

I-65

Between Exit 112
(KY 245) and
Exit 116 (KY 480)

Abbreviated Feasibility Study

Bullitt County | October 2014

prepared for:



prepared by:



Groundbreaking by Design.

Executive Summary

The Kentucky Transportation Cabinet (KYTC) initiated this feasibility study to evaluate a new I-65 interchange between Exit 112 (KY 245) and Exit 116 (KY 480) (Figure ES1, p.ES5) given expected significant employment growth provided by Bullitt County and KYTC and shown in Figure ES2 (p.ES6). The general purpose of the project is to increase access and/or mobility and provide relief to a congested I-65 / KY 480 interchange. The new interchange would require a new access road to the east and west of the interchange.

BACKGROUND

Currently KY 480 and the existing I-65 ramp terminals operate at LOS E and F in the peak design hour. Love's Truck Stop adds to that congestion issue. Its entrance is approximately 500 feet from the northbound ramp terminals. As with any truck stop, multiple semi-tractor trailers exit and enter I-65 destined for the truck stop. Because of the short distance between the NB ramp terminals and the Love's entrance, and the limited room for left-turn storage, trucks and other motorists begin queuing on the NB exit ramp and block the sight distance of motorists on KY 480. During the PM peak hours this problem exacerbates, backing up vehicles onto the interstate. KYTC requested that the intersection be moved eastward to alleviate this safety problem and improve mobility on KY 480 and at the ramp terminals. That request is addressed in this feasibility study.

Within the project area east of I-65 on KY 480 is a major traffic generator—Salt River Park with Amazon/Zappos on the north side of KY 480. Across KY 480 is the Cedar Grove Business Park with industry and distribution centers such as, Chegg, Best Buy, eBay, and Gordon Food Service. Current permanent employment is approximately 8,500 jobs, with over 6 million square feet occupied. Employment for 2014 is expected to grow to approximately 18,000. Additional development is expected in the Cedar Grove Business Park. Along KY 61 west of I-65, there is also existing and planned residential and light industrial development.

ALTERNATIVES

In an effort to reduce congestion at the ramp terminals at KY 480, provide connectivity to KY 61, and improve the current congestion with the Love's Truck stop east of KY 480, the No-Build Alternative, and three build alternatives with a connection to KY 480 and KY 61 were considered—Alternatives 1, 1a, and 2. The No-Build Alternative would involve no new construction.

Each Build Alternative has a KY 480-KY 61 connector road that begins with relocating the Love's Truck Stop entrance 835 feet eastward. From KY 480, the connector to KY 61 was analyzed as a 3-lane rural template. Plan and profiles were developed to ensure compatibility with the interstate system, and the existing roadway network and new connections. Cost estimates that include Design, Right-of-Way, Utility, and Construction phases were developed. All cost estimates were segmented in such a way that if any right-of-way is donated, those estimates can be subtracted from the total.

ALTERNATIVE 1 (Figure ES3, p.ES7) would be a diamond interchange on I-65 approximately 1.25 miles south of the existing KY 480 interchange (Exit 116) in Bullitt County. The gore-to-gore ramp spacing from KY 480 to the new interchange SB off ramp would be 4,400 feet. The gore-to-gore spacing from the new SB on ramp to the existing off ramp to the Welcome Center/rest area would be 2,800 feet. Both distances exceed the minimum ramp terminal spacing of 1,600 feet for an entrance to exit ramp identified in the 2011 AASHTO Green Book. The service or approach road would be a 45-mph, 3-lane rural arterial road with 12-foot-wide lanes and 8-foot-wide paved shoulders.

The approach road would connect to KY 61 to the west and to existing Buffalo Run Road (CS 1196) in the Cedar Grove Business Park to the east. The proposed Business Park Road begins at the intersection of the approach road and Buffalo Run Road and runs northward through the business park to KY 480, approximately 1,300 feet east of the existing NB off-ramp terminus, and approximately 800 feet east of the existing entrance to Love's Truck Stop.

