HOOPER ROAD CORRIDOR STUDY

BMTS
March 2020

A Traffic and Safety Operations Study was conducted for Hooper Road in 2002. That study included an analysis of traffic volumes, intersection crash rates, intersection level of service, traffic signal timing and roadway geometry. It included recommendations to improve performance and safety along Hooper Road.

The purpose of this current report is to provide an overview of progress toward implementing the 2002 study's recommendations. It further includes additional suggested safety countermeasures which may further improve traffic performance and safety along the corridor based upon current conditions. The report also analyzes potential traffic impacts of a new Susquehanna River crossing to the town of Vestal.

Implementation Progress

The 2002 Hooper Road Traffic Operations Study included 13 recommendations to address operational issues along the corridor. Most of these recommendations have been implemented (Table 1). Since the 2002 study the corridor has experienced an overall 3.39% increase in intersection crash rates per million entering vehicles (MEV) as traffic volumes have increased (see Appendix). This increase is primarily attributed to the Hooper Road / NY17C eastbound intersection where the crash rate increased by +3.09 MEV. Factoring out this intersection the crash rate increase along the corridor is significantly less at +0.3 MEV. The most significant crash rate decreases occurred at the Hooper Road / Prospect/Mary Street intersection where a traffic signal was added, and where pavement markings were corrected on the northbound approach to Smith Drive. Many of the accidents between 2015-2017 are rear end type which are typically attributed to congestion.

It is important to note that this study does not intend to specifically attribute the change in crash rates to specific improvements or lack thereof, since data has not been specifically collected for that level of analysis. However, the safety improvements that have been made are based upon best practices shown to improve safety. Therefore, it is likely that these improvements have had a positive impact on traffic operations and safety along the corridor.

Table 1: 2002 Implementation and change in Intersection Crash Rates 2002-2017

2002 Recommendations	Implemented Y/N	Comments	Change in Crash Rate/MEV 2002-2017
Immediate Actions			
Implement PM Peak period left turn restriction at Prospect Street	--	traffic signal added instead	-0.72
Retime signals at Country Club Road and Watson Boulevard to reduce conflicts for vehicles making left turns and to reduce delay and queue lengths	Yes	*signal at Watson to be replaced April 2020	Country Club +0.25 Watson +0.69
Retime signals at Pruyne Street and Smith Drive to improve arterial operations	Yes		Pruyne 0.16 Smith -0.43
Correct pavement markings on northbound approach to Smith Drive	Yes		-0.22
Coordinate with Maine-Endwell School District bus operations to move stops along arterial portion of Hooper Road			N/A
Delineate a center two-way left turn lane between Country Club Road and Watson Boulevard	No	Accident rate down at Lott, Rath, Hoover	
Install pedestrian signals at signalized intersections	Partial		
Near Term Actions			
Determine need for and feasibility of additional improvements at Prospect Street	Yes	Signal added	-0.72

Construct southbound right turn lane on Hooper Road at Country Club	Yes		+0.25
Construct median barrier on ramp to/from NY Route 17C eastbound	No		3.36
Street lighting improvements at and near Taft Avenue	Yes		0.27
Long Term Actions			
Signal coordination			
Evaluate NY17C westbound off-ramp to Hooper Road	Yes	Alignment updated, signage and pavement markings added	+0.32

Current Safety Conditions along Hooper Road

Accident data from January 2015 through December 2017 was acquired from NYSDOT's Accident Location Information System (Table 2). Highlighted entries are indicative of high collision frequency. Where intersection collision rates exceed typical statewide averages for similar facilities potential safety countermeasures have been identified that may be implemented to improve safety along the corridor. Note that many of the accidents are rear end type typically attributed to congestion not traffic engineering issues.

