Southwestern Pennsylvania Road Safety Audit

S.R. 136 from Allegheny / Westmoreland County Line to U.S. 30 Bypass

Rostraver Township, West Newton Borough, South Huntingdon Township, Sewickley Township, Arona Borough, Madison Borough, Hempfield Township & City of Greensburg, Westmoreland County, PA

March 2013

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1. BACKGROUND

A Road Safety Audit (RSA) is the formal safety performance examination of an existing or future road or intersection by an independent, multidisciplinary team. It qualitatively estimates and reports on potential road safety issues and identifies opportunities for improvements in safety for all road users. The aim of an RSA is to answer the following questions:

- What elements of the road may present a safety concern: to what extent, to which road users, and under what circumstances?
- What opportunities exist to eliminate or mitigate identified safety concerns? [1]

An RSA is a proactive process that provides recommendations which can be implemented in stages as time and resources permit. As a service to its Planning Partners, the Southwestern Pennsylvania Commission (SPC) has developed an RSA program as part of its Transportation Operations & Safety planning efforts. The methodology for this program is summarized below and is based on the 8-step RSA process developed by the Federal Highway Administration.

This document represents the final report for the Road Safety Audit conducted along S.R. 136 in Westmoreland County from its intersection with the U.S. Route 30 bypass in Greensburg to the Westmoreland County-Allegheny County line in Rostraver.

2. AUDIT PROCESS

The standard steps involved in a Road Safety Audit are:

Identify the Project

Candidates for Road Safety Audits are submitted to SPC by local municipalities, Counties, and PennDOT Districts. Candidates may include projects that are already in the design stage or may be in-service roads where safety is a concern. SPC reviews RSA candidate proposals and proceeds with setting up RSAs as manpower and budgetary constraints allow. Roadway owners must commit to documenting a formal response (see Step 7) prior to initiation of an RSA.

Select the RSA Team

SPC works with the roadway owner(s) to identify potential members for the independent, multi-disciplinary team. RSA teams typically consist of 3-5 members, with outside specialists consulted as needed. Team make-up typically includes 1-2 consultant members, 1 SPC staff person, and 1-2 PennDOT staff (from outside the District where the project is located). Prior to the on-site RSA activities, SPC collects and compiles relevant data (traffic volumes, maps, aerial photographs, crash data, previous studies, etc.) and provides a binder with this information to each of the RSA team members and to the roadway owner(s).

[1] Source: Federal Highway Administration - http://safety.fhwa.dot.gov/rsa/

Conduct a Start-up Meeting

The RSA team conducts a start-up meeting with the roadway owner(s) in order to identify the steps to be taken, review the schedule, and discuss any opportunities and/or constraints identified by the project owner(s). This is also the time for the project owner(s) to share any background information with the RSA team. Desirable information to be provided to the RSA team includes anecdotal crash history such as first responder experiences, potential changes in land use or travel patterns in the project area, public sentiment regarding the study location, and any known constraints.

Perform Field Reviews

The RSA team reviews the data provided by SPC and the project owner(s) and conducts multiple field views of the site (typically during AM and PM peak hours, an off-peak hour, and at night in order to see the site under different conditions). The RSA team drives and walks the site in order to identify geometric, operational, roadway user/human factors, and environmental issues.

Conduct RSA Analysis

Based on its field views, the information provided, consultation with specialists (if needed), and research into applicable design guidelines, the RSA team identifies and prioritizes safety issues within the project area and develops suggestions for enhancing safety.

Present RSA Findings to Project Owner

Once the RSA team has completed its analysis, it presents the findings to the roadway owner(s) in two phases:

- Preliminary Presentation – The RSA team conducts a meeting with the roadway owner(s) and presents its findings. This meeting is an opportunity to constructively discuss the issues and suggestions identified, and for the roadway owner(s) to provide feedback.
- Written Report – Following the preliminary presentation, the RSA team prepares a written report, incorporating roadway owner feedback as appropriate.

Prepare Formal Response

Upon receipt and review of the written report, the roadway owner(s) prepare a formal response (to the project file) documenting plans to address identified issues and reasons for not addressing other issues.

Incorporate Findings

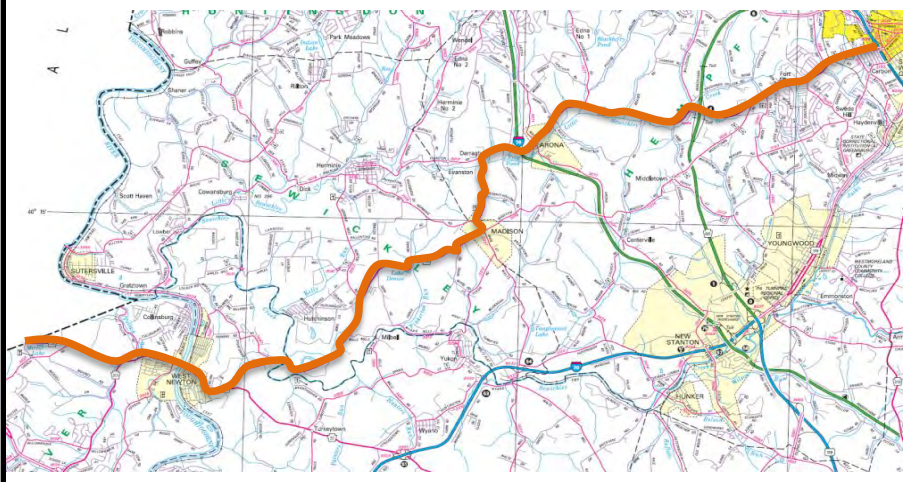
The roadway owner(s) implement improvements as outlined in the formal response.

