

Data Needs Analysis



Jessamine County
Brannon Road(KY 1980)
US 68 to US 27
Item No. 7-414.00

Prepared by
KYTC District 7 Planning

August 7, 2012



I. PRELIMINARY PROJECT INFORMATION

County:	Jessamine	Item No.:	7-414.00
Route Number(s):	KY 1980	Road Name:	Brannon Road
Program No.:	86758	UPN:	FD52 057 1980 000 - 004
Federal Project No.:	STP 3003(273)	Type of Work:	Safety

2012 **Highway Plan Project Description:**

Improve roadway geometrics, typical section, and roadway hazards on KY 1980 (Brannon Road) from US 68 (Harrodsburg Road) to US 27 (Nicholasville Road)

Beginning MP:	0.0	Ending MP:	3.205	Project Length:	3.205
Functional Class.:	<input checked="" type="checkbox"/> Urban <input checked="" type="checkbox"/> Rural Arterial	State Class.:	<input type="checkbox"/> Primary <input checked="" type="checkbox"/> Secondary	Route is on:	<input type="checkbox"/> NHS <input type="checkbox"/> NN <input type="checkbox"/> Ext Wt
MPO Area:	Lexington	Truck Class.:	A	% Trucks:	5.9
In TIP:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Terrain:	Rolling	ADT (current):	5080 2010
Access Control:	<input type="checkbox"/> None <input checked="" type="checkbox"/> Permit <input type="checkbox"/> Fully Controlled	Spacing:	Partial	Median Type:	<input checked="" type="checkbox"/> Undivided <input type="checkbox"/> Divided (Type):
Existing Bike Accommodations:	Shared Lane	Ped:	<input type="checkbox"/> Sidewalk	Posted Speed:	<input checked="" type="checkbox"/> 35 mph <input type="checkbox"/> 45 mph <input checked="" type="checkbox"/> 55 mph <input type="checkbox"/> Other (Specify):
KYTC Guidelines Preliminarily Based on :	see pg 1a MPH Proposed Design Speed				

COMMON GEOMETRIC PRACTICES*

Roadway Data:	EXISTING	PRACTICES*
No. of Lanes		Existing Rdwy. Plans available?
Lane Width		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Shoulder Width	See page 1a for existing and geometric criterion for urban and rural roadways	
Max. Superelevation**		Year of Plans: _____
Minimum Radius**		<input type="checkbox"/> Traffic Forecast Requested
Maximum Grade		Date Requested: _____
Minimum Sight Dist.		<input type="checkbox"/> Mapping/Survey Requested
Sidewalk Width(urban)		Date Requested: _____
Clear-zone***		Type: _____
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. *:	(Bridge #1)	(Bridge #2)	Existing Geotech data available?
Sufficiency Rating			<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Total Length	Existing 16' x 4 '3"		*If more than two bridges are located on the project, include additions sheets.
Width, curb to curb	Aluminum Box Culvert		
Span Lengths	MP 1.750 at South Elkhorn Creek		
Year Built			
Posted Weight Limit			
Structurally Deficient?			
Functionally Obsolete?			

Common Geometric Practices Urban and Rural Brannon Road (KY 1980)

Urban Minor Arterial

Harrodsburg Road to Clays Mill Road Ext.
Begin MP 0.0 to MP 1.03
Design Speed: 40 mph
ADT = 4819 (2009)

Roadway Data:	Existing	Common Geometric Practices (Urban)
No. of Lanes	2	2 min.
Lane Width	11 ft. *	12 ft.
Shoulder Width	3 ft. *	8 ft.
Max. Superelevation		6%
Minimum Radius		340 ft.
Maximum Grade		8%
Min. Sight Distance		250 ft.
Sidewalk Width (urban)	none	4 ft. min.
Clear-zone	1 ft. to 2 ft.	12 ft. to 16 ft.

Rural Minor Arterial

Clays Mill Road Ext. to Nicholasville Road
Begin MP 1.03 to MP 3.205
Design Speed: 55 mph
ADT = 5080 (2010)

Roadway Data:	Existing	Common Geometric Practices (Rural)
No. of Lanes	2	
Lane Width	8 ft. *	12 ft.
Shoulder Width	3 ft. *	8 ft.
Max. Superelevation		6%
Minimum Radius		1060 ft.
Maximum Grade		5%
Min. Sight Distance		495 ft.
Clear-zone	1 ft. to 2 ft.	20 ft. to 30 ft.