TABLE 2: HOOPER RD INTERSECTION CRASH ANALYSIS

CROSS STREET	TOTAL CRASHES	ENTER VOLUME	RATE/ MEV	REAR END	LEFT TURN	RIGHT ANGLE	RIGHT TURN	OVER TAKE	HEAD ON	OTHER/ ANIMAL	BIKE/ PED	Injuries	Expected Average Crash Rate	>Actual Average?	>2xActual Average	How many x avg?
TAFT	8	12308	0.59	3	4					1		1	0.18	yes	yes	3.30
NORTHWOOD	2	6750	0.27		1						1	1	0.29	no	no	
PLEASANT	3	9015	0.30	1	1					1		1	0.18	yes	no	
PLAZA/MANOR	2	9240	0.40	2								0	0.29	no	no	
FARM-TO-MARKET	12	14500	0.76	7	3			1	1			5	0.14	yes	yes	5.40
PHEASANT	4	15170	0.24	1		1	1				1	2	0.18	yes	no	
PRUYNE	17	16580	0.94	13	2		1	1				1	0.14	yes	yes	6.69
SMITH	7	17105	0.37	6							1	0	0.14	yes	yes	2.67
ROYAL	2	16340	0.11							1	1	1	0.18	no	no	
COUNTRY CLUB	19	21030	0.83	10	4	1		3			1	5	0.25	yes	yes	3.30
BEATRICE	1	15040	0.06	1								1	0.18	no	no	
LOTT	0	15060	0.00									0	0.18	no	no	
RATH	2	15040	0.12	2								1	0.18	no	no	
HOOVER	2	15040	0.12	2								1	0.18	no	no	
PAYNTER	1	15010	0.06	1								0	0.18	yes	no	
WATSON	27	22080	1.12	19	2	2	2	1		1		7	0.25	yes	yes	4.47
PROSPECT/ MARY	3	19550	0.14	1			1	1				0	0.52	no	no	
NY17C WB	8	9890	0.74	5	2		1					2	0.17	yes	yes	4.35
NY17C EB	24	6036	3.63	24								2	0.17	yes	yes	21.36

SAFETY COUNTERMEASURES

In 2008, the Federal Highway Administration (FHWA) began promoting certain infrastructure-oriented safety treatments and strategies chosen based on proven effectiveness and benefits. These treatments and strategies, referred to as safety countermeasures, have been proven to reduce serious injuries and fatalities. A full list of FHWA countermeasures can be found at: https://safety.fhwa.dot.gov/provencountermeasures/fhwasa18029/fhwasa18029v2.pdf

Based upon the crash history, traffic volumes, existing roadway geometry and signage along the corridor the following safety countermeasures were identified for possible implementation.

Corridor Wide

- Implement Access Management techniques.
    - Managing access by defining the location, number, spacing and design of access points from private properties to streets can reduce conflicts between turning vehicles, through traffic, pedestrians and cyclists.

All stop-controlled signalized intersections

Many of the accidents along the corridor are rear-end type which are generally attributed to congestion. Further, alternating lane configurations may be contributing to driver confusion. The following safety countermeasures are recommended at all signalized intersections to improve driver awareness and to improve operations:

- Add Backplates with Retroreflective Borders on all signal heads
    - Signal heads that have backplates equipped with retroreflective borders are more visible and conspicuous in both daytime and nighttime conditions, which is also helpful to older drivers. (Federal MUTCD)
- Add signal visors to each traffic light to obstruct the view of drivers of signal operations in opposing travel lanes.
- Review and adjust as necessary Yellow Clearance Intervals for all traffic lights.
    - Improve signalized intersection safety and reduce red-light running by reviewing and updating traffic signal timing policies and procedures concerning the yellow change interval. Agencies should institute regular evaluation and adjustment protocols for existing traffic signal timing. Refer to the Manual on Uniform Traffic Control Devices for basic requirements and further recommendations about yellow change interval timing.
- Install overhead lane configuration signs at all intersections.
    - These signs would be attached to the same wires as the traffic lights. An analysis of the load capacity of the wires would be necessary to ensure that they can accommodate signage.

Hooper Road Segment between Watson and Pruyne

- Conduct a Road Safety Assessment (RSA)
    - An RSA is a formal performance examination of a transportation facility by an independent, qualified multidisciplinary team. An assessment team would be assembled by BMTS to conduct a walking audit of this segment of the corridor. The team would be tasked with identifying opportunities for safety improvements during the walking audit.

Taft

No clear accident pattern identified.

- Maintain pavement marking in state of good repair.
- Monitor speed of vehicles traveling along Taft Avenue.

Farm to Market

No clear accident pattern identified.

- A protected left turn was evaluated based on guidance from the ITE Traffic Control Devices Handbook 2nd edition. The number of crashes, traffic volume, sight distance and delayed were used as inputs in determining the need for a potential left turn phase. Based on the ITE guidance a protected southbound left turn is not needed.
- Update Pedestrian Crossing sign located along southbound Hooper Road north of Farm to Market to be consistent with MUTCD.

Pruyne/Smith

Primarily rear end accidents due to congestion attributed to the proximity of these signalized intersections. The transition between the lane configurations in the northbound direction may also contribute to driver confusion. Difficult to mitigate due to roadway geometry.

- Add pedestrian accommodations.

Country Club

Primarily rear end accidents due to congestion.

Watson

Primarily rear end accidents due to congestion. A new traffic signal is scheduled to be installed in late Spring 2020 at this intersection which should alleviate congestion.

Hooper and 17C Eastbound

Rear end accidents are occurring nearly exclusively along Hooper where it intersects 17C eastbound. Implementation of any potential safety measures would be the responsibility of NYSDOT.

- Consider double right turn and possible signal timing changes to be evaluated by NYSDOT. The critical time period is the morning peak hour.