The following page provides a summary of the RSA participants and schedule for this project.

Southwestern Pennsylvania Road Safety Audit Program

Roadway Owner Agency(s)	Roadway Owner Representatives
Rostraver Township	Tom Godzak, Roadmaster
West Newton Borough	
South Huntingdon Township	
Sewickley Township	Wanda Layman, Supervisor
Arona Borough	
Madison Borough	
Hempfield Township	Bruce Beitel, Asst. Township Manager Mike Volpe, Public Works Director
City of Greensburg	
PennDOT District 12-0	Robb Dean, P.E., District Traffic Engineer Cory G. Craft, District Safety Engineer Jay Ofsanik, Safety Press Officer

RSA Team Members	Agency	Role
Ross Buchan, P.E.	Gannett Fleming	Transportation Engineer
Mike Castellano, P.E.	Federal Highway Administration	Safety Engineer
Stan Cotchen	PennDOT District 10-0	Traffic Technician
Millie French, P.E.	French Engineering	Transportation Engineer
Melissa Furlong, P.E.	Federal Highway Administration	Transportation Engineer
Adam Marshall, P.E.	PennDOT District 10-0	Asst. Traffic Engr. - Safety
Doug Smith, P.E.	Southwestern Pennsylvania Commission	Transportation Planner

Location:	S.R. 136 from ALCO/WECO line to U.S. 30 Bypass Rostraver Twp, West Newton Boro, South Huntingdon Twp, Sewickley Twp, Arona Boro, Madison Boro, Hempfield Twp, City of Greensburg, Westmoreland County
	

Schedule	Date & Time	Location
Start-up Meeting	Tuesday, March 26, 2013, 10:00AM	Sewickley Twp Municipal Bldg
Preliminary Presentation	Thursday, March 28, 2013, 1:00PM	Sewickley Twp Municipal Bldg

Key Person Interviews	Agency / Affiliation	Phone Number
Tim Cook	PennDOT WECO Maintenance	
Dave Forkey	PennDOT WECO Maintenance	

3. OVERVIEW OF THE STUDY AREA

The study area for this RSA was the section of S.R. 136 from the Allegheny County-Westmoreland County line in Rostraver Township to the area of the U.S. Route 30 interchange in the City of Greensburg, which is approximately 18.7 miles. S.R. 136 is classified as a Minor Arterial and has Average Daily Traffic (ADT) of approximately 3,000-4,500 vehicles per day (vpd) through most of the corridor. Segments of S.R. 136 in West Newton and between Edna Road and Greengate Road in Hempfield Township have volumes in the 6,300-6,700 vpd range. Between Greengate Road and the U.S. 30 interchange the ADT jumps up to 11,000-12,500 vpd.

The speed limit is posted at 40 and 45 mph throughout most of the corridor but is reduced to 25 mph through West Newton, with 35 mph transition zones approaching town. There are 35 mph zones through Madison Borough, Darragh, and Arona Borough as well. Some rural curves have advisory speed warnings posted, and there is a reduced speed (and reduced gear) zone of 20 mph for trucks between Sportsmans Road and Fox Lane. Sportsmans Road, along with Plummer School Road, is heavily used by trucks because of a truck restriction on westbound S.R. 136 approaching West Newton (due to the steep grade and sharp curve above town). East of Whigham Road in Hempfield Township the posted speed is reduced to 35 mph, with a 15 mph school zone near the Hempfield school complex.

S.R. 136 is a two-lane roadway throughout most of the study area. There is a short section of four-lane cross-section near the Amos K Hutchinson Bypass (S.R. 66) toll road interchange, and there is a three-lane cross-section between Willow Crossing Road and South Greengate Road. There are four lanes in the vicinity of the U.S. 30 interchange as well. Signalized intersections include:

- Water Street / Riverside Drive in West Newton;
- 2nd Street in West Newton;
- Hempfield High School in Hempfield Township;
- Walton Tea Room Road / Baltzer Meyer Pike (S.R. 3097) in Hempfield Township;
- Willow Crossing Road (S.R. 3099) in Hempfield Township;
- Woodward Drive in Hempfield Township; and,
- Hamilton Street (S.R. 3103) in the City of Greensburg.

All-way stop-controlled intersections include:

- Herminie Road (S.R. 3016) in Madison Borough;
- Main Street (S.R. 3037) in Madison Borough;
- Arona Road (S.R. 3071) in Arona Borough; and
- Millersdale Road (S.R. 3079) in Hempfield Township.

Land use in the study area is generally Rural in nature with Town Center type development in West Newton and Suburban Corridor development between Walton Tea Room Road / Baltzer Meyer Pike and South Greengate Road (S.R. 3099) in Hempfield Township.* The school complex in Hempfield Township and the close proximity of this corridor to the heavily

*Refer to PennDOT Smart Transportation Guidebook section 4.2 Defining Land Use Context.

congested U.S. 30 corridor have major impacts on traffic patterns in the eastern half of the corridor.

Also of note are a major railroad crossing in downtown West Newton (on the east side of the Youghiogheny River) and the Great Allegheny Passage trail, which is a pedestrian bicycle trail connecting Pittsburgh and Washington, D.C. This trail also crosses S.R. 136 in West Newton (on the west side of the Youghiogheny River).

4. SAFETY HISTORY

PennDOT crash data indicates that there were 258 reportable crashes along S.R. 136 for the 5-year period from January 1, 2007 through December 31, 2011. (Reportable crashes are those that result in an injury or fatality, or where a vehicle is required to be towed from the scene. A detailed analysis of the crash data was provided in the RSA binder provided at the start-up meeting.) In addition to property damage and minor injuries, there were 44 moderate injuries, 11 major injuries, and 3 fatalities associated with these crashes.

