



MEMORANDUM

Date: March 31, 2014

To: The Honorable Chair and Members
Pima County Board of Supervisors

From: C.H. Huckelberry
County Administrator 

Re: **Crash and Capacity Comparisons of Thornydale Road, Cortaro Road to Lambert Lane, and Colossal Cave Road, Dawn Drive to Cienega Creek Drive**

There has been some comparison by Supervisor Ally Miller of the Board of Supervisor's direction to allocate funding for pavement preservation on Thornydale Road to Colossal Cave Road for safety improvements. Crash Data, Traffic Volume and Schools are used in Supervisor Miller's Comparison.

Supervisor Miller has stated Thornydale Road is more important than Colossal Cave Road and has provided the data below as her reasons:

Category	Thornydale Road	Colossal Cave Road
Schools	7	2
Students	5,800	1,308
Crashes	156	42
Daily Traffic Volume	19,000	10,700

Such comparisons may not provide a true picture of actual differences. A closer examination of the information may lead to different conclusions.

Schools and Exposure of Children to Traffic

The school statistics cited are not comparative and, therefore, misleading. Thornydale Road may serve seven schools, but does so as an arterial highway. Only one school, Mountain View High School, is located on Thornydale Road. No school crosswalk or other facilities are located adjacent to Thornydale Road. Colossal Cave Road has two separate middle/elementary schools located immediately adjacent to the roadway with two fully-dedicated, marked and signed school crosswalk zones on Colossal Cave Road. Children are walking adjacent to and across Colossal Cave Road to access these facilities. School safety is always related to immediately adjacent roads and access to the school site, not how many schools may use a portion of a road. Clearly, Colossal Cave has school safety issues.

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Crash Comparison of Thornydale Road with Colossal Cave Road

Crash data was also presented for both segments. With four times as many crashes on Thornydale Road, it would appear the overwhelming "safety" need for improvements was on the Thornydale Road segment rather than Colossal Cave Road. However, a more objective review would reveal this may not be the case.

First, for Thornydale Road, the crash information is for a 2.5 mile segment with 15 intersections, 4 of which are signalized. For Colossal Cave Road, the information is for a 1-mile segment with only 5 unsignalized intersections. Therefore, two completely differently configured roadway segments of different lengths are being compared.

In consideration of these differences and to more accurately compare these roadways, it is first necessary to reduce the data to crash frequency or rate to develop a common basis. This is typically crashes per million vehicle miles of travel. For Thornydale Road, 54 percent (84 of 156) of the crashes occur on the roadway segment with a segment crash rate of 2.69 crashes per million vehicle miles (cmvm). Of the intersection crashes, most, 78 percent (56 of 72 crashes), were at a signalized intersection, with the remaining 16 crashes at minor street intersections. Discounting the signalized intersections since there are no signalized intersections along Colossal Cave Road, the average intersection crash rate for Thornydale Road is 1.15 crashes per million entering vehicles (cmev).

For Colossal Cave Road, 69 percent of the crashes occur on the segment with a segment crash rate of 2.22 cmvm. All of the 16 intersection crashes were at unsignalized intersections, resulting in an intersection crash rate of 1.37 cmev.

The fatal crashes on Thornydale Road were not attributed to roadway conditions. One involved an inattentive 16-year old driver who ran a stop sign during the day; and the other involved a pedestrian crossing the roadway at a mid-block, unmarked location at night. Neither involved congestion or roadway conditions.

In summary, Thornydale Road is not four times more dangerous than Colossal Cave Road, as the basic crash occurrence information would lead one to believe (156 divided by 42). The crash frequency or probability of a crash occurring is approximately the same for both roadways.

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Traffic Volumes and Highway Capacity

The capacities cited, or daily traffic volumes, are generalized capacity levels for the type of roadway facility (two-lane). It should be noted that a major length of Thornydale Road is a three-lane facility, which would have more capacity than a two-lane roadway. These do not take into consideration any site-specific operational and/or geometric characteristics that may be present. For a more precise measure of the capacity, further analysis is needed to properly address the actual field conditions of the roadways.

For Thornydale Road, field observations noted delay only at the signalized intersections, and the delay noted is relatively minor. For Colossal Cave Road, there is substantial delay due to congestion, two railroad crossings, the lack of alternate routes for this area, two school crossings on Colossal Cave Road, hidden dips that cause sight distance problems, and queuing as a result of turning vehicles because there are no turn lanes. Despite the traffic flow impediments along Colossal Cave Road, the highway capacity of both roadways is roughly equivalent, even though Thornydale Road carries more daily traffic.

