

AGENDA DOCUMENTATION

DATE: NOVEMBER 14, 2024

TO: TRAFFIC AND PARKING COMMISSION

FROM: TRANSPORTATION ENGINEERING DIVISION

SUBJECT: **ITEM 6**

DISCUSSION FOR POSSIBLE ACTION TO INSTALL SPEED CUSHIONS ON O'BANNON DRIVE BETWEEN BUFFALO DRIVE AND ROSANNA ST- WARD 1 (KNUDSEN)

SITUATION

The Transportation Engineering Division of the City of Las Vegas met with residents in the Buffalo Coalition neighborhood in April 2021 to discuss various traffic concerns. Buffalo Coalition neighborhood is bounded by Charleston Boulevard to the north, Rainbow Boulevard to the east, Sahara Avenue to the south, and Durango Drive to the west. In response to the concerns, a comprehensive study reviewing traffic volumes, speeds, and crashes, was conducted, and this segment was found to be a candidate for the installation of speed cushions based on the City's Neighborhood Traffic Management Program criteria.

The posted speed limit on O'Bannon Drive is 25 mph. The segment of O'Bannon Drive between Buffalo Drive and Rosanna Street was found to have an average speed of 33 mph, with an 85th percentile speed of 39 mph. Data collected also suggests 64% of average daily traffic is cut-through traffic.

To address the excessive speeding conditions found in the study, appropriate traffic calming measures were studied and identified, and the Transportation Engineering Division recommends installation of speed cushions. Speed cushions consist of two or more raised vertical deflection areas placed in a roadway to slow vehicles, as most passenger vehicles cannot pass through without traveling over at least a portion of the raised area. They are similar to a traditional speed hump, however they have gaps between the raised areas that enable large emergency vehicles to pass through without delays.

Speed cushions reduce the number of vehicles that are excessively speeding by an average of 20-25% and can also reduce the volume of traffic on a road by up to 20%, leading to a decrease in the amount of cut-through traffic. They have been found to have minimal impact on emergency response times, with less than a one second delay. (Traffic Engineering Council, *A Guide to Speed Reduction Techniques*, RP-038B Washington, DC: Institute of Transportation Engineers, 2022)

The City of Las Vegas Fire Department will support this installation in accordance with City of Las Vegas Fire #6631 Traffic Calming Devices as long as they meet all required specifications set forth by the City of Las Vegas.

STAFF RECOMMENDATION

The Transportation Engineering Division recommends installation of speed cushions on O'Bannon Drive between Buffalo Drive and Rosanna Street. The speed cushions will be included with a future City Capital Improvement Project.

TRAFFIC CALMING STUDY

FOR

BUFFALO COALITION NEIGHBORHOOD

JANUARY 2023

PREPARED FOR:

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APPENDICES

Section One: April 1, 2021 Meeting Materials

Meeting Handout
Roll Plot Exhibit Board of Existing Conditions
Exhibit Boards of ITE Traffic Calming Fact Sheets
Citizen Input & Response Log

Section Two: July 15, 2021 Meeting Materials

Meeting Handout
Roll Plot Exhibit Board of Existing Conditions and Data Collection
Exhibit Board of Citizen Input Received
Roll Plot Exhibit Board of Preliminary Improvement Recommendations
Exhibit Board of Via Olivero/Cimarron Mini-Roundabout Concept

Section Three: November 18, 2021 Meeting Materials

Meeting Handout
Roll Plot Exhibit Board of Improvement & Implementation Recommendations

Section Four: Traffic Volume, Speed and Crash Data

1.0 INTRODUCTION

A traffic calming study has been conducted for the Buffalo Coalition Neighborhood to identify measures that can be implemented to address neighborhood traffic concerns. The area of study consists of two square miles bound by Durango Drive on the west, Charleston Boulevard on the north, Rainbow Boulevard on the east, and Sahara Avenue on the south. GCW has conducted the Study in close coordination with City staff and the Buffalo Coalition Neighborhood community. The public outreach effort conducted with the community is outlined in Section 2.0.

1.1 DATA COLLECTION

The study included field reconnaissance and data collection to document existing conditions on 60-foot collector streets and larger, which included the data and information listed below. A roll plot exhibit was prepared to present the data and is included in the Appendices.

1. Collection of spot speed data and mechanical ADT counts by direction at twenty five (25) locations.
2. Procurement of crash data from NDOT for 21 street segment and 74 intersections.
3. Locations of Stop-controlled approaches and valley gutters.
4. Locations of curbed sidewalk.
5. Locations of marked crosswalk.
6. Streets with fronting residential and direct driveway access.
7. Locations of parks, schools and other pedestrian attractions along likely pedestrian routes to and from are residential neighborhoods.
8. Primary and secondary emergency response routes.
9. Posted speed limits.

2.0 PUBLIC OUTREACH

The study included significant public outreach, which included three public neighborhood meetings. The first meeting on April 1, 2021 was held to clarify project limits, identify key concerns of the neighborhood, and clearly establish study objectives. The second meeting on July 15, 2021 was held to provide an update on data collection, observations, and preliminary improvement recommendations. The last meeting held on November 18, 2021 was held to present Study recommendations and implementation plan to the Community. The meetings, meeting materials, and feedback received are described in greater detail in the following subsections.

2.1 APRIL 1, 2021 NEIGHBORHOOD MEETING

The April 1, 2021 meeting was held at the home of a concerned neighborhood citizen. Meeting materials included the items listed below that are also included in Section One of the Appendices.

1. Two-page informative meeting handout
2. Roll plot exhibit board of existing conditions
3. Exhibit boards of ITE Traffic Calming Fact Sheets

Introductions were made and the study process was described including the three public meetings planned. Planned data collection and existing conditions displayed on the roll plot were explained. Potential mitigation traffic calming measures were also reviewed and a great deal of the meeting was devoted to hearing neighborhood concerns and requests. It was requested that comments and concerns be provided by April 15, 2021 and a QR code was provided on the handout to facilitate easy online input.

Citizen input received at the April 1, 2021 Neighborhood meeting is summarized in **Table 1**. Input received following the meeting up through April 15, 2021 is summarized in matrix form by subject of concern and location in **Table 2**. A detailed five-page log of citizen input and preliminary responses prepared by GCW is included in Section One of the Appendices.

