TRAFFIC COMMISSION MEETING

May 5, 2021

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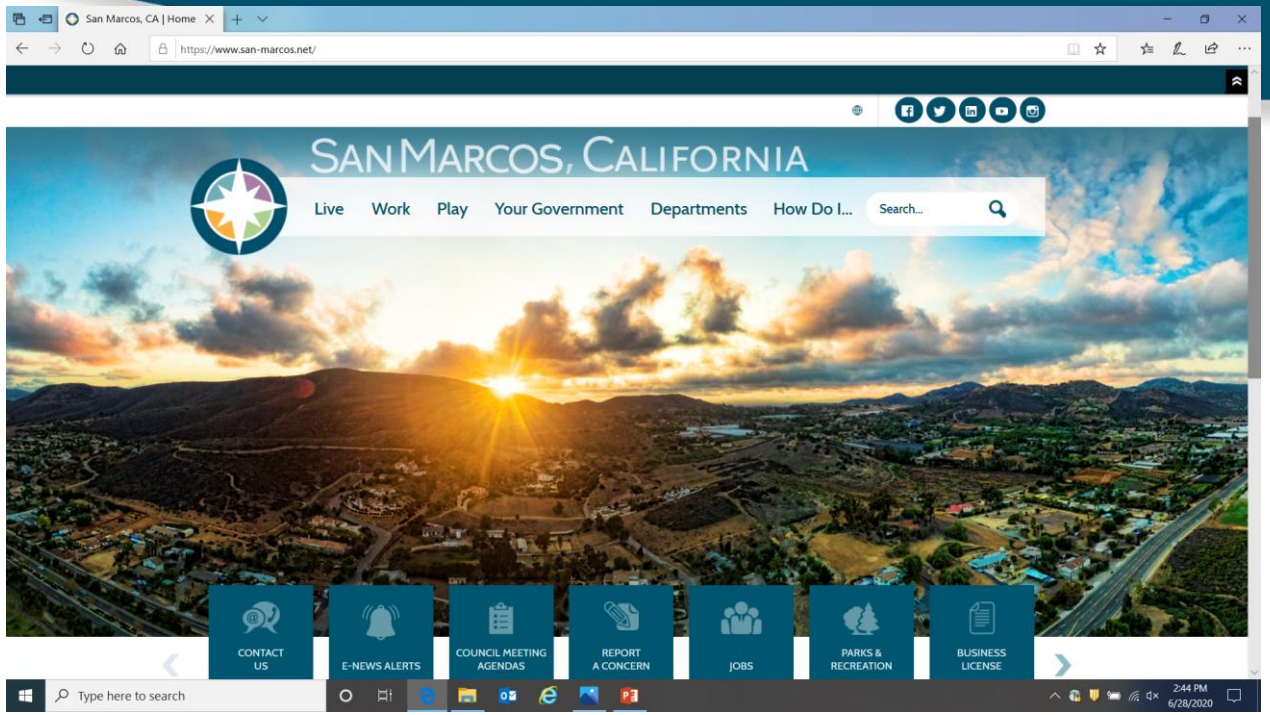
REPORT A CONCERN (TRAFFIC SAFETY)



- Select Traffic Congestion
- Enter description of traffic safety concerns (speeding, new signs, new markings, etc.)
- Enter phone number/email contact

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AGENDA ITEM #7A

Traffic Signing and Striping Improvements – Mulberry Drive and Rose Ranch Road Intersection

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BACKGROUND

- A pattern of vehicular collisions from 2017-2020 traveling in the northbound Mulberry Drive direction at the signalized intersection with Rose Ranch Road alerted Engineering staff to investigate.
- The reported collisions involved motorists that caused significant City property damage and injuries.
- Residents adjacent to the intersection were also recently interviewed and complained about the excessive speeding and red light running occurring at the intersection.
- Based on the recent collisions and residential concerns, Engineering staff initiated a traffic safety evaluation of the signalized intersection.

