Peak Hour Volumes to Achieve LOS D

Roadway	Extents	AM Peak Hour Volume (veh/hour)	PM Peak Hour Volume (veh/hour)	Minimum Number of Lanes Required
Section A				
I-240 EB/I-26 WB	From I-40 interchange to NC 191 (Brevard Road) interchange	4,691	5,260	8
I-240 WB/I-26 EB		5,256	4,695	
I-240 EB/I-26 WB	Within NC 191 (Brevard Road) interchange	4,159	4,797	8
I-240 WB/I-26 EB		4,752	4,132	
I-240 EB/I-26 WB	From NC 191 (Brevard Road) interchange to SR 3556 (Amboy Road) interchange	4,869	5,759	8
I-240 WB/I-26 EB		4,752	4,132	
I-240 EB/I-26 WB	Within SR 3556 (Amboy Road) interchange	4,367	5,280	8
I-240 WB/I-26 EB		4,316	3,659	
I-240 EB/I-26 WB	From SR 3556 (Amboy Road) interchange to US 19-23 Business (Haywood Road) interchange	4,631	5,556	8
I-240 WB/I-26 EB		5,556	4,631	
I-240 EB/I-26 WB	Within US 19-23 Business (Haywood Road) interchange	4,239	5,123	8
I-240 WB/I-26 EB		5,123	4,239	
I-240 EB/I-26 WB	From US 19-23 Business (Haywood Road) interchange to US 19-23-74A/Patton Avenue interchange	5,036	5,912	8
I-26 EB		2,431	1,671	4
I-240 WB		3,481	3,365	6
Section B				
I-26 WB	Within US 19-23-74A/Patton Avenue interchange	2,920	3,891	6
I-26 EB		2,431	1,671	4
I-26 WB	From US 19-23-74A/Patton Avenue interchange to US 19-23-70 interchange	2,448	3,262	6
I-26 EB		3,262	2,448	

Roadway	Extents	AM Peak Hour Volume (veh/hour)	PM Peak Hour Volume (veh/hour)	Minimum Number of Lanes Required
I-26 WB/ US 19-23-70 NB	From I-26/US 19-23-70 interchange to SR 1781 (Broadway) interchange	3,892	5,048	8
I-26 EB/ US 19-23-70 SB		5,048	3,893	
I-26 WB/ US 19-23-70 NB	Within SR 1781 (Broadway) interchange	3,322	4,427	6
I-26 EB/ US 19-23-70 SB		4,427	3,323	
I-26 WB/ US 19-23-70 NB	North of SR 1781 (Broadway) interchange	4,015	5,197	8
I-26 EB/ US 19-23-70 SB		5,197	4,016	

Source: *I-26 Connector Traffic Capacity Analysis Memorandum* (URS 2010f).

Note: The extents shown as "within" an interchange denote the freeway section between where exit ramps leave the freeway and entrance ramps enter the freeway.

Six-Lane Freeway Typical Section

The evaluation of a six-lane freeway of the proposed project from I-40 to Patton Avenue would result in the following segments operating at LOS F along I-240/I-26 during the peak hour period:

- From the NC 191 (Brevard Road) interchange to the SR 3556 (Amboy Road) interchange
- Within the SR 3556 (Amboy Road) interchange
- From the SR 3556 (Amboy Road) interchange to the US 19-23 Business (Haywood Road) interchange
- From the US 19-23 Business (Haywood Road) interchange to the US 19-23-74A/Patton Avenue interchange (I-240 EB/I-26 WB lanes only)

Additionally, the following segments would operate at LOS E during the peak hour period for a six-lane freeway typical section:

- From the I-40 interchange to the NC 191 (Brevard Road) interchange
- Within the NC 191 (Brevard Road) interchange
- Within the US 19-23 Business (Haywood Road) interchange

Based on this evaluation a six-lane freeway typical section does not meet the purpose and need for the proposed project and is therefore not considered a reasonable alternative and was eliminated from further study.

Enhanced Six-Lane Freeway Typical Section

The evaluation of an enhanced six-lane typical section was considered because it better reflects what a six-lane freeway typical section for this project would look like. This typical section utilized auxiliary lanes between interchanges due to the close proximity of the interchanges. The premise behind the enhanced typical section is that the traffic volumes between interchanges

would be greater than those in the area within the interchanges. The area within the interchange is typically the area between where a ramp exits the freeway to an intersecting roadway and where the entrance ramp merges back onto the freeway.

The distinct difference between a normal six-lane typical section and the enhanced version is that the auxiliary lanes provide some additional capacity to the facility. This hypothesis holds true as long as the length of the auxiliary lane is adequate to accomplish the weaving movements. However, the fundamental principal of the enhanced typical section is that the additional capacity is not needed within the interchanges. To determine whether an enhanced six-lane typical section would be reasonable for the proposed project, the volumes within each interchange were compared with the maximum volumes to attain the LOS D or better criteria. Based on the volumes shown in Table 2-3, the following interchanges would operate at LOS F within the I-26/I-240 and SR 3556 (Amboy Road) interchange.

Based on the volumes shown in Table 2-3, the following interchanges would operate at LOS E:

- I-26/I-240 and NC 191 (Brevard Road) interchange
- I-26/I-240 and US 19-23 Business (Haywood Road) interchange

Based on this evaluation an enhanced six-lane freeway typical section does not meet the purpose and need for the proposed project and is therefore not considered a reasonable alternative and was eliminated from further study.

Recommended Typical Section

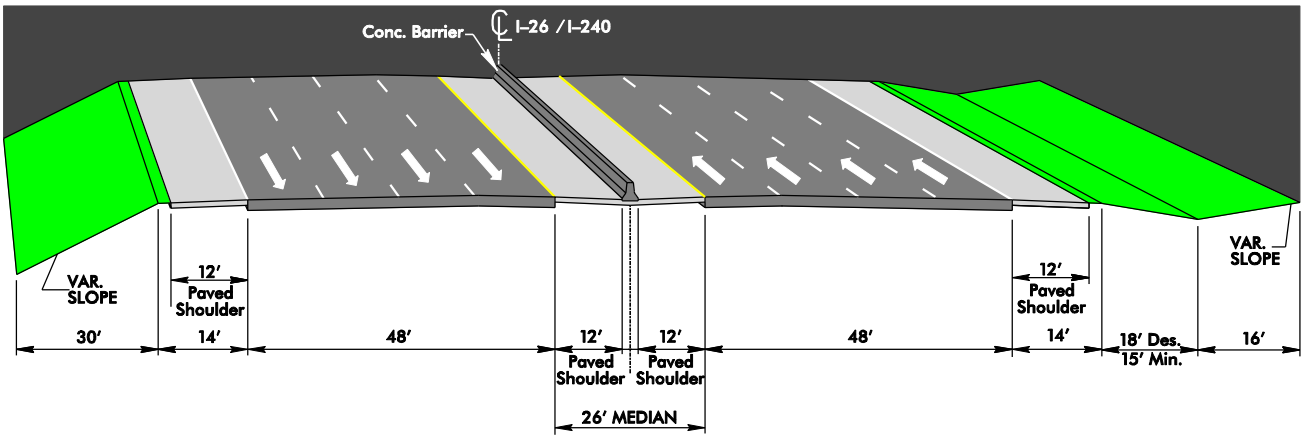
Based on Table 2-3 the build alternatives for the project would require eight basic freeway lanes on I-26/I-240, from I-40 to US 19-23-74A (Patton Avenue) and six basic freeway lanes on I-26, from US 19-23-74A (Patton Avenue) to US 19-23-70 to meet the capacity need presented in the purpose and need for the proposed project. A detailed description of the typical sections for the proposed project is presented in the remainder of this section.

I-26/I-240 from I-40 to US 19-23-74A (Patton Avenue)

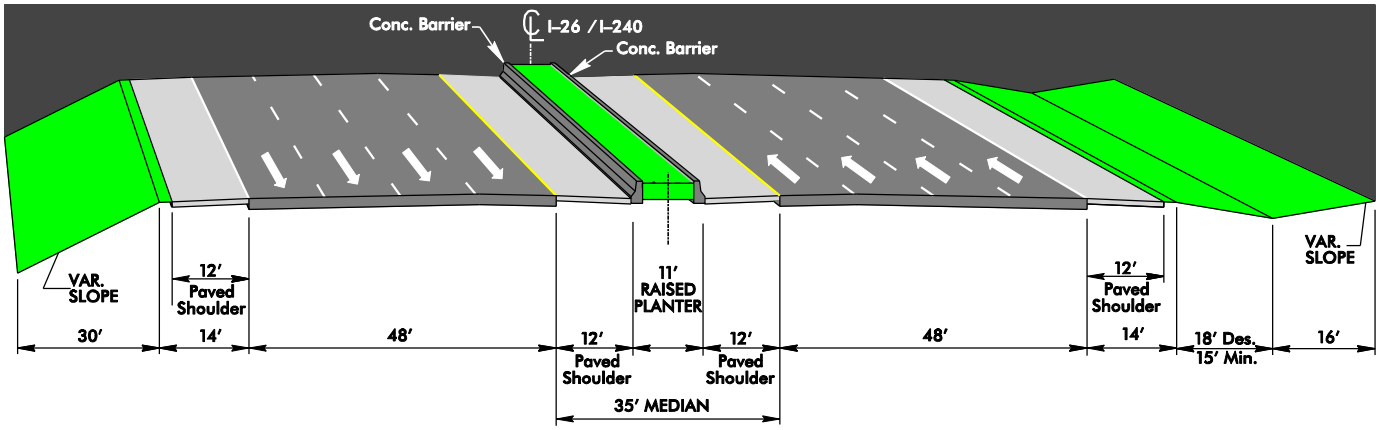
This segment includes the use of two different typical sections. The sections, shown on Figure 2-1a, are based on the basic eight-lane freeway section, which includes four 12-foot travel lanes in each direction. The only difference between the two typical sections is the width of the median. The typical section within the I-26/I-40/I-240 interchange includes a 26-foot wide median that transitions to a 35-foot wide median slightly north of the interchange. The 26-foot median includes 12-foot paved shoulders and a median barrier, while the 35-foot median includes 12-foot paved shoulders with an 11-foot wide raised planter within the median barriers. The outside shoulder width is 14 feet wide, including a 12-foot wide paved shoulder for both typical section configurations.

I-26 from US 19-23-74A (Patton Avenue) to US 19-23-70

This segment also includes two different typical sections. The sections shown on Figure 2-1b are based on the basic six-lane freeway section, which include three 12-foot lanes in each direction. Again, the only difference between the two typical sections is the median width. The project maintains the 35-foot median with 12-foot paved shoulders and an 11-foot wide raised planter from US 19-23-74A (Patton Avenue) northward until it transitions to the 26-foot wide



TYPICAL SECTION FOR I-26/I-240 FROM I-40 TO US 19-23-74A/PATTON AVENUE



TYPICAL SECTION FOR I-26/I-240 FROM I-40 TO US 19-23-74A/PATTON AVENUE

North Carolina
Department of Transportation

Legend

Date: January 2015

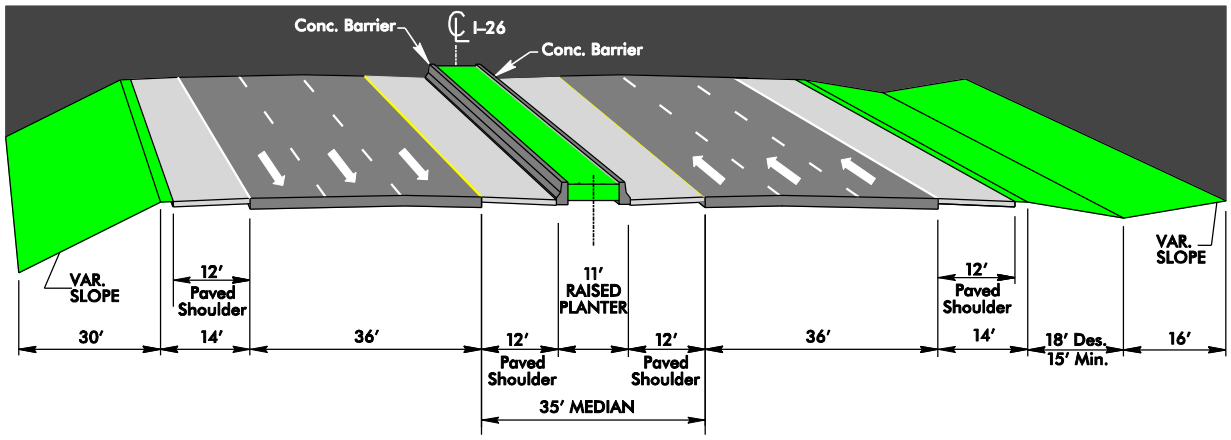
Not to Scale

I-26 Asheville Connector
Buncombe County

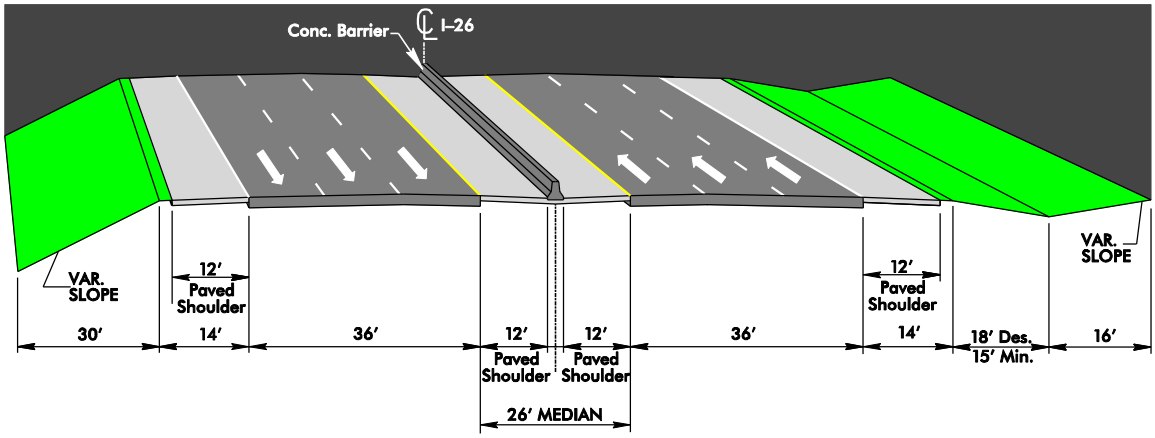
STIP Project No. I-2513

Figure 2-1a

Typical Sections
for Build Alternatives



TYPICAL SECTION FOR I–26 FROM US 19–23–74A/PATTON AVENUE TO US 19–23–70



TYPICAL SECTION FOR I–26 FROM US 19–23–74A/PATTON AVENUE TO US 19–23–70

North Carolina
Department of Transportation

I-26 Asheville Connector
Buncombe County

STIP Project No. I-2513

Legend

Date: January 2015

Not to Scale

Figure 2-1b

Typical Sections
for Build Alternatives

median with 12-foot paved shoulders and median barrier before crossing the French Broad River. The proposed typical section maintains the 26-foot median until it merges with US 19-23-70 where it eventually transitions to the existing median width north of the SR 1781 (Broadway) interchange. The outside shoulder width is 14 feet wide, including a 12-foot wide paved shoulder for both typical section configurations.

2.5.2.3 Access Control

The required access control for interstates is specified as follows in *A Policy on Design Standards – Interstate System* (AASHTO 2005).

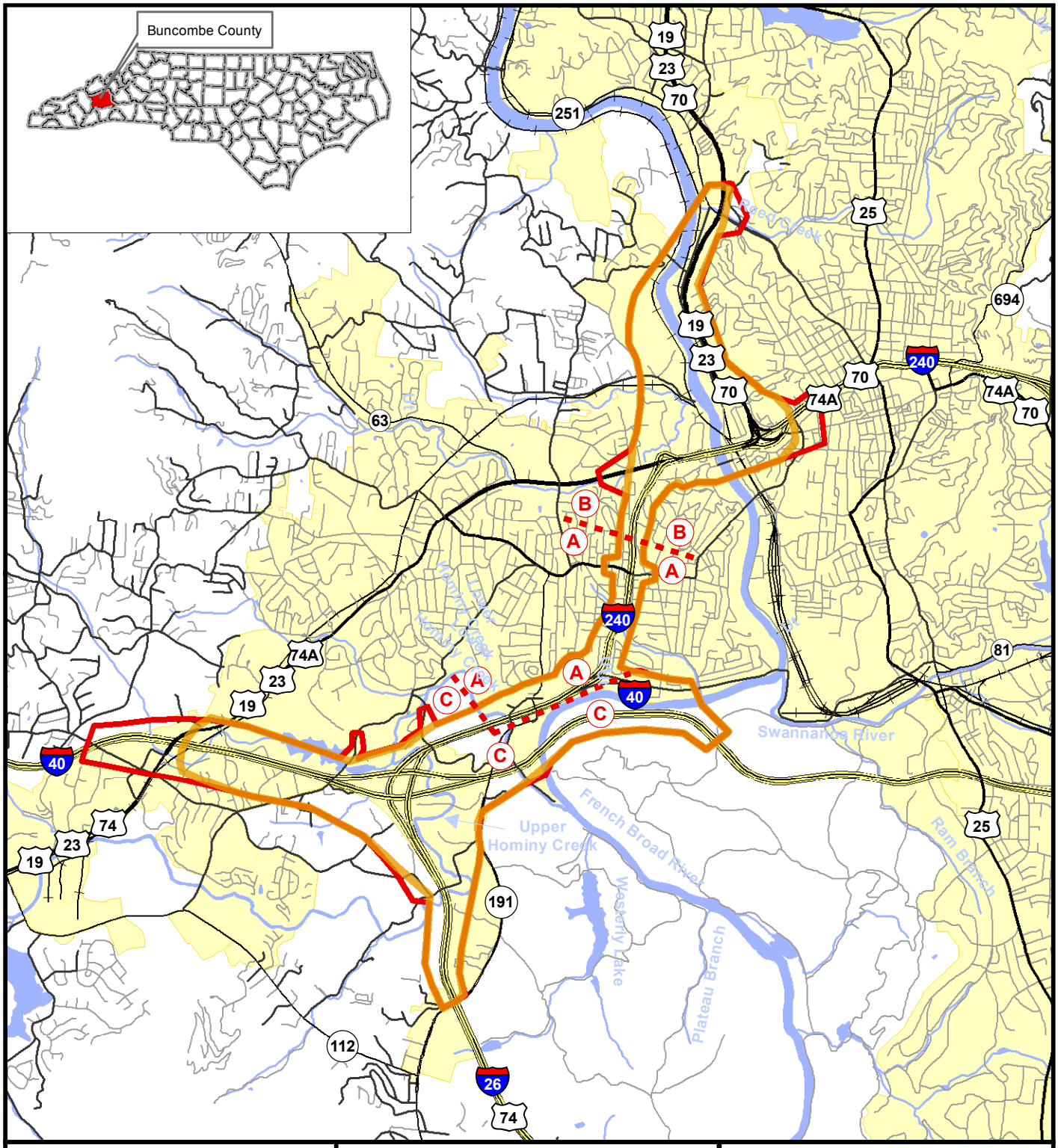
> Access to the interstate system shall be fully controlled. The interstate highway shall be grade separated at all railroad crossings and select public crossroads. At-grade intersections shall not be allowed. To accomplish this, the intersecting roads are to be grade separated, terminated, rerouted, and/or intercepted by frontage roads. Access is to be achieved by interchanges at select public roads.
>
> Access control shall extend the full length of ramps and terminals on the crossroad. Such control shall either be acquired outright prior to construction or by the construction of service roads or by a combination of both.

Access beyond the ramp terminals should be controlled by purchasing access rights, providing frontage roads, controlling added corner right-of-way areas, or prohibiting driveways. Such control should extend beyond the ramp terminal at least 30 meters (100 feet) in urban areas and 90 meters (300 feet) in rural areas. However, in areas of high traffic volume, where there exists the potential for development that would create operational or safety problems, longer lengths of access control should be provided (AASHTO 2005).

2.5.2.4 Project Study Area

The study area for the proposed project, shown on Figure 2-2, was developed to encompass the range of alternatives being considered to meet the purpose and need and connect the logical termini of the proposed project. The project study area includes the corridor required to improve existing I-240 from the I-26/I-40/I-240 interchange to the current I-240 interchange with US 19-23-74A (Patton Avenue) west of the French Broad River. From this interchange northward, the study area is expanded to provide for a freeway on new location that would cross the French Broad River and tie into existing US 19-23-70 on the east side of the French Broad River. The project study area also includes the current I-40 interchange with US 19-23-74A (Smoky Park Highway) and the I-40 corridor between this interchange and the I-26/I-40/I-240 interchange.

Throughout the development of the project, additional studies were undertaken to further analyze the specific effects associated with the construction of the project. Initially the project was divided into two sections known as Section A and Section B. Section A extends along existing I-240 from slightly north of I-40 to just south of the I-240 interchange with US 19-23-74A (Patton Avenue). Section B begins at the northern end of Section A and continues northward along I-240 through the US 19-23-74A (Patton Avenue) interchange and then splits on new location and continues across the French Broad River before ending slightly north of the SR 1781 (Broadway) interchange with US 19-23-70. The project study area that was delineated to encompass both sections of the project was known as the original study area. The study area



North Carolina Department of Transportation

Legend

- Interstate
- US Highway
- NC Highway
- State Route
- Local Road
- Streams (non-delineated)
- Railroad
- Original Project Study Area
- Expanded Project Study Area
- Water
- Municipal Boundary

Date: May 2015

N W E S

0 0.5 1 Miles

I-26 Asheville Connector
Buncombe County

STIP Project No. I-2513

Figure 2-2

Project Study Area with Expansions and Sections

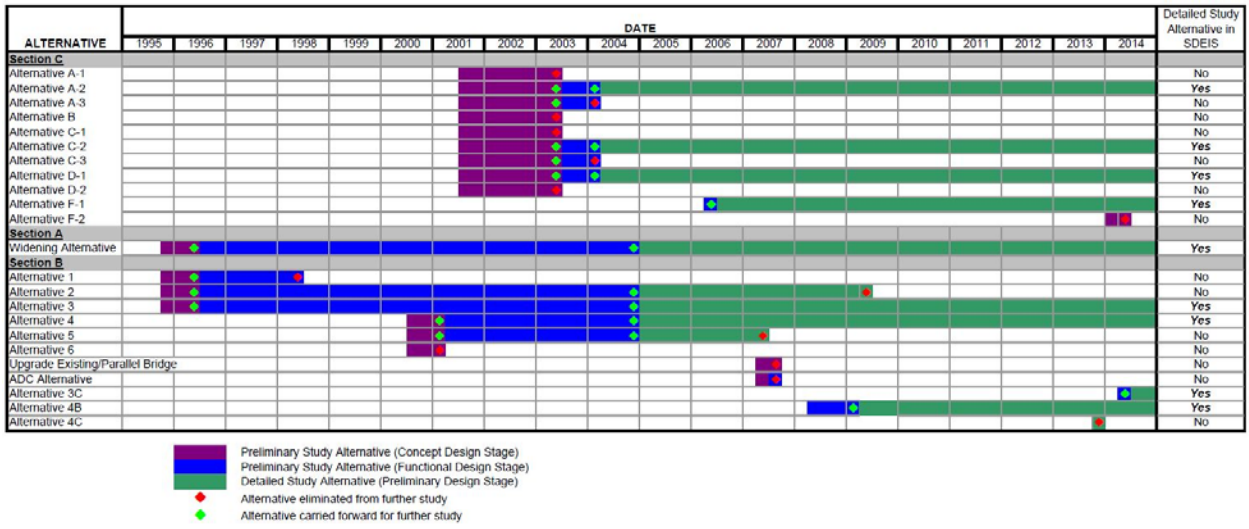
along Section A has a narrower corridor due to the proposal to upgrade the existing facility. The study area for Section B was expanded to allow for the development of alternative alignments for the new location portion of the project.

In July 2000, the CCC, with the help of NCDOT and the City of Asheville, conducted the Project Design Forum to give interested citizens the opportunity to suggest improvements and become involved in the project design. Soon after the Project Design Forum, and as a result of comments and suggestions received at the forum, NCDOT decided to expand the project study area to include the area along the eastern side of the French Broad River near the Captain Jeff Bowen Bridges. In the summer of 2001, NCDOT also began studying the area surrounding the I-26/I-40/I-240 interchange, resulting in a further expansion of the study area. The area along the eastern side of the French Broad River was included in Section B of the project and the area surrounding the I-26/I-40/I-240 interchange became a new section, known as Section C. In 2014, the project study area for Section C was expanded to include the freeway sections surrounding the US 19-23-74A interchange with I-40. This was done in an effort to address projected traffic capacity challenges centering around the weaving sections along I-40 between this interchange and the I-26/I-40/I-240 interchange. The discussion of alternatives is based on the individual sections that make up the proposed project. The sections from south to north are Section C, Section A, and Section B. They are described in this order throughout subsequent sections of this DEIS.

2.5.2.5 Summary of the Timeframe of Alternatives Considered

Due to the extensive history of the development of alternatives for the proposed project, a summary of the timeframe in which the alternatives were considered is included on Figure 2-3. Detailed descriptions of the preliminary study alternatives are included in Section 2.5.4.1 and the alternatives that were carried forward for detailed study are included in Section 2.5.5. The alternatives that were eliminated from further study are presented in Section 2.5.4.2.

Figure 2-3: Timeframe of Alternatives Considered



In 1995, after evaluating numerous corridors, a single widening corridor was developed for Section A. The corridor from the Phase I study recommended alternative was used to develop a best-fit design alternative that would avoid and minimize impacts to the human and natural environments along the I-240 corridor (NCDOT 1995). At the same time as the Section A

corridor was being developed, three alternatives for Section B were also being developed. These alternatives were labeled Alternative 1, 2, and 3. Alternative 1 was eliminated from further study in 1998 and Alternatives 2 and 3 were carried forward.

Three additional alternatives for Section B, Alternatives 4, 5, and 6, resulted from the July 2000 Project Design Forum. In early 2001, the CCC and NCDOT decided to eliminate Alternative 6 from further study and carry forward Alternatives 4 and 5. In summer 2007, due to concerns with traffic operations, Alternative 5 was eliminated as a detailed study alternative. Also as a result of the design forum, the I-26/I-40/I-240 interchange was added to the proposed project in mid-2001 as Section C. At this point, four different interchange types were developed with each having several design options relating to the area between the I-26/I-40/I-240 interchange and the I-40 interchange with NC 191 (Brevard Road). The alternatives were labeled as Alternatives A, B, C, and D with numbers appended to the end to designate the different design options. Alternative B was eliminated from further study in late 2003. Three of the alternatives with selected design options were carried forward as Alternatives A-2, C-2, and D-1.

In early 2006, NCDOT decided to add an additional alternative to Section C that would upgrade the I-26/I-40/I-240 interchange and provide the missing movements but still generally maintain the existing configuration of the interchange. This alternative was labeled F-1 and was determined to be reasonable and was therefore carried forward.

In early 2014 Alternative F-2 was developed to potentially minimize impacts to the human and natural environment as well as to provide a lower cost option for consideration. The configuration of the I-26/I-40/I-240 interchange was similar to the interchange in Alternative F-1. Following more detailed evaluation, the alternative was later eliminated from further study.

Two additional alternatives for Section B were considered in summer 2007, one to upgrade the existing alignment with a parallel bridge serving Patton Avenue traffic and a variation of Alternative 4 developed by the Asheville Design Center. Following the evaluation of these alternatives, both alternatives were eliminated from further study.

Two more alternatives for Section B were included for evaluation between 2013 and 2014. Those alternatives were Alternative 3-C and Alternative 4-C. Alternative 4-C was eliminated from further study at the end of 2013, while Alternative 3-C was carried forward as an alternative for eligible for more detailed analysis.

Following the completion of the Rescinded 2008 DEIS, a new alternative that refined the alternative developed by the ADC was developed and was added as Alternative 4-B. Also, an updated traffic forecast was developed for the project that resulted in several design changes to the alternatives. Following a detailed evaluation of traffic capacity and design, Alternative 2 was eliminated from further study due to concerns with traffic operations.

2.5.3 EVALUATION OF ALTERNATIVES DEVELOPED IN PREVIOUS STUDIES

2.5.3.1 Description of Alternatives – Phase I Environmental Analysis – Asheville Urban Area

Through the process of updating the *Asheville Urban Area Thoroughfare Plan* in the mid-1990s, the Phase I Study was completed as a pilot project undertaken by FHWA and NCDOT to justify early corridor protection of thoroughfare plan alignments (NCDOT 1995). The pilot project included the development of 17 alternatives, shown on Figure 2-4, that would address the

problem area identified as the Captain Jeff Bowen Bridges. The pilot project identified the Captain Jeff Bowen Bridges as the major travel problem in the Asheville urban area and evaluated the ability of the proposed alternatives to meet the projected 2020 travel demand.

Several underlying reasons were cited for the capacity problems, including mixing of local street traffic with freeway through traffic on the bridge and the presence of weaving sections. The Phase I Study report also cited the extension of I-26 from Tennessee to Asheville and the problems the increased traffic would generate on the Captain Jeff Bowen Bridges. The alternatives that were considered in the Phase I Study (NCDOT 1995) are described in this section.

"Do-Nothing" Alternative

The "do-nothing" alternative is the same as the no-build alternative where no construction would occur in the vicinity of the Captain Jeff Bowen Bridges. This alternative was considered the baseline for comparison of alternatives.

Build Alternatives

Improve Existing Alternative

The Improve Existing Alternative would improve the existing facilities, including the Captain Jeff Bowen Bridges, I-240, and the accompanying ramps.

Alternative A

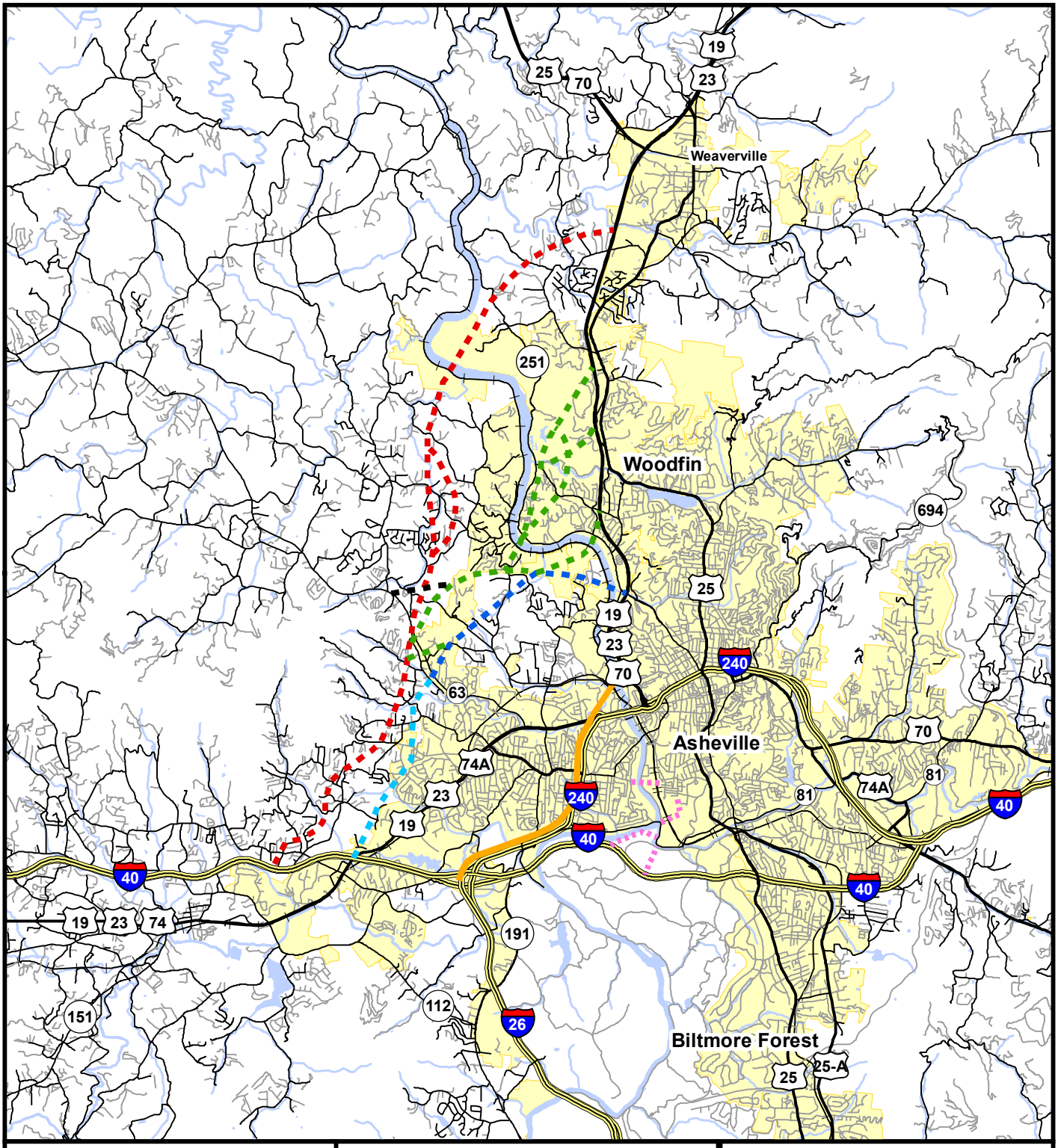
Alternative A included the widening of I-240 to six lanes from the I-40 interchange to US 19-23-74A (Patton Avenue), where a four-lane freeway on new location would cross the French Broad River and terminate along US 19-23-70 east of the river. This alternative also included the widening of the Captain Jeff Bowen Bridges and included three concepts to address the mixing of local traffic with freeway traffic as I-240 and Patton Avenue cross the bridges together.

Alternative B

Alternative B was a freeway on new location connecting from I-40 at US 19-23-74A to US 19-23-70 at SR 1781 (Broadway). The alternative included upgrading the existing I-40 interchange with US 19-23-74A and the US 19-23-70/SR 1781 (Broadway) interchange while providing new interchanges at NC 63 (Leicester Highway) and Riverview Road.

Alternative B-1

Alternative B-1 was a variation of Alternative B that connected NC 63 (Leicester Highway) to US 19-23-70. This alternative is identical to Alternative B, except that it eliminated the segment from I-40 to NC 63 (Leicester Highway). Alternative B-1 would provide an additional northwest to east connection besides Patton Avenue and the Captain Jeff Bowen Bridges and was proposed as an at-grade, limited access facility designed to accommodate local trips.



North Carolina
Department of Transportation

Legend

- Interstate
- US Highway
- NC Highway
- SR Route
- Local Road
- Railroad
- Streams (non-delineated)
- Water
- Municipal Boundaries
- Alternative A
- Alternative B
- Alternative B-1
- Alternative B-2
- Alternative C thru J
- Alternative K and L
- Alternative R

Date: May 2015

0 1 2 Miles

I-26 Asheville Connector
Buncombe County

STIP Project No. I-2513

Figure 2-4

Phase I
Study Corridors

Alternative B-2

Alternative B-2 was a revision to the Alternative B-1 corridor to reduce the social impacts along the corridor. The alternative also connected NC 63 (Leicester Highway) to US 19-23-70; however, the western terminus was moved north along NC 63 (Leicester Highway) to avoid the Bingham Heights and Camelot neighborhoods.

Alternatives C through J

Alternatives C through J were grouped together in the Phase I Study because many of their traffic carrying characteristics were similar. All of the alternatives were new location corridors with beginning points varying from I-40 at I-26 to Patton Avenue/Haywood Road and end points varying from US 19-23-70 at SR 1781 (Broadway) to the Woodfin town limits.

Alternatives K and L

Alternatives K and L were grouped together in the Phase I Study because their traffic carrying characteristics were similar. Both alternatives were new location corridors that began at I-40 and ended north of SR 1720 in Weaverville with a variation between the corridors in the vicinity of Old Leicester Highway.

Alternative R

Alternative R was a new interchange on I-40 and a connection to Meadow Road. The objective of the new interchange was to provide a southern route into the central business district and hospital area while helping relieve traffic on the Captain Jeff Bowen Bridges.

2.5.3.2 Phase I Study Alternatives Eliminated from Further Study

In accordance with NEPA (23 CFR 771.123I) and FHWA guidelines, this DEIS must discuss the range of alternatives being considered including all “reasonable alternatives” under consideration and those “other alternatives” that were eliminated from further study. In order to determine whether the alternatives developed in a previous study should be carried forward for additional study the alternatives must meet the purpose and need of the proposed project and be considered “reasonable” (USDOT/FHWA 1987). The following section presents the results of the analysis of the alternatives developed in previous studies that were eliminated from further study, and the reason for the elimination of the alternative. The alternatives developed in previous studies that were carried forward for additional study are presented in Section 2.5.3.3.

Build Alternatives

Improve Existing Alternative

Studies have determined that it was not feasible to widen the existing bridges to allow for additional traffic lanes across the French Broad River (additionally, alternatives that construct parallel bridges were later considered and are included in Section 2.5.4). Therefore, the Improve Existing Alternative would not address the need for adequate capacity because the Captain Jeff Bowen Bridges do not have the capacity to carry the projected traffic volumes. As a result of this, the Improve Existing Alternative was eliminated from further study.

Alternative B

Alternative B would not address the project purposes related to roadway deficiencies along I-240 because construction along I-240 is not included in the alternative. Therefore, Alternative B would not meet the purpose and need for the proposed project and was eliminated from further study.

Alternative B-1

Alternative B-1 would not address the project purposes related to system linkage or roadway deficiencies along I-240. Construction along I-240 is not included in Alternative B-1, nor would the alternative provide an interstate link between the existing sections of I-26. Therefore, Alternative B-1 would not meet the purpose and need for the proposed project and was eliminated from further study.

Alternative B-2

Alternative B-2 would not address the project purposes related to system linkage or roadway deficiencies along I-240. Construction along I-240 is not included in Alternative B-2, nor would the alternative provide an interstate link between the existing sections of I-26. Therefore, Alternative B-1 would not meet the purpose and need for the proposed project and was eliminated from further study.

Alternatives C through J

Alternatives C through J would not address the project purposes related to roadway deficiencies along I-240 because construction along I-240 is not included in the alternative. Therefore, Alternatives C through J would not meet the purpose and need for the proposed project and were eliminated from further study.

Alternatives K and L

Alternatives K and L would not address the project purposes related to roadway deficiencies along I-240 because construction along I-240 is not included in the alternative. Therefore, Alternatives K and L would not meet the purpose and need for the proposed project and were eliminated from further study.

Alternative R

Alternative R would not address the project purposes related to system linkage and roadway deficiencies along I-240. Construction along I-240 is not included in Alternative R, nor would the alternative provide an interstate link between the existing sections of I-26. Therefore, Alternative R would not meet the purpose and need for the proposed project and was eliminated from further study.

2.5.3.3 Phase I Analysis Alternatives Carried Forward for Additional Study

"Do-Nothing" Alternative

The "do-nothing" alternative is identical to the No-Build Alternative. The No-Build Alternative must be analyzed in accordance with NEPA (40 CFR 1502.14(d)) and FHWA guidelines and is

given full consideration and provides baseline conditions with which to compare the improvements and consequences associated with the alternatives studied in detail.

Build Alternatives

The Alternative A corridor was determined to be a reasonable alternative, and was carried forward for additional study because it was the only alternative that had the potential to meet the purpose and need for the proposed project. The Alternative A corridor would upgrade the Interstate corridor from I-26 south of Asheville through the US 19-23 interchange to meet design standards for the Interstate system. It would have the potential to improve the capacity of existing I-240 west of Asheville to accommodate the existing and forecasted (2033 design year) traffic in this growing area and to reduce traffic delays and congestion along the I-240 crossing of the French Broad River, which currently operates at capacity. The Alternative A corridor would have the potential to increase the remaining useful service of the existing Captain Jeff Bowen Bridges by substantially reducing the volume of traffic on this vital crossing of the French Broad River.

2.5.4 EVALUATION OF PRELIMINARY STUDY ALTERNATIVES BY PROJECT SECTION

Preliminary study alternatives for the proposed project were evaluated within the study area defined in Section 2.5.2.4. Descriptions of the build alternatives that were evaluated for the proposed project are presented in this section. The descriptions provide extensive detail about the engineering design for each alternative. Graphical representations of the alternatives are shown on Figures 2-5a through 2-5d, Figure 2-6, and Figures 2-7a through 2-7d following the alternative discussion for each section. A generalized description of the alternatives is presented in the Summary of this DEIS.

2.5.4.1 Description of Preliminary Study Alternatives

Section C

Section C of the proposed project focuses on upgrading the existing I-26/I-40/I-240 interchange. The existing interchange is a partial interchange with fully-directional movements that would provide only six of the typical eight ramp movements included in a freeway to freeway interchange. The existing interchange does not include the movements from I-40 westbound to I-240 eastbound or from I-240 westbound to I-40 eastbound. Additionally, the existing interchange includes two ramps, I-40 eastbound to I-240 eastbound and I-40 westbound to I-26 eastbound that have both left-hand exits and entrances.

For the proposed project, the preliminary study alternatives for Section C include five general interchange types that provide for all ramp movements within the interchange. The five alternatives were named A, B, C, D, and F.

Alternative A would be a fully-directional interchange where all movements use directional ramps with no loops. The difference among Alternatives B, C, and D is the number of semi-direct movements that utilize loops. Alternative B would include three loops, Alternative C would include two loops and Alternative D would utilize one loop. Alternative F was developed to be an upgrade of the existing interchange configuration with the addition of the missing movements.

The construction of the proposed project would include the widening of I-40 and I-26 for all alternatives being considered. The widening of I-40 would include increasing the existing four-lane freeway to an eight-lane freeway from slightly west of the SR 3412 (Sand Hill Road) overpass (where NCDOT STIP Project I-4401 ends) to the I-26/I-40/I-240 interchange, and to a six-lane freeway through the I-26/I-40/I-240 interchange and the adjacent I-40/NC 191 (Brevard Road) interchange to a point east of the French Broad River. To the south of the I-26/I-40/I-240 interchange, I-26 eastbound would be widened from the existing four-lane freeway to accommodate an eight-lane freeway to the I-26/NC 191 (Brevard Road) interchange and I-26 westbound would be widened from a point 3,500 feet north of the I-26/NC 191 (Brevard Road) interchange.

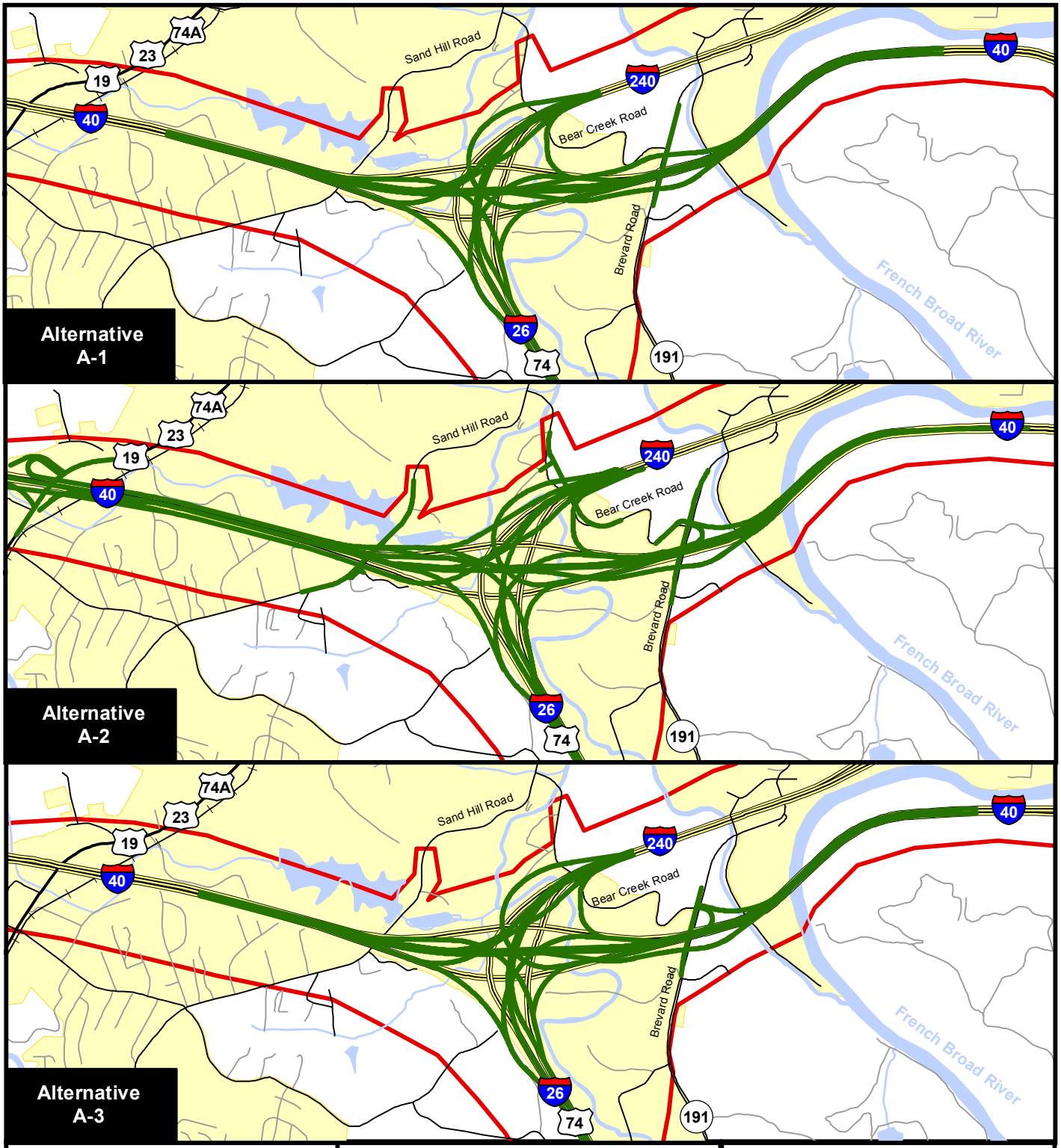
For all alternatives being considered, bridges would be provided over Upper Hominy Creek for the proposed I-26/I-240, I-40 and I-26 freeways, and ramps associated with the I-26/I-40/I-240 interchange. Additionally, all alternatives would provide bridges over Lower Hominy Creek at the crossings with I-40 and the ramps associated with the I-40/NC 191 (Brevard Road) interchange. The existing bridges along I-40 over the French Broad River would be replaced for all alternatives being considered in Section C.

While the I-26/I-40/I-240 interchange is the central focus of Section C, the interchange of I-40 with NC 191 (Brevard Road) slightly to the east is important to the development of alternatives due to the close proximity of the interchanges. With approximately one-half mile between the interchanges, the ability to provide access between the interchanges must be balanced with the need for adequate traffic operations. Several techniques were utilized at this location, including the use of braided ramps and collector-distributor (C/D) roads. These techniques provide the basis for the various options considered for each alternative with the numbered options being appended to each of the I-26/I-40/I-240 alternatives.

The use of braided ramps would eliminate the weaving section between roadways by grade separating the exit ramp and entrance ramp of closely spaced interchanges. However, braided ramps do not allow for access along the freeway between the two cross streets due to the configuration of the ramps, requiring the trips to be accommodated on the local street system. The use of C/D roadways would provide for weaving movements by developing a parallel roadway to the freeway that would be used only by traffic exiting and entering the freeway. This technique allows for a single exit ramp and entrance ramp along the freeway, eliminating the weaving movement along the freeway for through traffic.

Alternative A-1

Alternative A-1, shown on Figure 2-5a, would be a fully directional interchange that would provide direct ramp connections between I-26, I-40 and the proposed I-26/I-240 combined roadway, including the movements that are currently not provided by the existing interchange. Alternative A-1 would include the modification of the interchange of I-40 with NC 191 (Brevard Road) from the current partial cloverleaf configuration to a conventional diamond interchange configuration with braided ramps. The design would include two pairs of braided ramps along I-40, on both the north and south sides of the interstate. The braided ramps on the north side of I-40 separate the I-40 westbound exit ramp that would serve traffic destined for I-26 or I-240 and the entrance ramp to I-40 westbound from NC 191 (Brevard Road). This configuration would result in no direct connection to I-26 or I-240 from NC 191 (Brevard Road) via I-40. The braided ramps on the south side of I-40 separate the I-40 eastbound exit ramp to NC 191 (Brevard Road) and the entrance ramp to I-40 eastbound from I-26 and I-240. This configuration would result in no direct connection to NC 191 (Brevard Road) along I-40 from I-26 or I-240. This lack



North Carolina Department of Transportation

Legend

- Section C Preliminary Study Alternative
- Interstate
- US Route
- NC Route
- State Route
- Local Road
- Railroad
- Streams (non-delineated)
- Project Study Area
- Water
- Municipal Boundaries

Date: May 2015

0 0.25 0.5 Miles

I-26 Asheville Connector
Buncombe County

STIP Project No. I-2513

Figure 2-5a

Section C Preliminary Study Alternatives

of access from I-26/I-240 to NC 191 (Brevard Road) via I-40 would require vehicles to use either the I-26/NC 191 (Brevard Road) interchange to the south of the I-26/I-40/I-240 interchange or the I-26/I-240 interchange with NC 191 (Brevard Road) to the north.