Table 1. Summary of Citizen Input Received at April 1, 2021 Meeting

Location/Area	Concerns
Buffalo Drive	Speeding, high volumes, and truck traffic; and associated noise. Particularly bad during construction on Buffalo. Need for more speed enforcement. Poor lane markings southbound, south of Charleston Boulevard.
Buffalo Drive Intersections with Via Olivero, O'Bannon and El Parque	Consider raised median to restrict left turns and crossing movements at to restrict cut through traffic.
Cimarron Road	Speeding. Drag Racing and reckless driving. Serious crashes into property walls. Difficulty exiting driveways. Used for test drives. Request for more/wider bike lanes. Request for roundabout at O'Bannon Drive intersection
Via Olivero, O'Bannon and El Parque	Speeding. Used to test drive cars. Drag Racing. Criminal activity.
Oakey Boulevard	Speeding. Disregard for pedestrian crossings, particularly at Warbonnet Way, which provides access to All American Park and Derfelt Elem. School. Ped crossings needed at Belcastro St and Montessori St for access to Rainbow Family Park.
Valdez Street	Improve visibility of stop signs on El Parque Avenue at Valdez Street. Used as cut-through route and for criminal activity.
Miller Street	Used by cut-through traffic to avoid Buffalo Drive/Oakey Boulevard traffic signal. Need pedestrian crosswalk and sidewalk ramp at Buffalo Drive to provide better access to All American Park.
Lisa Lane	Need crosswalk and signing for at Via Olivero Avenue and O'Bannon Drive.

Table 2. Summary of Citizen Input Received April 1-15, 2021

Concerns and Requests	Street						Totals
	O'Bannon	Cimarron	Via Olivero	Oakey	Buffalo	El Parque	
Speeding	12	11	4	3	3	3	36
Volume of Traffic	6	3	4	1	1		15
Aggressive Driving/Racing	2	4	2	1		2	11
Noise	2	3	1	1		1	8
Signal timing & turn lanes issues				2	2		4
Inappropriate Parking	1		2			1	4
Request for Roundabout	3	3					6
Request for No Roundabout	1						1
Request for Speed Enforcement	2	4		1			7
Request for Additional Signing	1	3			1		5
Request for Speed Humps/Cushions	2			1		1	4
Request for Curb, Gutter & Sidewalk	2	1	1				4
Request No turn restrictions due to Adverse Impacts	1				2		3
Request for Roadway Narrowing/Choking	1	1					2
Request for All-way Stop Control	1	1					2
Request for No Traffic Calming that would Adversely Impact Oakey Blvd				1			1
Totals:	37	34	14	11	9	8	113

2.2 JULY 15, 2021 NEIGHBORHOOD MEETING

The July 15, 2021 meeting was held at City Hall, Council Chambers, 495 S. Main Street, Las Vegas, NV. This meeting presented preliminary recommendations for traffic calming and pedestrian improvements in the neighborhood. The process of developing those recommendations is described in Section 3.0 of this report. Meeting materials included the items listed below that are also included in Section Two of the Appendices.

1. Five-page informative meeting handout
2. Roll plot exhibit board of existing conditions and data collection results
3. Exhibit boards of citizen input received
4. Roll plot exhibit board of preliminary improvement recommendations
5. Exhibit board of mini-roundabout concept at Via Olivero Avenue and Cimarron Road

The five-page handout included a summary of traffic volume and speed data collected, preliminary traffic calming and pedestrian improvement recommendations, and summaries of citizen input received. Citizen input and data collection results were reviewed. Preliminary improvement recommendations were also described, which included the measures listed below. The basis for the recommendations were summarized in the handout (see Section Two of Appendices) and are described in greater detail in Section 3.0 of this report.

1. O'Bannon and Via Olivero: *Speed Cushions*.
2. El Parque: *No treatments recommended*.
3. Cimarron Road: *Mini-Roundabouts, Road Diet, Gateway Treatments, Enhanced Motorists Information and Feedback*.
4. Oakey Boulevard: *Road Diet Treatments and Motorists Speed Feedback*.
5. Buffalo Drive: *Enhanced Motorists Information and Feedback*.
6. Pedestrian Improvement Recommendations:
 - a. Oakey Boulevard crosswalks and sidewalk ramp improvements at Miller Lane (to All America Park), and at Montessori Street (to Rainbow Park).
 - b. Sidewalk or asphalt path improvements on north side of Oakey Boulevard east of Valdez Street to provide pedestrian access to All American Park.
 - c. Upgrades to Buffalo Drive pedestrian crossing flashers at Del Rey Avenue so they are more visible to motorists.
 - d. Potential addition of pedestrian crossing flashers approximately 500 feet south of Del Rey Avenue at access gate to the park.

It was requested that comments and concerns be provided by August 1, 2021 and a QR code was again provided on the handout to facilitate easy online input. A detailed four-page log of citizen input and preliminary responses prepared by GCW is included in Section Two of the Appendices.

2.3 NOVEMBER 18, 2021 NEIGHBORHOOD MEETING

The November 18, 2021 meeting was held at West Sahara Library, 9600 W. Sahara Ave, Las Vegas, NV. This meeting presented study recommendations and an implementation plan for traffic calming and pedestrian improvements in the neighborhood. Preliminary recommendations presented at the previous meeting and described in Section 3.0 were further evaluated and reviewed with City staff. Some treatments preliminarily recommended for consideration per Section 3.0 were deemed inappropriate and not included in final recommendations.

Meeting materials included the items listed below that are also included in Section Three of the Appendices.

1. Three-page informative meeting handout
2. Roll plot exhibit board of recommended treatments and implementation plan

The three-page handout included summaries of the study process, implementation process/requirements, implementation timelines, and implementation recommendations per location including the anticipated timelines. The study process was reviewed, as was the implementation process. It was noted that implementation requires two-thirds support by balloting, and may require test installations and follow-up evaluations. Implementation timelines were also reviewed and described as: Short-Term (1-2 Years); Middle-Term (2-5 Years); and Long Term (5+ Years). Improvement recommendations and timelines were also explained, which included the measures listed below.

