

## R-4045 Alternatives Development Documentation

### Reminder of Purpose and Need

US 74 is currently a 4-lane freeway with a grass median and varying control of access (primarily fully access-controlled). NCDOT and FHWA have functionally classified this portion of US 74 as a Freeway, and NCDOT and their federal/state/regional stakeholders designated it a Strategic Transportation Corridor (Corridor U) for North Carolina. Based upon the NCDOT review of needs in the project vicinity (see memo dated June 2021 and provided to the Merger Team in March 2022), the subject 1.2-mile portion of US 74 does not meet the aforementioned functional classification and is noncompliant with current roadway design requirements. The subject portion of US 74 also does not satisfy the highway network's established long-term vision, and lacks continuity that negatively affect driver expectations and safety. Additionally, NCDOT identified the existing US 74 at-grade intersection at SR 1168 (Academy Street/Lattimore Road) in the 2021 Highway Safety Improvement Program (HSIP) because of the historical pattern of frontal impact crashes, and the relative severity of personal injuries involved in those crashes. **The purpose of the R-4045 project is to provide a consistent facility to meet drivers' expectations for the US 74 corridor (from Kings Mountain to Columbus, NC) by upgrading this portion of US 74 to meet NCDOT freeway standards.**

### Concepts Considered

As described in the needs, and as illustrated in the crash mapping, there are accidents concentrated at every intersection and for many of the driveways along the 1.2-mile segment of US 74 in the study area. One idea for addressing these concerns is to close driveways and where practical to close intersections to create conditions for consistent driver expectations along US 74. To address maintaining access for the Town of Mooresboro, all concepts considered focused on closing access to the driveways and all intersections except for the intersection of US 74 and Academy St./Lattimore Rd. Three concepts for access at this intersection included:

1. Signalized Intersection
2. Reduced Conflict Intersection (RCI)
3. Interchange

Except for this 1.2-mile segment, US 74 between I-26 and I-85, is or soon will be (Shelby Bypass Under Construction) consistent with freeway standards including access via interchanges only. For this reason, to create a consistent facility to meet driver's expectations and to meet freeway standards, the at grade concepts (Signalized Intersection and RCI) do not meet the purpose. The interchange concept does meet purpose and need and is therefore carried forward for detailed study.

### Alternatives for Detailed Study

Upgrading to freeway standards requires an interchanges as the only means of access to the freeway. In this circumstance an interchange to maintain access to Mooresboro is appropriate and the location of Academy/Lattimore with US 74 is far enough from the interchanges immediately east and west of to allow proper weaving distance between the ramps. For

driveways and roads being closed in Mooresboro and the surround community, service roads will be considered to re-establish the connection with other roads and US 74.

For the southern half of an interchange to **serve US 74 east**, the streams and Dollar General business are unavoidable with any ramp scenario. However, the church and 4(f) park property are avoidable with a tight diamond configuration. There are two streams emanating at the existing intersection.

For the northern half of the interchange, Stream SB runs parallel to US 74 and so must be crossed by any proposed ramp or loop. The solar farm should be avoided if possible and Ellenboro Road must be reconnected to maintain system connectivity.

To study minimizing impacts to the streams two alternative configurations were considered:

**Alternate 1:** A ramp loop combination in the northwest quadrant (A) would serve on and off ramp traffic to US 74 west. Ellenboro Road would be disconnected from US 74 and reconnected across from Ramp/Loop A. The southern half of the interchange serving US 74 east will be a tight diamond.

**Alternate 2:** An off ramp in the A Quadrant and an on ramp in the B quadrant would serve as access to US 74 west traffic. The ramps would terminate into an oblong roundabout which would also have Ellenboro Road connected to it. The southern half of the interchange serving US 74 east will be a tight diamond.

Service Roads are also being studied to restore access to the community. Variations of the service roads will be studied to consider minimization of impacts and costs.