

Crash Avoidance System

Rural ITS Application for Intersections with Restricted Sight



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Crash Avoidance System

PA 38 / PA 138 / SR 1004

Village of North Washington



PA 38 / SR 1010

Village of Hooker





BUTLER COUNTY'S DAILY NEWSPAPER

Review finds missing \$60,000

KRIS MILLER
Staff Writer

IPPERY ROCK financial review in September only missing \$60,000 in the first seven months of 1999. The review of the borough's financial records revealed a discrepancy of \$60,000 missing from the records.

After this report, the borough council requested a more extensive investigation of the records. That second report at the end of December revealed \$60,000 missing from the funds.

At that time, borough council members announced they turned over this matter to the police to investigate. The council issued a statement saying Kay would cooperate with the borough to determine what happened to the missing funds.

He Hartzel, a certified public accountant in Allentown, did the September report. He is in it that the report is not an audit and the firm was not asked to conduct an audit.

Probable missing \$60,000 goes on

The review of Kay's pay was done, and all payments to her were proper except three: On a paycheck dated Feb. 1, 1999, Kay was paid for six hours of overtime not listed on her time sheet. Kay was also paid for 2.5 hours of time when only 1.5 hours were listed on an April 26, 1999, pay check. On a paycheck dated June 7, 1999, Kay was paid for 64 regular hours when there were 62 hours listed on the time sheet.

Auditors also were unable to locate Kay's pay rate approved in the personnel file. ■ Compared cash receipts from District Justice Clifford Weeger with the borough financial records. They all matched except one dated March 2, 1999, that could not be tied into a deposit.

There were two deposits that could have contained this particular receipt, but there was no detail for the deposit so this couldn't be verified.

■ Checked cash receipts from the police department against borough financial records.

All records were proper except for two police department receipts that could not be tied to the general ledger. They were for \$1,157 and \$696, dated Feb. 12 and March 16, 1999, respectively.

Two other receipts, for \$1,145 and \$629, dated March 15 and March 18, 1999, respectively, had no detail or what they were for from the department.

■ Reviewed a sample of disbursements. All disbursements were verified except for three checks that were written without being listed

on an invoice made to: March; B Taylor Er

■ All c financial

■ Mont council records w

■ Chec ments to records.

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always se many det with fina