Fixed object collisions (36%), Angle collisions (30%) and Rear Ends (21%) were the predominant crash patterns in the study area; however crash patterns were different in different parts of the corridor. As could be expected, run off the road fixed object collisions were clearly the predominant type of crashes in the rural, rolling portions of the corridor, while rear ends and angle crashes were prevalent in the more developed areas on the eastern end of the corridor.

The majority of crashes occurred during clear weather (78%), with dry pavement (70%), and in daylight conditions (64%), which is typical, although the proportion occurring during the day is somewhat lower than in other corridors where RSAs have been conducted. This could indicate that motorists have difficulty judging speeds, distances, and/or identifying the location of side streets and driveways when it is dark.

There were a few sections of the corridor that exhibited notable crash patterns:

- Segment 0020/0000-0040/0000 (between Salem Church Road and S.R. 201) – 7 of the 11 crashes in this section (64%) involved *Slippery Road (Ice/Snow)* conditions, *Too Fast for Conditions* driver actions, or *Overturn/Roll Over*.
- 2 of the 4 bicycle crashes in the corridor were in West Newton Borough, which is a Trail Town on the Great Allegheny Passage.
- Segment 0070/0921-0080/0000 (between Hill Street in West Newton Borough and S.R. 31) – 8 of the 15 crashes involving motorcycles (53%) occurred in this approximately ½ mile section, which contains a large curve and significant grade. These crashes included 2 Major Injuries and 1 Fatality.
- Segment 0270/1395-0290/0000 (between Whigham Road and Cribb Station Road) – 9 out of 10 crashes in this section were Hit Fixed Object or Head On crashes and 7 of 10 included *Slippery Road (Ice/Snow)* or *Substances on Roadway* conditions.
- There were 11 crashes at the intersection of Walton Tea Room Road and Baltzer Meyer Pike, 7 of which (64%) were Angle crashes.

- Segment 0330/0000-Segment0340/0000 (between Mohawk Drive and Willow Crossing Road) – 16 of 24 crashes in this section (67%) were Rear End crashes, including 1 Major Injury and 1 Fatality. 6 of the 24 crashes (25%) were Angle crashes.

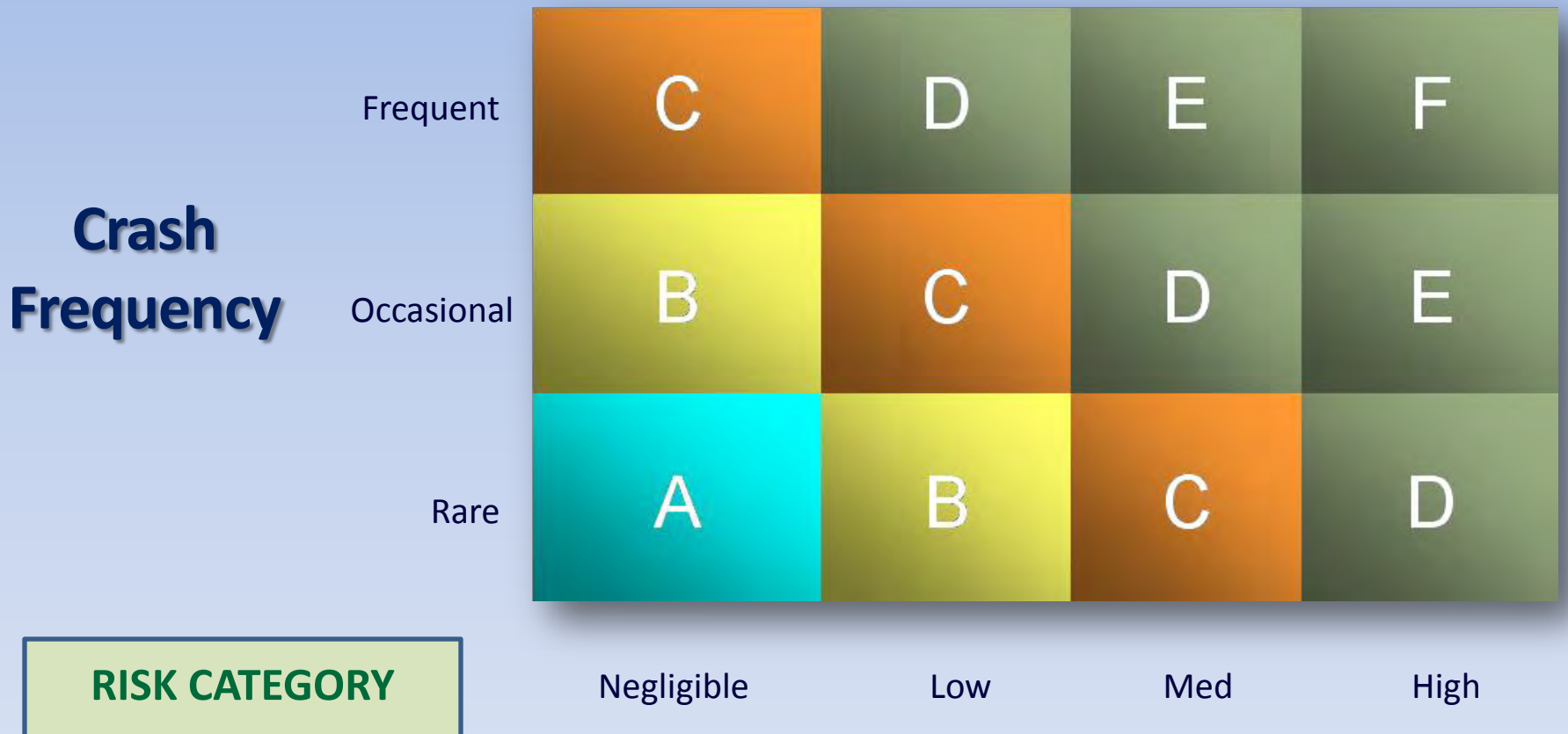
5. AUDIT FINDINGS

The following pages summarize the findings of the RSA team.