* from HIS Database

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 preliminary estimates shown are based on a reconstruction of a two lane rural roadway.	<i>Funding</i>	<i>Phase</i>	<i>Year</i>	<i>Amount</i>
	STP	D	2012	\$2,000,000
	STP	R	2016	\$7,500,000
	STP	U	2017	\$5,000,000
	STP	C	2018	\$12,000,000
				\$26,500,000

B. Project Status

The state funding authorization TC-10 was approved on June 26, 2012 (Appendix A). The federal authorization PR-1 is pending approval.

C. System Linkage

Brannon Road (KY 1980) is an west-east minor arterial route that links Harrodsburg Road (US 68) to Nicholasville Road (US 27) in northern Jessamine County. This route also provides a connection to Clays Mill Extension which is a north-south urban collector route in northern Jessamine County and in the southwest Lexington area. In the 2010 Jessamine County Joint Comprehensive Plan, local collector roads include South Elkhorn Road east to Brannon Road near Legacy Drive, Clays Mill Ext. south to Rhineheimer Lane at Catnip Hill Road, and Boston Road south to Bakers Lane. These local collector routes are intended to create multiple travel alternatives between the arterial roads (Appendix B).

D. Modal Interrelationships

Jessamine County and Nicholasville public schools operate seven school buses along Brannon Road with over 15 trips on this route on a typical school day. There is currently no public transit service in Jessamine County. However, Lextran currently operates along Harrodsburg Road, Clays Mill Road, and Nicholasville Road. Lextran has expressed an interest in expanded their service into Jessamine County via US 27 with a transfer station at Man O' War Blvd. There are no existing sidewalks, bike lanes, or share-use paths along Brannon Road. However, there are opportunities in the Brannon Road corridor to incorporate these type of facilities. Based on the Conceptual Greenway / Trail Plan (Appendix C), the county has begun looking at opportunities for a north/south multi-purpose trail crossing Brannon Road as well as an east/west trail in the Brannon Road corridor. No decisions have been made as to the type or location.

E. Social Demands & Economic Development

Based on the 2010 Joint Comprehensive Plan land use map (Appendix D), the current land use around Brannon Road serves low density residential, commercial, agricultural, and public institutional properties. The future land use for the undeveloped areas will continue to be low density residential on the west side of the railroad line while east of the railroad the undeveloped land is reserved for professional office to Nicholasville Road. Currently the only commercial property along Brannon Road is the Cracker Barrel Restaurant which was annexed into the City of Nicholasville. Jessamine County's 20 year expansion plan for sanitary sewer service extends from US 68 to US 27 taking in the Brannon Road corridor to the Fayette County line (Appendix E).

F. Transportation Demand

Based on the Transportation Cabinet's HIS (Highway Information System) database, Brannon Road is a minor arterial that carries over 5,000 vehicles per day. From the historical data trends, the traffic on this route has doubled over the past 15 years (Appendix F). This traffic is mainly attributed to the recent development at Brannon Crossing. The main entrance to Brannon Crossing is at the intersection of Brannon Road and Nicholasville Road. Brannon Crossing is a major traffic generator in northern Jessamine County that includes shopping, restaurants, gas station, a movie theater, etc. At the west end of Brannon Road at Harrodsburg Road, a Lexington area mega church; Southland Christian Church, has grown in attendance averaging 10,000 to 12,000 per weekend. The northern church campus entrance is off of Brannon Road and serves traffic for on-going weekly institutional programs. (Appendix G)

II. PROJECT PURPOSE AND NEED (cont.)

G. Capacity

Based on the 2011 Adequacy Ratings Report, the V/SF (volume to service flow ratio) along the urban section of Brannon Road is 0.45 with an adequacy percentile of 45.51. This section is congested at about 45% capacity with only 54.49% of similar classified roads in better condition in terms of congestion, safety, and pavement condition. The V/SF ratio in the rural section is 1.17 with an adequacy percentile of 0.20. The rural section is 17% over capacity with 98.8% of similar classified roads in better condition. Essentially, based on this percentile, the rural section is one of the lowest rated roadways compared to other rural minor arterial roadways in the state.

H. Safety

A collision data report was generated over a three year period from July 1, 2009 through June 30, 2012 using the Kentucky State Police collision database. A total of 105 collisions were reported with no fatalities. However, of the 105 collisions reported, there were 46 single vehicle collisions which make up 44% of the total crashes reported (Appendix H). Based on the 2011 Adequacy Ratings Report, a CRF (critical rate factor) of 1.24 was calculated for the urban section and 1.46 for the rural section. Since the CRF for both sections are greater than one, then statistically, there is a significant crash problem along Brannon Road. Also, there exists an at-grade railroad crossing at MP 2.791 (Appendix I) with safety gates and warning lights installed. This track carries over 27 trains per day at speeds reaching 60 mph causing traffic backups along Brannon Road.