1. O'Bannon: Speed Cushions – Short-Term, Cimarron-to-Buffalo and middle term on remainder of street.
2. Via Olivero: Speed Cushions - Middle-Term, Cimarron-to-Rainbow.
3. El Parque: *No treatments recommended at this time due to low volumes, lower speeds and no evidence of significant cut-through traffic.*
4. Tenaya Way: Speed Cushions - Middle-Term, Via Olivero-to-Del Rey.
5. Cimarron Road:
 - a. Road Diet – Intermediate marking only by TEFO and permanent if successful.
 - b. Mini-Roundabouts – Intermediate temporary by TEFO and permanent if successful.
 - c. Oversized Speed Limit signs and pavement legends – Short-Term by TEFO.
 - d. Speed monitoring signs:
 - i. Short-Term Neighborhood purchase of two, TEFO-installed, and moved at Neighborhood request.
 - ii. Middle-Term City purchase and located at City discretion.
6. Oakey Boulevard:
 - a. Road Diet – Intermediate marking only by TEFO and permanent if successful.
 - b. Oversized Speed Limit signs and pavement legends – Short-Term by TEFO
 - c. Speed monitoring signs:

- i. Short-Term Neighborhood purchase of two, TEFO-installed, and moved at Neighborhood request.
 - ii. Middle-Term City purchase and located at City discretion.
 - d. Crosswalk and sidewalk ramps improvements: Short-Term at Montessori Street, and Middle-Term at Bel Castro Street and at Miller Street.
 - e. Sidewalk E. of Valdez – Middle-Term
 - f. Enhanced lighting at Rainbow Park – Short-Term by TEFO
7. Buffalo Drive:
- a. Reduced Speed Ahead signs – Short-Term by TEFO
 - b. Oversized Speed Limit signs and pavement legends – Short-Term by TEFO
 - c. Speed monitoring signs
 - i. Short-Term Neighborhood purchase of two, TEFO-installed, and moved at Neighborhood request.
 - ii. Middle-Term City purchase and located at City discretion.
 - d. Crosswalk and flasher upgrade at Del Rey – Middle-Term by TEFO

It was requested that comments and concerns be provided by November 30, 2021 and a QR code was again provided on the handout to facilitate easy online citizen input.

3.0 DEVELOPMENT OF PRELIMINARY RECOMMENDATIONS

Traffic data (volumes and speeds), street characteristics and citizen input on key areas of concern have been reviewed to facilitate identification of appropriate traffic calming measures. Average Daily Traffic (ADT) and spot speed data is summarized in **Table 3**. Citizen input received at the April 1, 2021 Neighborhood meeting through April 15, 2021 is summarized in Tables 1 and 2 in Section 2.1. More detail on input received following the meeting is also documented in a log included in Section One of the Appendices. The identification and evaluation of appropriate traffic calming measures are addressed by location of concern in the following subsections, and preliminary recommendations are noted.

Table 3. Summary of ADT and Spot Speed Data

#ID	Street & Segment	ADT Volume			Speed Data					
		NB/EB	SB/WB	Two-way	Posted	Avg	85 th %	10 mph Pace	#Veh	High
1	Tenaya, Del Rey-Oakey	1,523	1,052	2,575	25	34	40	28 - 37	100	54
2	Tenaya, Oakey-El Parque	1,549	1,120	2,668	25	31	37	27 - 36	100	41
3	Tenaya, El Parque-O'Bannon	1,619	1,224	2,843	25	32	37	29 - 38	100	52
4	Tenaya, O'Bannon-Via Olivero	1,634	1,235	2,869	25	33	38	28 - 37	100	45
5	Cimarron, Oakey-El Parque	3,292	3,288	6,580	25	35	40	31 - 40	100	49
6	Cimarron, El Parque-O'Bannon	3,249	3,052	6,301	25	35	39	29 - 38	100	56
7	Cimarron, O'Bannon-Via Olivero	3,479	3,423	6,902	25	35	41	30 - 39	100	45
8	Buffalo, Oakey-El Parque	10,493	10,880	21,372	35	41	46	38 - 47	100	58
9	Buffalo, El Parque-O'Bannon	10,873	10,733	21,606	35	43	47	38 - 47	100	64
10	Buffalo, O'Bannon-Via Olivero	11,034	10,908	21,942	35	41	46	37 - 46	100	51
11	Del Rey, Tenaya-Rainbow	233	445	678	25	27	32	23 - 32	64 ¹	36
12	Oakey, Durango-Cimarron	1,181	1,524	2,704	35	39	46	34 - 43	100	54
13	Oakey, Cimarron-Buffalo	1,522	2,116	3,638	35	36	41	32 - 41	100	49
14	Oakey, Buffalo-Tenaya	1,818	2,240	4,058	35	36	40	32 - 41	100	47
15	Oakey, Tenaya-Rainbow	2,185	1,204	3,389	35	37	43	33 - 42	100	51
16	El Parque, Cimarron-Buffalo	101	105	206	25	29	32	27 - 36	15 ²	36
17	El Parque, Buffalo-Tenaya	145	109	254	25	25	30	22 - 31	18 ²	34
18	O'Bannon, Durango-Cimarron	435	321	755	25	35	39	31 - 40	59 ¹	51
19	O'Bannon, Cimarron-Buffalo	254	255	509	25	31	36	27 - 36	66 ¹	47
20	O'Bannon, Buffalo-Tenaya	291	237	527	25	31	35	28 - 37	55 ¹	37
21	O'Bannon, Tenaya-Rainbow	406	326	732	25	33	39	30 - 39	68 ¹	51
22	Via Olivero, Durango-Cimarron	254	146	400	25	37	42	32 - 41	40 ¹	46
23	Via Olivero, Cimarron-Buffalo	192	212	403	25	38	46	34 - 43	42 ¹	52
24	Via Olivero, Buffalo-Tenaya	245	244	489	25	34	40	30 - 39	54 ¹	64
25	Via Olivero, Tenaya-Rainbow	296	320	616	25	31	36	28 - 37	42 ¹	54

¹ Locations with <100 spot speed data points, but ≥40

² Locations with <20 spot speed data points

3.1 CIMARRON ROAD

3.1.1 CONCERNS, CHARACTERISTICS AND DATA

Citizen concerns are primarily excessive speeding, high volumes, and associated safety and noise issues. Cimarron Road is a center-section line collector street (80-foot right-of-way) that serves as a primary emergency response route, while also serving a local access function by providing direct access to several abutting residential parcels. The large majority of abutting parcels are residential. Only the Sahara Avenue - Via Olivero block and the southwest corner of the Charleston Boulevard intersection are commercial.

