Chapter 5 DEFINITION OF ALTERNATIVES

This chapter describes the conceptual improvement alternatives that were subjected to a formal evaluation as part of the corridor study. The alternatives are defined in terms of both physical and operational characteristics, which include typical roadway cross section, operating speed, right-of-way width, and access allowances. The definitions are broad in scope and are intended to represent varying degrees of financial investment.

5.1 No-build Alternative (Baseline)

The No-build Alternative serves as the baseline or benchmark against which the Build Alternatives are evaluated. Typically, a No-build Alternative is defined as an alternative that incorporates "planned" improvements that are included in the fiscally constrained long-range plan, and/or "committed" improvements such as those in the state DOT's transportation improvement program (TIP) or local agency's capital improvement program (CIP). However, the US 64–NC 49 Corridor Study is evaluating the compilation of all of the currently "planned" and "committed" improvements to US 64 and NC 49 as an investment alternative. Therefore, for the purposes of this study, the No-build Alternative is defined as only the "existing" facility for US 64 and NC 49, which consists of the present physical and operational condition of the facility, plus those improvements that were under construction at the time of the analysis. The remaining transportation network within the study area includes committed and planned improvements as defined previously.

Figure 5.1 shows the existing number of lanes on US 64 and NC 49. The two-lane and five-lane sections have no control of access. The four-lane highway sections have variable levels of access control, depending on location, but tend to a large degree to have no control of access. Freeway sections have full control of access. **Figures 5.2** through **5.5** present photographs that provide typical roadway characteristics that are representative of the corridor at large.

5.2 Build Alternatives

Four Build Alternatives were defined for this study. These alternatives address the project objectives and encompass a range of investment options. The definitions describe the primary physical and operational characteristics of each alternative and are consistent with the NCDOT facility type and control of access definitions provided in **Appendix E**. Descriptions of the Build Alternatives are provided in the following sections.