Hooper and 17C Westbound

Accidents are occurring primarily because the prohibition against left turns from the Hooper Road ramp onto 17C is not been adhered to. Implementation of any potential safety measures would be the responsibility of NYSDOT.

- Doubled up (left and right), oversized “No Left Turn” warning signs.
- Potentially install candlesticks to prevent illegal left turns from ramp.

Existing and Future Traffic Operations, including a new Susquehanna River Crossing

Synchro was used to perform a capacity analysis of existing and future (+20 years) traffic operations along the corridor. PM peak traffic counts where used to conduct the analysis because they represent the worst-case traffic scenarios along the corridor. Current signal timings were used for existing and future operations. See Attachment A for a complete readout of the analysis. A summary follows.

The Highway Capacity Manual quantifies the quality of traffic flow in terms of levels of service (LOS). There are six levels of service, with LOS A indicating the shortest traffic delays and LOS F indicating the longest traffic delays associated with congestion. Synchro indicates that the signalized intersections in the study area are currently operating at LOS C or better during PM peak hours, with the exception of Pruyne/Hooper and westbound Watson/Hooper with a LOS of D. LOS of D or better is generally considered acceptable.

Future operations were analyzed under the following three scenarios:

- Existing +20 years PM Peak (Future)
- Future PM Peak with Susquehanna River Bridge crossing without RT17 access
- Future PM Peak with Susquehanna River Bridge crossing with RT17 access

Synchro indicates that there would be little to no change from existing operating conditions under each of these scenarios. This is likely because the corridor is built out with little room for future large-scale developments that would significantly increase traffic. The addition of a new river crossing would have minimal impact on traffic operations along the corridor. Hooper Road primarily acts as a collector for the surrounding residential areas and adjacent land uses. Therefore, it would not likely experience an increase in traffic as a result of a new bridge because the number trips generated from the surrounding land uses would not be greatly affected by a change in access to Vestal. Further, the model did not indicate that a new bridge crossing would generate new trips to the Hooper Road corridor. The model did indicate that a new bridge crossing would reduce future PM peak traffic on NY 201 and Route 26 as follows:

Future PM Peak Traffic Change:

Without Connection to Route 17		**With Connection to Route 17**	
Route 201	-8%	Route 201	-12%
Route 26	-17%	Route 26	-26%

Conclusion

The corridor continues to experience congestion which contributes to safety impacts. The implementation of additional safety countermeasures identified in this report could contribute to improved safety and traffic operations. The addition of a new river crossing to Vestal would have minimal impact on traffic operations along the corridor but may reduce traffic on Route 201 and Route 26.

Cover photo: **An aerial view of Endwell, named after H. Wendell Endicott, around 1960.** *(Photo: Broome County Historical Society photo)*

Appendix A - PEAK TRAFFIC VOLUMNS 2002 AND 2017

Watson	**EASTBOUND**			**WESTBOUND**			**NORTHBOUND**			**SOUTHBOUND**		
	LEFT	**THRU**	**RIGHT**	**LEFT**	**THRU**	**RIGHT**	**LEFT**	**THRU**	**RIGHT**	**LEFT**	**THRU**	**RIGHT**
PM Peak 2002	75	150	200	50	125	50	225	700	50	50	500	50
PM Peak 2017	137	247	307	64	283	64	556	1276	90	70	1047	121
	EASTBOUND			**WESTBOUND**			**NORTHBOUND**			**SOUTHBOUND**		
	LEFT	**THRU**	**RIGHT**	**LEFT**	**THRU**	**RIGHT**	**LEFT**	**THRU**	**RIGHT**	**LEFT**	**THRU**	**RIGHT**
AM Peak 2002	25	75	250	25	50	25	100	300	25	25	675	50
AM Peak 2017	69	154	386	59	117	44	174	726	36	45	1414	73
Farm to Market	**EASTBOUND**			**WESTBOUND**			**NORTHBOUND**			**SOUTHBOUND**		
	LEFT	**THRU**	**RIGHT**	**LEFT**	**THRU**	**RIGHT**	**LEFT**	**THRU**	**RIGHT**	**LEFT**	**THRU**	**RIGHT**
PM Peak 2002	-	-	-	225	-	50	-	450	300	25	350	-
PM Peak 2017	-	-	-	336	2	70	3	994	432	65	594	3
	EASTBOUND			**WESTBOUND**			**NORTHBOUND**			**SOUTHBOUND**		
	LEFT	**THRU**	**RIGHT**	**LEFT**	**THRU**	**RIGHT**	**LEFT**	**THRU**	**RIGHT**	**LEFT**	**THRU**	**RIGHT**
AM Peak 2002	25	75	250	25	50	25	100	300	25	25	675	50
AM Peak 2017	69	154	386	59	117	44	174	726	36	45	1414	73
Pruyne	**EASTBOUND**			**WESTBOUND**			**NORTHBOUND**			**SOUTHBOUND**		
	LEFT	**THRU**	**RIGHT**	**LEFT**	**THRU**	**RIGHT**	**LEFT**	**THRU**	**RIGHT**	**LEFT**	**THRU**	**RIGHT**
PM Peak 2002	-	-	-	150	-	25	-	775	125	25	550	-
PM Peak 2016	-	-	-	328	2	63	2	1880	306	30	1348	2
	EASTBOUND			**WESTBOUND**			**NORTHBOUND**			**SOUTHBOUND**		
	LEFT	**THRU**	**RIGHT**	**LEFT**	**THRU**	**RIGHT**	**LEFT**	**THRU**	**RIGHT**	**LEFT**	**THRU**	**RIGHT**
AM Peak 2002	-	-	-	100	-	5	-	400	100	25	725	-
AM Peak 2016	-	-	-	218	1	40	4	759	206	39	1520	4

