

East Lebanon Connectivity Study

MARION COUNTY, KY | KYTC ITEM NO. 4-80153

TEAM
KENTUCKY

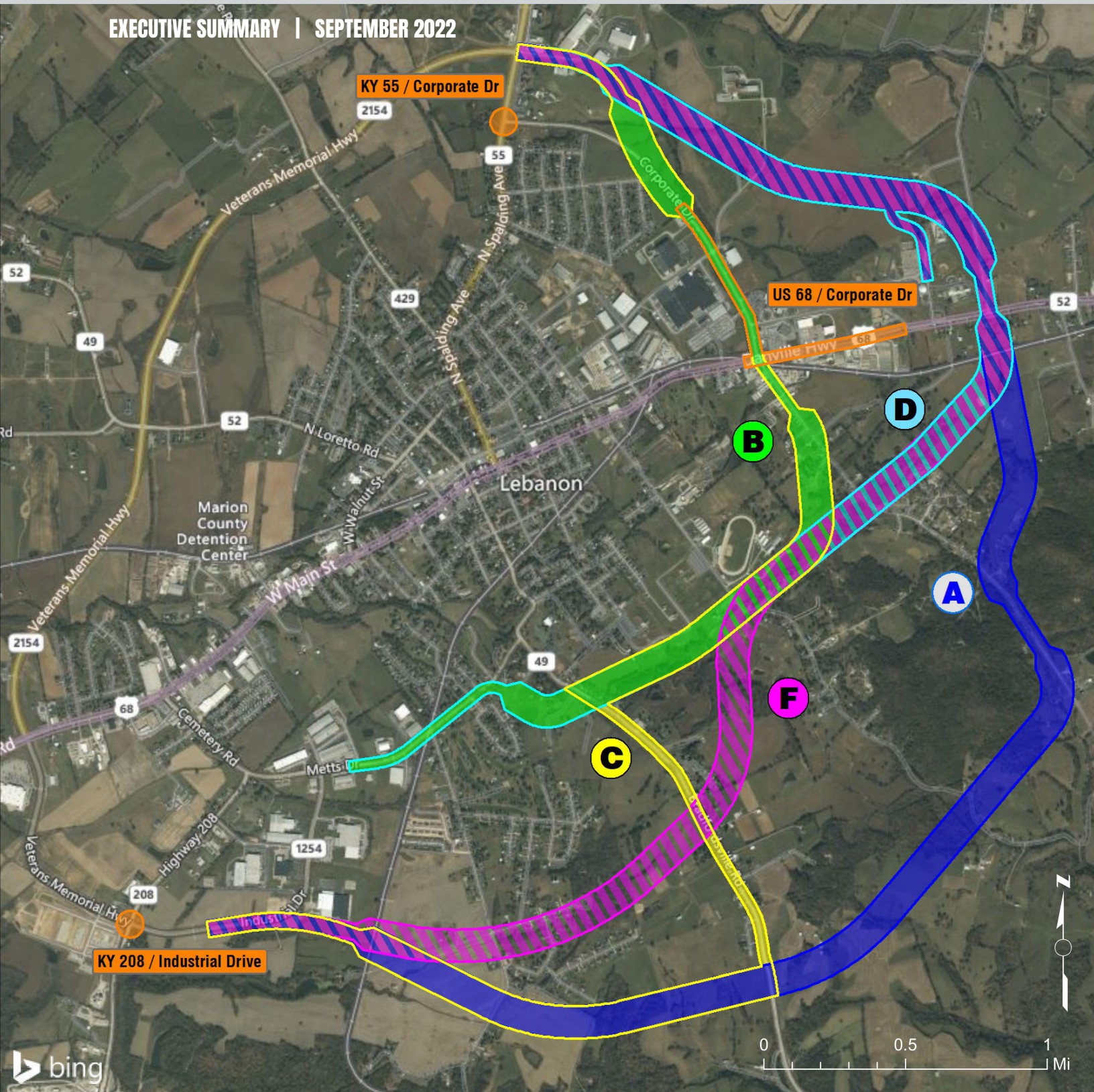
TRANSPORTATION
CABINET

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Engineering Planning

EXECUTIVE SUMMARY | SEPTEMBER 2022



EXECUTIVE SUMMARY

Study Background

The Kentucky Transportation Cabinet (KYTC) initiated the East Lebanon Connectivity Study to examine needs and consider opportunities to improve connectivity on the east side of Lebanon in Marion County, Kentucky. Nestled in the heart of bourbon country within a robust industrial sector, the city has seen substantial growth in recent decades with continued development on the horizon.

