



DAVID EVANS
AND ASSOCIATES INC.

MEMORANDUM

DATE: February 3, 2009
TO: Nancy Kraushaar, PE
FROM: John Replinger, PE & Joshan Rohani
SUBJECT: Safety and Operations Issues in the Vicinity of Warner Parrott/Central Point and Warner-Milne/Leland/Linn
PROJECT:
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Background

This memo presents a summary of safety and operational analyses conducted at Warner Parrott Road/Central Point Road and Warner-Milne Road/Leland Road/Linn Avenue intersections. It summarizes existing conditions and discusses features that have been identified as possible safety and operational concerns.

One of the major concerns are the close proximity of the two intersections – the unsignalized Warner Parrott Road/Central Point Road intersection is located only 100 feet west of the signalized intersection of Warner Parrott Road/Leland Road/Linn Avenue. The second major concern is the presence of three access points with moderate volumes in close proximity to these two intersections. The most significant of these accesses are: the Savage Mini Mall access on Central Point Rd, the Savage Mini Mall access on Leland Rd, and Mt. Pleasant School access on Linn Ave. The Savage Mini Mall's tenants include the Plaid Pantry, VIP Deli and Figaro's Pizza, which appears to have been recently vacated.

Crash Analysis

Crash data was obtained from the Oregon Department of Transportation (ODOT) for the areas immediately surrounding the two study area intersections for the years 2003 through 2007, the most recent five-year period for which data are available. Crashes that occurred within 265' (0.05 miles) of each intersection were considered to fall within the intersection influence areas and were included in this analysis. Because of the immediate proximity of the two study intersections, crash summaries are combined in portions of this memo. Based on a detailed summary of ODOT crash data for this period, the five-year average crash rate was 0.57 crashes per million entering vehicles (MEV). For comparison, a crash rate of 1.0 crash per MEV is generally considered the rate at which more detailed analysis and possible mitigation are undertaken. Analyzed as separate intersections, the crash rates for the Warner Parrott Road/Central Point Road intersection and the Warner Milne/Leland/Linn intersection are 0.05 crashes per MEV and 0.53 crashes per MEV, respectively.

For the five-year analysis period, there were 18 property damage only crashes, 6 minor/possible injury crashes, zero serious injury crashes and zero fatal injury crashes. This is an average of 4.8 crashes per year for the two locations combined. Of these 24 crashes, 13 were rear-end crashes, 6 were turn-related crashes, 3 were angle crashes, and two were other miscellaneous types. The majority of crashes occurred with dry pavement conditions (17), while only 6 crashes occurred with wet conditions (1 crash had an unidentified roadway condition). **Table 1** provides a summary of crash types itemized by year.

Table 1
Summary of Crash Data (2003-2007)
For crashes within 265' of Warner Parrott/Central Point & Warner-Milne/Leland/Linn

Year of Crash	Rear End	Sideswipe / Overtaking	Turning	Angle	Fixed Object	Backing	Property Damage Only Crashes	Minor/Possible Injury Crashes	5-Year Crash Rate (Intersections Combined)*
2003	2	0	4	0	0	0	6	0	0.57
2004	0	0	0	0	0	1	0	1	
2005	3	0	1	1	0	0	4	1	
2006	5	0	0	2	0	0	4	3	
2007	3	1	1	0	0	0	4	1	
% Total Crashes by Type	54%	4%	25%	13%	0%	4%	75%	25%	
Totals	13	1	6	3	0	1	18	6	
Final Total	24						24		

* Crash rate is expressed in crashes per million entering vehicles (MEV).

The number and proportion of rear-end crashes is typical of signalized intersections. A typical rear-end crash can involve an inattentive driver who fails to notice when a car ahead stops abruptly. A detailed review of crash types and locations does not suggest any surprising crash pattern that might be attributable to the close proximity of intersections. The crash frequency and types observed at this location are within reason for an intersection with moderately high traffic volumes. The adjacent access points to the Savage Mini Mall and the school do not appear to have contributed to the crashes at the intersections. There were zero reported crashes that involved turning into or out of the mini mall access points. Two turning-related crashes involved the school access on Linn Avenue, though one of those involved a vehicle making an exiting left turn that is now prohibited. No turning-related crashes occurred at the intersection of Warner Parrott Road/Central Point Road. The crash data suggests that the majority of crashes that occurred within the analysis area were due to driver errors such as following too closely/inattention (13) and failure to yield right-of-way (6). **Exhibit 1** is a collision diagram that illustrates crashes by year, type, and general location.