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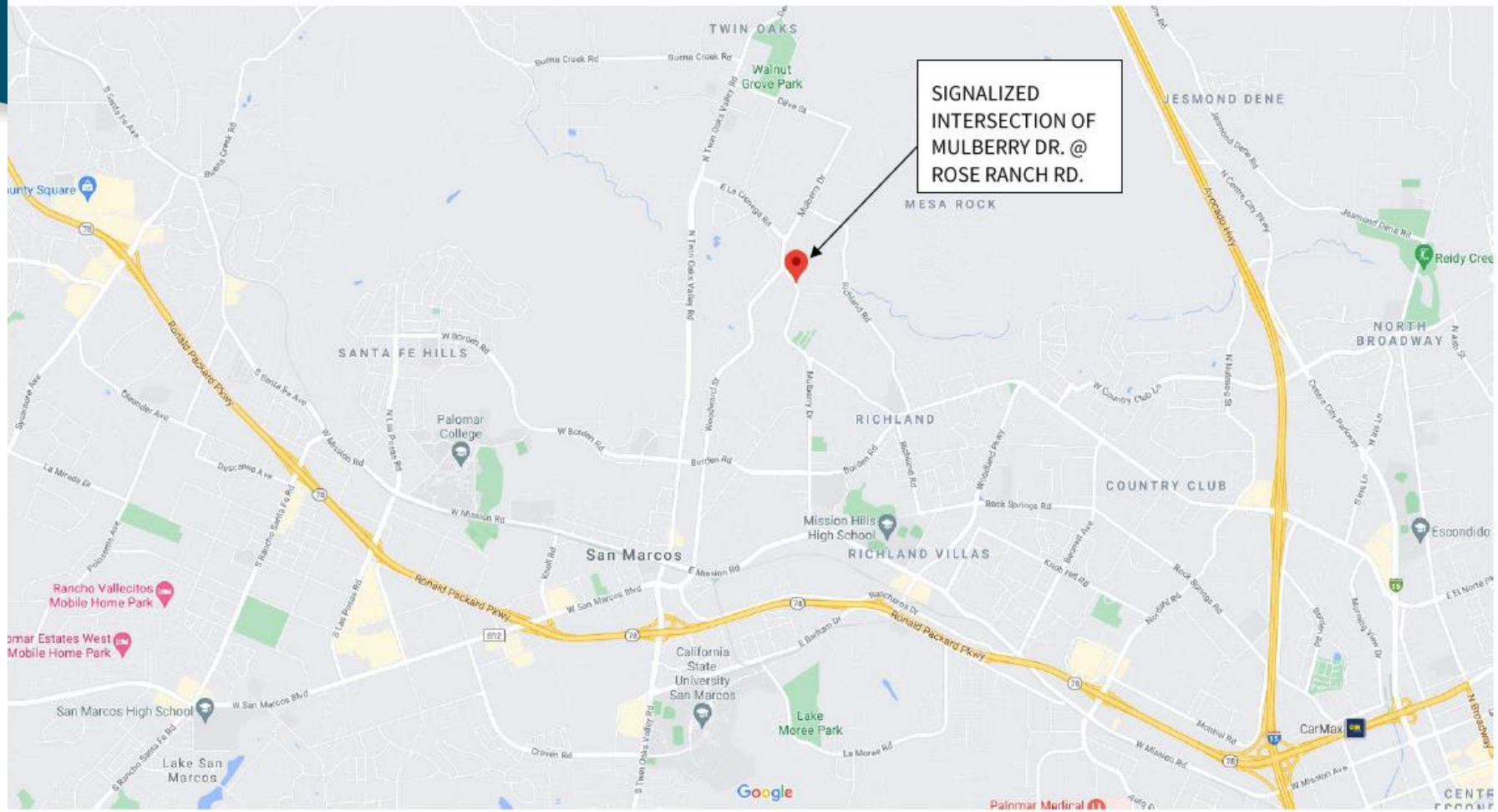

- Study area – Signalized intersection of Mulberry Drive @ Rose Ranch Rd.
- Northern part of the City

VICINITY MAP

TRAFFIC SIGNING/STRIPING IMPROVEMENTS – MULBERRY DR. @ ROSE RANCH RD.

AGENDA ITEM #7A – MAY 2021

N

*NOT TO SCALE

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- Mulberry Drive (collector street) - (2) lanes in the SB direction with a single in the NB direction.
- The posted speed limit - 45 MPH
- Street grade approx. 6% uphill in the NB direction towards the intersection.
- Rose Ranch Road (residential-collector) – single lane in each direction
- The posted speed limit - 40 MPH with no bike lanes and existing sidewalks on the south side.
- Street grade approx. 5% uphill in the westbound direction towards the intersection.
- Short radius curve at intersection – westbound; several curve warning signs installed
- The signalized intersection sits at the vertical crest of the roadway.
- NB Mulberry Dr. curves to the west at the intersection.
- There is an existing northbound right-turn slip lane which is signalized to allow motorists to turn right into eastbound Rose Ranch Road when the traffic signal arrow indication is green.
- The traffic signal stops traffic for pedestrians crossing the right-turn slip lane and also stops traffic to allow southbound left turning traffic from Mulberry Drive to eastbound Rose Ranch Road.