This planning study evolved from three separate KYTC projects:

- **Item 4-80152** to reduce congestion at the US 68 (East Main Street) intersection with KY 2154 (Corporate Drive).
- **Item 4-80153** to extend KY 2154 (Veterans Memorial Highway) from KY 208 (New Calvary Road) to KY 49 (Bradfordsville Road).
- **Item 4-80259** to improve connectivity and congestion between US 68 and KY 55.

To be sensitive to future needs of the community, this study looked at the bigger picture to understand the relationship between these separate projects—potentially as part of a larger future effort to “close the loop” for the Lebanon Bypass. Some local elected officials have advocated for such a connection. **Figure ES-1** illustrates the study area alongside the locations of the aforementioned Highway Plan projects in the vicinity.

Existing Highway Network

Three primary highways provide the highest level of mobility for the city.

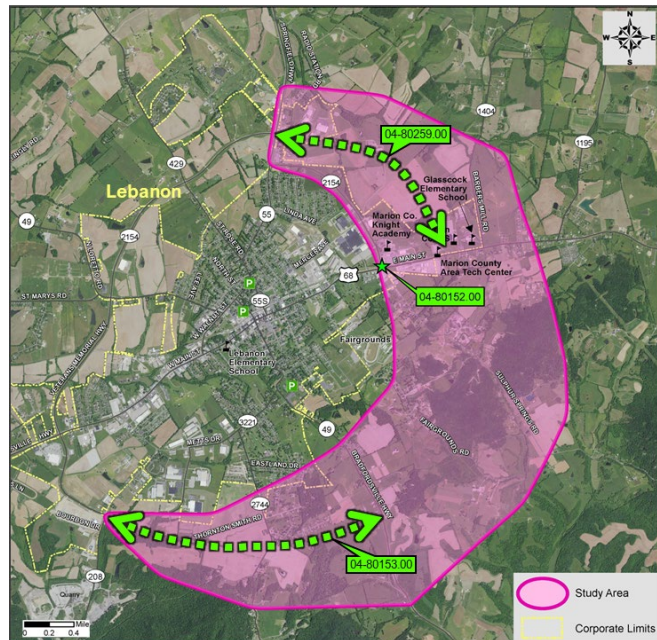


Figure ES-1: Study Area

- KY 55 is a principal arterial connecting Lebanon to Springfield. Approaching Lebanon, KY 55 has a four-lane undivided rural section and carries about 10,000 vehicles per day (vpd).

- West of town, US 68 is a principal arterial connecting Lebanon to Campbellsville. This section of US 68 has two lanes and carries 11,600 vpd. East of town, US 68 is a minor arterial that provides a connection towards Danville. Through the study area, the road has two to three lanes and provides access to the Independent Stave Company cooperage (a major tourist attraction and freight producer) and the Marion County Schools consolidated campus.
- Beyond the study area, KY 2154 (Veterans Memorial Highway) forms a western bypass of the city and is also designated a principal arterial. The roadway has a two-lane rural template and partial access control and carries 6,000 to 8,000 vpd along this section. Efforts are underway to reroute the federal truck route designation from downtown to the KY 2154 bypass west of town.

Within the study area, 207 crashes occurred from 2015 through 2020, including one fatality and 30 injury collisions. While a few scattered crashes occurred along more rural state-maintained highways in the southern portion of the study area, the bulk of study area crashes were concentrated on US 68, KY 55, and KY 2154 (Corporate Drive).

Level of Service of Safety (LOSS) is a statistical method used to evaluate safety needs, with higher ratings representing a greater potential to reduce crashes. The location with the highest LOSS rating within the study area corresponds to US 68 (East Main Street) from KY 2154 (Corporate Drive) to the Marion County Area Technology Center.

