



I. INTRODUCTION

The City of Albuquerque – Department of Municipal Development (Engineering Division and Traffic Engineering Division) requested Souder, Miller & Associates to conduct a speed study along La Corrida Road in northeast Albuquerque.

II. PROJECT PURPOSE

A speed study on La Corrida Road was conducted between Comanche Road and San Pedro Drive to determine the following:

- Evaluate the 85th percentile speed along La Corrida Road
- Determine from the speed study if there is a speeding along La Corrida Road
- If traffic management strategies are warranted based on the City’s Neighborhood Traffic Management Program

As part of this study, an evaluation and cataloging of existing roadway conditions, collection of historical ADT and crash data, field speed surveys at two (2) locations within the study area, and evaluate the survey data will be completed.

III. PROJECT DESCRIPTION

The study area will be a 0.3 mile section of La Corrida Road between Comanche Road and San Pedro Drive.

Please refer to Figures III.A.1 below showing the project area.



**Figure III.A.1
Project Vicinity Map**



IV. BACKGROUND OF SPEED LIMITS

Speed limits are established on roadways of virtually all classifications, from interstate freeways to low-volume local streets. The primary purpose of speed limits is to give motorists clear instruction as to what is a reasonable speed for them to drive at while traveling on a given roadway.

Among regulatory signage, speed limit signs arguably contain the most critical information that motorists need to be informed of while driving. Drivers unfamiliar with a roadway often do not realize what characteristics the roadway has, and properly established speed limit signs give them the information they need to drive the roadway safely.

The NMDOT has guidelines for analyzing and establishing posted speed limits; the following text is based on one such example:

Realistic posted speed limits are of public importance for many reasons:

- They invite public compliance by conforming to driving behavior
- They give clear reminders of safe and reasonable speeds to non-conforming violators
- They offer the most effective tool for law enforcement of safe driving
- They will minimize public antagonism toward law enforcement that results from unreasonable regulations

Improperly, or artificially low, posted speed limits can cause problems for state and local agencies for several reasons:

- They do not encourage voluntary compliance since they do not reflect the behavior of the majority
- They make the behavior of the majority unlawful
- They maximize public antagonism toward law enforcement since the perception is that the police are enforcing a “speed trap”
- They create a bad image for a community in the eyes of visitors/tourists

IV.A SETTING SPEED LIMITS

In accordance with Section 66-7-303 of the New Mexico Criminal and Traffic Law Manual, the speed limit on state highways shall be set by the Cabinet Secretary of the Department of Transportation, based on an engineering survey and traffic investigation that includes the following parameters:

- Spot speed studies (typically consisting of 100 vehicles)
- Roadway geometry/number of lanes
- Roadside environment and characteristics
- Building setbacks (if within a commercial business district)
- Driveway and intersection spacing/density
- Historical crash data for the roadway study area



Many speed limits are established using the theory of the 85th percentile. Out of 100 vehicles surveyed, beginning with the fastest vehicle speed recorded, the 15th vehicle from that speed is determined to show where the 85th percentile speed is. This is assuming that most drivers (85%) drive within reasonable limits. The posted speed limit can then be established and is usually the 5-mph increment just below the 85th percentile speed. For example, if the 85th percentile speed has been determined by an engineering survey to be 47 mph, the posted speed would be 45 mph. This method of posting speed limits allows for a reasonable posted speed limit that can be enforced by local agencies, without creating a speed trap.

For surveys with a different amount than 100 vehicles, the 85th percentile speed is determined by the following formula: $100/15 = \# \text{ of vehicles surveyed}/X$ (where x is the vehicle at the 85th percentile). For example, a 50 vehicle survey would result in:

$$100/15 = 50/X$$
$$X = 7.5, \text{ or the } 8^{\text{th}} \text{ vehicle in the survey}$$

Other methods are frequently used to further analyze the posting of speed limits – these are the mode, median and geometric mean:

- The mode is the most frequently clocked vehicle speed in a given survey – for example, in a 100 vehicle survey where 12 vehicles were clocked traveling 55 mph and no other speed was observed as frequently, the mode is 55 mph.
- The median is the numerical midpoint of a given survey – in a survey of 100 vehicles, the speeds of the 50th and 51st vehicles are added and divided by 2 to obtain the median speed. If the 50th vehicle of such a survey was traveling 56 mph and the 51st vehicle was also traveling 56 mph, the resulting median speed would be $(56+56)/2 = 112/2 = 56$ mph.
- The geometric mean is described as follows: *“an average of a set of numbers that is calculated by multiplying all the numbers (“n”), and taking the nth root of the total.”*

Formula for Geometric Mean:

$$\text{Geometric Mean} = ((X_1)(X_2)(X_3)\dots\dots(X_N))^{1/N}$$

where

X = Individual Score (speed)

N = Sample size (Number of scores)

Geometric Mean Example: To find the Geometric Mean of speeds 51, 52, 55, 58, and 60 mph.

Step 1: N = 5, the total number of values. Find 1/N.

$$1/N = 0.2$$

Step 2: Determine Geometric Mean using the formula.

$$((51)(52)(55)(58)(60))^{0.2} = (507,592,800)^{0.2}$$

$$\text{Geometric Mean} = 55.09 \text{ mph}$$



In most cases, the geometric mean of a speed study will be of similar value of the median, often within 1 to 2 mph on either side of the median. In the above example, the median speed would be the third vehicle surveyed (55 mph), and the geometric mean is 55.09 mph.

IV.B STUDY AREA

The study area is along La Corrida Road between beginning at Comanche Road and ending at San Pedro Drive. Traffic counts and speed data was collected at two (2) locations along La Corrida Road. Traffic/speed count locations were collected at the following locations:

- West Count Station: La Corrida Road just east of Cuervo Drive
- East Count Station: La Corrida Road just west of Cardenas Drive

Traffic count locations are shown in Figure III.B.1 below.



**Figure III.B.1
Project Vicinity Map**

The AADT for the two (2) locations along La Corrida Road are listed below:

| | Lane 1 (EB) | Lane 3 (WB) | AADT |
|---------------------|--------------------|--------------------|-------------|
| West Count Location | 255 | 267 | 522 |
| East Count Location | 234 | 218 | 452 |
| AADT | 245 | 243 | 487 |

**Table IV.B.1
AADT Count Data Results**



La Corrida Road study area ranges from 452 to 522 vehicles per day.

The speed survey segments are described in more detail below, beginning with the westernmost portion of the corridor at Comanche Road. Each study segment will have descriptions of roadside environment, driveway and intersection density and photographs illustrating the study segment. From the westerly terminus of the study area, each survey segment is described as follows:

Traffic count data is located in Appendix A.

IV.B.1 – SEGMENT 1: LA CORRIDA ROAD BETWEEN COMANCHE ROAD AND VALENCIA DRIVE

This segment of the study area is ROW width of 37'. A breakdown of the ROW is listed below:

- 28' asphalt pavement
- 2.5' curb and gutter
- 4' sidewalk

Sidewalk, and curb/gutter exist on both sides of La Corrida Road. Below is a photo showing the cross-section listed above.



Figure IV.B.2
La Corrida Road east Comanche Road

There are three (3) intersections (Cuervo Drive, Alvarado Drive & Valencia Drive) and 20 driveways within this segment of the study area. All driveways provide access to residential homes.



Results of the speed study for Segment 1 is listed below:

| | Lane 1 (EB) | Lane 3 (WB) | Comb Total |
|---------------------|-------------|-------------|------------|
| West Count Location | | | |
| Average | 23.4 | 23.9 | 23.7 |
| 50th Percentile | 24.7 | 25.0 | 24.9 |
| 10mph Pace | 61.00% | 61.60% | 61.30% |
| 85th Percentile | 31.1 | 31.3 | 31.3 |

Table IV.B.2
West Count Location Speed Study Results

IV.B.2 – SEGMENT 2: LA CORRIDA ROAD BETWEEN VALENCIA DRIVE AND SAN PEDRO DRIVE

This segment of the study area is ROW width of 37’. A breakdown of the ROW is listed below:

- 28’ asphalt pavement
- 2.5’ curb and gutter
- 4’ sidewalk

Sidewalk, and curb/gutter exist on both sides of La Corrida Road. Below is a photo showing the cross-section listed above.