The Business Park Road would be a 35-mph, 3-lane road with 12-foot-wide lanes and curb and gutter. The proposed Love's Access Road would begin at the Business Park Road intersection with KY 480 and tie to the existing entrance pavement at the Love's Truck Stop. Love's Access Road would be 36 feet wide and traverse a wetland area over Buffalo Run Creek to Love's. Alternative 1's I-65 interchange and approach, Business Park Road, and Love's Access Road are estimated to cost approximately \$39 million.

ALTERNATIVE 1A (Figure ES3, p.ES7) would be the same as Alternative 1 with the exception of eliminating the Business Park Road and extending the approach road eastward to tie to the existing Omega Parkway in the Cedar Grove Business Park. This alternative also includes relocating Love's Truck Stop eastward. Omega Parkway would provide access to I-65 to the south. By eliminating the Business Park Road, Alternative 1's cost would be reduced \$8.2 million to approximately \$30.5 million.

ALTERNATIVE 2 (Figure ES4, p. ES8) would be the same as Alternative 1 with the exception of an added Collector-Distributor (C-D) system on I-65 SB between KY 480 and just south of the Chapeze Lane Bridge over I-65. The C-D would begin just south of the I-65 Bridge over KY 480 and merge with the existing SB on ramp from KY 480, thus creating a 2-lane C-D southward to the new interchange. The C-D would serve and carry traffic from the new approach road and existing rest area until its tie back to I-65. The estimated cost for Alternative 2 is approximately \$53 million.

TRAFFIC OPERATIONS

KIPDA's travel model was used, and modified for this study to reflect conditions during the seasonal peak. The Traffic Analysis Zones (TAZ) within the study area are quite large and traffic model results are affected by placement of centroids within these zones. Therefore, the northern TAZ was divided in half to reflect the study area consideration. The KIPDA travel demand model was modified using square footage and employment numbers provided by KYTC. Model results were provided by KIPDA for both the existing and future year "seasonal traffic" scenario.

In 2035, the new connector road to I-65 is expected to carry 19,300 vehicles per day (vpd) east of I-65, with ramp volumes to and from the north that range from 6,700 to 8,100 vpd. This connector and new interchange are expected to reduce KY 480 traffic volumes east of I-65 by nearly 12,000 vpd and also reduce KY 480 ramp volumes between 1,000 to 3,000 vpd. The 2035 Build Traffic for the KY 480 and KY 245 ramp terminals would still operate at LOS F, however, the delay would be significantly improved. With additional study, the delay could possibly improve even more.

Alternative 1 is expected to have minimal impact on the operation of I-65. Between KY 480 and the proposed new interchange, traffic is expected to increase approximately 2,000 vpd; however, it would still operate at LOS E, just as without the interchange. This is a result of northbound and southbound traffic now exiting at the new connector instead of KY480.

Alternative 2 with the southbound C-D road does improve the mainline traffic on I-65; however, the merge south of the rest area is expected to operate at LOS D and the merge area of influence would exceed capacity. This alternative is also estimated at nearly \$14M more than Alternative 1.

In addition to Alternatives 1 and 2, another option was investigated that would add an auxiliary lane from KY 480 southbound to the new interchange. A capacity analysis shows an improvement in LOS of mainline I-65; however, the resultant weave between the two interchanges would operate at LOS E. An auxiliary lane between KY 480 and the connector has a construction cost estimate of approximately \$1,500,000.

Alternative 1 appears to have minimal effect on I-65, improves the KY 480 ramp terminals' congestion, and is the least expensive. All Build traffic for Alternative 1 is illustrated in detail in Figures ES5 and ES6 (pp.ES9 – ES10).

Before such an investment is made, with several closely spaced interchanges in progression, any further study of the proposed interchange should include a microsimulation model to determine the impacts of each interchange in relationship to the other in the study area (and even including the KY 44 interchange, Exit 116 north of KY 480).

SIGNING

A cursory review of existing and new I-65 signs between KY 44 and KY 245 was conducted to ensure that signing for each alternative along I-65 could be accomplished with each alternative.