I. Roadway Deficiencies

Brannon Road has substandard roadway geometry that can be a hazard to motorists. The existing roadway width contains two narrow driving lanes with narrow shoulders. Also, in some areas along the roadway, there are no ditches for draining the storm water off the roadway. There is substandard vertical and horizontal curvature along the roadway that can restrict a driver's sight distance for seeing entrances and other vehicles ahead. Other roadway corridor obstructions exist in the clear zone recovery area. These obstructions include tree lines, brush, earth slopes, pavement edge drop offs, etc. which can be a safety hazard to motorists in the event that a vehicle incidently veered off the traveled way. (Appendix J)

Draft Purpose and Need Statement:

Need: Brannon Road is a west-east minor arterial roadway connecting Harrodsburg Road to Nicholasville Road in northern Jessamine County. This road carries over 5,000 vehicles per day and has doubled over the past 15 years. The current land use includes low density residential, commercial, and public institutional properties with some areas reserved for professional office development. Major traffic generators in the area include the Brannon Crossing shopping area at Nicholasville Road and Southland Christian Church at Harrodsburg Road. The V/SF ratio of Brannon Road is 0.45 on the urban section and 1.17 on the rural section indicating congestion on the rural section. There have been over 100 vehicle collisions along this stretch of roadway over the past three years. A CRF of 1.24 on the urban section and 1.46 on the rural section indicates a severe collision problem along this stretch of roadway. There are many roadway deficiencies and roadside obstructions along the roadway that can be a severe safety hazard to motorists. These include narrow lanes and shoulders, substandard horizontal / vertical curvature, roadway drainage ditches, tree lines, brush, earth slopes, and pavement edge drop offs.

Purpose: To improve the roadway typical section, vertical and horizontal geometry, drainage, and roadside clear zone for motorists' safety.

III. PRELIMINARY ENVIRONMENTAL OVERVIEW

A. Air Quality

Project is in: Attainment area Nonattainment or Maintenance Area PM 2.5 County

STIP Pg. #: TIP Pg. #:

The project is not in the STIP at this time. Jessamine County is in attainment for all monitored air pollutants.

B. Archeology/Historic Resources

Known Archeological or Historic Resources are present

Several homes along the project could be 50 years old or older. A site check and survey will be needed to determine historic impacts. An Archaeology Checklist or Phase I survey will need to be completed in order to rule out any impacts to archaeological sites. This may be done in house or contracted out, depending on time and available resources. Optimum time for a survey would be during a winter draw-down when more of the shoreline is exposed.

C. Threatened and Endangered Species

Jessamine Federally Endangered Species: Indiana Bat, Gray bat, Cracking Pearlymussel, Sheepnose mussel, running buffalo clover. During a site visit potential habitat (summer roost trees) was observed for the bat species in the project area; however a Habitat Assessment will need to be conducted to examine the habitat potential more closely. A Biological Assessment may also be needed. A mussel survey for federally listed mussel species may also be necessary in this location, though during the site visit the impacted streams were dry. Habitat for RBC should be assessed in May during bloom time since parts of the location/setting are potentially historic. Any impacts to threatened and endangered species must be mitigated for through coordination with USFWS.

D. Hazardous Materials

Potentially Contaminated Sites are present Potential Bridge or Structure Demolition

During a site visit in July 2012, no properties were observed that would have a high probability of hazardous materials. One above ground storage tank was located near the project.

E. 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

Any impacts below the ordinary high water mark within streams will need a USACE 404 Permit and potentially a Water Quality Certification from the Division of Water.

F. Noise

Are existing or planned noise sensitive receptors adjacent to the proposed project? Yes No
 Is this considered a "Type I Project" according to the [KYTC Noise Analysis and Abatement Policy?](#) Yes No

The scope of the project may require noise analyses if additional lanes of traffic planned for this project. The noise associated with construction and demolition will be temporary.

G. Socioeconomic

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

There will likely be no socioeconomic impacts associated with this project. If relocations are determined necessary, a more in-depth look at EJ issues will be required.