The characteristics of abutting residential use are distinctly different north and south of Oakey Boulevard. To the north of Oakey Boulevard the abutting residential use is characterized by tract home subdivisions and some multi-family near Charleston Boulevard. Abutting residential use south of Oakey Boulevard is characterized by large lot (i.e., >0.5 acres) custom homes, seven of which front on to Cimarron Road and take direct access from it.

Cimarron Road is posted for a 25 mph speed limit, incorporates a flush center turn lane, and forms signal-controlled intersections with Sahara Avenue, Oakey Boulevard and Charleston Boulevard. It is also posted for 25 mph north of Charleston Boulevard, but posted for 35 mph south of Sahara Avenue in Clark County jurisdiction. It incorporates bike lanes in each direction, and two motor vehicle lanes per direction on about half its length (see **Table 4** below).

Table 4. Inventory of Through Travel Lanes on Cimarron Road

Street Segment	Segment Length	No. of Lanes	
		Southbound	Northbound
Charleston Blvd-Oakey Blvd	1/2 mile	1	2
Oakey Blvd-El Parque Ave	1/8 mile	1	2
El Parque Ave-Via Olivero Ave	1/4 mile	1	1
Via Olivero Ave-Sahara	1/8 mile	2	2

Traffic counts and speed data were collected on Cimarron Road at three locations between Oakey Boulevard and Via Olivero Avenue. The ADT was found to be approximately 6,900 vehicles between Via Olivero Avenue and O'Bannon Drive. Average speeds were found to be approximately 35 mph, and 85th percentile speeds were found to be approximately 40 mph, values that are well above the posted speed limit of 25 mph.

The speed data confirmed citizen concerns about speeding well in excess of the posted limit. An ADT of 7,000 is not typically considered high for an 80-foot center-section line collector, but in the case of Cimarron Road, this street does provide direct residential access. Also, Cimarron Road was found to be carrying significantly more traffic than any other street surveyed in this study,

with the exception of Buffalo Drive - a 100-foot section line arterial. The other center-section line collectors of Oakey Boulevard and Tenaya Way were found to be carrying ADTs of approximately 4,100 and 2,900 respectively.

3.1.2 TRAFFIC CALMING MEASURES

It is recommended that the measures listed below be considered for Cimarron Road. These measures will require review and approval of the Fire Department due to potential adverse impact on emergency response.

1. Mini-roundabout installations at the Via Olivero Avenue, O'Bannon Drive and El Parque Avenue intersections.
2. Road diet measures to reduce northbound Cimarron Road to one lane between El Parque Avenue and Oakey Boulevard. This could also include raised median from Via Olivero Avenue to approximately 300 feet north of El Parque Avenue.
3. Enhanced motorist information and feedback consisting of installation of "Reduced Speed Ahead" signs, oversized "25 MPH Speed Limit" signs, "25 MPH" pavement legends, and periodic use of Speed Monitoring Trailers to encourage speed limit compliance. It is recommended that this be done in conjunction with treatments distinguishing the segments north and south of Oakey Boulevard. It is recommended that a higher speed limit be considered for Cimarron Road north of Oakey Boulevard as a separate issue.
4. Speed "cushion" installations (speed humps slotted to accommodate emergency vehicles) that are located approximately midblock between proposed mini-roundabouts.

The following measures are not considered appropriate and are not recommended.

1. Traffic circles – not considered appropriate for a collector or emergency route
2. Roundabout – existing intersection footprints not big enough
3. Speed humps, speed tables, raised crosswalks, or raised intersections – not considered appropriate for emergency route.
4. Lateral shifts, chicane or realigned intersections – difficult with fronting driveways and existing roadway width, and not as effective as vertical deflection.
5. Routing restriction - not considered appropriate for emergency route.

3.1.2.1 MINI-ROUNDBABOUTS

Mini-roundabouts differ from traffic circles in that they are designed to roundabout geometric principles per Federal guidelines and are considered appropriate for collector streets such as Cimarron Road. Anticipated benefits include a reduction in intersection crash potential and some reduction in speeds. It is anticipated that they would also be helpful in distinguishing the different

characteristics of the Via Olivero Avenue to El Parque Avenue segment, which provides a direct residential access function that other segments do not.

Emergency vehicles are able to maneuver through mini-roundabouts at low speed, but may need to utilize the traversable raised center island. The five-year reported crash histories at the three intersections are *five* at Via Olivero Avenue, *zero* at O'Bannon Drive, and *one* at El Parque Avenue. Consequently, based on crash history, the Via Olivero Avenue intersection should have the highest priority, followed by the El Parque Avenue intersection. Those happen to be the end streets of the two-block segment providing direct residential access, and the two intersections at which proper roundabout pedestrian crossings treatment can be most easily added. Mini-roundabouts are a relatively expensive treatment, in part due to the pedestrian crossing improvements typically needed. Consequently, it may be appropriate to phase their implementation (installing just one first to test its success) or to try other treatments first.

3.1.2.2 ROAD DIET MEASURES

The road diet measures envisioned would involve the installation of raised median and the elimination of a northbound travel lane between El Parque Avenue and Oakey Boulevard. Anticipated benefits include a reduction in crash potential, a more pedestrian-friendly street, and limited speed reduction. Like mini-roundabouts, raised median would help distinguish the Via Olivero Avenue to El Parque Avenue segment.

Raised median would prevent aggressive motorists from passing slower-moving motorists, but would also restrict abutting resident access. Residents would no longer be able to make a direct left-in or left-out to/from their property. But if combined with mini-roundabouts, abutting residents could make a U-turn at the next intersection to limit their out-of-direction travel. Also, if combined with speed cushions, a raised median may allow the speed cushions to be better placed, as each direction can be placed independently instead of having to be at the same longitudinal location.

3.1.2.3 ENHANCED MOTORIST INFORMATION AND FEEDBACK

These measures do not constitute physical changes to the roadway, and therefore are not technically considered traffic calming treatments. However, they can be effective as part of traffic calming efforts.