FHWA EIGHT POLICY POINTS FOR INTERSTATE ACCESS

FHWA provides Interchange Justification Study guidance in the *Interstate System Access Informational Guide (Guide)* dated August 2010, which details eight (8) policy requirements the States must follow when seeking FHWA approval for access to the interstate for a new interchange. A high-level review of these points concluded that a proposed new I-65 interchange and connector in this portion of Bullitt County would not have an adverse effect

on the engineering and operational acceptability of I-65 in the project area. Due in part to the expected low usage of the interchange, the project would not be in conflict with the goals of Policy Point Requirement No. 3, which are designed to protect the existing and projected traffic operations. This determination was one of the primary goals of this Abbreviated Feasibility Study was to make that determination.

Regarding Policy Requirement No. 1, which requires consideration of improving the existing interchanges rather than constructing a new interchange to meet the needs, it was found through coordination with local officials and KYTC that improvement to the existing road have been made and are planned; however, they will not meet the demands from the future growth planned in the area, and would not meet the purpose and need of the project.

ENVIRONMENTAL OVERVIEW

The key environmental impacts to be considered are associated with the access roads from the interchange. The western access road would traverse forested land and the associated habitat. The eastern access road would be through an area that is largely disturbed, but would have the following known impacts: use of a potential hazmat site south of the Cedar Grove Business Park, and use of a large wetland north of KY 480, at the proposed realigned access to the Love's Truck Stop. There are no known historic, archaeology, social, economic or other environmental impacts. Overall, no significant environmental impacts are expected, and it is anticipated a CE-Level 3 would satisfy the required NEPA documentation. That determination and the resulting analysis would be made as part of that second step, and are beyond the scope of this report.

SUMMARY

In summary, as shown in Figures ES5 and ES6 (pp.ES9 – ES10), Alternative 1 is expected to have minimal impact on the operation of I-65. Between KY 480 and the proposed new interchange, traffic is expected to increase approximately 2,000 vpd; however, it would still operate at LOS E, just as without the interchange. This increase is a result of northbound and southbound traffic now exiting at the new connector instead of KY480.