Alternative A-2

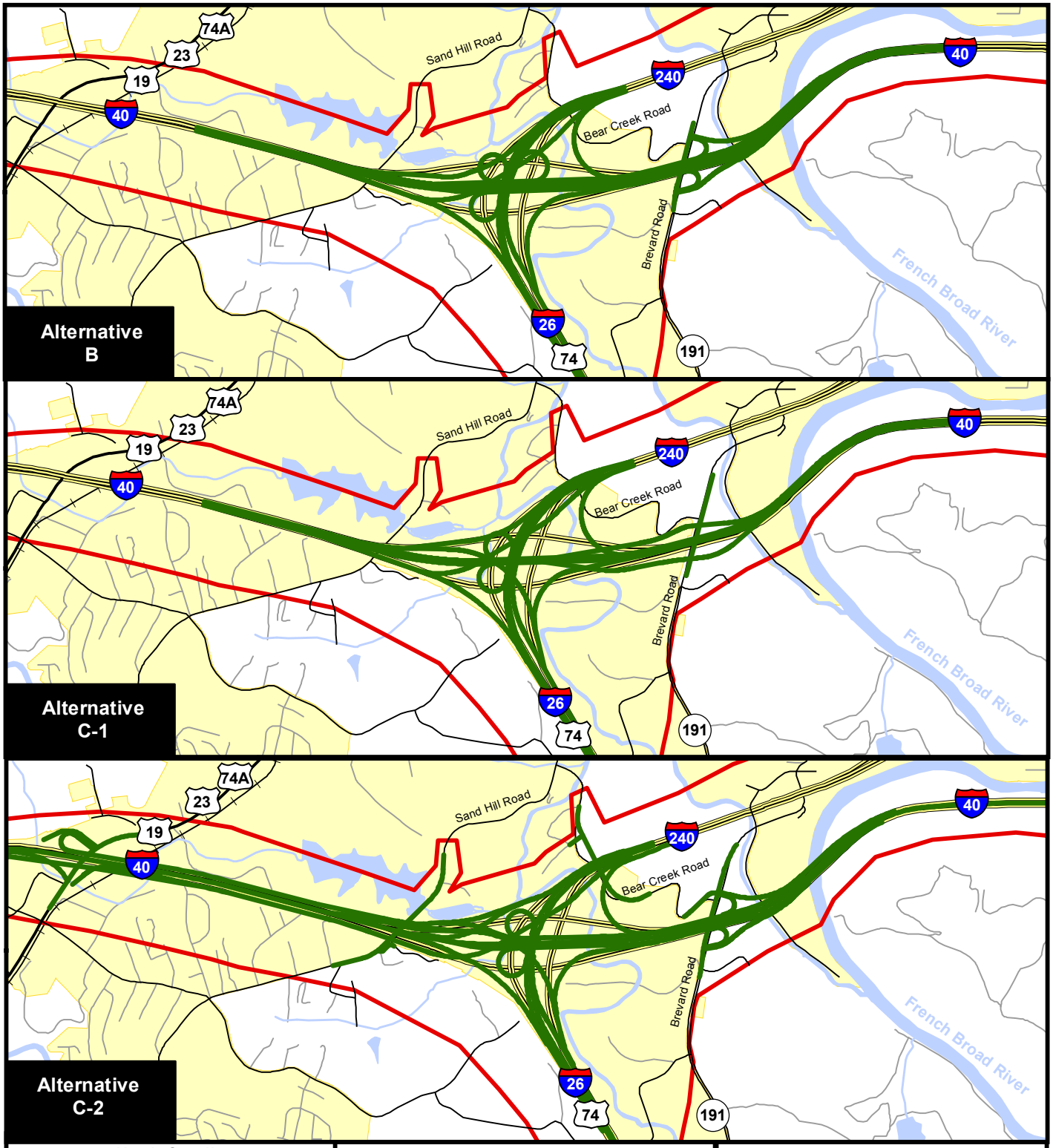
Alternative A-2, shown on Figure 2-5a, would be a fully directional interchange that would provide direct ramp connections between I-26, I-40 and the proposed I-26/I-240 combined roadway, including the movements that are currently not provided by the existing interchange. The I-40 interchange at NC 191 (Brevard Road) would be revised from the current partial cloverleaf configuration to a modified diamond interchange configuration with single ramps in the southwest and southeast quadrants and a ramp with an internal loop in the northeast quadrant. The design would include a C/D roadway along I-40 on the north side of I-40 and braided ramps along I-40, on the south side of the interstate. The C/D roadway would exit I-40 westbound, east of the NC 191 (Brevard Road) interchange; would provide the connection to NC 191 (Brevard Road), I-26 and I-240; and would re-enter I-40 slightly to the east of the existing I-26/I-40/I-240 interchange. This configuration would create a weaving movement on the C/D between the NC 191 (Brevard Road) entrance loop and the exit ramp to I-26 and I-240. The C/D configuration would provide direct access between the interchanges. The braided ramps on the south side of I-40 would be identical to Alternative A-1.

Alternative A-3

Alternative A-3, shown on Figure 2-5a, would be a fully directional interchange that would provide direct ramp connections between I-26, I-40 and the proposed I-26/I-240 combined roadway, including the movements that are currently not provided by the existing interchange. For Alternative A-3, the I-26/I-40/I-240 interchange would essentially be identical to alternatives A-1 and A-2, with the exception being the area between the I-26/I-40/I-240 interchange and the NC 191 (Brevard Road) interchange to the east along I-40. The I-40 interchange at NC 191 (Brevard Road) would have the same general configuration as Alternative A-2 but would not include the C/D roadway along the north side of I-40 westbound that would remove the weaving traffic from the through traffic. Direct access between the interchanges would be provided through a weaving section between the NC 191 (Brevard Road) entrance loop and the exit ramp to I-26 and I-240. This weaving section would occur along the I-40 westbound lanes. The braided ramps on the south side of I-40 would be identical to Alternatives A-1 and A-2.

Alternative B

Alternative B, shown on Figure 2-5b, would be a semi-directional interchange that would provide five of the eight ramp movements with directional ramps while the remaining three movements would be provided by semi-direct loop ramps. This alternative would include a loop in the northwest quadrant that would serve the I-40 westbound to I-26 eastbound traffic, a loop in the southwest quadrant that would serve the I-26 eastbound/I-240 westbound to I-40 eastbound movement, and a loop in the northeast quadrant that would serve the I-26 westbound to I-40 westbound traffic. This configuration would result in weaving sections at two locations formed between the back-to-back loops (loops located in adjacent quadrants that generate a successive loop configuration) both along I-40 westbound and along I-26 eastbound/I-240 westbound. To address the weaving sections, C/D roadways would be included for this alternative. The I-26 eastbound/I-240 westbound C/D would exit to the north of the I-26/I-40/I-240 interchange and would serve all traffic bound for I-40. The I-40 westbound C/D would exit east of the NC 191 (Brevard Road) interchange and would serve all traffic bound for



North Carolina Department of Transportation

Legend

- Section C Preliminary Study Alternative
- Interstate
- US Route
- NC Route
- State Route
- Local Road
- Railroad
- Streams (non-delineated)
- Project Study Area
- Water
- Municipal Boundaries

Date: May 2015

0 0.25 0.5 Miles

I-26 Asheville Connector
Buncombe County

STIP Project No. I-2513

Figure 2-5b

Section C Preliminary Study Alternatives

NC 191 (Brevard Road), I-26 and I-40, as well as all traffic entering from NC 191 (Brevard Road), before merging again with I-40 slightly west of the back-to-back loops. A third C/D roadway would be included along I-40 eastbound that would exit slightly west of the entrance loop from I-26/I-240 and would serve all traffic bound for NC 191 (Brevard Road), as well as the traffic entering I-40 eastbound from I-26 and I-240. The C/D roadway would merge again with I-40 eastbound slightly west of the French Broad River bridge crossing. The NC 191 (Brevard Road) interchange with I-40 would maintain the existing configuration but would be reconstructed to meet current design standards.

Alternative C-1

Alternative C-1, shown on Figure 2-5b, would be a semi-directional interchange that would provide six of the eight ramp movements with directional ramps while the remaining two movements would be provided by semi-direct loop ramps. This alternative would include a loop in the northwest quadrant that would serve the I-40 westbound to I-26 eastbound traffic and a loop in the southwest quadrant that would serve the I-26 eastbound/I-240 westbound to I-40 eastbound movement. This configuration would result in a weaving section between the back-to-back loops (loops located in adjacent quadrants that generate a successive loop configuration). To address the weaving section, a C/D roadway would be included that would exit I-26 eastbound/I-240 westbound north of the I-26/I-40/I-240 interchange and would serve all traffic bound for I-40 before re-entering I-26 eastbound south of the I-26/I-40/I-240 interchange. For Alternative C-1, the I-40 interchange at NC 191 (Brevard Road) would be revised from the current partial cloverleaf configuration to a conventional diamond interchange configuration with braided ramps. The braided ramps on the north side of I-40 grade separate the I-40 westbound exit ramp to I-240 eastbound/I-26 westbound from the I-40/NC 191 (Brevard Road) entrance ramp to I-40. This configuration would not have a direct connection to I-240 eastbound/I-26 westbound from NC 191 (Brevard Road) via I-40. The result of this lack of connection would require vehicles to continue north along NC 191 (Brevard Road) to the I-26/I-240 interchange with NC 191 (Brevard Road) to access I-26/I-240. The braided ramps on the south side of I-40 would include the I-40 eastbound exit ramp to NC 191 (Brevard Road) grade separated below the entrance ramp to I-40 eastbound from I-26 and I-240. This configuration would not have a direct connection to NC 191 (Brevard Road) from I-26 or I-240. The result of this lack of access would require vehicles to exit at either the I-26 exit to NC 191 (Brevard Road) to the south of the I-26/I-40/I-240 interchange or the I-26/I-240 interchange with NC 191 (Brevard Road) to the north.

Alternative C-2

Alternative C-2, shown on Figure 2-5b, would be a semi-directional interchange that would provide six of the eight ramp movements with directional ramps while the remaining two movements would be provided by semi-direct loop ramps. Alternative C-2 would have the same general configuration for the I-26/I-40/I-240 interchange as Alternative C-1, with two semi-direct loop movements in the northwest and southwest quadrants. Alternative C-2 would include a C/D roadway along I-26 eastbound to accommodate I-40 traffic bond for I-26 eastbound and I-26 eastbound traffic exiting toward I-40 eastbound. The C/D roadway exits I-26 eastbound/I-240 westbound just east of South Bear Creek Road and re-enters south of the I-26/I-40/I-240 interchange. Alternative C-2 would include C/D roadways on both the north and south sides of I-40 that connect the I-26/I-40/I-240 interchange and the NC 191 (Brevard Road) interchange. The NC 191 (Brevard Road) interchange would maintain the existing configuration but would be reconstructed to meet current design standards. The C/D roadway on the north side of I-40 would begin to the east of the NC 191 (Brevard Road) interchange, and would serve all traffic

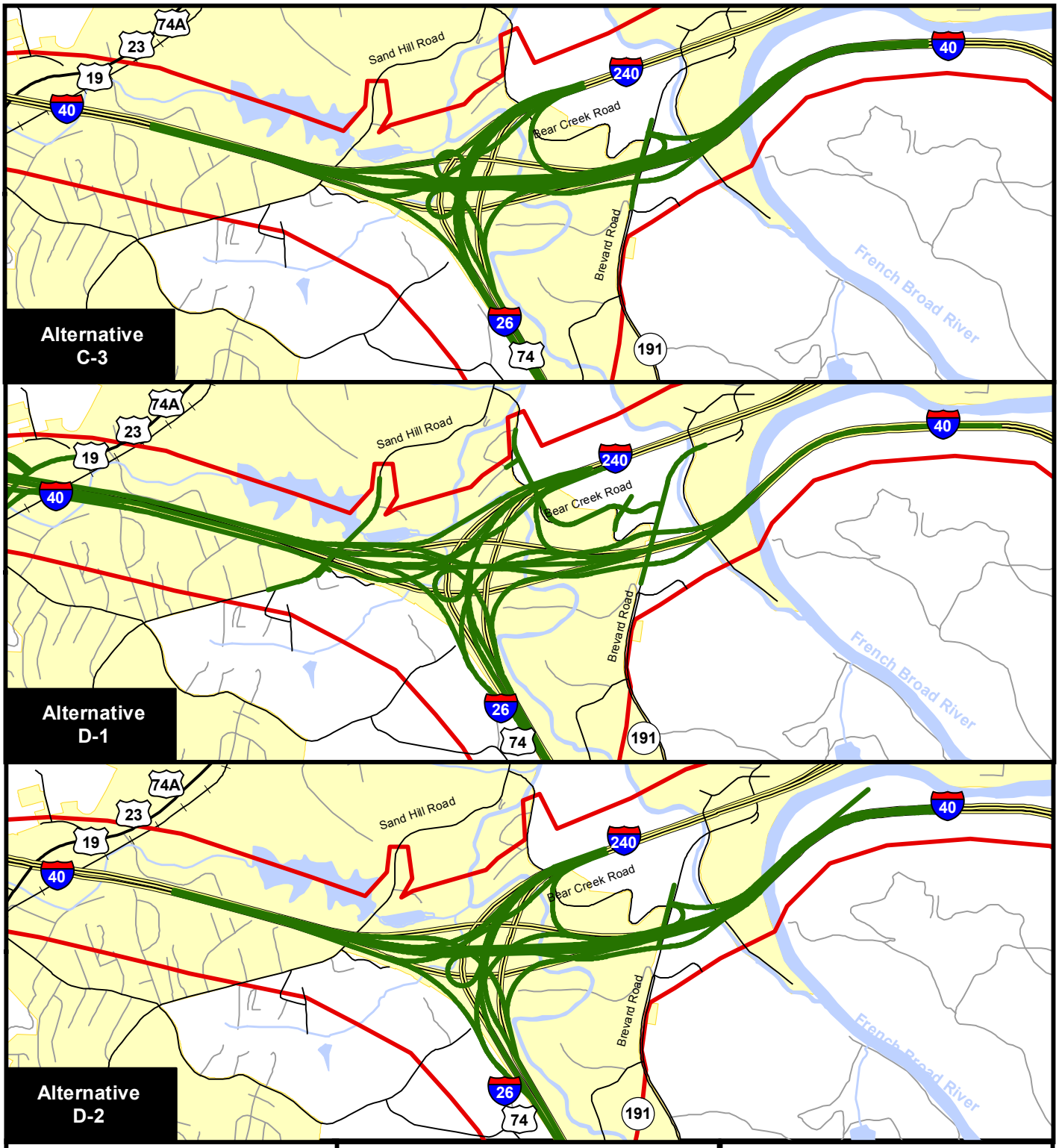
bound for NC 191 (Brevard Road), I-26 and I-240; as well as traffic destined for I-40 westbound from NC 191 (Brevard Road). The C/D roadway would merge with I-40 westbound slightly west of the I-26/I-40/I-240 interchange loop in the northwest quadrant. The C/D roadway on the south side of I-40 would accommodate traffic from I-26, and alleviate weaving between the on-ramp from I-26 and off-ramp to NC 191 (Brevard Road). The C/D would begin west of the I-26/I-40/I-240 interchange, I-40 and NC 191 (Brevard Road), and would re-enter I-40 east of the NC 191 (Brevard Road) interchange. The C/D roadways accommodate the weaving sections between the NC 191 (Brevard Road) interchange and the I-26/I-40/I-240 interchange and provide direct access between the interchanges.

Alternative C-3

Alternative C-3, shown on Figure 2-5c, would be a semi-directional interchange that would provide six of the eight ramp movements with directional ramps while the remaining two movements would be provided by semi-direct loop ramps and would have the same general configuration of the I-26/I-40/I-240 interchange as Alternative C-2, with two semi-direct loop movements in the northwest and southwest quadrants and a C/D roadway to accommodate the weaving section. Additionally, the C/D roadways along the north and south sides of I-40 would be generally the same as in Alternative C-2. The main difference between Alternative C-2 and C-3 would be that the NC 191 (Brevard Road) interchange would be modified from the current configuration to a modified diamond interchange configuration with single ramps in the southwest and southeast quadrants and a ramp with an internal loop in the northeast quadrant. Due to the ramp in the southwest quadrant, the use of braided ramps within the C/D roadway on the south side of I-40 would be included in the design. Additionally, the use of a slip ramp connecting the braided ramps that would provide direct access between the interchanges was evaluated. However, the use of a slip ramp was not practical from a geometric design standpoint and was removed from consideration. Therefore, the resulting braided ramp configuration would not provide direct access between I-26 westbound and NC 191 (Brevard Road) via I-40.

Alternative D-1

Alternative D-1, shown on Figure 2-5c, would be a semi-directional interchange that would provide seven of the eight ramp movements with directional ramps with the remaining movement provided by a semi-direct loop ramp. This alternative would include a loop in the southwest quadrant that would serve the I-26 eastbound/I-240 westbound to I-40 eastbound movement. Alternative D-1 modifies the I-40/NC 191 (Brevard Road) interchange from the current partial cloverleaf configuration to a conventional diamond interchange configuration with braided ramps. The design would include two pairs of braided ramps along I-40, on both the north and south sides of the interstate. The braided ramps on the north side of I-40 would grade separate the I-40 westbound exit ramp that would serve traffic destined for I-26 and I-240 from the entrance ramp to I-40 westbound from NC 191 (Brevard Road). This configuration would result in no direct connection to I-26 or I-240 from NC 191 (Brevard Road) via I-40. This lack of connection would require vehicles to use the I-26/I-240 interchange with NC 191 (Brevard Road) to the north or the I-26/NC 191 (Brevard Road) interchange to the south to access I-26 or I-240. The braided ramps on the south side of I-40 separate the I-40 eastbound exit ramp to NC 191 (Brevard Road) from the entrance ramp to I-40 eastbound from I-26 and I-240. This configuration would result in no direct connection to NC 191 (Brevard Road) from I-26 or I-240.



North Carolina Department of Transportation

Legend

- Section C Preliminary Study Alternatives
- Interstate
- US Route
- NC Route
- State Route
- Local Road
- Railroad
- Streams (non-delineated)
- Project Study Area
- Water
- Municipal Boundaries

Date: May 2015

N W E S

0 0.25 0.5 Miles

I-26 Asheville Connector
Buncombe County

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Figure 2-5c

Section C Preliminary Study Alternatives

The result of this lack of access would require vehicles to exit at either the I-26 exit to NC 191 (Brevard Road) to the south of the I-26/I-40/I-240 interchange or the I-26/I-240 interchange with NC 191 (Brevard Road) to the north.

Alternative D-2

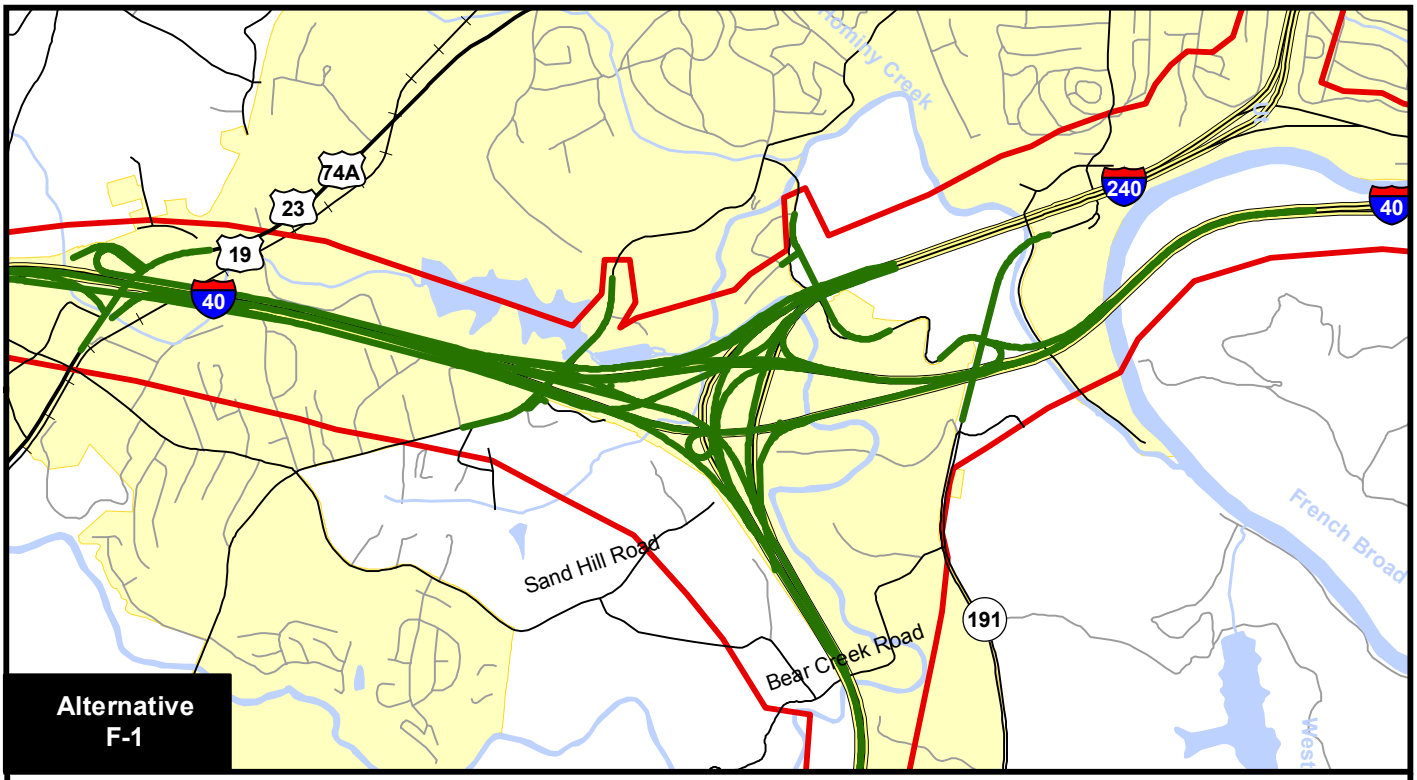
Alternative D-2, shown on Figure 2-5c, would be a semi-directional interchange that would provide seven of the eight ramp movements with directional ramps, with the remaining movement provided by a semi-direct loop and would be essentially identical to Alternative D-1 with the exception of the area between the I-26/I-40/I-240 interchange and the NC 191 (Brevard Road) interchange to the east along I-40. The I-40 interchange at NC 191 (Brevard Road) would be revised from the current partial cloverleaf configuration to a modified diamond interchange configuration with single ramps in the southwest and southeast quadrants and a ramp with an internal loop in the northeast quadrant. The design would include a C/D roadway along I-40 on both the north side of I-40 and the south side of I-40, with braided ramps along the south side of I-40. The C/D roadway along the north side would exit I-40 westbound, east of the NC 191 (Brevard Road) interchange, and would provide the connection to NC 191 (Brevard Road), I-26 and I-240; before re-entering I-40 slightly to the east of the existing I-26/I-40/I-240 interchange. This configuration would create a weaving movement on the C/D between the NC 191 (Brevard Road) entrance loop and the exit ramp to I-26 and I-240; however, the C/D configuration would provide direct access between the interchanges. The braided ramps on the south side of I-40 would be identical to Alternative D-1, with the exception of the movements being completed along a C/D roadway that would exit to the west of the I-26/I-240 crossing and serve all traffic bound for NC 191 (Brevard Road). The design also included the consideration of a slip ramp connecting the braided ramps that would provide direct access between the interchanges. The use of a slip ramp was not practical from a geometric design standpoint and was removed from consideration. Therefore, the braided ramp configuration would not provide direct access between I-26 westbound and NC 191 (Brevard Road) via I-40.

Alternative F-1

Alternative F-1, shown on Figure 2-5d, was developed to potentially minimize impacts to the human and natural environment as well as to provide a lower cost option for consideration. The configuration of the interchange is similar to the existing interchange with the exception of the following additions. One is the addition of the two missing movements to provide for access in all directions at the I-26/I-40/I-240 interchange. To provide access between I-26 eastbound/I-240 westbound and I-40 eastbound, a loop would be added in the southwest quadrant. To provide access from I-40 westbound to I-26 westbound/I-240 eastbound, a ramp would be added in the northeast quadrant. The interchange of I-40 with NC 191 (Brevard Road) would maintain its existing configuration, but would require the ramp in the northeast quadrant to be realigned in order to provide adequate storage length. Additional turn lanes on the ramps and along NC 191 (Brevard Road) would also be provided.

Section A

The only build alternative in Section A, The I-240 Widening Alternative, includes a best-fit alignment for the widening and reconstruction of existing I-240 from a four-lane freeway to an eight-lane freeway. This alternative is shown on Figure 2-6. The reconstructed roadway would carry both I-26 and I-240 throughout the length of Section A and would be compatible with all of the proposed alternatives for Section B and Section C. The Section A alternative would include



North Carolina Department of Transportation

Legend

- Section C Preliminary Study Alternatives
- Interstate
- US Route
- NC Route
- State Route
- Local Road
- Railroad
- Streams (non-delineated)
- Project Study Area
- Water
- Municipal Boundaries

Date: May 2015

N W E S

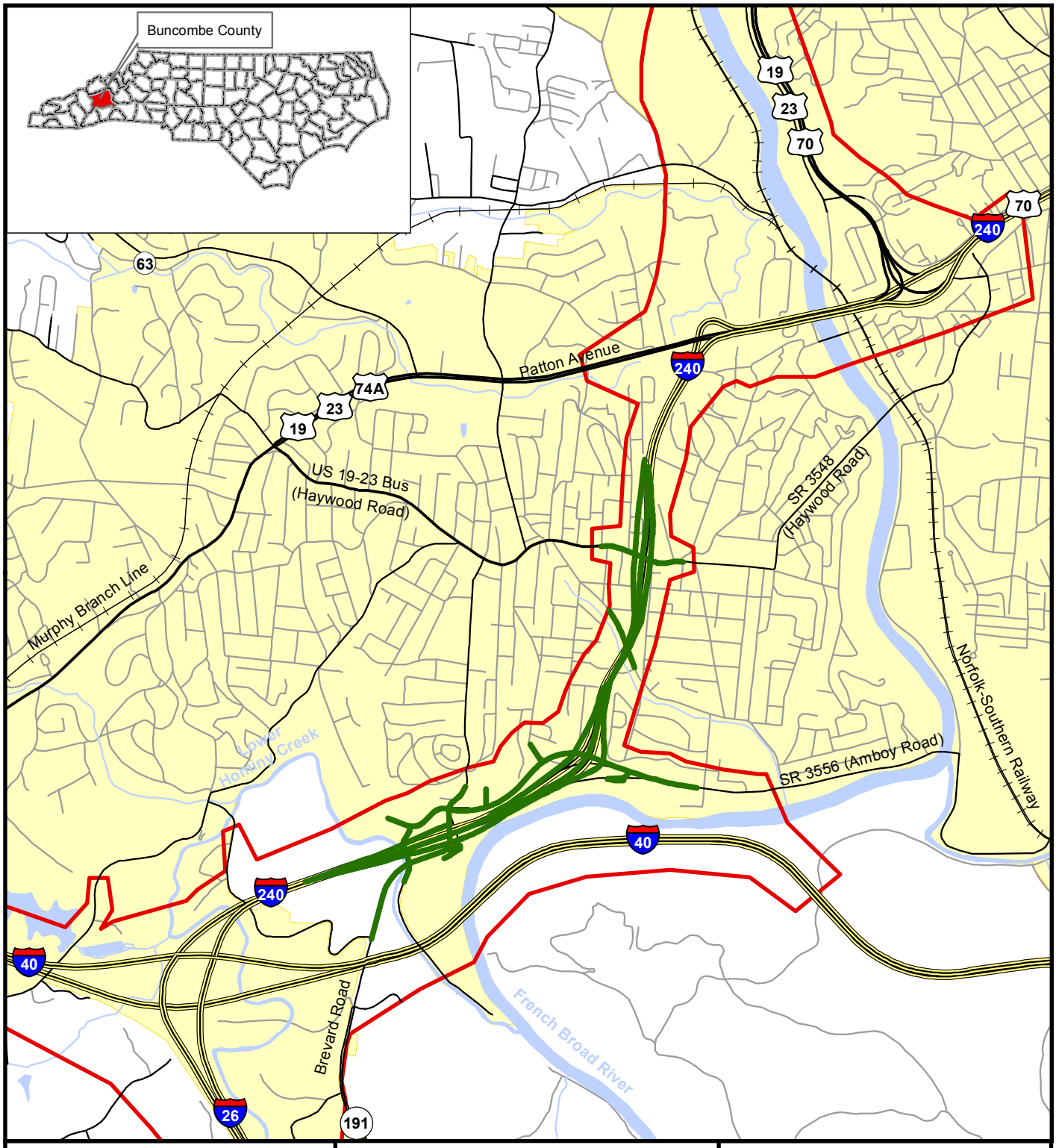
0 0.25 0.5 Miles

I-26 Asheville Connector
Buncombe County

STIP Project No. I-2513

Figure 2-5d

Section C Preliminary Study Alternatives



North Carolina Department of Transportation

Legend

- Section A Preliminary Study Alternative
- Interstate
- US Route
- NC Route
- State Route
- Local Road
- Railroad
- Streams (non-delineated)
- Project Study Area
- Water
- Municipal Boundaries

Date: May 2015

N W E S

0 0.25 0.5 Miles

I-26 Asheville Connector
Buncombe County

STIP Project No. I-2513

Figure 2-6

Section A
Preliminary Study Alternative

interchanges at NC 191 (Brevard Road), SR 3556 (Amboy Road), and US 19-23 Business (Haywood Road)

The proposed interchange of I-26/I-240 with NC 191 (Brevard Road) would provide for all movements except for the I-26 eastbound/I-240 westbound exit to NC 191 (Brevard Road). This movement would be removed from the existing configuration due to the close proximity between the NC 191 (Brevard Road) interchange and the proposed SR 3556 (Amboy Road) interchange. The missing movement would be accomplished by exiting at the SR 3556 (Amboy Road) interchange and following the extension of SR 3556 (Amboy Road) to the intersection with NC 191 (Brevard Road). The interchange would have typical diamond interchange ramps in the northwest, southwest and southeast quadrants. To provide adequate horizontal clearance and maintain traffic flow during the widening of I-240, the NC 191 (Brevard Road) bridge would be relocated to the west of its existing location and would be upgraded from the current two-lane cross section to carry six travel lanes. To provide for greater control of access along NC 191 (Brevard Road), concrete islands would be installed to separate traffic and limit turn movements in the vicinity of the interchange. The interchange ramps would also be lengthened to provide for greater acceleration and deceleration lengths.

The partial interchange of I-26/I-240 with SR 3556 (Amboy Road) would be upgraded to a full interchange with a conventional diamond configuration. The existing interchange does not provide for the I-240 westbound to SR 3556 (Amboy Road) movement or the SR 3556 (Amboy Road) to I-240 eastbound movement. Currently, SR 3556 (Amboy Road) terminates at I-240, creating a three-leg interchange. In addition to providing for all movements, the proposed design would include extending SR 3556 (Amboy Road) over I-26/I-240 and then continuing it parallel to I-26/I-240 to the existing intersection of NC 191 (Brevard Road) opposite Shelburne Road. The extension of SR 3556 (Amboy Road) would provide connections to Fairfax Avenue and Virginia Avenue, and would provide a link that would eliminate the existing weaving section along I-240 between SR 3556 (Amboy Road) and NC 191 (Brevard Road). The roadway extension would be a four-lane divided roadway and would include a new six-lane bridge over I-26/I-240. To provide for greater control of access along SR 3556 (Amboy Road), concrete islands would be installed to separate traffic and limit turn movements in the vicinity of the interchange.

Several scenarios to address the area between the existing I-240 westbound ramps between the NC 191 (Brevard Road) and SR 3556 (Amboy Road) interchanges have been considered. The existing left-hand entrance ramp from SR 3556 (Amboy Road) to I-240 westbound is in close proximity to the I-240 westbound exit to NC 191 (Brevard Road). Initially, the proposed configuration replaced the left-hand entrance ramp by providing a longer bridge over the combined I-26/I-240 roadway for the westbound SR 3556 (Amboy Road) traffic destined for eastbound I-26/westbound I-240. The I-26 eastbound/I-240 westbound exit ramp to NC 191 (Brevard Road) would be extended to exit I-240 before the proposed SR 3556 (Amboy Road) entrance ramp, creating a braided ramp configuration. This configuration also included a slip ramp that allowed westbound traffic from SR 3556 (Amboy Road) destined for NC 191 (Brevard Road) to cross over I-240 and intersect the Brevard Road exit ramp without entering westbound I-240. However, this proposed configuration was revised to the design detailed above after extensive coordination with the City of Asheville. The link would provide the same connection of SR 3556 (Amboy Road) to NC 191 (Brevard Road) that was available before the construction of I-240 in the 1960s.

The proposed interchange of I-26/I-240 with US 19-23 Business (Haywood Road) would upgrade the existing interchange with a tight urban diamond interchange (TUDI) configuration.

The existing interchange includes an exit from I-240 eastbound to Hanover Street that eventually intersects with Haywood Road to the north. Additionally, an existing entrance ramp to I-240 eastbound in the northeast quadrant serves two-way traffic. The proposed design would relocate the exit ramp in the southeast quadrant to intersect with Haywood Road. Hanover Street would become a cul-de-sac as it approaches Haywood Road. The two-way ramp in the northeast quadrant would be eliminated with the proposed design. Haywood Road would remain a two-lane roadway but would be widened in the vicinity of the interchange to allow for turn lanes. To provide adequate horizontal clearance and maintain traffic flow during the widening of I-240, the NC 191 (Brevard Road) bridge would be relocated slightly to the north of its existing location and would be upgraded to carry five travel lanes. Due to the proximity to the historic properties along Haywood Road, the proposed new bridge would overlap the location of the existing bridge and would require the use of phased construction. To provide for greater control of access along Haywood Road, concrete islands would be installed to separate traffic and limit turn movements in the vicinity of the interchange. The interchange ramps would also be lengthened to provide for greater acceleration and deceleration lengths.

Due to the close proximity of interchanges along the I-26/I-240 corridor, auxiliary lanes would be needed between some of the interchanges to provide an adequate weaving distance between entrance and exit ramps. An auxiliary lane would be included along I-26 westbound/I-240 eastbound between the I-26/I-40/I-240 interchange and the NC 191 (Brevard Road) interchange, and also between the NC 191 (Brevard Road) interchange and the SR 3556 (Amboy Road) interchange. Auxiliary lanes would be included along both directions of I-26/I-240 from the SR 3556 (Amboy Road) interchange to the US 19-23 Business (Haywood Road) interchange and again to the US 19-23-74A (Patton Avenue) interchange.

Section A of the proposed project also would include a new bridge along I-26/I-240 over Lower Hominy Creek including the ramps to the interchange of NC 191 (Brevard Road) with I-26/I-240.

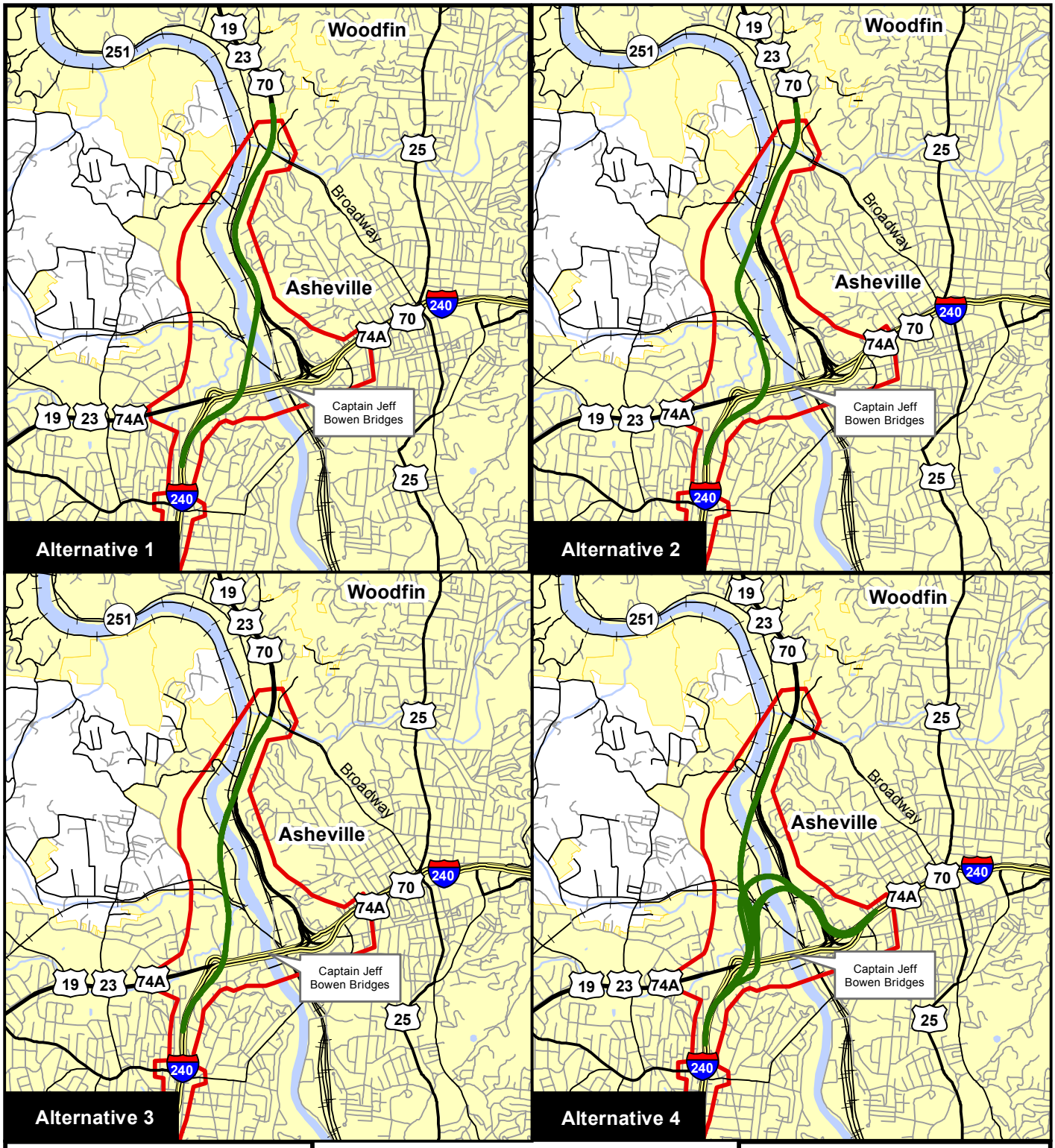
Section B

Section B of the proposed project would include the modification of the existing interchange of I-240 with US 19-23-74A (Patton Avenue) and the extension of I-26 on new location across the French Broad River to US 19-23-70. From the I-26/I-40/I-240 interchange, the proposed project has included I-26 and I-240 combined as one roadway. At the existing I-240 interchange with US 19-23-74A (Patton Avenue), the two interstates would separate with I-26 continuing to the north on new location and I-240 continuing to the east. The interchange area is made more complex due to the mixing of local traffic on Patton Avenue with freeway traffic along the Captain Jeff Bowen Bridges.

This section presents the nine alternatives that were considered for Section B.

Alternative 1

Alternative 1, shown on Figure 2-7a, begins south of the existing interchange of I-240 with US 19-23-74A (Patton Avenue), where I-26 and I-240 would be combined as one roadway. The combined roadway of I-26 westbound/I-240 eastbound separates slightly to the south of the US 19-23-74A (Patton Avenue) interchange, with I-26 continuing to the north and I-240 exiting toward the east across the Captain Jeff Bowen Bridges. Traffic destined for westbound US 19-23-74A (Patton Avenue) from I-26 westbound/I-240 eastbound would be accommodated from I-26 westbound via a loop in the northeast quadrant of the interchange. Eastbound Patton Avenue traffic would cross under I-26 and then would merge with I-240 eastbound traffic west of



North Carolina Department of Transportation

Legend

- Section B Preliminary Study Alternative
- Interstate
- US Route
- NC Route
- State Route
- Local Road
- Railroad
- Streams (non-delineated)
- Project Study Area
- Water
- Municipal Boundaries

Date: May 2015

N W E S

0 0.5 1 Miles

I-26 Asheville Connector
Buncombe County

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Figure 2-7a

Section B
Preliminary Study Alternatives

the existing Captain Jeff Bowen Bridges. Westbound traffic crossing the Captain Jeff Bowen Bridges on I-240 and Patton Avenue would cross under I-26 and then split, with Patton Avenue continuing to the west and I-240 turning southward and merging with I-26 eastbound south of US 19-23-74A (Patton Avenue). The proposed design would not provide access from I-240 westbound to I-26 westbound at this interchange, and would require that traffic bound for I-26 westbound utilize the I-240 interchange with US 19-23-70/Patton Avenue east of the French Broad River. Local traffic on the west side of the French Broad River would be maintained by reconfiguring the existing interchange to accommodate the local access.

From the I-26/I-240 interchange with US 19-23-74A (Patton Avenue), I-26 would continue to the north on new location across the Westgate Shopping Center property and would cross the French Broad River approximately 2,000 feet north of the Captain Jeff Bowen Bridges. East of the French Broad River, I-26 combines with US 19-23-70 approximately one mile south of the SR 1781 (Broadway) interchange. Where I-26 ties to US 19-23-70, the alignment of I-26 would become the through movement and US 19-23-70 would merge into I-26. The interchange would not allow I-26 westbound traffic to access US 19-23-70 in the southbound direction, nor would it allow access from US 19-23-70 northbound to access I-26 eastbound. To make these movements, the traffic would utilize the I-26/I-240 interchange with US 19-23-74A (Patton Avenue) or the I-240 interchange with US 19-23-70/Patton Avenue. These movements would essentially be redundant and would only be utilized by motorists who missed an exit.

For Alternative 1, the interchange of I-240 with US 19-23-70/Patton Avenue east of the French Broad River would not be modified. Additionally, freeway traffic on I-240 and the local traffic on Patton Avenue would not be separated under this alternative - both would use the Captain Jeff Bowen Bridges. The proposed design would include a bridge carrying I-26 that would span SR 1338 (Emma Road), the main line of Norfolk Southern Railways, the French Broad River, the NS Craggy Mountain spur line of the Norfolk Southern Railway and a relocated SR 1477 (Riverside Drive).

Alternative 2

Alternative 2, shown on Figure 2-7a, is similar to Alternative 1 except that the new location portion of I-26 would parallel the western bank of the French Broad River and the main line of the Norfolk Southern Railway before crossing the river approximately one mile north of the Captain Jeff Bowen Bridges. East of the French Broad River, I-26 combines with US 19-23-70 approximately 2,500 feet south of the SR 1781 (Broadway) interchange. Where I-26 ties to US 19-23-70, the alignment of I-26 would become the through movement and US 19-23-70 would be bifurcated and would merge into I-26. The existing I-240 interchange with US 19-23-70/Patton Avenue east of the French Broad River would not be modified, as the access provided for Alternative 2 would be the same as for Alternative 1.

Alternative 2 would include a bridge carrying I-26 over both the Blue Ridge Southern Railroad of Norfolk Southern Railway and SR 1338 (Emma Road), and a bridge carrying I-26 farther north over the main line of Norfolk Southern Railway, the French Broad River, the NS Craggy Mountain spur line of Norfolk Southern Railway and SR 1477 (Riverside Drive).

Alternative 3

Alternative 3, shown on Figure 2-7a, is similar to Alternatives 1 and 2 but would move the alignment of I-26 to the west as it would cross beneath Patton Avenue. The Alternative 3 alignment would cross the edge of the Crowne Plaza Resort golf course, but it would not affect

the Westgate Shopping Center. The alignment would parallel the French Broad River and the main line of the Norfolk Southern Railway before turning toward the east and crossing the French Broad River at the same location as Alternative 2. All improvements on the east side of the French Broad River, including the bridge over the French Broad River, would be identical to Alternative 2. Due to the topography and existing infrastructure, Alternative 3 would require an approximately 2,300-foot bridge that would span from slightly north of Patton Avenue to north of SR 1338 (Emma Road) crossing the Blue Ridge Southern Railroad of the Norfolk Southern Railway and SR 1338 (Emma Road). The I-240 interchange with US 19-23-70/Patton Avenue would also not be modified for Alternative 3.

Alternative 4

Alternative 4, shown on Figure 2-7a, was developed to provide an alternative that would separate the local traffic on Patton Avenue from the freeway traffic on I-26 and I-240. In order to separate the routes, construction of a new bridge crossing of the French Broad River would be required. Additionally, to separate the traffic, the interchange of I-240 with US 19-23-70/Patton Avenue on the east side of the French Broad River would be modified. For Alternative 4, the Captain Jeff Bowen Bridges would accommodate the local Patton Avenue traffic and two new flyover bridges north of the Captain Jeff Bowen Bridges would carry the I-240 traffic. The alignment of I-26 is similar to that of Alternative 3 and would cross the edge of the Crowne Plaza Resort golf course. The interchange of I-26/I-240 with US 19-23-74A (Patton Avenue) would consist of a diamond interchange with Patton Avenue crossing over the freeway. The Patton Avenue diamond interchange overlaps the interchange that separates I-26 and I-240 from their common alignment through the use of braided ramps. The braided ramps also include slip ramps between the braided sections that allow for access between Patton Avenue and I-240. Once I-240 eastbound separates from I-26 westbound it would cross the French Broad River as a flyover at a location approximately 2,400 feet north of the existing Captain Jeff Bowen Bridges. The flyover from I-240 westbound to I-26 eastbound would cross the French Broad River on a flyover ramp approximately 3,200 feet north of the existing Captain Jeff Bowen Bridges.

The alignment of I-26 beyond the I-240 flyovers is similar to Alternative 3 and the bridge crossing and proposed design on US 19-23-70 at the SR 1781 (Broadway) interchange is identical to Alternatives 2 and 3. The interchange of I-240 with US 19-23-70/Patton Avenue, east of the French Broad River, would be reconfigured with I-240, turning to the north along the existing US 19-23-70 alignment and becoming the through movement with ramps tying to and from US 19-23-70 near the existing Atkinson Street overpass. The revised interchange would only provide access to and from Patton Avenue and the Hillcrest Apartments through an exit ramp from I-240 eastbound/US 19-23-70 southbound and an entrance ramp to I-240 westbound/US 19-23-70 northbound. Traffic on Patton Avenue destined for I-240 eastbound would use the SR 3548 (Clingman Avenue) entrance ramp. Traffic destined for Patton Avenue from I-240 westbound would have to either exit at the Montford Avenue interchange or continue to the braided interchange on the west side of the French Broad River.

Due to the topography and existing infrastructure in the vicinity of the I-26 extension, the mainline of I-26 would require an approximately 2,300-foot bridge and nearly all of the braided ramps would be required to be constructed as bridges. Alternative 4 would include a total of three new crossings of the French Broad River, including a pair of curved flyover bridges that span the Norfolk Southern Railway, SR 1338 (Emma Road), the French Broad River, the Norfolk Southern Railway, NS Craggy Mountain spur line and SR 1477 (Riverside Drive).

Alternative 5

Alternative 5, shown on Figure 2-7b, is an additional alternative that was developed to separate local traffic on Patton Avenue from the freeway traffic on I-26 and I-240. The major difference in this alternative is that it would construct a parallel bridge slightly to the south of the Captain Jeff Bowen Bridges that would serve the Patton Avenue traffic while maintaining I-240 traffic on the Captain Jeff Bowen Bridges. The alignment of the I-26 extension is similar to Alternative 3 and would cross the edge of the Crowne Plaza Resort golf course. The portion from just west of the French Broad River to US 19-23-70 would be identical to Alternatives 2, 3 and 4. Alternative 5 includes an approximately 2,300-foot bridge carrying I-26, that would span from slightly north of Patton Avenue to north of SR 1338 (Emma Road), crossing the Blue Ridge Southern Railroad of Norfolk Southern Railway and SR 1338 (Emma Road). It would include bridging a portion of the Patton Avenue interchange ramps.

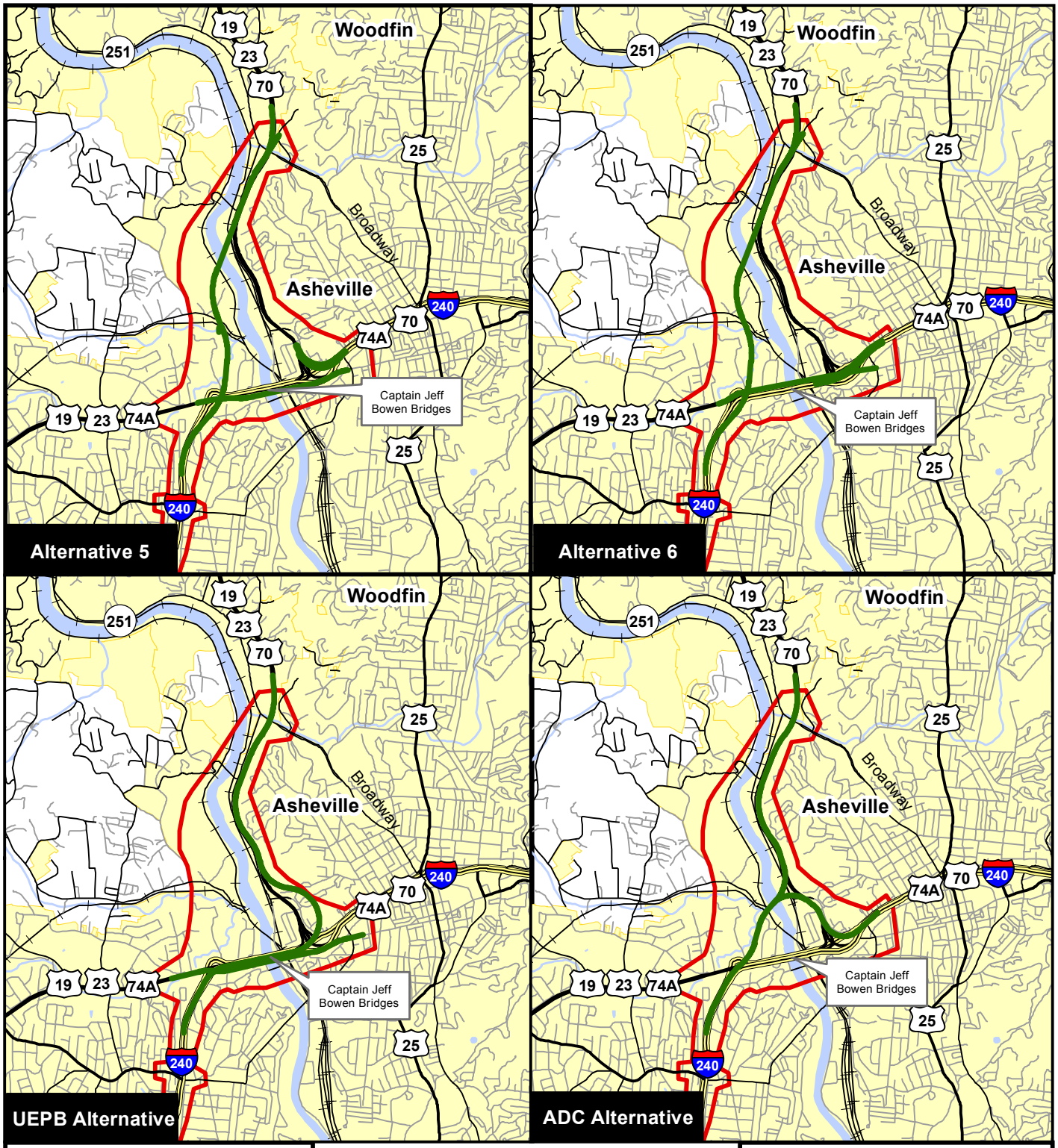
To accommodate the Patton Avenue traffic on the south side of the Captain Jeff Bowen Bridges, the alignment of Patton Avenue would be shifted to the south and would cross over I-26. The interchange of US 19-23-74A (Patton Avenue) with I-26 would be a diamond interchange with the ramp terminals west of I-26 offset from each other due to the I-240 westbound flyover ramp location. Within the I-26 interchange with US 19-23-74A (Patton Avenue) the separation of I-240 from the common alignment with I-26 would be accomplished through flyover ramps that would cross over both I-26 and Patton Avenue. The interchange of I-240 with US 19-23-70/Patton Avenue east of the French Broad River would also be modified under this alternative to separate the local and freeway traffic. The revised interchange would provide a directional ramp between I-240 westbound and US 19-23-70 northbound, a directional ramp from US 19-23-70 southbound to I-240 eastbound, and a ramp from Patton Avenue to I-240 eastbound. Movements from I-240 eastbound to US 19-23-70 northbound, from US 19-23-70 southbound to I-240 westbound and from I-240 westbound to Patton Avenue, would be not included in the interchange.

Alternative 6

Alternative 6, shown on Figure 2-7b, was also developed to separate the local traffic from the freeway traffic and is a variation of Alternative 5. The major difference between Alternative 6 and Alternative 5 is that the parallel bridge carrying Patton Avenue traffic would be flipped to the north side of the Captain Jeff Bowen Bridges and would cross through several buildings in the Hillcrest Apartment complex. The alignment of the I-26 extension and all of the proposed construction west of the river, including the French Broad River bridge crossing, would be the same as for Alternative 5. The proposed design would include a partial cloverleaf interchange with ramps and loops on the north side of Patton Avenue to serve local traffic. The interchange of I-240 with US 19-23-70/Patton Avenue east of the French Broad River would also be modified to separate local traffic from freeway traffic by providing grade separations between I-240 and Patton Avenue without connections between the roadways.