Figure 5.1: Existing Number of Lanes on US 64 and NC 49

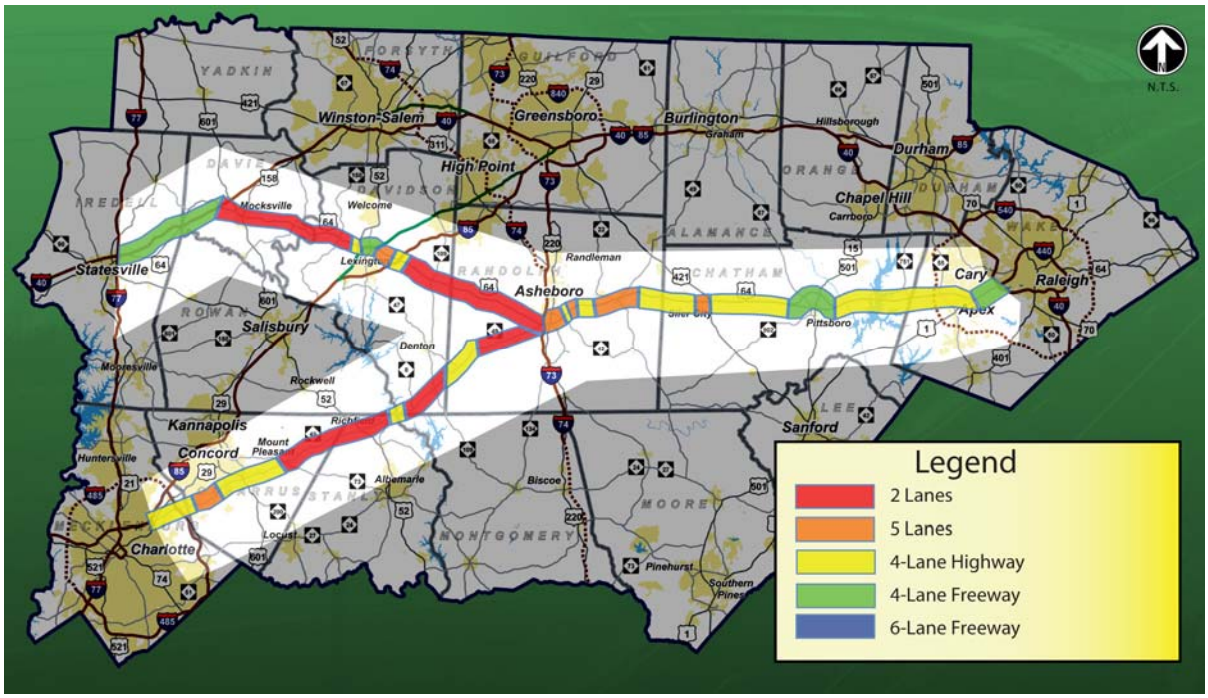


Figure 5.2: Typical Two-lane Roadway Section

