

I. PRELIMINARY PROJECT INFORMATION

County:	Fayette	Item No.:	7-412.00
Route Number(s):	US 27	Road Name:	North Broadway
Program No.:	86647	UPN:	FD52 0034 0027 008-009
Federal Project No.:	STP 8580 001	Type of Work:	Bridge Replacement/ Roadway Improvements

2012 Highway Plan Project Description:

Replace L&N Railroad bridge overpass (MP8.378), improve drainage and typical section on US 27 (North Broadway).

Beginning MP: 8.324 **Ending MP:** 8.45 **Project Length:** 0.126 mi

Functional Class.:	<input checked="" type="checkbox"/> Urban <input type="checkbox"/> Rural	State Class.:	<input checked="" type="checkbox"/> Primary <input type="checkbox"/> Secondary
	Arterial ▼	Route is on:	<input checked="" type="checkbox"/> NHS <input type="checkbox"/> Nat'l Truck Network
MPO Area:	Lexington Area MPO ▼	Truck Class.:	AAA ▼
In TIP:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (1)	% Trucks:	n/a
ADT (current):	17,695 (2010)	Terrain:	Rolling ▼
Access Control:	<input type="checkbox"/> Fully Controlled <input checked="" type="checkbox"/> Permit	Partial Spacing:	▼
Median Type:	<input checked="" type="checkbox"/> Undivided <input type="checkbox"/> Divided (Type):		
Existing Bike Accomodations:	Shared Lane ▼	Ped:	<input type="checkbox"/> Sidewalk
Posted Speed:	<input type="checkbox"/> 35 mph <input checked="" type="checkbox"/> 45 mph <input type="checkbox"/> 55 mph	Other (Specify):	

KYTC Guidelines Preliminarily Based on : 45 MPH Proposed Design Speed

COMMON GEOMETRIC

Roadway Data:	EXISTING	PRACTICES*	
No. of Lanes	4	2 min.	Existing Rdwy. Plans available?
Travelled Way Width	10 ft	12 ft	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Shoulder Width	2 ft	8 ft min.	Year of Plans: 1937
Max. Superelevation**		6%	<input checked="" type="checkbox"/> Traffic Forecast Requested
Minimum Radius**		643 ft	Date Requested: 1-Jun-12
Maximum Grade		7%	<input type="checkbox"/> Mapping Requested
Minimum Sight Dist.		360 ft	Date Requested:
Sidewalk Width(urban)		4 ft min.	Type: ▼
Clear-zone***		14 ft - 28 ft	

Project Notes/Design Exceptions?:

*Based on proposed Design Speed, **AASHTO's A Policy on Geometric Design of Highways and Streets, ***AASHTO's Roadside Design Guide

Bridge No.*:	034R00603N	(Bridge #2)	Existing Geotech data available?
Sufficiency Rating	80.0ft		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Total Length	80.0 ft		
Width, curb to curb	80.1 ft		
Span Lengths			
Max. Span Length			
Year Built			
Posted Weight Limit			
Structurally Deficient?			
Functionally Obsolete?			

* If more than 2 bridges are present on project, see attached sheets.

(1) TIP amendment requires 15 day public review

II. PROJECT PURPOSE AND NEED

A. Legislation

The project is listed in the 2012 Highway Plan with federal surface transportation funds. The project was identified as a need in the district transportation plan. The funding amounts shown are preliminary cost estimates for bridge replacement only. Costs for roadway improvements are not included in this estimate.	<i>Funding</i>	<i>Phase</i>	<i>Year</i>	<i>Amount</i>
	STP	D	2012	\$1,000,000
	STP	R	2016	\$2,000,000
	STP	U	2016	\$1,000,000
	STP	C	2018	\$2,000,000

TOTAL \$6,000,000

B. Project Status

\$1,000,000 funding authorization request was submitted on May 3, 2012 for the design phase. The state authorization TC-10 (Appendix C) was approved on 6/10/2012. The federal authorization PR-1 is pending approval.

C. System Linkage

US 27 is a north-south principal arterial highway running through the central bluegrass region providing direct access to I-75/I-64 at exit 113 within 1 mile north of the project. Also, this route provides access to downtown Lexington, University of Kentucky, Transylvania University, and the Whitaker Bank Ballpark south of the project.

D. Modal Interrelationships

Lextran operates the 'North Broadway' bus route along this section of roadway. Fayette County public schools operate both Bryan Station High and Winburn Middle Schools bus routes along this section of roadway. No sidewalks or bike lanes are present along this section of the roadway. However, in the Lexington Regional Bicycle and Pedestrian Plan (Link A), there is a constrained project listing with a medium rank to add sidewalks and bike lanes along this route. Pedestrians have been observed walking along the roadway beneath the bridge (Appendix D).