Upgrade Existing with Parallel Bridge Alternative

The Upgrade Existing with Parallel Bridge Alternative, shown on Figure 2-7b, would build upon the concept of upgrading the existing facilities and combine it with providing a parallel bridge to serve the local Patton Avenue traffic. The alternative would continue the combined roadways of I-26 and I-240 across the Captain Jeff Bowen Bridges to the east side of the French Broad River where the existing I-240 interchange with US 19-23-70/Patton Avenue would be upgraded with



North Carolina Department of Transportation

Legend

- Section B Preliminary Study Alternative
- Interstate
- US Route
- NC Route
- State Route
- Local Road
- Railroad
- Streams (non-delineated)
- Project Study Area
- Water
- Municipal Boundaries

Date: May 2015

N W E S

0 0.5 1 Miles

I-26 Asheville Connector
Buncombe County

STIP Project No. I-2513

Figure 2-7b

Section B
Preliminary Study Alternatives

I-26 turning to the north along US 19-23-70 and I-240 continuing east into Asheville. The existing I-240 interchange with US 19-23-74A (Patton Avenue) west of the river would be upgraded and Patton Avenue would be relocated to the south of its existing alignment and would include a new bridge across the French Broad River parallel to the Captain Jeff Bowen Bridges (similar to Alternative 5). The alternative would also include the widening of the US 19-23-70 corridor to an eight-lane cross section to the SR 1781 (Broadway) interchange.

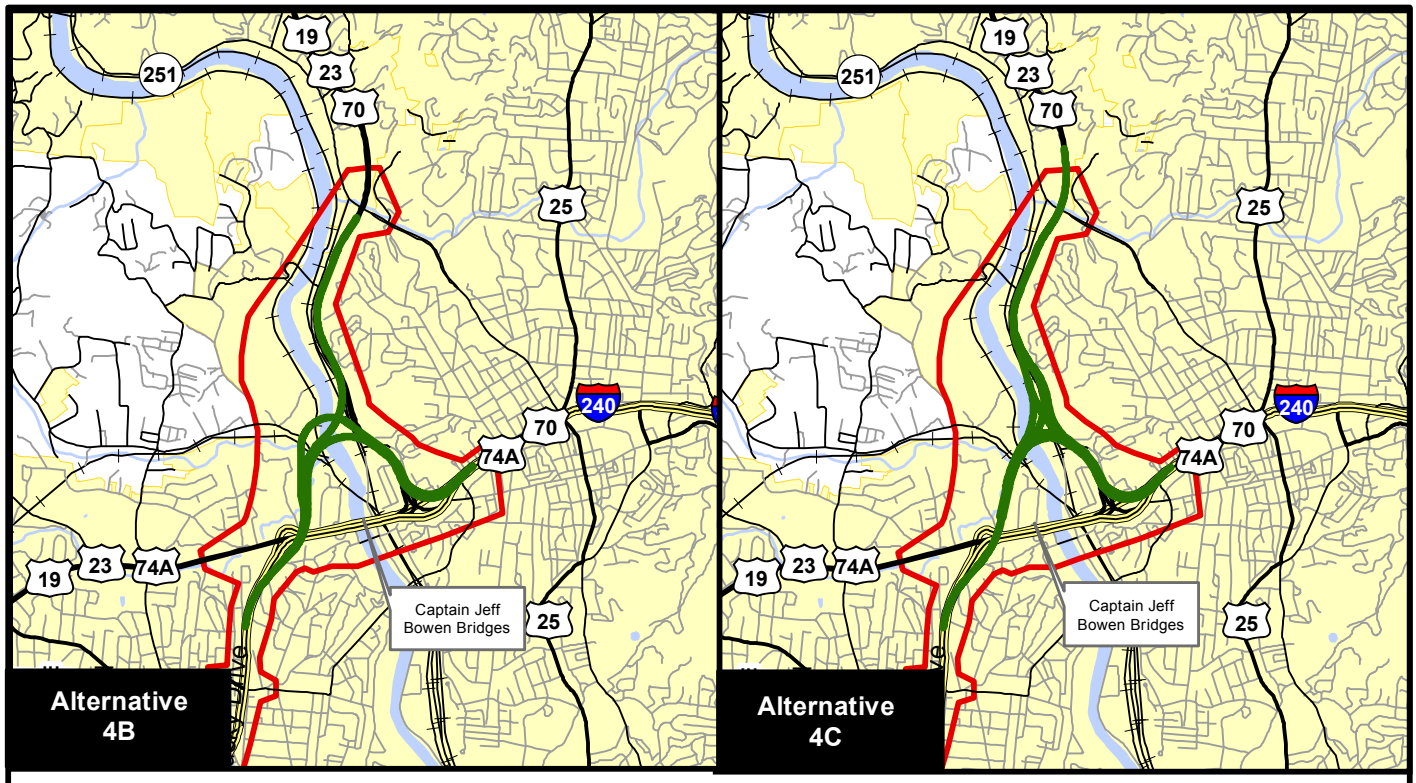
Asheville Design Center Alternative

The ADC proposed an alternative, shown on Figure 2-7b and known as the ADC Alternative, which was developed as a modification to Alternative 4. The goal of the alternative is to separate out the interstate traffic from the local Patton Avenue traffic while minimizing the footprint of the facility, thus reducing the effects on land use. The ADC Alternative would begin north of the I-26/I-240 interchange with US 19-23 Business (Haywood Road) and would continue to the north crossing Patton Avenue with a combined I-26/I-240 roadway. The existing Patton Avenue roadway and Captain Jeff Bowen Bridges would be converted to serve local traffic and would include a half cloverleaf interchange configuration with the ramps and internal loops located on the south side of Patton Avenue. The combined I-26/I-240 roadway would continue north, then turn toward the east, and cross the French Broad River approximately 2,000 feet north of the Captain Jeff Bowen Bridges. The combined roadway would transition to a dual-level bridge structure with traffic to and from I-26 on the bottom level and traffic bound for I-240 on the top level. The dual-level bridge would cross the French Broad River and would include a three-leg interchange with US 19-23-70, with I-26 traffic continuing north and I-240 traffic turning south. The I-26/US 19-23-70 corridor would be widened north of the new interchange to the SR 1781 (Broadway) interchange and the relocated section of I-240 would include a reconfiguration of the existing I-240 interchange with US 19-23-70/Patton Avenue. The existing I-240 interchange with US 19-23-70/Patton Avenue would be reconfigured to connect the relocated section of I-240 with Patton Avenue and Hill Street.

Alternative 4-B

Alternative 4-B, shown on Figure 2-7c, is similar to Alternative 4, except the interchange of I-26/I-240 and US 19-23-74A (Patton Avenue) would be modified from a full diamond interchange to have a conventional diamond interchange on the east side and a loop and a ramp in the southwest quadrant. Along with modifying the interchange of I-26/I-240 and US 19-23-74A (Patton Avenue), the braided ramps in the I-26 eastbound/I-240 westbound direction would be removed. Similar to Alternative 4, I-26 and I-240 would split just north of US 19-23-74A (Patton Avenue). I-240 would cross over the French Broad River on two flyover bridges north of the Captain Jeff Bowen Bridges (which would only carry local traffic).

From the I-26/I-240 interchange with US 19-23-74A (Patton Avenue), I-26 would continue to the north on new location and cross over the French Broad River approximately 2,700 feet north of the Captain Jeff Bowen Bridges. I-26 would combine with US 19-23-70 approximately 2,500 feet south of the SR 1781 (Broadway) interchange. Where I-26 ties to US 19-23-70, the alignment of I-26 would become the through movement and US 19-23-70 would become bifurcated and would merge into I-26. The interchange would not allow I-26 westbound traffic to access US 19-23-70 in the southbound direction, nor would it allow access from US 19-23-70 northbound to access I-26 eastbound. To make these movements, the traffic would utilize the I-26/I-240 interchange with US 19-23-74A (Patton Avenue) or the I-240 interchange with US 19-23-70/Patton Avenue. These movements would essentially be redundant and would only



North Carolina Department of Transportation

Legend

- Section B Preliminary Study Alternative
- Interstate
- US Route
- NC Route
- State Route
- Local Road
- Railroad
- Streams (non-delineated)
- Project Study Area
- Water
- Municipal Boundaries

Date: May 2015

N W E S

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I-26 Asheville Connector
Buncombe County

STIP Project No. I-2513

Figure 2-7c

Section B Preliminary Study Alternative

be utilized by motorists who missed an exit. The interchange of I-240 with US 19-23-70/Patton Avenue east of the French Broad River would be identical to the design in Alternative 4.

The proposed design would include a total of three new bridge crossings of the French Broad River, including a bridge carrying I-26 and two new flyover bridges that would span SR 1338 (Emma Road), the main line of Norfolk Southern Railways, the French Broad River, the Norfolk Southern Railway, the NS Craggy Mountain spur line and SR 1477 (Riverside Drive).

Alternative 4-C

Alternative 4-C is similar to Alternative 4-B, with the exception of the interchange design of I-26/I-240 and US 19-23-74A (Patton Avenue). The interchange would be modified to have a conventional diamond interchange on the west side and a loop and a ramp in the southeast quadrant. From the I-26/I-240 interchange with US 19-23-74A (Patton Avenue), I-26 would continue to the north on new location and cross over the French Broad River approximately 2,700 feet north of the Captain Jeff Bowen Bridges (which would only carry local traffic). I-26 and I-240 would split north of US 19-23-74A (Patton Avenue) at the freeway crossing over French Broad. The two bridges over French Broad River connecting I-26/I-240 to US 19-23-70 will be of approximate length of over 4,000 feet. I-26 would combine with US 19-23-70 approximately 4,000 feet south of the SR 1781 (Broadway) interchange. Unlike Alternative 4-B, Alternative 4-C northbound traffic on US 19-23-70 heading toward I-26E/I-240W will merge I-26E/I-240W through a ramp on the left-hand side of the freeway.

Where I-26 ties to US 19-23-70, the alignment of I-26 would become the through movement and US 19-23-70 would become bifurcated and would merge into I-26. The interchange would not allow I-26 westbound traffic to access US 19-23-70 in the southbound direction, nor would it allow access from US 19-23-70 northbound to access I-26 eastbound. To make these movements, the traffic would utilize the I-26/I-240 interchange with US 19-23-74A (Patton Avenue) or the I-240 interchange with US 19-23-70/Patton Avenue. These movements would essentially be redundant and would only be utilized by motorists who missed an exit. The interchange of I-240 with US 19-23-70/Patton Avenue, east of the French Broad River, would be identical with the Alternative 4 and Alternative 4-B designs.

The proposed design would include a total of four new bridge crossings of the French Broad River, including two bridges carrying I-26 and two new flyover bridges carrying I-240. The bridges would span SR 1338 (Emma Road), the main line of Norfolk Southern Railways, the French Broad River, the Norfolk Southern Railway, the Craggy Mountain spur line and SR 1477 (Riverside Drive).

2.5.4.2 Preliminary Study Alternatives Eliminated from Further Study

In accordance with NEPA (23 CFR 771.123) and FHWA guidelines, this DEIS must discuss the range of alternatives being considered including all “reasonable alternatives” under consideration and those “other alternatives” that were eliminated from further study (USDOT/FHWA 1987). The alternatives that were carried forward for detailed study are presented in Section 2.5.4.3. Alternatives that were eliminated from further study and the reason for the elimination of the alternative are presented in this section.

Section C

The alternatives being considered for Section C were developed at a conceptual level and were considered to be generally the same with regard to impacts to the natural and human environments. From an engineering perspective, with the exception of Alternative B, all of the alternatives being considered were reasonable and feasible. In order to reduce the time and resources required to develop all of the alternatives as detailed study alternatives, four of the alternatives were selected that would encompass the entire range of alternatives. If needed, any of the remaining five alternatives considered feasible for this section could be developed as a detailed study alternative as the environmental planning process continues.

Alternative A-1

Alternative A-1 was considered to be a reasonable and feasible alternative, but was not selected as a detailed study alternative. The primary reason Alternative A-1 was not selected as a detailed study alternative was that the braided ramps would not provide direct access between I-26/I-240 and NC 191 (Brevard Road) in both the eastbound and westbound directions. Alternative A-2 was considered to be a better alternative because it was able to provide access in the westbound direction.

Alternative A-3

Alternative A-3 was considered to be a reasonable and feasible alternative, but was not selected as a detailed study alternative. The primary reason Alternative A-3 was not selected as a detailed study alternative was that the weaving section between the I-26/I-40/I-240 interchange and the NC 191 (Brevard Road) interchange would be located along the interstate without a C/D roadway.

Alternative B

Alternative B was eliminated from further study because the use of semi-direct loops for three movements would not be able to accommodate the projected traffic volumes. A freeway loop operating with a design speed of 30 mph has a maximum capacity of 1,900 passenger cars per hour according to the HCM (TRB 2010). The traffic forecast for the project includes projected volumes greater than 1,900 passenger cars per hour for the loop in the northeast quadrant during both the AM and PM peak hours, and for the loop in the southeast quadrant during the AM peak hour. Based on the maximum capacity of a freeway loop, neither the loop in the northeast nor southeast quadrant would operate at an acceptable LOS in the design year. Therefore, any build alternative with more than two semi-direct loop connections does not meet the purpose and need of the proposed project and is eliminated from further study.

Alternative C-1

Alternative C-1 was considered to be a reasonable and feasible alternative, but was not selected as a detailed study alternative. The primary reason Alternative C-1 was not selected as a detailed study alternative was that the braided ramps would not provide direct access between I-26/I-240 and NC 191 (Brevard Road) in both the eastbound or westbound directions. Alternative C-2 was considered to be a better alternative because it was able to provide access in the westbound direction.

Alternative C-3

Alternative C-3 was considered to be a reasonable and feasible alternative, but was not selected as a detailed study alternative. The primary reason Alternative C-3 was not selected as a detailed study alternative was that the slip ramp associated with the braided ramp was not able to be accommodated in the design, which would not provide direct access between the I-26/I-40/I-240 interchange and the NC 191 (Brevard Road) interchange.

Alternative D-2

Alternative D-2 was considered to be a reasonable and feasible alternative, but was not selected as a detailed study alternative. The primary reason Alternative D-2 was not selected as a detailed study alternative was that the slip ramp associated with the braided ramp was not able to be accommodated in the design. This meant direct access would not be provided between the I-26/I-40/I-240 interchange and the NC 191 (Brevard Road) interchange, making it essentially the same as Alternative D-1.

Section B

Alternative 1

Alternative 1 was eliminated from further study due to problems with constructability, railroad track relocation, and potential impacts to historic properties. The alignment for Alternative 1 was determined to be contingent upon how the SR 1477 (Riverside Drive) and the NS Craggy Mountain spur line of the Norfolk Southern Railway along SR 1477 (Riverside Drive) would be addressed. To maintain the existing location of SR 1477 (Riverside Drive) and the NS Craggy Mountain spur line, the improvements required to tie the Alternative 1 alignment to US 19-23-70 would require extensive construction east of existing US 19-23-70 and would also substantially raise the elevation of US 19-23-70 to allow for adequate vertical clearance for the proposed I-26 bridge over the railroad tracks. The construction to the east of US 19-23-70 would encroach upon the historic Riverside Cemetery and the Montford Avenue Historic District.

Based on the impacts to the historic resources, it was determined that the roadway and railroad would have to be relocated or closed to make Alternative 1 a viable alternative. The closure of SR 1477 (Riverside Drive) and the NS Craggy Mountain spur line of the Norfolk Southern Railway was determined to not be feasible due to the transportation services provided by these facilities. In order to relocate the railroad, extensive coordination would be required with Norfolk Southern Railways and a suitable location for the relocated railroad would need to be determined. The only potential location between US 19-23-70 and the French Broad River for the relocated railroad would be to the west, requiring business relocations and the crossing of a former landfill. Crossing the landfill would likely require the railroad to be constructed as a bridge due to the unsuitable soil conditions.

Due to the potential for impacts to historic properties, constructability issues, increased construction and right-of-way costs and the extensive coordination related to relocating the railroad; Alternative 1 was determined to not be reasonable and was eliminated from further study.

Alternative 2

Alternative 2 was eliminated from further study after the design was evaluated based on the revised traffic forecast for the project. The design of Alternative 2 had several major issues related to traffic capacity. The design would include a service road north of the I-26/I-240 interchange with Patton Avenue, west of the French Broad River. The service road would serve traffic from I-26 southbound and I-240/I-26 northbound as well as local traffic to Resort Drive and Sam's Club. The service road would intersect with Patton Avenue west of the proposed interchange and include a series of four signalized intersections in close proximity to one another. The intersections would also connect Regent Park Boulevard to Patton Avenue and include the ramp to I-26/I-240 southbound. The traffic volumes at this location were too high to allow the four signalized intersections to operate acceptably as originally designed and would result in LOS F at multiple locations and extensive queuing, including queuing onto the freeway.

Measures were taken to try to revise the design to attain acceptable traffic operations; however, no solution could be developed that addressed the traffic capacity concerns at this location. Based on the concerns with traffic operations Alternative 2 was determined to not be feasible and was eliminated from further study.

Alternative 5

Alternative 5 was eliminated from further study after preliminary designs were developed. Further investigations into the traffic operations showed that Alternative 5 would exacerbate existing weaving problem along I-240 between the US 19-23-70/Patton Avenue and Montford Avenue interchanges.

Alternative 5 was developed, in part, to separate the local Patton Avenue traffic from the through traffic of I-240. This would be accomplished by providing a parallel bridge south of the Captain Jeff Bowen Bridges to serve Patton Avenue traffic, with the Captain Jeff Bowen Bridges accommodating I-240 traffic. The urban setting of the project required that Patton Avenue access to I-240 eastbound be limited to the east side of the French Broad River. The limited opportunities to access eastbound I-240 from Patton Avenue would result in successive ramps entering on both the left and right sides of the freeway with a distance of 175 feet between the two. The proposed design would provide approximately 1425 feet between the Patton Avenue to eastbound I-240 entrance ramp and the Montford Avenue exit ramp, which would not meet the recommended minimum as specified in *A Policy on Geometric Design of Highways and Streets* (AASHTO 2011).

Due to the present weaving conditions, the concentration of Patton Avenue traffic being limited to one access point to I-240 eastbound, inadequate ramp distance and inability to maintain lane continuity on I-240; Alternative 5 was determined to not be feasible and was eliminated from further study.

Alternative 6

Alternative 6 was eliminated from further study due to a potential Environmental Justice issue caused by right-of-way impacts to the Hillcrest Apartment complex. The Hillcrest Apartments are operated by the Housing Authority of the City of Asheville and are located within a census block group that contains the highest percentage of African Americans within the Direct Community Impact Area (DCIA). The block group contains 77.7 percent African Americans and is more than ten times the Buncombe County average of 7.4 percent. Additionally, more than half of the

population (56.8 percent) within the block group lives below the poverty level, and the median income is approximately one-third of the median income in Buncombe County (HNTB North Carolina, PC 2007). Due to the Hillcrest Apartments location within an area designated as a special population for Environmental Justice, Alternative 6 was determined to not be reasonable and was eliminated from further study.

Upgrade Existing with Parallel Bridge Alternative

The Upgrade Existing with Parallel Bridge Alternative was eliminated from further study due to the impacts to the Montford Avenue Historic District. To meet the design criteria for the I-26 roadway, the proposed alternative would have a direct impact to the Riverside Cemetery which is included in the boundary of the Montford Avenue Historic District. Additionally, the alternative would require the relocation of the Hill Street Baptist Church and a neighborhood that is located within the same census block group as described in Alternative 6. Due to the direct impacts to the Montford Avenue Historic District and impacts to a church and a neighborhood located within an area designated as a special population for Environmental Justice; the Upgrade Existing with Parallel Bridge Alternative was determined to not be reasonable and was eliminated from further study.

Asheville Design Center Alternative

The ADC Alternative was eliminated from further study due to concerns with traffic operations, constructability and potential effects to historic resources. The concerns relating to operations include short weaving areas along the interstate and the operations of the signalized intersection between the ramp from I-26 Eastbound/I-240 Westbound to US 19-23-74A (Patton Avenue). Due to the dual-level bridge concept, the length required to transition the I-240 lanes above the I-26 lanes would require moving the location where I-26 and I-240 split closer to Patton Avenue. The location of the I-26/I-240 split would reduce the weave distance from the US 19-23-74A (Patton Avenue) entrance loop to the I-26/I-240 split to approximately 850 feet, which would create problems with traffic operations. The second concern with traffic operations was a result of the exit from I-26/I-240 being relocated to the south side of US 19-23-74A (Patton Avenue) as a loop ramp. The volume of traffic exiting at this location destined for westbound Patton Avenue would likely result in operational problems due to the high volume of left turns and the potential for traffic to queue onto the interstate due to the short length of the loop.

In addition to the operational concerns, this alternative would affect historic resources including; the William Worley House, Freeman House and Montford Avenue District (including the Riverside Cemetery). The impacts relating to acquisition of property from the William Worley House would likely be greater than for the other alternatives due to the placement of the loop in the southeast quadrant requiring that the exit ramp in the quadrant be moved farther east toward the William Worley House. The impacts relating to the acquisition of property from the Freeman House, based on the alignment provided by the ADC, would be greater than any of the alternatives being considered. The edge of the interstate would be less than 70 feet from the structure. The potential effects to the Montford Avenue District would be similar to those for Alternative 1 and would involve the constructability of the new roadway between the historic district and the NS Craggy Mountain spur line of the Norfolk Southern Railway along SR 1477 (Riverside Drive).

Due to the concerns with traffic operations, constructability issues, and likely impacts to historic properties; the ADC Alternative was determined to not be reasonable and was eliminated from further study.

Alternative 4-C

Alternative 4-C was eliminated from further consideration due to traffic safety concerns with the freeway weaving segment along I-26 eastbound between the I-240 westbound on-ramp (a left-side entrance ramp) and the Patton Avenue off-ramp (a right-side exit ramp). While the traffic capacity analysis and traffic simulation of this segment showed that it would operate at an acceptable LOS, the left-side entrance from I-240 westbound coupled with the short weaving distance of approximately 1,600 feet brought concerns about traffic being required to change multiple lanes over a short distance. Alternative 4-C would have also led to increased impacts to a historic property (William Worley House), which is protected under Section 4(f) of the USDOT Act, as well as additional impacts to residences.

For an urban freeway the recommended minimum terminal ramp spacing between a right-hand entrance ramp and a right-hand exit ramp for a "system to service" interchange is 1,600 feet, before an auxiliary lane should be included between the ramps according to *A Policy on Geometric Design of Highways and Streets* (AASHTO 2011). The roadway design geometry required to make the ramp connections from the I-240 westbound ramp onto I-26 southbound (a left-side on ramp), connecting to Patton Avenue (Ramp A) (a right-side exit ramp) creates a very tight, undesirable weave distance of 1,624 feet. Additionally, "left-side entrances and exits are contrary to driver expectancy when intermixed with right-side entrances. Therefore, extreme care should be exercised to avoid left-hand entrances and exits in the design of interchanges," (AASTHO 2011). The weave would be problematic, especially to a motorist who is unfamiliar with the route and difficult for a motorist familiar with the route, particularly when considering the variability between on- and off-ramp speeds and the mainline through traffic speeds.

Due to a super-elevation rollover concern, the geometry of Loop C (at Patton Avenue) would have to be adjusted, which would also affect Ramp C, causing increased impacts to the William Worley House historic property, as well as the houses adjacent to the ramp. Further impact to the William Worley historic property may result in an "adverse effect" determination under Section 106 of the Historic Preservation Act, and consequently constitute a "use" under Section 4(f).

In addition to weaving and impacts to environmental resources, Alternative 4-C was also eliminated in part due to foreseeable problems with maintaining traffic during construction. There are more extreme complexities with respect to the ability to maintain traffic operations on Patton Avenue during the various phases of construction, relative to the other alternatives in Section B, traffic.

Due to concerns over unacceptable weave distance, impacts to a historic property (William Worley House) and residences, and maintenance of traffic problems, it was determined that it is not prudent or reasonable to carry Alternative 4C forward for study.

2.5.4.3 Preliminary Study Alternatives Carried Forward for Detailed Study

In accordance with NEPA (23 CFR 771.123) and FHWA guidelines this DEIS must discuss the range of alternatives being considered, including all "reasonable alternatives" under consideration and those "other alternatives" that were eliminated from further study

(USDOT/FHWA 1987). The alternatives that were eliminated from further study were presented in Section 2.5.4.2.

The alternatives described in this section were found to meet the purpose and need of the proposed project, to accommodate the range of alternatives, and to be reasonable and feasible; and therefore were carried forward as detailed study alternatives. A discussion of each of the alternative's ability to meet the project purposes is included in Section 2.1.

A description of each of the alternatives carried forward for detailed study is presented in Section 2.5.5.

Section C

- Alternative A-2
- Alternative C-2
- Alternative D-1
- Alternative F-1

Section A

- I-240 Widening Alternative

Section B

- Alternative 3
- Alternative 3-C
- Alternative 4
- Alternative 4-B

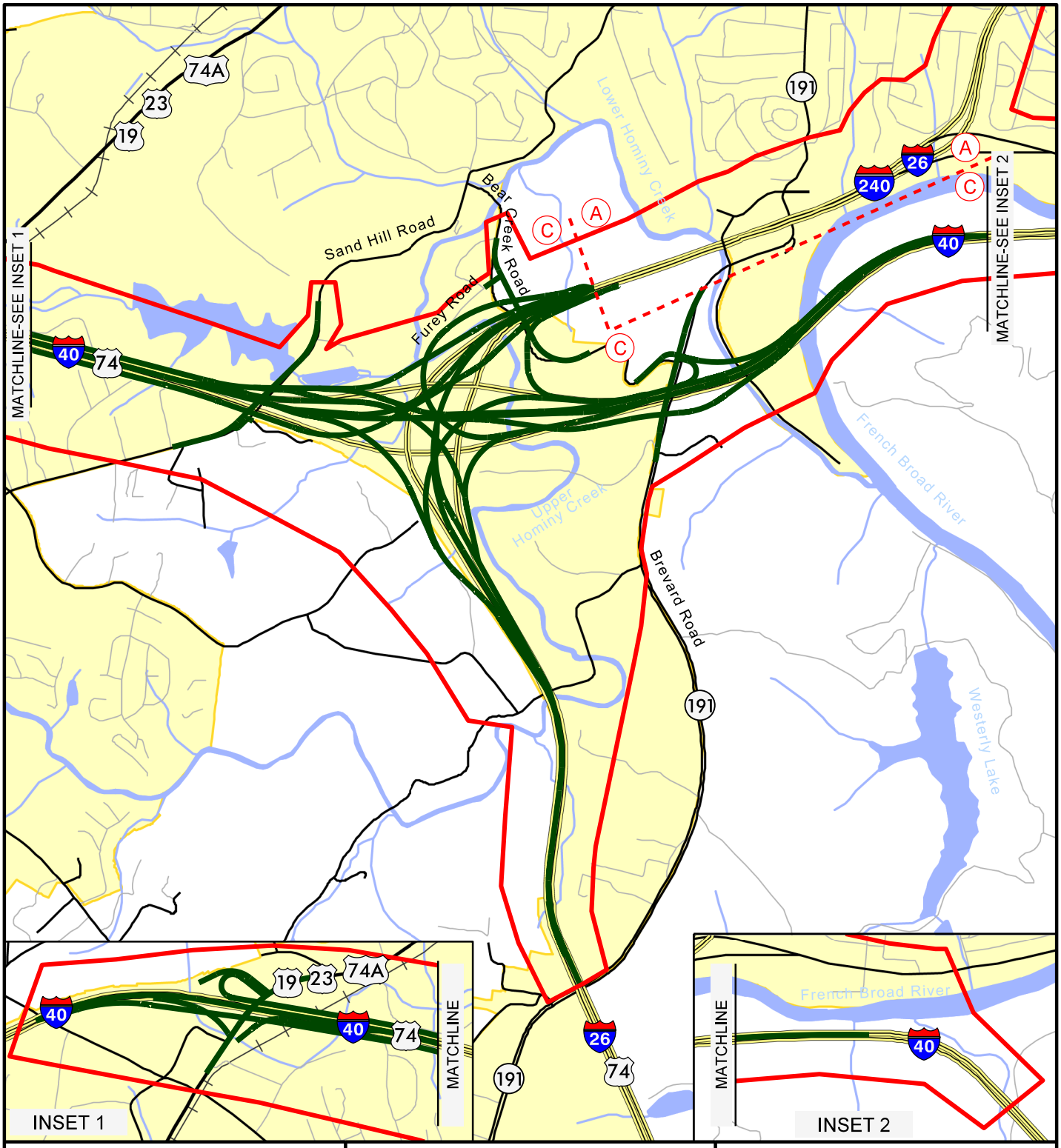
2.5.5 DESCRIPTION OF DETAILED STUDY ALTERNATIVES

The descriptions presented in this section provide extensive detail about the engineering design for each alternative. Graphical representations of the alternatives are shown on Figure 2-8 through Figure 2-17 for the detailed study alternatives following the discussion of each section. A generalized description of the alternatives is presented in Section 2.5.5.4.

2.5.5.1 Section C

Alternative A-2

Alternative A-2, shown on Figure 2-8, would reconstruct the existing I-26/I-40/I-240 interchange as a fully directional interchange that would provide direct ramp connections between I-26, I-40 and the proposed I-26/I-240 combined roadway; including the movements that are currently not provided by the existing interchange. In order to reconstruct the interchange, the freeways associated with the interchange would also be upgraded. The freeways would be upgraded to the extent needed to provide for adequate traffic operations, and would then transition back to the existing configurations as soon as is practical. The basic number of freeway lanes approaching the I-26/I-40/I-240 interchange would be an eight-lane typical section for I-26 to the south, a six-lane typical section for I-40 to the east, an eight-lane typical section for I-26/I-240 to the north and a six-lane typical section with two two-lane C/D roadways on I-40 to the west.



North Carolina
Department of Transportation

Legend

- Proposed Roadway Alignment
- Project Study Area
- Interstate
- US Highways
- NC Highways
- Local Road
- Railroad
- Municipal Boundaries
- Streams
- Water
- A Section

Date: June 2015

N W E S

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I-26 Asheville Connector
Buncombe County

STIP Project No. I-2513

Figure 2-8

Section C Alternative A-2
Detailed Study Alternative

The reconstructed interchange would be a four-level interchange with the connections stacked on top of one another. The lowest level would be I-40, which would be modified from the existing bifurcated alignment to a standard median width. The second level of the interchange would include the I-26/I-240 roadway crossing over I-40 with the existing bifurcated median being modified to a standard median width. The third level of the interchange would consist of dual two-lane flyover ramps that connect I-40 eastbound with I-26 westbound/I-240 eastbound and I-40 westbound with I-26 eastbound. The fourth level of the interchange would consist of two additional two-lane flyover ramps that would connect I-26 eastbound/I-240 westbound with I-40 eastbound and I-26 westbound with I-40 westbound.

To the south of the I-26/I-40/I-240 interchange, I-26 would be widened to accommodate the basic eight-lane typical section across Upper Hominy Creek with the I-26 westbound lanes transitioning back to the existing four-lane typical section at a point 2,500 feet north of the I-26/NC 191 (Brevard Road) interchange. I-26 eastbound would continue to the I-26/NC 191 (Brevard Road) interchange, where it would taper back to the existing typical section, including an additional lane that would be dropped at the existing exit loop in the southwest quadrant of the interchange.

To the east of the I-26/I-40/I-240 interchange, I-40 eastbound would be widened to a three-lane typical section and I-40 westbound would be widened to a two-lane typical section with a two-lane C/D roadway, and would include the reconstruction of the I-40/NC 191 (Brevard Road) interchange. The existing partial cloverleaf configuration for the I-40/NC 191 (Brevard Road) interchange would be reconstructed with the same configuration on the north side of I-40 and a standard diamond configuration on the south side of I-40. Due to the proximity of the interchanges to one another, the freeway section between the interchanges would include measures to improve the traffic operations and minimize the effect of weaving sections. On the eastbound side of I-40, the exit ramp from I-40 eastbound to NC 191 (Brevard Road) would be braided under the entrance ramp to I-40 eastbound from I-26 westbound. This configuration would eliminate the weave section between the interchanges; however, it would not provide direct access along I-40 to NC 191 from I-26. Traffic destined for NC 191 (Brevard Road) from I-26 would have to use the NC 191 (Brevard Road) interchanges along I-26 to the south and north of the I-26/I-40/I-240 interchange. On the westbound side of I-40, the weave section between the interchanges would be accommodated through the use of a C/D roadway. The C/D roadway would begin to the east of the I-40 crossing of the French Broad River; would consist of two through lanes; and would serve all traffic destined for NC 191 (Brevard Road), I-26 and I-240. A weaving section along the C/D would be present between the NC 191 (Brevard Road) entrance loop and the I-26 westbound/I-240 eastbound exit ramp. The C/D roadway would end by merging into I-40 westbound roughly 1,500 feet to the east of the I-26 bridges over I-40. The widening of I-40 would continue to a point approximately 4,000 feet east of the bridge over the French Broad River, where it would transition back to the existing four-lane typical section. The ramp terminals at the reconstructed I-40/NC 191 (Brevard Road) interchange would have signalized intersections. Concrete islands would be installed to separate traffic and limit turn movements in the vicinity of the interchange.

To the north of the I-26/I-40/I-240 interchange, the combined I-26/I-240 would consist of an eight-lane typical section with an auxiliary lane in either direction between the I-26/I-40/I-240 interchange and the NC 191 (Brevard Road) interchange. The proposed project would continue along I-26/I-240 north of the I-26/I-40/I-240 interchange as Section A, and is described in more detail in subsequent sections. Due to the configuration of the proposed interchange ramps at the I-26/I-40/I-240 interchange, the existing grade-separated crossing of SR 3413 (Bear Creek Road) over I-26/I-240 would be relocated to the east and the bridge would be lengthened to

accommodate the increased footprint associated with the interchange. This relocation would also require a short extension of Furey Drive.

To the west of the I-26/I-40/I-240 interchange, I-40 would consist of a six-lane typical section with a two-lane C/D roadway in each direction. The configuration of the proposed interchange ramps at the I-26/I-40/I-240 interchange would require the relocation of the existing grade-separated crossing of SR 3412 (Sand Hill Road) over I-40 to the west, and the bridge would be lengthened to accommodate the increased footprint associated with the interchange. This relocation would also require a minor relocation of Sand Hill Lane and Sand Hill Court.

To alleviate weaving movements and roadway capacity issues at the section of I-40 between the I-26/I-40/I-240 interchange and the US 19-23-74A (Smoky Park Highway) interchange two C/D roadways along I-40 will be introduced. Traffic from I-40, I-26 and I-240 heading west toward US 19-23-74A (Smoky Park Highway) would be routed via the C/D roadway on the north side of I-40, thus eliminating westbound weaving movements between the I-26/I-40/I-240 and US 19-23-74A (Smoky Park Highway) interchanges. The C/D exits I-40 westbound at the I-26/I-40/I-240 interchange and merges back onto I-40 westbound just west of US 19-23-74A (Smoky Park Highway) interchange. Another C/D roadway south of I-40 will exit I-40 eastbound just west of the US 19-23-74A (Smoky Park Highway) interchange and will carry traffic bound for I-26 westbound/I-240 eastbound. A weaving movement will still exist on I-40 eastbound between eastbound traffic entering I-40 from US 19-23-74A (Smoky Park Highway) and traffic bound for I-26 eastbound.

This alternative would include new, replacement or modification of a total of 25 bridge locations. Six of the bridge locations would be associated with crossings of Upper Hominy Creek, including I-26, I-40, I-26/I-240 and six fly-over ramp bridges associated with the I-26/I-40/I-240 interchange reconfiguration. Three bridge crossings would be associated with crossings of Lower Hominy Creek, including I-40 and two ramp bridges associated with the I-40/NC 191 (Brevard Road) interchange. One bridge would replace the existing bridge along I-40 over the French Broad River due to the C/D roadway and six-lane typical section. Three bridges would be constructed to replace existing grade separated crossings at NC 191 (Brevard Road), SR 3413 (Bear Creek Road) and SR 3412 (Sand Hill Road) due to the expanded footprint of the I-26/I-40/I-240 interchange. Four bridges will be associated with the reconfigured I-40/US 19-23-74A (Smoky Park Highway) interchange and they would include two bridge widenings accommodating the westbound C/D along I-40 crossing over the Norfolk Southern Railway and US 19-23-74A (Smoky Park Highway), one bridge widening accommodating the ramp to I-40 eastbound from US 19-23-74A (Smoky Park Highway), and one bridge carrying I-40 eastbound C/D over the US 19-23-74A (Smoky Park Highway) ramps in the south quadrants of the interchange. The remaining two bridge locations would include new bridges carrying I-26 over I-40 and I-26 over Pond Road/Hominy Creek.

Alternative C-2

Alternative C-2, shown on Figure 2-9, would reconstruct the existing I-26/I-40/I-240 interchange as a semi-directional interchange that would provide six of the eight ramp movements with directional ramps and two of the eight ramp movements with semi-direct loop ramps. The reconfigured interchange would contain the movements that are currently not provided by the existing interchange. In order to reconstruct the interchange, the freeways associated with the interchange would also be upgraded. The freeways would be upgraded to the extent needed to provide for adequate traffic operations, and would then transition back to the existing configurations as soon as is practical. The basic number of freeway lanes approaching the

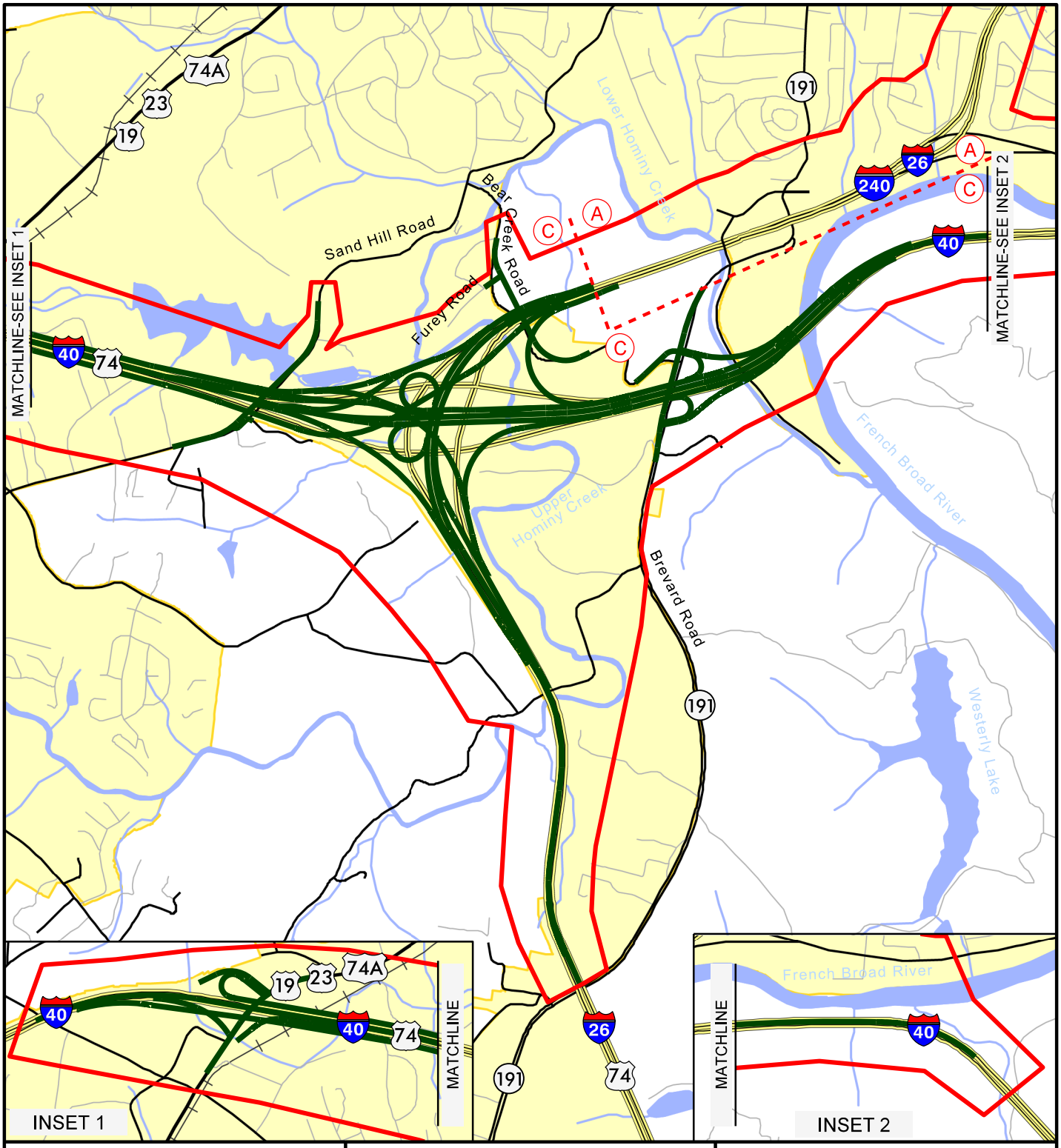

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Figure 2-9

Section C Alternative C-2
Detailed Study Alternative

I-26/I-40/I-240 interchange would be an eight-lane typical section for I-26 to the south, a six-lane typical section with two two-lane C/D roadways for I-40 to the east, an eight-lane typical section for I-26/I-240 to the north and a six-lane typical section with two two-lane C/D roadways on I-40 to the west.

The proposed I-26/I-40/I-240 interchange for this alternative would be a four-level interchange. I-40 would be the lowest level, and would be modified from the existing bifurcated alignment to a standard median width. The second level of the interchange would include the I-26/I-240 roadway crossing over I-40, with the existing bifurcated median modified to a standard median width. Connections between I-40 and I-26/I-240 within the proposed interchange would include a loop in the northwest quadrant that would serve the I-40 westbound to I-26 eastbound traffic and a loop in the southwest quadrant that would serve the I-26 eastbound/I-240 westbound to I-40 eastbound movement. This configuration would result in a weaving section between the back-to-back loops (loops located in adjacent quadrants that generate a successive loop configuration). To address the weaving section, a C/D roadway would be included that would exit I-26 eastbound/I-240 westbound north of the I-26/I-40/I-240 interchange and would serve all traffic bound for I-40 before re-entering I-26 eastbound south of the interchange. The third level of the interchange would consist of a two-lane flyover ramp that would connect I-40 eastbound with I-26 westbound/I-240 eastbound and the fourth level of the interchange would consist of an additional two-lane flyover ramp that would connect I-26 westbound with I-40 westbound. To reduce the overall height of the interchange, the flyover ramps would be offset slightly from the crossing of I-26 and I-40.

To the south of the I-26/I-40/I-240 interchange, I-26 would be widened to accommodate the basic eight-lane typical section across Upper Hominy Creek with the I-26 westbound lanes transitioning back to the existing four-lane typical section at a point 2,500 feet north of the I-26/NC 191 (Brevard Road) interchange. I-26 eastbound would continue to the I-26/NC 191 (Brevard Road) interchange, where it would taper back to the existing typical section, including an additional lane that would be dropped at the existing exit loop in the southwest quadrant of the interchange.

To the east of the I-26/I-40/I-240 interchange, I-40 eastbound would be widened to a three-lane typical section with a two-lane C/D roadway and I-40 westbound would be widened to a two-lane typical section with a two-lane C/D roadway and would include the reconstruction of the I-40/NC 191 (Brevard Road) interchange. The existing partial cloverleaf configuration for the I-40/NC 191 (Brevard Road) interchange would be reconstructed with the same configuration but would be upgraded to current design standards with larger radius loops and longer ramps. Due to the proximity of the interchanges to one another, the freeway section between the interchanges would include measures to improve the traffic operations and minimize the effect of weaving sections. On the eastbound side of I-40, the weave section between the interchanges would be accommodated through the use of a C/D roadway. The C/D would begin west of where I-26 crosses I-40, would consist of two lanes, and would serve the traffic destined for NC 191 (Brevard Road), as well as the traffic from I-26 and I-240 destined for I-40 eastbound and NC 191 (Brevard Road). A weaving section along the C/D would be present between the entrance ramp from I-26 and the NC 191 (Brevard Road) exit loop. The C/D roadway would end by merging into I-40 eastbound slightly east of the I-40 crossing of the French Broad River. On the westbound side of I-40, the weave section between the interchanges would be accommodated in a similar fashion, through the use of a C/D roadway. The C/D roadway would begin to the east of the I-40 crossing of the French Broad River; would consist of two through lanes; and would serve all traffic destined for NC 191 (Brevard Road), I-26 and I-240. A weaving section along the C/D would be present between the NC 191 (Brevard Road) entrance loop and

the I-26 westbound/I-240 eastbound exit ramp. The C/D roadway would end by merging into I-40 westbound slightly to the east of the I-26 bridge over I-40. The widening of I-40 to a six-lane typical section would continue to a point approximately one mile east of the bridge over the French Broad River in the eastbound lanes and approximately 4,000 feet east of the bridge over the French Broad River for the westbound lanes, where it would transition back to the existing four-lane typical section. The ramp terminals at the reconstructed I-40/NC 191 (Brevard Road) interchange would have signalized intersections. Concrete islands would be installed to separate traffic and limit turn movements in the vicinity of the interchange.

To the north of the I-26/I-40/I-240 interchange, the combined I-26/I-240 would consist of an eight-lane typical section with an auxiliary lane in either direction between the I-26/I-40/I-240 interchange and the NC 191 (Brevard Road) interchange. The proposed project would continue along I-26/I-240 north of the I-26/I-40/I-240 interchange as Section A, and is described in more detail in subsequent sections. Due to the configuration of the proposed interchange ramps at the I-26/I-40/I-240 interchange, the existing grade-separated crossing of SR 3413 (Bear Creek Road) over I-26/I-240 would be relocated to the east and the bridge would be lengthened to accommodate the increased footprint associated with the interchange. This relocation would also require a short extension of Furey Road.

To the west of the I-26/I-40/I-240 interchange, I-40 would consist of a six-lane typical section with a two-lane C/D roadway in each direction. The configuration of the proposed interchange ramps at the I-26/I-40/I-240 interchange would require the relocation of the existing grade-separated crossing of SR 3412 (Sand Hill Road) over I-40 to the west, and the bridge would be lengthened to accommodate the increased footprint associated with the interchange. This relocation would also require a minor relocation of Sand Hill Lane and Sand Hill Court.

To alleviate weaving movements and roadway capacity issues at the section of I-40 between the I-26/I-40/I-240 interchange and the US 19-23-74A (Smoky Park Highway) interchange two C/D roadways along I-40 will be introduced. Traffic from I-40, I-26 and I-240 heading west toward US 19-23-74A (Smoky Park Highway) will be routed via the C/D roadway on the north side of I-40, thus eliminating westbound weaving movements between the I-26/I-40/I-240 and US 19-23-74A (Smoky Park Highway) interchanges. The C/D exits I-40 westbound at the I-26/I-40/I-240 interchange and merges back onto I-40 westbound just west of US 19-23-74A (Smoky Park Highway) interchange. Another C/D roadway south of I-40 will exit I-40 eastbound just west of the US 19-23-74A (Smoky Park Highway) interchange and will carry traffic bound for I-26 westbound/I-240 eastbound. A weaving movement will still exist on I-40 eastbound between eastbound traffic entering I-40 from US 19-23-74A (Smoky Park Highway) and traffic bound for I-26 eastbound. This alternative would include new or replacement bridges at a total of 20 locations. Four of the bridge locations would be associated with crossings of Upper Hominy Creek, including: I-40, I-26/I-240 and two ramp bridges associated with the I-26/I-40/I-240 interchange reconfiguration. Three of the bridge crossings would be associated with crossings of Lower Hominy Creek, including: I-40 and two ramp bridges associated with the I-40/NC 191 (Brevard Road) interchange. One bridge would replace the existing bridge along I-40 over the French Broad River as a result of the C/D roadway and six-lane typical section. Three bridges would be constructed to replace existing grade separated crossings at NC 191 (Brevard Road), SR 3413 (Bear Creek Road) and SR 3412 (Sand Hill Road) due to the expanded footprint of the I-26/I-40/I-240 interchange. There are three bridges carrying the fly-over ramps associated with the I-26/I-40/I-240 interchange. Four bridges will be associated with the reconfigured I-40/US 19-23-74A (Smoky Park Highway) interchange and they would include two bridge widenings accommodating the westbound C/D along I-40 crossing over the Norfolk Southern Railway and US 19-23-74A (Smoky Park Highway), one bridge widening

accommodating the ramp to I-40 eastbound from US 19-23-74A (Smoky Park Highway), and one bridge carrying I-40 eastbound C/D over the US 19-23-74A (Smoky Park Highway) ramps in the south quadrants of the interchange. The remaining two bridge locations would include new bridges carrying I-26 over I-40 and I-26 over Pond Road/Hominy Creek.

Alternative D-1

Alternative D-1, shown on Figure 2-10, would reconstruct the existing I-26/I-40/I-240 interchange as a semi-directional interchange that would provide seven of the eight ramp movements with directional ramps and the remaining movement with a semi-direct loop ramp. The reconfigured interchange would provide the movements that are currently not included in the existing interchange. In order to reconstruct the interchange, the freeways associated with the interchange would also be upgraded. The freeways would be upgraded to the extent needed to provide for adequate traffic operations, and would then transition back to the existing configurations as soon as is practical. The basic number of freeway lanes approaching the I-26/I-40/I-240 interchange would accommodate an eight-lane typical section for I-26 to the south, a six-lane typical section for I-40 to the east, an eight-lane typical section for I-26/I-240 to the north and a six-lane typical section with two two-lane C/D roadways on I-40 to the west.

The proposed I-26/I-40/I-240 interchange for this alternative would be a four-level interchange. The lowest level would be I-40, which would be modified from the existing bifurcated alignment to a standard median width. The second level of the interchange would include the I-26/I-240 roadway crossing over I-40 with the existing bifurcated median being modified to a standard median width. Connections between I-26/I-240 and I-40 within the proposed interchange would include a loop in the southwest quadrant that would serve the I-26 eastbound/I-240 westbound to I-40 eastbound movement. The third level of the interchange would consist of dual two-lane flyover ramps that connect I-40 eastbound with I-26 westbound/I-240 eastbound and I-40 westbound with I-26 eastbound. The fourth level of the interchange would consist of an additional two-lane flyover ramp that would connect I-26 westbound with I-40 westbound.

To the south of the I-26/I-40/I-240 interchange, I-26 would be widened to the basic eight-lane typical section across Upper Hominy Creek with the I-26 westbound lanes transitioning back to the existing four-lane typical section at a point 2,500 feet north of the I-26/NC 191 (Brevard Road) interchange. I-26 eastbound would continue to the I-26/NC 191 (Brevard Road) interchange, where it would taper back to the existing typical section, including an additional lane that would be dropped at the existing exit loop in the southwest quadrant of the interchange.