As previously noted, the characteristics of Cimarron Road are distinctly different north and south of Oakey Boulevard. North of Oakey Boulevard the abutting residential use is characterized by tract home subdivisions and some multi-family, but no direct local access to single family detached residential. Although there is some on-street parking north of Windrush Avenue, the 25 mph speed limit north of Oakey Boulevard is not as clearly justified as it is south of Oakey Boulevard where the street provides direct local access to abutting residential parcels. It is

therefore recommended that enhanced emphasis of the 25 mph speed limit be considered south of Oakey Boulevard.

Since 80-foot center-section line collectors often have speed limits higher than 25 mph, it is recommended that special measures be considered to emphasize the limit where it is most critical, and make sure it is understood by motorists. Also, there has been neighborhood input that the 25 mph speed limit is not emphasized enough, and some motorists may not be aware of it. Proposed measures are listed below. The effectiveness of these measures is difficult to predict. If not done in conjunction with other traffic calming treatments, effectiveness may be limited.

1. "Reduced Speed Ahead" signs
2. Oversized "25 MPH Speed Limit" signs
3. "25 MPH" pavement legends.
4. Periodic use of Speed Monitoring Trailers that display a motorist's speed to them as well as the speed limit.

3.1.2.4 SPEED CUSHIONS

Speed cushions incorporate slots that accommodate the wide wheelbase of emergency vehicles, and thus have minimal impact on emergency response times. They are typically placed at 250 to 500 feet apart. If combined with intersection roundabout treatments, one speed cushion installation could be placed on each of the two blocks between Via Olivero Avenue and El Parque. In the absence of intersection treatments, approximately six speed cushion treatments would likely be needed for the two-block Via Olivero Avenue to El Parque Avenue segment.

Anticipated benefits and impacts include the following:

1. Significant speed reduction, typically 20 to 25 percent
2. Some reduction in ADT traffic demand
3. Reduction in crash rates – average of 13% found in other studies

Speed cushions, like speed humps, are typically utilized on local and collector streets carrying ADT demands of 4,000 vehicles or less, but have been used on streets carrying ADTs up to 12,000 vehicles in some communities. From a nationwide perspective, Cimarron Road's ADT of 6,900 is on the high side of streets where speed cushion or speed humps installations have been employed. It is also well above the City's maximum ADT threshold at which speed hump installations are allowed.

The City's current Neighborhood Traffic Management (NTMP) addresses use of speed humps and speed tables, but not speed cushions. Cimarron Road meets all of the current NTMP speed hump criteria listed in **Table 5** with the exception of #3 (ADT < 3,000), and #7 (Cimarron is primary emergency response route).

Table 5. City NTMP Minimum Speed Hump Criteria and Compliance

Criteria	Cimarron Road
1. Speed limit of 25 mph:	Satisfied
2. 85 th percentile speed >35 mph:	Satisfied
3. ADT between 800 and 3,000:	Not Satisfied
4. Classified ≤Neighborhood Collector and ≤ 1 lane/direction:	Satisfied
5. Installation visible from 200 feet:	Satisfied
6. Grades ≤8 Percent:	Satisfied
7. Not emergency response route:	Not Satisfied
8. Not likely to cause problematic diversions:	Satisfied
9. Not transit bus route:	Satisfied

Subject to Fire Department approval, it makes sense to not apply the #7 criteria to speed cushion installations since they are designed to avoid significant adverse impacts to emergency response times.

Speed cushions do have a similar impact on general traffic as speed humps. Consequently, a waiver of the #3 criteria needs to be justified, as a lot of motorists using a center-section line collector are affected. *It is therefore recommended that speed cushions only be employed on Cimarron Road if other measures have proven to be ineffective, and significant speeding and safety issues remain.*

3.2 VIA OLIVERO AVENUE AND O'BANNON DRIVE

3.2.1 CONCERNS, CHARACTERISTICS AND DATA

Citizen concerns are primarily excessive speeding, high volumes, and associated safety and noise issues. Both Via Olivero Avenue and O'Bannon Drive are local streets that provide direct access to large lot (i.e., >0.5 acres) single-family detached custom homes, and are posted for 25 mph speed limits. Portions of both streets serve as secondary emergency response routes. They are also contiguous streets from Rainbow Boulevard to Durango Drive, and can be used by non-local traffic that should be traveling on arterials.

Traffic counts and speed data were collected at several locations on both streets. On Via Olivero Avenue, ADTs varied from 400 to 616 vehicles, average speeds varied from 31 to 38 mph, and 85th percentile speeds varied from 36 to 46 mph. On O'Bannon Drive, ADTs varied from 509 to 755 vehicles, average speeds varied from 31 to 35 mph, and 85th percentile speeds varied from 35 to 39 mph.

The speed data confirm citizen concerns about speeding well in excess of the posted limit. And even though the ADT demands are in an appropriate range for a local residential, they are higher than they should be given the low density residential use they are providing access to. Trip generation analyses, as described in ITE's 2011 *Guidelines for the Design and Design and Application of Speed Humps and Speed Tables* (Section 2.3.2.2), indicate that volumes are substantially higher than they should be if the streets were only serving a local access function (see **Table 6**).

Table 6. Estimates of Cut-Through Traffic

Street & Segment	Dwelling Units Taking Access	Estimated Local Daily Trips*	Average Daily Count	Estimated Cut-Thru Traffic	
				Volume	Percentage
El Parque, Cimarron-Buffalo	44	220	206	-14	-7%
El Parque, Buffalo-Bel Castro	78	390	254	-136	-54%
O'Bannon, Durango-Cimarron	91	455	755	300	40%
O'Bannon, Cimarron-Buffalo	66	330	509	179	35%
O'Bannon, Buffalo-Tenaya	38	190	527	337	64%
Via Olivero, Durango-Cimarron	39	195	400	205	51%
Via Olivero, Cimarron-Buffalo	19	95	403	308	76%
Via Olivero, Buffalo-Tenaya	31	155	489	334	68%
Via Olivero, Tenaya-Rainbow	21	105	616	511	83%

*Based on 10 trips per day per single-family detached home divided by 2 for access in each direction

3.2.2 TRAFFIC CALMING MEASURES

It is recommended that speed cushions be considered for Via Olivero Avenue and O'Bannon Drive, which will require review and approval of the Fire Department due to potential adverse impact on emergency response. The following measures are not considered appropriate and are not recommended.