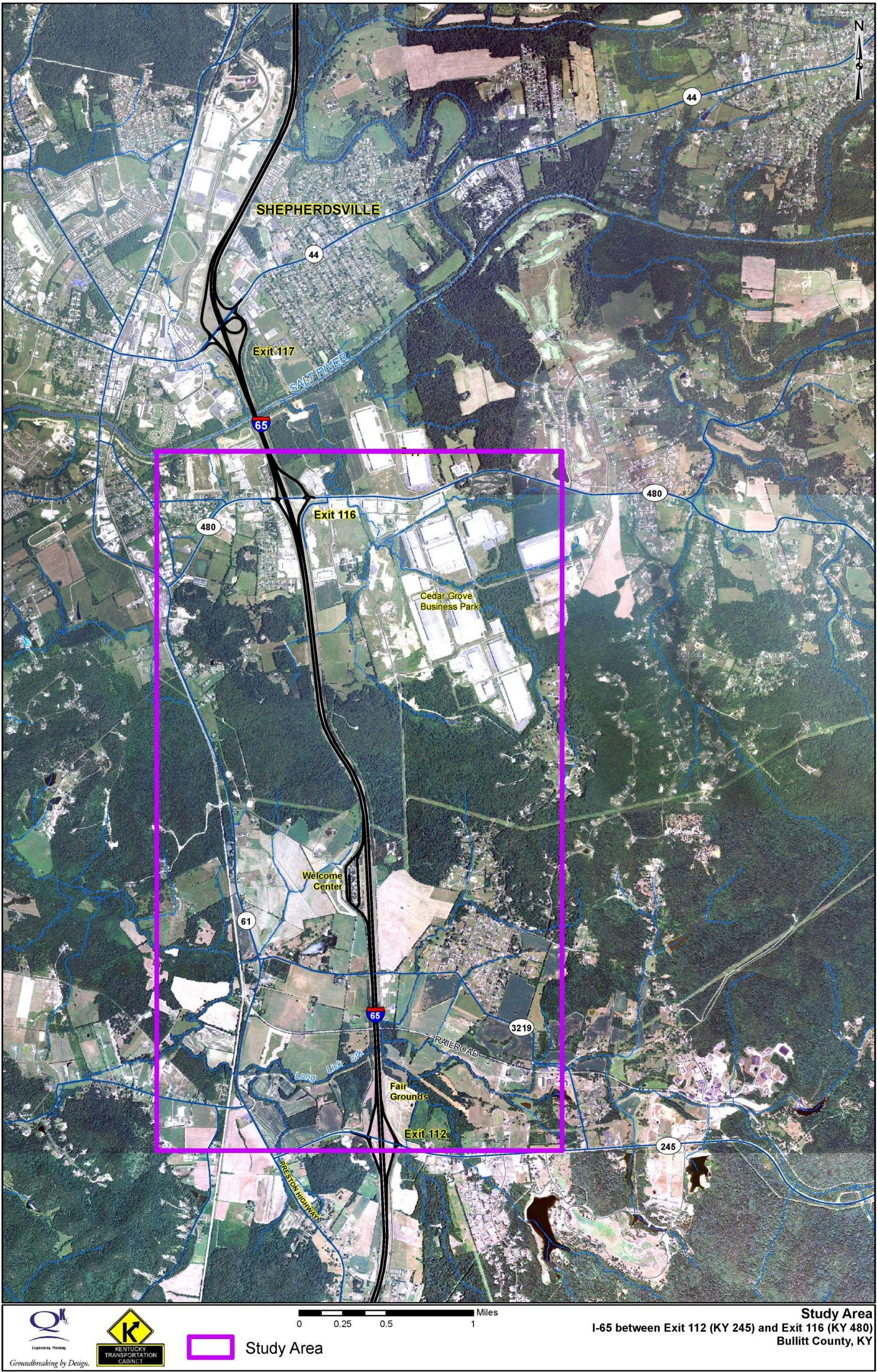


Figure ES1: Study Area

CEDAR GROVE I-65 EXIT

CURRENT PERMANENT EMPLOYMENT	APPROXIMATELY	8,500 JOBS
XMAS 2014 EMPLOYMENT	APPROXIMATELY	18,000 JOBS
APPROXIMATE 2014 JOB ANNOUNCEMENTS		678 JOBS
CURRENT SPACE OCCUPIED		6,465,303 SQ.FT.
SPECULATIVE BUILDING SPACE AVAILABLE TO LEASE		1,037,410 SQ.FT.
SPECULATIVE BUILDING EMPLOYMENT		518 JOBS
PAD READY SITES		800,000 SQ. FT.
PAD READY SITES EMPLOYMENT		400 JOBS
ADDITIONAL PROPERTY AVAILABLE FOR BUILDINGS		4.5 PLUS MILLION SQ.FT.
ESTIMATED EMPLOYMENT FROM BOURBON PATHWAY		2,250 JOBS
ESTIMATED EMPLOYMENT XMAS 2014		18,000 JOBS
ESTIMATED EMPLOYMENT XMAS 2015		25,000 JOBS
THIS DOES NOT COUNT JOBS OR BUILDINGS AT THE CLERMONT, SHEPHERDSVILLE OR HILLVIEW EXIT OF I 65		
Updated August 4, 2014		

