

CRASH ANALYSIS

In addition to intersection capacity, queue length, and access management assessments, crash histories for study intersections and the project length as a whole were obtained and reviewed. The best means of ascertaining the types and causes of crashes is to obtain and review the actual police reports. Therefore, in addition to crash data provided by NMDOT Crash Bureau, the Town of Bernalillo Police Department, Rio Rancho Police Department, Sandoval County Sheriff's Department and the Santa Ana Pueblo Police were all called to provide any additional crash data in the form of police crash reports. Additionally, the NMDOT Crash Bureau was also asked to supply any available police reports. The data sets were cross-referenced to avoid a double count of any crashes and all crash reports were read to verify location, crash type and cause.



Table 11 on the next page presents a summary of the crashes determined to have occurred within the study corridor. Additionally, crash diagrams for all study intersections were created and included in **Appendix E**. Review of the information suggests a few comments/conclusions:

- Collected crash data includes 2009 through 2011, as 2011 crash data was the latest available from the NMDOT Crash Bureau. The most crashes occurred during the 2010 calendar year.
- Generally, observed crashes occurred at both the Camino Don Tomas and Jemez Dam intersections at over half of the observed crashes for the whole corridor. Another third of the observed crashes appear to occur at NM 528, NM 313, and Sprint Boulevard.
- The most common crash type by far was rear-end crashes, which tends to indicate congested conditions combined with vehicles traveling too fast. Additionally, most of these crashes occurred at the Camino Don Tomas and Jemez Dam intersections. Camino Don Tomas currently does not have right-turn lanes in either east and west legs of the intersection, but a new right-turn lane is being added on the west lane and a right-turn lane is recommended for the east leg. With the addition of these lanes, the risk for rear-end crashes should be reduced.
- There were two observed fatal crashes within the study area with one occurring at Edmund Road and one at Sprint Boulevard. The fatal crash at Edmund Road was an angle crash involving a motorcycle and was caused due to a driver failing to yield right-of-way. The crash report says that the vehicle was turning from Edmund Road, and turned in front of the on-coming motorcycle. The crash at Sprint Boulevard was a rear-

end crash in which an eastbound vehicle traveling well over the speed limit crashed into the back of another eastbound vehicle, stopped at the red light. Excessive speed was cited as the cause of the crash.

- Night time crashes accounted for approximately 19% of all crashes. Even though this appears to be a minority of total crashes, it must be mentioned that the corridor is lit in advance of Camino Don Tomas to I-25 and at the intersections of Paseo del Volcan, NM 528, and Sprint Boulevard. There are street lights on the signal poles at Jemez Dam. Street lighting is generally absent between Jemez Dam and Camino Don Tomas. Full street lights throughout the corridor could significantly reduce (up 20% for all types of crashes) night-time crashes with relatively less construction costs.
- As was the case at Camino Don Tomas, there was a large majority of rear-end crashes occurring at Jemez Dam. One potential cause for these crashes is due to the westbound add-through-right lane at the intersection and westbound acceleration lane downstream which drops to a forced right-turn lane at NM 528. Vehicles turning right from the north leg could easily mistake the upstream added through-right pocket as a right-turn lane only and therefore turn in front of westbound throughs, thinking they are turning right.
- The most common reason given for crashes was following too close at 41%. Again, this is consistent with the fact that the most common type of crash is rear-end collisions on a congested corridor. The second most common reason was failure to yield at 19%. Driver inattention was a close third at 16%.