Safety Successes

- Centerline rumble strips in some locations
- Guiderail along some curves and steep banks
- Maintenance efforts to address drainage problem areas
- ADA upgrades in West Newton
- Red flasher at S.R. 136 / Main Street (S.R. 3037) / Madison Road (S.R. 3016) intersection
- Bus and auto traffic and parking separated at high school
- Signal spacing (not too close)

Evaluating Risk to Prioritize Safety Issues



RISK CATEGORY

A = Lowest priority

F = Highest priority

EXPECTED FREQUENCY	EXPECTED SEVERITY	RISK RATING	
Occasional	**Medium**	**Moderate-High**	**D**

OBSERVATION: Curve warning and advisory speed signage seems to be inconsistent along the corridor.

SUGGESTION:

- Evaluate significant horizontal and vertical curves and provide consistent signage and pavement markings including chevrons, arrow boards, speed warnings, supplemental pavement markings (slow curve), etc. where appropriate.

EXPECTED FREQUENCY	EXPECTED SEVERITY	RISK RATING	
Occasional	**Low**	**Moderate**	**C**

OBSERVATION: Guiderail installation and end treatments appear to be inconsistent throughout the corridor.

SUGGESTION:

- Review existing guiderail installations and upgrade end treatments as appropriate.
- Consider providing guiderail along curves where it does not currently exist.

CONSIDERATION:

- Adequate back-up needed on slope

EXPECTED FREQUENCY	EXPECTED SEVERITY	RISK RATING	
Rare	**Medium**	**Moderate**	**C**

OBSERVATION: The rolling terrain and rural nature of much of the corridor result in limited nighttime visibility. (25% of the crashes between 2007 and 2011 were in Dark conditions.)

SUGGESTION:

- Provide additional raised pavement markers (RPMs), flexible post delineators, and signage to increase nighttime visibility.

EXPECTED FREQUENCY	EXPECTED SEVERITY	RISK RATING	
Rare	**Medium**	**Moderate**	**C**

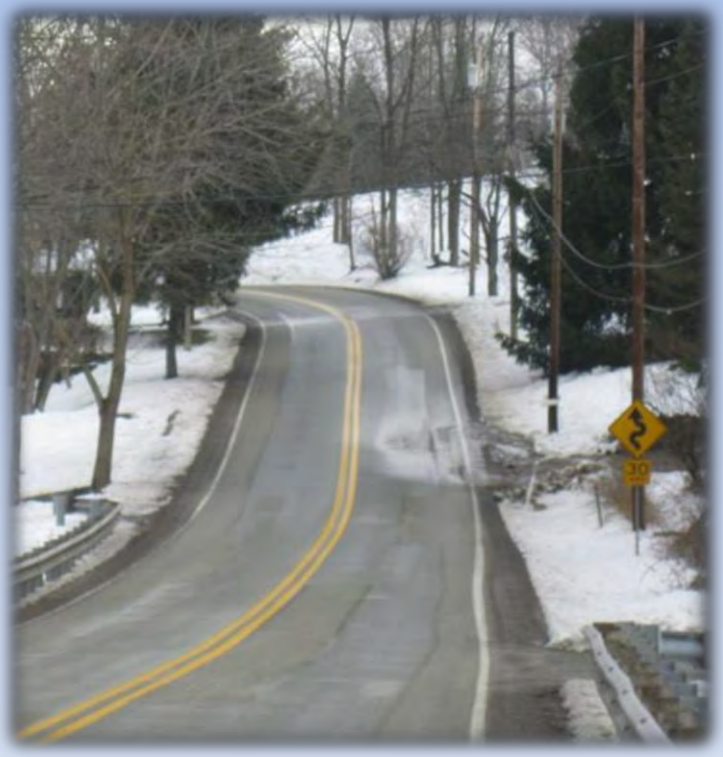
OBSERVATION: There are a large number of driveways (i.e. potential conflict points) in the two short designated passing zones.

SUGGESTION:

- Reevaluate passing zones and consider eliminating them.

EXPECTED FREQUENCY	EXPECTED SEVERITY	RISK RATING	
Occasional	**Medium**	**Moderate-High**	**D**

OBSERVATION: Inadequate drainage results in ponding on the roadway in certain areas and increases pavement deterioration.



SUGGESTION:

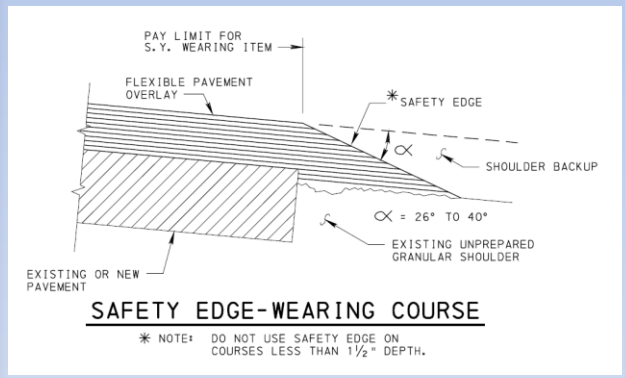
- Provide pavement base drain and other drainage improvements as part of future roadway reconstruction.