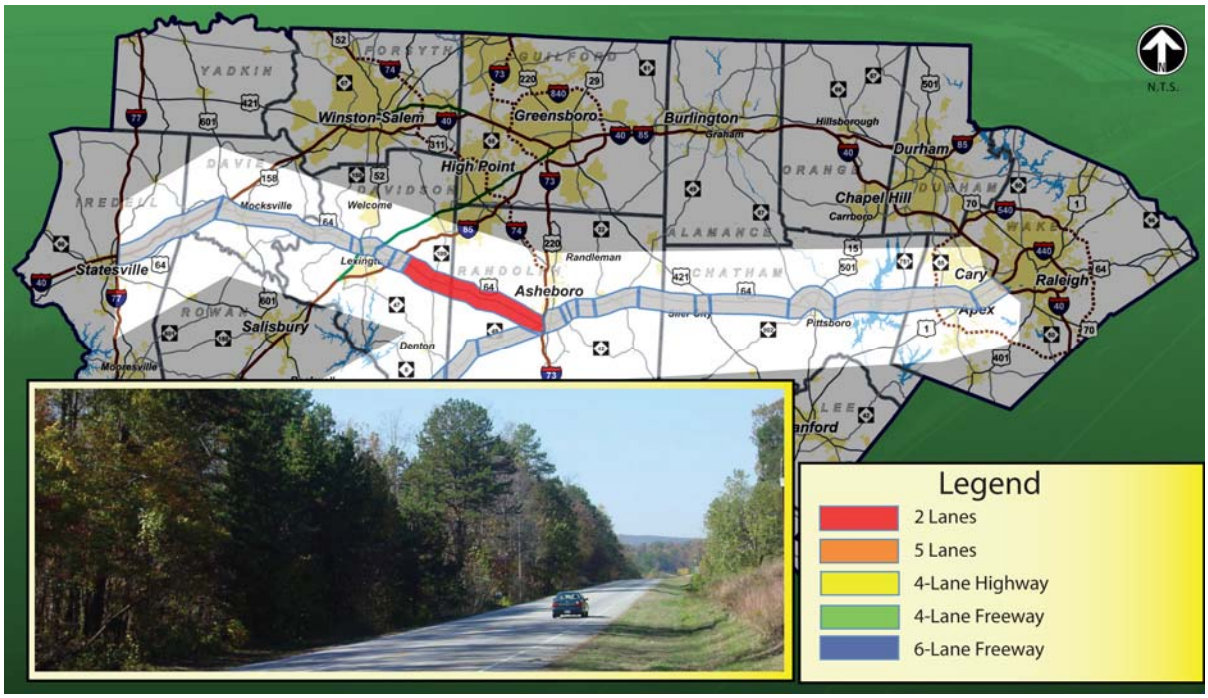


Figure 5.3: Typical Five-lane Roadway Section

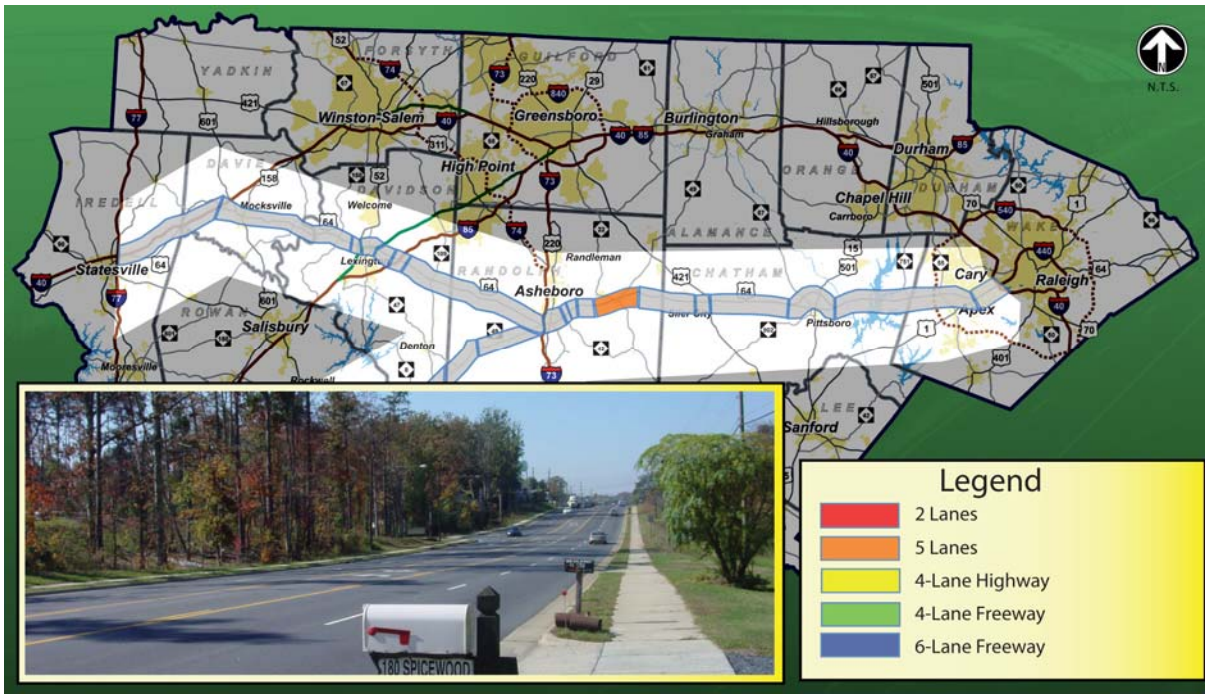