E. Social Demands & Economic Development

Based on the current land use, the area is primarily developed with both commercial and residential. These developments include multiple strip malls, single family homes and the Whitaker Bank Ball Park. The Whitaker stadium is home to the Legends; a professional single 'A' minor league baseball team. The stadium was built in 2001 with their main entrance located within 1500 feet south of the bridge. Each year the Legends host around 75 home games per season from April through September. There is an average of 5000 in attendance for each game. Whitaker Bank also hosts other events such as concerts, rallies, and other baseball tournaments throughout the season.

F. Transportation Demand

North Broadway is a principal arterial that carries 17,695 vehicles per day based on the Cabinet's Highway Information System (HIS) database. Furthermore, this railroad bridge is located around 470 feet south of the heavily congested signalized intersection at New Circle Road. Even though this roadway segment of North Broadway is a major route for Lexington, historically over the past 45 years of traffic volume data, there has only been a small increase in traffic volumes of 0.3% per year based on actual counts (Appendix E).

II. PROJECT PURPOSE AND NEED (cont.)

G. Capacity

The city has conducted an intersection capacity analysis for the New Circle at North Broadway intersection for their use in signal timing. Due to the close proximity of the bridge location to the intersection, it is important to note that the capacity of North Broadway at the bridge is directly related to the operational conditions at the New Circle Road intersection. The HCM output shows that the North Broadway leg of the intersection has a high v/c ratio of 1.07 and 1.17 for both the left and through movements respectively, and high delays of 147 sec. and 155.2 sec. respectively, which contributes to a Level Of Service of 'F' (Appendix F). One of the issues impeding operational conditions along this leg of this intersection is the length of the northbound North Broadway left turn lane to westbound New Circle Road.

H. Safety

Collision data was generated over a 3 year period from May 2009 to May 2012 from the Kentucky State Police database website. A total of 38 collisions were reported with no fatalities and 15 injuries (Appendix G). Over 1/3 reported are "rear end" collisions. A critical rate factor of 1.183 shows that statistically there is a significant crash problem along this section of roadway. Furthermore, the New Circle Road intersection at North Broadway has been identified as one of the top crash locations in the state. However, the North Broadway leg of the intersection was not the most critical location for collisions with respect to the overall intersection.

I. Roadway Deficiencies

There are several deficiencies along this roadway section near the bridge overpass. It has been observed that the roadway drainage is a severe problem. The roadside ditches and drainage are inadequate to drain the water off the road during severe rains causing North Broadway to be closed for extended time until the rain water recedes off the roadway. There are grated drop boxes in the ditches on both sides of the road that take the storm water through culvert pipe and discharge it into Cane Run Creek just north of New Circle Road (Appendix H). However, due to a small difference in elevation between the creek and the drop boxes prevents the storm water from discharging adequately. There is also low overhead clearance under the railroad bridge. This clearance is signed at 13 feet 2 inches causing delivery trucks with tall loads to use alternate routes for making deliveries in the area (Appendix I). This route is designated to be a 'AAA' truck class rating. The Cabinet desires to maintain a 16 foot minimum overhead clearance for a 'AAA' classed roadway. Furthermore, due to the grade of the roadway combined with the low bridge clearance, the sight distance for both the north and southbound motorists is restricted. Also, the bridge abutments are within one foot of the outside traveled lanes which is a hazard to motorists.

Purpose and Need Statement:

Need: There are over 17,000 cars per day traveling along this section of US 27. There are traffic backups past the railroad bridge due to congestion occurring at the New Circle Road intersection resulting in a Level Of Service of 'F' along this section of North Broadway. This section of roadway is statistically a critical accident location with a Critical Rate Factor of 1.183. Also it has been observed that pedestrians are present along this section of roadway. Inadequate roadway drainage, vertical bridge clearance, and the close proximity of the bridge abutments within one foot of the roadway presents a serious hazard to motorists.

Purpose: To improve the roadway drainage, vertical and horizontal bridge clearance, and traffic congestion with consideration of improving mobility for pedestrians and cyclists.

III. PRELIMINARY ENVIRONMENTAL OVERVIEW

NOTE: The environmental work for this project will be completed in the Design Phase by in-house KYTC staff and is not made part of this report.