YOUTHS DRIVE FOR ROAD SAFETY



3 of hero over

Citation Cranbe

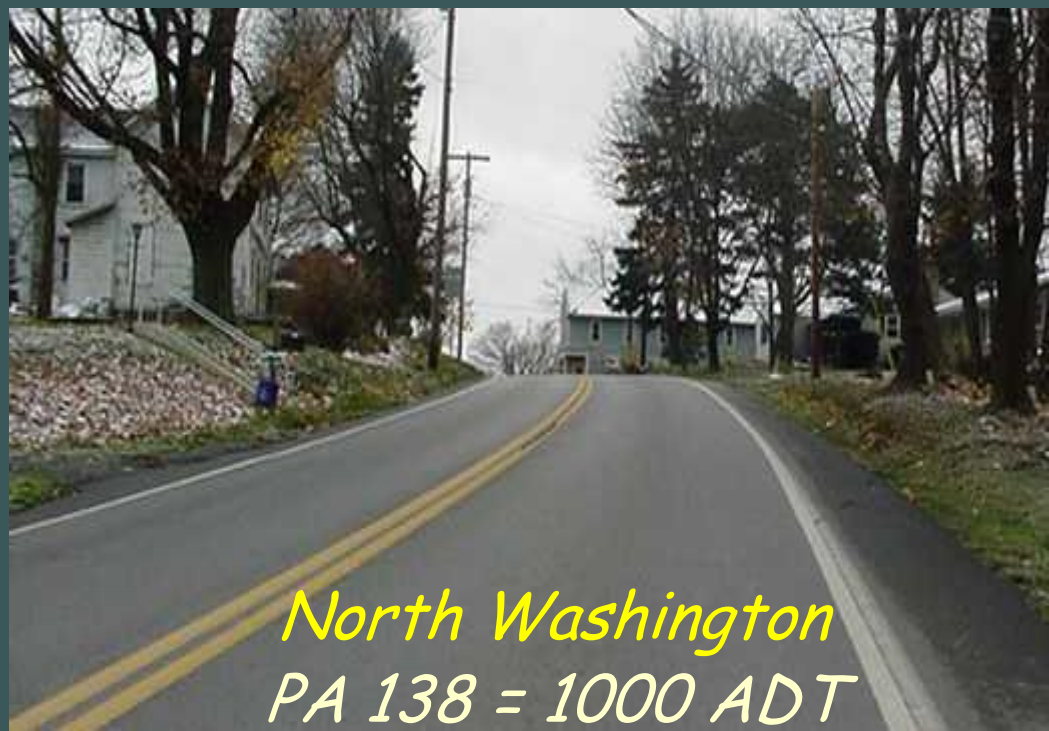
By BOB SCHULTZ
Eagle Staff Writer

CRANBERRY T of its police office recent events that into the world.

The first preser Thursday night ho William Ahlgren, 3 who collapsed from

Both
intersections are
on vertical curves
that restrict
sight distance

PA 38 = 4100 ADT



Hooker Intersection



Eastbound, Looking Left & Right

Hooker Intersection



Westbound, Looking Left & Right

North Washington Intersection

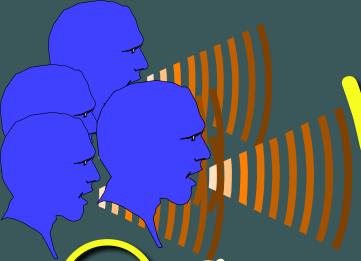


Eastbound, Looking Left & Right

North Washington Intersection



Westbound, Looking Left & Right



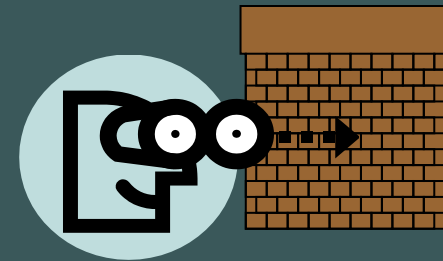
What the community told us...

- ☹️ Concerned for safety !!!
- ☹️ Vehicles are speeding
- ☹️ Garbage trucks speeding



☞ **Company names**

☹️ Restricted sight distance



☹️ Need to pull up into the intersections to see



☹️ School buses using intersection(s)





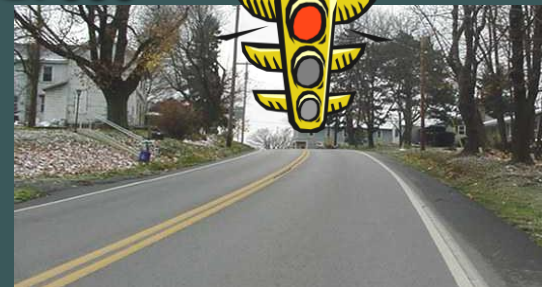
What was discussed...



Traffic signal?

Not sound judgment!...

On hill, Low volumes



Convex mirror?

Been there, Done that!



Reconstruct road?

Costly...and will wipe out the community!



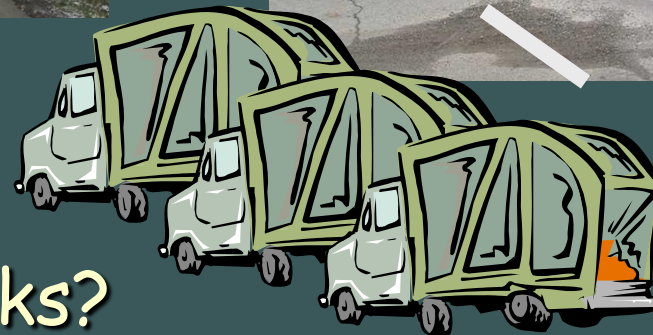
Improve pavement markings?

Did it...Not enough!



Ask haulers to slow their trucks?

Did it...Not enough!



Lowering the 35mph speed limit?

Won't work!



State Police assistance?

Did it...Not enough!



What was discussed...

Special ITS signing?