Figure 5.4: Typical Four-lane Highway Section

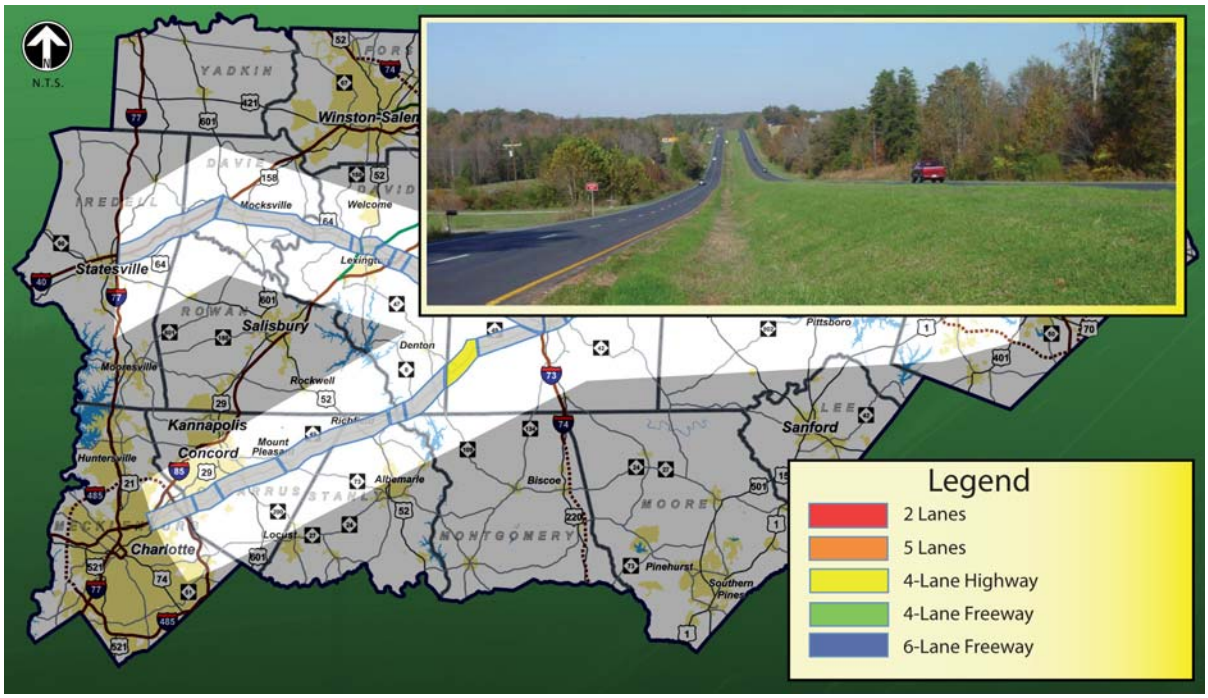
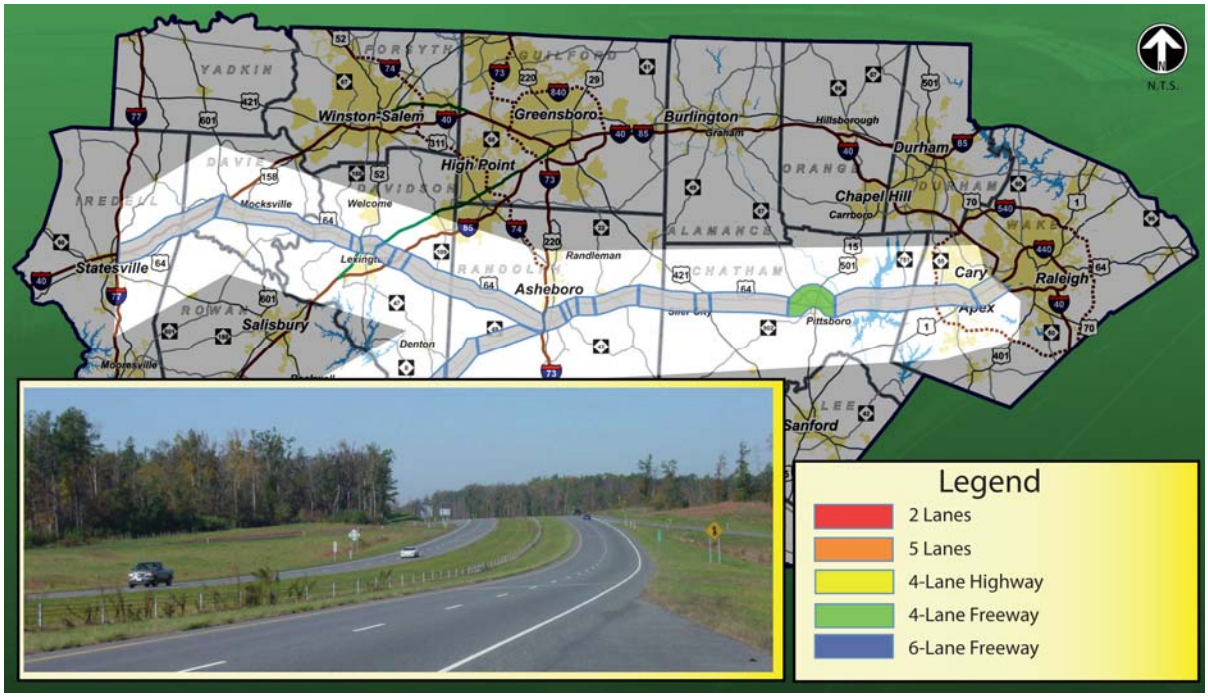