To the east of the I-26/I-40/I-240 interchange, I-40 would be widened to a basic six-lane typical section and would include reconstruction of the I-40/NC 191 (Brevard Road) interchange. The existing partial cloverleaf configuration for the I-40/NC 191 (Brevard Road) interchange would be revised to a standard diamond configuration. Due to the proximity of the interchanges to one another, the freeway section between the interchanges would include measures to improve the traffic operations and minimize the effect of the weaving sections. On the eastbound side of I-40, the exit ramp from I-40 eastbound to NC 191 (Brevard Road) would be braided under the entrance ramp to I-40 eastbound from I-26 westbound. This configuration would eliminate the weave section between the interchanges; however, it would not provide direct access along I-40 to NC 191 from I-26. Traffic destined for NC 191 (Brevard Road) from I-26 would have to use the NC 191 (Brevard Road) interchanges along I-26 to the south. A weaving section would be present along I-40 between the entrance loop from I-26/I-240 and the exit ramp to NC 191 (Brevard Road). On the westbound side of I-40, the weave section between the interchanges

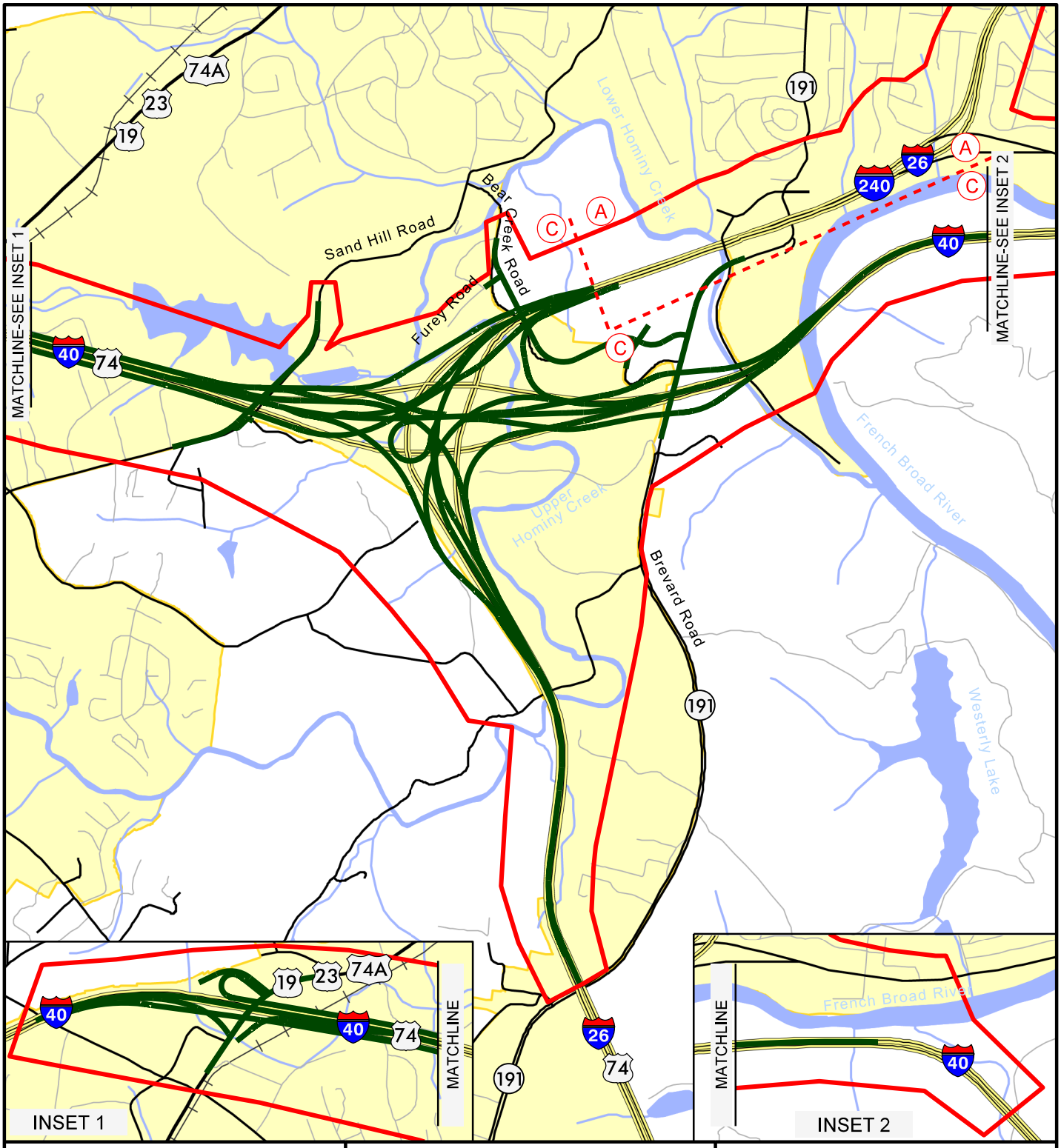

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Figure 2-10

Section C Alternative D-1
Detailed Study Alternative

would be accommodated in a similar fashion, through the use of braided ramps. The exit ramp from I-40 to I-26 and I-240 would be braided under the entrance ramp from NC 191 (Brevard Road) to I-40 westbound. This configuration would eliminate the weave section between the interchanges; however, it would not provide direct access from NC 191 (Brevard Road) to I-26 or I-240 along I-40. Traffic destined for I-26 or I-240 from NC 191 (Brevard Road) would have to utilize the NC 191 (Brevard Road) interchanges with I-26 to the south and I-26/I-240 to the north. The widening of I-40 to a six-lane typical section would continue to a point approximately 2,400 feet east of the French Broad River bridge for the eastbound lanes and approximately 700 feet east of the French Broad River bridge for the westbound lanes, where it would transition back to the existing four-lane typical section. The ramp terminals at the reconfigured I-40/NC 191 (Brevard Road) interchange would have signalized intersections and concrete islands would be installed to separate traffic and limit turn movements in the vicinity of the interchange.

To the north of the I-26/I-40/I-240 interchange, the combined I-26/I-240 would consist of an eight-lane typical section with an auxiliary lane along I-26/I-240 in either direction between the I-26/I-40/I-240 interchange and the interchange with NC 191 (Brevard Road). The proposed project would continue along I-26/I-240 north of the I-26/I-40/I-240 interchange as Section A, and is described in more detail in subsequent sections. Due to the configuration of the proposed interchange ramps at the I-26/I-40/I-240 interchange, the existing grade-separated crossing of SR 3413 (Bear Creek Road) over I-26/I-240 would be relocated to the east and the bridge would be lengthened to accommodate the increased footprint associated with the interchange. This relocation would also require a short extension of Furey Road.

To the west of the I-26/I-40/I-240 interchange, I-40 would consist of a six-lane typical section with a two-lane C/D roadway in each direction. The configuration of the proposed interchange ramps at the I-26/I-40/I-240 interchange would require the relocation of the existing grade-separated crossing of SR 3412 (Sand Hill Road) over I-40 to the west, and the bridge would be lengthened to accommodate the increased footprint associated with the interchange. This relocation would also require a minor relocation of Sand Hill Lane and Sand Hill Court.

To alleviate weaving movements and roadway capacity issues at the section of I-40 between the I-26/I-40/I-240 interchange and the US 19-23-74A (Smoky Park Highway) interchange two C/D roadways along I-40 will be introduced. Traffic from I-40, I-26 and I-240 heading west toward US 19-23-74A (Smoky Park Highway) will be routed via the C/D roadway on the north side of I-40, thus eliminating westbound weaving movements between the I-26/I-40/I-240 and US 19-23-74A (Smoky Park Highway) interchanges. The C/D exits I-40 westbound at the I-26/I-40/I-240 interchange and merges back onto I-40 westbound just west of US 19-23-74A (Smoky Park Highway) interchange. Another C/D roadway south of I-40 will exit I-40 eastbound just west of the US 19-23-74A (Smoky Park Highway) interchange and will carry traffic bound for I-26 westbound/I-240 eastbound. A weaving movement will still exist on I-40 eastbound between eastbound traffic entering I-40 from US 19-23-74A (Smoky Park Highway) and traffic bound for I-26 eastbound.

This alternative would include new or replacement bridges at a total of 25 locations. Six bridge locations would be associated with crossings of Upper Hominy Creek, including: I-40, I-26/I-240 and four ramp bridges associated with the I-26/I-40/I-240 interchange reconfiguration. Four fly-over ramp bridges would be associated with the I-26/I-40/I-240 interchange reconfiguration. Three bridge crossings would be associated with crossings of Lower Hominy Creek, including: I-40 and two ramp bridges associated with the I-40/NC 191 (Brevard Road) interchange. One bridge would replace the existing bridge along I-40 over the French Broad River as a result of

the six-lane typical section. Three bridges would be constructed to replace existing grade separated crossings at NC 191 (Brevard Road), SR 3413 (Bear Creek Road) and SR 3412 (Sand Hill Road) due to the expanded footprint of the I-26/I-40/I-240 interchange. Four bridges will be associated with the reconfigured I-40/US 19-23-74A (Smoky Park Highway) interchange and they would include two bridge widenings accommodating the westbound C/D along I-40 crossing over the Norfolk Southern Railway and US 19-23-74A (Smoky Park Highway), one bridge widening accommodating the ramp to I-40 eastbound from US 19-23-74A (Smoky Park Highway), and one bridge carrying I-40 eastbound C/D over the US 19-23-74A (Smoky Park Highway) ramps in the south quadrants of the interchange. One bridge will carry I-26 over I-40, one will carry I-26 over Pond Road/Hominy Creek and two bridges will accommodate the I-40/NC 191 braided ramps.

Alternative F-1

Alternative F-1, shown on Figure 2-11, would reconstruct the existing I-26/I-40/I-240 interchange and maintain the same general configuration while adding the two missing movements. The new movement from I-26 eastbound/I-240 westbound to I-40 eastbound would be accomplished with a semi-direct loop connection. The movement from I-40 westbound to I-26 westbound/I-240 eastbound would utilize a direct ramp connection. In order to reconstruct the interchange, the freeways associated with the interchange would also be upgraded. The freeways would be upgraded to the extent needed to provide for adequate traffic operations, and would then transition back to the existing configurations as soon as is practical. The basic number of freeway lanes approaching the I-26/I-40/I-240 interchange would be an eight-lane typical section for I-26 to the south, a six-lane typical section for I-40 to the east, an eight-lane typical section for I-26/I-240 to the north and a six-lane typical section with two two-lane C/D roadways on I-40 to the west.

The proposed I-26/I-40/I-240 interchange for this alternative would be a three-level interchange with the lowest level being I-40, which would maintain its existing bifurcated alignment through the interchange. The second level of the interchange would include the I-26/I-240 roadway crossing over I-40 and maintain its existing bifurcated median. The I-26 eastbound lanes would be relocated slightly to the east to allow adequate spacing for the new loop connecting I-26 eastbound/I-240 westbound to I-40 eastbound. Connections between I-26/I-240 and I-40 within the proposed interchange would include the new loop in the southwest quadrant, a new ramp in the northeast quadrant and two reconstructed ramps connecting the roadways. The two reconstructed ramps would connect I-40 westbound with I-26 westbound/I-240 eastbound and I-40 eastbound with I-26 eastbound and would be located within the portion of the bifurcated freeways. This configuration would create a left-hand exit and entrance for one of the reconstructed ramps, while the other reconstructed ramp would operate as a major merge and diverge. The third level of the interchange would consist of a single two-lane flyover ramp that would connect I-26 westbound with I-40 westbound.

To the south of the I-26/I-40/I-240 interchange, I-26 would be widened to accommodate the basic eight-lane typical section across Upper Hominy Creek with the I-26 westbound lanes transitioning back to the existing four-lane typical section at a point 2,500 feet north of the I-26/NC 191 (Brevard Road) interchange. I-26 eastbound would continue to the I-26/NC 191 (Brevard Road) interchange, where it would taper back to the existing typical section, including an additional lane that would be dropped at the existing exit loop in the southwest quadrant of the interchange.

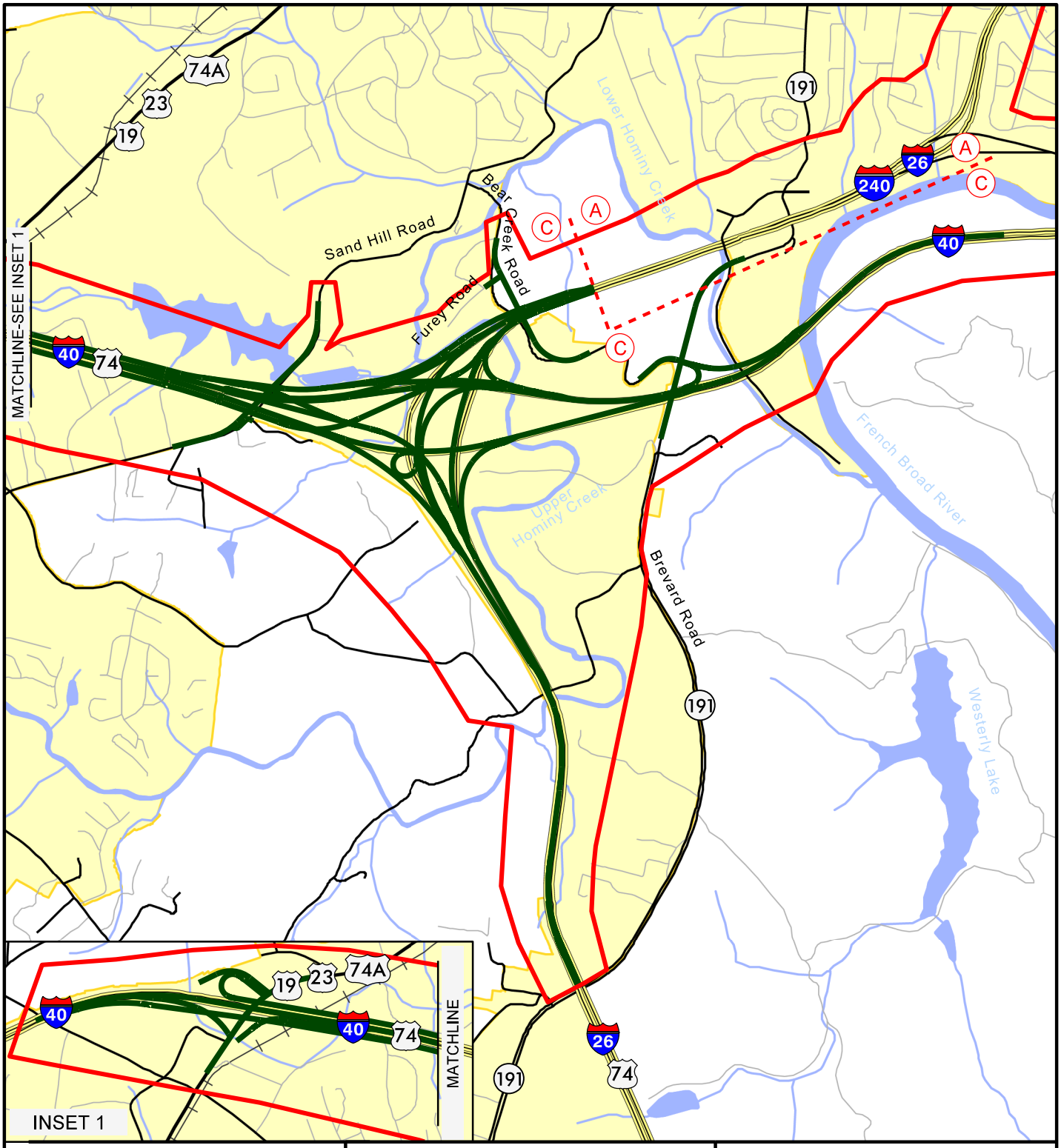

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Figure 2-11

Section C Alternative F-1
Detailed Study Alternative

To the east of the I-26/I-40/I-240 interchange, I-40 would be widened to a basic six-lane typical section and would include tying to the existing I-40/NC 191 (Brevard Road) interchange. The interchange of I-40/NC 191 (Brevard Road) would maintain the existing configuration, but would require the ramp in the northeast quadrant to be realigned in order to provide adequate storage length. Additional turn lanes on the ramps and along NC 191 (Brevard Road) would also be provided. Due to the longer weave distances for this alternative, the weave section between the I-26/I-40/I-240 interchange and the I-40/NC 191 (Brevard Road) interchange would be accommodated with auxiliary lanes between the interchanges. The widening of I-40 to a six-lane typical section would continue to a point approximately 2,800 feet east of the bridge over the French Broad River, where it would transition back to the existing four-lane typical section. The ramp terminals at the I-40/NC 191 (Brevard Road) interchange would maintain their signalized intersections and no additional construction would be included at the ramp terminals.

To the north of the I-26/I-40/I-240 interchange, the combined I-26/I-240 would consist of an eight-lane typical section with an auxiliary lane in either direction between the I-26/I-40/I-240 interchange and the NC 191 (Brevard Road) interchange. The proposed project would continue along I-26/I-240 north of the I-26/I-40/I-240 interchange as Section A, and is described in more detail in subsequent sections. Due to the configuration of the proposed interchange ramps at the I-26/I-40/I-240 interchange, the existing grade-separated crossing of SR 3413 (Bear Creek Road) over I-26/I-240 would be relocated to the east and the bridge would be lengthened to accommodate the increased footprint associated with the interchange. This relocation would also require a short extension of Furey Road.

To the west of the I-26/I-40/I-240 interchange, I-40 would consist of a six-lane typical section with a two-lane C/D roadway in each direction. The configuration of the proposed interchange ramps at the I-26/I-40/I-240 interchange would require the relocation of the existing grade-separated crossing of SR 3412 (Sand Hill Road) over I-40 to the west. The bridge would be lengthened to accommodate the increased footprint associated with the interchange. This relocation would also require a minor relocation of Sand Hill Lane and Sand Hill Court.

To alleviate weaving movements and roadway capacity issues at the section of I-40 between the I-26/I-40/I-240 interchange and the US 19-23-74A (Smoky Park Highway) interchange two C/D roadways along I-40 will be introduced. Traffic from I-40, I-26 and I-240 heading west toward US 19-23-74A (Smoky Park Highway) will be routed via the C/D roadway on the north side of I-40, thus eliminating westbound weaving movements between the I-26/I-40/I-240 and US 19-23-74A (Smoky Park Highway) interchanges. The C/D exits I-40 westbound at the I-26/I-40/I-240 interchange and merges back onto I-40 westbound just west of US 19-23-74A (Smoky Park Highway) interchange. Another C/D roadway south of I-40 will exit I-40 eastbound just west of the US 19-23-74A (Smoky Park Highway) interchange and will carry traffic bound for I-26 westbound/I-240 eastbound. A weaving movement will still exist between eastbound traffic entering I-40 from US 19-23-74A (Smoky Park Highway) and traffic bound to I-26 eastbound.

This alternative would include new or replacement and widened bridges at total of 23 locations. Four bridge locations would be associated with crossings of Upper Hominy Creek, including: two on the bifurcated I-40, and two on the bifurcated I-26/I-240. Four fly-over and directional ramp bridges associated with the I-26/I-40/I-240 interchange reconfiguration will be constructed or widened. Two bridge crossings would be widened along I-40 as a result of the six-lane typical section, including: a bridge crossing of Lower Hominy Creek and a bridge crossing over the French Broad River. The Lower Hominy Creek would also have a new crossing associated with the realignment of the ramp in the northeast quadrant of the I-40/NC 191 (Brevard Road)

interchange. Three of the bridges would be constructed to replace existing grade separated crossings at SR 3413 (Bear Creek Road), SR 3412 (Sand Hill Road), and NC 191 (Brevard Road) due to the expanded footprint of the I-26/I-40/I-240 interchange. Four bridges will be associated with the reconfigured I-40/US 19-23-74A (Smoky Park Highway) interchange and they would include two bridge widenings accommodating the westbound C/D along I-40 crossing over the Norfolk Southern Railway and US 19-23-74A (Smoky Park Highway), one bridge widening accommodating the ramp to I-40 eastbound from US 19-23-74A (Smoky Park Highway), and one bridge carrying I-40 eastbound C/D over the US 19-23-74A (Smoky Park Highway) ramps in the south quadrants of the interchange. Four new bridges will carry the bifurcated alignment of I-26 over the bifurcated alignment of I-40, and vive more bridges will be associated with flyover ramps within the I-26/I-40/I-240 interchange. Lastly one bridge will carry I-26 over Pond Road/Hominy Creek.

Alternative F-2

Alternative F-2, shown on Figure 2-12, was developed during the detailed study alternative phase in advance of the *I-26 Connector Traffic Capacity Analysis Memorandum* (URS 2010f). It was anticipated that Alternative F-1 would contain a weaving segment on westbound I-40 between the I-26/I-40/I-240 interchange and the US 19-23-74A (Smoky Park Highway) interchange that would operate at LOS E or F. Early design concepts that would address this segment's LOS included separating traffic exiting to US 19-23-74A (Smoky Park Highway) through a series of braided ramps and grade separations. Traffic from the north, east, and south legs of the I-26/I-40/I-240 interchange heading to US 19-23-74A (Smoky Park Highway) along westbound I-40 would travel along a C/D roadway paralleling westbound I-40, which would exit directly onto US 19-23-74A (Smoky Park Highway). This would eliminate the weaving segment from westbound I-40.

During the analysis in preparation of the *I-26 Connector Traffic Capacity Analysis Memorandum*, it became apparent that all of the Section C alternatives carried forward from the preliminary study alternatives would include weaving segments along I-40 that would have LOS E or F (URS 2010f). Because of this, all the detailed study alternatives in Section C would require substantial revisions to address the capacity issues along these weaving segments. It was decided at this point that the design revisions would be performed on all of the Section C alternatives, and that the alternative identification terminology would remain the same for all alternatives. Therefore, although revisions would be performed to Alternative F-1, which would be similar to that anticipated for Alternative F-2, the revised designs would still be referred to as Alternative F-1 and the terminology for Alternative F-2 was eliminated.

2.5.5.2 Section A – I-240 Widening Alternative

The I-240 Widening Alternative, shown on Figure 2-13, would include a best-fit design for the widening and reconstruction of existing I-240 from a four-lane freeway to an eight-lane freeway. The reconstructed roadway would carry both I-26 and I-240 throughout the length of Section A and would be compatible with all of the proposed alternatives for Section B and Section C. The Section A alternative would include interchanges at NC 191 (Brevard Road), SR 3556 (Amboy Road), and US 19-23 Business (Haywood Road). The alternative would begin at the north end of Section C and would include eight basic freeway lanes with auxiliary lanes on either side.

The first interchange in Section A would be with I-26/I-240 and NC 191 (Brevard Road). This interchange would provide for all movements except for the I-26 eastbound/I-240 westbound exit to NC 191 (Brevard Road). This movement, typically in the form of an exit ramp in the

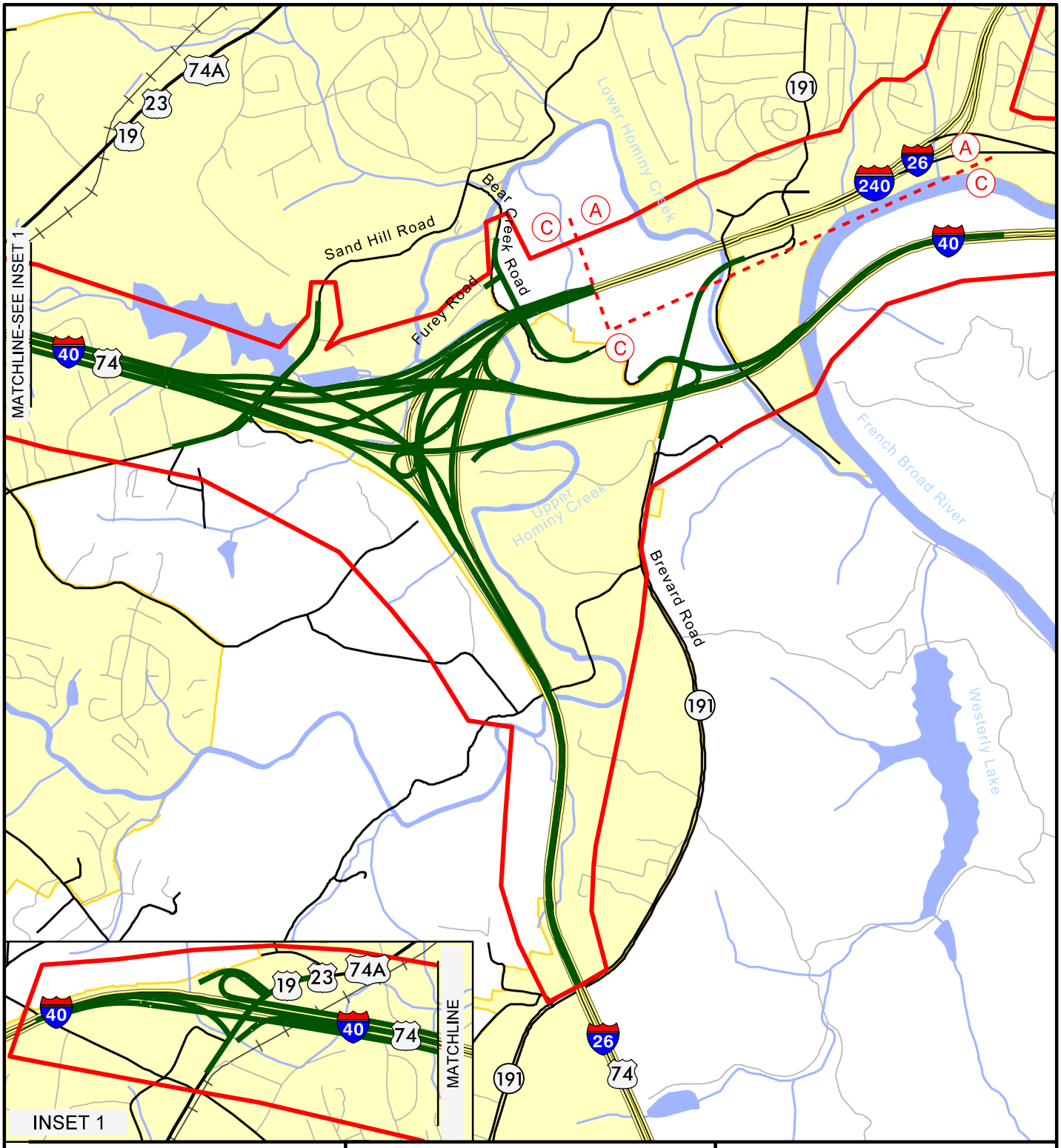

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Figure 2-12

Section C Alternative F-2
Detailed Study Alternative

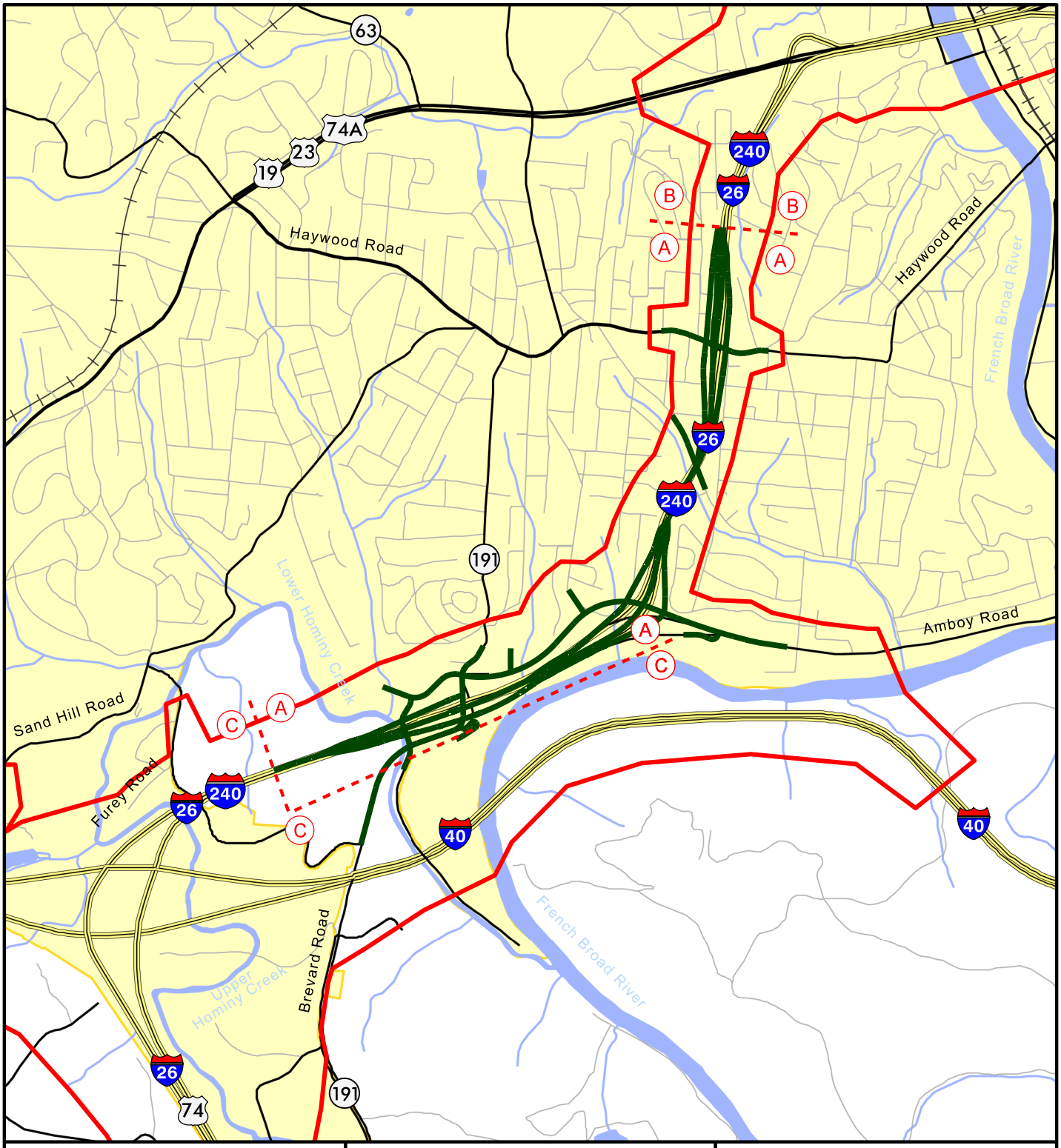

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Figure 2-13

Section A
Detailed Study Alternative

northeast quadrant, would not be provided due to the close proximity between the NC 191 (Brevard Road) interchange and the SR 3556 (Amboy Road) interchange. Instead, this movement would be accomplished by exiting at the SR 3556 (Amboy Road) interchange and following the extension of SR 3556 (Amboy Road) to the intersection with NC 191 (Brevard Road). The interchange would have typical diamond interchange ramps in the northwest, southwest and southeast quadrants. To provide adequate horizontal clearance and maintain traffic flow during the widening of I-240, the NC 191 (Brevard Road) bridge would be relocated to the west of its existing location and would be upgraded from the current four-lane cross section to carry six travel lanes. To provide greater control of access along NC 191 (Brevard Road), concrete islands would be installed to separate traffic and limit turn movements in the vicinity of the interchange. The interchange ramps would also be lengthened to provide greater acceleration and deceleration lengths. Due to the close proximity of interchanges along the I-26/I-240 corridor, auxiliary lanes would be needed along I-26 westbound/I-240 eastbound between the NC 191 (Brevard Road) interchange and the SR 3556 (Amboy Road) interchange to provide an adequate weaving length between the entrance and exit ramp.

The second interchange in Section A would be at I-26/I-240 and SR 3556 (Amboy Road) and would upgrade the existing partial interchange to a full interchange with a conventional diamond configuration. The existing interchange does not provide for the I-240 westbound to SR 3556 (Amboy Road) movement or the SR 3556 (Amboy Road) to I-240 eastbound movement. Currently, SR 3556 (Amboy Road) terminates at I-240, creating a three-leg interchange. In addition to providing for all movements, the proposed design would include extending SR 3556 (Amboy Road) over I-26/I-240, where it would then turn to the west and continue parallel with I-26/I-240 to the existing intersection of NC 191 (Brevard Road) opposite Shelburne Road. The extension of SR 3556 (Amboy Road) would provide connections to Fairfax Avenue and Virginia Avenue, and would provide a link that would eliminate the existing weaving section along I-240 between SR 3556 (Amboy Road) and NC 191 (Brevard Road). The roadway extension would be a four-lane divided roadway and would include a new six-lane bridge over I-26/I-240. To provide greater control of access along SR 3556 (Amboy Road), concrete islands would be installed to separate traffic and limit turn movements in the vicinity of the interchange. Along the extension of Amboy Road, the intersections at Fairfax Avenue and Virginia Avenue would have right-in/right-out access with no median openings, requiring traffic to utilize U-turns at the intersections at NC 191 (Brevard Road) and SR 3556 (Amboy Road).

The interchange of I-26/I-240 with US 19-23 Business (Haywood Road) would be upgraded from the existing interchange to a TUDI configuration. The existing interchange includes an exit from I-240 eastbound to Hanover Street that eventually intersects with US 19-23 Business (Haywood Road) and a ramp in the northeast quadrant that serves two-way traffic. The revised design would relocate the exit ramp in the southeast quadrant to intersect with US 19-23 Business (Haywood Road). Hanover Street would become a cul-de-sac as it approaches US 19-23 Business (Haywood Road). The southbound section of the ramp in the northeast quadrant would be eliminated for the proposed design. US 19-23 Business (Haywood Road) would remain a two lane roadway but would be widened in the vicinity of the interchange to allow for turn lanes. To provide adequate horizontal clearance and maintain traffic flow during the widening of I-240, the US 19-23 Business (Haywood Road) bridge would be relocated slightly to the north of its existing location and would be upgraded to carry five travel lanes. Due to the proximity to the historic properties along US 19-23 Business/SR 3548 (Haywood Road), the proposed new bridge would overlap the location of the existing bridge and would require the use of phased construction. To provide greater control of access along US 19-23 Business/SR 3548 (Haywood Road), concrete islands would be installed to separate traffic and limit turn

movements in the vicinity of the interchange and the interchange ramps would be lengthened to provide greater acceleration and deceleration distances. Due to the close proximity of interchanges along the I-26/I-240 corridor, auxiliary lanes would be needed along I-26/I-240 in both directions between the SR 3556 (Amboy Road) interchange and the US 19-23 Business (Haywood Road) interchange to provide an adequate weaving distance between the entrance and exit ramps.

The US 19-23 Business (Haywood Road) interchange with I-26/I-240 would have slightly different designs for the ramp in the northwest quadrant of the interchange depending on which Section B alternative it would tie to. Due to the close proximity between the I-240 westbound merge with I-26 eastbound (for Section B – Alternative 3 and Alternative 3-C) and the US 19-23 Business (Haywood Road) interchange, the merge would have to be accomplished within the US 19-23 Business (Haywood Road) interchange. The merge that would occur within the US 19-23 Business (Haywood Road) interchange would only allow for access to US 19-23 Business (Haywood Road) from I-240 westbound for Alternative 3 and Alternative 3-C. Traffic bound for US 19-23 Business (Haywood Road) along I-26 eastbound would have to exit at the US 19-23-74A (Patton Avenue) interchange and access the US 19-23 Business (Haywood Road) interchange by utilizing the entrance ramp to I-240 westbound and exiting onto the US 19-23 Business (Haywood Road) exit ramp. For Alternative 4, traffic bound for US 19-23 Business (Haywood Road) from I-26 eastbound and I-240 westbound would be required to exit at the US 19-23-74A (Patton Avenue) interchange and access US 19-23 Business (Haywood Road) by utilizing an access road between the two interchanges, which also serves as the entrance ramp to I-26 eastbound/I-240 westbound from US 19-23-74A (Patton Avenue). Because the merge between I-26 eastbound and I-240 westbound would occur farther north for Alternative 4-B, and because no service roads exist between the US 19-23-74A (Patton Avenue) interchange and the US 19-23 Business (Haywood Road) interchange, the exit to US 19-23 Business (Haywood Road) would be accomplished from the combined I-26/I-240 roadway, allowing for direct access to US 19-23 Business (Haywood Road).

Section A of the proposed project would include new or replacement bridges at five locations. The bridge carrying I-26/I-240 and the ramps to the NC 191 (Brevard Road) interchange over Lower Hominy Creek would require replacement due to the upgraded typical section and ramp ties. The bridge carrying NC 191 (Brevard Road) would be replaced to the west of the existing bridge crossing due to the wider typical sections on both NC 191 (Brevard Road) and I-26/I-240. A new bridge would be constructed over I-26/I-240 for the extension of SR 3556 (Amboy Road). The bridge carrying I-26/I-240 over State Street would require replacement due to the wider typical section. The bridge carrying US 19-23 Business (Haywood Road) over I-26/I-240 would require replacement to accommodate the wider typical section on both US 19-23 Business (Haywood Road) and I-26/I-240 and would be offset from the current location, slightly to the north.

2.5.5.3 Section B

Alternative 3

Alternative 3, shown on Figure 2-14, would include the modification of the existing I-240 interchange with US 19-23-74A (Patton Avenue) and the extension of I-26 across the French Broad River to US 19-23-70. Throughout Section A, the proposed project would include I-26 and I-240 combined as one roadway through the interchange of I-26/I-240 with US 19-23 Business (Haywood Road). At the existing I-240 interchange with US 19-23-74A (Patton Avenue), the two interstates would separate, with I-26 continuing to the north on new location and I-240

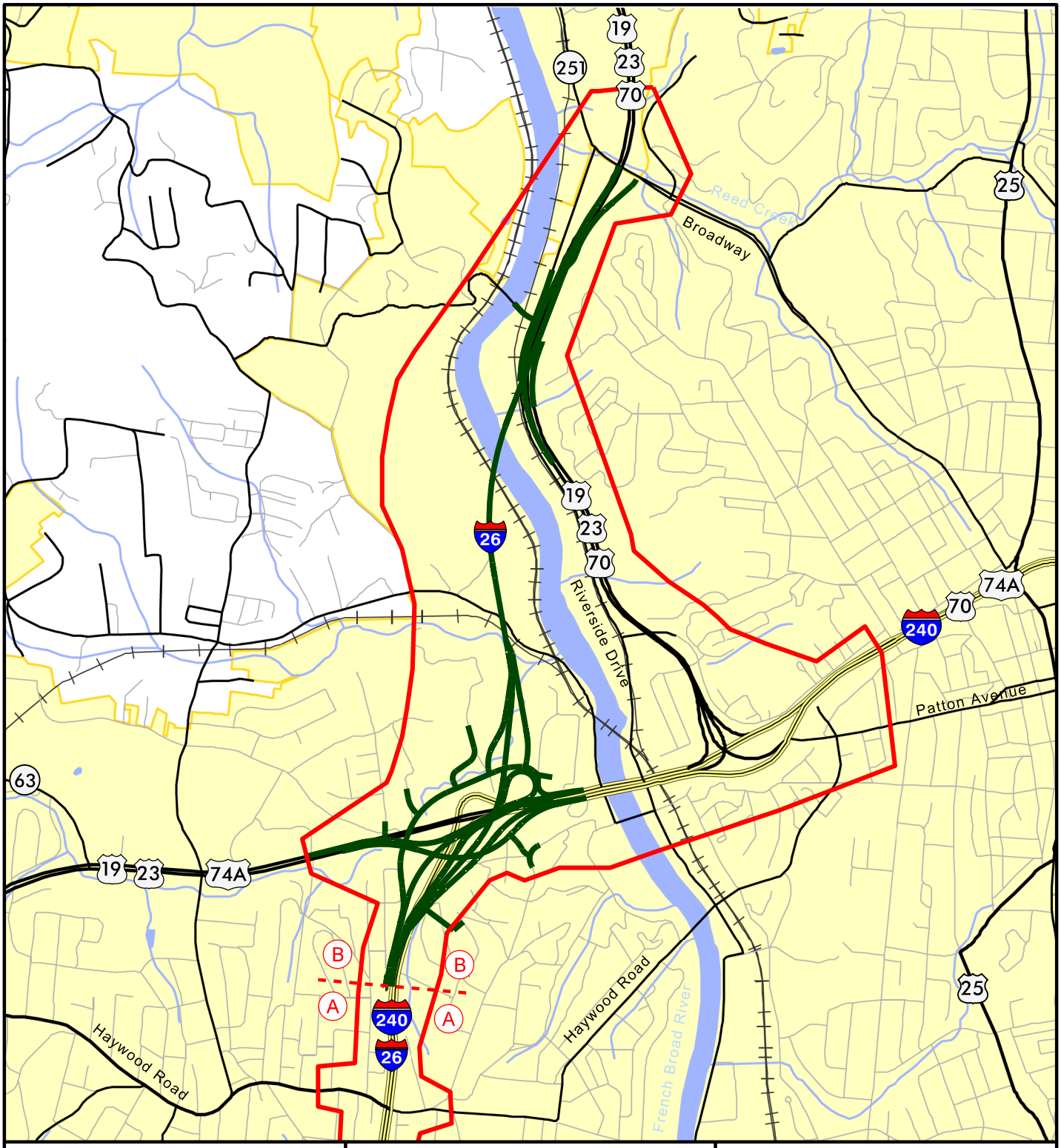

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Figure 2-14

Section B Alternative 3
Detailed Study Alternative

continuing to the east across the Captain Jeff Bowen Bridges. The interchange area is very complex due to the mixing of local traffic on Patton Avenue which also uses the Captain Jeff Bowen Bridges.

The complexity of the proposed interchange of the I-26 and I-240 freeways with US 19-23-74A (Patton Avenue) would be compounded as the interchange would accommodate the separation of the freeways and the connections to Patton Avenue at a single location. The proposed alignment for I-26/I-240, north of the US 19-23 Business (Haywood Road) interchange, splits; with traffic bound for I-26 westbound and westbound US 19-23-74A (Patton Avenue) continuing northward, and traffic bound for I-240 eastbound and eastbound Patton Avenue exiting toward the east. After I-26 westbound would cross under I-240 eastbound and eastbound US 19-23-74A (Patton Avenue), traffic destined for US 19-23-74A (Patton Avenue) westbound would exit onto a loop ramp intersecting with westbound Patton Avenue. The design of Alternative 3 also includes a new access road north of Patton Avenue that would provide access to the businesses to the north of the interchange. The access road begins at an exit from I-240 eastbound approximately 200 feet west of the Captain Jeff Bowen Bridges, includes a roundabout near the Westgate Shopping Center and would eventually intersect with US 19-23-74A (Patton Avenue) to the west of I-26. The ramp carrying I-240 eastbound traffic would become the through movement, with the traffic from eastbound Patton Avenue merging west of the French Broad River and continuing to the east across the southern Captain Jeff Bowen Bridge.

In the opposite direction, the I-240 westbound roadway would remain combined with westbound US 19-23-74A (Patton Avenue) across the northern Captain Jeff Bowen Bridges (Buncombe County Bridge 323, the northern span of these bridges, is historically known as the Great Smoky Mountain Park Bridge). After crossing over I-26, the roadway would split, with Patton Avenue exiting to the west and I-240 westbound continuing in the southbound direction. Immediately downstream of the US 19-23-74A (Patton Avenue) exit, traffic headed to US 19-23 Business (Haywood Road) would exit onto a C/D roadway shared with traffic going from US 19-23-74A (Patton Avenue) to eastbound I-26/westbound I-240. I-240 westbound would merge with eastbound I-26 between the US 19-23-74A (Patton Avenue) interchange and the US 19-23 Business (Haywood Road) interchange. A standard diamond interchange ramp from US 19-23-74A (Patton Avenue) would merge with the ramp from I-240 westbound and the C/D roadway would continue toward the south to the exit ramp to the US 19-23 Business (Haywood Road) interchange. The traffic from US 19-23-74A (Patton Avenue) headed to I-26 eastbound/I-240 westbound would then merge with I-26 eastbound/I-240 westbound within the US 19-23 Business (Haywood Road) interchange in Section A of the proposed project.

The interchange of I-26/I-240 with US 19-23-74A (Patton Avenue) would be completed by providing access to and from US 19-23-74A (Patton Avenue) to I-26, beyond the point where it splits with I-240. Two standard diamond interchange ramps would provide a connection to and from I-26 to the new access roadway that parallels Patton Avenue and would serve businesses located to the west of the French Broad River (Figure 2-14). Due to the complexity of the interchange and the constraints associated with developing an interchange within an urban area and adjacent to the river, not all movements would be included in the interchange.

The proposed design would not provide direct access from I-240 westbound to I-26 westbound at this interchange, and would require that traffic bound for I-26 westbound utilize the access road or the US 19-23-74A (Patton Avenue) interchange along I-240 east of the French Broad River. Access from I-26 eastbound to I-240 eastbound or eastbound Patton Avenue would also not be provided through a direct connection. Traffic would be required to use the exit to the new

access roadway north of Patton Avenue, turn onto Patton Avenue and follow it to where I-240 eastbound would merge and the combined roadways cross the Captain Jeff Bowen Bridges.

The I-26 freeway alignment for Alternative 3 would turn the freeway to the east and then north beyond the interchange of I-26/I-240 with US 19-23 Business (Haywood Road); crossing under eastbound Patton Avenue, westbound I-240, westbound US 19-23-74A (Patton Avenue) and the new access roadway on new location. The new location freeway would cross through the edge of the Crowne Plaza Resort golf course and along the west side of the Westgate Shopping Center and would continue running parallel along the west bank of the French Broad River and the mainline of the Norfolk Southern Railway. The I-26 roadway for Alternative 3 would cross over Smith Mill Creek, an unnamed tributary to Smith Mill Creek, the Blue Ridge Southern Railroad of Norfolk Southern Railway and SR 1338 (Emma Road) along a single 2,300-foot long bridge that would include a portion of the ramps being constructed as bridges. I-26 would continue to the north, paralleling the French Broad River, before turning to the east and crossing the main line of the Norfolk Southern Railway, the French Broad River, the NS Craggy Mountain spur line of the Norfolk Southern Railway, SR 1477 (Riverside Drive) and the southbound lanes of US 19-23-70 along a single 1,750-foot long bridge, approximately one mile north of the Captain Jeff Bowen Bridges. The new location freeway carrying I-26 would then merge into US 19-23-70 approximately 2,500 feet south of the SR 1781 (Broadway) interchange, where the alignment of I-26 would become the through movement and US 19-23-70 would become bifurcated and would merge into I-26. The interchange would not provide the I-26 westbound traffic the ability to access US 19-23-70 in the southbound direction, nor would it provide access from US 19-23-70 northbound to I-26 eastbound. To make these movements, the traffic would utilize the interchange of I-26/I-240 with US 19-23-74A (Patton Avenue) or the I-240 interchange with US 19-23-70/Patton Avenue. These movements would essentially be redundant and would only be utilized by motorists who missed an exit.

The existing I-240 interchange with US 19-23-70/Patton Avenue east of the French Broad River would not be modified for Alternative 3. All improvements to the combined I-240/Patton Avenue roadway would occur on the west side of the river and would not involve any construction along the Captain Jeff Bowen Bridges.

Alternative 3 would include new or replacement bridges at a total of eight locations. Two of the bridge locations would be along the mainline of I-26, four would be associated with Patton Avenue and I-240, one would be along the new roadway north of Patton Avenue, and one would be associated with the I-26/US 19-23-70 interchange bridge over SR 1781 (Broadway) at the north end of the project. The first I-26 bridge crossing would include the crossing of Smith Mill Creek, an unnamed tributary to Smith Mill Creek, the Blue Ridge Southern Railroad of Norfolk Southern Railway and SR 1338 (Emma Road) and would include portions of the ramps that connect to the new roadway north of Patton Avenue. The second I-26 bridge crossing would include the crossing of the main line of the Norfolk Southern Railway, the French Broad River, the NS Craggy Mountain spur line of the Norfolk Southern Railway, SR 1477 (Riverside Drive) and the southbound lanes of US 19-23-70. The first of the three bridges associated with Patton Avenue and I-240 would be a new bridge crossing along the I-240 westbound ramp over eastbound Patton Avenue, the second would be westbound I-240 and westbound Patton Avenue over I-26, and the third would be along eastbound Patton Avenue over I-26 and I-240 eastbound. The sixth bridge location would be the grade separation of the new roadway north of Patton Avenue over I-26, and the final bridge location would be a freeway bridge that would be part of the interchange of I-26/US 19-23-70 with SR 1781 (Broadway).

Alternative 3-C

Alternative 3-C was developed during the Detailed Study Alternative phase in an effort to further minimize impacts as well as to improve traffic operations on proposed I-26 between US 19-23-70 and the SR 1781 (Broadway) interchanged. This alternative very closely resembles Alternative 3, with the only exceptions being along proposed I-26 as it crosses the French Broad River, and at the intersection location with US 19-23-70.

If chosen Alternative 3-C, shown on Figure 2-15, would include the modification of the existing I-240 interchange with US 19-23-74A (Patton Avenue) and the extension of I-26 across the French Broad River to US 19-23-70. Alternative 3-C is almost identical in configuration and design to Alternative 3 with the main difference being the new alignment location for the I-26 freeway after the I-240 split. The new I-26 alignment would turn east instead of going north and would cross the French Broad River on new location approximately 2,400 feet north of the Captain Jeff Bowen Bridges. Throughout Section A, the proposed project would include I-26 and I-240 combined as one roadway through the interchange of I-26/I-240 with US 19-23 Business (Haywood Road). At the existing I-240 interchange with US 19-23-74A (Patton Avenue), the two interstates would separate, with I-26 continuing to the north on new location and I-240 continuing to the east across the Captain Jeff Bowen Bridges. The interchange area is very complex due to the mixing of local traffic on Patton Avenue which also uses the Captain Jeff Bowen Bridges.

The complexity of the proposed interchange of the I-26 and I-240 freeways with US 19-23-74A (Patton Avenue) would be compounded as the interchange would accommodate the separation of the freeways and the connections to Patton Avenue at a single location. The proposed alignment for I-26/I-240, north of the US 19-23 Business (Haywood Road) interchange, splits with traffic bound for I-26 westbound and westbound US 19-23-74A (Patton Avenue) continuing northward, and traffic bound for I-240 eastbound and eastbound Patton Avenue exiting toward the east. After I-26 would cross under I-240 and Patton Avenue, traffic destined for US 19-23-74A (Patton Avenue) westbound would exit onto a loop ramp intersecting with westbound Patton Avenue. The design of Alternative 3-C also includes a new access road north of Patton Avenue that would provide access to the businesses to the north of the interchange. The access road begins at an exit from I-240 eastbound approximately 200 feet west of the Captain Jeff Bowen Bridges, includes a roundabout near the Westgate Shopping Center and would eventually intersect with US 19-23-74A (Patton Avenue) to the west of I-26. The ramp carrying I-240 eastbound traffic would become the through movement, with the traffic from eastbound Patton Avenue merging west of the French Broad River and continuing to the east across the southern Captain Jeff Bowen Bridge.

In the opposite direction, the I-240 westbound roadway would remain combined with westbound Patton Avenue across the northern Captain Jeff Bowen Bridge (Buncombe County Bridge 323, the northern span of these bridges, is historically known as the Great Smoky Mountain Park Bridge). After crossing over I-26, the roadway would split, with Patton Avenue exiting to the west and I-240 westbound continuing in the southbound direction. I-240 westbound would continue to the south, parallel with I-26 eastbound, with a median barrier separating the roadways. A standard diamond interchange ramp from US 19-23-74A (Patton Avenue) would merge with I-240 westbound and the roadway would continue toward the south to the exit ramp to the US 19-23 Business (Haywood Road) interchange. The I-240 westbound roadway would then merge with I-26 eastbound within the US 19-23 Business (Haywood Road) interchange in Section A of the proposed project.