Table 11. Crash History Summary 2009 to 2011

US 550 Intersection with:		Hwy 313	Camino Don Tomas	Sheriff's Posse	Edmund RD	Jemez Dam	NM 528	Sprint Blvd	Paseo Del Volcan	Total	
Total Crashes		21	37	1	9	41	22	16	3	150	
by Year	2009	20	16	1	2	10	7	9		65	
	2010	1	12		6	22	13	4		58	
	2011		9		1	9	2	3	3	27	
by Crash Type	Rear-End	14	25	1	3	32	17	9	1	102	
	Angle	3	7		3	6	2	5	1	27	
	Sideswipe	3	4		2	3	2	2	1	17	
	Fixed Object	1	1		1		1	2	0	6	
	% Angle	14%	19%	0%	33%	15%	9%	31%	33%	18%	
	% Rear-End	67%	68%	100%	33%	78%	77%	56%	33%	68%	
by Severity	PDO	15	24		8	34	14	12	3	110	
	Injury	6	13	1		7	8	3		38	
	Fatality				1			1		2	
	% Injury	29%	35%	100%	0%	0%	36%	0%	0%	25%	
by Time of Day	Day	17	29	1	8	33	13	15	2	118	
	Night	4	6		1	8	9	1		29	
	Dawn/Dusk		1						1	2	
	Raining		1							1	
	AM / PM Peak Periods^	9	16	1	1	6	6	2	2	43	
	% Night	43%	16%	0%	11%	20%	41%	6%	0%	19%	
by Cause	Alcohol Involved	1	1			2	2	3		9	
	Driver Inattention	1	5		1	8	4	6		25	
	Failure to Yield	5	6		5	4	2	4	2	28	
	Red Light-Running					3	2			5	
	Following Too Close	12	18	1	1	21	8	2		63	
	Improper Lane Change		4		1		2			7	
	Skid-No Braking								1	1	
	Left of Center					1	1			2	
	Avoid Pedestrian				1					1	
	Avoid Vehicle		1			1		1		3	
	None	1	1			1	1			4	
	Made Improper Turn	1	1							2	
	% Following Too Close										42%
	% Failure to Yield										19%

Sprint Boulevard, Jemez Dam and Camino Don Tomas are identified as locations with much higher than expected crash rates.

Using the 2010 Highway Safety Manual (HSM), predicted yearly crash rates for each intersection and roadway sections were calculated based on existing conditions and traffic demands and then compared to historical crash rates as summarized in **Table 12**. As indicated, the intersections at

Table 12. Crash History Summary 2009 to 2011

US 505 Intersection with:	HSM Predicted Crash Rate	Observed Crash Rate
NM 313	6.10	7.00
Camino Don Tomas	7.10	12.33
Sherriff's Posse	2.10	0.30
Kuaua Road	1.60	0.00
Homestead Road	2.20	3.00
Jemez Dam	4.20	13.67
NM 528	6.90	7.33
Sprint Blvd	2.20	6.00
Paseo del Volcan	2.40	1.00

- The consolidation of ten driveways to two between Camino Don Tomas and NM 313 is predicted to result in an 8% reduction of overall crashes within that segment of roadway.
- Simply adding a right-turn only lane at westbound could reduce overall crashes by 5% and rear-end crashes by 4%. This does not account for the additional benefit of removing a potentially confusing maneuver for southbound right-turn vehicles and therefore rear-end crashes reductions would be expected to be much greater by simply restriping and possibly signal modifications. However, LOS and capacity analysis indicates that three through lanes are required at this approach during the PM peak. Therefore, the best recommendation to reduce crashes at this location would be to construct the third through lane from the corridor and add an exclusive right-turn lane at the west leg of Jemez Dam.

Based on the crash data and analysis, the following improvements could reduce crashes along the US 550 corridor:

- As mentioned, an eastbound right-turn lane will be added at Camino Don Tomas. HSM predicts that this will reduce rear-end crashes and overall crashes by 8%. However, there were many observed crashes westbound as well. Therefore, a westbound right-turn lane could mitigate some of these crashes, but is not recommended at this time due to low westbound right-turn demands.
- Per the 2010 HSM, removing skew from an intersection can reduce crash rates by as much as 23%. Although, removing a skew will mainly impact angle crashes rather than rear end crashes.
- Improvement of corridor progression with adjustments to signal timing and offsets can also reduce rear end crashes especially since the most common reason for crashes was "Following Too Close". Propose signal improvements are discussed in the previous section.
- There were a disproportionate amount of night-time crashes at NM 528. Currently the intersection is lit with streetlights on the signal poles, and on three approaches (East, West, and South).
- Replacement of all TWLTL sections with raised median is predicted to reduce overall crashes on the corridor as whole by 5% and up to 50% within the section of roadway in which TWLTL are being removed.