Figure IV.B.3
La Corrida Road east of Valencia Drive

There are three (3) intersections (Valencia Drive, Cardenas Drive & Cagua Drive) and 20 driveways within this study area. All driveways provide access to residential homes.



Results of the speed study for Segment 2 is listed below:

| | Lane 1 (EB) | Lane 3 (WB) | Comb Total |
|---------------------|-------------|-------------|------------|
| East Count Location | | | |
| Average | 22.6 | 22.6 | 22.6 |
| 50th Percentile | 23.5 | 24 | 23.9 |
| 10mph Pace | 63.60% | 65.10% | 64.50% |
| 85th Percentile | 29.7 | 29.3 | 29.7 |

**Table IV.B.3
East Count Location Speed Study Results**

V. CRASH DATA

Crash data was requested from the Traffic Safety Bureau at New Mexico Department of Transportation. NMDOT stated that there were no reported crashes along La Corrida Road within the study area.

VI. SPOT SPEED STUDY RESULTS

When considering a new posted speed limit, or revising an existing posted speed limit on a given roadway, a survey of traffic speeds is critical to determine a reasonably posted speed limit.

But before a posted speed limit can be modified, analysis must be conducted to ascertain whether or not the speed limit can be adjusted without resulting in further increases of motorists’ travel speeds. Motorists usually drive at speeds that they feel safe, based on the observable roadway conditions; this means that if a roadway is wide, flat and straight, the motorist will drive at a speed they feel comfortable based on what they observe as opposed to what a speed limit sign would say. To elaborate further, a four-lane street that is flat and straight with no unusual conditions that has a posted speed of 30 mph would probably result in most motorists traveling well over that posted speed, because the roadway conditions dictate that they could safely drive much faster.

In the case of La Corrida Drive between Comanche Road and San Pedro Drive, the posted speed limit is 25 mph, and roadway conditions throughout the corridor are fairly consistent: controlled access, good pavement condition with wide (11’) travel lanes, and on-street parking. Thus, there are no unusual roadway conditions through the corridor.

Also, over 500 vehicles were surveyed at two (2) locations within the study area. The surveyed vehicles showed that 44.8% of those surveyed vehicles were traveling higher than the posted speed limit of 25 mph. This percentage indicates that the 25 mph speed limit on the study area of La Corrida Road is probably a reasonably posted speed limit and that in order to maintain this speed limit, speed humps would not be warranted. The survey results essentially make identify 44.8% of the motorists who use this roadway exceed the posted speed limit of 25 mph.



Results of the speed study for the entire study area is listed below:

| | Lane 1 (EB) | Lane 3 (WB) | Comb Total |
|--------------------------|-------------|-------------|------------|
| Entire Study Area | | | |
| Average | 23mph | 23.25mph | 23.15mph |
| 50th Percentile | 22.8mph | 22.1mph | 22.5mph |
| 67th Percentile | 25.7mph | 24.8mph | 25.3mph |
| 85th Percentile | 28.7mph | 27.7mph | 28.2mph |

*Table VI.1
La Corrida Road Speed Study Results*

Speed study results are located in Appendix B.

VII. ORIGIN/DESTINATION STUDY

VII.A PURPOSE

The intent of the origin-destination study is to determine travel patterns in traffic at a certain location during a typical day. The origin-destination study will assist in determining future traffic planning at the study location which is the west leg of La Corrida Drive at Comanche Road. The purpose is to provide the City of Albuquerque with evidence of cut thru traffic along La Corrida Drive between Comanche Road and San Pedro Drive.

VII.B DATA COLLECTION

The traffic data collected for this origin-destination study was collected using two methodologies.