Which Project Provides More Benefit: Pavement Preservation of Thornydale Road or Safety and Capacity Improvements on Colossal Cave Road?

As in almost all cases, any pavement preservation project that would have occurred on Thornydale Road would have had no impact or measurable decrease in crashes that occurred along Thornydale or increased the roadway carrying capacity. Only a full roadway widening capacity project costing in the tens of millions of dollars would have made any difference in safety. Such a roadway capacity project is years into the future given the current transportation funding constraints and the amount of time to develop and design such a project.

On the other hand, the crashes along Colossal Cave Road can be reduced by the now proposed improvement, which is a third lane widening; providing refuge for left turns, as well as deceleration lanes at appropriate locations where there are high-volume right turns, thereby reducing crashes. While the pavement preservation project on Thornydale Road would have no, or little, effect on the number of roadway crashes, the planned improvements on Colossal Cave Road will have a significant benefit by reducing the rate and frequency of these crashes.

It is always important to understand the data being utilized and the importance of the data before drawing conclusions regarding accident benefit. In this particular case, the fundamental improvement planned for Thornydale Road would have the benefit of extending the pavement life, but it would have had almost no effect on incidences or

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frequency of auto crashes. On Colossal Cave Road, there is high probability the improvements will reduce crashes and improve the safety of the traveling public.

CHH/mjk

Attachments

c: Martin Willett, Chief Deputy County Administrator
John Bernal, Deputy County Administrator for Public Works
Priscilla Cornelio, Transportation Director

County Talk: More on the District 1 road fund reallocation

Ally Miller, Special to The Explorer | Posted: Wednesday, March 26, 2014 4:00 am

The Explorer published an opinion piece by Pima County Supervisor Sharon Bronson on March 12, 2014, titled Another explanation for District 1 fund reallocation. The article relates to the 4-1 vote of the Board of Supervisors at the February 18, 2014, board meeting to reallocate \$872,000 of District 1 road repair funds to Colossal Cave Road in District 4. The reason given in the article was this was a, “..decision about one thing and one thing only – saving children.”

Bronson’s argument that this decision was solely about saving children, completely contradicts the facts.

Thornydale Road from Cortaro Road to Linda Vista was included in the roads to be repaired with funds originally allocated to District 1. In stark contrast to Bronson’s opinion piece, this stretch of roadway truly is an urgent public safety issue for children. For example:

More than 5,800 children attend seven schools serviced by Thornydale Road. This is a vast number of school children when compared to the only 1,308 children attending two schools serviced by Colossal Cave Road.

Data from the Pima County Department of Transportation (PCDOT) shows Thornydale Road has a capacity of 15,000 vehicles per day, yet is operating over capacity at 19,000 vehicles per day. Colossal Cave Road has a capacity of 11,000 vehicles per day and is operating under capacity at only 10,700 vehicles per day.

Also excluded are accident and fatality data from the PCDOT and the Pima County Sheriff’s Department. In the past two years alone, 156 accidents have occurred on Thornydale Road – resulting in two fatalities. Only 42 accidents have been reported on Colossal Cave Road with zero fatalities.

In addition, Bronson argued that 64 percent of bond funding for new roadway capacity has been steered to District 1. This is a direct result of the vast amount of expansion and growth that has occurred in District 1 over the past 20 years. The November 1997 HURF bond package was for new roads and capacity improvements; District 1 had the majority of the growth and, therefore, the majority of the need for new roads and capacity improvements. This is further solidified by the fact an overwhelming 33 percent of all Pima County tax revenue comes from District 1. District 1 is more than paying its fair share.

Given the facts, it is clear the condition of Thornydale Road provides a much higher threat to the health and welfare of school children than Colossal Cave Road. The reallocation of \$872,000 of District 1 road repair funds to District 4 is not about saving children. I stand by my statement that my fellow colleagues displayed an unprecedented level of retaliation towards me in an effort to intimidate me from speaking on behalf of the taxpayers in the future.

I will continue the promises I made during my campaign – to shine the light, increase funding for road repairs, and ensure county tax dollars are only spent on core essential services.

Please visit my website at www.allymillerdistrict1.com for further information, traffic studies, and accident data.

(Editor's Note: Ally Miller is the District 1 on the Pima County Board of Supervisors.)