Figure 5.5: Typical Freeway Section



5.2.1 Existing plus Committed (E+C) Alternative

"Committed" for this alternative is defined as those improvements contained in the financially constrained long-range transportation plans (LRTPs), the NCDOT TIP, and local capital improvement programs. For the sections of US 64 and NC 49 proper through the study area, the only "committed" projects are those in the state's TIP for Fiscal Years (FY) 2004-2010. Descriptions of the TIP Projects are provided in **Table 5.1** (This information is identical to that in Section 3.6.5.1)

Table 5.1: US 64 and NC 49 NCDOT TIP (2004-2010) Projects

ROUTE	TIP #	LIMITS	LENGTH	IMPROVEMENT
NC 49	R-2533	Harrisburg to Yadkin River	29.3 mi.	Widen to multi-lanes.
NC 49	R-2535	SR 1174 West of Farmer to Asheboro Bypass (R-2536) West of SR 1193	9.7 mi.	Widen to four-lane, divided facility.
US 64	R-2220	East of I-85 Bus. in Lexington to US 220 in Asheboro	28.5 mi.	Widen to four-lanes

Table 5.1: US 64 and NC 49 NCDOT TIP (2004-2010) Projects

ROUTE	TIP #	LIMITS	LENGTH	IMPROVEMENT
US 64	R-3111	US 64 East of Mocksville to US 601 West of Mocksville.	6.1 mi.	Two-lane Bypass on four-lane R/W.
US 64	R-3602	US 601 South of Mocksville to US 52 in Lexington.	14.0 mi.	Widen to multi-lanes and upgrade interchange at US 52.
US 64	R-2536	US 64 West to US 64 East.	13.5 mi.	Four-lane freeway on new location with interchanges at US 220, NC 49, and zoo access at NC 159.
US 64/ US 1	U-3101	US 64 to South of SR 1313 (Walnut Street).	2.6 mi.	Rehabilitate pavement, additional travel lanes, and modify SR 1313 interchange.

Figure 5.6 shows the number of lanes and general facility types that would result across the study corridor following implementation of all defined elements of the E+C Alternative. Alternative characteristics are provided in **Table 5.2**.