Smith	**EASTBOUND**			**WESTBOUND**			**NORTHBOUND**			**SOUTHBOUND**		
	LEFT	**THRU**	**RIGHT**	**LEFT**	**THRU**	**RIGHT**	**LEFT**	**THRU**	**RIGHT**	**LEFT**	**THRU**	**RIGHT**
PM Peak 2002	50	-	50	-	-	-	125	850	-	-	650	50
PM Peak 2016	90	-	86	-	-	-	115	1833	12	0	1447	87
	EASTBOUND			**WESTBOUND**			**NORTHBOUND**			**SOUTHBOUND**		
	LEFT	**THRU**	**RIGHT**	**LEFT**	**THRU**	**RIGHT**	**LEFT**	**THRU**	**RIGHT**	**LEFT**	**THRU**	**RIGHT**
AM Peak 2002	50	-	50	-	-	-	50	450	-	-	725	100
AM Peak 2016	53	-	98	-	-	-	52	954	-	-	1571	67
Country Club	**EASTBOUND**			**WESTBOUND**			**NORTHBOUND**			**SOUTHBOUND**		
	LEFT	**THRU**	**RIGHT**	**LEFT**	**THRU**	**RIGHT**	**LEFT**	**THRU**	**RIGHT**	**LEFT**	**THRU**	**RIGHT**
PM Peak 2002	300	125	125	50	125	125	200	550	50	75	425	200
PM Peak 2015	410	220	261	57	236	159	332	852	27	154	749	289
	EASTBOUND			**WESTBOUND**			**NORTHBOUND**			**SOUTHBOUND**		
	LEFT	**THRU**	**RIGHT**	**LEFT**	**THRU**	**RIGHT**	**LEFT**	**THRU**	**RIGHT**	**LEFT**	**THRU**	**RIGHT**
AM Peak 2002	200	75	175	50	75	50	75	250	25	50	525	200
AM Peak 2015	301	155	410	64	117	95	241	503	27	176	923	289
Prospect	**EASTBOUND**			**WESTBOUND**			**NORTHBOUND**			**SOUTHBOUND**		
	LEFT	**THRU**	**RIGHT**	**LEFT**	**THRU**	**RIGHT**	**LEFT**	**THRU**	**RIGHT**	**LEFT**	**THRU**	**RIGHT**
PM Peak 2002	5	0	5	30	-	70	10	900	90	40	700	10
PM Peak 2015	10	15	9	37	13	22	18	2019	28	10	1495	19
	EASTBOUND			**WESTBOUND**			**NORTHBOUND**			**SOUTHBOUND**		
	LEFT	**THRU**	**RIGHT**	**LEFT**	**THRU**	**RIGHT**	**LEFT**	**THRU**	**RIGHT**	**LEFT**	**THRU**	**RIGHT**
AM Peak 2002	5	0	10	5	-	15	5	415	20	20	925	5
AM Peak 2015	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data	no data
NY 17C Ramps	**EASTBOUND**			**WESTBOUND**			**NORTHBOUND**			**SOUTHBOUND**		

	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT
PM Peak 2002	-	750	350	-	650	-	-	-	500	-	-	-
PM Peak 2012	-	1214	484	-	1166	-	-	-	917	-	-	-
	EASTBOUND			**WESTBOUND**			**NORTHBOUND**			**SOUTHBOUND**		
	LEFT	**THRU**	**RIGHT**	**LEFT**	**THRU**	**RIGHT**	**LEFT**	**THRU**	**RIGHT**	**LEFT**	**THRU**	**RIGHT**
AM Peak 2002	-	600	200	-	500	-	-	-	800	-	-	-
AM Peak 2012	7	927	266	-	690	-	-	-	1606	-	-	-