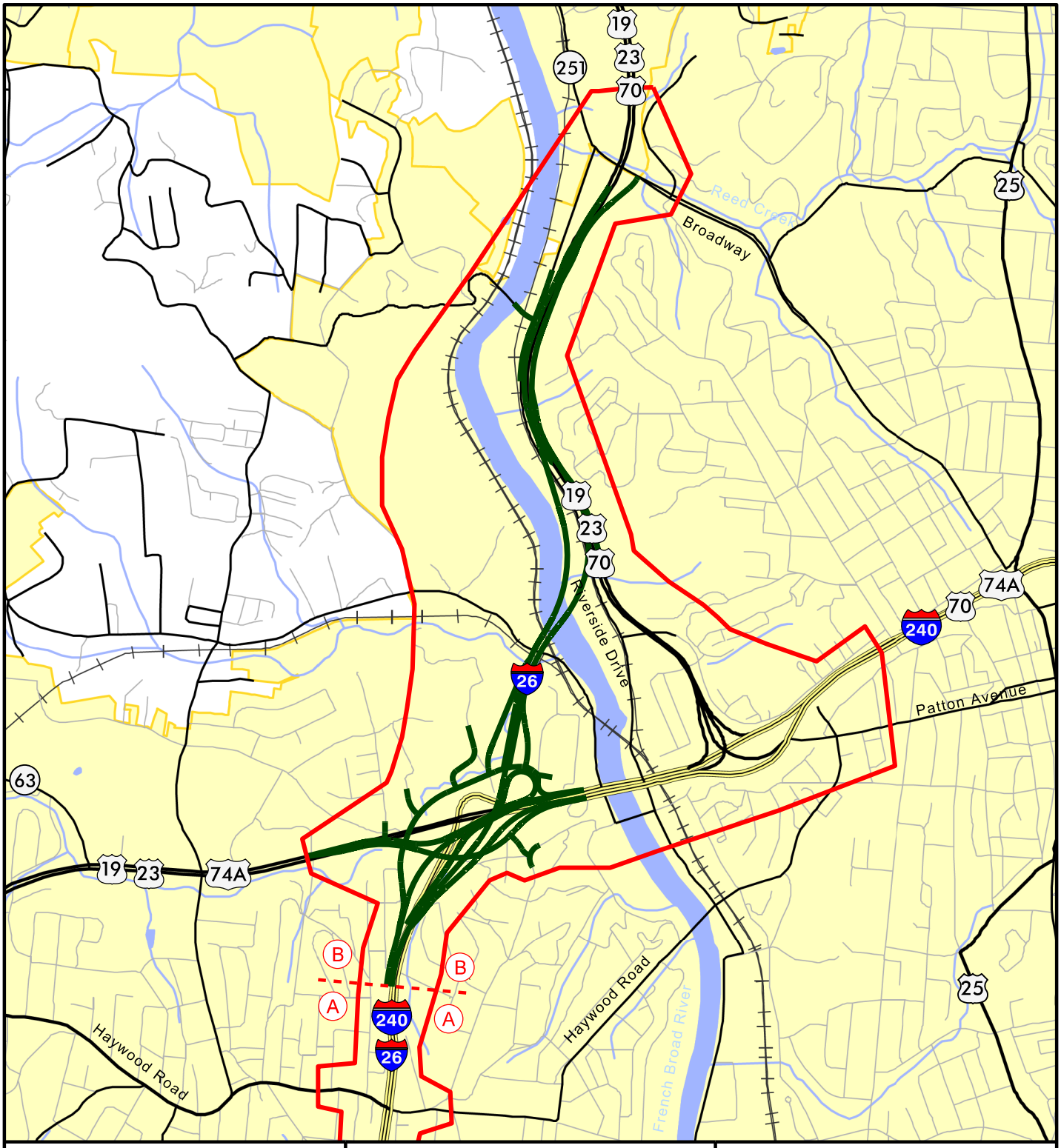

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Figure 2-15

Section B Alternative 3-C
Detailed Study Alternative

The interchange of I-26/I-240 with US 19-23-74A (Patton Avenue) would be completed by providing access to and from US 19-23-74A (Patton Avenue) to I-26, beyond the point where it splits with I-240. Two standard diamond interchange ramps would provide a connection to and from I-26 to the new access roadway that parallels Patton Avenue and would serve businesses located to the west of the French Broad River. Due to the complexity of the interchange and the constraints associated with developing an interchange within an urban area and adjacent to the river, not all movements would be included in the interchange.

The proposed design would not provide direct access from I-240 westbound to I-26 westbound at this interchange, and would require that traffic bound for I-26 westbound utilize the access road or the US 19-23-70/Patton Avenue interchange along I-240 east of the French Broad River. Access from I-26 eastbound to I-240 eastbound or eastbound Patton Avenue would also not be provided through a direct connection. Traffic would be required to use the exit to the new access roadway north of Patton Avenue, turn onto Patton Avenue and follow it to where I-240 eastbound would merge and the combined roadways cross the Captain Jeff Bowen Bridges.

The I-26 freeway alignment for Alternative 3-C would turn the freeway to the east, then north and east again beyond the interchange of I-26/I-240 with US 19-23 Business (Haywood Road); crossing under eastbound Patton Avenue, westbound I-240, westbound Patton Avenue and the new access roadway on new location. The new location freeway would cross through the edge of the Crowne Plaza Resort golf course and after going along the west side of the Westgate Shopping Center it would turn north-east and cross over Smith Mill Creek, an unnamed tributary to Smith Mill Creek, the Blue Ridge Southern Railroad of Norfolk Southern Railway and SR 1338 (Emma Road) and the main line of the Norfolk Southern Railway. I-26 freeway will bifurcate just west of French Broad River approximately 2,400 feet north of Captain Jeff Bowen Bridges and will cross it along two 4,800-foot long fly-over bridges. On the east side of French Broad River the I-26 freeway will cross over the NS Craggy Mountain spur line of the Norfolk Southern Railway, SR 1477 (Riverside Drive) and the southbound lanes of US 19-23-70 approximately 4,500 feet north of the Captain Jeff Bowen Bridges. The new location freeway carrying I-26 would then merge into US 19-23-70 approximately 4,200 feet south of the SR 1781 (Broadway) interchange, where the alignment of I-26 would become the through movement and US 19-23-70 would become bifurcated and would merge into I-26. The interchange would not provide the I-26 westbound traffic the ability to access US 19-23-70 in the southbound direction, nor would it provide access from US 19-23-70 northbound to I-26 eastbound. To make these movements, the traffic would utilize the interchange of I-26/I-240 with US 19-23-74A (Patton Avenue) or the I-240 interchange with US 19-23-70/Patton Avenue. These movements would essentially be redundant and would only be utilized by motorists who missed an exit.

The existing I-240 interchange with US 19-23-70/Patton Avenue east of the French Broad River would not be modified for Alternative 3-C. All improvements to the combined I-240/Patton Avenue roadway would occur on the west side of the river and would not involve any construction along the Captain Jeff Bowen Bridges.

Alternative 3-C would include new or replacement bridges at a total of eight locations. Two of the bridge locations would be along the mainline of I-26, four would be associated with Patton Avenue and I-240, one would be along the new roadway north of Patton Avenue, and one would be associated with the I-26/US 19-23-70 interchange bridge over SR 1781 (Broadway) at the north end of the project. The first I-26 bridge crossing would include the crossing of Smith Mill Creek, an unnamed tributary to Smith Mill Creek, the Blue Ridge Southern Railroad of Norfolk Southern Railway and SR 1338 (Emma Road) and would include portions of the ramps that connect to the new roadway north of Patton Avenue. The second I-26 bridge crossing would

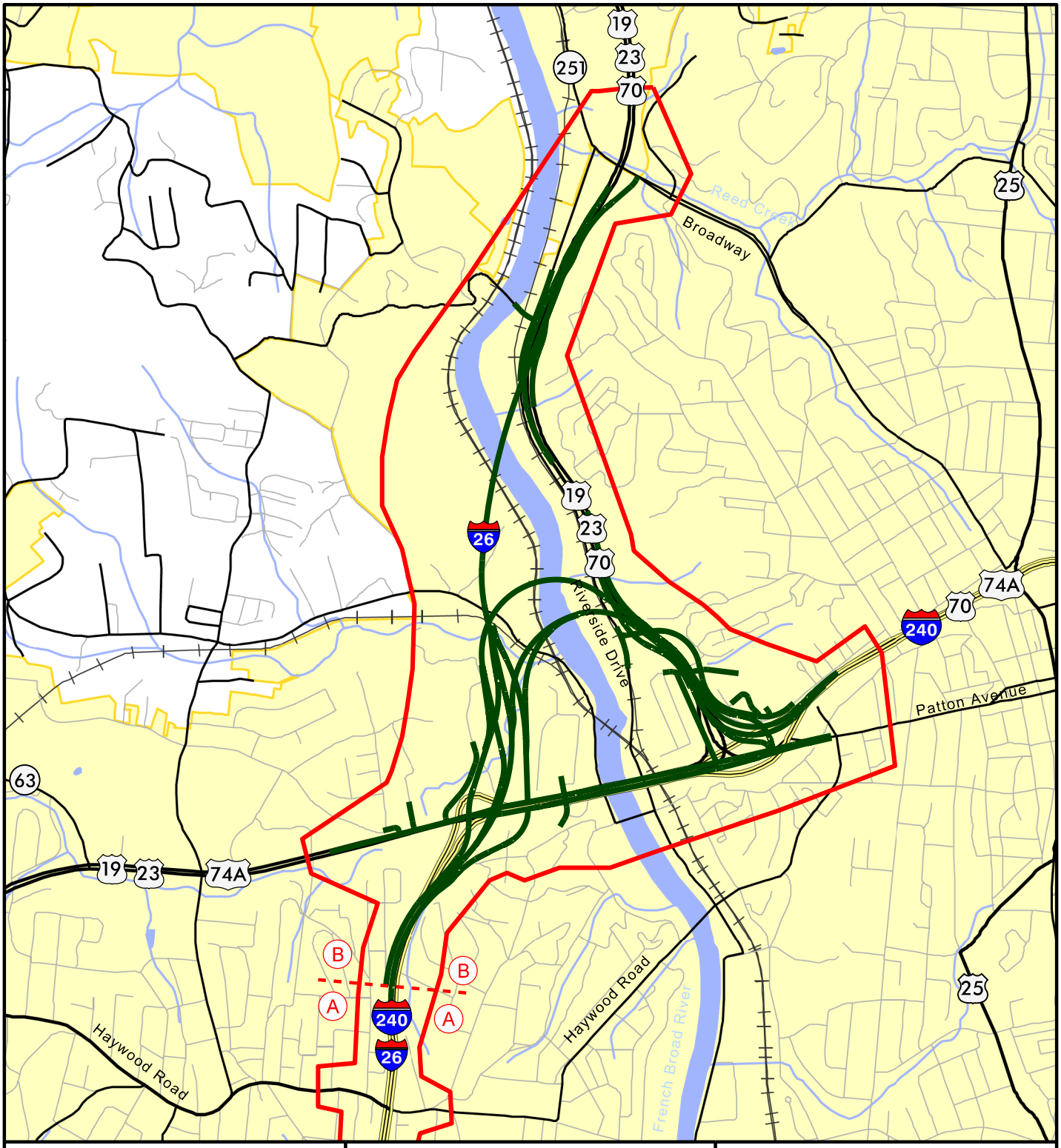
include the crossing of the main line of the Norfolk Southern Railway, the French Broad River, the NS Craggy Mountain spur line of the Norfolk Southern Railway, SR 1477 (Riverside Drive) and the southbound lanes of US 19-23-70. The first of the three bridges associated with Patton Avenue and I-240 would be a new bridge crossing along the I-240 westbound ramp over eastbound Patton Avenue, the second would be westbound I-240 and westbound Patton Avenue over I-26, and the third would be along eastbound Patton Avenue over I-26 and I-240 eastbound. The sixth bridge location would be the grade separation of the new roadway north of Patton Avenue over I-26, and the final bridge location would be a freeway bridge that would be part of the interchange of I-26/US 19-23-70 with SR 1781 (Broadway).

Alternative 4

Alternative 4, shown on Figure 2-16, would include the modification of the existing I-240 interchange with US 19-23-74A (Patton Avenue) and the extension of I-26 across the French Broad River to US 19-23-70. Throughout Section A, the proposed project would include I-26 and I-240 combined as one roadway through the interchange of I-26/I-240 with US 19-23 Business (Haywood Road). Alternative 4 was developed to separate the local Patton Avenue traffic from the I-240 through-traffic. To create this separation, the split between I-26 and I-240 would be moved to the north and the existing Captain Jeff Bowen Bridges would be converted to serve local Patton Avenue traffic only.

The I-26 freeway alignment for Alternative 4 would be very similar to Alternative 3 and would turn the freeway to the east and then north, crossing under US 19-23-74A (Patton Avenue). The new location freeway would cross through the edge of the Crowne Plaza Resort golf course and along the west side of the Westgate Shopping Center and would be parallel to the west bank of the French Broad River and the mainline of the Norfolk Southern Railway. The I-26 roadway for Alternative 4 would then cross over Smith Mill Creek, an unnamed tributary to Smith Mill Creek, the Blue Ridge Southern Railroad of Norfolk Southern Railway and SR 1338 (Emma Road). This will be accomplished through a complex bridge structure that would include the mainline of I-26, portions of four ramps, the I-240 eastbound flyover ramp and a portion of a slip ramp connecting a Patton Avenue ramp to the flyover. I-26 would continue to the north, paralleling the French Broad River, before turning to the east and crossing the main line of the Norfolk Southern Railway, the French Broad River, the NS Craggy Mountain spur line of the Norfolk Southern Railway, SR 1477 (Riverside Drive) and the southbound lanes of US 19-23-70 along a single 1,750-foot long bridge, approximately one mile north of the Captain Jeff Bowen Bridges. The new location freeway carrying I-26 would then merge into US 19-23-70 approximately 2,500 feet south of the SR 1781 (Broadway) interchange, where the alignment of I-26 would become the through movement and US 19-23-70 would become bifurcated and would merge into I-26.

Due to the separation of the local Patton Avenue traffic from the interstate traffic, the interchange configuration for Alternative 4 becomes simpler with regard to the connection to US 19-23-74A (Patton Avenue) and very complex with regard to the split of I-26 and I-240. The interchange of I-26/I-240 and US 19-23-74A (Patton Avenue) west of the French Broad River would mostly consist of a conventional diamond configuration with ramps in three of the four quadrants. The southwest quadrant would consist of a two-lane service road between the US 19-23-74A (Patton Avenue) interchange and the US 19-23 Business (Haywood Road) interchange, which would serve as both the on ramp from US 19-23-74A (Patton Avenue) to eastbound I-26/westbound I-240, and as the off ramp from eastbound I-26, westbound I-240, and US 19-23-74A (Patton Avenue) to US 19-23 Business (Haywood Road). This configuration would result in requiring traffic exiting to US 19-23 Business (Haywood Road) from eastbound I-26 and westbound I-240 to exit to US 19-23-74A (Patton Avenue), and then travel through the



North Carolina
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Legend

- Proposed Roadway Alignment
- Project Study Area
- Interstate
- US Highways
- NC Highways
- Local Road
- Railroad
- Municipal Boundaries
- Streams
- Water
- A Section

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Figure 2-16

Section B Alternative 4
Detailed Study Alternative

at-grade signalized intersection at the ramp terminal onto the service road. The alignment of US 19-23-74A (Patton Avenue) would generally be the same as the existing alignment. The location of the proposed interchange would require that the entrance to the Crowne Plaza Resort be relocated to the west of the interchange, intersecting with US 19-23-74A (Patton Avenue) approximately 300 feet west of the interchange.

North of the I-26/I-240 interchange with US 19-23-74A (Patton Avenue), the combined I-26 and I-240 roadways split. The mainline of I-26 would continue to the north and I-240 would turn to the east and would cross over the French Broad River along two flyover bridges, with one bridge carrying eastbound I-240 traffic and the other carrying westbound I-240 traffic. The interstate split is further complicated by the interchange ramps on the north side of US 19-23-74A (Patton Avenue) associated with the US 19-23-74A (Patton Avenue) interchange. Due to the close proximity between the US 19-23-74A (Patton Avenue) interchange and the I-26/I-240 split, braided ramps would be utilized to avoid weaving sections. Because braided ramps typically do not provide for direct access between all roadways, slip ramps would be incorporated such that direct access to and from I-26 and I-240 with US 19-23-74A (Patton Avenue) would be maintained.

To the east of the French Broad River, the flyover bridges that would carry I-240 traffic turn to the south and connect with US 19-23-70. The connection to US 19-23-70 would require the alignment of the existing roadway to be reconfigured. The alignment of I-240 would become the through movement and the existing alignment of US 19-23-70 would become bifurcated, with the revised roadway merging and diverging with the I-240 traffic. Additionally, the interchange that connects to Hill Street and SR 1477 (Riverside Drive) would be closed due to the proximity to the new I-240 alignments. Access would be provided by a new bridge south of the existing Atkinson Street crossing and a new roadway that would connect SR 1477 (Riverside Drive) to Patton Avenue. The existing interchange between I-240 and US 19-23-70/Patton Avenue east of the French Broad River would require modification to accommodate the revised alignment of I-240 and the Patton Avenue crossing along the Captain Jeff Bowen Bridges. The existing interchange would be modified to provide a direct freeway connection from I-240 to the combined I-240/US 19-23-70 roadway in the northbound direction. The modified interchange would also include a ramp connection to Patton Avenue from I-240 eastbound/US 19-23-70 southbound, and a ramp connection from Patton Avenue to I-240 westbound/US 19-23-70 northbound. The existing connection from Patton Avenue to eastbound I-240 along SR 3548 (Clingman Avenue) would be maintained. There would not be a connection to Patton Avenue from I-240 westbound at the modified interchange.

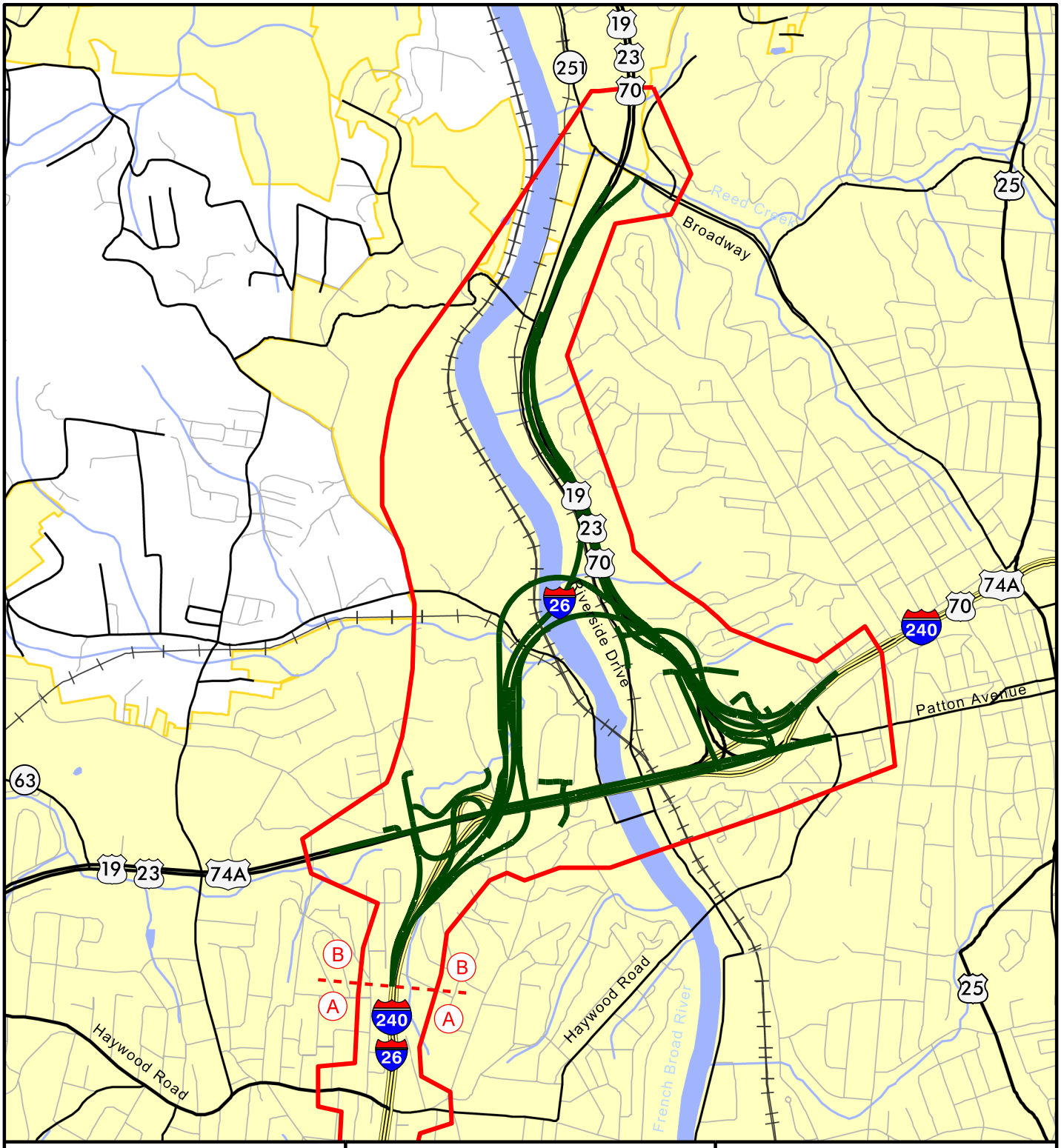
Due to the complexity of the interchanges, their close proximity to each other and constraints associated with developing interchanges within an urban area and adjacent to a river, not all movements would be included in the interchanges. The proposed design of the I-26/I-240 interchange with US 19-23-74A (Patton Avenue) would not include the movements connecting I-26 eastbound to I-240 eastbound or I-240 westbound to I-26 westbound. The interchange where I-240 and US 19-23-70 split east of the French Broad River would not include the movements connecting I-240 eastbound to US 19-23-70 northbound or US 19-23-70 southbound to I-240 westbound. The I-26 interchange with US 19-23-70 would not include the movements connecting I-26 westbound with US 19-23-70 southbound or US 19-23-70 northbound to I-26 eastbound. To make these movements, the traffic would utilize an adjacent interchange. These movements would essentially be redundant and would only be utilized by motorists who missed an exit.

Alternative 4 would include new or replacement bridges at a total of twelve locations. The first bridge crossing would include the crossing of US 19-23-74A (Patton Avenue) over I-26. The second bridge crossing would be along the ramp from I-26 eastbound and I-240 westbound to US 19-23-74A (Patton Avenue) and would cross over Smith Mill Creek and an unnamed tributary to Smith Mill Creek. The third bridge location would be adjacent to the second and would cross Smith Mill Creek with a new access road serving the Crowne Plaza Resort. The fourth bridge location would be a complex bridge structure that would include the mainline of I-26, portions of four ramps, the I-240 eastbound flyover ramp and a portion of a slip ramp connecting a US 19-23-74A (Patton Avenue) ramp to the I-240 eastbound flyover. The fifth bridge location would be the I-240 westbound flyover over the southbound lanes of US 19-23-70, SR 1477 (Riverside Drive), the NS Craggy Mountain spur line of the Norfolk Southern Railway, the French Broad River, and the mainline of the Norfolk Southern Railway. The sixth bridge location would also be along the I-240 westbound flyover and would cross over both I-26 and an unnamed tributary to Smith Mill Creek. The seventh bridge location would be the I-26 bridge crossing of the main line of the Norfolk Southern Railway, the French Broad River, the NS Craggy Mountain spur line of the railroad, SR 1477 (Riverside Drive) and the southbound lanes of US 19-23-70. The eighth bridge location would be a freeway bridge that would be part of the interchange of I-26/US 19-23-70 with SR 1781 (Broadway). The ninth, tenth, eleventh and twelfth bridge locations would be associated with the reconfiguration of the existing US 19-23-70/Patton Avenue interchange with I-240. The ninth bridge location would include a new bridge along relocated Atkinson Street over I-240/US 19-23-70 that would connect Hill Street and a new roadway between Patton Avenue and SR 1477 (Riverside Drive). The tenth bridge location would be a new ramp that would connect Patton Avenue to I-240 westbound/US 19-23-70 northbound and would cross over the combined I-240/US 19-23-70 roadway. The eleventh bridge location would carry US 19-23-70 southbound over Hill Street, while the twelfth bridge location would carry the combined I-240 westbound/US 19-23-70 northbound roadway over Hill Street.

Alternative 4-B

Alternative 4-B, shown on Figure 2-17, would include the modification of the I-240 interchange with US 19-23-74A (Patton Avenue) and the extension of I-26 across the French Broad River to US 19-23-70. Throughout Section A, the proposed project would include I-26 and I-240 combined as one roadway through the interchange of I-26/I-240 with US 19-23 Business (Haywood Road). Alternative 4-B was developed to separate the local Patton Avenue traffic from the I-240 through-traffic and minimize the footprint of the design. To create this separation, the split between I-26 and I-240 would be moved to the north and the existing Captain Jeff Bowen Bridges would be converted to serve Patton Avenue traffic only.

The I-26 freeway alignment for Alternative 4-B would be similar to Alternatives 3, 3-C and 4 and would turn the freeway to the east and then north, crossing under US 19-23-74A (Patton Avenue). The new location freeway would cross through the edge of the Crowne Plaza Resort golf course and along the west side of the Westgate Shopping Center before turning to the northeast and crossing over Smith Mill Creek, the Blue Ridge Southern Railroad and mainline of the Norfolk Southern Railway, SR 1338 (Emma Road), and the French Broad River along a complex bridge structure that would include the mainline of I-26, the I-240 westbound flyover ramp and a portion of the ramp to I-26 westbound from US 19-23-74A (Patton Avenue). The complex bridge structure on I-26 would continue on the east side of the French Broad River, crossing the NS Craggy Mountain spur line of the Norfolk Southern Railway, SR 1477 (Riverside Drive), would become an elevated structure over the southbound lanes of US 19-23-70 approximately one-half mile north of the Captain Jeff Bowen Bridges including a portion of



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Buncombe County

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Figure 2-17

Section B Alternative 4-B
Detailed Study Alternative

the ramp from U 19-23-70 northbound. The new location freeway carrying I-26 westbound would include an entrance ramp from US 19-23-70 northbound approximately 4,500 feet south of the SR 1781 (Broadway) interchange, where the alignment of I-26 would become the through movement and US 19-23-70 would merge into I-26. The exit ramp from I-26 eastbound to US 19-23-70 southbound would be similar to Alternative 4 and the split would occur approximately 2,500 feet south of the SR 1781 (Broadway) interchange, where the US 19-23-70 roadway would split and would eventually travel beneath the I-26 bridge that crosses the French Broad River. The I-26 freeway alignment, as noted above, would include a continuous complex bridge structure beginning south of US 19-23-74A (Patton Avenue), extending north to the I-26 and I-240 split, and going over the southbound lanes of US 19-23-70 as an elevated structure.

The interchange of I-26/I-240 and US 19-23-74A (Patton Avenue) west of the French Broad River would have a conventional diamond interchange on the east side, utilize a loop and ramp in the southwest quadrant, and a tight flyover ramp in the northeast quadrant. The alignment of US 19-23-74A (Patton Avenue) would generally be the same as the existing alignment. The loop and ramp in the southwest quadrant intersect US 19-23-74A (Patton Avenue) at the same location as Regent Park Boulevard. Westbound left turns from US 19-23-74A (Patton Avenue) would be prohibited at this intersection; therefore, westbound traffic on US 19-23-74A/Patton of this intersection. The location of the proposed interchange would require the entrance to the Crowne Plaza Resort be relocated to intersect with Regent Park Boulevard north of the intersection with US 19-23-74A (Patton Avenue).

North of the I-26/I-240 interchange with US 19-23-74A (Patton Avenue), the combined I-26 and I-240 roadways split near the crossing of the French Broad River. The mainline of I-26 would turn northeast and I-240 would turn to the east along two new flyover bridges, with one bridge carrying eastbound I-240 traffic and the other carrying westbound I-240 traffic. Due to the close proximity between the US 19-23-74A (Patton Avenue) interchange and the I-26/I-240 split, braided ramps would be utilized on the east side to avoid weaving sections. Because braided ramps typically do not provide for direct access between all roadways, a slip ramp would be incorporated such that direct access to I-26 and I-240 from US 19-23-74A (Patton Avenue) would be maintained.

To the east of the French Broad River, the flyover bridges that would carry I-240 traffic would turn to the south and connect with US 19-23-70. The connections to US 19-23-70 would require the alignment of the existing roadway to be reconfigured. The alignment of I-240 would become the through movement and the existing alignment of US 19-23-70 would become bifurcated with the revised roadway merging and diverging with the I-240 traffic. Additionally, the interchange that connects to Hill Street and SR 1477 (Riverside Drive) would be closed due to the proximity to the new I-240 alignments. Access would be provided by a new bridge south of the existing Atkinson Road crossing and a new roadway that would connect SR 1477 (Riverside Drive) to Patton Avenue. The existing interchange between I-240 and US 19-23-70/Patton Avenue east of the French Broad River would require modification to accommodate the revised alignment of I-240 and the Patton Avenue crossing along the Captain Jeff Bowen Bridges. The existing interchange would be modified to provide a direct freeway connection from I-240 to the combined I-240/US 19-23-70 roadway in the northbound direction. The modified interchange would also include a ramp connection to Patton Avenue from I-240 eastbound/US 19-23-70 southbound and a ramp connection from Patton Avenue to I-240 westbound/US 19-23-70 northbound. The existing connection from Patton Avenue to eastbound I-240 along SR 3548 (Clingman Avenue) would be maintained. There would not be a connection to Patton Avenue from I-240 westbound at the modified interchange.

Due to the complexity of the interchanges, the close proximity of the interchange and the constraints associated with developing interchanges within an urban area and adjacent to the river; not all movements would be included in the interchanges. The proposed design of the I-26/I-240 interchange with US 19-23-74A (Patton Avenue) would not include the movements connecting I-26 eastbound to I-240 eastbound or I-240 westbound to I-26 westbound. The interchange where I-240 and US 19-23-70 split east of the French Broad River would not include the movements connecting I-240 eastbound to US 19-23-70 northbound or US 19-23-70 southbound to I-240 westbound. The I-26 interchange with US 19-23-70 would not include the movements connecting I-26 westbound with US 19-23-70 southbound or US 19-23-70 northbound to I-26 eastbound. To make these movements, the traffic would utilize an adjacent interchange. These movements would essentially be redundant and would only be utilized by motorists who missed an exit.

Alternative 4-B would include new or replacement bridges at a total of ten locations. The first bridge location would be a complex bridge structure that would include the mainline of I-26 from north of US 19-23-74A (Patton Avenue) to US 19-23-70, the I-240 westbound flyover ramp, a portion of the ramp to I-26 westbound from US 19-23-74A (Patton Avenue) and a portion of the ramp from US 19-23-70 northbound. The second would include the I-240 eastbound flyover ramp, and a portion of a slip ramp connecting US 19-23-74A (Patton Avenue) to the I-240 eastbound flyover. These bridges would span Smith Mill Creek and the French Broad River. The third and fourth bridges would be along US 19-23-74A (Patton Avenue) over I-26/I-240 and the entrance ramp to I-26 eastbound/I-240 westbound. The fifth bridge location would be along the I-26 eastbound/I-240 westbound off-ramp loop in the southwest quadrant of the US 19-23-74A (Patton Avenue) interchange. The sixth bridge location would be a freeway bridge that would be part of the interchange of I-26/US 19-23-70 with SR 1781 (Broadway). The seventh bridge location would be along I-240 westbound/US 19-23-70 northbound crossing over Hill Street. The eighth bridge location would be along US 19-23-70 southbound crossing over Hill Street. The ninth and tenth bridge locations would be associated with the reconfiguration of the existing US 19-23-70/Patton Avenue interchange with I-240. The ninth bridge location would include a new bridge along relocated Atkinson Street over I-240/US 19-23-70 that would connect Hill Street and a new roadway between Patton Avenue and SR 1477 (Riverside Drive). The tenth bridge location would be a new ramp that would connect Patton Avenue to I-240 westbound/US 19-23-70 northbound and would cross over the combined I-240/US 19-23-70 roadway.

2.5.5.4 Summary of Detailed Study Alternatives

This section provides a condensed description of the detailed study alternatives that focus on comparing the features of each alternative. For a more detailed description of the detailed study alternatives see Section 2.5.5.

Section C

Alternative A-2

Features of Alternative A-2 include:

- Fully-directional interchange at I-26/I-40/I-240 with flyover ramps and no loops.
- Reconstruction of I-40/NC 191 (Brevard Road) interchange to a modified diamond configuration.

- Braided ramps along I-40 eastbound between I-26/I-40/I-240 interchange and I-40/NC 191 (Brevard Road) interchange.
- C/D roadway along I-40 westbound from east of I-40/NC 191 (Brevard Road) interchange to within the I-26/I-40/I-240 interchange.
- Reconstruction of I-40/US 19-23-74A (Smoky Park Highway) interchange utilizing existing configuration, but realigning ramps on the north of I-40.
- Two C/D roadways north and south of I-40 from west of I-26/I-40/I-240 interchange to within or west of the I-40/US 19-23-74A (Smoky Park Highway) interchange.
- No access to NC 191 (Brevard Road) along I-40 eastbound for traffic coming from I-26 and I-240. Existing NC 191 (Brevard Road) interchanges on I-26 and I-240 would provide access.

Alternative C-2

Features of Alternative C-2 include:

- Two of the fully-directional flyover ramps for the I-26/I-40/I-240 interchange included in Alternative A-2 would become loops.
- C/D roadway along I-26 eastbound would accommodate weaving movement between loops.
- Reconstruction of I-40/NC 191 (Brevard Road) interchange utilizing existing configuration, but updating to current design standards.
- C/D roadway along I-40 eastbound and westbound from within the I-26/I-40/I-240 interchange to east of I-40/NC 191 (Brevard Road) interchange.
- Reconstruction of I-40/US 19-23-74A (Smoky Park Highway) interchange utilizing existing configuration, but realigning ramps on the north of I-40.
- Two C/D roadways north and south of I-40 from west of I-26/I-40/I-240 interchange to within or west of the I-40/US 19-23-74A (Smoky Park Highway) interchange.
- Full access to NC 191 (Brevard Road) along I-40 eastbound and westbound for traffic coming to/from I-26 and I-240.

Alternative D-1

Features of Alternative D-1 include:

- One of the fully-directional flyover ramps for the I-26/I-40/I-240 interchange included in Alternative A-2 would become a loop.
- Reconstruction of I-40/NC 191 (Brevard Road) interchange to a standard diamond configuration.
- Braided ramps along I-40 eastbound between I-26/I-40/I-240 interchange and I-40/NC 191 (Brevard Road) interchange.
- No access to I-26/I-240 along I-40 westbound for traffic coming from NC 191 (Brevard Road). Existing NC 191 (Brevard Road) interchanges on I-26 and I-240 would provide access.
- Braided ramp along I-40 westbound from I-40/NC 191 (Brevard Road) interchange to within the I-26/I-40/I-240 interchange.
- Reconstruction of I-40/US 19-23-74A (Smoky Park Highway) interchange utilizing existing configuration, but realigning ramps on the north of I-40.
- Two C/D roadways north and south of I-40 from west of I-26/I-40/I-240 interchange to within the I-40/US 19-23-74A (Smoky Park Highway) interchange.

- No access to NC 191 (Brevard Road) along I-40 eastbound for traffic coming from I-26 and I-240. Existing NC 191 (Brevard Road) interchanges on I-26 and I-240 would provide access.

Alternative F-1

Features of Alternative F-1 include:

- Maintaining the existing I-26/I-40/I-240 interchange configuration and adding a loop and a ramp to provide for the missing movements.
- Reconstruction of I-40/US 19-23-74A (Smoky Park Highway) interchange utilizing existing configuration, but realigning ramps on the north of I-40.
- Two C/D roadways north and south of I-40 from west of I-26/I-40/I-240 interchange to within the I-40/US 19-23-74A (Smoky Park Highway) interchange.
- I-40/NC 191 (Brevard Road) interchange would maintain existing configuration.
- Full access to NC 191 (Brevard Road) along I-40 eastbound and westbound for traffic coming to/from I-26 and I-240.

Section A – I 240 Widening Alternative

Features of Alternative A include:

- Reconstruct the I-26/I-240 and NC 191 (Brevard Road) interchange to a diamond interchange that would eliminate I-26 eastbound/I-240 westbound exit to NC 191 (Brevard Road).
- Upgrade the existing I-26/I-240 and SR 3556 (Amboy Road) interchange to a full interchange with a conventional diamond configuration.
- Extend SR 3556 (Amboy Road) over I-26/I-240 and continue parallel with I-26/I-240 to the existing intersection of NC 191 (Brevard Road).
- Upgrade the existing I-26/I-240 and US 19-23 Business (Haywood Road) interchange to a TUDI configuration.

Section B

Alternative 3

Features of Alternative 3 include:

- Upgrading the existing I-240 interchange with US 19-23-74A (Patton Avenue) to accommodate the connection for the new location portion of I-26.
- Crosses over the Crowne Plaza Resort golf course.
- Creates a new crossing for I-26 over the French Broad River, approximately one mile north of the existing Captain Jeff Bowen Bridges.
- Does not include construction on I-240 east of the French Broad River.
- Does not separate I-240 traffic from Patton Avenue traffic across the Captain Jeff Bowen Bridges.

Alternative 3-C

Features of Alternative 3-C include:

- Upgrading the existing I-240 interchange with US 19-23-74A (Patton Avenue) to accommodate the connection for the new location portion of I-26.
- Crosses over the Crowne Plaza Resort golf course.
- Creates a new crossing for I-26 over the French Broad River, approximately one-half mile north of the existing Captain Jeff Bowen Bridges.
- Does not include construction on I-240 east of the French Broad River.
- Does not separate I-240 traffic from Patton Avenue traffic across the Captain Jeff Bowen Bridges.

Alternative 4

Features of Alternative 4 include:

- Upgrading the existing I-240 interchange with US 19-23-74A (Patton Avenue) to accommodate the connection for the new location portion of I-26.
- Crosses over the Crowne Plaza Resort golf course.
- Creates three new crossings over the French Broad River, two slightly to the north of the existing Captain Jeff Bowen Bridges would carry I-240 traffic and the third, carrying I-26, would be located approximately one mile to the north.
- Separates I-240 traffic from Patton Avenue traffic across the Captain Jeff Bowen Bridges and includes construction on I-240 east of the French Broad River.

Alternative 4-B

Features of Alternative 4-B include:

- Upgrading the existing I-240 interchange with US 19-23-74A (Patton Avenue) to accommodate the connection for the new location portion of I-26.
- Crosses over the Crowne Plaza Resort golf course.
- Creates three new crossings over the French Broad River, to the north of the existing Captain Jeff Bowen Bridges. Two bridges would carry I-240 traffic, with the third, carrying I-26.
- Separates I-240 traffic from Patton Avenue traffic across the Captain Jeff Bowen Bridges and includes construction on I-240 east of the French Broad River.

2.6 SYSTEM LINKAGE

One of the identified needs for the proposed project is to provide for improved systems linkage, especially for the I-26 Corridor. The build alternatives for the proposed project would provide the needed linkage from existing I-26 south of Asheville to US 19-23-70 north of Asheville. In addition to the new linkage for the I-26 Corridor, the linkage between other roadways within the study area would be modified. The following roadways within the study area would not have major modifications to the system linkage as a result of the proposed project:

- I-40
- US 74
- US 70
- NC 191 (Brevard Road)
- US 19-23 Business (Haywood Road)
- US 74A

- NC 251
- SR 3412 (Sand Hill Road)
- SR 3413 (Bear Creek Road)
- Shelburne Road
- State Street
- Craven Street
- Hazel Mill Road
- Haywood Street
- Atkinson Street
- Patton Avenue
- SR 3548 (Haywood Road/Clingman Avenue)
- Montford Avenue
- Emma Road
- SR 1781 (Broadway)

The modifications to the systems linkage that would occur for each build alternative are described in the following sections.

2.6.1 SECTION C

None of the roadways in the construction vicinity of the four Section C alternatives would be modified to the extent of a system linkage change.

2.6.2 SECTION A

The roadways in the vicinity of the construction of the I-240 Widening Alternative that would include modification of the system linkage as a result of the proposed project are described in this section.

2.6.2.1 SR 3556 (Amboy Road)

The existing system linkage for SR 3556 (Amboy Road) would be modified by extending the roadway beyond its current terminus at I-240 to NC 191 (Brevard Road). The roadway extension would allow for a full movement interchange with the combined I-26/I-240 roadway and would provide a connection that was present prior to the construction of I-240 in the 1960s. This connection would also allow local traffic access between NC 191 (Brevard Road) and SR 3556 (Amboy Road) without traveling on the interstate.

2.6.2.2 Virginia Avenue

The system linkage for Virginia Avenue would be modified from its existing configuration by connecting to the extension of SR 3556 (Amboy Road). The existing connection to Hubbard Avenue would be severed and a new connection to SR 3556 (Amboy Road) would be constructed.

2.6.2.3 Fairfax Avenue

The system linkage for Fairfax Avenue would be modified from its existing configuration by connecting to the extension of SR 3556 (Amboy Road). The existing connection to NC 191

(Brevard Road) would be severed and a new connection to SR 3556 (Amboy Road) would be constructed.

2.6.2.4 Hanover Street

The existing system linkage of Hanover Street would be modified from its existing configuration due to the construction of the ramp for the US 19-23 Business (Haywood Road) interchange. The existing connection from I-240 to Hanover Street would be removed and the roadway would become a dead end as it approaches SR 3548 (Haywood Road).

2.6.2.5 Burton Street

The system linkage for Burton Street would be modified from its existing configuration at the intersection with US 19-23 Business (Haywood Road) due to the close proximity of the proposed interchange ramps. Burton Street would be converted to a right-in/right-out intersection and would not allow left turns from Burton Street to US 19-23 Business (Haywood Road) or from US 19-23 Business (Haywood Road) to Burton Street.

2.6.3 SECTION B

The roadways in the vicinity of the construction of the alternative for Section B that would include modification of the system linkage as a result of the proposed project are described below.

2.6.3.1 Alternative 3

US 19-23

The existing system linkage for US 19-23 to I-240 would be maintained; however, it is possible that the route would be re-designated on the new I-26 roadway in order to avoid the existing interchange with I-240 and Patton Avenue east of the French Broad River.

Resort Drive

The existing system linkage for Resort Drive would be modified for Alternative 3 by connecting to a new access roadway. The new access roadway would allow for access to and from Westgate Shopping Center and a full movement intersection between Patton Avenue and the new access road.

2.6.3.2 Alternative 3-C

US 19-23

The existing system linkage for US 19-23 to I-240 would be maintained; however, it is possible that the route would be re-designated on the new I-26 roadway in order to avoid the existing interchange with I-240 and Patton Avenue east of the French Broad River.

Resort Drive

The existing system linkage for Resort Drive would be modified for Alternative 3-C by connecting to a new access roadway. The new access roadway would allow for access to and

from Westgate Shopping Center and a full movement intersection between Patton Avenue and the new access road.

2.6.3.3 Alternative 4

I-240

The existing system linkage for I-240 would be modified for Alternative 4 due to the relocation of the interstate to the north along the US 19-23-70 corridor. The relocated interstate would turn to the west and cross the French Broad River before merging with I-26 and connecting to Patton Avenue.

US 19-23

The existing system linkage for US 19-23 would be maintained for Alternative 4; however, it is possible that the route would be re-designated on the new I-26 roadway in order to provide a more direct connection to the roadway west of the proposed project.

SR 1477 (Riverside Drive)

The existing system linkage for SR 1477 (Riverside Drive) would be modified under Alternative 4 because the existing entrance ramp to US 19-23-70 in the southbound direction would be eliminated. A new roadway connection between SR 1477 (Riverside Drive) and Patton Avenue would allow access to and from I-240.

Hill Street

The existing system linkage for Hill Street would be modified under Alternative 4 because the existing exit ramp from US 19-23-70 in the northbound direction would be eliminated. A connection to the new roadway connection between SR 1477 (Riverside Drive) and Patton Avenue would allow access to and from I-240.

Resort Drive

The existing system linkage for Resort Drive would be modified for Alternative 4 by relocating the connection to Patton Avenue approximately 800 feet to the west of the existing connection. The new connection would include a right-in/right-out intersection with Patton Avenue, requiring traffic that would desire to turn left from Resort Drive to eastbound Patton Avenue make a U-turn at Florida Avenue and traffic desiring to turn left from eastbound Patton Avenue to Resort Drive access the roadway through Regent Park Boulevard.

2.6.3.4 Alternative 4-B

I-240

The existing system linkage for I-240 would be modified for Alternative 4-B due to the relocation of the interstate to the north along the US 19-23-70 corridor. The relocated interstate would turn to the west and cross the French Broad River before merging with I-26 and connecting to Patton Avenue.

US 19-23

The existing system linkage for US 19-23 would be maintained for Alternative 4-B; however, it is possible that the route would be re-designated on the new I-26 roadway in order to provide a more direct connection to the roadway west of the proposed project.

SR 1477 (Riverside Drive)

The existing system linkage for SR 1477 (Riverside Drive) would be modified under Alternative 4-B because the existing entrance ramp to US 19-23-70 in the southbound direction would be eliminated. A new roadway connection between SR 1477 (Riverside Drive) and Patton Avenue would allow access to and from I-240.

Hill Street

The existing system linkage for Hill Street would be modified under Alternative 4-B because the existing exit ramp from US 19-23-70 in the northbound direction would be eliminated. A connection to the new roadway connection between SR 1477 (Riverside Drive) and Patton Avenue would allow access to and from I-240.

Resort Drive

The existing system linkage for Resort Drive would be modified for Alternative 4-B by relocating the connection to Patton Avenue to tie directly to Regent Park Boulevard. The new connection would include a right-in/right-out intersection with Regent Park Boulevard, requiring traffic that would desire to turn left from Resort Drive to southbound Regent Park Boulevard make a U-turn or utilize the connections to Regent Park Boulevard on the back side of the Crowne Plaza Hotel or through the Sam's Club roadway network.

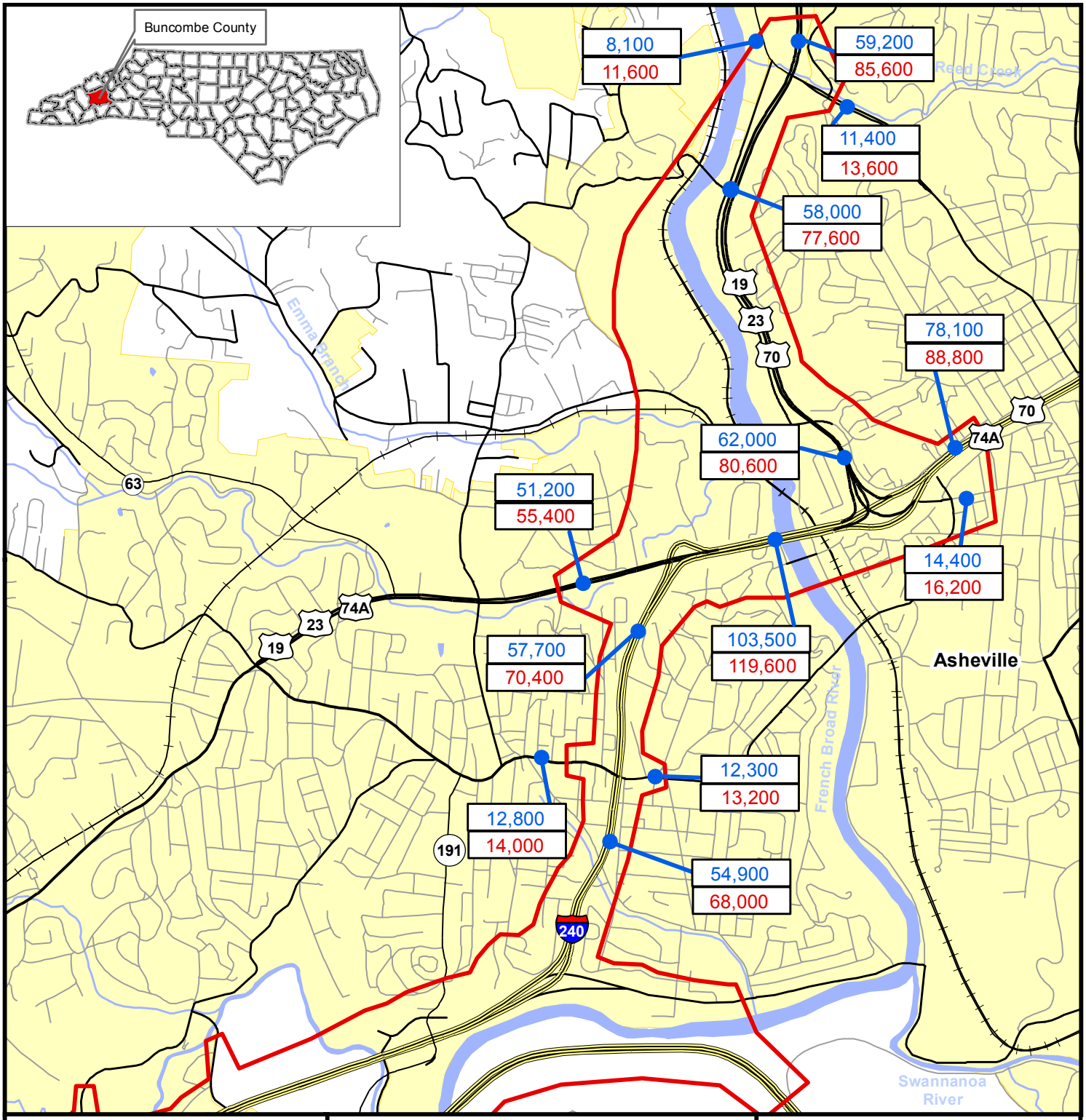
2.7 TRAFFIC OPERATIONS ANALYSES

2.7.1 YEAR 2033 NO-BUILD TRAFFIC PROJECTIONS

The traffic forecasts used for the traffic operations analyses of the No-Build alternative were obtained from the *Traffic Forecasts for NCDOT STIP Project No. I-2513, I-26 Connector* (Martin/Alexiou/Bryson, PLLC 2010). The traffic forecasts were used to develop peak hour volumes for AM and PM peak periods for the transportation network within the study area for the Future No-Build Scenario (Year 2033). The 2033 No-Build peak hour and ADT volumes were determined through the use of the 2005 Asheville Travel Model (Martin/Alexiou/Bryson, PLLC 2004). Projected 2033 No-Build ADT volumes for existing roadways within the project study area are shown on Figure 2-18 and Figure 2-19. Projected traffic volumes on I-240 range from 65,100 ADT to 119,600 ADT; and volumes on US 19-23-70 range from 77,600 ADT to 85,600 ADT. The projected volumes on I-40 range from 55,600 ADT to 107,200 ADT within the study area, while the projected volume on I-26 as it approaches I-40 is 103,600 ADT.

2.7.2 YEAR 2033 NO-BUILD CAPACITY ANALYSIS

The No-Build Alternative assumes the local transportation system would evolve as currently planned, but without implementation of the proposed project. With the exception of routine maintenance, no change would take place along the existing corridors within the study area.