1. Traffic circles, mini-roundabouts or roundabouts – more suited to intersection crash reduction and not effective for speed reduction between intersections.
2. Road Diet Measures – Already two-lane street. Re-striping for narrower lanes would be unusual for a local residential street, and likely to have limited effectiveness. It was also previously considered and rejected.
3. Enhanced motorist information and feedback – Not practical to apply to low volume streets where issues extend for two miles.
4. Speed humps, speed tables, raised crosswalks, or raised intersections – not considered appropriate for emergency route.

5. Lateral shifts, chicane or realigned intersections – difficult with fronting driveways and existing roadway width, and not as effective as vertical deflection.
6. Routing restriction - not considered appropriate for emergency route.

3.2.2.1 SPEED CUSHIONS

Speed cushions incorporate slots that accommodate the wide wheel base of emergency vehicles, and thus have minimal impact on emergency response times. They are typically placed at 250 to 500 feet apart. At recommended spacings, it estimated that 20 to 25 speed cushion installations would be needed on each street to address their entire two-mile lengths. Anticipated benefits and impacts include the following:

1. Significant speed reduction, typically 20 to 25 percent
2. Some reduction in ADT traffic demand
3. Reduction in crash rates – average of 13% found in other studies

The City's current Neighborhood Traffic Management (NTMP) addresses use of speed humps and speed tables, but not speed cushions. Via Olivero Avenue and O'Bannon Drive meet all of the current NTMP speed hump criteria listed in **Table 7** with the exception of #3 (ADT > 800), and #7 (both are secondary emergency response routes).

Subject to Fire Department approval, it makes sense to not apply the #7 criteria to speed cushion installations since they are designed to avoid significant adverse impacts to emergency response times.

Although ADT demands are below the #3 criteria, it is recommended that a waiver be considered since this is a low density area where volumes should be very low. Also trip generation analyses summarized in Table 6 indicates there is considerable cut-through traffic.

If implemented, phasing of the speed cushion installations may be considered due to funding limitations and to test their success and acceptability in terms of emergency response impacts. In terms of priority, it is noted that the highest speeds were found on the 1/4-mile of Via Olivero Avenue from Cimarron Road to Buffalo Drive (38 mph average and 46 mph 85th percentile). As shown in Table 6, the highest volumes occurred on O'Bannon Drive, Durango to Cimarron; and the highest estimate of non-local cut-through traffic occurred on Via Olivero, Tenaya to Rainbow.

Table 7. City NTMP Minimum Speed Hump Criteria and Compliance

Criteria	Via Olivero	O'Bannon
1. Speed limit of 25 mph:	Satisfied	Satisfied
2. 85 th percentile speed >35 mph:	Satisfied	Satisfied
3. ADT between 800 and 3,000:	Not Satisfied	Not Satisfied
4. Classified ≤Neighborhood Collector and ≤ 1 lane/direction:	Satisfied	Satisfied
5. Installation visible from 200 feet:	Satisfied	Satisfied
6. Grades ≤8 Percent:	Satisfied	Satisfied
7. Not emergency response route:	Not Satisfied	Not Satisfied
8. Not likely to cause problematic diversions:	Satisfied	Satisfied
9. Not transit bus route:	Satisfied	Satisfied

3.3 OAKEY BOULEVARD

3.3.1 CONCERNS, CHARACTERISTICS AND DATA

Citizen concerns are primarily excessive speeding, high volumes, and associated safety and noise issues. Oakey Boulevard is a center-section line collector street (80-foot right-of-way) that serves as a primary response route. With the exception of two north-side lots east of Tenaya, it does not provide direct access to abutting residential parcels. It does abut the Herbert A. Derfelt Elementary School, the All American Park, and Rainbow Park.

Oakey Boulevard is posted for a 35 mph speed limit, incorporates a flush center turn lane, and forms signal-controlled intersections with Durango Drive, Buffalo Drive and Charleston Boulevard. Raised median does exist for approximately 400 linear feet (lf) along the elementary school. Oakey Boulevard incorporates bike lanes in each direction, two through motor vehicle lanes in the westbound direction, and one motor vehicle lane in the eastbound direction. Street improvements are largely complete, with the exception of missing sidewalk or asphalt walkway on approximately 14 percent of frontage, at the segments listed below in **Table 8**.

Table 8. Missing Sidewalk Segments on Oakey Boulevard

Segment	Length
1. North side, east of Valadez Street:	~300 lf
2. South side, east of Miller Street:	~150 lf (paved shoulder exists)
3. North side, east of Buffalo Drive:	~200 lf (adjacent parcel under construction)
4. South side, east of Pioneer Way:	~280 lf
5. South side, east of Monte Cristo Way:	~300 lf
6. North side, east of Tenaya Way:	~200 lf (paved shoulder exists)
7. South side, east of Tenaya Way:	~630 lf
8. North side, east & west of Belcastro Street:	~900 lf

Traffic counts and speed data were collected on Oakey Boulevard at four locations between Durango Drive and Rainbow Boulevard. ADTs ranged from approximately 2,700 vehicles west of

Cimarron Road to just under 4,100 vehicles between Buffalo Drive and Tenaya Way. ADT demand dropped to approximately 3,400 vehicles east of Tenaya Way. With the exception of the Tenaya-to-Rainbow segment, volumes were heavier in the westbound direction (~57%) where two lanes are provided. East of Tenaya Way, the eastbound direction was heavier (64%). The highest hourly volume was found to be 273 vph in the westbound direction between 5:00 and 6:00 pm.

An ADT of 4,100 is considered relatively low for an 80-foot center-section line collector. The two residential lots that take direct access have semi-circular driveways that do not require back-out entry onto Oakey Boulevard. It is also noted the peak directional demand of 273 vph is well within the service capacity of a single lane, where two are currently provided in the westbound direction.

Average speeds varied from 36 to 39 mph, less than 5 mph over the posted limit. The 85th percentile speed on the lightest traveled segment west of Cimarron Road was 46 mph. The 85th percentile speeds on the other three segments varied from 40 to 43 mph, less than 10 mph over posted. Not surprisingly, the differences between actual speed and posted speed limits were lower on Oakey Boulevard than most of the other streets posted for 25 mph. However, the data does confirm citizen concerns about speeding.