- Fred Hanscom, PE, FHWA, ITS 2000, Boston
- Evaluation of signs in Virginia

From side road

On mainline



TRAFFIC
AHEAD

25
M.P.H.

Side Road sign activates when mainline traffic is approaching from either direction



Mainline sign activates when traffic is entering from either side road direction or stopped at intersection

Crash Avoidance System Facts

✓ First installed in US in Virginia

✓ Signs made in France
Cost beaucoup Francs !



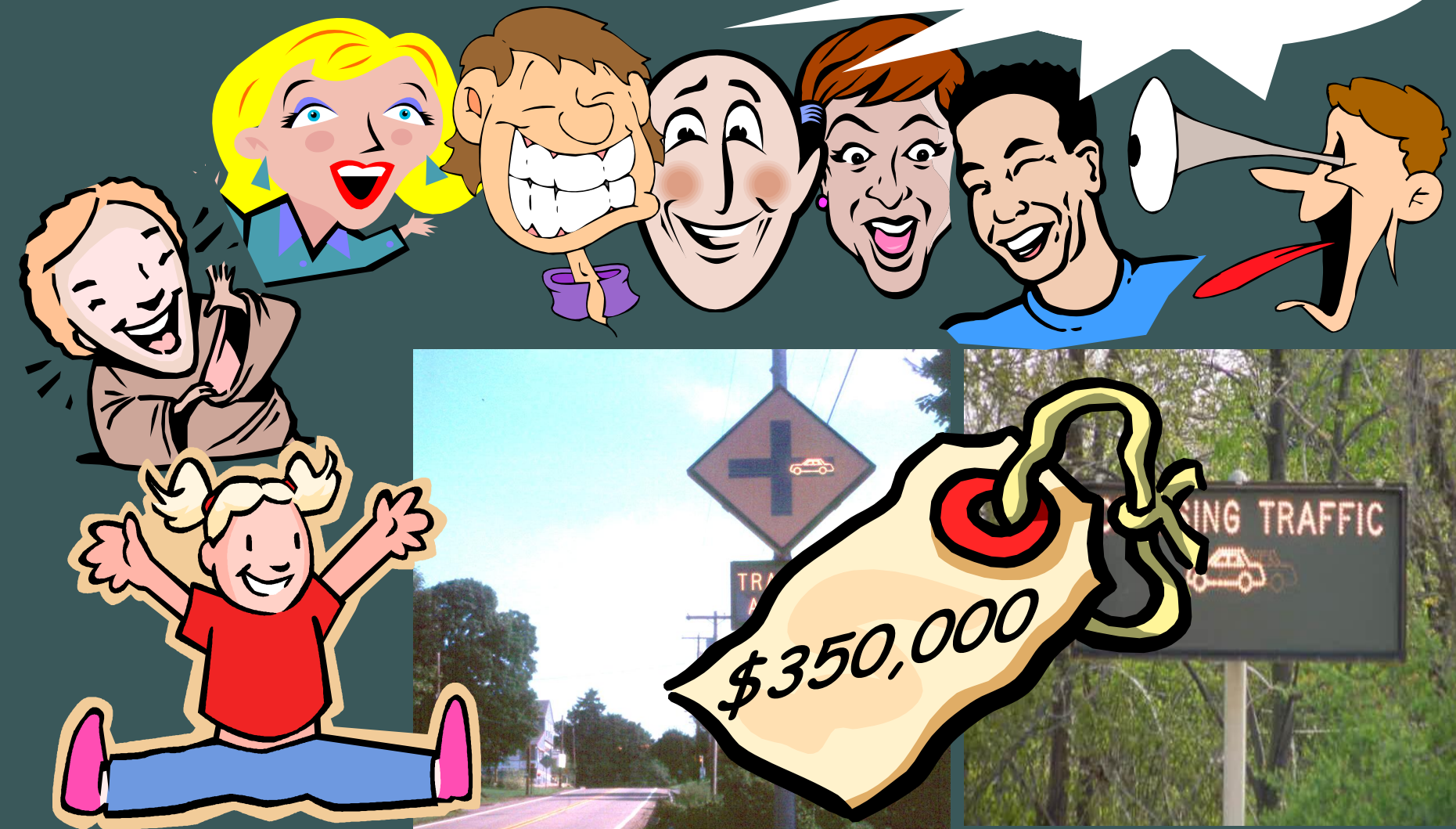
✓ Before / After Study Results:

<u>Measure</u>	<u>Before</u>	<u>Acclimation Period</u>	<u>After</u>
<i>Exceeding 45mph</i>	61%	19%	40%
<i>Exceeding 55mph</i>	2.8%	0.8%	2.6%
<i>>45mph - activated</i>	12.1%	3.0%	0.7%
<i>55mph - activated</i>	2.1%	0.3%	0.0%
<i>Crashes</i>	20+	0	0



What was discussed...