Figure 5.6: E+C Alternative – Number of Lanes

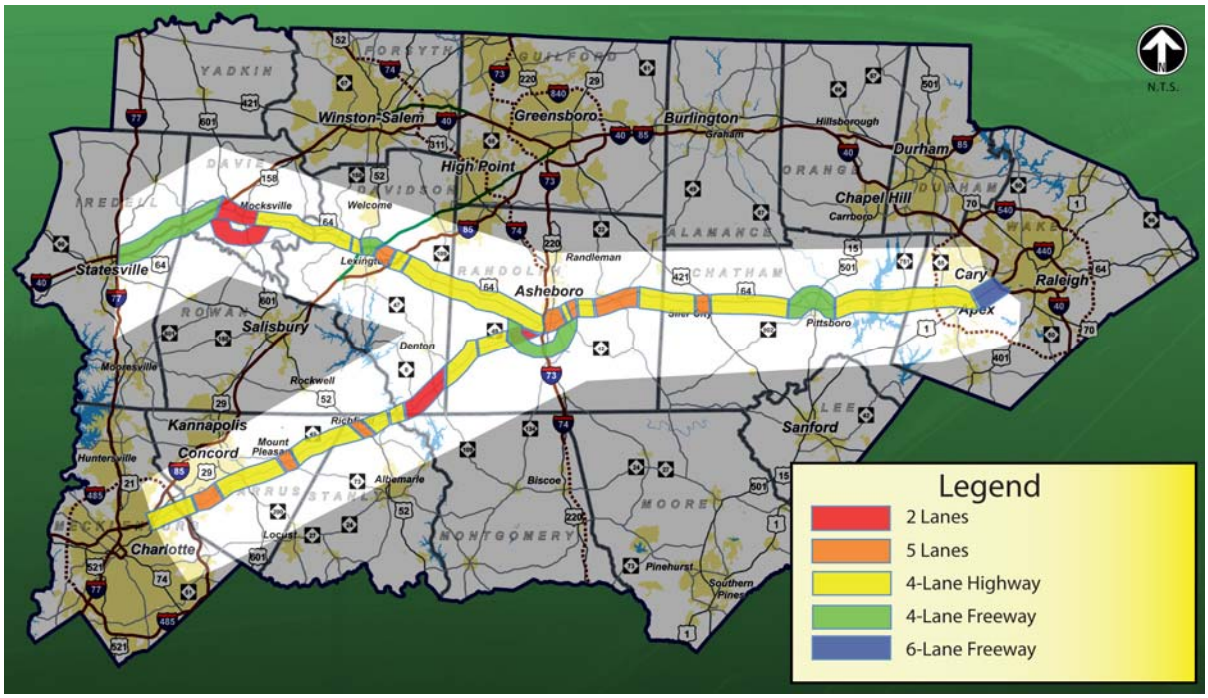


Table 5.2: E+C Alternative Characteristics

Operating Speed	Less than 55 mph
Right-of-way	Varies
Type of Access	• Interchanges. • Signalized intersections. • Unsignalized intersections. • Driveway access.

5.2.2 E+C Enhanced Alternative

An enhancement of the E+C Alternative would provide for a continuous four-lane, divided facility from Charlotte to Asheboro and from Statesville to Asheboro and on to Raleigh. Major improvement elements of the E+C Enhanced Alternative include the following:

- Implement all TIP projects.
- Upgrading all remaining two-lane segments to four-lane, divided roadways. (Mocksville Bypass (A)[1] and two-lane segment of NC 49 (B) in Davidson County)
- New location of four-lane, divided segments with full access control around urban areas now planned to have or presenting having five-lane sections. (Harrisburg (C), Mount Pleasant (D), Richfield (E), Ramseur (F), Siler City (G), and Lexington (H) between I-85 Business and I-85)
- Enhancement of the four-lane, divided section of US 64 through Lexington (I) to improve safety and operations.
- Freeway-to-freeway interchanges (free-flowing) at other freeways (J).
- Consolidation of driveways along all existing and committed four-lane, divided segments.
- Conversion of signalized intersections with major crossroads to grade-separated interchanges where appropriate along all existing and committed four-lane, divided segments.

Figure 5.7 identifies where the suggested improvements to the E+C Alternative would be made to create the E+C Enhanced Alternative. The general characteristics of the E+C Enhanced Alternative are described in **Table 5.3.** The E+C Enhanced Alternative improves the US 64–NC 49 corridor to a combination of a Freeway, Expressway Type-I and Expressway Type-II, as indicated in the NCDOT *Facility Type & Control of Access Definitions* in **Appendix E**.

[1] Project identifier as shown in Figure 5.7.