A. Air Quality

Project is in: Attainment area Nonattainment or Maintenance Area PM 2.5 County
STIP Pg.#: TIP Pg.#:

B. Archeology/Historic Resources

Known Archeological or Historic Resources are present

C. Threatened and Endangered Species

D. Hazardous Materials

Potentially Contaminated Sites are present Potential Bridge or Structure Demolition

G. Permitting

Check all that may apply: Waters of the US MS4 area Floodplain Impacts Navigable Waters of the US Impacts
Are 401/404 Permits likely to be required? Yes No Impacts to: Wetlands Stream/Lake/Pond
 ACE LON ACE NW ACE IP DOW IWQC Special Use Waters

H. Noise

Are noise sensitive receivers adjacent to the proposed project? Yes No

I. Socioeconomic

Check all that may apply: Low Income/Minority Populations affected Relocations Local Land Use Plan available

J. Section 4(f) or 6(f) Resources

The following are present on the project: Section 4(f) Resources Section 6(f) Resources

Anticipated Environmental Document:

None (Completely State funded)



IV. POSSIBLE ALTERNATIVES

A. Alternative 1: No Build

The No Build alternative is not a viable alternative based on the findings of this study. Pedestrians will continue to unsafely walk in or close to the edge of the roadway. Storm drainage will continue to be problem causing North Broadway to be closed during severe rainfall. If there is no correction to the vertical bridge clearance or the close proximity of the bridge abutments to the roadway, then there will continue to be a hazard to motorists which could cause severe crashes and furthermore; delivery trucks with tall loads will continue to use alternate delivery routes.

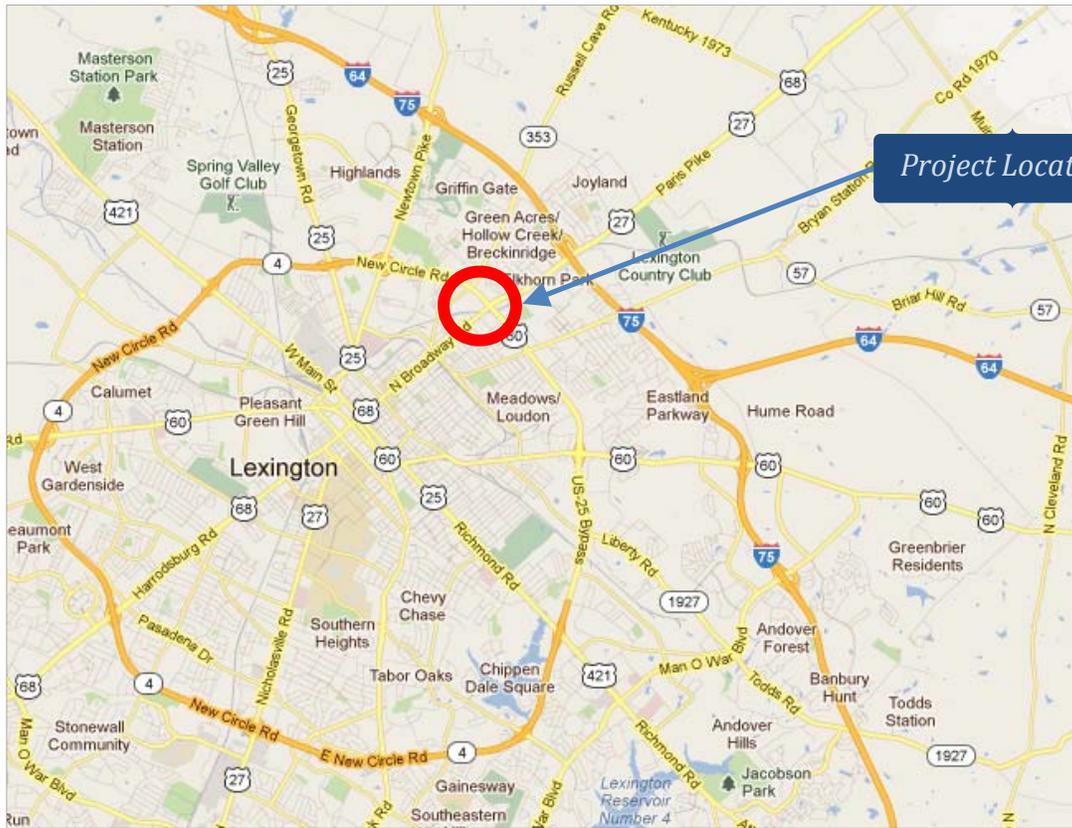
B. Project Concerns When Developing Alternatives

If the railroad bridge were to be raised, then the new bridge height may impact the railroad bridge over New Circle Road. The track distance is approximately 600 feet between the two bridges. Since typically there are grade limitations on railroads tracks, the maximum grade permitted may dictate how much elevation change can be accommodated for the bridge over North Broadway without affecting the bridge over New Circle Road.