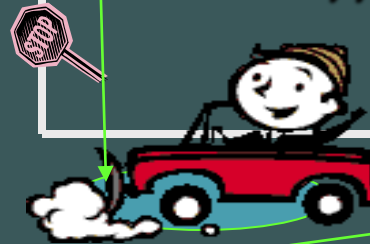
Special ITS signing? **GREAT IDEA!**



Pulse loops detect approaching traffic, calculate speeds, and activate side road signs according to speeds



Presence loops detect traffic and advise mainline drivers of cross traffic



Pulse loops identify approaching traffic, calculate speeds, and consider traffic that may enter driveways



Presence loops on
mainline detect
traffic and advise
mainline drivers of
possible stopped
traffic



Crash Avoidance System Facts

✓ No other installation is known to exist

✓ BHSTE acquired 140 funds



✓ Designed by Trans Associates, Pittsburgh, for \$520,000

➤ Includes all systems

Costs should be much less

Contract to Post Construction, New York, 2001 for \$370,000

✓ Path Master supplied 170 Controller

✓ McCauley developed software

✓ Provides modem



✓ Placed on line in November, 2003



Crash Avoidance System Facts



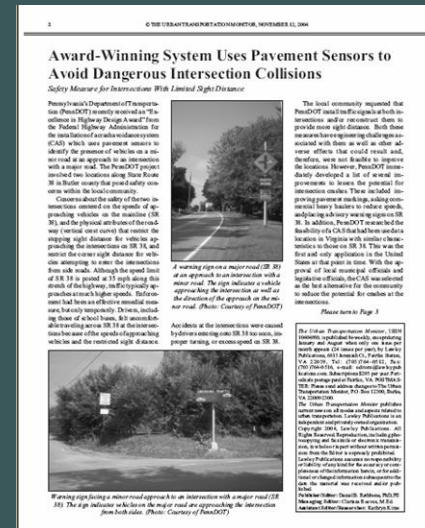
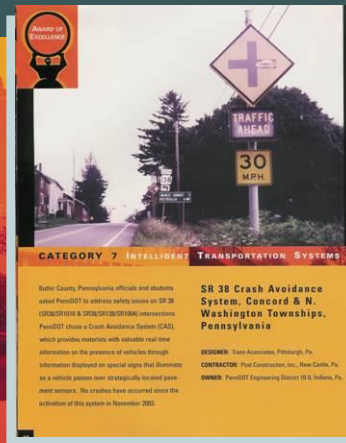
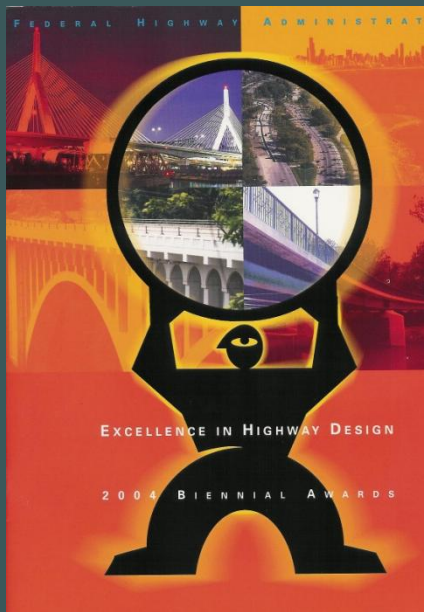
- ✓ Maintained by PennDOT
 - Fail safe - All signs flash continuously
 - Butler County stockpile nearby to monitor
 - Electrical contractor on call 24X7 @ \$2,000/mo.
 - ▲ Minor repairs needed by electrical contractor twice
 - ▲ Includes cleaning every 3 months
- ✓ Risk management concerns
 - Malfunctions?
 - Placing faith in an electrical device?
- ✓ Uses a lead-acid battery back-up
- ✓ Rightsizing & engineering success!
Community remains extremely pleased!