3.3.2 TRAFFIC CALMING MEASURES

It is recommended that Road Diet and Motorist Speed Feedback Measures be considered for Oakey Boulevard. The following measures are not considered appropriate and are not recommended.

1. Traffic circles, mini-roundabouts or roundabouts – more suited to intersection crash reduction and not effective for speed reduction between intersections. Not requested.
2. Speed humps, speed tables, raised crosswalks, or raised intersections – not considered appropriate for emergency route.
3. Speed cushions – Not significant fronting residential, speed limit >25 mph, and ADT >3,000 vehicles
4. Lateral shifts, chicane or realigned intersections – Not considered appropriate for 35 mph street.
5. Routing restriction - not considered appropriate for emergency route.

3.3.2.1 ROAD DIET

Oakey Boulevard incorporates a face-of-curb width of 69 feet, which includes an 18-inch gutter on each side. It is recommended that a road diet treatment be considered to reduce Oakey Boulevard to a single lane westbound, which would match the existing single lane eastbound. This could be accomplished by constructing a 21-foot wide raised median with left-turn pockets where needed. This would leave a 24-foot clear width each side for emergency access, and the

22.5 feet of asphalt could be delineated for an 11-foot motor vehicle lane, 4-foot buffer and 7-foot bike lane (accommodating bike passing or two-abreast cycling). At intersections the buffered bike lane could be converted to an 11-foot shared bike lane/right-turn lane. The raised median could include non-irrigated aesthetic treatments.

An alternative section that would be less costly is something similar to what has been constructed on Cimarron Road north of Charleston Boulevard. It primarily involves striping treatments with short raised islands placed within the center two-way left-turn lane. The section includes a parking lane outside of the bike lane that sees little use along the large majority of frontage. The resulting travel-way each direction is 27 feet, considerably wider than the 22.5 feet that the 21-foot raised median option would produce. The wider travel-way widths each direction may make the “Cimarron” section less effective, but it should be considered if it has been found to be successful. However, there has been input from neighborhood citizens that they don’t perceive it as being effective.

3.3.2.2 SPEED MONITORING TRAILERS

Construction of raised median would provide a prominent spot for Speed Monitoring Trailers to be placed to encourage better speed limit compliance. They display a motorist’s speed to them as well as the speed limit, and would be particularly appropriate to use near the two parks and elementary school that abut Oakey Boulevard.

3.4 BUFFALO DRIVE

3.4.1 CONCERNS, CHARACTERISTICS AND DATA

Citizen concerns are primarily excessive speeding, and associated requests for additional signing and enforcement. There have also been requests to consider turn movement restrictions at minor intersections, and requests *not* to make any turn restrictions.

Buffalo Drive is a section line arterial street (100-foot right-of-way) that forms a freeway interchange with the Summerlin Parkway approximately 1.3 miles north of Charleston Boulevard. It is also contiguous for 3 miles to the south of Sahara Avenue, where it forms a T-intersection with Tropicana Avenue. Within the study area, it does provide direct access to four abutting residential parcels on the east side just north of O’Bannon Drive. Buffalo Drive also abuts the All American Park. The Park frontage is fenced, with openings at three driveways, one of which aligns with Del Rey Avenue. There is also a gated opening at a sidewalk connection to Buffalo Drive approximately 500 feet south of Del Rey Avenue. An enhanced pedestrian crossing exists on the south leg of the Del Rey intersection, with overhead flashers on short mast arms.

Buffalo Drive is posted for a 35 mph speed limit between Charleston Boulevard and Sahara Avenue. The speed limit raises to 45 mph both north of Charleston Boulevard and south of

Sahara Avenue. It is delineated for two motor vehicle lanes, a buffered bike lane, and a parking lane in each direction along most of its one mile length within the study area.

Traffic counts and speed data were collected on Buffalo Drive at three locations between Oakey Boulevard and Via Olivero Avenue. ADTs ranged 21,000 and 22,000 vehicles. Average speeds varied from 41 to 43 mph, 6-8 mph over the posted limit. The 85th percentile speeds varied from 46 to 47 mph, 11-12 mph over posted. The data does confirm citizen concerns about speeding.

3.4.2 TRAFFIC CALMING MEASURES

Given that Buffalo Drive is a section line arterial, very limited physical traffic calming measures are considered appropriate to apply to it. However, it is recommended that enhanced motorist information and feedback be considered. This would consist of the following:

1. Reduced Speed Ahead signs (replace outdated signing)
2. Oversized 35 MPH Speed Limit signs (appropriate since abutting segments are 45 mph)
3. 35 MPH pavement legends (appropriate since abutting segments are 45 mph)
4. Periodic use of Speed Monitoring Trailers that display a motorist's speed to them as well as the speed limit (this measure may already be employed)

As previously noted, there was some interest expressed at the April 1 Neighborhood meeting to have left-turns and east-west through movements restricted at local street intersections with Buffalo Drive (i.e., Via Olivero Avenue, O'Bannon Drive, and El Parque Avenue) in order to limit cut-through traffic demands. Subsequently, two comments have been received requesting that restrictions *not* be implemented. Also, based on inspection of turning movement counts provided by the City, it is not clear that restrictions would significantly reduce cut-through demands. Therefore, the turn restrictions are not recommended.

3.5 PEDESTRIAN IMPROVEMENTS

There were only a few comments received requesting the addition of curbed sidewalk. One of those was for the southeast corner of Cimarron Road and O'Bannon Drive, where sidewalk was requested to protect pedestrians and slow down right-turns. Sidewalk installed at this corner would need to extend approximately 260 feet to connect to existing sidewalk to the east, and approximately 600 feet to connect to existing sidewalk to the south. Also, there is not nearby sidewalk on the northeast and southwest corners of the intersection. Given that most citizen input focused on other areas of concern, it is recommended that a more economical treatment of short frangible delineator posts be considered at the corners to sharpen and slow the path of right-turns, and provide some protection for pedestrians utilizing the shoulder.

It is recommended that limited curbed sidewalk or asphalt path construction be considered to fill in missing segments that would provide for walk routes along Oakey Boulevard to area parks. These are listed in **Table 9**. It is also recommended that sidewalk and ramp improvements be considered at the Oakey Boulevard/Montessori Street intersection (NWC and south side) to provide a marked and signed crosswalk to Rainbow Park.