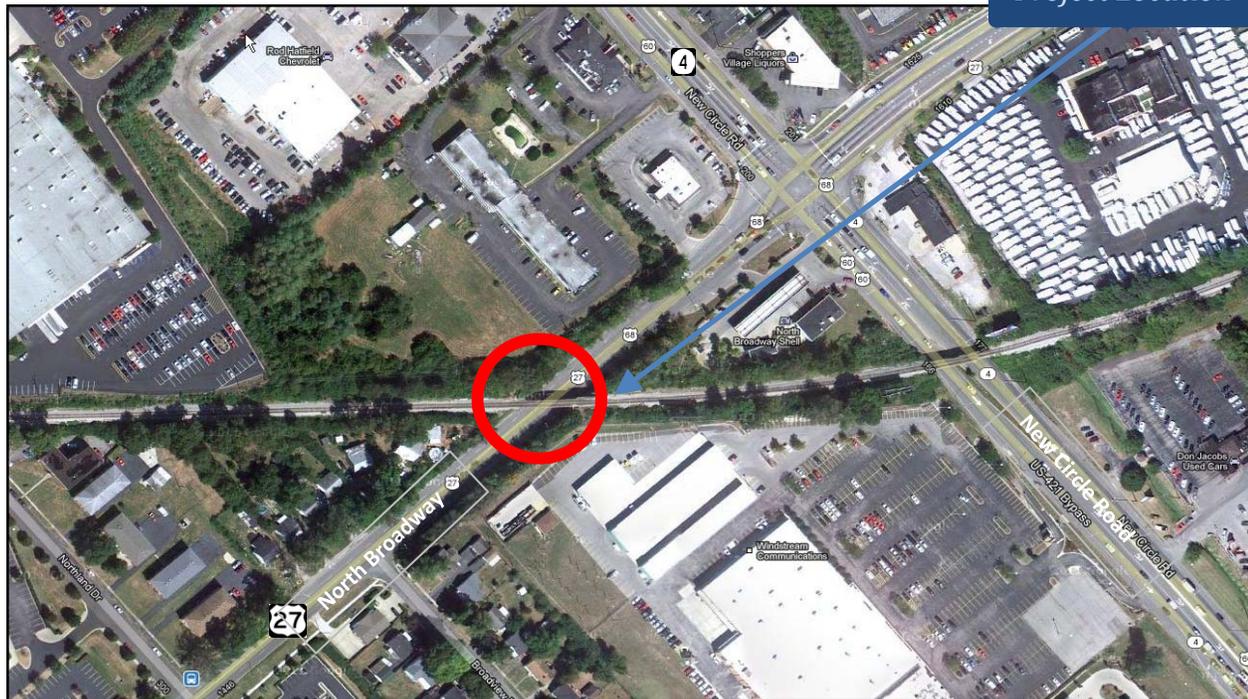
If additional lanes are to be considered along with accommodations for pedestrians and bike lanes, then lengthening the bridge over North Broadway will increase the bridge span lengths and possibly introducing a need for a center pier. This would cause impacts to the roadway since the roadway is currently non-divided. A center median to accommodate a pier will cause additional widening of the roadway and possibly increase the southern project limits to accommodate lane transitions and tapers.

The culvert pipe in the existing drainage system appears to be a very flat grade so there may not be much wiggle room to increase the culvert pipe slope or increase the culvert pipe size to allow storm water to discharge faster. There are most likely buried utilities within the path of the culvert pipe, so any changes to the system could increase the cost for utility relocations.

V. Location Maps



Project Location



Project Location

VI. Links

LINKS:

A. Appendix of the DNA Planning Study

- A Existing Roadway Plans (1937)
- B Railroad Companies Involved
- C TC-10 Funding Authorization
- D Photo: Pedestrians near Bridge
- E Traffic Volume Trend Graph
- F HCM (Highway Capacity Manual) Report
- G Accident Data Map
- H Photo: Drop Box/Roadway Ditch
- I Photo: Overhead Bridge Clearance Sign
- J Bridge Inventory Form
- K Railroad Valuation Map
- L Lexington East Topo Map

[B. Lexington Regional Bicycle and Pedestrian Plan](#)

(Reference Chapter 5B page 70)