Figure ES2: Employment Figures from KYTC



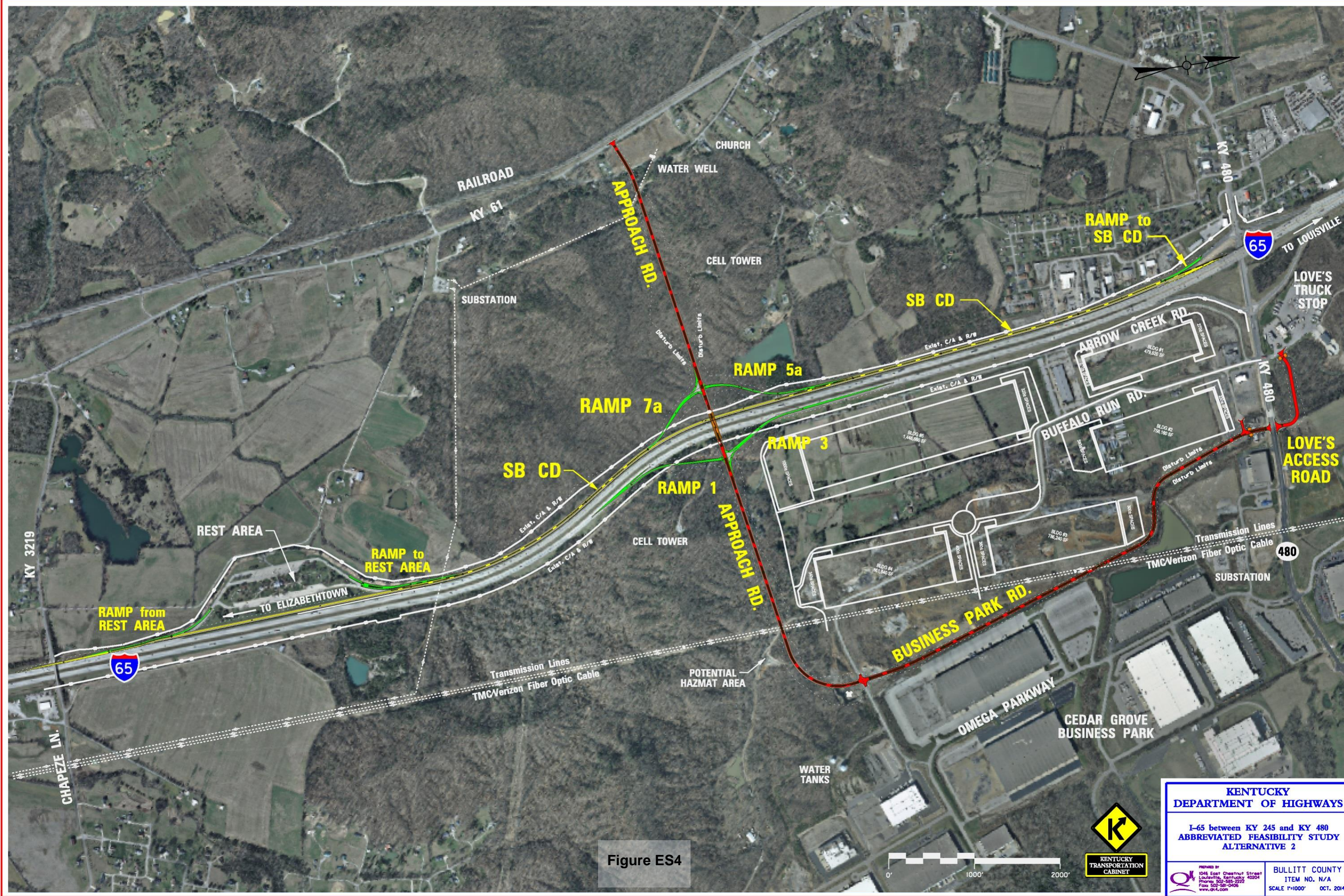


Figure ES4



KENTUCKY DEPARTMENT OF HIGHWAYS	
I-65 between KY 245 and KY 480 ABBREVIATED FEASIBILITY STUDY ALTERNATIVE 2	
PREPARED BY  1046 East Chestnut Street Louisville, Kentucky 40204 Phone: 502-581-2222 Fax: 502-581-0406 www.gk4.com	BULLITT COUNTY ITEM NO. N/A SCALE 1"=1000' OCT. 2014