Figure 5.7: E+C Enhanced Alternative Improvement Locations

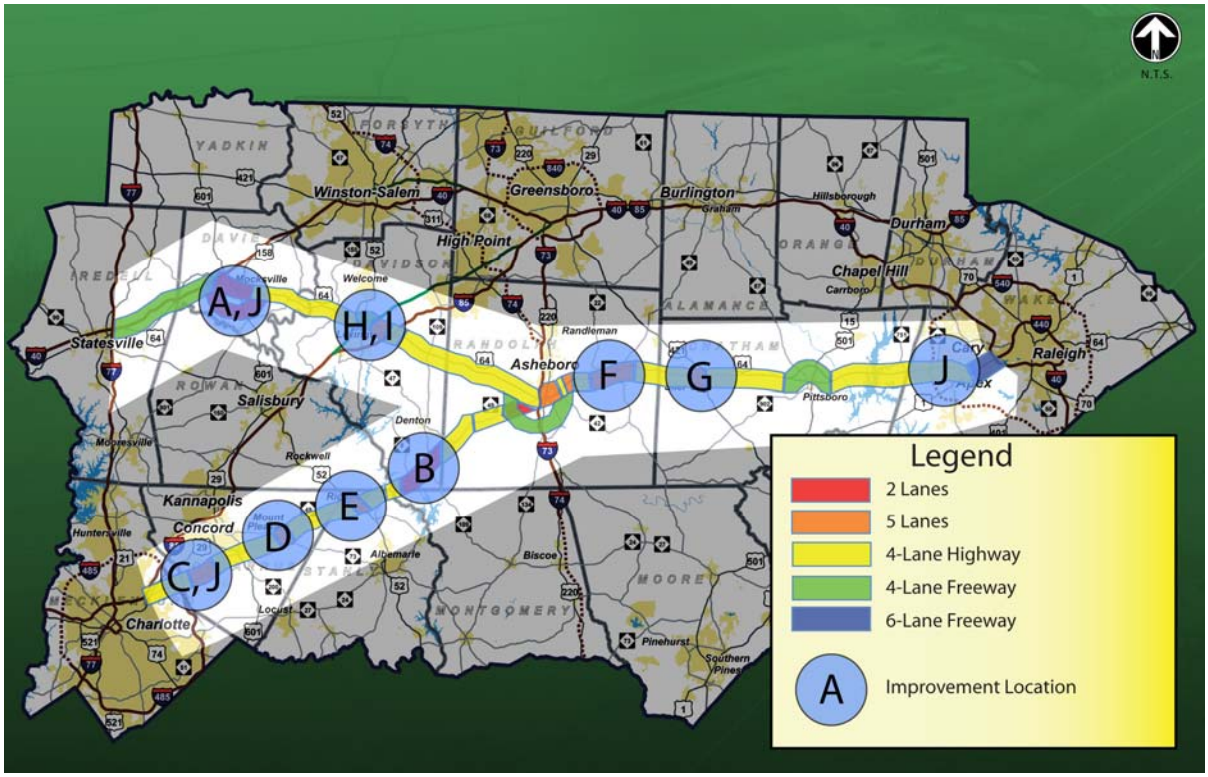


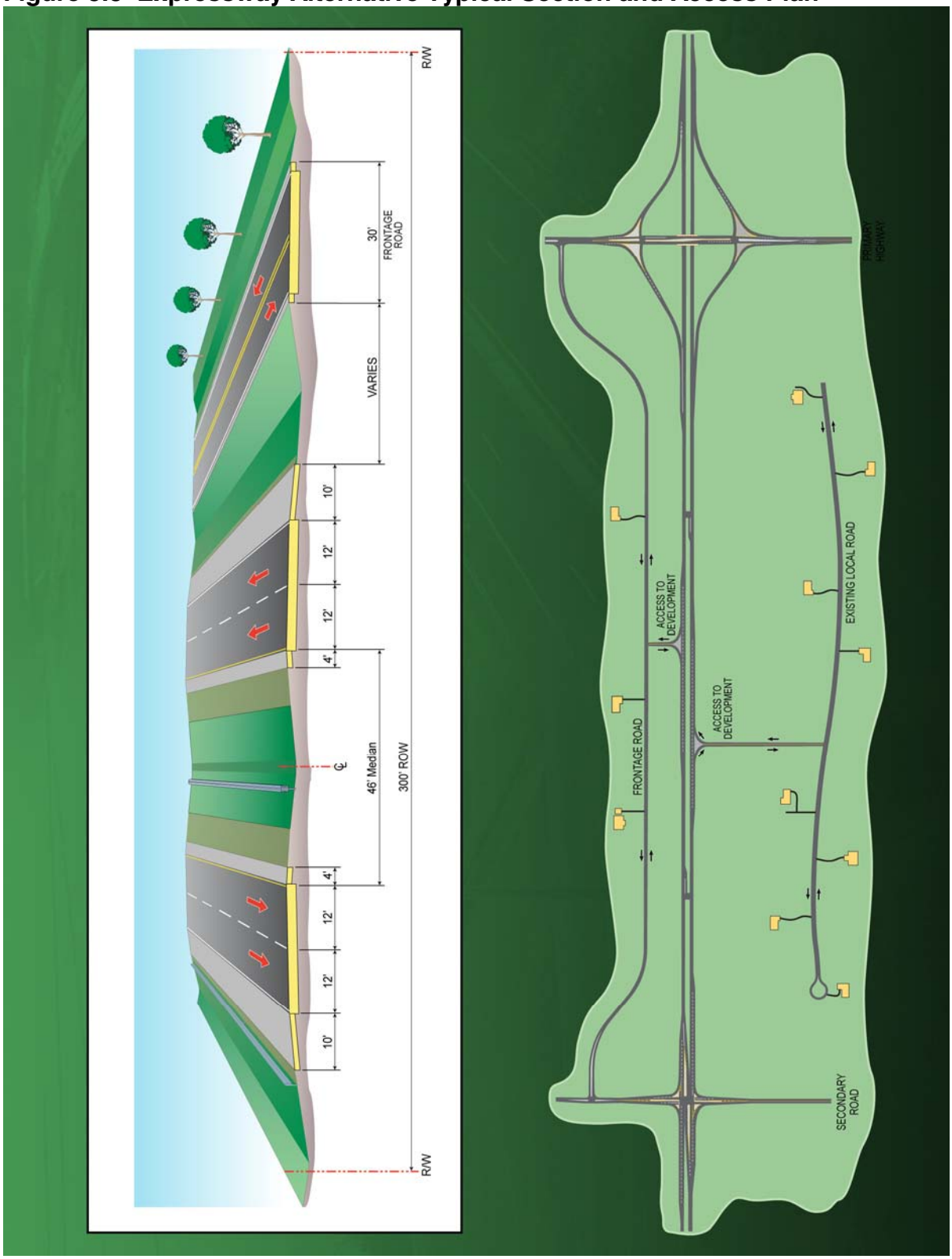
Table 5.3: E+C Enhanced Alternative Characteristics