KYTC's latest statewide model¹ estimated future year growth for all study area roadway segments. Considering historic traffic growth rates, population projections, anticipated development, and model projections, a growth rate of 0.58% was applied to the 2021 Existing scenario to project future year 2045 No-Build traffic. For both 2021 existing and 2045 No-Build scenarios, most segments operate at acceptable levels during peak periods. Turn movements at individual intersections can be congested, especially busy moves at KY 2154 (Corporate Drive) intersections with KY 55 and US 68.

Study Goals and Objectives

The objective of this study is to develop conceptual options to improve connectivity for east Lebanon. Lebanon's robust industrial sector attracts truck traffic and leads to localized peak-period congestion during shift changes. Industrial sites are concentrated in two parks—one south of the city along KY 208 and the other northeast along KY 2154 (Corporate Drive). Ongoing and continued development will increase volumes and exacerbate current mobility concerns.

¹ Version v7_KYSTMv19 with an indicated release date of July 2020



Figure ES-2: Truck turning onto US 68 downtown

As shown in **Figure ES-2**, signal timing/phasing and tight turning radii at key intersections downtown limit mobility for large trucks trying to navigate between arterial corridors. Coupled with lower travel speeds and longer travel times, the City's vision for its quaint downtown character is inconsistent with a thru-route for heavy trucks.

Meanwhile, the city's spoke-and-wheel layout provides few connections beyond the urban core. Narrow, two-lane highways and local streets provide limited access to areas south of town. Residents south of US 68 must rely on a sparse network of collector and local routes to get around; often they must return to US 68 (Main Street) to access non-residential destinations. These constraints on mobility contribute to increased travel times—influenced by congested urban sections or circuitous rural routing. US 68 (East Main Street) provides access to the county's consolidated schools' campus and the largest tourist attraction—Independent Stave Company. Most traffic on the east side of town is funneled through the signalized US 68/KY 2154 (Corporate Drive) intersection, with few turn lanes and no left turn signal phases.

Another objective of this study is to consider the bigger picture to understand the relationship between separate Highway Plan projects, potentially forming part of a larger future effort to “close the loop” for the Lebanon Bypass.

Secondary goals supporting the primary project purpose—improved connectivity—include:

- Complementing local and regional economic development efforts
- Minimizing impacts to the community and natural environment

Improvement Concepts Considered

Improvement concepts were developed based on a combination of input from the project team, a review of existing conditions, community feedback, and field reconnaissance. Shown in **Figure ES-3**, five Build concepts were developed with corridors up to 600 feet wide to provide engineers with flexibility to refine designs during any future project development while staying within the footprints shown. In addition to the new connectors, improvements at three key intersections (shown in orange) were also considered with the Build concepts.

