

Request for HSIP Funds by Tippecanoe County

Project: Improvements to the North River Road
and CR 500N Intersection

Submitted by the Area Plan Commission of Tippecanoe County
September 2015

Tippecanoe County is seeking Highway Safety Improvement Program funds to improve the intersection of North River Road (formally SR 43) and CR 500N. The Tippecanoe County Commissioners have reviewed the safety audit and concur with its findings (attached letter). They have requested HSIP funds for the improvements. The cost estimates, project time line, and agreement to fund all future maintenance can be found below.

1) *Addresses SHSP Emphasis Area*

Strategic Highway Safety Plan Emphasis Area Targeted:

Emphasis Area 1, Lane Departures,
Emphasis Area 2, Intersection Crashes

2) *Needs Analysis*

A Road Safety Audit was conducted on June 18, 2015 and a copy of the report is attached. The report includes the following information: aerial photography, volume counts, functional classification, intersection geometrics, crash history (January 2010 – February 2015), zoning, parcel boundary, and elevation contours. It also includes the team observations, analysis and recommendations.

RSA Observations and Analysis section clearly defined the problems. They are:

- a) Safety issue with the reverse curve on CR 500N,
- b) Off road crashes due to slippery surface conditions,
- c) Sight distance issue due to reverse curve,
- d) Sight distance issue due to vegetation,
- e) Hidden driveway, and
- f) Drainage Swales directly adjacent to road.

The team recommended the following solutions:

- a) Road realigned addressing the reverse the curves,
- b) High friction pavement,
- c) Left turn lane, passing blister,
- d) Right turn deceleration lane,
- e) Advanced signage,
- f) Lighting, and
- g) Pedestrian and cyclists accommodations.

3) *Financial Analysis*

The following parameters were used in calculating the benefit to cost ratio.

Total Project Cost: \$1,456,440

This amount includes right-of-way acquisition and construction. The following table summarizes the cost per phase and amount of federal funds sought.

	Federal	Local	Total
PE	---	---	---
RW	360,000	40,000	400,000
CN	<u>845,152</u>	<u>211,288</u>	<u>1,056,440</u>
Total	1,177,728	251,288	1,456,440

The following table summarizes the additional parameters used with the HAT software:

	CRF PD	CRF IF	Service Life	Capital Cost	Annual Maintenance	Salvage Cost
Improve Road Alignment	58.0	58.0	20	\$754,436	\$5,000	\$0
High Friction Pavement	45.0	30.0	20	\$145,644	\$1,000	\$0
Passing Blister	28.0	36.0	20	\$218,466	\$1,000	\$0
Right Turn Decel Lane	18.0	21.0	20	\$218,466	\$1,000	\$0
Advanced Warning Signs	40.0	40.0	20	\$2,913	\$500	\$0
Lighting	20.0	29.0	20	\$29,129	\$500	\$0
Ped & Bike	71.0	71.0	20	\$87,386	\$1,000	\$0

Sources of CRFs are located at the end of the request.

A benefit to cost ratio was calculated through the HAT software. When factoring in the cost of engineering, right-of-way and construction, the B/C ratio is 1.92.

4) Project Development Timeline

Preliminary Engineering: This phase is current under way.
 Right-of-Way: This phase is scheduled to begin in FY 2016
 Construction: This phase is scheduled to begin in FY 2018

5) Maintenance of HSIP Installation

Tippecanoe County will maintain the improvements when the project has been completed. Please see the attached letter.

6) Post Construction Safety Evaluation

The Area Plan Commission will perform a post construction evaluation.

Crash Reduction Factor Sources

Improve Road Alignment

FHWA Desk Top Administration
Desktop Reference for Crash Reduction Factors
Table 6, Geometric Countermeasures
Countermeasure: Improve Horizontal and Vertical Alignments

High Friction Pavement:

FHWA Desk Top Administration
Desktop Reference for Crash Reduction Factors
Table 9, Signs/Marking/Operational Countermeasures
Countermeasure: Improve pavement friction (increase skid resistance)

Passing Blister:

Federal Highway Administration
Desktop Reference for Crash Reduction Factors
Table 2, Geometric Countermeasures
Countermeasure: Install Turn and Bypass Lanes (Left Turn Crashes)

Right Turn Deceleration Lane

Federal Highway Administration
Desktop Reference for Crash Reduction Factors
Table 2, Geometric Countermeasures
Countermeasure: Install Turn and Bypass Lanes (Rear End Crashes)

Advanced Warning Signs:

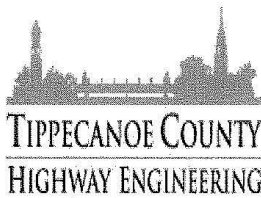
FHWA Desk Top Administration
Desktop Reference for Crash Reduction Factors
Table 3, Signs/Markings/Operational Countermeasures
Countermeasure: Install advance warning signs (positive guidance)
Area Type: Rural

Lighting

Federal Highway Administration
Desktop Reference for Crash Reduction Factors
Table 9, Signs/Markings/operational Countermeasures
Countermeasure: Install Lighting (night)

Pedestrian and Bicycle

FHWA Desk Top Administration
Desktop Reference for Crash Reduction Factors
Table 11, Geometric Countermeasures
Countermeasure: Provide Paved Should (of at least 4 ft) to avoid walking along roadway.



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Mike Spencer, Assistant Executive Director

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August 6, 2015

Mike Holowaty
Safety Programs Manager
Indiana Department of Transportation
100 N. Senate Avenue - Room N955-PL
Indianapolis, IN 46204

Re: Road Safety Audit – North River Road and CR 500 N

Dear Mr. Holowaty,

The Tippecanoe County Commissioners and I have reviewed the Road Safety Audit for North River Road and CR 500 N in Tippecanoe County. The Audit was conducted on June 18, 2015. We appreciate the effort that all parties put forth to complete the report.

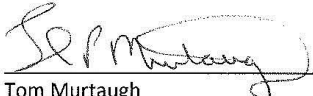
We are already implementing the short term recommendations listed in the Road Safety Audit concerning vegetation, signage, and pavement markings. The Commissioners and I concur with the long term recommendations in the Road Safety Audit. We would like to see CR 500 N realigned to eliminate the reverse curves. This improvement, along with a high friction pavement, signage, and lighting would help to improve the safety of the roadway. The improvements planned at the intersection - additional lanes, a passing blister and signage would increase the awareness and visibility of the intersection.

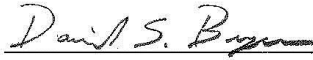
Tippecanoe County is requesting HSIP funds to plan and construct the needed long term improvements at North River Road and CR 500 N. Thank you for reviewing this project for the recommended safety improvements. We believe this is a necessary project to improve safety in our county.

Respectfully Submitted,


Opal Kuhl, P.E.
Executive Director
Highway Department

Tippecanoe County Commissioners


Tom Murtaugh


David Byers


Tracy Brown