Operating Speed	55 mph +
Right-of-way	250 feet +
Type of Access	• Interchanges. • No new signalized intersections with removal or bypassing of existing signalized intersections. • Consolidated driveway access.

5.2.3 Expressway Alternative

The Expressway Alternative is consistent with the NCDOT Expressway-Type I facility type definition. It provides high mobility with low to moderate direct access to adjacent land parcels. The general characteristics of this alternative are outlined in **Table 5.4**. The typical section is a four-lane, divided highway with a frontage or access road to one side. Access to the facility would be accomplished via interchanges, unsignalized intersections, and consolidated drives. A typical roadway cross section and access plan are shown in **Figure 5.8**. Major elements of the Expressway Alternative include the following.

Figure 5.8 Expressway Alternative Typical Section and Access Plan



- Four-lane, divided roadway with full control of access on new location around urban areas.
- Freeway-to-freeway interchanges (free-flowing) at other freeways.
- Utilization of existing two-lane segments as a frontage road where applicable.
- Utilization of existing four-lane segments in part or whole through access consolidation and implementation of frontage roads.
- Conversion of significant existing at-grade intersections to grade-separated interchanges.

Table 5.4 Expressway Alternative Characteristics

Operating Speed	55 mph +
Right-of-way	300 feet
Type of Access	• Interchanges. • Unsignalized intersections • Consolidated driveway access.

5.2.4 Freeway Alternative

The Freeway Alternative provides high mobility and full control of access. The general facility characteristics for this alternative are outlined in **Table 5.5**. The typical roadway section is similar to the Expressway Alternative with the exception of a wider median as dictated by a higher design speed. The typical roadway cross section and access plan are shown in **Figure 5.9**. Major elements of the Freeway Alternative include the following:

- Four-lane, divided roadway with full control of access on new location around urban areas.
- Freeway-to-freeway interchanges (free-flowing) at other freeways.
- Utilization of existing two-lane segments as a frontage road where applicable.
- Utilization of existing four-lane segments in part or whole through upgrading mainline horizontal and vertical geometry, implementation of frontage roads, and access modifications.
- Interchanges with state highways and higher traffic volume county roads.

Table 5.5: Freeway Alternative Characteristics

Operating Speed	65 mph +
Right of Way	400 feet
Type of Access	Interchanges only

Figure 5.9: Freeway Alternative Typical Section and Access Plan