EXISTING TRAFFIC CONDITIONS

MULBERRY DRIVE @ ROSE RANCH ROAD

Looking northbound on Mulberry Drive towards Rose Ranch Rd.

Looking northbound on Mulberry Drive (inside right-turn slip lane).

Looking southbound on Mulberry Dr. from right-turn slip lane at traffic signal pole location

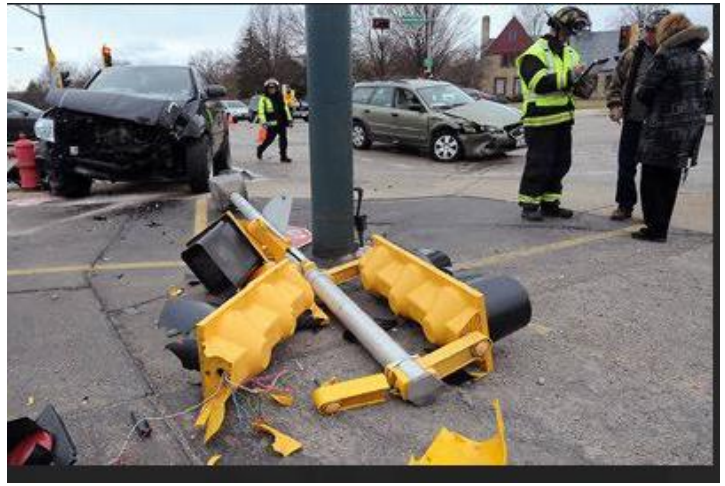
Looking southbound on Mulberry Drive towards Rose Ranch Rd.


Looking eastbound on Rose Ranch Road from Mulberry Dr.
GRACE

Looking westbound on Rose Ranch Rd. towards Mulberry Dr

ENGINEERING STUDY/ANALYSIS

- Engineering staff reviewed the collision history for the last three (3) years and found a total of six “Fixed Object” type collisions, and involved vehicles traveling in the northbound Mulberry Drive direction which resulted in property damage to the existing raised “pork chop” island and/or existing traffic signal poles.
- All reported collisions have been attributed to unsafe speeding, unsafe turning and DUI. There were no collisions that involved pedestrians or bicyclists at the intersection.



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ENGINEERING STUDY/ANALYSIS

DATE	TIME	TYPE OF COLLISION	MOTOR VEHICLE INVOLVED WITH	MOVEMENT PRECEDING COLLISION	PRIMARY CAUSE OF COLLISION	PROPERTY DAMAGE/ INJURIES
08/30/20	10:25 PM	HIT OBJECT	FIXED OBJECT	MAKING RIGHT TURN	DUI, UNSAFE TURN	YES/NO
08/02/20	4:18 AM	HIT OBJECT	FIXED OBJECT	MAKING RIGHT TURN	UNSAFE SPEED, DUI	YES/YES
05/23/20	4:42 AM	HIT OBJECT	FIXED OBJECT	MAKING RIGHT TURN	DUI	YES/NO
08/27/19	2:00 AM	HIT OBJECT	FIXED OBJECT	PROCEEDING STRAIGHT	DUI, UNSAFE TURN	YES/NO
04/10/19	9:48 PM	HIT OBJECT	FIXED OBJECT	RAN OFF ROAD	DUI, UNSAFE TURN, UNSAFE SPEEDING	YES/NO
10/24/18	9:35 AM	HIT OBJECT	FIXED OBJECT	MAKING RIGHT TURN	UNSAFE TURN	YES/NO

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ENGINEERING STUDY/ANALYSIS

- Engineering staff investigated if there was insufficient line of sight to the existing traffic signal heads at the intersection traveling on northbound Mulberry Drive.
- Per Table 4D-2 of the CAMUTCD, minimum sight distance for signal visibility on a 45 MPH speed limit roadway is 460 feet. Sight distance was determined to be approximately 1300 feet (at Vineyard Rd. cross street) which exceeds the minimum required value.
- Nighttime observation of the signalized intersection was also conducted and determined that lighting levels were adequate and not an issue with visibility to the signal heads.