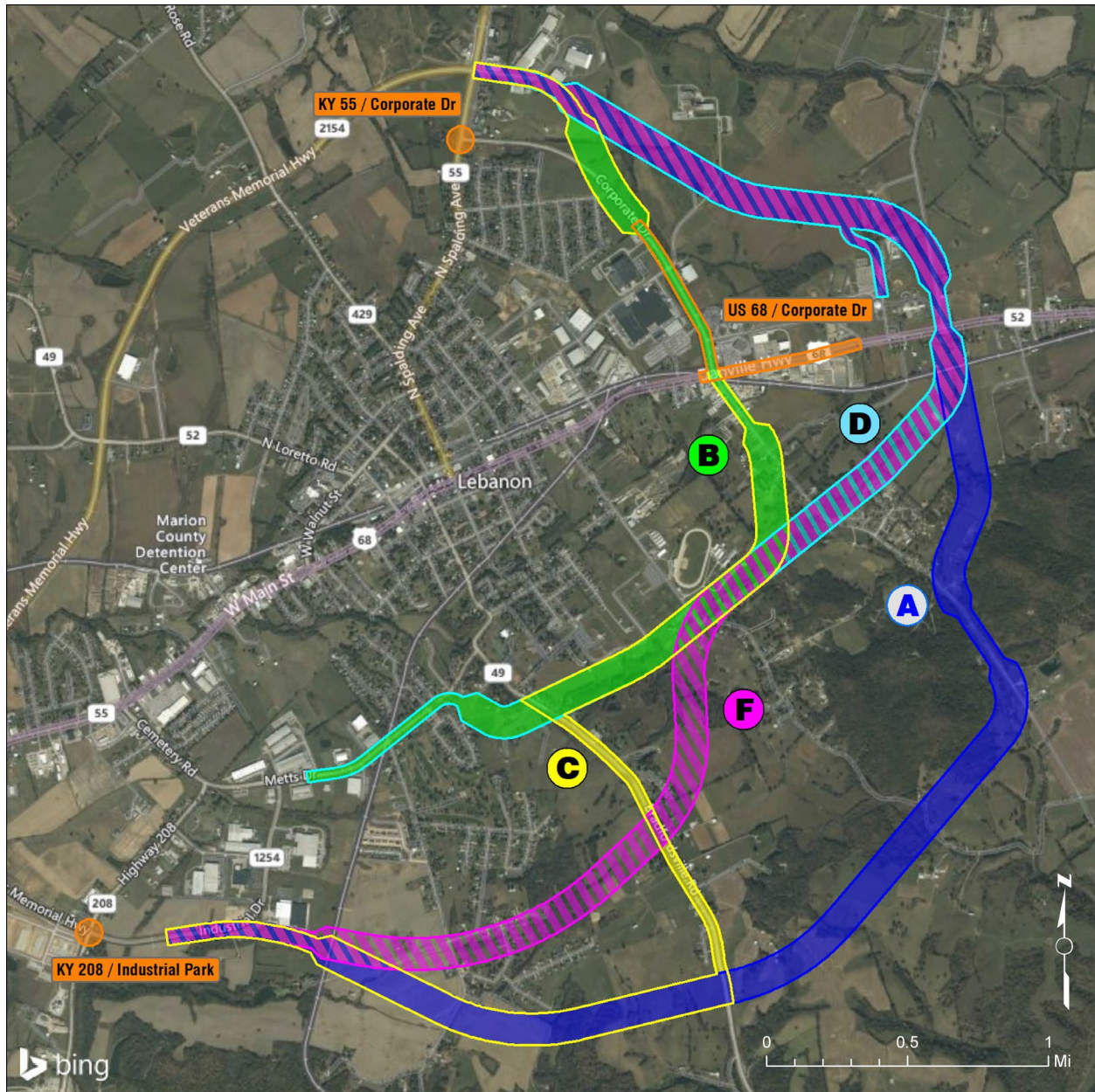


Figure ES-3: Build Concepts Considered

South of US 68, forecasts show that a new connector is expected to carry 1,600 to 2,800 vpd in 2045. North of US 68, a new connector could carry approximately 3,000 vpd and divert some volume from busy KY 2154 (Corporate Drive). An inner connector improves traffic moving through town while an outer connector benefits traffic near the schools and cooperation east of town.

The outermost option—Concept A—is the longest and most expensive of the corridors considered. Although it does not reduce travel times compared to using the existing highway network, the concept does increase access to mostly undeveloped areas. The innermost option—Concept B—is the shortest corridor considered with the lowest construction costs; however, right-

of-way costs and property impacts would be much higher as it passes through more developed residential areas. Concepts C, D, and F fall within the geographic area bounded by Concepts A and B, overlapping one or more segments of these inner and outer corridors. An initial concept E was eliminated as it resulted in higher costs and impacts without corresponding benefits compared to other combinations.

Coordination Meetings

Over the course of the study, the project team met three times. Two meetings were conducted with local officials and key stakeholders to identify study area needs and gather feedback on proposed options for Build corridors. In addition, public meetings were held at two milestones, supplemented by a project website (www.EastLeb.com) and surveys to engage with the larger community.

While 62% of 117 survey responders initially agreed on the need for a new connector in the study area, support decreased to 35% once concepts were shared. Top study area needs identified by the public were safety, connectivity, future development, and minimizing disruptions. Most survey responders agreed the northern portion of a potential connector—between KY 55 and US 68, corresponding to Item No. 4-80259—represented the highest priority and that improvements to US 68/KY 2154 (Corporate Drive)—corresponding to Item 4-80152—were needed.

Recommendations

In light of the study goals, anticipated costs, benefits to traffic, impacts to the human and natural environment, community input, and project team discussions, the northeast connector between KY 55 and US 68 (Item No. 4-80259) as well as capacity improvements at the US 68/KY 2154 (Corporate Drive) intersection (Item No. 4-80152) are recommended to advance to the next phase of project development. Ongoing efforts to reroute the federal truck route designation to the existing KY 2154 (Veterans Memorial Highway) bypass west of town should continue.² South of US 68, the No-Build concept is recommended. If a future northeast connector is constructed and truck routing adjusted, the need for a southern bypass extension (Item No. 4-80153) may be reconsidered. Another concept identified: realigning the US 68/KY 2154 intersection west of town to make the north-to-west movement predominant is beyond the scope of this study but is noted as a viable improvement for future consideration.