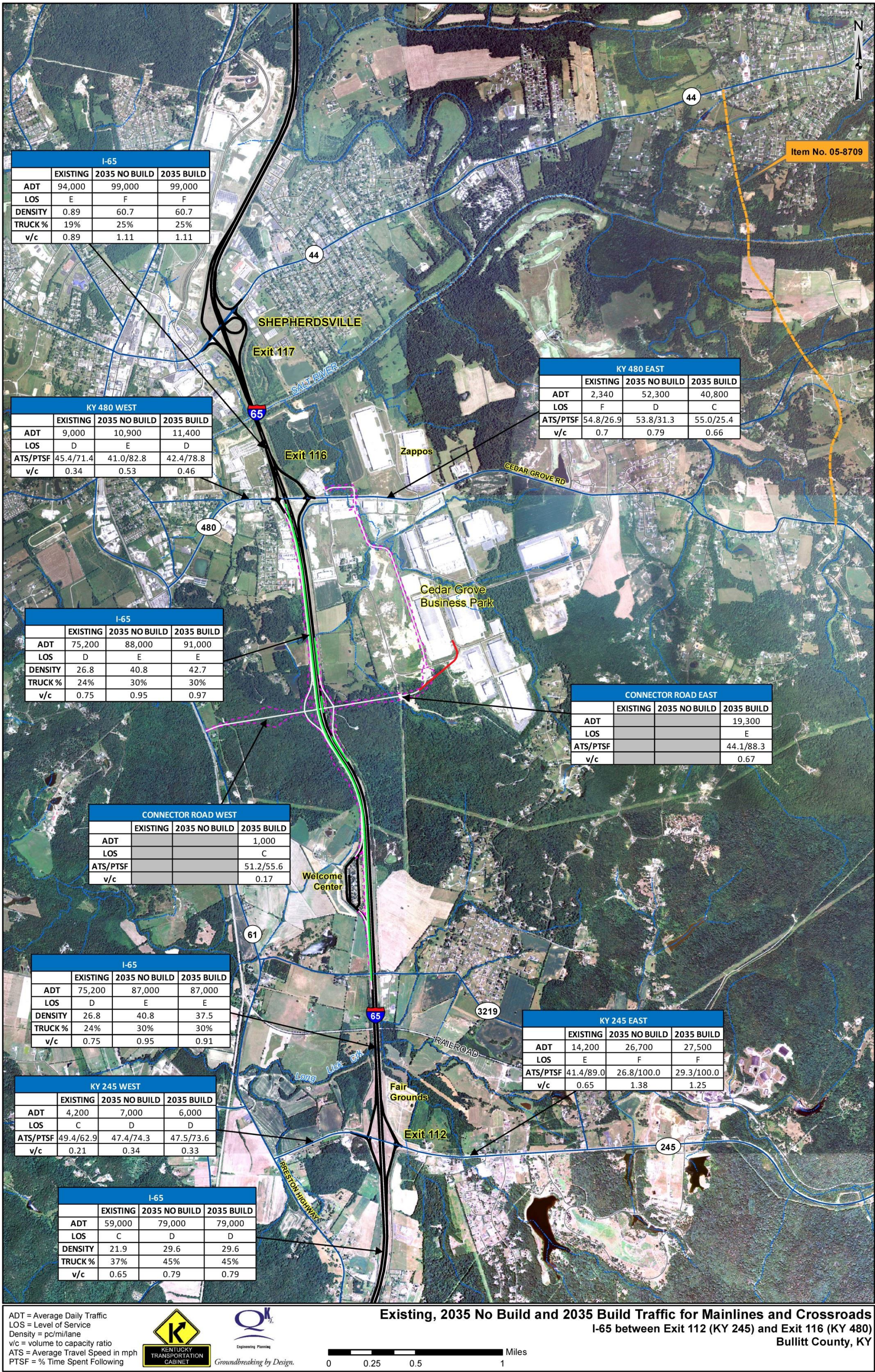


Figure ES5: Mainline and Crossroads Existing, 2035 No Build and 2035 Build Traffic

