TO: Kirk Hoff

Design Engineer

FR: Darell Arne

Traffic Safety Engineer – Design

DT: MONTH XX, XXXX

RE: Project XX-X-XXX(XXX)XXX – Safety Review

PROJECT LOCATION FROM RIMS

PCN 00000

**23 USC § 407 Documents**

**NDDOT Reserves All Objections**

This project has been reviewed as a Major Rehabilitation project (as per the Design Guidelines). An obstruction clearance of 20 feet / clear zone of XX feet from the edge of the driving lane was used on the majority of the project (as per the Design Guidelines). If another strategy is chosen, then the design standards for that strategy shall be used instead of this safety review. This FUNCTIONAL CLASSIFICATION highway is classified as a PERFORMANCE CLASSIFICATION. The traffic volume is:

 RP 000.000 to RP 000.000 RP 000.000 to RP 000.000

 Current (2010) 500 ADT Current (2010) 1,000 ADT

 Forecast (2030) 500 ADT Forecast (2030) 1,000 ADT

This project involves widening of the roadbed. Both sides of the roadbed will be widened.

Since all of the driveway inslopes will be disturbed during construction there is no need to review them. Recommend that the driveway inslopes that are steeper than 6:1 shall be flattened to 8:1 and any pipes shall be addressed.

Since all of the centerline culverts will be disturbed during construction there is no need to review them. Recommend that the centerline culverts be extended out to the clear zone or have traversable end sections installed.

*...NOTE ON GUARDRAIL HEIGHT (remove this section upon submittal)…*

* *If the guardrail is compliant with MASH then 34” is the maximum height and 28” is the minimum height.*
* *If the guardrail is not in compliance then engineering judgement shall be used to determine if the guardrail should be replaced, reset, or adjusted.*

There is no guardrail located on this project.

…OR…

The “NAME” Bridge at RP 000.000 has a XX’ clear roadway, conc/curb (code E) bridge rail and is protected with w-beam guardrail and end terminals. The bridge rail, guardrail, and end terminals conform with MASH crash test criteria. The length of need and taper rate are functionally adequate based on the forecast ADT and design speed. The height is adequate. If the overlay at the guardrail reduces the existing height to less than 28 inches, then recommend the guardrail be brought up to current standards.

…AND/OR…

The “NAME” Bridge at RP 000.000 has a XX’ clear roadway, conc/curb (code E) bridge rail and is protected with w-beam guardrail and end terminals. The bridge rail, guardrail, and end terminals do not conform with MASH crash test criteria. The length of need and taper rate are substandard based on the forecast ADT and design speed. The height is substandard. Recommend removing the existing guardrail and resetting it with enough new guardrail to meet the required length of need. Recommend removing the existing end treatments and installing new end terminals. The estimated cost for this work is **$00,000**.

There are no slopes steeper than 4:1 within the clear zone.

…OR…

Since the steep slopes will be disturbed during construction, there is no need to review them. Recommend that the slopes be flattened to design standards.

There are no ditch blocks surveyed within the clear zone.

…OR…

Since all of the ditch blocks will be disturbed during the construction there is no need to review them. Recommend that all ditch blocks steeper than 8:1 be flattened to 10:1.

…OR…

The ditch block at RP 000.000 rt has slopes that are steeper than 8:1 within the clear zone. These slopes shall be flattened to 10:1. The estimated cost for this work is **$00,000**.

There is no riprap surveyed within the clear zone.

…OR…

Since the riprap will be disturbed during construction there is no need to review it. Recommend that the riprap be removed to the clear zone.

…OR…

The riprap at RP 000.000 rt is within the clear zone. It is cost effective to remove the riprap to the clear zone. The estimated cost for this work is **$00,000**.

There is no water over 2 feet deep surveyed within the clear zone

There are no light standards located within the clear zone.

…OR…

The light standards on this project have break-away bases.

There are no railroad crossings located on this project.

…OR…

The railroad crossing at RP 000.000 has crossbuck signs, yield or stop signs, advanced railroad crossing signs, and pavement marking for both directions of traffic, in accordance with Standard Drawing D-754-81 and D-762-1.  The crossbuck signs are located on 6” x 6” wood posts.  Holes have been drilled in the base of the posts to make them breakaway.

…OR…

The railroad crossing at RP 000.000 has signals, gates, crossbuck signs, advance railroad crossing signs, and pavement marking for both directions of traffic, in accordance with Standard Drawing D-762-1.  The signal units have the required minimum horizontal clearance, as per the MUTCD.  The signal control building was surveyed and is outside the clear zone.  The crossbuck signs are located on the signal units.

…AND/OR…

The railroad crossing at RP 000.000 has signals, gates, crossbuck signs, advance railroad crossing signs, and pavement marking for both directions of traffic, in accordance with Standard Drawing D-762-1.  The signal units do not have the required minimum horizontal clearance, as per the MUTCD.  The signal units should be moved to provide the required minimum horizontal clearance. The signal control building was surveyed and is inside the clear zone. The railroad should be contacted to move the signal control building outside the clear zone. The crossbuck signs are located on the signal units.

There are no T-intersections located on this project.

…OR…

The intersection of US/ND XX and US/ND/County System XX at RP 000.000 is a T-intersection. It does not appear to have a recovery approach. If this intersection does not already have a recovery approach, it should be looked at to determine if a recovery approach is feasible. If a recovery approach cannot be provided, some other form of warning device should be installed.

Since all of the mailboxes will be disturbed during construction there is no need to review them. Recommend that the mailboxes be removed and replaced on new supports.

Since all of the signs will be disturbed during construction there is no need to review them. Recommend that the signs be removed and replaced with new signs on new supports or reset on new supports.

There are no other items identified in the 90-1 survey (such as trees, fences, large rocks, etc).

There is no safety work recommended for this project.

…OR…

The estimated cost for the above recommended safety work is **$000,000**.

Reviewed by:

 Darell L. Arne, P.E. – Traffic Safety Engineer Date

Reviewed by:

 Kirk J. Hoff, P.E. – Design Engineer Date