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

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

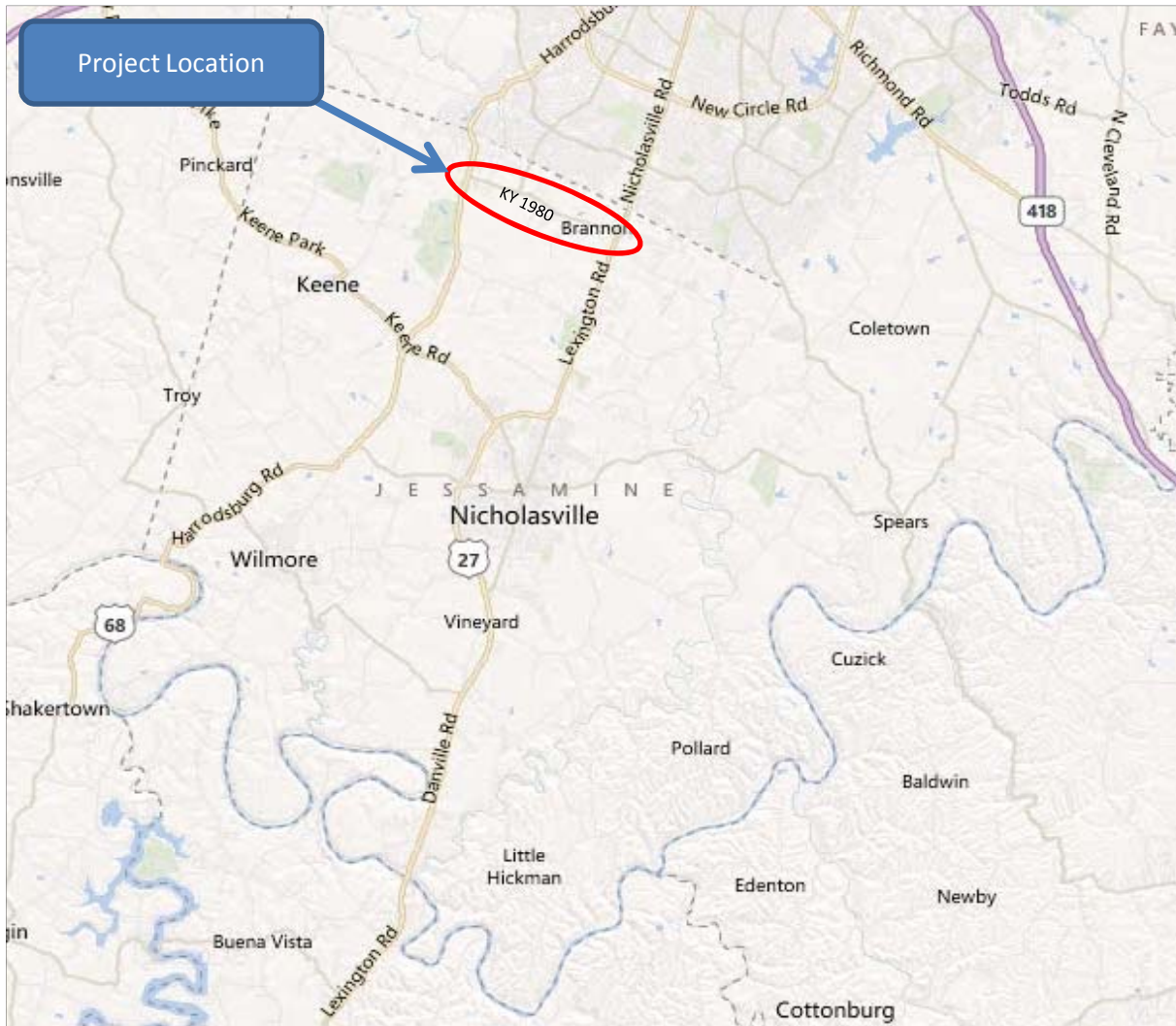
If any residences are ruled as eligible for the National Register of Historic Places they could also be afforded protection under Section 4(f). The KYTC has options to mitigate and avoid impacts to Section 4(f) resources including using "de minimis" guidance for minor strip takings.

Anticipated Environmental Document:

CE Level 1



IV. Project Location Maps



V. Alternatives

No Alternatives were developed for this report. The cost estimate shown in 'Section A' was based on an initial planning level cost per mile for a reconstruction of a two lane rural roadway and is not necessarily a recommended alternative.

VI. Appendix / Links

A. Appendix of the DNA Planning Study

- A TC-10 Funding Authorization
- B Long Range Local Collector Road Map
- C Concept Greenway / Trail Plan
- D Land Use Map
- E Long Range Sanitary Sewer Service Map
- F Historic Traffic Count Graphs
- G Photos - Traffic Generators
- H Collision Summary
- I At-Grade Railroad Crossing
- J Photos - Roadway Deficiencies
- K Property Line Map
- L Nicholasville USGS Quad Map
- M Watershed Map
- N Utility Owner Summary

[B. Wilmore Nicholasville Jessamine County Joint Comprehensive Plan 2010](#)

- References:
- Page 61 - Local Collector System
 - Page 66 - Public Transit
 - Page 67 - Greenways and Trails
 - Page 75 - Sewer Service Availability