North Carolina Department of Transportation

Legend

- Interstate
- US Highway
- NC Highway
- State Route
- Local Road
- Railroad
- Streams (non-delineated)
- Project Study Area
- Municipal Boundaries
- Water
- 2007 / 2033 Existing / No-Build Average Daily Traffic

Date: January 2015

N W E S

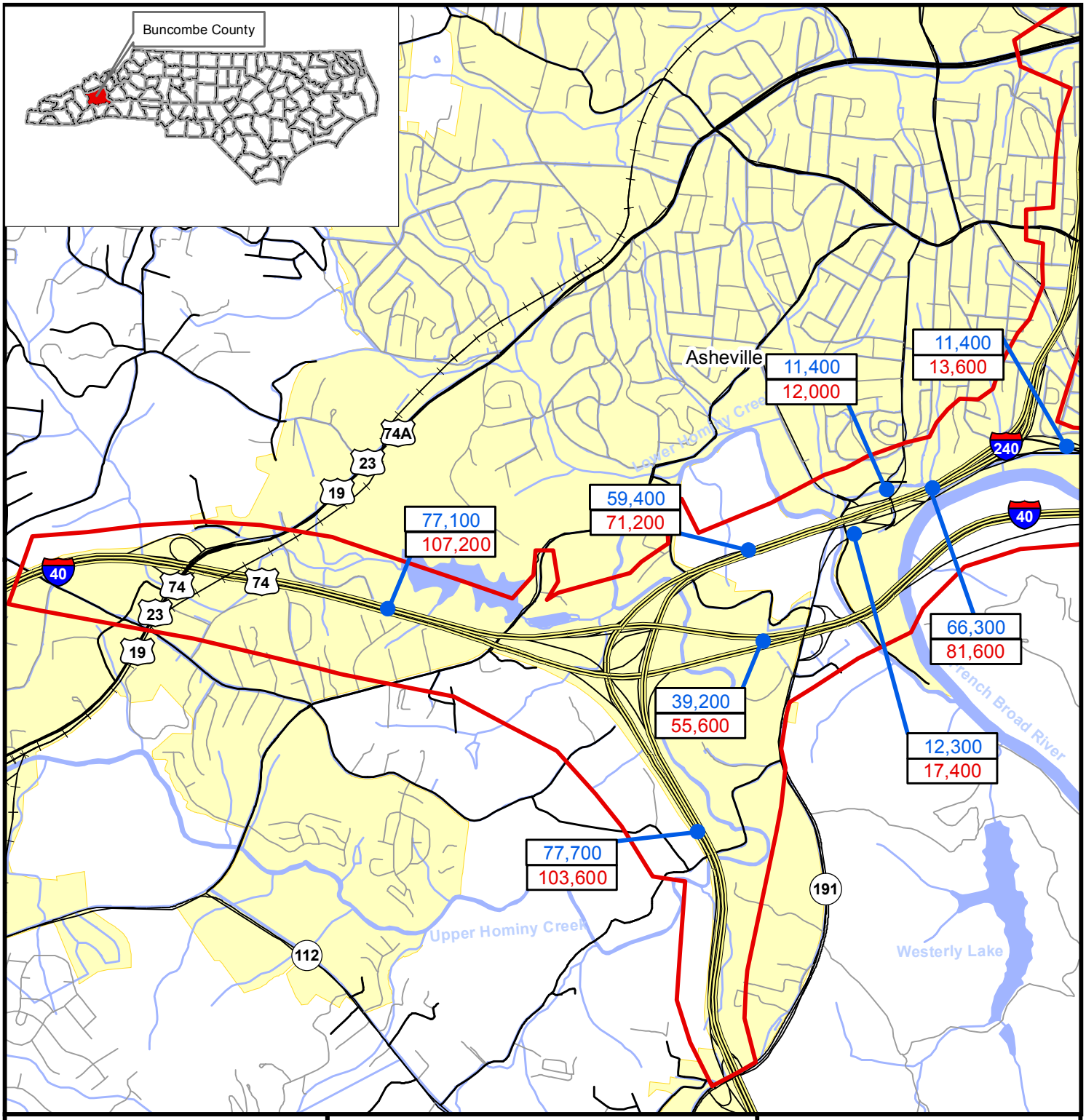
0 0.25 0.5 Miles

I-26 Asheville Connector
Buncombe County

STIP Project No. I-2513

Figure 2-18

2007 Existing/ 2033 No-Build Average Daily Traffic



North Carolina Department of Transportation

Legend

- Interstate
- US Highway
- NC Highway
- State Route
- Local Road
- Railroad
- Streams (non-delineated)
- Project Study Area
- Municipal Boundaries
- Water
- 2007 Existing Average Daily Traffic
- 2033 No-Build Average Daily Traffic

Date: January 2015

N W E S

0 0.25 0.5 Miles

I-26 Asheville Connector
Buncombe County

STIP Project No. I-2513

Figure 2-19

2007 Existing/ 2033 No-Build Average Daily Traffic

The planned improvements, within the study area of the proposed project, were identified by reviewing the 2035 LRTP.

It should be noted that the peak hour traffic forecasts provided for this alternative were not balanced during the forecasting process. Because of this, peak hour volumes in several locations were calculated based on the directional daily volumes, design hourly volume factor, and peak-hour directional split factor. This was especially prevalent and necessary in locations between ramps of interchanges.

The methods developed in the 2010 HCM were used to determine the future LOS for the freeway segments and signalized intersections at ramp terminals for the No-Build Alternative. A summary of the LOS results for the freeway basic segments, freeway merges and diverges, freeway weaving and signalized intersections is included in the following sections and the LOS for each is shown on Figure 2-20 and Figure 2-21. The results of the analysis show that 13 of 37 basic freeway segments, 17 of 29 freeway merges and diverges and major diverges, 4 of 6 major merges and isolated ramp roadways, and 7 of 8 freeway weaving sections will operate at LOS E or worse or a V/C ratio of 0.85 or worse, with a total of 23 analysis segments operating at LOS F or a V/C ratio over 1.0 during the AM peak hour, PM peak hour, or both. A detailed description of the analysis of the traffic operations is included in the *Traffic Capacity Analysis Memorandum* (URS 2010f).

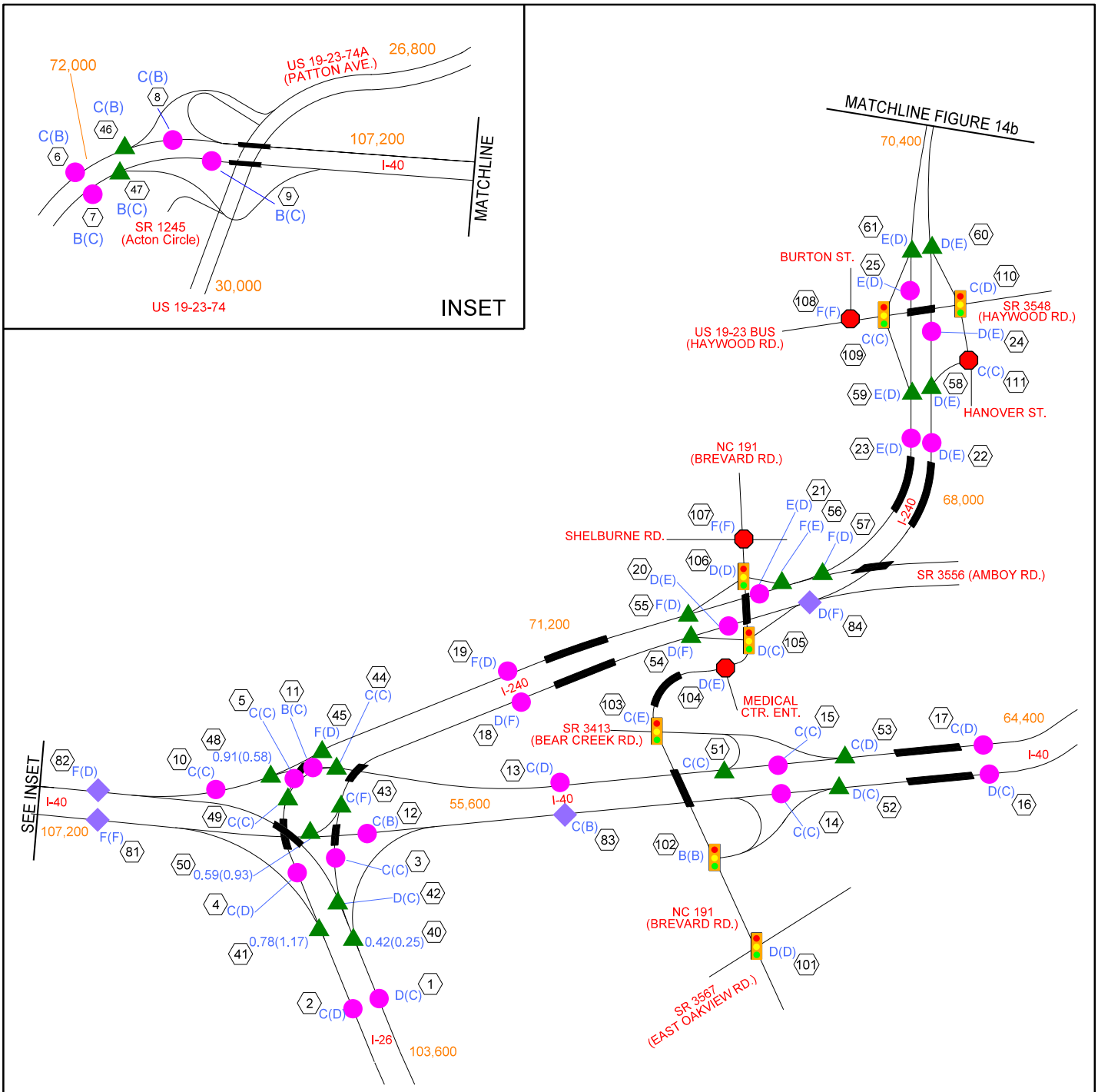
2.7.3 YEAR 2033 BUILD TRAFFIC PROJECTIONS

The traffic forecasts used for the traffic operations analyses of the build alternatives were obtained from the *Traffic Forecasts for NCDOT STIP Project No. I-2513, I-26 Connector* (Martin/Alexiou/Bryson, PLLC 2010). The traffic forecasts were used to develop peak hour volumes for AM and PM peak periods for the transportation network within the study area for the Future Build Scenario (Year 2033) for the detailed study alternatives. The 2033 Build peak hour and ADT volumes were determined through the use of the 2005 Asheville Travel Model (Martin/Alexiou/Bryson, PLLC 2004a). A comparison of the Asheville 2005, 2010, and 2015 travel demand models was performed to determine if a new traffic forecast was needed. For the purposes of alternative evaluation and comparison, it was determined that the current traffic forecast based on the Asheville 2005 model would be sufficient (URS 2015a).

The ADT volumes for major roadways within the project study area are shown on Figure 2-22 through Figure 2-30 following the discussion of each alternative. Future traffic volumes range from 40,400 ADT to 114,000 ADT on US 19-23; from 51,800 ADT to 117,600 ADT on I-40; from 55,600 ADT to 120,400 ADT on I-240; and from 68,000 ADT to 122,400 ADT on I-26, which includes existing I-26, the proposed I-26/I-240 combined roadway and the proposed new location I-26.

2.7.4 YEAR 2033 BUILD TRAFFIC CAPACITY ANALYSIS

The methods developed in the 2010 HCM were used to determine the future LOS for the freeway segments and signalized intersections at ramp terminals for the build alternatives. A summary of the LOS results for the freeway basic segments, freeway merges and diverges, freeway weaving and signalized intersections is included in the following sections and the LOS for each alternative is shown on Figure 2-22 through Figure 2-30. The analysis of the build alternatives assumes that the local transportation system would evolve as currently planned,



* LOS shown for unsignalized intersection is the LOS for the worst lane group.

North Carolina Department of Transportation

Legend

- Basic Freeway Segments
- Freeway Ramp Junctions
- Freeway Weaving Segments
- Signalized Intersection
- Unsignalized Intersection*
- A(A) LOS of V/C Ratio - AM(PM)
- (1) Analysis Reference Number
- #### Average Daily Traffic

Date: June 2015

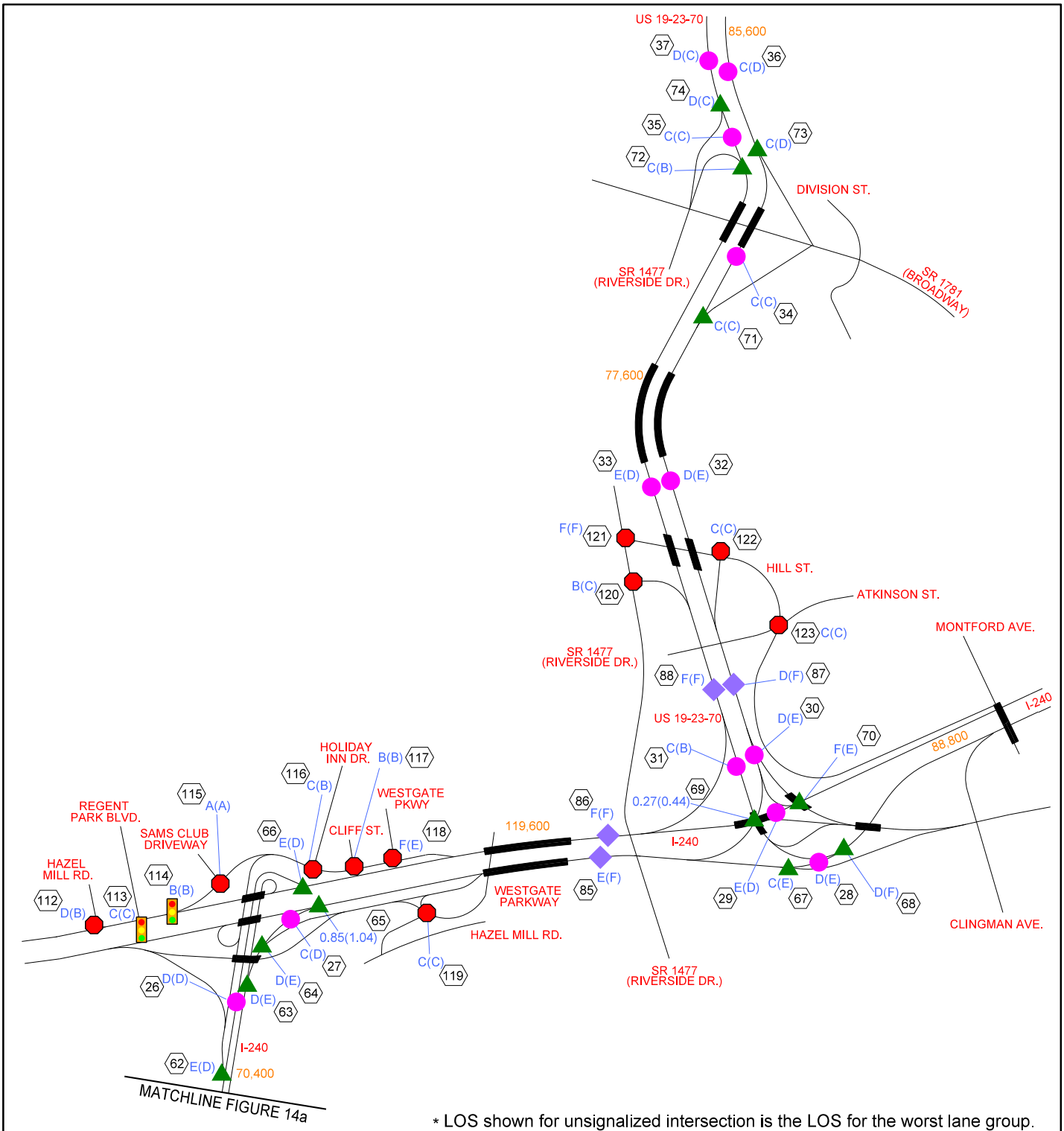
Not to Scale

I-26 Connector
Buncombe County

TIP Project No. I-2513

Figure 2-20

2033 No-Build Average Daily Traffic and Level of Service



* LOS shown for unsignalized intersection is the LOS for the worst lane group.

North Carolina
Department of Transportation

I-26 Connector
Buncombe County

TIP Project No. I-2513

Legend

- Basic Freeway Segments
- Freeway Ramp Junctions
- Freeway Weaving Segments
- Signalized Intersection
- Unsignalized Intersection*
- A(A) LOS or V/C Ratio - AM(PM)
- (1) Analysis Reference Number
- #### Average Daily Traffic

Date: June 2015

N W E S

Not to Scale

Figure 2-21

2033 No-Build Average Daily Traffic and Level of Service

including the implementation of the proposed project. Assumptions regarding how the transportation system adjacent to the project study area will be developed and include analysis of both the improvements presented in the 2035 LRTP and the AIS. Some elements of the LRTP analysis may result in LOS E or F operations, thus necessitating the need for the Additional Improvement Scenario (AIS) evaluation. A detailed description of the analysis of the traffic operations is included in the *I-26 Connector Traffic Capacity Analysis Memorandum* (URS 2010f).

2.7.4.1 Section C

Alternative A-2

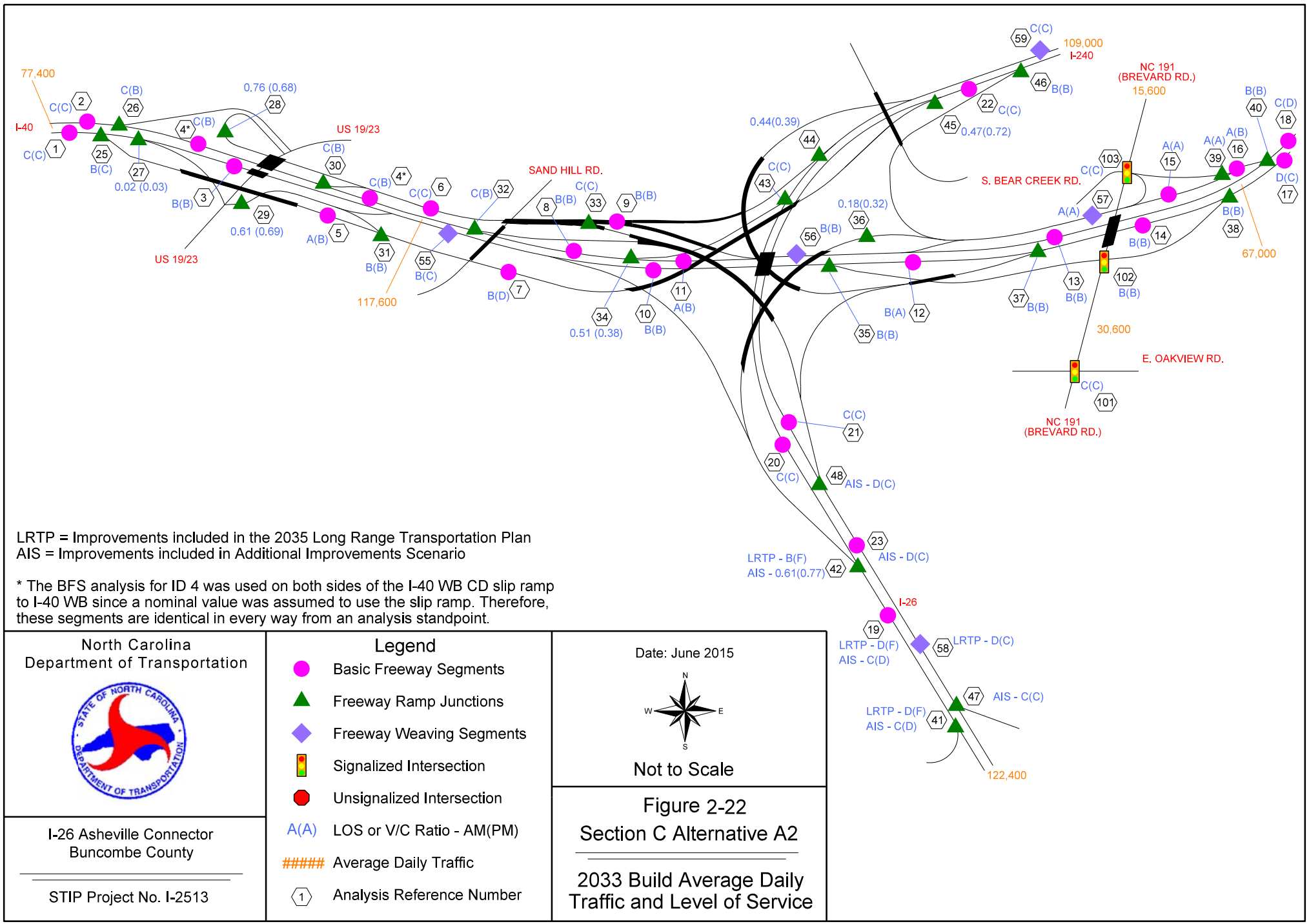
Figure 2-22 presents a summary of the 2033 build peak hour LOS for Section C, Alternative A-2. Analysis points evaluated include basic freeway segments, freeway merges and diverges, major merges, major diverges, isolated ramp roadways, freeway weaving segments, and signalized intersections. The results of the design year analysis under the LRTP analysis show that 1 of 22 basic freeway segments, 2 of 15 freeway merges and diverges and major diverges, 0 of 7 major merges and isolated ramp roadways, 0 of 5 freeway weaving sections, and 0 of 3 signalized intersections would operate at LOS E or worse or a V/C ratio of 0.85 or worse, with five analysis segments or would operate at LOS F or a V/C ratio over 1.0 during the AM peak hour, PM peak hour, or both. The results of the design year analysis, including the AIS, show that all analysis points would operate at an acceptable LOS D or with a V/C ratio less than 0.85. Based on the analysis, the design of this alternative should be developed such that it would not preclude the development of I-26 south of the project as an eight-lane typical section.

Alternative C-2

Figure 2-23 presents a summary of the 2033 build peak hour LOS for Section C – Alternative C-2. Analysis points evaluated include basic freeway segments, freeway merges and diverges, major merges, major diverges, isolated ramp roadways, freeway weaving segments, and signalized intersections. The results of the design year analysis under the LRTP analysis show that 1 of 25 basic freeway segments, 2 of 17 freeway merges and diverges and major diverges, 0 of 9 major merges and isolated ramp roadways, 0 of 7 freeway weaving sections, and 0 of 3 signalized intersections would operate at LOS E or worse or a V/C ratio of 0.85 or worse, with five analysis segments or would operate at LOS F or a V/C ratio over 1.0 during the AM peak hour, PM peak hour, or both. The results of the design year analysis, including the AIS, show that all analysis points would operate at an acceptable LOS D or with a V/C ratio less than 0.85. Based on the analysis, the design of this alternative should be developed such that it would not preclude the development of I-26 south of the project as an eight-lane typical section.

Alternative D-1

Figure 2-24 presents a summary of the 2033 build peak hour LOS for Section C – Alternative D-1. Analysis points evaluated include basic freeway segments, freeway merges and diverges, major merges, major diverges, isolated ramp roadways, freeway weaving segments, and signalized intersections. The results of the design year analysis under the LRTP analysis show that 1 of 21 basic freeway segments, 2 of 15 freeway merges and diverges and major diverges, 0 of 7 major merges and isolated ramp roadways, 0 of 5 freeway weaving sections, and 0 of 4 signalized intersections would operate at LOS E or worse or a V/C ratio of 0.85 or worse, with five analysis segments or would operate at LOS F or a V/C ratio over 1.0 during the AM peak hour, PM peak hour, or both. The results of the design year analysis, including the AIS, show



LRTP = Improvements included in the 2035 Long Range Transportation Plan
AIS = Improvements included in Additional Improvements Scenario

* The BFS analysis for ID 4 was used on both sides of the I-40 WB CD slip ramp to I-40 WB since a nominal value was assumed to use the slip ramp. Therefore, these segments are identical in every way from an analysis standpoint.

North Carolina
Department of Transportation

I-26 Asheville Connector
Buncombe County

STIP Project No. I-2513

Legend

- Basic Freeway Segments
- Freeway Ramp Junctions
- Freeway Weaving Segments
- Signalized Intersection
- Unsignalized Intersection
- A(A) LOS or V/C Ratio - AM(PM)
- ##### Average Daily Traffic
- (1) Analysis Reference Number

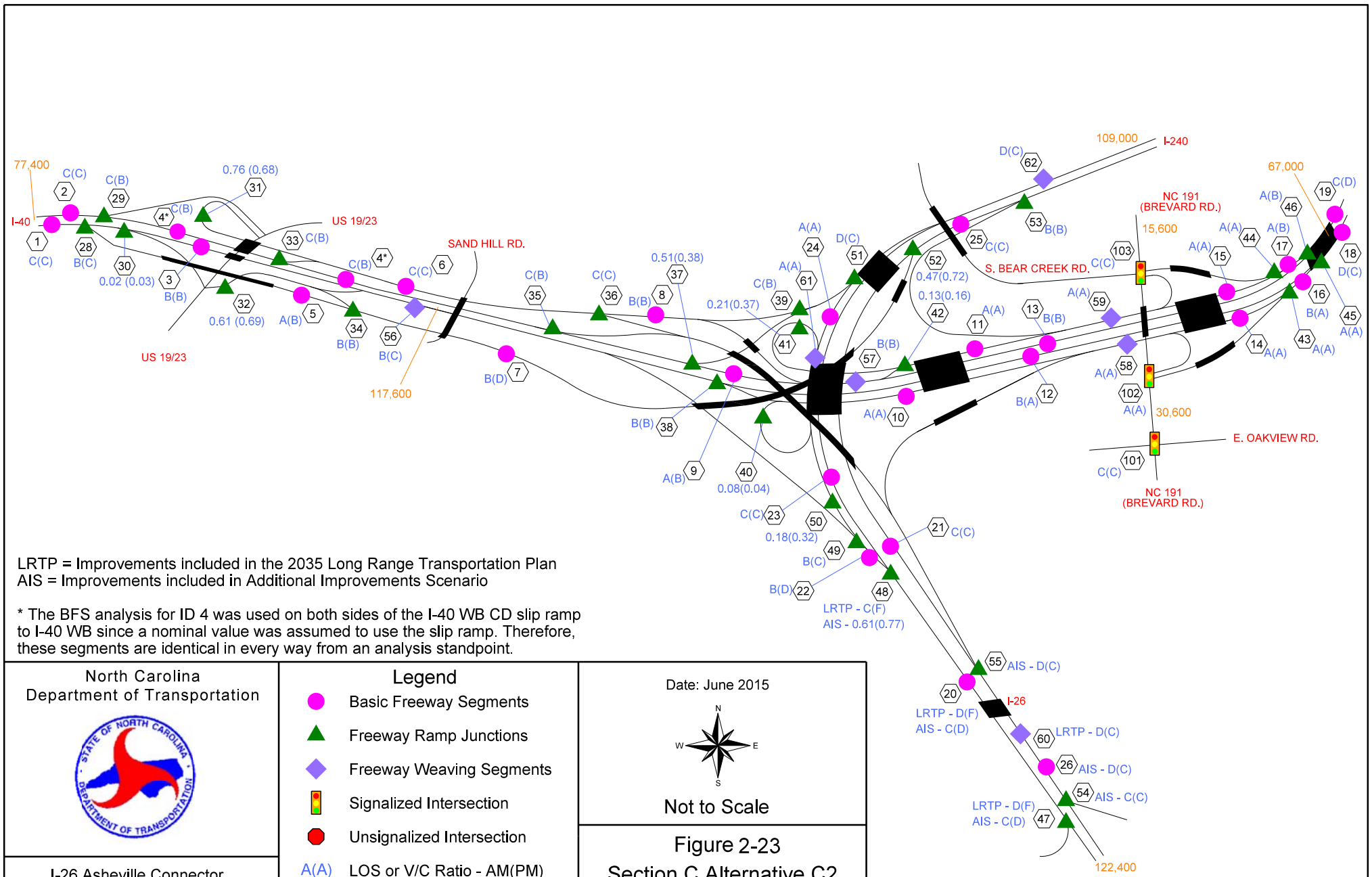
Date: June 2015

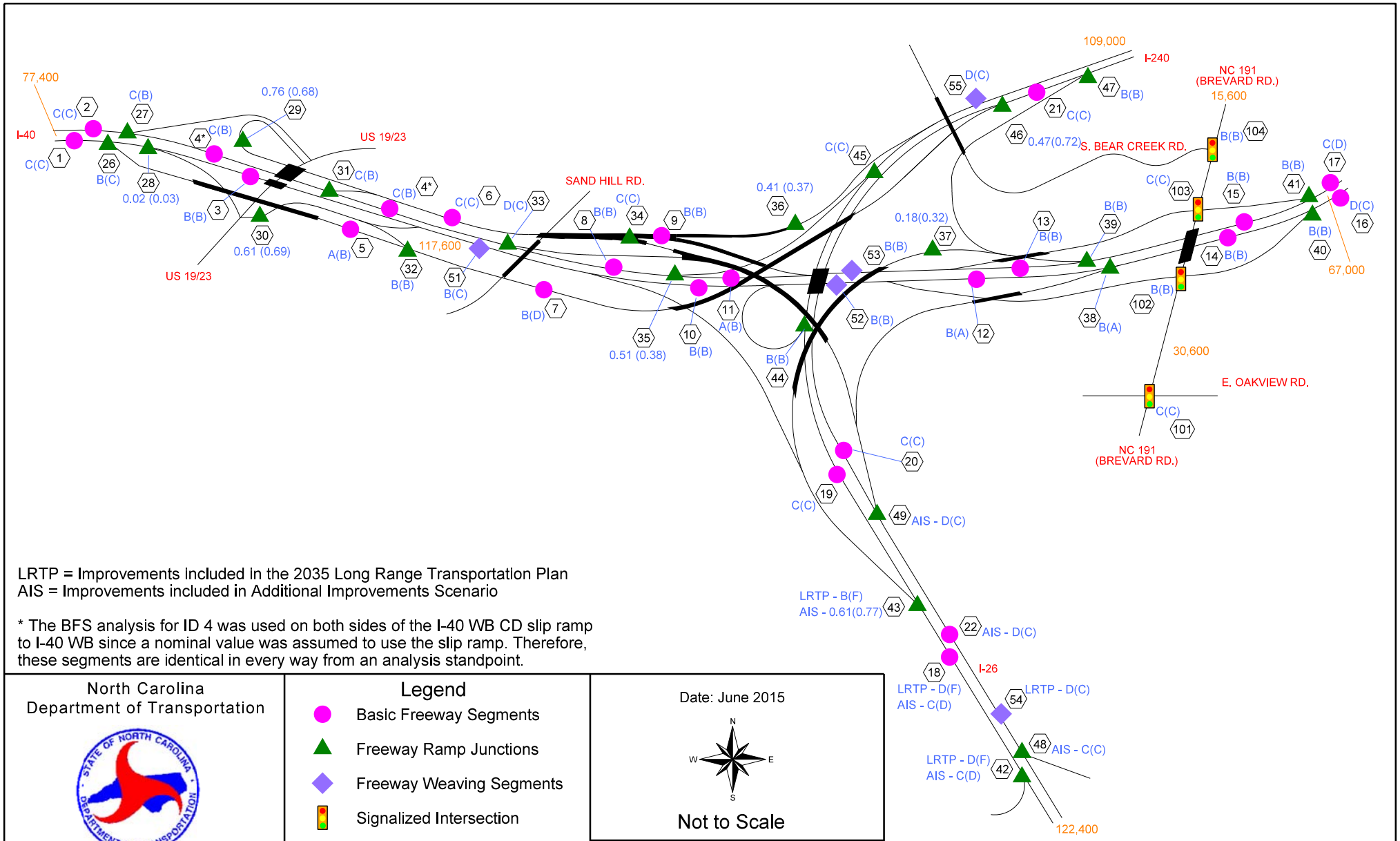
N W E S

Not to Scale

Figure 2-22
Section C Alternative A2

2033 Build Average Daily Traffic and Level of Service


I-40
77,400
C(C)
C(B)
0.76 (0.68)
US 19/23
SAND HILL RD.
0.02 (0.03)
0.61 (0.69)
117,600
0.51(0.38)
0.21(0.37)
0.47(0.72)
0.13(0.16)
109,000
I-240
67,000
NC 191
(BREVARD RD.)
15,600
S. BEAR CREEK RD.
30,600
E. OAKVIEW RD.
0.08(0.04)
0.18(0.32)
LRTP - C(F)
AIS - 0.61(0.77)
AIS - D(C)
LRTP - D(F)
AIS - C(D)
I-26
LRTP - D(C)
AIS - C(C)
122,400
LRTP = Improvements included in the 2035 Long Range Transportation Plan
AIS = Improvements included in Additional Improvements Scenario
* The BFS analysis for ID 4 was used on both sides of the I-40 WB CD slip ramp to I-40 WB since a nominal value was assumed to use the slip ramp. Therefore, these segments are identical in every way from an analysis standpoint.
North Carolina Department of Transportation
I-26 Asheville Connector
Buncombe County
STIP Project No. I-2513
Legend
Basic Freeway Segments
Freeway Ramp Junctions
Freeway Weaving Segments
Signalized Intersection
Unsignalized Intersection
A(A) LOS or V/C Ratio - AM(PM)
Average Daily Traffic
1 Analysis Reference Number
Date: June 2015
N
W
E
S
Not to Scale
Figure 2-23
Section C Alternative C2
2033 Build Average Daily Traffic and Level of Service



LRTP = Improvements included in the 2035 Long Range Transportation Plan
AIS = Improvements included in Additional Improvements Scenario

* The BFS analysis for ID 4 was used on both sides of the I-40 WB CD slip ramp to I-40 WB since a nominal value was assumed to use the slip ramp. Therefore, these segments are identical in every way from an analysis standpoint.

North Carolina
Department of Transportation

I-26 Asheville Connector
Buncombe County

STIP Project No. I-2513

Legend

- Basic Freeway Segments
- Freeway Ramp Junctions
- Freeway Weaving Segments
- Signalized Intersection
- Unsignalized Intersection
- A(A) LOS or V/C Ratio - AM(PM)
- ##### Average Daily Traffic
- (1) Analysis Reference Number

Date: June 2015

N W E S

Not to Scale

Figure 2-24
Section C Alternative D1

2033 Build Average Daily Traffic and Level of Service

that all analysis points would operate at an acceptable LOS D or with a V/C ratio less than 0.85. Based on the analysis, the design of this alternative should be developed such that it would not preclude the development of I-26 south of the project as an eight-lane typical section.

Alternative F-1

Figure 2-25 presents a summary of the 2033 build peak hour LOS for Section C – Alternative F-1. Analysis points evaluated include basic freeway segments, freeway merges and diverges, major merges, major diverges, isolated ramp roadways, freeway weaving segments, and signalized intersections. The results of the design year analysis under the LRTP analysis show that 1 of 22 basic freeway segments, 2 of 16 freeway merges and diverges and major diverges, 0 of 10 major merges and isolated ramp roadways, 0 of 4 freeway weaving sections, and 0 of 3 signalized intersections would operate at LOS E or worse or a V/C ratio of 0.85 or worse, with five analysis segments or would operate at LOS F or a V/C ratio over 1.0 during the AM peak hour, PM peak hour, or both. The results of the design year analysis, including the AIS, show that all analysis points would operate at an acceptable LOS D or with a V/C ratio less than 0.85. Based on the analysis, the design of this alternative should be developed such that it would not preclude the development of I-26 south of the project as an eight-lane typical section.

2.7.4.2 Section A

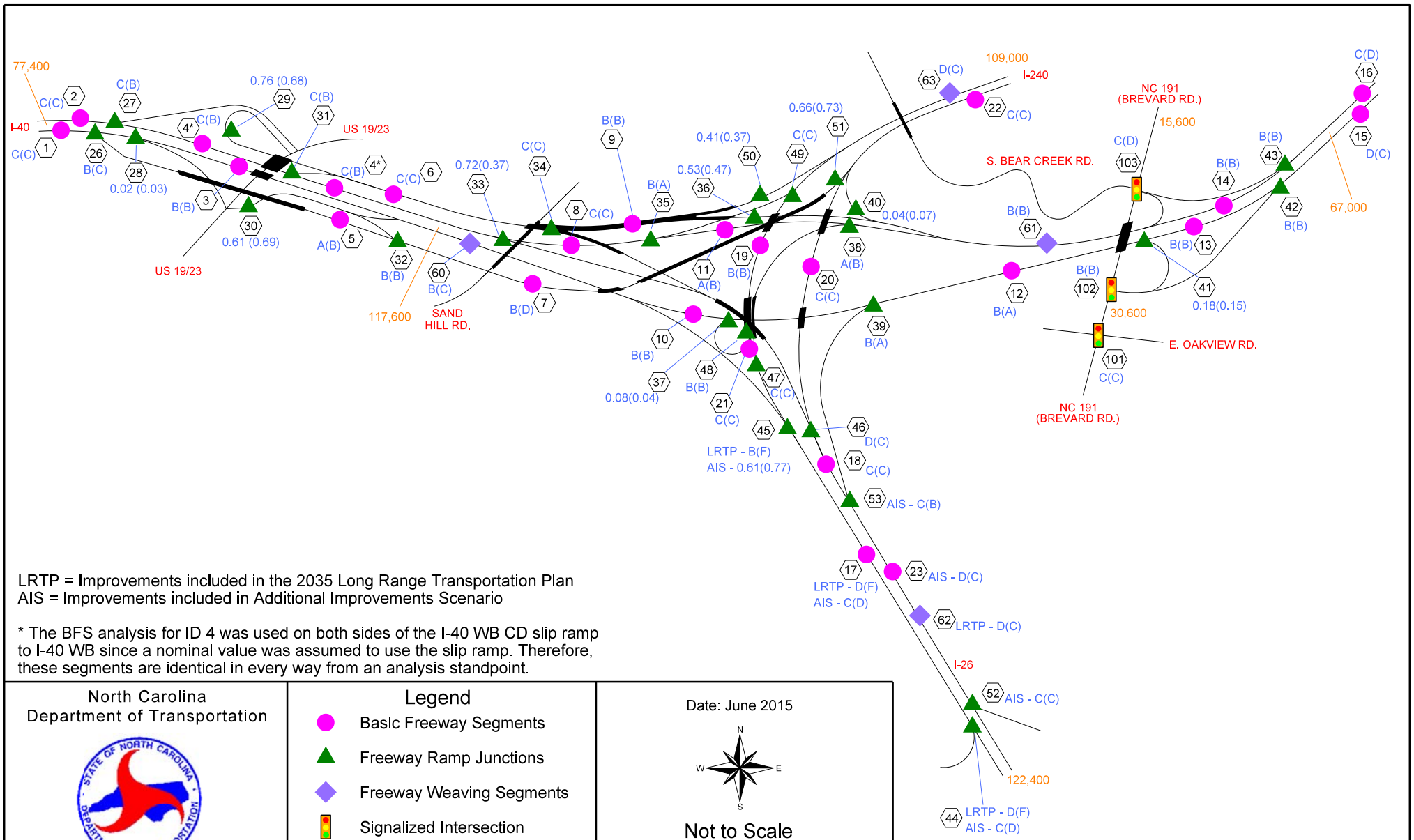
Figure 2-26 presents a summary of the 2033 build peak hour LOS for Section A – I-240 Widening Alternative. Analysis points evaluated include basic freeway segments, freeway merges and diverges, major diverges, isolated ramp roadways, freeway weaving segments, and signalized and unsignalized intersections. The traffic projections for the I-240 Widening Alternative vary depending upon the build alternatives for Section B; therefore, Figure 2-26 presents a summary of the 2033 build peak hour LOS for the I-240 Widening Alternative for each of the alternatives being considered in Section B. It should be noted that the LOS and volumes for Section B – Alternative 3 and Alternative 3-C are the same; therefore, the results were reported together in the tables and figures. The results of the design year analysis for Section A show that, for all alternatives and all traffic forecast volumes, one analysis point would operate at LOS E. For all alternatives, this analysis point is an unsignalized intersection with a V/C ratio of less than 0.85, which is acceptable.

2.7.4.3 Section B

Alternative 3

Figure 2-27 presents a summary of the 2033 build peak hour LOS for Section B – Alternative 3. Analysis points evaluated include basic freeway segments, freeway merges and diverges, major merges, major diverges, isolated ramp roadways, freeway weaving segments, and signalized and unsignalized intersections, and a roundabout. The results of the design year analysis within the limits of construction under the LRTP analysis show that no segments would operate at LOS E or worse or a V/C ratio of 0.85 or worse.

The AIS analysis at the north end of the project has been developed to meet LOS D standards based on the traffic forecast for this alternative. As such, US 19-23-70 NB requires four lanes through the interchange with SR 1781, while US 19-23-70 SB requires three lanes. It was assumed that US 19-23-70 SB would have four lanes north of SR 1781, but would drop the outside lane to the exit ramp to SR 1781 to bring the total laneage to three within the



LRTP = Improvements included in the 2035 Long Range Transportation Plan
AIS = Improvements included in Additional Improvements Scenario

* The BFS analysis for ID 4 was used on both sides of the I-40 WB CD slip ramp to I-40 WB since a nominal value was assumed to use the slip ramp. Therefore, these segments are identical in every way from an analysis standpoint.

North Carolina
Department of Transportation

I-26 Asheville Connector
Buncombe County

STIP Project No. I-2513

Legend

- Basic Freeway Segments
- Freeway Ramp Junctions
- Freeway Weaving Segments
- Signalized Intersection
- Unsignalized Intersection
- A(A) LOS or V/C Ratio - AM(PM)
- ##### Average Daily Traffic
- (1) Analysis Reference Number

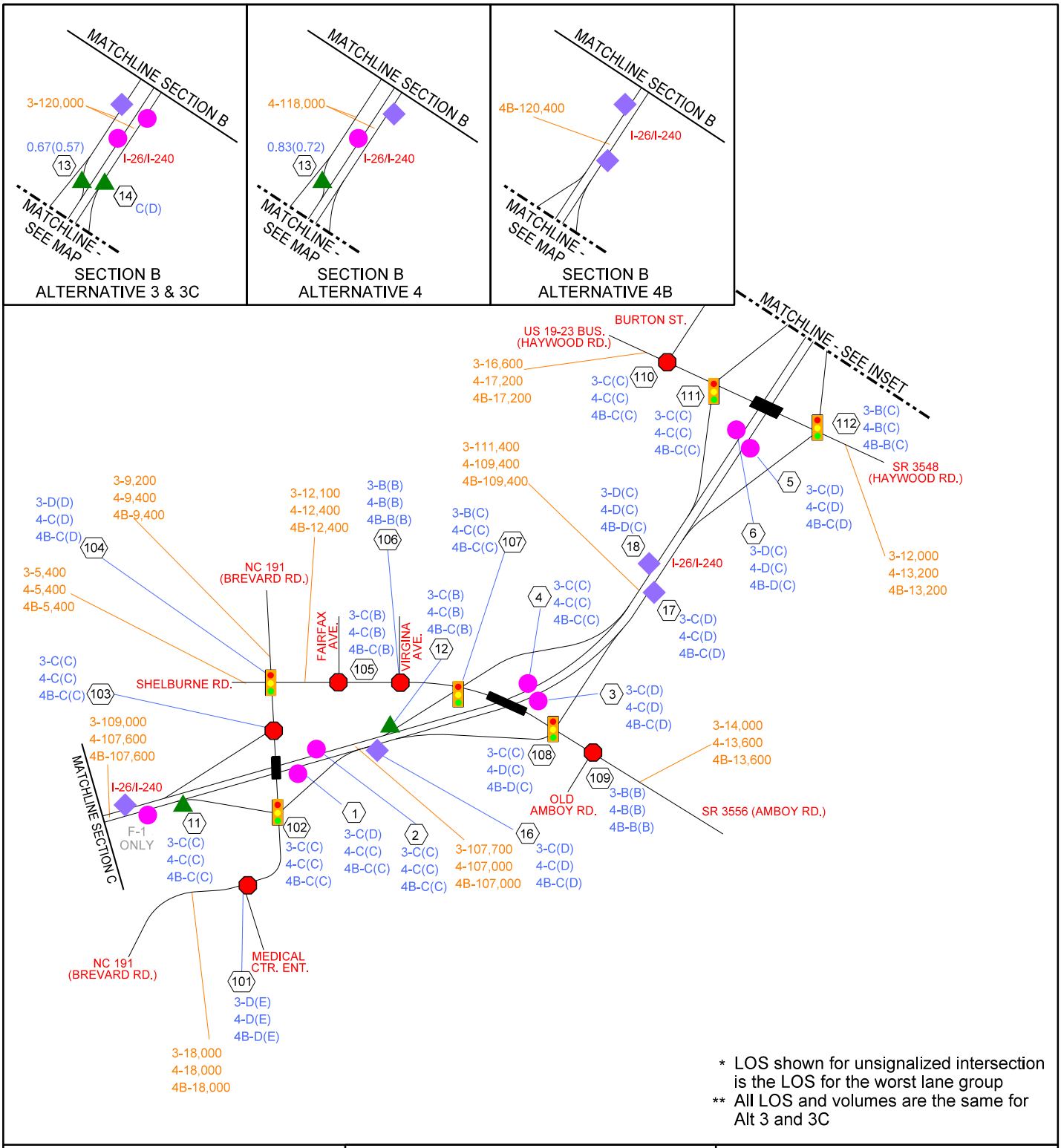
Date: June 2015

N W E S

Not to Scale

Figure 2-25
Section C Alternative F1

2033 Build Average Daily Traffic and Level of Service



* LOS shown for unsignalized intersection is the LOS for the worst lane group

** All LOS and volumes are the same for Alt 3 and 3C

North Carolina
Department of Transportation

Legend

- Basic Freeway Segments
- Freeway Ramp Junctions
- Freeway Weaving Segments
- Signalized Intersection
- Unsignalized Intersection
- A(A) LOS or V/C Ratio - AM(PM)
- ##### Average Daily Traffic
- (1) Analysis Reference Number

Date: June 2015

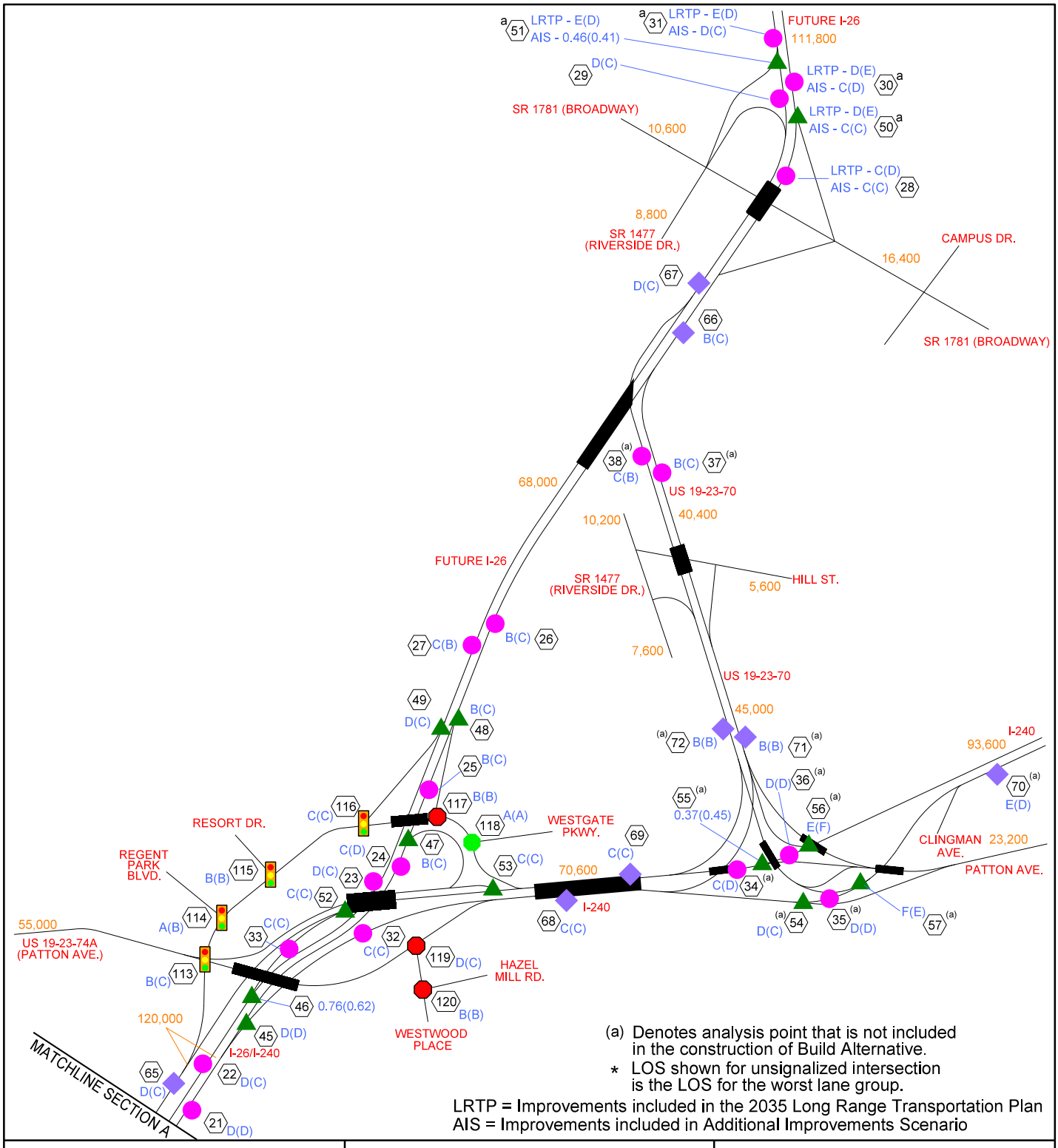
Not to Scale

I-26 Connector
Buncombe County

STIP Project No. I-2513

Figure 2-26

Section A
2033 Build Average Daily Traffic and Level of Service



(a) Denotes analysis point that is not included in the construction of Build Alternative.

* LOS shown for unsignalized intersection is the LOS for the worst lane group.

LRTP = Improvements included in the 2035 Long Range Transportation Plan

AIS = Improvements included in Additional Improvements Scenario

North Carolina
Department of Transportation

I-26 Connector
Buncombe County

TIP Project No. I-2513

Legend

- Basic Freeway Segments
- Freeway Ramp Junctions
- Freeway Weaving Segments
- Signalized Intersection
- Unsignalized Intersection
- Roundabout
- A(A) LOS or V/C Ratio - AM(PM)
- ##### Average Daily Traffic
- (1) Analysis Reference Number

Date: June 2015

N W E S

Not to Scale

Figure 2-27

Section B Alternative 3
2033 Build Average Daily Traffic and Level of Service

interchange. The development of Project I-2513 would provide adequate pavement to provide for the anticipated required lanes, while showing lane striping to the existing four-lane cross section at the bridge over SR 1781. However, should the traffic capacity analysis for Project A-0010A show that additional capacity is required beyond what is provided by Project I-2513, additional improvements would be required in order to seamlessly join both projects together. Based on this, the design of this alternative should be developed such that it would not preclude the development of I-26/US 19-23-70 north of the Project I-2513 as an eight-lane typical section.