Site Observations

To evaluate traffic operations during congested periods, site observations were conducted on November 17, 2008 and November 18, 2008 during the AM and PM peak periods, respectively. During these observations, DEA engineers examined the site layout, and noted safety and operational issues such as: intersection queue lengths blocking adjacent access points, parking lot cut-through traffic, observable vehicular conflicts (avoided or otherwise), and other noteworthy occurrences. As a result of these site observations, the following conditions were observed:

- Eastbound vehicles on Warner-Milne approaching the signal at Leland/Linn occasionally (a few times during each hour) exceeded the available storage length for eastbound traffic between the two intersections. During the observation periods, eastbound motorists on Warner-Milne stopping for the red light did not block the intersection of Central Point Road, but rather stopped in advance of that intersection, leaving it clear for other maneuvers (such as the left turn onto southbound Central Point Road discussed below).

- Westbound vehicles on Warner Parrott seeking to make a left turn onto southbound Central Point Road were observed on a few occasions to occupy the entire storage length between from the Central Point intersection back to the Leland/Linn intersection. Usually, this condition existed only momentarily before motorists were able to complete their left turns onto southbound Central Point Road allowing the queue to dissipate. On only one occasion was this back-up caused by a southbound vehicle on Central Point Road seeking to turn into the Mini Mall. This motorist's desire to make a left turn into the Mini Mall happened to coincide with a particularly high volume of westbound vehicles seeking to make a left turn onto southbound Central Point Road and two northbound vehicles on Central Point Road seeking to make left turns onto westbound Warner Parrott Road. This incident did not appear to be especially dangerous and given the low volumes of some of these maneuvers, it is not likely to happen very many times even during peak periods.
- During the peak periods, several northbound vehicles on Central Point Road frequently queued at the stop sign at Warner Parrott Road, causing blockage of the Savage Mini Mall access to Central Point Road. However, if a car was waiting to exit the Mini Mall to Central Point Road, northbound motorists frequently accommodated the exiting motorist, stopping clear of the driveway to allow the exiting motorist to exit onto Central Point Road. In a similar vein, northbound motorists were also observed to stop short of the Mini Mall driveway to allow southbound motorists to make left turns into the Mini Mall.
- Some cut-through traffic was observed through the Mini Mall parking lot during the peak periods. This was not a frequent occurrence, but was observed three to five times during the site investigation. A more frequent occurrence was a traffic pattern in which a motorist entered the Mini Mall parking lot, transacted business at the Plaid Pantry, and exited onto the other street.

In general, the traffic was observed to flow relatively freely with little interference between the adjacent intersections. The familiarity of the motorists with the complicated configuration appeared to result in a high degree of awareness and cooperation. This was evident from motorists' choice to allow maneuvers by those exiting driveways and by stopping short of intersections rather than blocking them.

Potential Solutions

Driveway closures or restrictions to prohibit left turns are sometimes offered as solutions. The "downside" to such actions includes compromising the viability of businesses and the out-of-direction travel that can result from these restrictions. Given the absence of crashes and the fact that the driveways for the Mini Mall appear to function well during non-peak periods and adequately during peak periods, restrictions do not appear warranted.

Restricting left turns to minimize the potential for queuing and conflicts at the intersection of Warner Parrott/Central Point could eliminate some conflicts, but the impact on travel patterns in the area would be considerable given the relative lack of alternative routes and connectivity issues.

Recommendations

Based on the calculations of crash rates, the detailed analysis of the five-year crash information, and the observations, I conclude that is not a significant safety or operational problem in the analysis area under today's conditions.

Any opportunity that arises through the land use process, for example, that could allow relocation of driveways to provide greater separation from adjacent intersections should be pursued.