CONSIDERATION:

- Funding for adequate life cycle maintenance.

EXPECTED FREQUENCY	EXPECTED SEVERITY	RISK RATING	
Occasional	**Medium**	**Moderate-High**	**D**

OBSERVATION: Lack of shoulders and pavement deterioration along roadway edges results in pavement edge dropoffs in certain areas, leaving little or no room for motorists to correct if they go off the roadway.



SUGGESTION:

- Provide additional shoulder width and eliminate pavement edge dropoffs as part of future roadway reconstruction.
- Install edgeline rumble strips along with wider shoulders.

CONSIDERATION:

- Funding for adequate life cycle maintenance.

EXPECTED FREQUENCY	EXPECTED SEVERITY	RISK RATING	
Occasional	**Medium**	**Moderate-High**	**D**

OBSERVATION: Run off the road hit fixed object crashes are the predominant crash type in the rural sections of the corridor.

SUGGESTION:

- Provide additional sections of centerline rumble strips in order to discourage speeding and keep motorists in their lanes.

CONSIDERATION:

- Need adequate pavement conditions.

EXPECTED FREQUENCY	EXPECTED SEVERITY	RISK RATING	
Rare	**Medium**	**Moderate**	**C**

OBSERVATION: Horizontal and vertical alignment at the intersection of S.R. 136 and S.R. 201 create sight distance problems and precludes the use of these roadways as detour routes for S.R. 51 due to truck turning difficulties.

SUGGESTION:

- Add Intersection Ahead warning signage with advisory speed placards and intersection warning pavement markings.
- Consider intersection realignment.

CONSIDERATION:

- Right-of-way
- Utilities
- Cost

EXPECTED FREQUENCY	EXPECTED SEVERITY	RISK RATING	
Rare	**Medium**	**Moderate**	**C**

OBSERVATION: Roadway geometry and parked vehicles at local businesses create sight distance limitations for trail users and motorists.

SUGGESTION:

- Work with The Trail Side store to eliminate 2 parking spaces nearest the trail crossing.
- Raise western approach to the bridge as part of future bridge replacement in order to improve sight distances.

CONSIDERATION:

- Parking impacts on local business.

EXPECTED FREQUENCY	EXPECTED SEVERITY	RISK RATING	
Rare	**Medium**	**Moderate**	**C**

OBSERVATION: Trail crossing signage and pavement markings are faded and are not ideally placed to draw the attention of passing motorists.

Sign does not provide enough advance warning for a driver to react when traveling westbound

SUGGESTION:

- Refresh painted trail crossing.
- Consider use of thermoplastic or stamped asphalt to increase visibility of trail crossing.
- Provide supplemental advance warning of trail crossing.

EXPECTED FREQUENCY	EXPECTED SEVERITY	RISK RATING	
Rare	**Low**	**Moderate-Low**	**B**

OBSERVATION: Traffic signals at the railroad are not coordinated with the railroad crossing gates and ITS warning signs are not fully functioning.

SUGGESTION:

- Review and repair overhead LED blank out warning signs.
- Coordinate railroad crossing with S.R. 136 traffic signals to eliminate conflicting traffic controls (i.e. railroad preemption).

EXPECTED FREQUENCY	EXPECTED SEVERITY	RISK RATING	
Occasional	**High**	**High**	**E**

OBSERVATION: The large curve and down grade above (east of) West Newton has been the site of a high number of speed related motorcycle crashes.

SUGGESTION:

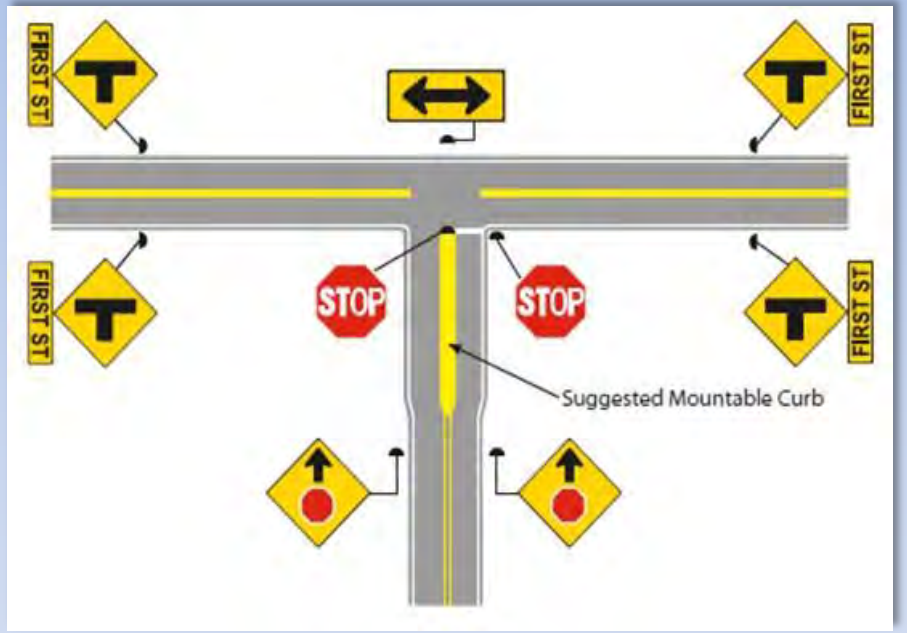
- Provide additional advance warning for motorcyclists.
- Improve drainage and investigate skid resistance. If warranted, apply a high friction surface course to curve.
- Reduce sign clutter on WB approach to curve.