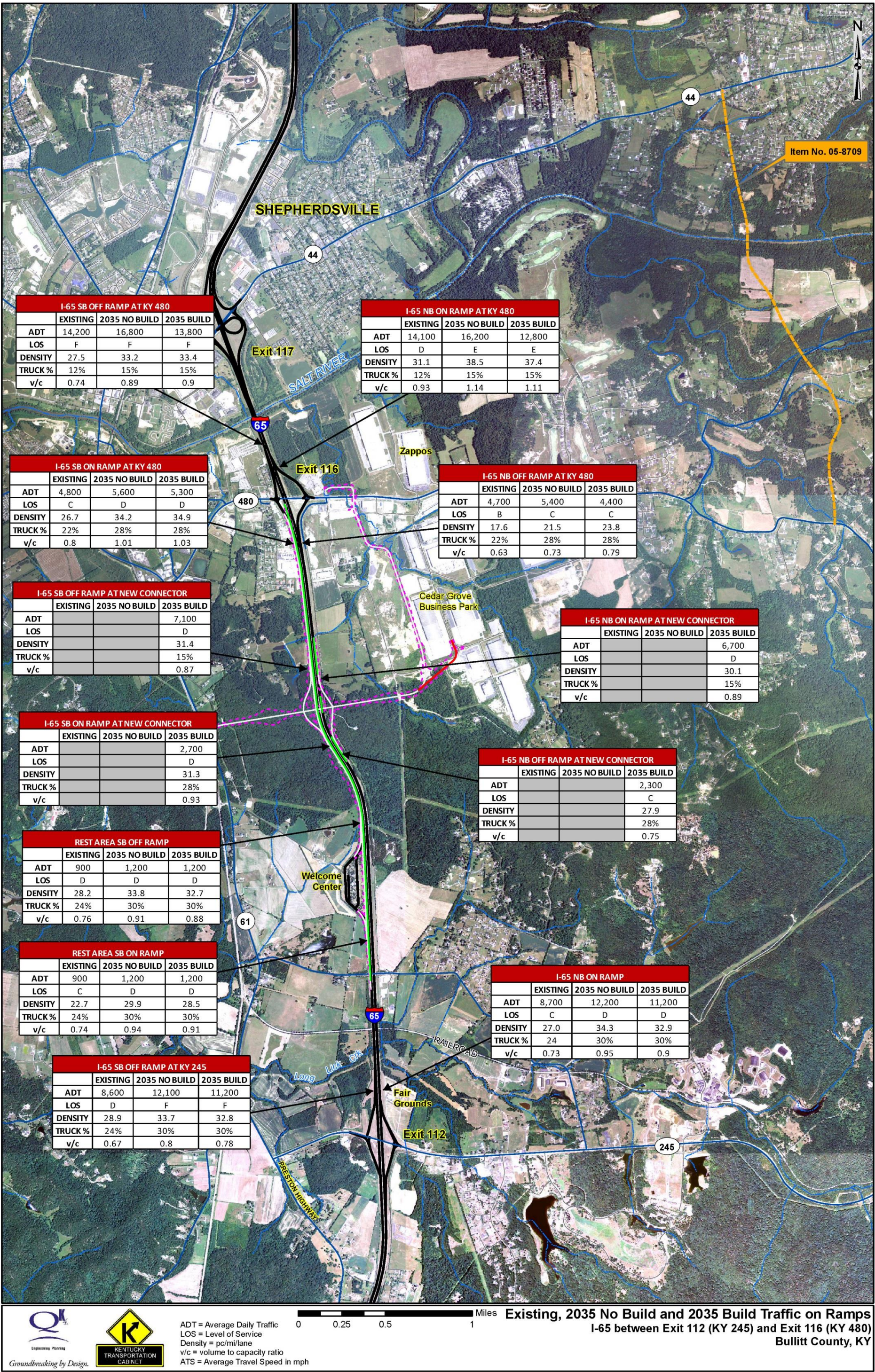


Figure ES6: Ramps Existing, 2035 No Build and 2035 Build Traffic