During future design phases, a preferred alignment for the outer northeast connector concept (**Figure ES-4**) should be refined. Appropriate design speeds, typical sections, and configurations for the connections to KY 55, KY 2154 (Corporate Drive), Knight's Way/Patriot Drive, and US 68 will be determined during the future phases of work. Construction costs for this section are

² Completed August 2022 via Official Order Number 112958 with continuing FHWA coordination.

estimated at \$4.2 million in 2021 dollars. Red flag environmental resources to consider in future design phases include two tributaries to Cartwright Creek, a potential historic home along Teledyne Road, karst terrain, and the underlying geologic concerns associated with New Albany Shale.

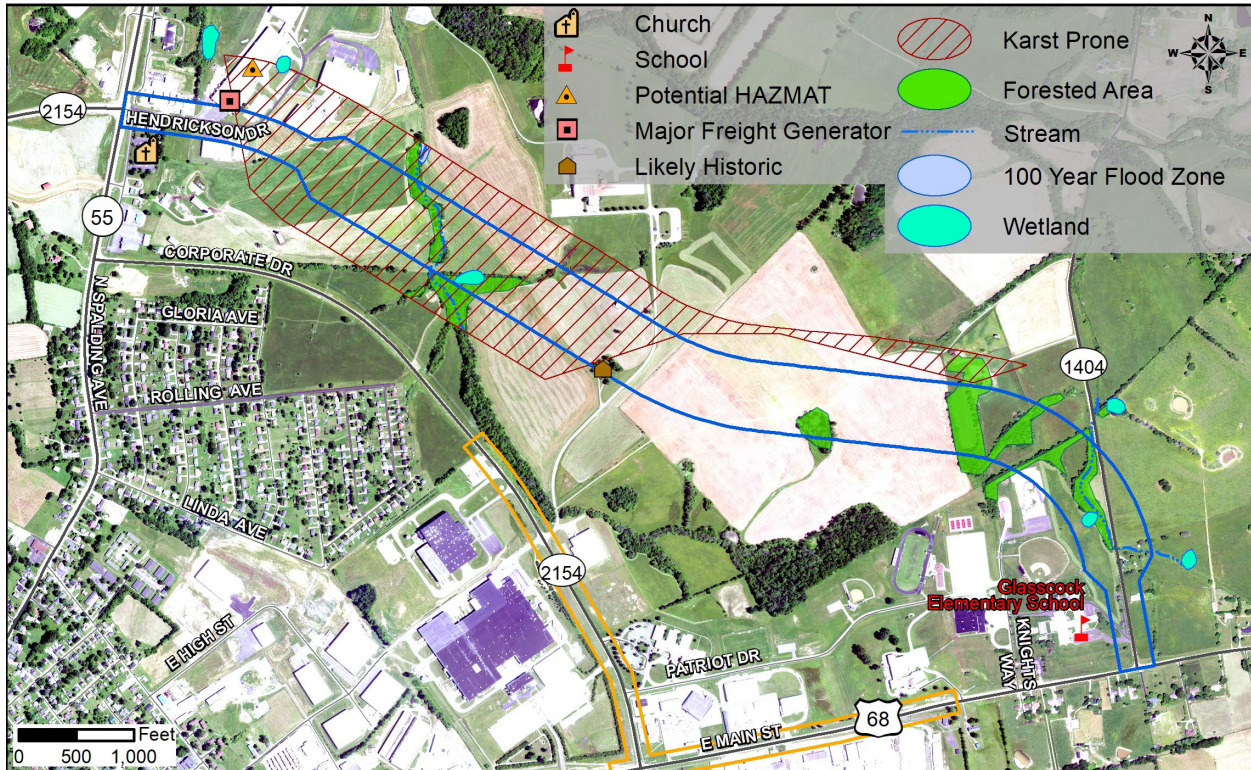


Figure ES-4: Recommended Northeast Connector