CONSIDERATION:

- Consider ITS speed warning devices if lower cost solutions are not effective.

EXPECTED FREQUENCY	EXPECTED SEVERITY	RISK RATING	
Rare	**Medium**	**Moderate**	**C**

OBSERVATION: At the S.R. 31 / 136 intersection, drivers on S.R. 136 westbound do not always comply with existing traffic control, and lack of positive guidance results in conflicts between turning vehicles.



SUGGESTION:

- Provide supplemental pavement markings and signing on eastbound S.R. 136 and S.R. 31 to raise awareness of the intersection.
- Install bracketed stop signs and paint a stop bar on S.R. 136 westbound.

CONSIDERATION:

- Consider adding dedicated left and right turn lanes.

Location: S. Huntingdon Twp

S.R. 31 Intersection

EXPECTED FREQUENCY	EXPECTED SEVERITY	RISK RATING	
Rare	**Low**	**Moderate-Low**	**B**

OBSERVATION: In order to stay on S.R. 136, motorists must make a number of turns at stop-controlled intersections. It is easy to get off course if a motorist misses one of the guide signs.

SUGGESTION:

- Provide supplemental guide signage at intersections where the alignment takes significant turns.

EXPECTED FREQUENCY	EXPECTED SEVERITY	RISK RATING	
Rare	**Low**	**Moderate-Low**	**B**

OBSERVATION: Multi-way stops along the corridor can be unexpected resulting in stop sign running and potential for rear end crashes.

SUGGESTION:

- Provide additional advance intersection warning signs and supplemental pavement markings.

CONSIDERATIONS:

- Stop ahead signs and pavement markings.
- Advance intersection warning signs.
- Stop bars.

EXPECTED FREQUENCY	EXPECTED SEVERITY	RISK RATING	
Occasional	**Medium**	**Moderate-High**	**D**

OBSERVATION: High occurrence of wet / icy road crashes near Whigham Road. Pavement edge drops off in this area.

SUGGESTION:

- Improve drainage to reduce potential for icy road crashes.
- Provide improved shoulder to eliminate drop off condition.

EXPECTED FREQUENCY	EXPECTED SEVERITY	RISK RATING	
Rare	**High**	**Moderate-High**	**D**

OBSERVATION: Cribb Station Road is located in a sharp curve with limited sight distance. Crash history and pavement conditions indicate a potential drainage issue.

Cribb Station Road

SUGGESTION:

- Provide additional advance warning signage.
- Consider right-in/right-out turn restrictions for Cribb Station Road.
- Investigate drainage in curve.

EXPECTED FREQUENCY	EXPECTED SEVERITY	RISK RATING	
Rare	**Medium**	**Moderate**	**C**

OBSERVATION: Vehicles parked adjacent to S.R. 136 at the Log Cabin Tire business restrict sight distance for motorists exiting Edna Road.

SUGGESTION:

- Work with property owner to relocate parked vehicles adjacent to S.R. 136.

EXPECTED FREQUENCY	EXPECTED SEVERITY	RISK RATING	
Rare	**Medium**	**Moderate**	**C**

OBSERVATION: There are no sidewalks provided in the school campus area to connect the Middle and High Schools. Existing pedestrian facilities do not meet current ADA standards.

Example of ADA compliant pedestrian accommodations

SUGGESTION:

- Install sidewalks, curb lines, curb ramps, and other infrastructure to meet ADA requirements as other improvements are implemented.

CONSIDERATIONS:

- ADA improvements will need to be considered if a new project is planned that impacts sidewalk or curb lines, including resurfacing projects.

EXPECTED FREQUENCY	EXPECTED SEVERITY	RISK RATING	
Rare	**Medium**	**Moderate**	**C**

OBSERVATION: The skew of Middletown Road and close proximity to the High School intersection creates additional turning movement conflicts and unwanted cut-through traffic to avoid the signal at the High School.

SUGGESTION:

- Reconfigure the Middletown Road spur in order to restrict to northbound traffic (and right turns out) only.
- Construct left turn lanes on S.R. 136.
- Remove unnecessary guiderail surrounding dirt parking areas.

CONSIDERATIONS:

- Right of way
- Cost

Middletown Road Intersection

Location: Hempfield Twp

EXPECTED FREQUENCY	EXPECTED SEVERITY	RISK RATING	
Occasional	**Medium**	**Moderate-High**	**D**

OBSERVATION: Motorists were observed using the westbound right turn lane and shoulders at the Walton Tea Room / Baltzer Meyer intersection to weave around left turning vehicles queued on S.R. 136.

SUGGESTION:

- Provide eastbound and westbound left turn lanes along S.R. 136.

CONSIDERATION:

- Right-of-way
- Cost
- Consider a roundabout as a long-term solution

Location: Hempfield Twp

Walton Tea Room / Baltzer Meyer Intersection

EXPECTED FREQUENCY	EXPECTED SEVERITY	RISK RATING	
Rare	**High**	**Moderate-High**	**D**

OBSERVATION: Turning conflicts at the intersection of Mohawk Drive create the potential for angle crashes and rear ends at this unsignalized intersection .

Mohawk Drive

SUGGESTION:

- Install westbound left turn lane.

CONSIDERATIONS:

- Right-of-way

EXPECTED FREQUENCY	EXPECTED SEVERITY	RISK RATING	
Frequent	**Medium**	**High**	**E**

OBSERVATION: The number of side streets and driveways along S.R. 136 between Willow Crossing and Fosterville Road create numerous conflict points due to left turning traffic and vehicles exiting minor approaches.