Table 9. Recommended Sidewalk/Asphalt Path Construction on Oakey Boulevard

Segment	Length
1. North side, east of Valadez Street:	~300 lf
2. North side, east of Buffalo Drive:	~200 lf (adjacent parcel under construction)

Other pedestrian Improvements recommended for consideration:

1. Upgrade the existing pedestrian crossing of Buffalo Drive at Del Rey Avenue. The existing crossing incorporates an overhead Rectangular Rapid Flashing Beacon (RRFB), but the existing poles will not support longer mast arms to better position the overhead signs and flashers near the center of approach lanes. Also, a curb extension should be considered on the west side to shorten the crossing distance and provide better visibility. A curb extension could be considered on the east side as well, but it would eliminate a right-turn lane.
2. Consider the addition of an enhanced pedestrian crossing of Buffalo Drive at the gated access to the All American Park approximately 500 feet south of Del Rey Avenue (i.e., RRFB or pedestrian hybrid beacon). It is understood that pedestrian crossings are generated by Park parking on the east side of Buffalo Drive, and many pedestrians walking to and from the gated access are unlikely to walk 500 feet up to Del Rey Avenue.
3. Signed and marked crosswalk of Oakey Boulevard at Miller Lane (~600 feet west of Buffalo) where there is an entrance to the All American Park. A sidewalk ramp is needed on the north side of Oakey Boulevard. A paved shoulder exists on the southeast corner, and sidewalk construction may not be justified by pedestrian volumes.
4. A signed and marked crossing of Oakey Boulevard at Montessori Street to provide better access to the Rainbow family park. A sidewalk ramp is needed on the south side, and curb return sidewalk/ramp improvements should be considered on the northwest corner of the intersection.

3.6 NON-ACTION STREETS

3.6.1 EL PARQUE AVENUE

Citizen concerns are primarily excessive speeding, high volumes, and associated safety and noise issues. El Parque Avenue is local street that provides direct access to large lot (i.e.,

> 0.5 acres) single-family detached custom homes, and it is posted for a 25 mph speed limit. It abuts the Derfelt Elementary School, and is contiguous from its T-intersection with Lisa Lane to its T-intersection with Belcastro Street next to Rainbow Park. The portion east of Buffalo Drive serves as secondary emergency response route.

Traffic counts and speed data were collected at two locations east and west of Buffalo Drive. ADTs were found to be very low, approximately 200 vehicles west of Buffalo Drive, and approximately 250 vehicles east of Buffalo Drive. The low volumes made it difficult to collect spot speed data in a reasonable amount of time. The data collected reflects average speeds of approximately 29 mph west of Buffalo Drive, and 25 mph east of Buffalo Drive. 85th percentile speeds were found to be approximately 32 mph west of Buffalo Drive and 30 mph east of Buffalo Drive.

The volumes and speeds were found to be well below those of Via Olivero Avenue and O'Bannon Drive. Also, trip generation analyses summarized in Table 6 do not indicate significant cut-through traffic is using the street. It is also noted that El Parque Avenue does not meet Minimum NTMP criteria #2 (85th percentile speed >35 mph) for speed hump installations, and is well short of criteria #3 (ADT between 800 and 3,000). Given these characteristics, no traffic calming mitigation is recommended for El Parque Avenue.

However, if traffic calming treatments are implemented on parallel streets, particularly O'Bannon Drive, some traffic diversion to El Parque Avenue could occur, and this should be monitored as part of any installations on parallel routes. If diversions are found to be significant, the appropriateness of mitigating traffic calming improvements to El Parque should be revisited.

3.6.2 TENAYA WAY

No citizen input was received on Tenaya Way, which is a center-section line collector street (80-foot right-of-way) that serves as a primary response route. It also provides direct access to 27 residential parcels, and abuts a car dealership and Catholic Church near Sahara Avenue. There is considerable on-street parking near Sahara Avenue to north of Via Olivero Avenue.

Tenaya Way is posted for a 25 mph speed limit, and incorporates a flush center turn lane and bike lanes in each direction. It forms a signal-controlled intersection with Sahara Drive, an all-way stop-controlled intersection with Oakey Boulevard (with flashers), and a stop-controlled T-intersection with Charleston Boulevard. Much of its frontage does not include curb, gutter and sidewalk.

Traffic counts and speed data were collected on Tenaya Way at four locations between Via Olivero Avenue and Del Rey Avenue. ADTs ranged from approximately 2,600 to 2,900 vehicles, values that are notably lower than the other two center-section line collector streets surveyed

(Cimarron Road and Oakey Boulevard). Average speeds varied from 31 to 34 mph, and 85th percentile speeds varied from 37 to 40 mph; values well above the posted speed limit, similar to other streets surveyed.

Although, complaints about speeding specific to Tenaya Way were not received, the data indicates that it is an issue. Potential mitigation could include speed cushions, as it meets all NTMP Minimum Criteria (subject to Fire Department concurrence on waiving #7), including an ADT between 800 and 3,000 vehicles. However, in the absence of any complaints or request for mitigating improvements to Tenaya Way, no recommendations for improvements have yet been made.

3.6.3 DEL REY AVENUE

No citizen input was received on Del Rey Avenue, which has recently seen the installation of four rubberized speed cushion installations between Tenaya Way and Rainbow Boulevard. The tack-on installations are 6'-8" in length with 2-foot ramps each side to a 2'-8" flat top. The cushions, intended to be traversable by emergency vehicles, are approximately 6'-6" wide with 1-foot tapers and 3-foot slots each side. The most westerly installation is approximately 350' east of Tenaya Way, and the four installations have west-to-east spacings of 890', 485' and 390'. The spacings are impacted by several local intersections (Belcastro Street, a private cul-de-sac, Marina Del Rey Court (private), Montessori Street, and Casa Del Rey Court (private)). One panel at one of the cushions at the most westerly installation has dislodged.

When compared to other streets surveyed, the speed data indicate the speed cushions have been effective. The average speed of 27 mph is only 2 mph over the limit, and the 85th percentile speed of 32 mph is less than 10 mph over the limit. The data was collected near Belcastro Street, approximately 200 feet from the nearest speed cushion.

The installations are much shorter than the recommended 12 to 14 feet, and are more impactful to traverse than longer installations. If they are to be retained, it is recommended that longer installations be considered, and that locations be reviewed to determine if tighter spacings can be achieved.