Crash Avoidance System Facts

✓ Awards:

★ 2004 FHWA Excellence in Highway Design - ITS



★ 2004 PPHQ Award - Safety

★ 2004 Diamond Award nominee

★ Urban Transportation Monitor Feature

Crash Avoidance System Evaluation



Hooker Intersection

<u>Measure</u>	Before	2 Weeks After	2 Months After	2 Years After
85 th Percentile: <u>non-activated</u>	47mph	48 mph	42 mph	51 mph
85 th Percentile: <u>activated</u>		45 mph	41 mph	46 mph

North Washington Intersection

<u>Measure</u>	Before	2 Weeks After	2 Months After	2 Years After
85 th Percentile: <u>non-activated</u>	42mph	No data	46 mph	49 mph
85 th Percentile: <u>activated</u>		40mph	37 mph	43 mph

Crash Avoidance System Evaluation

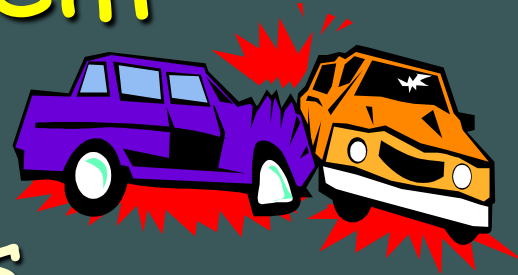


Speeds at Both Intersections

Measure	Before	2 Months After	2 Years After
<i>Exceeding 35 mph</i>	66%	34%	59%
<i>Exceeding 45 mph</i>	17%	4%	11%
<i>Exceeding 50 mph</i>	9.2%	1.2%	4%*

* Actual values are: Hooker = 0%
North Washington = 8%

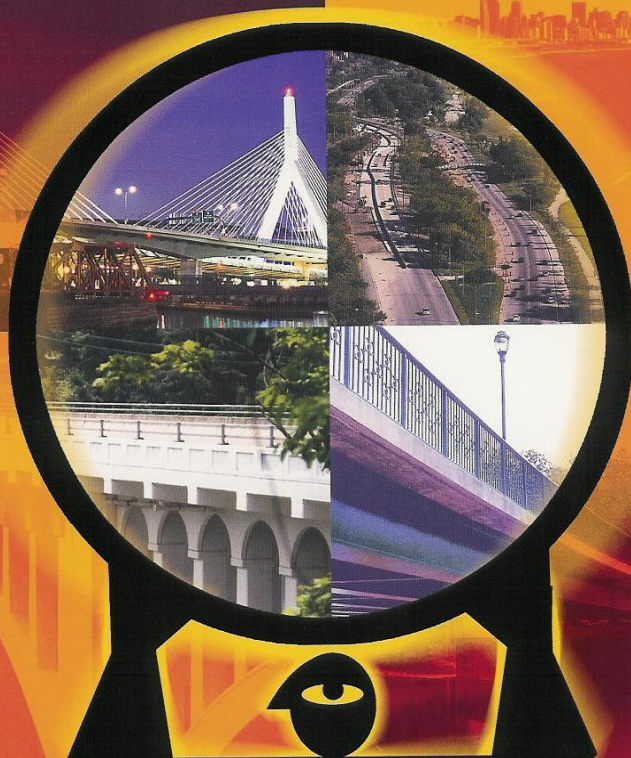
Crash Avoidance System Evaluation



Crashes at Both Intersections

Year	# of Crashes	Causation Factors
1995	0	Improper turning Pulled out too soon Over posted speed Driver drinking
1996	3	
1997	4	
1998	1	
1999	0	
2000	3	
2001	2	
2003	1	
2004	1	Pulled out too soon Careless turn (from mainline)
2005	1	
2006	4	
2007	1	
2008	6	

FEDERAL HIGHWAY ADMINISTRATION



EXCELLENCE HIGHWAY

2014 NATIONAL AWARDS

Thank You!