SUGGESTION:

- Construct a TWLTL from Willow Crossing to Fosterville Road.

CONSIDERATION:

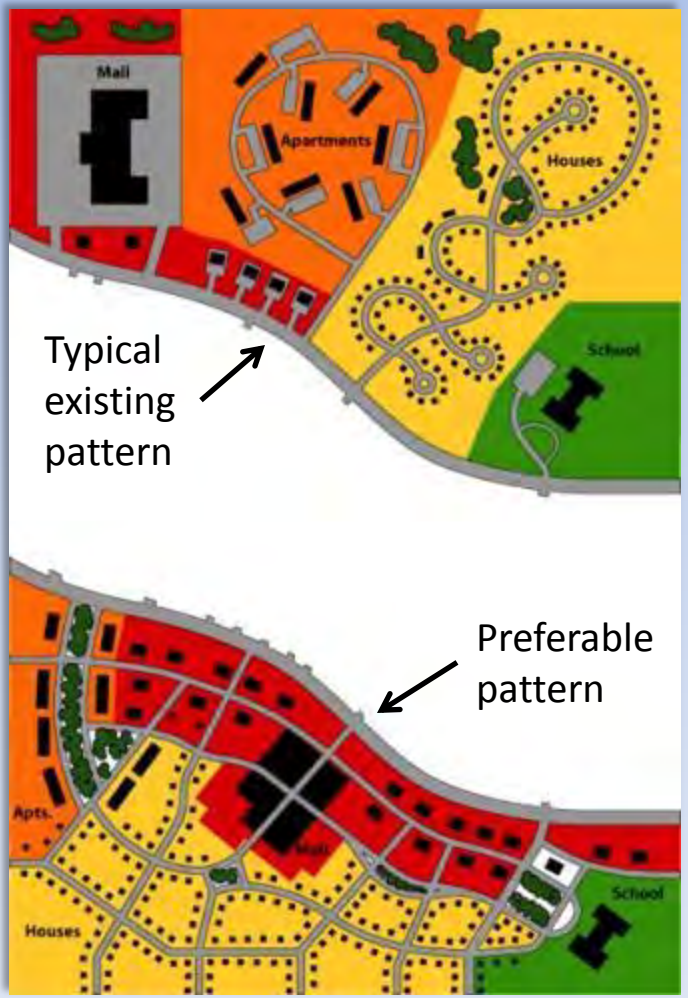
- Right-of-way
- Utilities
- Cost
- Provide left turn lanes at Fosterville Road if TWLTL is not feasible.

Location: Hempfield Twp

Fosterville Road to Willow Crossing

EXPECTED FREQUENCY	EXPECTED SEVERITY	RISK RATING	
Rare	**Low**	**Moderate-Low**	**B**

OBSERVATION: The lack of connectivity between adjacent properties results in additional turning movements from commercial driveways and increased traffic on S.R. 136.



Smart Transportation Concepts

SUGGESTION:

- Provide internal access connectivity and eliminate/combine driveways where feasible.

CONSIDERATIONS:

- Additional development / redevelopment could increase problems or could provide an opportunity to implement improvements.

EXPECTED FREQUENCY	EXPECTED SEVERITY	RISK RATING	
Rare	**Medium**	**Moderate**	**C**

OBSERVATION: The wide median along Woodward Drive and the location of the westbound left turn on S.R. 136 could result in motorists driving the wrong way down Woodward Drive. Pedestrian infrastructure at this intersection is also in need of repair.

SUGGESTION:

- Provide supplemental pavement markings (i.e. turkey tracks) to guide westbound left turns to the proper receiving lane.
- Repair/replace damaged pedestrian push buttons, faded crosswalks, and other pedestrian infrastructure.

EXPECTED FREQUENCY	EXPECTED SEVERITY	RISK RATING	
Occasional	**Medium**	**Moderate-High**	**D**

OBSERVATION: Left turning traffic at side streets and driveways along S.R. 136 between Greengate Road and U.S. 30 results in congestion and a predominance of rear end and angle crashes in this area.

SUGGESTION:

- Analyze traffic patterns in this area to determine where left turns could be restricted, one-way street operations could be established, and/or grid connections could be made.

CONSIDERATION:

- Consider additional traffic signal installations as needed.
- Sight distance limitations.

EXPECTED FREQUENCY	EXPECTED SEVERITY	RISK RATING	
Frequent	**Medium**	**High**	**E**

OBSERVATION: Short spacing between on/off-ramps and lack of lane designations along S.R. 136 creates numerous vehicle conflict points at the U.S. 30 interchange.

SUGGESTION:

- Restripe four lane cross section to provide eastbound left turn lanes through the interchange.
- Construct a roundabout on S.R. 136 west of U.S. 30 and stripe an eastbound left turn lane east of U.S. 30.

CONSIDERATIONS:

- Right of way
- Cost

Existing Interchange Configuration

Potential Lane Restriping

Potential Roundabout Alignment

EXPECTED FREQUENCY	EXPECTED SEVERITY	RISK RATING	
Rare	**Medium**	**Moderate**	**C**

OBSERVATION: Traffic signal equipment at the intersection of S.R. 136 and Hamilton Avenue is outdated and lane assignments are poorly marked (specifically the EB right lane drop). The lane marking sign on this approach is blocked by the S.R. 30 West and guide signage.

SUGGESTION:

- Conduct a traffic study to determine whether this signal is still warranted. If not, decommission the signal. If warranted, upgrade the signal equipment.
- Upgrade signing and markings.
- Consider turn restrictions and/or one way options for side streets.