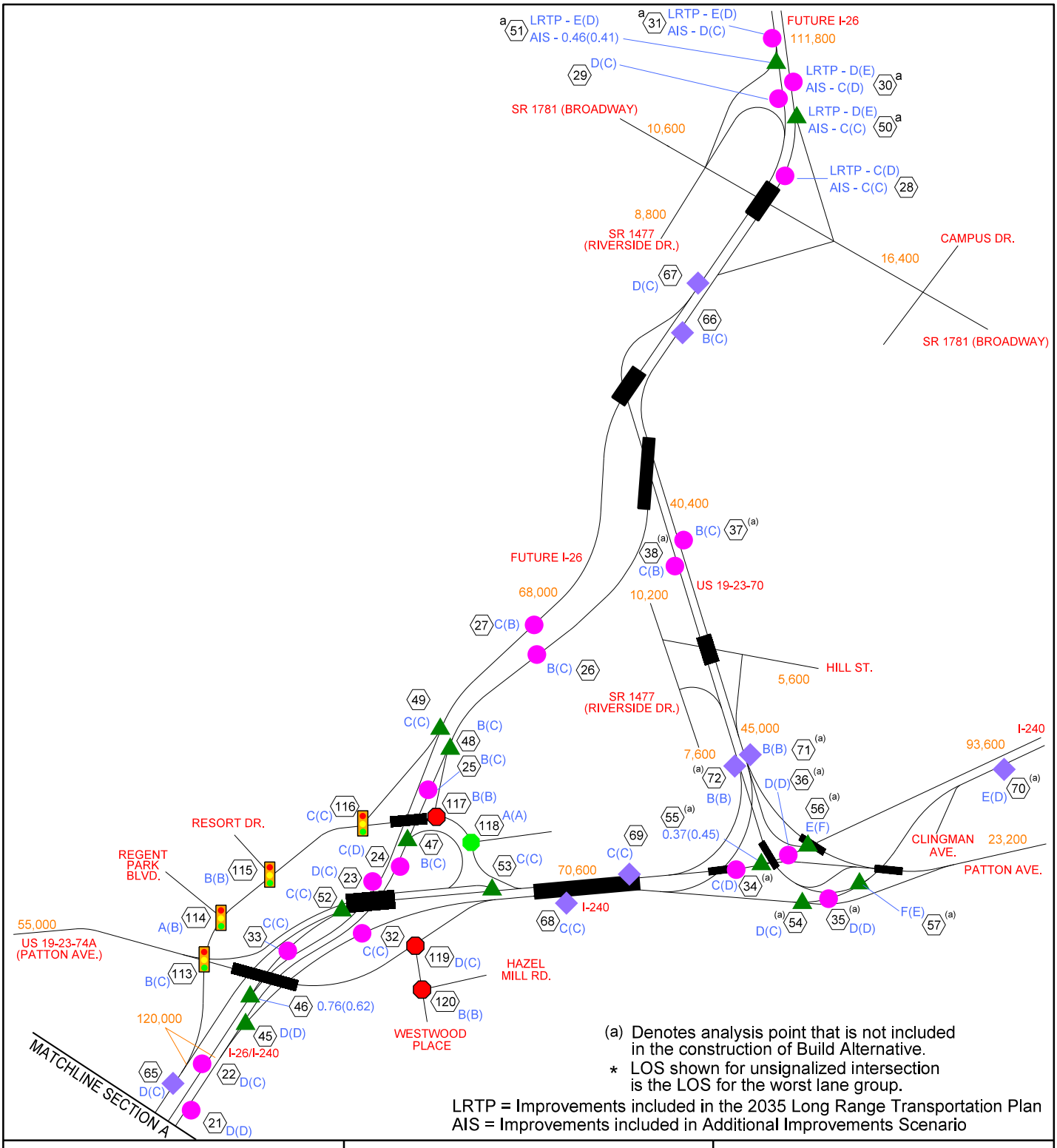
Beyond the limits of construction for the build alternative the results of the design year analysis show that 11 of 18 analysis points would operate at an acceptable LOS D or better with the remaining seven analysis points operating at LOS E or F with the 2035 LRTP Scenario. The results of the design year analysis with the AIS show that 15 of 18 analysis points would operate at an acceptable LOS D or better with the remaining three analysis points operating at LOS E or F. One of the three analysis points that operate at an unacceptable level is associated with I-240 east of the US 19-23-70/Patton Avenue interchange while the remaining two analysis points are associated with ramps within the interchange at US 19-23-70/Patton Avenue. Improvements to these segments are beyond the limits of construction for the proposed project and would need to be addressed under a future project.

Alternative 3-C

Figure 2-28 presents a summary of the 2033 build peak hour LOS for Section B – Alternative 3-C. Analysis points evaluated include basic freeway segments, freeway merges and diverges, major merges, major diverges, isolated ramp roadways, freeway weaving segments, and signalized and unsignalized intersections, and a roundabout. The results of the design year analysis within the limits of construction under the LRTP analysis show that no segments would operate at LOS E or worse or a V/C ratio of 0.85 or worse.

The AIS analysis at the north end of the project has been developed to meet LOS D standards based on the traffic forecast for this alternative. As such, US 19-23-70 NB requires four lanes through the interchange with SR 1781, while US 19-23-70 SB requires three lanes. It was assumed that US 19-23-70 SB would have four lanes north of SR 1781, but would drop the outside lane to the exit ramp to SR 1781 to bring the total laneage to three within the interchange. The development of Project I-2513 would provide adequate pavement to provide for the anticipated required lanes, while showing lane striping to the existing four-lane cross section at the bridge over SR 1781. However, should the traffic capacity analysis for Project A-0010A show that additional capacity is required beyond what is provided by Project I-2513, additional improvements would be required in order to seamlessly join both projects together. Based on this, the design of this alternative should be developed such that it would not preclude the development of I-26/US 19-23-70 north of the Project I-2513 as an eight-lane typical section.

Beyond the limits of construction for the build alternative the results of the design year analysis show that 11 of 18 analysis points would operate at an acceptable LOS D or better with the remaining seven analysis points operating at LOS E or F with the 2035 LRTP Scenario. The results of the design year analysis with the AIS show that 15 of 18 analysis points would operate at an acceptable LOS D or better with the remaining three analysis points operating at LOS E or F. One of the three analysis points that operate at an unacceptable level is associated with I-240 east of the US 19-23-70/Patton Avenue interchange while the remaining two analysis points are associated with ramps within the interchange at US 19-23-70/Patton Avenue.



(a) Denotes analysis point that is not included in the construction of Build Alternative.

* LOS shown for unsignalized intersection is the LOS for the worst lane group.

LRTP = Improvements included in the 2035 Long Range Transportation Plan
AIS = Improvements included in Additional Improvements Scenario

North Carolina
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I-26 Connector
Buncombe County

TIP Project No. I-2513

Legend

- Basic Freeway Segments
- Freeway Ramp Junctions
- Freeway Weaving Segments
- Signalized Intersection
- Unsignalized Intersection
- Roundabout
- A(A) LOS or V/C Ratio - AM(PM)
- ##### Average Daily Traffic
- (1) Analysis Reference Number

Date: June 2015

N
W E
S

Not to Scale

Figure 2-28

Section B Alternative 3C
2033 Build Average Daily Traffic and Level of Service

Improvements to these segments are beyond the limits of construction for the proposed project and would need to be addressed under a future project.

Alternative 4

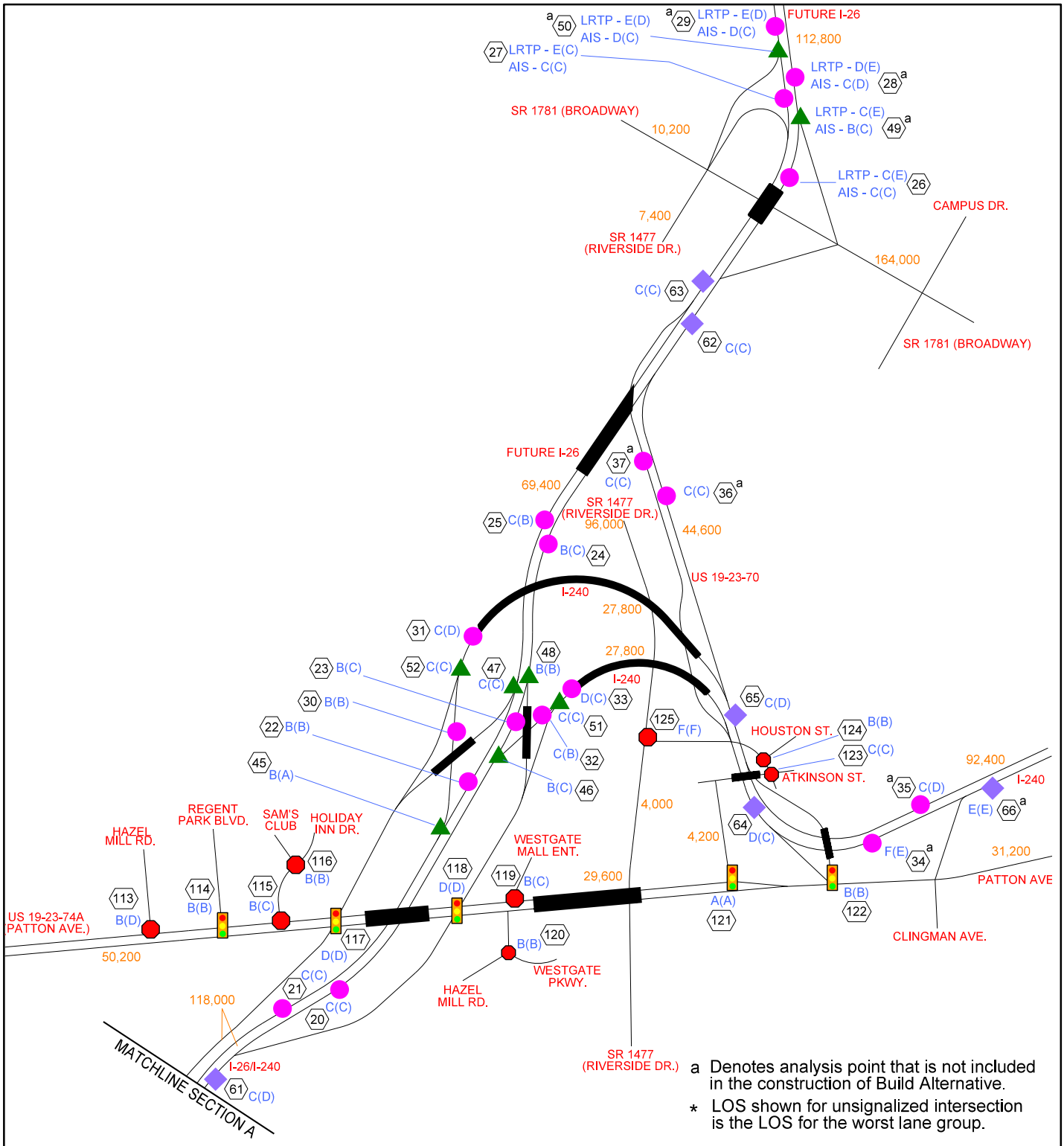
Figure 2-29 present a summary of the 2033 build peak hour LOS for Section B – Alternative 4. Analysis points evaluated include basic freeway segments, freeway merges and diverges, major merges, major diverges, isolated ramp roadways, freeway weaving segments, and signalized and unsignalized intersections. The results of the design year analysis within the limits of construction under the LRTP analysis show that two basic freeway segments and one unsignalized intersection would operate at LOS E or F. The results of the design year analysis within the limits of construction under the AIS analysis show that one segment would operate at LOS E or worse or a V/C ratio of 0.85 or worse. This analysis point is an unsignalized intersection with a V/C ratio of less than 0.85, which is acceptable.

The AIS analysis at the north end of the project has been developed to meet LOS D standards based on the traffic forecast for this alternative. As such, US 19-23-70 NB and SB each require four lanes through the interchange with SR 1781. The development of Project I-2513 would provide adequate pavement to provide for the anticipated required lanes, while showing lane striping to the existing four-lane cross section at the bridge over SR 1781. However, should the traffic capacity analysis for Project A-0010A show that additional capacity is required beyond what is provided by Project I-2513, additional improvements would be required in order to seamlessly join both projects together. Based on this, the design of this alternative should be developed such that it would not preclude the development of I-26/US 19-23-70 north of the Project I-2513 as an eight-lane typical section.

Beyond the limits of construction for the build alternative the results of the design year analysis show that three of nine analysis points would operate at an acceptable LOS D or better with the remaining six analysis points operating at LOS E or F with the 2035 LRTP Scenario. The results of the design year analysis with the AIS show that seven of nine analysis points would operate at an acceptable LOS D or better with the remaining two analysis points operating at LOS E or F. The two analysis points that operate at an unacceptable level are associated with I-240 east of the US 19-23-70/Patton Avenue interchange. Improvements to these segments are beyond the limits of construction for the proposed project and would need to be addressed under a future project.

Alternative 4-B

Figure 2-30 present a summary of the 2033 build peak hour LOS for Section B – Alternative 4-B. Analysis points evaluated include basic freeway segments, freeway merges and diverges, major merges, major diverges, isolated ramp roadways, freeway weaving segments, and signalized and unsignalized intersections. The results of the design year analysis within the limits of construction under the LRTP analysis show that two basic freeway segments and one unsignalized intersection would operate at LOS E or F. The results of the design year analysis within the limits of construction under the AIS analysis show that one segment would operate at LOS E or worse or a V/C ratio of 0.85 or worse. This analysis point is an unsignalized intersection with a V/C ratio of less than 0.85, which is acceptable.



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I-26 Connector
Buncombe County

STIP Project No. I-2513

Legend

- Basic Freeway Segments
- Freeway Ramp Junctions
- Freeway Weaving Segments
- Signalized Intersection
- Unsignalized Intersection
- A(A) LOS or V/C Ratio - AM(PM)
- ##### Average Daily Traffic
- (1) Analysis Reference Number

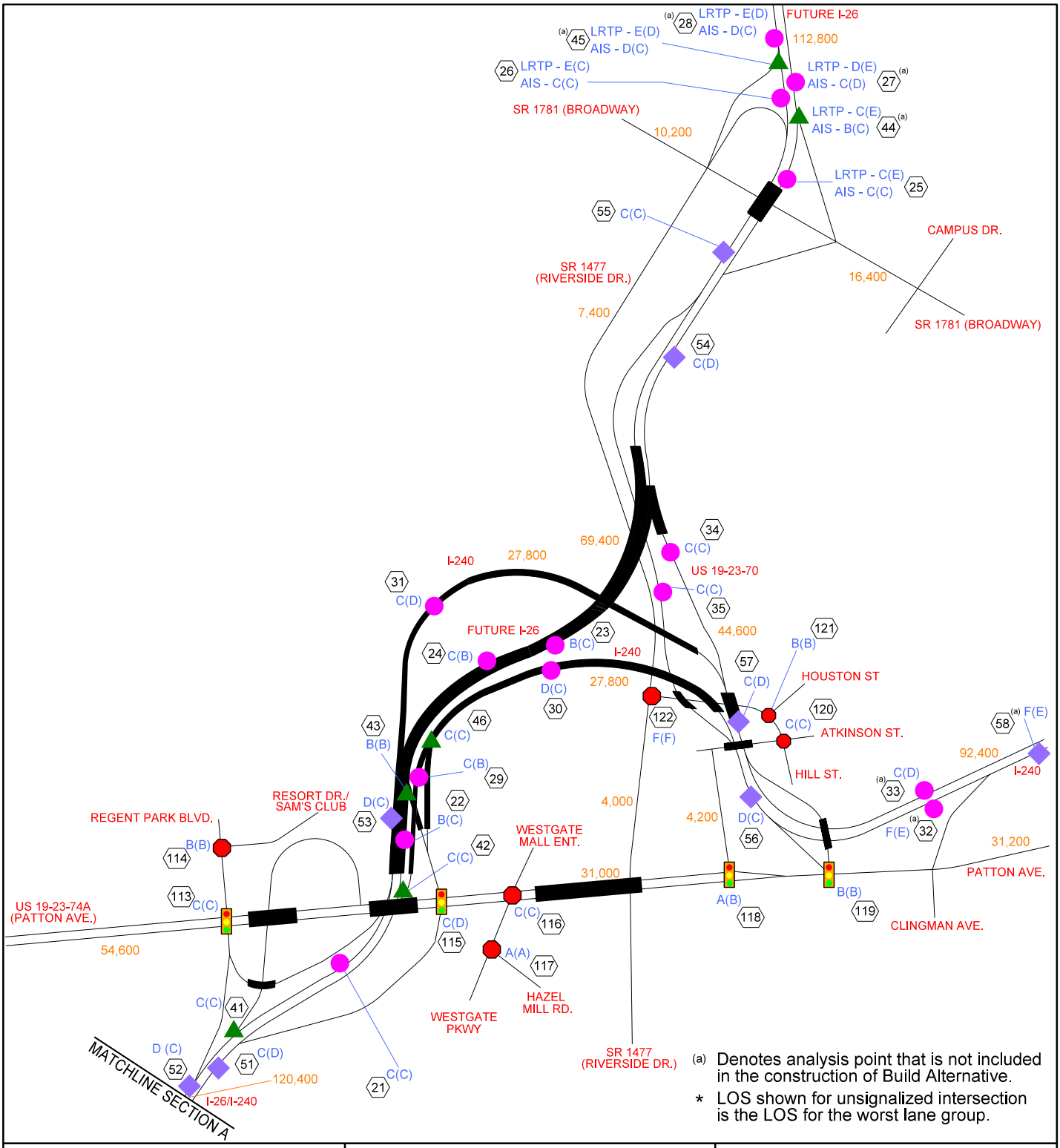
Date: June 2015

N W E S

Not to Scale

Figure 2-29

Section B Alternative 4
2033 Build Average Daily Traffic
and Level of Service



North Carolina
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I-26 Connector
Buncombe County

STIP Project No. I-2513

Legend

- Basic Freeway Segments
- Freeway Ramp Junctions
- Freeway Weaving Segments
- Signalized Intersection
- Unsignalized Intersection
- A(A) LOS or V/C Ratio - AM(PM)
- ##### Average Daily Traffic
- (1) Analysis Reference Number

Date: June 2015

N W E S

Not to Scale

Figure 2-30

Section B Alternative 4B
2033 Build Average Daily Traffic and Level of Service

The AIS analysis at the north end of the project has been developed to meet LOS D standards based on the traffic forecast for this alternative. As such, US 19-23-70 NB and SB each require four lanes through the interchange with SR 1781. The development of Project I-2513 would provide adequate pavement to provide for the anticipated required lanes, while showing lane striping to the existing four-lane cross section at the bridge over SR 1781. However, should the traffic capacity analysis for Project A-0010A show that additional capacity is required beyond what is provided by Project I-2513, additional improvements would be required in order to seamlessly join both projects together. Based on this, the design of this alternative should be developed such that it would not preclude the development of I-26/US 19-23-70 north of the Project I-2513 as an eight-lane typical section.

Beyond the limits of construction for the build alternative the results of the design year analysis show that one of seven analysis points would operate at an acceptable LOS D or better with the remaining six analysis points operating at LOS E or F with the 2035 LRTP Scenario. The results of the design year analysis with the AIS show that five of seven analysis points would operate at an acceptable LOS D or better with the remaining two analysis points operating at LOS E or F. The two analysis points that would operate at an unacceptable level are associated with I-240 east of the US 19-23-70/Patton Avenue interchange. Improvements to these segments are beyond the limits of construction for the proposed project and would need to be addressed under a future project.

2.7.5 TRAFFIC OPERATIONS SUMMARY

This section includes a summary of the traffic operations for the build alternatives. Section 2.7.4 includes a detailed quantitative analysis of the traffic operations based on LOS and shows that all of the alternatives meet the design LOS standard set for the project. The goal of this section is to provide a more qualitative discussion of projected traffic operations for each alternative.

2.7.5.1 Section C

Section C of the proposed project includes four alternatives. In general, the traffic operations along the I-26, I-40, and I-240 corridors would be about the same for all alternatives. The main difference between alternatives relates to how the traffic at the I-26/I-40/I-240 interchange would be accommodated and how this would affect the connections to the interchange of I-40 and NC 191 (Brevard Road) to the east. The following sections provide a comparison of the alternatives at these locations.

I-26/I-40/I-240 Interchange

The four alternatives included in Section C for the I-26/I-40/I-240 interchange would provide similar functions but would have differences in their traffic operations. All four of the alternatives would provide for the movement from I-40 westbound to I-26 westbound/I-240 eastbound and from I-26 eastbound/I-240 westbound to I-40 eastbound, neither of which are included in the existing interchange.

In general, Alternative A-2 would have the best traffic operations because all of the movements would occur on multi-lane flyover ramps that accommodate very high volumes at high speeds and have no weaving movements within the interchange. The next best interchange from a traffic standpoint is Alternative D-1, which would not include any weaving segments within the interchange, and would replace one of the flyover ramps with a lower speed loop. While the loop associated with Alternative D-1 would operate acceptably; should traffic volumes increase

substantially beyond the projected volumes, the loop may not be able to process the high volumes that a flyover ramp can. However, Alternative D-1 provides better ramp spacing, which may provide a higher level of comfort for drivers than Alternative A-2. Alternative C-2 provides the third best traffic operations of the four alternatives being considered, by removing a second flyover ramp and replacing it with a lower speed loop ramp. For Alternative C-2 the two loops would both connect to I-26 eastbound and create a weaving segment, which would be separated from the through traffic along a C/D Roadway to minimize the effect on freeway traffic operations. Alternative F-1 provides adequate traffic operations in the design year but would have the shortest lifespan of the four alternatives. Alternative F-1 maintains the existing configuration of the interchange while adding the missing movements, resulting in a much lower construction cost. Alternative F-1 could be more confusing for drivers due to the utilization of left-hand exit and entrance ramps.

I-40 Interchange at NC 191 (Brevard Road)

There are four alternatives for the I-40 interchange at NC 191 (Brevard Road). Two of the alternatives (Alternative C-2 and Alternative F-1) would maintain the existing interchange configuration with all ramps and loops on the east side of NC 191 (Brevard Road). Alternative A-2 would convert the loop in the southeast quadrant of the interchange to a ramp in the southwest quadrant of the interchange. Alternative D-1 would modify the existing interchange into a standard diamond interchange with ramps in each quadrant. The traffic operations along NC 191 (Brevard Road) would be similar for each of the four alternatives, but Alternative D-1 would operate slightly better than the remaining three because it would have fewer left turn movements at the signal on the north side of I-40 due to Bear Creek Road being relocated farther north and because it creates slightly more separation on the south side of I-40 from the entrance to the Farmers Market.

The main difference between the alternatives for this interchange is the access they would allow. The level of access that would be provided between the NC 191 (Brevard Road) interchange and the I-26/I-40/I-240 interchange is directly related to the footprint of the interchange at I-26/I-40/I-240.

- Alternative F-1 would have the smallest footprint at the I-26/I-40/I-240 interchange. The small footprint would allow for the longest segment along I-40, between NC 191 and I-26/I-240, the best traffic operations and would not include any access restrictions between the two interchanges.
- Alternative C-2 would have the next smallest footprint. While full movement would be provided between the two interchanges; it is along parallel C/D roadways.
- Alternative A-2 would provide the next best access. Full access would be provided along a parallel C/D roadway from NC 191 (Brevard Road) to I-26/I-240 in the I-40 westbound direction. Due to the braided ramps on the south side of I-40, movements from I-26 westbound and I-26 eastbound/I-240 westbound to NC 191 (Brevard Road) would not be provided.
- Alternative D-1 would have the most restrictions on access due to the braided ramps along both directions of I-40, which would restrict the movement from I-26 westbound to NC 191 (Brevard Road) and from NC 191 (Brevard Road) to both I-26 and I-240. The movements that would not be provided by Alternatives A-2 and D-1 may be made at the adjacent NC 191 (Brevard Road) interchanges with I-26 to the south and I-26/I-240 to the north.

I-40 Interchange at US 19-23-74A (Smoky Park Highway)

All four Section C alternatives have identical designs for the I-40 interchange at US 19-23-74A (Smoky Park Highway). All of the segments would operate with identical LOS and density. Therefore, no alternative would be operationally superior over any of the others at this interchange.

2.7.5.2 Section A

Section A includes a single best fit alternative for the widening of I-240. The traffic operations for each of the interchanges along this section are discussed as a means of describing the key aspects of this section of the project.

I-26/I-240 Interchange at NC 191 (Brevard Road)

The traffic operations of the freeway south of the interchange would be slightly different for each of the four alternatives being considered in Section C. The traffic operations for the freeway segment between the I-26/I-40/I-240 interchange in Section C and the I-26/I-240 interchange at NC 191 (Brevard Road) would be controlled by the length between the interchanges.

- Section C – Alternative F-1 would allow for the best traffic operations because it would provide the greatest distance between the interchanges.
- Section C – Alternative C-2 would provide the second best traffic operations due to a shorter length between interchanges.
- Section C – Alternatives A-2 and D-1 would provide the worst traffic operations due to having the shortest length between interchanges.

The configuration of the I-26/I-240 interchange at NC 191 (Brevard Road) would not include an exit ramp from I-26 eastbound/I-240 westbound to NC 191 (Brevard Road) due to the close proximity to the SR 3556 (Amboy Road) interchange. Drivers would be required to exit at the SR 3556 (Amboy Road) interchange and follow the extension of SR 3556 (Amboy Road) to NC 191 (Brevard Road). The change in configuration, combined with the extension of SR 3556 (Amboy Road) would provide substantial benefits to the traffic operations in this area of the project. Eliminating the exit ramp and weaving segment between SR 3556 (Amboy Road) and NC 191 (Brevard Road), would result in better traffic operations because the number of conflicts between vehicles would be reduced. This is a substantial improvement from the existing configuration where SR 3556 (Amboy Road) enters I-240 westbound as a left-entrance and vehicles desiring to exit to NC 191 (Brevard Road) must weave across both lanes of I-240 and exit in a very short distance. Additionally, given that the existing SR 3556 (Amboy Road) interchange does not provide all movements; SR 3556 (Amboy Road) traffic desiring to follow I-240 eastbound must weave across both lanes of I-240 and exit with the vehicles at NC 191 (Brevard Road), before making a U-turn by crossing through two signalized intersections in order to merge back onto I-240 eastbound.

I-26/I-240 Interchange at SR 3556 (Amboy Road)

The traffic operations in the vicinity of the interchange with SR 3556 (Amboy Road) would be improved substantially by providing greatly enhanced connectivity within the area. In addition to the improvements in traffic operations along the freeway discussed above, the extension of SR 3556 (Amboy Road) and providing an interchange that allows for all movements would improve the traffic operations.

The extension of SR 3556 (Amboy Road) to NC 191 (Brevard Road) opposite Shelburne Road would greatly enhance the connectivity for local traffic and reduce the amount of traffic on the interstate, including eliminating the traffic weaving segment between interchanges along I-26 eastbound/I-240 westbound. The extension would allow for the separation of local and interstate traffic by providing adequate connectivity so that local trips would not need to access the interstate and re-establishes the linkage that was severed by the original construction of I-240. The extension of SR 3556 (Amboy Road) would also include local connections to Virginia Avenue and Fairfax Avenue that would provide additional options for drivers and would enhance the traffic operations on the local street system.

The I-26/I-240 interchange at SR 3556 (Amboy Road) would improve traffic operations and improve the efficiency of the local network by providing a full movement interchange. The existing interchange does not include a ramp from SR 3556 (Amboy Road) to I-240 eastbound and from I-240 westbound to SR 3556 (Amboy Road). The missing movements require drivers to either use the NC 191 (Brevard Road) interchange to complete what is essentially a U-turn movement or use the surface street network between Haywood Street and SR 3556 (Amboy Road). The proposed interchange would allow for all movements, improving the traffic operations by eliminating excess trips along the interstate and providing enhanced connectivity.

I-26/I-240 Interchange at US 19-23 Business (Haywood Road)

The traffic operations in the vicinity of the interchange with US 19-23 Business (Haywood Road) would be improved by providing additional turn lanes and connecting the I-240 eastbound exit ramp directly to US 19-23 Business (Haywood Road) instead of Hanover Street (as is the case with the existing configuration). Additionally, the two-way ramp in the northeast quadrant would be converted to an entrance ramp only, which would improve the operations by allowing more of the signal's green time to be allocated to the heavier traffic movements.

Since the I-26/I-240 interchange at US 19-23 Business (Haywood Road) is located in Section A of the project, only one configuration is proposed; however, the access to the interchange from the north vary depending on the Section B alternatives. Section B includes four alternatives that would have varying effects on traffic exiting to US 19-23 Business (Haywood Road).

- For Section B, Alternative 3 and Alternative 3-C access to the US 19-23 Business (Haywood Road) exit ramp from I-26 eastbound would be restricted due to the close proximity to the combined I-26/I-240/US 19-23-74A (Patton Avenue) interchange to the north. The movement would create driver confusion, create signing difficulties and negatively affect the traffic operations. In order to exit to US 19-23 Business (Haywood Road) from I-26 eastbound, a driver would be required to exit onto a ramp at the interchange with US 19-23-74A (Patton Avenue) to the north, turn right onto an access road, pass through intersections at relocated Resort Drive and relocated Regent Park Boulevard, and cross Patton Avenue onto the I-240 westbound entrance ramp. Once on the entrance ramp to I-240, the driver would continue in an auxiliary lane along I-240 and exit to US 19-23 Business (Haywood Road).
- For Section B, Alternative 4 access to the US 19-23 Business (Haywood Road) exit ramp from I-26 eastbound and I-240 westbound would be restricted due to the close proximity to the combined I-26/I-240/US 19-23-74A (Patton Avenue) interchange to the north. The movement would create driver confusion, create signing difficulties, and negatively affect traffic operations. To exit to US 19-23 Business (Haywood Road) from I-26 eastbound and I-240 westbound, a driver would be required to exit onto a ramp at the interchange with US 19-23-74A (Patton Avenue) to the north and cross Patton Avenue onto the eastbound

I-26/westbound I-240 service road. Once on the service road, the driver would continue in the right-hand lane in order to exit to US 19-23 Business (Haywood Road).

- For Section B – Alternative 4-B the I-26/I-240 split would occur farther to the north, and traffic from US 19-23-74A (Patton Avenue) would enter eastbound I-26/westbound I-240 from two locations, which allows the weaving section between the US 19-23-74A (Patton Avenue) interchange and the US 19-23 Business (Haywood Road) interchange to operate acceptably. The roadways would be merged together in advance of the US 19-23 Business (Haywood Road) interchange, thus allowing for full access from both I-26 and I-240.

2.7.5.3 Section B

The differences in the way traffic is accommodated among the four alternatives in Section B are greater than differences in other sections. The following provides a comparison of the alternatives at these locations.

I-26/I-240 Interchange at US 19-23-74A (Patton Avenue)

The I-26/I-240 interchange at US 19-23-74A (Patton Avenue) is the location where the Section B alternatives differ the greatest. For Alternatives 3 and 3-C, the primary difference is that I-240 and Patton Avenue remain as a combined roadway across the Captain Jeff Bowen Bridges, while Alternatives 4 and 4-B separate local and interstate traffic by relocating I-240 onto flyover bridges to the north. Due to the magnitude of the differences, each alternative is discussed individually.

Alternative 3 and 3-C

Since the I-26/I-240 and US 19-23-74A (Patton Avenue) interchange design configuration for Alternatives 3 and 3-C is the same, they are compared to the rest as the alternatives as one. Alternatives 3 or 3-C would improve traffic operations substantially over the existing conditions by constructing a new location roadway for I-26 traffic. The traffic operations across the Captain Jeff Bowen Bridges would be improved over the existing conditions by reducing the weaving volumes across the bridges as a result of removing the I-26 weaving traffic that currently must make at least two lane changes. The traffic operations for I-240 eastbound would be improved by reconfiguring the roadways on the west side of the French Broad River in a manner that Patton Avenue would merge into I-240 from the right side of I-240 and exit to the right from I-240 east of the river; thus reducing the amount of weaving that would be required to continue on each route. The configuration in the opposite direction, I-240 westbound, would result in more weaving as Patton Avenue would merge with I-240 from the left side of I-240 and exit from the right side of the I-240 roadway on the west side of the French Broad River. The configuration for Alternatives 3 and 3-C would provide the best traffic operations for the heavy traffic volumes that originate along Patton Avenue, west of I-240 destined for I-240 eastbound along the north side of downtown Asheville, as this movement would pass straight through one signal associated with the Patton Avenue interchange and merge directly onto I-240. In this location Alternatives 4 and 4-B would require that traffic, including all traffic destined for I-26 westbound and I-240 eastbound, traverse multiple signals before turning left at a ramp.

The traffic operations of the I-26/I-240 interchange at US 19-23-74A (Patton Avenue) would also include several features that would be superior to Alternatives 4 and 4-B. The movement from I-26 westbound to US 19-23-74A (Patton Avenue) westbound would be accomplished with a free flow loop as opposed to a ramp requiring traffic to turn left at a traffic signal. The configuration for Alternatives 3 and 3-C would also have the advantage of ramps to I-26

westbound and from I-26 eastbound connecting to an access road which has lower volumes and allows for better traffic operations (as opposed to connecting directly to US 19-23-74A (Patton Avenue) as Alternatives 4 and 4-B would do). Additionally, the new access road would provide benefits to the traffic operations by improving the connectivity between Westgate Shopping Center, the Crowne Plaza Resort and Regent Park Boulevard by separating local traffic from the through traffic along the Patton Avenue corridor.

Conversely, the configuration of Alternative 3 and 3-C would have several aspects that would be inferior to the other alternatives in Section B, including difficulty in accessing the Westgate Shopping Center from I-26 westbound/I-240 eastbound. To access the shopping center, traffic would exit onto the loop and merge into US 19-23-74A (Patton Avenue) westbound traffic, travel one-third of a mile west and turn right onto the access road and return in the opposite direction. The largest constraint on traffic operations for Alternatives 3 and 3-C would be the signalized intersection to the west of the I-240 split from Patton Avenue. The intersection would have heavy traffic due to: volumes along US 19-23-74A (Patton Avenue) in the east-west direction; the ramp traffic to I-26 eastbound/I-240 westbound to the south; traffic from Westgate Shopping Center, Resort Drive, Regent Park Boulevard, the interchange ramp to I-26 westbound; and the interchange ramp from I-26 eastbound from the north.

Alternative 4

Alternative 4 would improve traffic operations substantially over the existing conditions by constructing new location roadways for both the I-26 and I-240 traffic, allowing the Captain Jeff Bowen Bridges to only serve local traffic. The interchange configuration for Alternative 4 at US 19-23-74A would be much simpler than for Alternatives 3 and 3-C and would allow for a standard diamond configuration. Alternative 4 would allow for the best traffic operations in the vicinity of the Captain Jeff Bowen Bridges due to the rerouting of the I-240 traffic but would have slightly inferior access to Westgate Shopping Center when compared to Alternative 4-B, which provides left turn movements into the shopping center.

The traffic operations of the I-26/I-240 interchange at US 19-23-74A (Patton Avenue) would also include several features that would be superior to the other alternatives. The simplified configuration of the interchange would allow for the best traffic operations for local traffic along the Patton Avenue corridor and would maintain the best traffic operations for the intersection with Regent Park Boulevard. The braided ramps along both directions of the interstate on the north side of Patton Avenue would provide for the best traffic operations by eliminating weaving segments within the interchange and would have the ability to process the most traffic.

The configuration of Alternative 4 would also have several aspects that would be inferior to the other alternatives in Section B, including the traffic operations and access to Resort Drive. Resort Drive would include a right-in/right-out intersection with Patton Avenue. This would require traffic desiring to turn left from Resort Drive to eastbound Patton Avenue to make a U-turn at Florida Avenue, since there would not be adequate storage length to allow for the U-turn movement at Regent Park Boulevard). Traffic desiring to turn left from eastbound Patton Avenue to Resort Drive would be required to access the roadway through Regent Park Boulevard. Additionally, the Alternative 4 traffic operations for Resort Drive would be the worst of the alternatives in Section B due to limited gaps in traffic caused by the location of Resort Drive being so close to the ramp intersection. The large traffic volumes originating west of the project destined for I-240 along the north side of downtown Asheville would be required to turn left at a traffic signal to access I-240 eastbound or I-26 westbound. The greatest negative aspect of Alternative 4 would be that access to the US 19-23 Business (Haywood Road) exit

ramp from I-26 eastbound and I-240 westbound would be restricted due to the close proximity to the combined I-26/I-240/US 19-23-74A (Patton Avenue) interchange to the north. The resulting required movements would create driver confusion, create signing difficulties and negatively affect the traffic operations. In order to exit to US 19-23 Business (Haywood Road) from I-26 eastbound and I-240 westbound, a driver would be required to exit onto a ramp at the interchange with US 19-23-74A (Patton Avenue) to the north and cross Patton Avenue onto the eastbound I-26/westbound I-240 service road. Once on the service road, the driver would continue in the right-hand lane in order to exit to US 19-23 Business (Haywood Road).

Alternative 4-B

Alternative 4-B would also improve traffic operations substantially over the existing conditions by constructing the new location roadways for both I-26 and I-240 traffic, allowing the Captain Jeff Bowen Bridges to serve only local traffic. The interchange configuration for Alternative 4-B at US 19-23-74A would be much simpler than for Alternatives 3 and 3-C, but slightly more complex than for Alternative 4. Alternative 4-B would allow for good traffic operations in the vicinity of the Captain Jeff Bowen Bridges due to the rerouting of the I-240 traffic and would have slightly superior access to Westgate Shopping Center when compared to Alternative 4, which does not provide left turn movements into the shopping center.

The traffic operations of the I-26/I-240 interchange at US 19-23-74A (Patton Avenue) would also include several features superior over the other alternatives. The interchange configuration would include a tight flyover ramp from westbound Patton Avenue to I-26 eastbound/I-240 westbound, which would allow this heavy movement to occur unimpeded. Also, Alternative 4-B is the only alternative that allows a typical full-access interchange with US 19-23 Business (Haywood Road) without rerouting traffic through the US 19-23-74A (Patton Avenue) interchange.

The configuration of Alternative 4-B would also have several aspects inferior to or the same as the other alternatives in Section B. Like Alternative 4, the large traffic volume originating west of the project destined for I-240 along the north side of downtown Asheville would be required to turn left at a traffic signal to access I-240 eastbound or I-26 westbound.

Several aspects of the traffic operations for Alternative 4-B would be superior to one of the other Section B alternatives, but inferior to the other. The following movements would be inferior to Alternative 4, but better than Alternatives 3 and 3-C:

- The elimination of the braided ramps along I-26 eastbound/I-240 westbound on the north side of Patton Avenue would provide slightly inferior traffic operations compared to Alternative 4 by introducing a weaving segment within the interchange.
- At the intersection of the I-26 eastbound/I-240 westbound loop connecting to US 19-23-74A (Patton Avenue) opposite Regent Park Boulevard, the amount traffic required to turn left from the loop onto US 19-23-74A (Patton Avenue) is very large. Due to the additional traffic movements to and from Regent Park Boulevard, this intersection has very little excess capacity to serve volumes beyond the design year.

The following movements would be inferior to Alternatives 3 and 3-C, but better than Alternative 4:

- The connection for Resort Drive would be better than the connection provided for Alternative 4, as it would result in a connection directly to Regent Park Boulevard. However, due to its

proximity to the Regent Park Boulevard/Patton Avenue intersection it would only include right-in/right-out movements with Regent Park Boulevard, thus requiring traffic that would desire to turn left from Resort Drive to southbound Regent Park Boulevard to either make a U-turn along Regent Park Boulevard or utilize the connections to Regent Park Boulevard on the back side of the Crowne Plaza Hotel or through the Sam's Club roadway network.

I-240 Interchange at US 19-23-74A/Patton Avenue

The design of the I-240 interchange at US 19-23-74A (Patton Avenue) on the east side of the French Broad River is identical for Alternatives 4 and 4-B. The existing configuration would not be changed for Alternatives 3 and 3-C. The revised interchange under Alternatives 4 and 4-B could improve the traffic operations on the east side of the French Broad River to some extent by eliminating the undesirable left-hand entrances and exits, reducing driver confusion.

The freeway elements of Alternatives 4 and 4-B would be improved by separating the local traffic along Patton Avenue from the I-240 traffic; however, the impact on the overall traffic operations in the vicinity of the interchange would be somewhat limited due to limited capacity along the I-240 corridor east of the proposed project. The I-240 corridor to the east of the project is projected to cause a constraint on the capacity that would affect the operations of the US 19-23-70/Patton Avenue interchange. The traffic capacity analysis for Alternatives 3 and 3-C shows that the US 19-23-70 ramps from I-240 westbound to US 19-23-70 northbound and to I-240 eastbound from US 19-23-70 southbound would fail in the design year. The failure would be due to the limited capacity of the I-240 corridor. The point that the traffic would fail is essentially the same for all alternatives. Due to the common constraint, the operations for Alternative 4 and 4-B would only be a slight improvement over the operations for Alternatives 3 and 3-C.

The traffic operations for Alternatives 3 and 3-C, beyond the constraint of the I-240 corridor mentioned above, would be adequate to serve the project design year volumes. The Alternative 3 and 3-C configuration would also preserve the interchange to the Hill Street/Riverside Drive area, while Alternatives 4 and 4-B would revise access to these areas. The configurations for Alternatives 4 and 4-B would preserve the connectivity between Hill Street and the Riverside Drive area (including the connection to the Hillside Apartment Complex) and would provide additional access to the Patton Avenue corridor; however, the partial access from US 19-23-70, as currently provided (and maintained in Alternatives 3 and 3-C) would be eliminated. The Alternative 4 and 4-B configuration would require traffic from I-240 westbound destined for the Hill Street/Riverside Drive area to exit at the Montford Avenue exit and traffic destined for Patton Avenue to cross over the French Broad River and exit at the interchange on the west side of the river. Alternatives 4 and 4-B would improve the flow and operations of traffic along Patton Avenue and provide for better interconnectivity between Hill Street/Riverside Drive and downtown Asheville on the east side of the French Broad River.

I-26 Interchanges at I-240 and US 19-23-70

The design of the I-26 interchanges at I-240 and US 19-23-70 would be slightly different for each of the alternatives in Section B. Alternatives 4 and 4-B would also include the I-240 movements separated from the Patton Avenue traffic. The proposed interchanges would essentially create a triangle: I-26 would make up one leg, I-240 would make up the second leg and US 19-23-70 would make up the final leg. The triangle would include interchanges at each of the three corners.

The traffic operations for Alternatives 3 and 3-C would be adequate; however, in comparison to the other alternatives; they would provide slightly lower efficiency and lifespan due to the combined I-240/Patton Avenue traffic on the Captain Jeff Bowen Bridges. Alternatives 4 and 4-B would provide good traffic operations by separating the local traffic and interstate traffic across the Captain Jeff Bowen Bridges by providing the flyover bridges for I-240 traffic. Alternative 4-B would allow for the best traffic operations of the three options by providing the longest weaving distance for traffic along the I-26 westbound/US 19-23-70 northbound direction. The Alternative 4 traffic operations would only be slightly worse than Alternative 4-B due to the shorter weaving distance but would be slightly better than Alternatives 3 and 3-C.

2.8 ROADWAY DEFICIENCIES

As detailed in Section 1.9, the design of roadways is subject to design standards and recommendations such that the practice of highway design features will result in maximum safety and utility. While every effort has been made to achieve these standards and meet these recommendations within the study area for each of the build alternatives, it was not feasible to completely achieve this goal. Several of the existing deficient roadway elements along I-26, I-40, I-240, US 19-23-70, and their associated interchanges are presented in Section 1.9. The following is a listing of the elements of design where standards or recommendations would not be fully met by one or more of the build alternatives.

- Control of access
- Design speeds
- Shoulders
- Medians
- Interchanges
- Left-hand entrances and exits
- Speed-change lanes

The following sections detail the evaluation of the elements for each of the build alternatives.

2.8.1 SECTION C

2.8.1.1 Alternative A-2

The elements for Alternative A-2 that would not fully meet design standards or recommendations are included in Table 2-4 and on Figure 2-31.

Table 2-4: Roadway Deficiencies for Section C – Alternative A-2

Location No.	Roadway Segment	Deficient Element
1	I-40 interchange at NC 191 (Brevard Road)	The interchange would not provide for all traffic movements because the following movements would not exist: I-26 WB to I-40 EB to NC 191. However, this access is provided at the adjacent NC 191 interchange with I-26/I-240.
1	I-40 interchange at NC 191 (Brevard Road)	The interchange would not provide for all traffic movements because the following movements would not exist: I-26 EB to I-40 EB to NC 191. However, this access is provided at the adjacent NC 191 interchange with I-26/I-240.

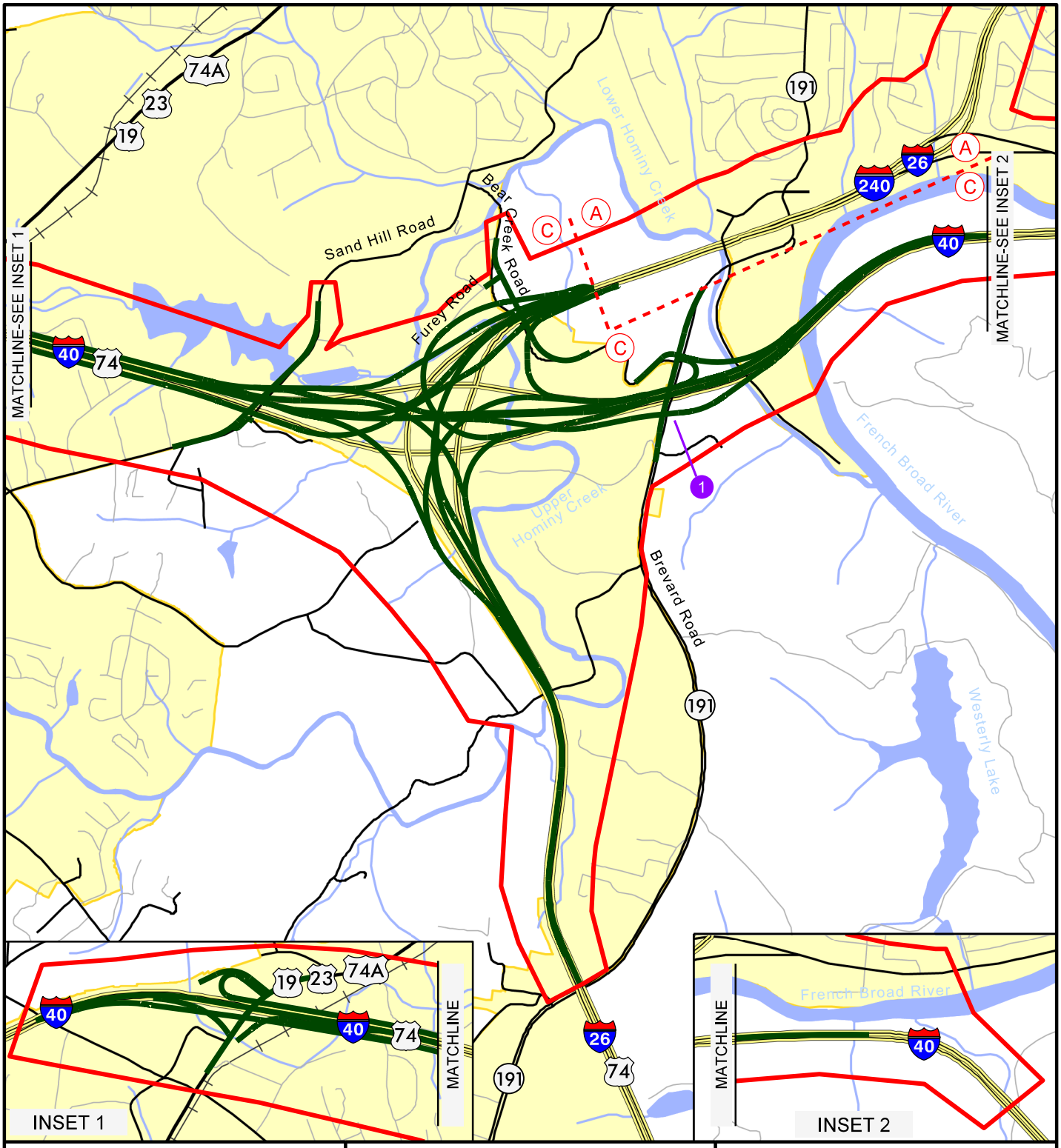

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Figure 2-31

Section C Alternative A-2
Roadway Deficiencies

2.8.1.2 Alternative C-2

There are no elements of Alternative C-2 that would be deficient.

2.8.1.3 Alternative D-1

The elements for Alternative D-1 that would not fully meet design standards or recommendations are included in Table 2-5 and on Figure 2-32.

Table 2-5: Roadway Deficiencies for Section C – Alternative D-1

Location No.	Roadway Segment	Deficient Element
1	I-40 interchange at NC 191 (Brevard Road)	The interchange would not provide for all traffic movements because the following movements would not exist: I-26 WB to I-40 EB to NC 191. However, this access is provided at the adjacent NC 191 interchange with I-26/I-240.
1	I-40 interchange at NC 191 (Brevard Road)	The interchange would not provide for all traffic movements because the following movements would not exist: NC 191 to I-40 WB to I-26 EB. However, this access is provided at the adjacent NC 191 interchange with I-26/I-240.

2.8.1.4 Alternative F-1

The elements for Alternative F-1 that would not fully meet design standards or recommendations are included in Table 2-6 and on Figure 2-33.

Table 2-6: Roadway Deficiencies for Section C – Alternative F-1

Location No.	Roadway Segment	Deficient Element
1	I-40/I-26 interchange	The ramp from I-40 WB to I-26 EB utilizes a left-hand exit from I-40 and a left-hand entrance to I-26. Left-hand entrances and exits are not prohibited, but they are not recommended.
1	I-40/I-26 interchange	The ramp from I-26 WB to I-40 WB utilizes a left-hand exit from I-26 and a left-hand entrance to I-40. Left-hand entrances and exits are not prohibited, but they are not recommended.
1	I-40/I-26 interchange	The ramp from I-40 EB to I-26 WB utilizes a left-hand entrance to I-26. Left-hand entrances and exits are not prohibited, but they are not recommended.

2.8.2 SECTION A

The elements for the I-240 Widening Alternative that would not fully meet design standards or recommendations are included on Figure 2-34 and in Table 2-7.