Implementing a comprehensive solution for the area that seeks to reduce queuing conflicts, reduce driveway conflicts and increase capacity will likely be very expensive and have significant right-of-way and relocation

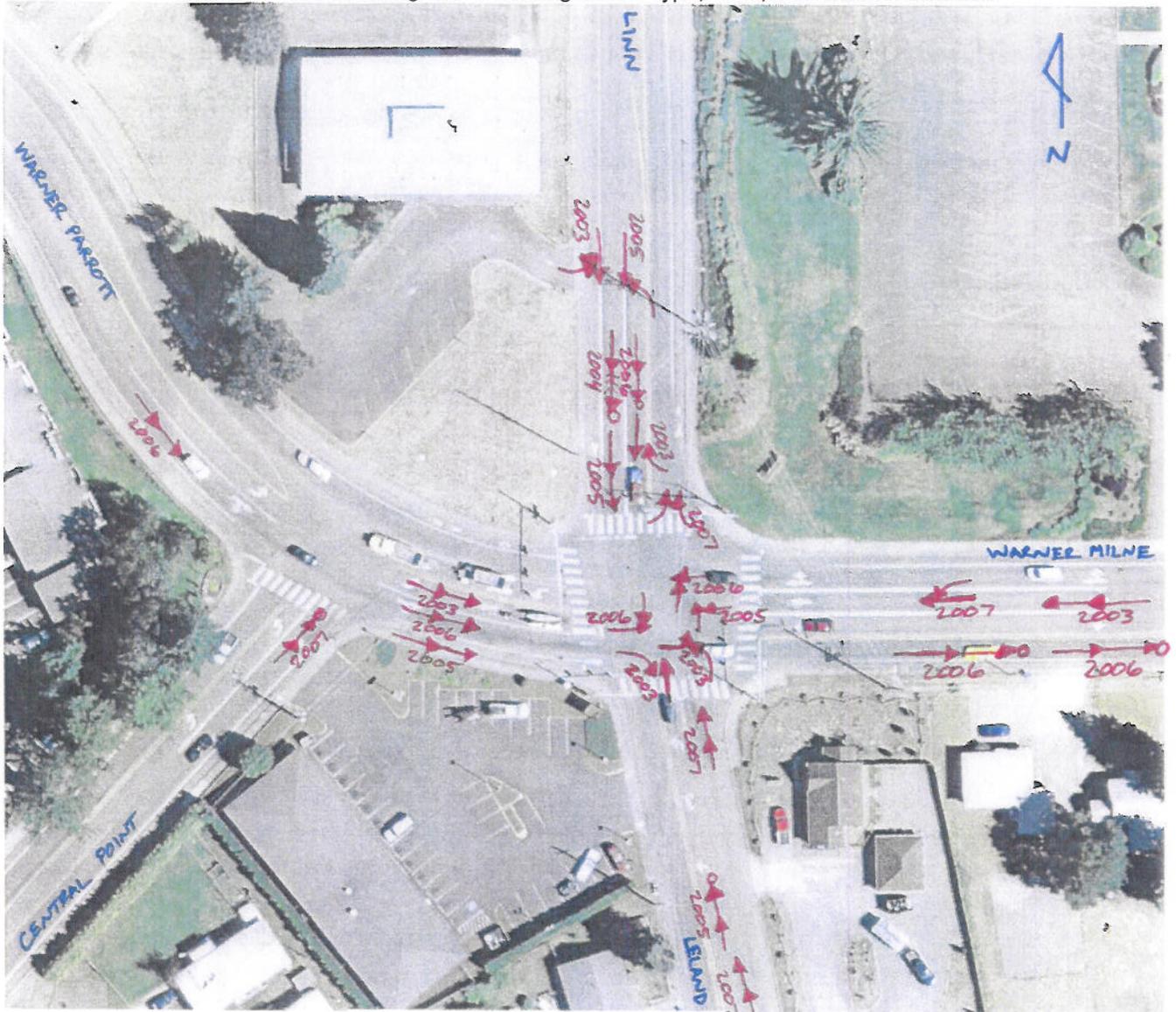
impacts. A roundabout, as suggested in the Transportation System Plan, especially if constructed as a two-lane roundabout, would be expensive and require significant land. It is probably not worth pursuing at this time.

Signalizing the intersection of Warner Parrott/Leland and operating in connection with the existing signalized intersection of Warner-Milne/Leland/Linn might solve some of the existing conflicts, but it is not without some problems and may not offer much benefit. Like the roundabout solution, this is also probably not worth pursuing at this time.

At this point, the solution may be for the city and its residents to "live with" the existing situation. I recommend that the city periodically monitor the crashes and operational issues.

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Exhibit 1. Collision Diagram: Indicating Crash Type, Year, and General Location



	Moving Vehicle		Rear-End
	Backing Vehicle		Head On
	Non-Involved Vehicle		Side Swipe
	Pedestrian		Out of Control
	Parked Vehicle		Left Turn
	Fixed Object		Right Angle
	Fatal Accident		
	Injury Accident		