CONSIDERATIONS:

- Improvements at this location should be coordinated with improvements at the interchange.

6. CONCLUSION

The road safety audit program is conducted to identify opportunities for improvements in safety for transportation system users. The safety issues identified during this audit and documented in this report, along with the outlined improvement strategies, should enhance the overall safety of the study area. The full impact of the improvement strategies will be realized when they are combined, but time and budget constraints may dictate when remedial strategies are implemented.

PennDOT and the municipalities have already deployed various safety enhancements in this corridor including centerline rumble strips, guiderail, advance warning signs, and a traffic signal flasher at a key 4-way stop-controlled intersection. As part of the audit, the following strategies were identified to continue to enhance safety:

Short-Range

- Provide consistent signage and pavement markings along significant curves and install additional curve warning and advisory speed signage as needed. (P)
- Review guiderail installations throughout the corridor and make upgrades to end treatments as appropriate. (P)
- Provide additional guiderail along curves as needed. (P)
- Install centerline raised pavement markers (RPM), flexible post delineators, guiderail delineators and/or other delineation to increase nighttime visibility, particularly at unsignalized intersections. (P)
- Reevaluate passing zones and consider eliminating them. (P)
- Provide additional sections of centerline rumble strips. (P)
- Install additional Intersection Ahead warning signage, advisory speed plaques, and intersection warning pavement markings on approaches to the S.R. 136 / S.R. 201 intersection. (P)
- Work with owners of the The Trail Side store to eliminate 2 parking spaces nearest the Great Allegheny Passage trail crossing. (P, M)
- Refresh the signage and pavement markings at the Great Allegheny Passage trail crossing. (M)
- Provide supplemental advance warning signage (WB on the “town side” of the bridge) of the Great Allegheny Passage trail crossing. (P)
- Review and repair overhead LED blank out warning signs at the railroad crossing in West Newton. (M)
- Coordinate the railroad crossing gates with S.R. 136 traffic signals to eliminate conflicting traffic controls. (M, P)
- Provide supplemental signage for motorcyclists on the large curve east of West Newton. (P)
- Improve drainage and investigate the skid resistance of pavement in the large curve east of West Newton. If warranted, apply a high friction surface course to the pavement. (P)

- Provide supplemental pavement markings and signage at the intersection of S.R. 31. (P)
- Provide additional advance intersection warning signs, supplemental guide signs, and enhanced pavement markings at intersections where the S.R. 136 alignments takes significant turns. (P)
- Improve drainage and shoulders to reduce pavement edge drop-off and run off the road crashes between Whigham Road and Cribb Station Road. (P)
- Provide additional advance warning signage near Cribb Station Road. (P)
- Consider right-in/right-out turn restrictions at Cribb Station Road. (P)
- Work with owners of the Log Cabin Tire business in order to relocate parked vehicles that block sight distance at the intersection of Edna Road. (P, M)
- Remove unnecessary guiderail in the area of Hempfield High School. (P)
- Provide supplemental pavement markings (i.e. "turkey tracks") to guide westbound left turning traffic into the proper receiving lane at the intersection of Woodward Drive. (M)
- Repair/replace damaged and worn pedestrian infrastructure at the intersection of Woodward Drive. (M)
- Restripe the four-lane cross section at the U.S. 30 interchange to provide an eastbound left turn lane and clarify existing lane assignments. Make adjustments to the islands and radii at the U.S. 30 eastbound ramps to reduce conflict points. (P)
- Conduct a traffic study to determine if the signal at Hamilton Avenue is still warranted. If it is, upgrade the traffic signal equipment. If it is not, remove the signal. (M)
- Upgrade signage and pavement markings at the intersection with Hamilton Avenue in conjunction with improvements at the U.S. 30 ramps. Consider turn restrictions and/or one way side street options in order to reduce conflict points at this intersection. (M, P)

Mid-Range

- Provide pavement base drain and other drainage improvements. (P)
- Provide additional shoulder width, edgeline rumble strips, and a "safety edge" as part of future roadway reconstruction in order to reduce run off the road crashes. (P)
- Install sidewalks, curb lines, curb ramps and other infrastructure to meet ADA requirements in and around the school complex in Hempfield Township. (M)
- Reconfigure the Middletown Road spur in order to restrict to one-way northbound traffic (right turn out) only and construct left turn lanes on S.R. 136. (P)
- Provide eastbound and westbound left turn lanes at the intersection of Walton Tea Room Road and Baltzer Meyer pike, or consider installation of a roundabout at this location. (P)
- Install a westbound left turn lane at the intersection of Mohawk Drive. (P)
- Construct a two-way left turn lane (TWLTL) between Willow Crossing Road and Fosterville Road. (P)
- Analyze traffic patterns in the area between Greengate Road and U.S. 30 to determine where left turns could be restricted, one-way street operations could be established, additional grid connections could be made, and/or additional traffic signals could be installed in order to improve side street access. (P)

- Ensure that local ordinances require traffic impact studies and consider multimodal mitigation alternatives as part of future proposed developments. (M)
- Work with property owners to eliminate and/or combine driveways whenever possible. Review local ordinances to ensure that access management principles are incorporated into any future developments. (M)

Long Range

- Consider realignment options at the intersection of S.R. 136 and S.R. 201. (P)
- Raise the western approach of the West Newton Bridge as part of future bridge replacement in order to improve sight distances. (P)
- Consider adding dedicated left and right turn lanes at the intersection of S.R. 136 and S.R. 31. (P)
- Construct a roundabout at the intersection of S.R. 136 and the U.S. 30 eastbound ramps. (P)