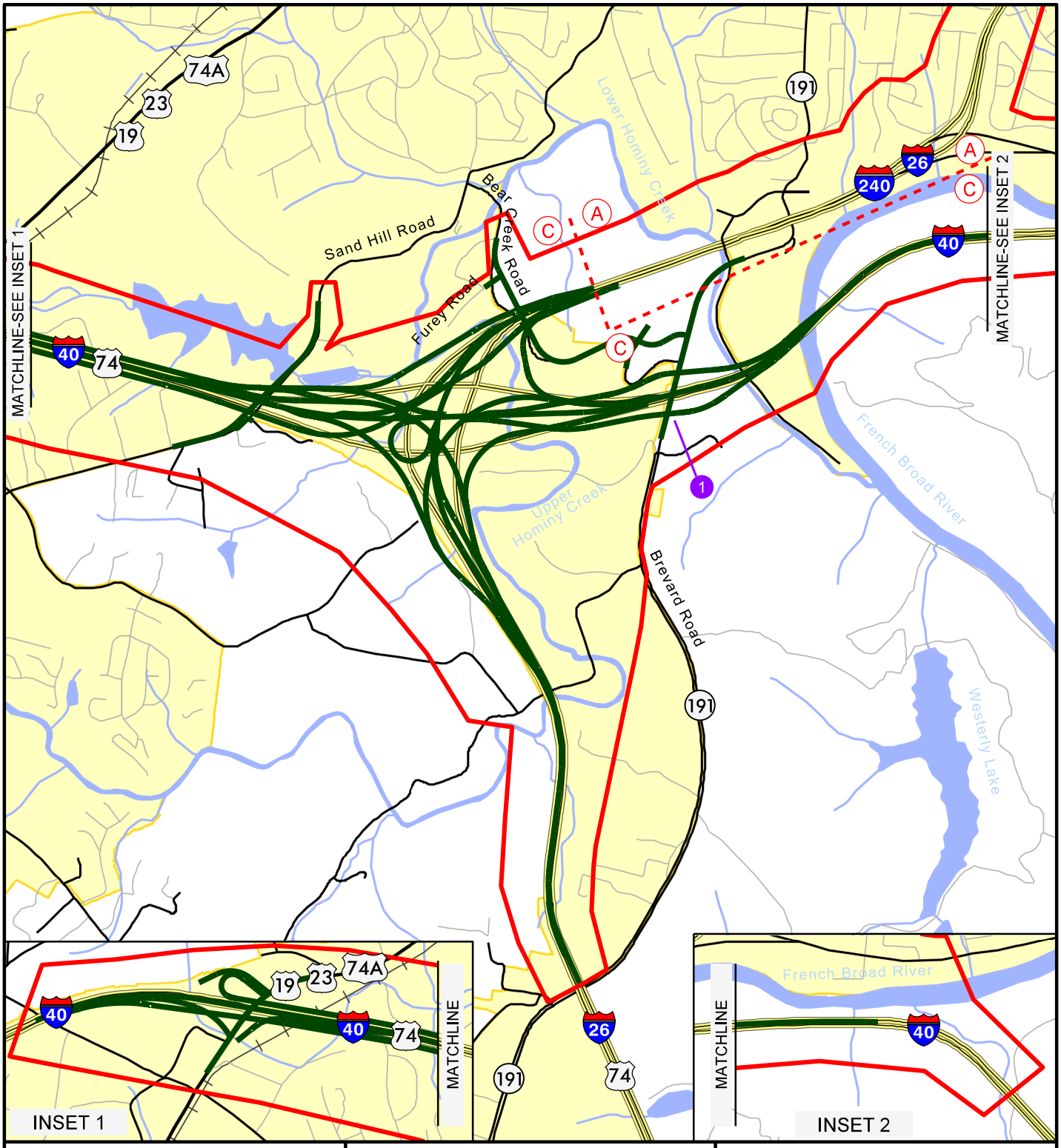

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Figure 2- 32

Section C Alternative D-1
Roadway Deficiencies

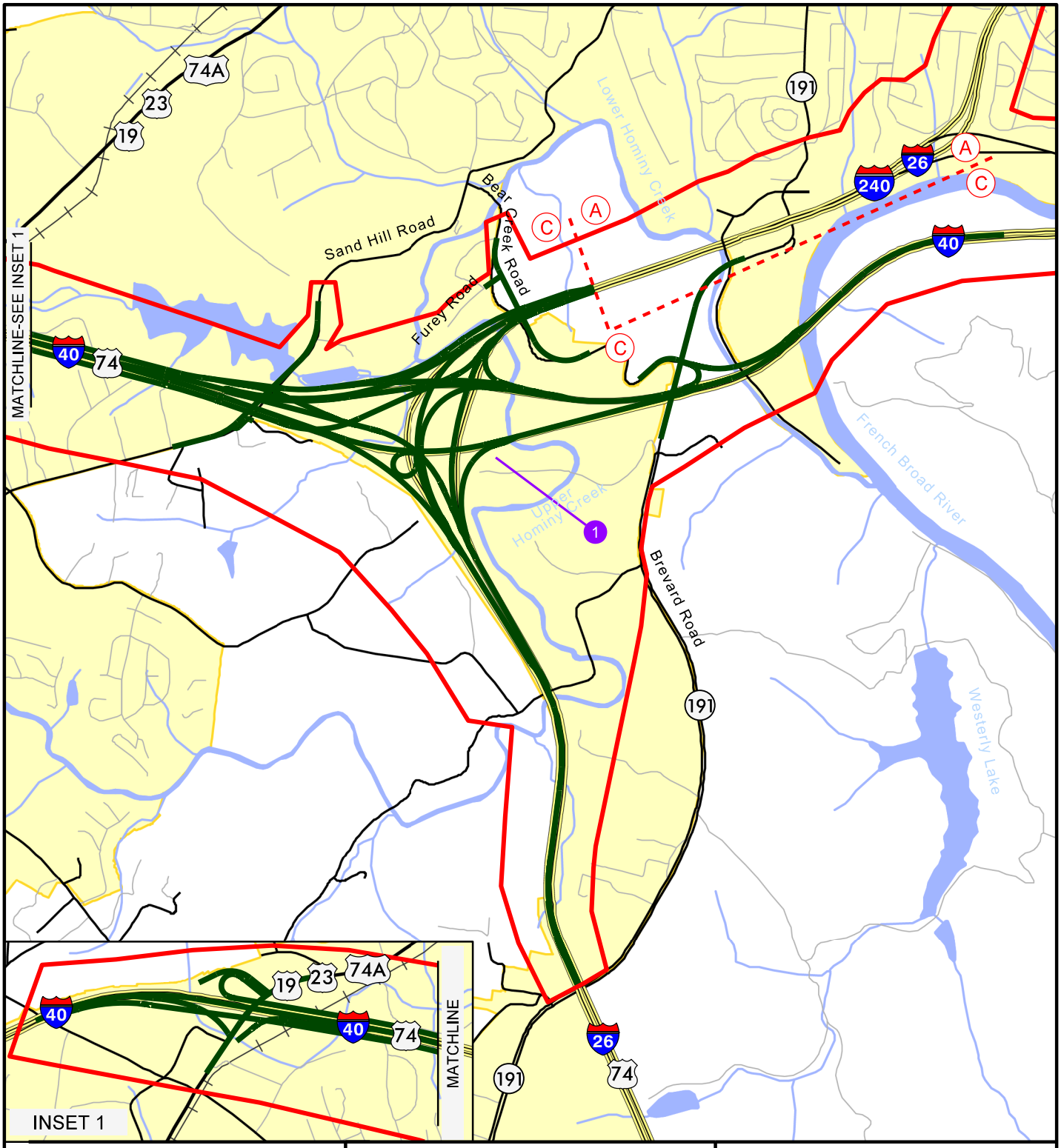

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Figure 2-33

Section C Alternative F-1
Roadway Deficiencies

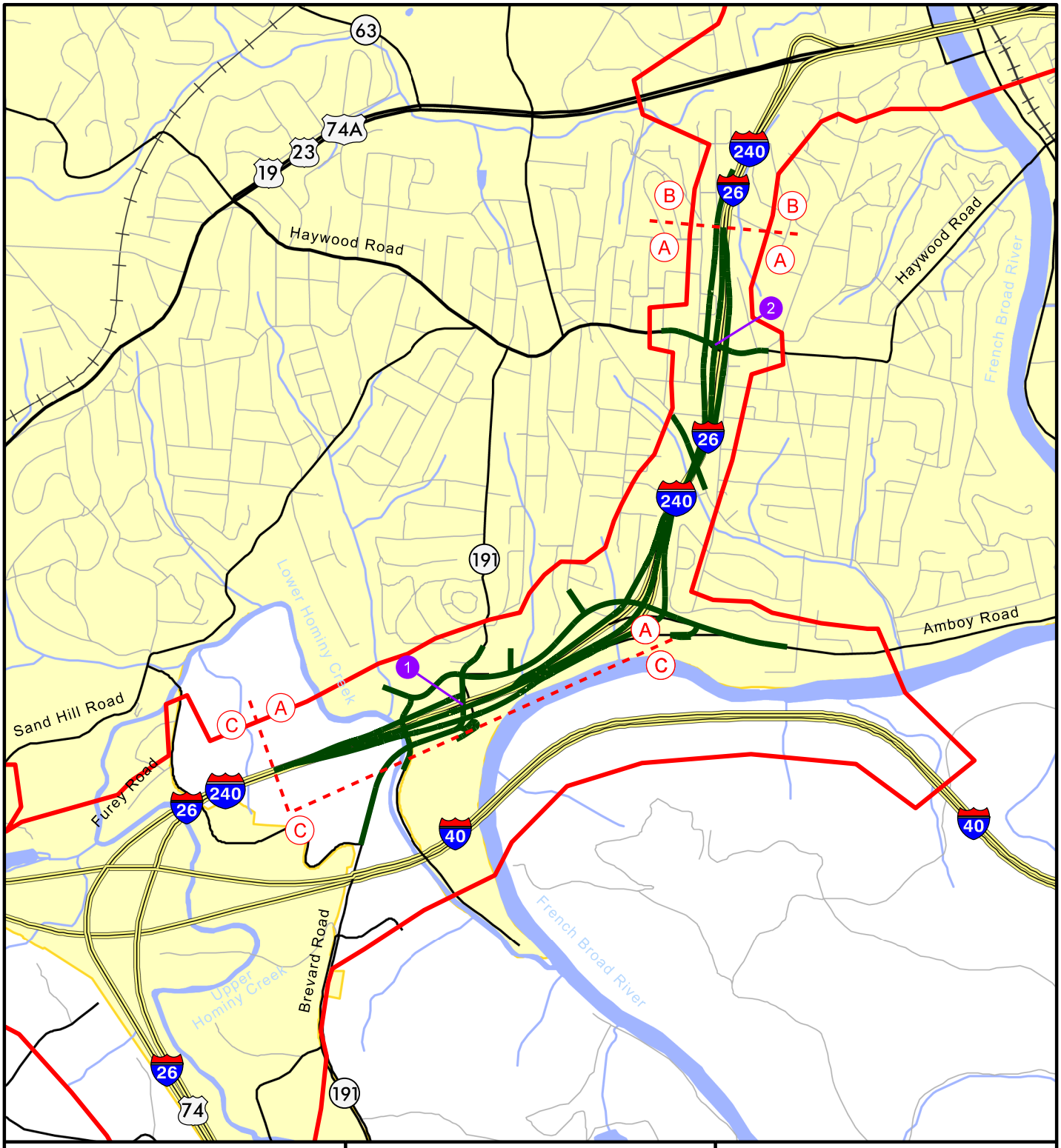

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Figure 2-34

Section A
Roadway Deficiencies

Table 2-7: Roadway Deficiencies for Section A – I-240 Widening Alternative

Location No.	Roadway Segment	Deficient Element
1	I-26/I-240 Interchange at NC 191(Brevard Road)	The interchange would not provide for all traffic movements because the following movements would not exist: I-26 eastbound/I-240 westbound to NC 191 (Brevard Road).
2	I-26/I-240 Interchange at US 19-23 Business (Haywood Road)	The control of access for the entrance ramp to I-26 westbound/I-240 eastbound from US 19-23 Business (Haywood Road) would not extend a minimum of 100 feet beyond the ramp terminals.
2	I-26/I-240 Interchange at US 19-23 Business (Haywood Road)	The interchange would not provide for all traffic movements because the following movements would not exist: I-26 eastbound to US 19-23 Business (Haywood Road). For Section B – Alternatives 3, 3-C, and 4.

The I-26/I-240 and NC 191 (Brevard Road) interchange would not provide for all traffic movements due to the close proximity of the SR 3556 (Amboy Road) interchange to the north. However, vehicles would be able to access NC 191 (Brevard Road) by exiting at the SR 3556 (Amboy Road) interchange and following the extension of SR 3556 (Amboy Road) to NC 191 (Brevard Road). The lack of controlled access for a distance of 100 feet along US 19-23 Business (Haywood Road) would be due to the need for access to the Aycock School historic property. In order to control the access for 100 feet, a greater impact to a Section 4(f) resource would be required. The interchange at the I-26/I-240 interchange with US 19-23 Business (Haywood Road) would not provide for all traffic movements due to the eastbound I-26 traffic not having direct access to the interchange. This is a result of the combining and splitting of I-26 and I-240 and the close proximity to the US 19-23-74A (Patton Avenue) interchange. This scenario would only be present for Section B – Alternative 3 (Alternatives 4 and 4-B provide access due to the I-26/I-240 merge being completed farther north). For Section B – Alternative 3, traffic on I-26 eastbound destined for US 19-23 Business (Haywood Road) would have to exit at US 19-23-74A (Patton Avenue) onto the access roadway and pass through two signals along the access roadway and one signal along Patton Avenue, onto the entrance ramp to I-240 westbound and follow the auxiliary lane along I-240 to the US 19-23 Business (Haywood Road) exit ramp.

2.8.3 SECTION B

2.8.3.1 Alternative 3

The elements for Alternative 3 that would not fully meet design standards or recommendations are included on Figure 2-35 and in Table 2-8.

Three of deficient elements would be due to not being able to provide for all traffic movements at the I-26/I-240 interchange with Patton Avenue, the I-26 interchange with US 19-23-70 and the I-240 interchange with US 19-23-70/Patton Avenue. The primary reason that the access could not be accommodated is due to the constraints within the corridor, including the urban development and natural features such as the French Broad River. The traffic movements that are not included in the interchanges are redundant movements to those that occur at an interchange in advance of the interchange with the missing movements; therefore, these movements would only serve traffic that missed an earlier exit.

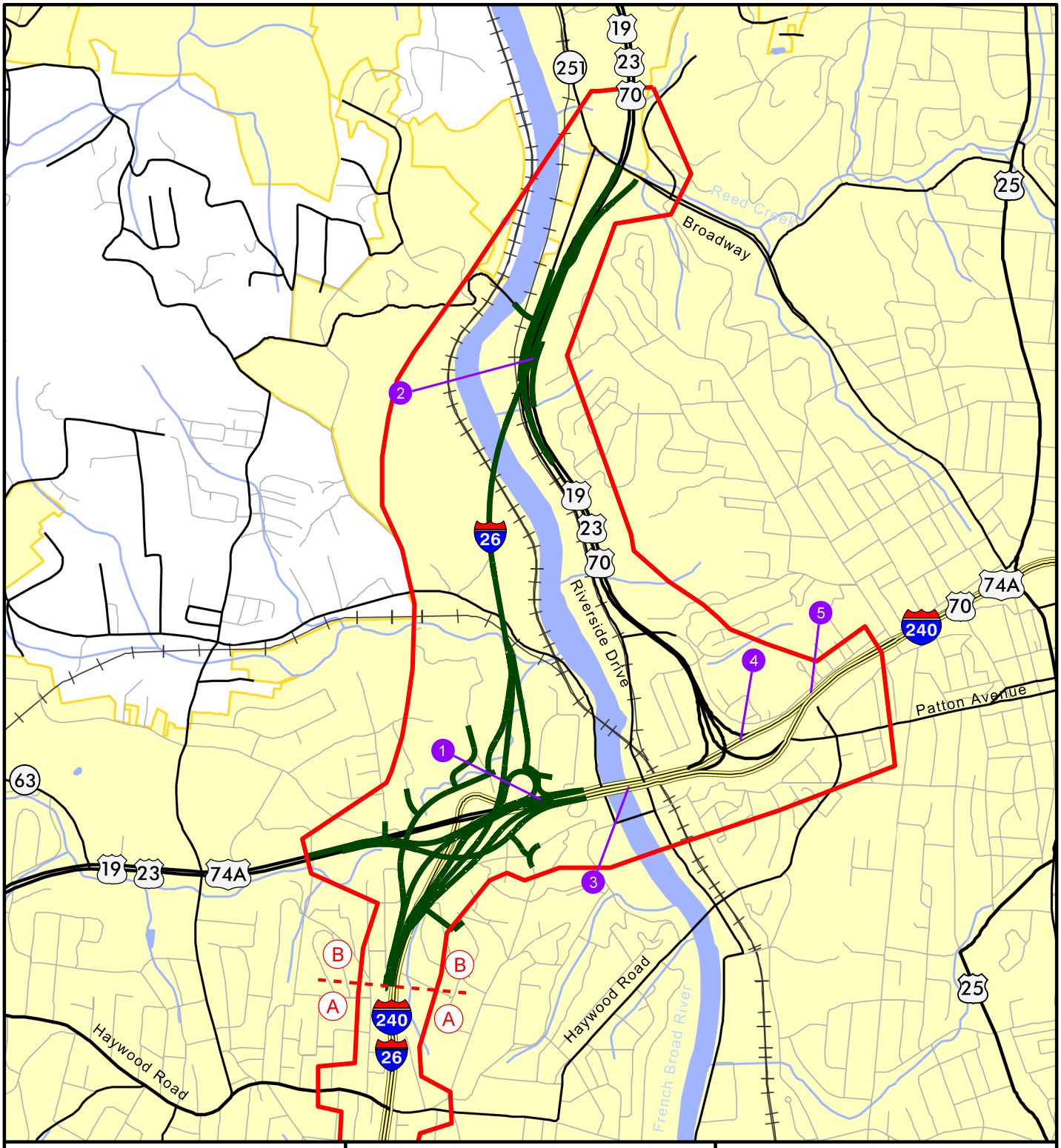

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Figure 2-35

Section B Alternative 3
Roadway Deficiencies

Table 2-8: Roadway Deficiencies for Section B – Alternative 3

Location No.	Roadway Segment	Deficient Element
1	I-26/I-240 Interchange at Patton Avenue	The interchange would not provide for all traffic movements because the I-240 westbound to I-26 westbound movement would not exist.
2	I-26 Interchange at US 19-23-70	The interchange would not provide for all traffic movements because the I-26 westbound to US 19-23-70 southbound movement and US 19-23-70 northbound to I-26 eastbound movement would not exist.
3	I-240 Captain Jeff Bowen Bridges	The existing bridge widths do not equal the full paved width of the roadway, which includes the minimum width of paved shoulders for an interstate facility. Additionally, the existing bridges do not provide adequate horizontal clearance required for an interstate facility. (Existing Deficiency)
3	I-240 Captain Jeff Bowen Bridges area	The I-240 inside and outside paved shoulder widths do not meet the requirements for an interstate facility. Additionally, the existing paved shoulder widths do not provide adequate horizontal clearance required for an interstate facility. (Existing Deficiency)
3	I-240 Captain Jeff Bowen Bridges area	I-240 includes vertical curb (with and without guardrail). (Existing Deficiency)
4	I-240/US 19-23-70/Patton Avenue Interchange	The interchange does not provide for all traffic movements because the I-240 westbound to eastbound Patton Avenue movement does not exist. (Existing Deficiency)
4	I-240/US 19-23-70/Patton Avenue Interchange	The interchange has a left-hand exit from I-240 eastbound to US 19-23-70 northbound, a left-hand entrance ramp from US 19-23-70 southbound to I-240 eastbound and a left-hand entrance from Patton Avenue westbound to I-240 westbound. (Existing Deficiency)
4	I-240/US 19-23-70/Patton Avenue Interchange	The I-240 eastbound exit ramp to US 19-23-70 northbound does not provide the minimum deceleration length. (Existing Deficiency)
4	I-240/US 19-23-70/Patton Avenue Interchange	The I-240 westbound exit ramp to US 19-23-70 northbound does not provide the minimum deceleration length. (Existing Deficiency)
4	I-240/US 19-23-70/Patton Avenue Interchange	The Patton Avenue bridge over I-240 to US 19-23-70 northbound does not provide the recommended vertical clearance for an interstate facility. (Existing Deficiency)
4	I-240/US 19-23-70/Patton Avenue Interchange	The US 19-23-70 southbound bridge over I-240 to Patton Avenue does not provide the recommended vertical clearance for an interstate facility. (Existing Deficiency)
4	I-240/US 19-23-70/Patton Avenue Interchange	The existing I-240 westbound bridge width does not equal the full paved width of the roadway, which includes the minimum width of paved shoulders for an interstate facility. Additionally, the existing bridge does not provide adequate horizontal clearance required for an interstate facility. (Existing Deficiency)

Location No.	Roadway Segment	Deficient Element
4	I-240/US 19-23-70/Patton Avenue Interchange area	East of US 19-23-70, the I-240 inside and outside paved shoulder widths do not meet the requirements for an interstate facility. Additionally, the existing paved shoulder widths do not provide adequate horizontal clearance required for an interstate facility. (Existing Deficiency)
5	Pedestrian bridge over I-240	East of US 19-23-70, the pedestrian bridge over I-240 does not provide the recommended vertical clearance for an interstate facility. (Existing Deficiency)
5	I-240/US 19-23-70/Patton Avenue Interchange area	I-240 east of US 19-23-70 includes vertical curb (with and without guardrail). (Existing Deficiency)
5	I-240/US 19-23-70/Patton Avenue Interchange	The I-240 westbound vertical alignment of the roadway east of the interchange exceeds the maximum allowable gradient. (Existing Deficiency)

Due to the difficulties in providing all movements at a single interchange as a result of the urban location, topographic constraints and the French Broad River, the intent of the three interchanges is to act as a single interchange that is spread out to form a triangle that when combined provide for all traffic movements. The remaining four deficient elements are all related to existing conditions east of the French Broad River that are beyond the limits of construction for Alternative 3 and could be addressed in a separate project, if necessary.

2.8.3.2 Alternative 3-C

The elements for Alternative 3 that would not fully meet design standards or recommendations are included on Figure 2-36 and in Table 2-9.

The first three deficient elements would be due to not being able to provide for all traffic movements at the I-26/I-240 interchange with Patton Avenue, the I-26 interchange with US 19-23-70 and the I-240 interchange with US 19-23-70/Patton Avenue. The primary reason that the access could not be accommodated is due to the constraints within the corridor, including the urban development and natural features such as the French Broad River. The traffic movements that are not included in the interchanges are redundant movements to those that occur at an interchange in advance of the interchange with the missing movements; therefore, these movements would only serve traffic that missed an earlier exit. Due to the difficulties in providing all movements at a single interchange as a result of the urban location, topographic constraints and the French Broad River, the intent of the three interchanges is to act as a single interchange that is spread out to form a triangle that when combined provide for all traffic movements. The remaining four deficient elements are all related to existing conditions east of the French Broad River that are beyond the limits of construction for Alternative 3-C and could be addressed in a separate project, if necessary.

2.8.3.3 Alternative 4

The elements for Alternative 4 that would not fully meet design standards or recommendations are included on Figure 2-37 and in Table 2-10.

.

Table 2-9: Roadway Deficiencies for Section B – Alternative 3-C

Location No.	Roadway Segment	Deficient Element
1	I-26/I-240 Interchange at Patton Avenue	The interchange would not provide for all traffic movements because the I-240 westbound to I-26 westbound movement would not exist.
2	I-26 Interchange at US 19-23-70	The interchange would not provide for all traffic movements because the I-26 westbound to US 19-23-70 southbound movement and US 19-23-70 northbound to I-26 eastbound movement would not exist.
3	I-240/US 19-23-70/Patton Avenue Interchange	The interchange does not provide for all traffic movements because the I-240 westbound to eastbound Patton Avenue movement does not exist. (Existing Deficiency)
4	I-240/US 19-23-70/Patton Avenue Interchange	The interchange has a left-hand exit from I-240 eastbound to US 19-23-70 northbound, a left-hand entrance ramp from US 19-23-70 southbound to I-240 eastbound and a left-hand entrance from Patton Avenue westbound to I-240 westbound. (Existing Deficiency)
5	I-240/US 19-23-70/Patton Avenue Interchange	The I-240 westbound exit ramp towards US 19-23-70 northbound does not provide the minimum deceleration length. (Existing Deficiency)
6	US 19-23-70 between I-240 and Hill Street	The US 19-23-70 median width does not meet the requirements for a freeway facility. (Existing Deficiency)
7	US 19-23-70 between I-240 and SR 1781 (Broadway)	The US 19-23-70 inside and outside paved shoulder widths do not meet the requirements for a freeway facility. (Existing Deficiency)

Table 2-10: Roadway Deficiencies for Section B – Alternative 4

Location No.	Roadway Segment	Deficient Element
1	I-26/I-240 Interchange at Patton Avenue	The interchange would not provide for all traffic movements because the I-240 westbound to I-26 westbound movement and the I-26 eastbound to I-240 eastbound movement would not exist.
2	I-26 Interchange at US 19-23-70	The interchange would not provide for all traffic movements because the I-26 westbound to US 19-23-70 southbound movement and the US 19-23-70 northbound to I-26 eastbound movement would not exist.
3	I-240 Interchange with US 19-23-70	The interchange would not provide for all traffic movements because the I-240 eastbound to US 19-23-70 northbound movement and the US 19-23-70 southbound to I-240 westbound movement would not exist.
4	I-240/US 19-23-70/Patton Avenue Interchange	The interchange would not provide for all traffic movements because the I-240 westbound to Patton Avenue westbound and eastbound movements would not exist.
5	US 19-23-70 between I-240 split and SR 1781 (Broadway)	The US 19-23-70 inside and outside paved shoulder widths do not meet the requirements for a freeway facility. (Existing Deficiency)

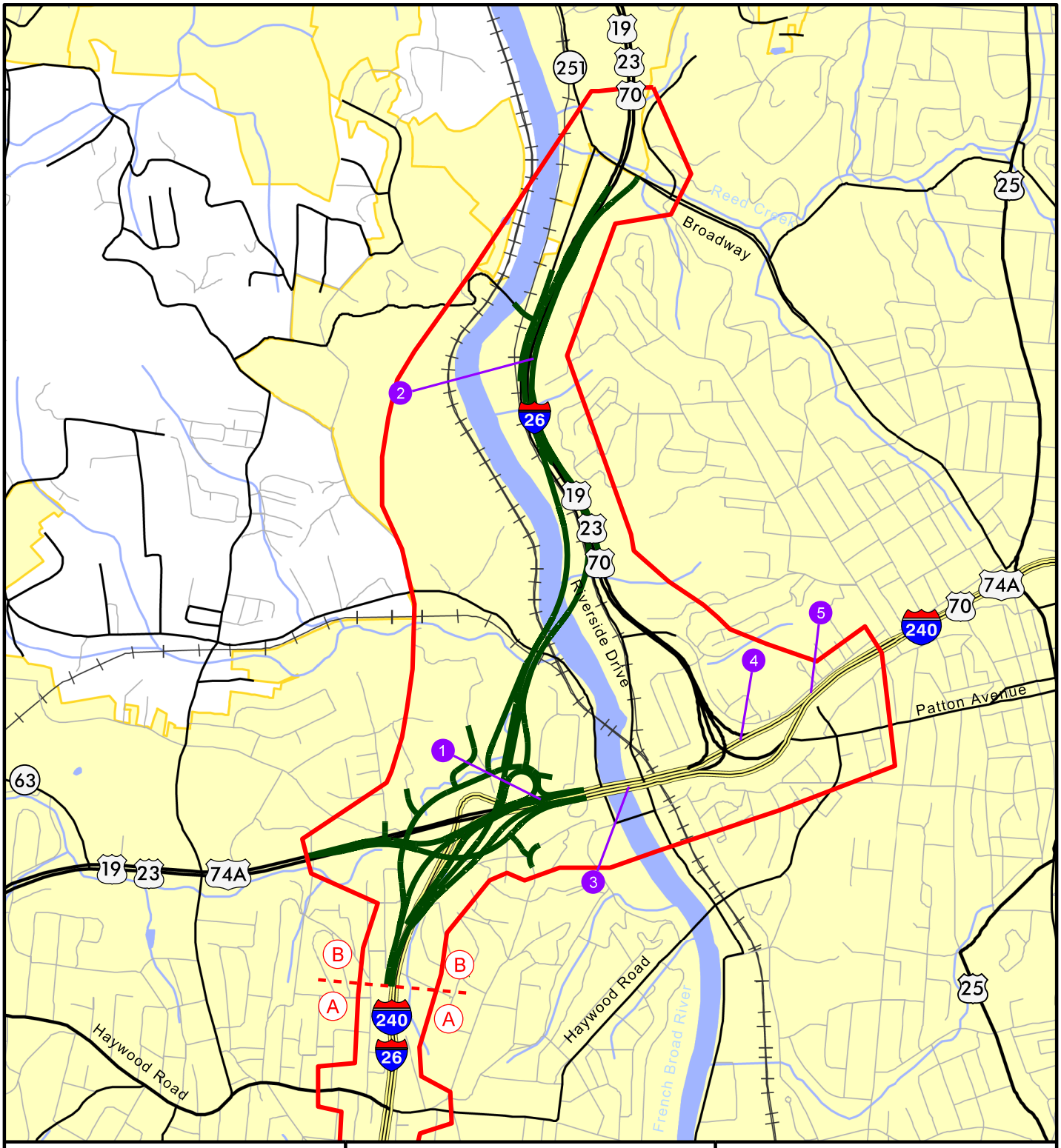

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Figure 2-36

Section B Alternative 3-C
Roadway Deficiencies

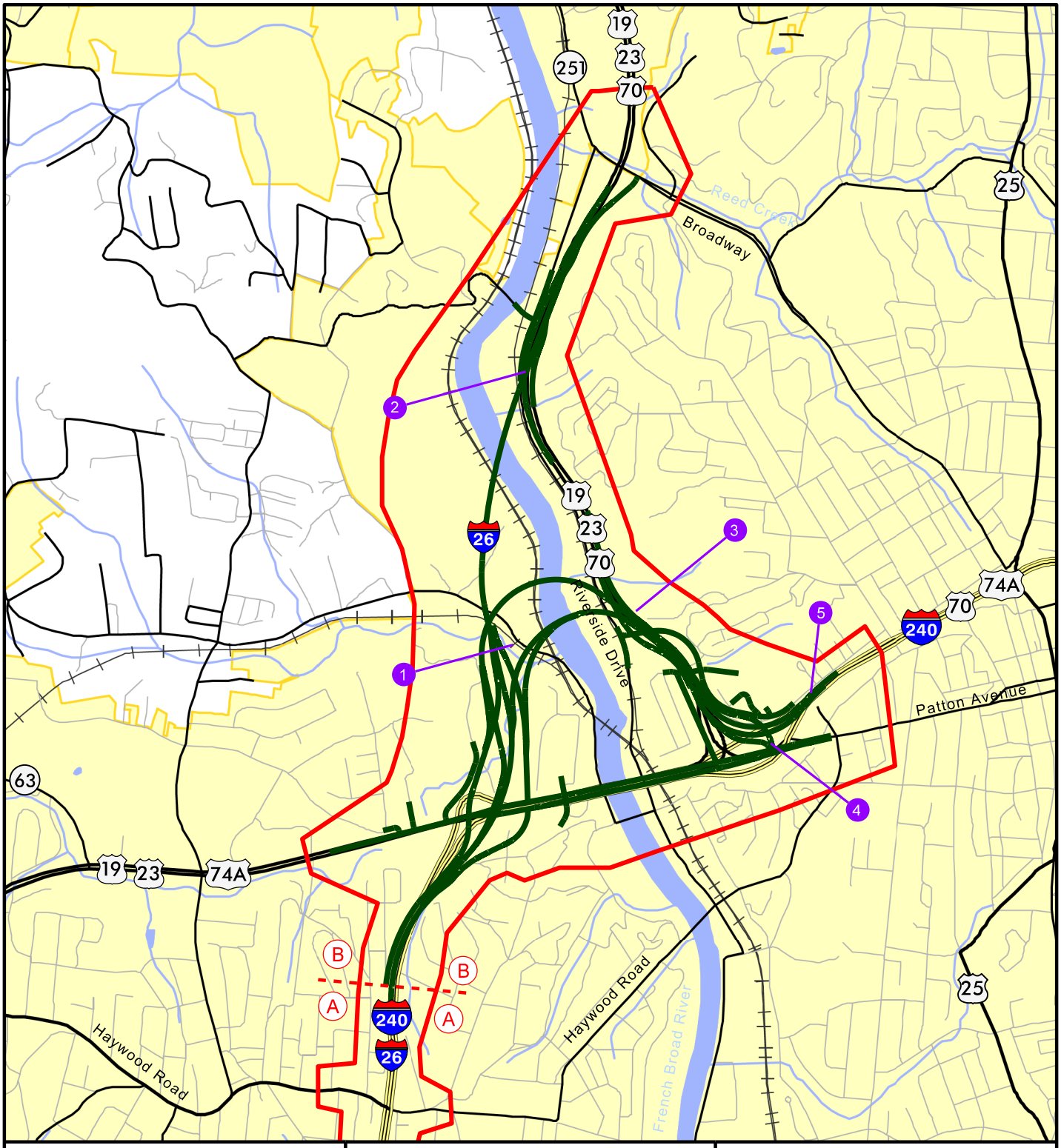

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Figure 2-37

Section B Alternative 4
Roadway Deficiencies

The first three deficient elements would be due to not being able to provide for all traffic movements at the I-26/I-240 interchange with Patton Avenue, the I-26 interchange with US 19-23-70, and the relocated I-240 interchange with US 19-23-70. The primary reason that the access could not be accommodated is due to the constraints within the corridor, including the urban development and natural features such as the French Broad River. The traffic movements that are not included in the interchanges would be redundant movements to those that occur at an interchange in advance of the interchange with the missing movements; therefore, these movements would only serve traffic that missed an earlier exit. Due to the difficulties in providing all movements at a single interchange as a result of the urban location, topographic constraints and the French Broad River, the intent of the three interchanges is to act as a single interchange that is spread out to form a triangle that when combined provide for all traffic movements.

The partial interchange between I-240/US 19-23-70 and Patton Avenue (Location #4) would be due to topographical constraints, a school, daycare center and church adjacent to the interstate and the close proximity to the interchanges at I-240/Montford Avenue and the relocated I-240 interchange with US 19-23-70. Access to Patton Avenue from I-240 would be provided at the interchange of I-26/I-240 and US 19-23-74A, west of the French Broad River. The remaining deficient element is related to existing conditions east of the French Broad River that are beyond the limits of construction for Alternative 4 and could be addressed in a separate project, if necessary.

2.8.3.4 Alternative 4-B

The elements for Alternative 4-B that would not fully meet design standards or recommendations are included on Figure 2-38 and in Table 2-11.

The first three deficient elements would be due to not being able to provide for all traffic movements at the I-26/I-240 interchange with Patton Avenue, the I-26 interchange with US 19-23-70, and the relocated I-240 interchange with US 19-23-70. The primary reason that the access could not be accommodated is due to the constraints within the corridor, including the urban development and natural features such as the French Broad River. The traffic movements that are not included in the interchanges would be redundant movements to those that occur at an interchange in advance of the interchange with the missing movements; therefore, these movements would only serve traffic that missed an earlier exit. Due to the difficulties in providing all movements at a single interchange as a result of the urban location, topographic constraints and the French Broad River, the intent of the three interchanges is to act as a single interchange that is spread out to form a triangle that when combined provide for all traffic movements.

The partial interchange between I-240/US 19-23-70 and Patton Avenue (Location #4) would be due to topographical constraints, a school, daycare center and church adjacent to the interstate and the close proximity to the interchanges at I-240/Montford Avenue and the relocated I-240 interchange with US 19-23-70. Access to Patton Avenue from I-240 would be provided at the interchange of I-26/I-240 and US 19-23-74A, west of the French Broad River.

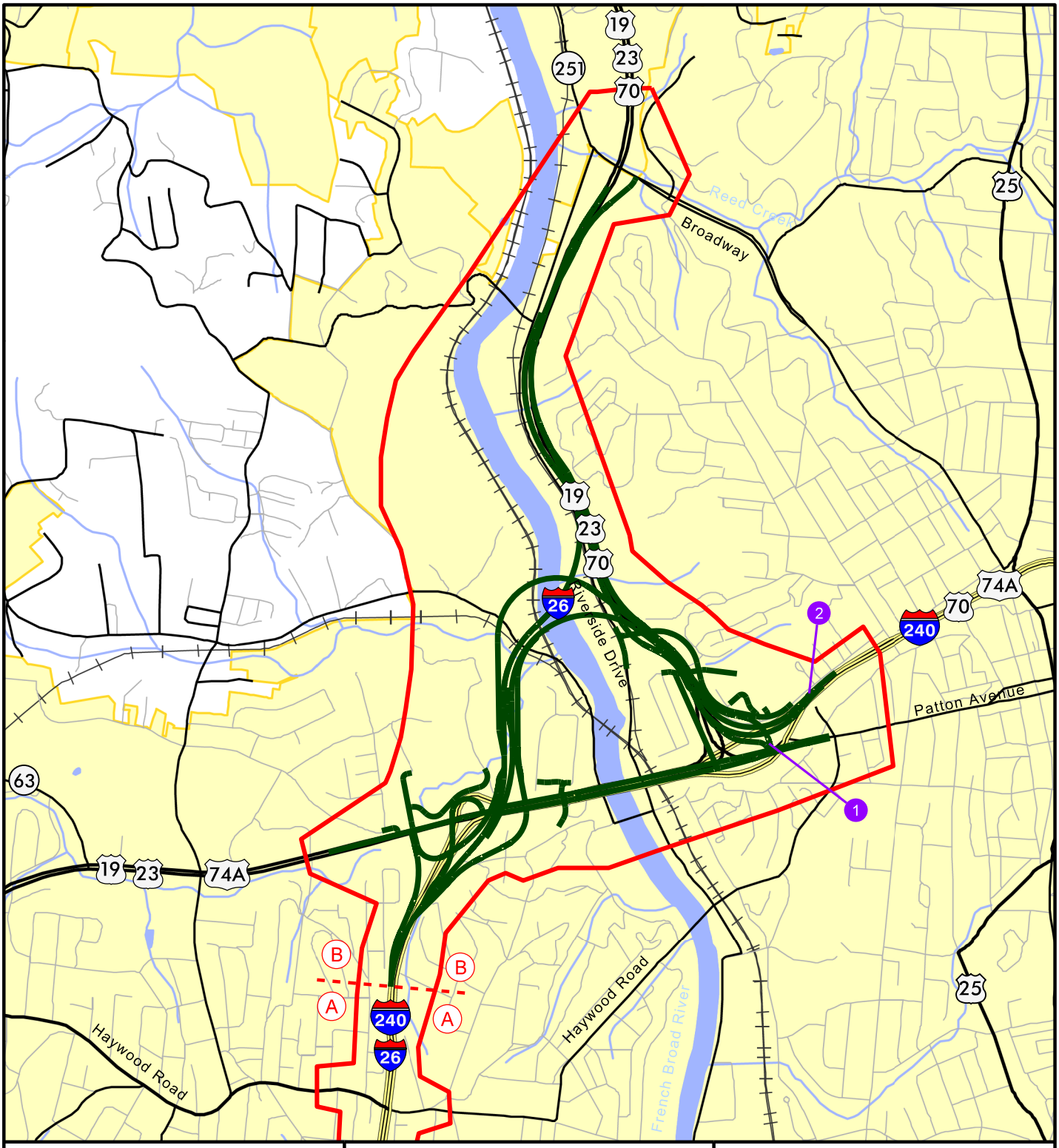

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Figure 2-38

Section B Alternative 4-B
Roadway Deficiencies

Table 2-11: Roadway Deficiencies for Section B – Alternative 4-B

Location No.	Roadway Segment	Deficient Element
1	I-26/I-240 Interchange at Patton Avenue	The interchange would not provide for all traffic movements because the I-240 westbound to I-26 westbound movement and the I-26 eastbound to I-240 eastbound movement would not exist.
2	I-26 Interchange at US 19-23-70	The interchange would not provide for all traffic movements because the I-26 westbound to US 19-23-70 southbound movement and the US 19-23-70 northbound to I-26 eastbound movement would not exist.
3	I-240 Interchange with US 19-23-70	The interchange would not provide for all traffic movements because the I-240 eastbound to US 19-23-70 northbound movement and the US 19-23-70 southbound to I-240 westbound movement would not exist.
4	I-240/US 19-23-70/Patton Avenue Interchange	The interchange would not provide for all traffic movements because the I-240 westbound to Patton Avenue westbound and eastbound movements would not exist.

2.9 COMPARISON OF DETAILED STUDY ALTERNATIVES TO PROJECT PURPOSES

This section provides a summary of the comparison of each of the detailed study alternatives to the project purposes. The evaluation was conducted to determine whether each of the detailed study alternatives meet the objectives included in Chapter 1 of this DEIS. The project's needs and associated purposes are evaluated in the following sections of this chapter:

- System Linkage (Section 2.6)
- Traffic Capacity (Section 2.7)
- Roadway Deficiencies (Section 2.8)

2.9.1 SECTION C

2.9.1.1 Alternative A-2

Alternative A-2 would meet the project purposes by:

- Upgrading the Interstate corridor from I-26 south of Asheville through the US 19-23 interchange to meet design standards for the Interstate system
- Providing a link in the transportation system connecting a direct, multi-lane, freeway facility from the Port of Charleston, South Carolina, to I-81 near Kingsport, Tennessee, that meets the 13 controlling criteria defined by FHWA
- Improving the capacity of a portion of existing I-240 west of Asheville by attaining LOS D or better for all movements associated with existing I-240

The following project purposes would not be applicable to alternatives in Section C of this project:

- To reduce delays and congestion along the I-240 crossing of the French Broad River

- To increase the remaining useful life of the existing Captain Jeff Bowen Bridges by substantially reducing the volume of traffic on this vital crossing of the French Broad River

The evaluation concluded that Alternative A-2 would meet the Purpose and Need for the proposed project.

2.9.1.2 Alternative C-2

Alternative C-2 would meet the project purposes by:

- Upgrading the Interstate corridor from I-26 south of Asheville through the US 19-23 interchange to meet design standards for the Interstate system
- Providing a link in the transportation system connecting a direct, multi-lane, freeway facility from the Port of Charleston, South Carolina, to I-81 near Kingsport, Tennessee, that meets the 13 controlling criteria defined by FHWA
- Improving the capacity of a portion of existing I-240 west of Asheville by attaining LOS D or better for all movements associated with existing I-240

The following project purposes would not be applicable to alternatives in Section C of this project:

- To reduce delays and congestion along the I-240 crossing of the French Broad River
- To increase the remaining useful life of the existing Captain Jeff Bowen Bridges by substantially reducing the volume of traffic on this vital crossing of the French Broad River

The evaluation concluded that Alternative C-2 would meet the Purpose and Need for the proposed project.

2.9.1.3 Alternative D-1

Alternative D-1 would meet the project purposes by:

- Upgrading the Interstate corridor from I-26 south of Asheville through the US 19-23 interchange to meet design standards for the Interstate system
- Providing a link in the transportation system connecting a direct, multi-lane, freeway facility from the Port of Charleston, South Carolina, to I-81 near Kingsport, Tennessee, that meets the 13 controlling criteria defined by FHWA
- Improving the capacity of a portion of existing I-240 west of Asheville by attaining LOS D or better for all movements associated with existing I-240

The following project purposes would not be applicable to alternatives in Section C of this project:

- To reduce delays and congestion along the I-240 crossing of the French Broad River
- To increase the remaining useful life of the existing Captain Jeff Bowen Bridges by substantially reducing the volume of traffic on this vital crossing of the French Broad River

The evaluation concluded that Alternative D-1 would meet the Purpose and Need for the proposed project.

2.9.1.4 Alternative F-1

Alternative F-1 would meet the project purposes by:

- Upgrading the Interstate corridor from I-26 south of Asheville through the US 19-23 interchange to meet design standards for the Interstate system
- Providing a link in the transportation system connecting a direct, multi-lane, freeway facility from the Port of Charleston, South Carolina, to I-81 near Kingsport, Tennessee, that meets the 13 controlling criteria defined by FHWA
- Improving the capacity of a portion of existing I-240 west of Asheville by attaining LOS D or better for all movements associated with existing I-240

The following project purposes would not be applicable to alternatives in Section C of this project because they refer to the locations outside of the limits of Section C:

- To reduce delays and congestion along the I-240 crossing of the French Broad River
- To increase the remaining useful life of the existing Captain Jeff Bowen Bridges by substantially reducing the volume of traffic on this vital crossing of the French Broad River

The evaluation concluded that Alternative F-1 would meet the Purpose and Need for the proposed project.

2.9.2 SECTION A

The I-240 Widening Alternative would meet the project purposes by:

- Upgrading the Interstate corridor from I-26 south of Asheville through the US 19-23 interchange to meet design standards for the Interstate system
- Providing a link in the transportation system connecting a direct, multi-lane, freeway facility from the Port of Charleston, South Carolina, to I-81 near Kingsport, Tennessee, that meets the 13 controlling criteria defined by FHWA
- Improving the capacity of a portion of existing I-240 west of Asheville by attaining LOS D or better for all movements associated with existing I-240

The following project purposes would not be applicable to alternatives in Section A of this project because they refer to the locations outside of the limits of Section A:

- To reduce delays and congestion along the I-240 crossing of the French Broad River
- To increase the remaining useful life of the existing Captain Jeff Bowen Bridges by substantially reducing the volume of traffic on this vital crossing of the French Broad River

The evaluation concluded that the I-240 Widening Alternative from Section A would meet the Purpose and Need for the proposed project.

2.9.3 SECTION B

2.9.3.1 Alternative 3

Alternative 3 would meet the project purposes by:

- Upgrading the Interstate corridor from I-26 south of Asheville through the US 19-23 interchange to meet design standards for the Interstate system
- Providing a link in the transportation system connecting a direct, multi-lane, freeway facility from the Port of Charleston, South Carolina, to I-81 near Kingsport, Tennessee, that meets the 13 controlling criteria defined by FHWA
- Improving the capacity of a portion of existing I-240 west of Asheville by attaining LOS D or better for all movements associated with existing I-240
- Reducing delays and congestion along the I-240 crossing of the French Broad River by attaining LOS D or better across the Captain Jeff Bowen Bridges
- Increasing the remaining useful life of the existing Captain Jeff Bowen Bridges by substantially reducing the volume of traffic to a level that allows the existing bridges to operate at LOS D or better

The evaluation concluded that Alternative 3 would meet the Purpose and Need for the proposed project.

2.9.3.2 Alternative 3-C

Alternative 3-C would meet the project purposes by:

- Upgrading the Interstate corridor from I-26 south of Asheville through the US 19-23 interchange to meet design standards for the Interstate system
- Providing a link in the transportation system connecting a direct, multi-lane, freeway facility from the Port of Charleston, South Carolina, to I-81 near Kingsport, Tennessee, that meets the 13 controlling criteria defined by FHWA
- Improving the capacity of a portion of existing I-240 west of Asheville by attaining LOS D or better for all movements associated with existing I-240
- Reducing delays and congestion along the I-240 crossing of the French Broad River by attaining LOS D or better across the Captain Jeff Bowen Bridges
- Increasing the remaining useful life of the existing Captain Jeff Bowen Bridges by substantially reducing the volume of traffic to a level that allows the existing bridges to operate at LOS D or better

The evaluation concluded that Alternative 3-C would meet the Purpose and Need for the proposed project.

2.9.3.3 Alternative 4

Alternative 4 would meet the project purposes by:

- Upgrading the Interstate corridor from I-26 south of Asheville through the US 19-23 interchange to meet design standards for the Interstate system
- Providing a link in the transportation system connecting a direct, multi-lane, freeway facility from the Port of Charleston, South Carolina, to I-81 near Kingsport, Tennessee, that meets the 13 controlling criteria defined by FHWA
- Improving the capacity of a portion of existing I-240 west of Asheville by attaining LOS D or better for all movements associated with existing I-240
- Reducing delays and congestion along the I-240 crossing of the French Broad River by attaining LOS D or better across the new flyover bridges

- Increasing the remaining useful life of the existing Captain Jeff Bowen Bridges by substantially reducing the volume of traffic to a level that allows the existing bridges to operate at LOS D or better

The evaluation concluded that Alternative 4 would meet the Purpose and Need for the proposed project.

2.9.3.4 Alternative 4-B

Alternative 4-B would meet the project purposes by:

- Upgrading the Interstate corridor from I-26 south of Asheville through the US 19-23 interchange to meet design standards for the Interstate system
- Providing a link in the transportation system connecting a direct, multi-lane, freeway facility from the Port of Charleston, South Carolina, to I-81 near Kingsport, Tennessee, that meets the 13 controlling criteria defined by FHWA
- Improving the capacity of a portion of existing I-240 west of Asheville by attaining LOS D or better for all movements associated with existing I-240
- Reducing delays and congestion along the I-240 crossing of the French Broad River by attaining LOS D or better across the new flyover bridges
- Increasing the remaining useful life of the existing Captain Jeff Bowen Bridges by substantially reducing the volume of traffic to a level that allows the existing bridges to operate at LOS D or better

The evaluation concluded that Alternative 4-B would meet the Purpose and Need for the proposed project.

2.10 COSTS

The construction and right-of-way costs for the detailed study alternatives evaluated in this DEIS are included in Table 2-12.

Table 2-12: Construction and Right-of-Way Cost Estimates

Resource	Section C (I-26/I-40/I-240 Interchange)				Section A	Section B (New Location across French Broad)			
	Alt. A-2	Alt. C-2	Alt. D-1	Alt. F-1	I-240 Widening	Alt. 3	Alt. 3C	Alt. 4	Alt. 4B
Construction Cost	$286.1	$269.7	$263.1	$203.3	$105.7	$190.2	$191.2	$255.6	$291.3
Right-of-Way Cost	$26.6	$22.4	$33.8	$17.1	$29.4	$42.8	$36.2	$45.5	$36.8
Utilities Cost	$2.2	$2.0	$2.3	$2.1	$3.4	$3.1	$3.3	$3.6	$3.9
Total Cost	$314.9	$294.1	$299.2	$222.5	$138.5	$236.1	$230.7	$304.7	$332.0

Source: NCDOT Roadway Design Unit, NCDOT Right of Way Unit, and NCDOT Utilities Unit

2.11 SUMMARY OF ALTERNATIVES CONSIDERED

The following section includes a summary of the alternatives evaluated for the proposed project. The following alternatives were evaluated as a part of the Phase I Environmental Analysis (NCDOT 1995):

- "Do-Nothing" Alternative
- Build Alternatives
- Improve Existing Alternative
  - Alternative A
  - Alternative B
  - Alternative B-1
  - Alternative B-2
  - Alternatives C through J
  - Alternative K and L
  - Alternative R

Following the Phase I Environmental Analysis two alternatives were carried forward for additional study (NCDOT 1995).

- "Do-Nothing" Alternative
- Build Alternative A

Once the project entered the NEPA phase additional analysis of alternatives was undertaken in the form of preliminary study alternatives. The following is a list of the preliminary study alternatives for the proposed project:

- No-Build Alternative
- Transportation System Management Alternatives
- Transportation Demand Management Alternatives
- Mass Transit Alternatives
- Build Alternatives
  - Section C
    - Alternative A-1
    - Alternative A-2
    - Alternative A-3
    - Alternative B
    - Alternative C-1
    - Alternative C-2
    - Alternative C-3
    - Alternative D-1
    - Alternative D-2
    - Alternative F-1
    - Alternative F-2
  - Section A
    - I-240 Widening Alternative
  - Section B
    - Alternative 1
    - Alternative 2
    - Alternative 3

- Alternative 4
- Alternative 5
- Alternative 6
- Upgrade Existing with Parallel Bridge Alternative
- Asheville Design Center Alternative
- Alternative 3-C
- Alternative 4-B

The preliminary study alternatives were evaluated and the following alternatives were selected as detailed study alternatives:

- No-Build Alternative
- Build Alternatives
  - Section C
    - Alternative A-2
    - Alternative C-2
    - Alternative D-1
    - Alternative F-1
  - Section A
    - I-240 Widening Alternative
  - Section B
    - Alternative 3
    - Alternative 3-C
    - Alternative 4
    - Alternative 4-B

Two more build alternatives were briefly studied, but later dropped from consideration. These were Section C – Alternative F-2 and Section B – Alternative 4-C. As stated previously, each of the detailed study alternatives must meet the stated purposes for the proposed project, with the exception of the no-build alternative, which is given full consideration and provides baseline conditions with which to compare the other alternatives. Table 2-13 includes a summary of the comparison of the detailed study alternatives to the project purposes.

Table 2-13: Comparison of Alternatives to Project Purposes Summary

Project Purpose	Alternative								
	Section C				Section A	Section B			
	A-2	C-2	D-1	F-1		3	3-C	4	4-B
	Does the Alternative Meet the Project Purpose?								
Upgrade the Interstate corridor from I-26 south of Asheville through the US 19-23 interchange to meet design standards for the Interstate system	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
To provide a link in the transportation system connecting a direct, multi-lane, freeway facility meeting interstate standards from the Port of Charleston, South Carolina, to I-81 near Kingsport, Tennessee	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
To improve the capacity of existing I-240 west of Asheville to accommodate the existing and forecasted (2033 design year) traffic in this growing area.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
To reduce traffic delays and congestion along the I-240 crossing of the French Broad River, which currently operates at capacity	N/A	N/A	N/A	N/A	N/A	Yes	Yes	Yes	Yes
To increase the remaining useful service of the existing Captain Jeff Bowen Bridges by substantially reducing the volume of traffic on this vital crossing of the French Broad River	N/A	N/A	N/A	N/A	N/A	Yes	Yes	Yes	Yes