- 48 – hour volume counts were collected at two (2) locations within the project limits. The locations that were collected east of the intersection of La Corrida Road/Cuervo Drive and west of the intersection of La Corrida Road/Cardenas Drive. All volume counts were collected in accordance with the traffic monitoring standards published by the New Mexico Department of Transportation.
- SMA staff were positioned at the intersection of Comanche Road/La Corrida Road and San Pedro Drive/La Corrida Road to record the entering/exiting license plate data for all locations.

VII.C DATA ANALYSIS

Using the data that SMA staff collected, the amount of traffic that cut thru La Corrida Road is displayed below in Table VII.C.1. As shown in the table for the day 26.4% of vehicles that cut thru La Corrida Road between Comanche Road and San Pedro Drive.



| Time Period | # Cars Entering Neighborhood | # Cut-thru Vehicles | % Cut-thru |
|--------------|------------------------------|---------------------|--------------|
| 8-8:30 | 11 | 2 | 18.2% |
| 8:30-9 | 10 | 3 | 30.0% |
| 9-9:30 | 2 | 0 | 0.0% |
| 9:30-10 | 10 | 3 | 30.0% |
| 10-10:30 | 8 | 3 | 37.5% |
| 10:30-11 | 14 | 3 | 21.4% |
| 11-11:30 | 13 | 2 | 15.4% |
| 11:30-12 | 6 | 1 | 16.7% |
| 1-1:30 | 20 | 7 | 35.0% |
| 1:30-2 | 17 | 4 | 23.5% |
| 2-2:30 | 17 | 5 | 29.4% |
| 2:30-3 | 11 | 3 | 27.3% |
| 3-3:30 | 14 | 4 | 28.6% |
| 3:30-4 | 18 | 4 | 22.2% |
| 4-4:30 | 20 | 5 | 25.0% |
| 4:30-5 | 21 | 7 | 33.3% |
| Total | 212 | 56 | 26.4% |

*Table VII.C.1
 Origin / Destination Study Results*

Origin / Destination study results are located in Appendix D.

VIII. U.S. LIMITS SPEED LIMIT PROGRAM

U.S. Limits is an FHWA sponsored program used to analyze speed limits. This program calculates a recommended speed limit based on the criteria given, which is listed on the website as follows:

- *density of surrounding development (e.g. high density, low density or rural);*
- *frequency of roadside access (e.g. number of residential driveways, commercial, industrial, shopping, and special activity properties, and the number and type of intersecting roads);*
- *road function (e.g. traffic movement vs. access to abutting properties);*
- *road characteristics (e.g. paved width, divided or undivided, lane width and number of lanes, sight restrictions);*
- *road conditions and important high speed road characteristics (e.g. interchange spacing, AADT, shoulders);*
- *existing vehicle operating speeds;*
- *adjoining speed limits; and*
- *any special conditions that may exist on the road section (e.g. adverse alignment, pedestrian and roadside activities, high crash rates, etc).*



This analysis was used for La Corrida Road. Based on the data entered for the above-listed categories, the program concluded that a 25 mph posted speed limit was warranted for the corridor. The output sheet is shown in Appendix C – U.S. Limits Output.

This site can be accessed at <http://www.uslimits.com>

VIII. CONCLUSION

After evaluating the traffic and speed study data collected through the project area, it is apparent that traffic is exceeding the 25 mph posted speed limit and a 26.4% of the traffic traveling along La Corrida Road is cut thru between Comanche Road and San Pedro Drive. In order to meet criteria for traffic calming measures as outlined in the City of Albuquerque’s Neighborhood Traffic Management Program, at least two (2) of the following threshold criteria must be met:

| Item | Description |
|------|---|
| #1 | Reported crashes in the past three (3) years that could be corrected with traffic calming |
| #2 | Peak-hour traffic volume greater than 400 vehicles in one direction |
| #3 | 25% of peak hour traffic is non-local cut-through traffic |
| #4 | 85 th percentile speed exceeds the posted speed limit by 5 mph or more |

*Table VIII.1
COA NTMP Traffic Calming Measures*

Based on the data collected and this criteria, the 85th percentile for the entire study area was not met. La Corrida Road meets only one (1) of the necessary two (2) criteria as outlined in the City’s Neighborhood Traffic Management Plan.