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ENGINEERING STUDY/ANALYSIS

MINIMUM SIGHT DISTANCE FOR SIGNAL VISIBILITY EXHIBIT

MULBERRY DRIVE @ ROSE RANCH ROAD

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Table 4D-2. Minimum Sight Distance for Signal Visibility

85th-Percentile Speed	Minimum Sight Distance
20 mph	175 feet
25 mph	215 feet
30 mph	270 feet
35 mph	325 feet
40 mph	390 feet
45 mph	460 feet
50 mph	540 feet
55 mph	625 feet
60 mph	715 feet

Note: Distances in this table are derived from stopping sight distance plus an assumed queue length for shorter cycle lengths (60 to 75 seconds).

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ENGINEERING STUDY/ANALYSIS

- Engineering staff conducted a ball bank study to determine the comfortable speeds for vehicles approaching the curved “porkchop” raised island inside the right-turn slip lane.
- Based on the data collection runs, a 15-MPH speed advisory limit is recommended. Vehicle speed tube counts were collected within the right-turn slip lane to determine the 85th percentile speed that motorists were driving as they approach the curved “porkchop” island.
- The geometric design of the “porkchop” island should discourage high speeds and turns. However, the collected data indicated an 85th percentile speed of 29 MPH which was significantly higher than the recommended speed advisory limit of 15 MPH.
- Engineering staff also observed speeds using a radar speed gun and determined that speeds were averaging at least 35 MPH as motorists were approaching the raised “porkchop” island.
- Average Daily Traffic (ADT) volume of 550 vehicles per day (VPD) were also collected for the right-turn slip lane. The highest peak hour volume was 50 vehicles at 2 PM.

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ENGINEERING STUDY/ANALYSIS

- Based on its field investigation, Engineering staff noted that additional traffic warning signs and pavement markings for the existing right-turn slip lane in accordance with the CAMUTCD (Figure 3B-13) would be beneficial.
- In addition, motorists traveling on northbound Mulberry Drive could benefit from additional guidance on which lane to take for eastbound Rose Ranch Road.
- Therefore, Engineering staff recommends additional traffic signing and striping improvements consistent with CAMUTCD standards as low-cost effective countermeasures for reducing vehicular speeds, increasing speed awareness, and enhancing visibility of the intersection.
- Similarly, westbound Rose Ranch Road towards Mulberry Drive has additional curve warning signs and pavement markings that inform motorists of the upcoming curved roadway section.

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- Engineering staff recommends traffic signing and striping improvements be installed at the intersection of Mulberry Drive and Rose Ranch Road to include the following:

1) A five-foot bike lane extended through the right-turn slip lane on northbound Mulberry Drive to assist in channelizing vehicular through traffic.
1) Installation of painted gore area to separate traffic for northbound Mulberry Drive from the existing right-turn slip lane.
1)Installation of left edgeline (yellow) adjacent to the raised “porkchop” island to improve visibility of the limit of travel way.
2) Installation of new right turn pavement arrows in the right-turn slip lane.
3) Installation of new advance curve warning sign with a supplementary 15-MPH speed advisory plaque.
4) Installation of new curve alignment warning signs “Chevrons” to delineate the curved raised island and roadway.

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ENGINEERING STUDY/ANALYSIS

- Engineering staff also reviewed alternative improvements to help reduce vehicular speeding in the right-turn slip lane, including active flashing beacons, rumble strips, and raised crosswalks.

- However, these devices are not recommended as a first measure of intervention.
- In addition, a “Rest-on-Red” traffic signal operation was also considered as an alternative measure to force motorists to come to a full stop at the terminus of the right-turn slip lane, thereby reducing their turning speeds.
- The “Rest-on-Red”operation would likely be implemented during off-peak, nighttime periods. Residents may not be in support of this type of signal operation due to increased noise levels associated with vehicles coming to stop.
- Engineering staff recommends the additional traffic signing and striping enhancements as a first step in reducing vehicular speeds and improving overall travel safety.
- Engineering staff plans to monitor traffic and driver behavior once these improvements are implemented for at least (1) year before determining if other alternatives would need to be evaluated.

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ENGINEERING STUDY/ANALYSIS

- As a longer-term solution, Engineering staff plans to evaluate this signalized intersection for a potential conversion to a modern roundabout.
- The observed low traffic volumes and the size of the intersection make it possible to incorporate a standard roundabout.
- Staff will be hiring an engineering consultant to develop a roundabout feasibility study. The findings and recommendations of such a study will be presented at a future Traffic Commission meeting.

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ENGINEERING STUDY/ANALYSIS

- Last month, the City was awarded federal funds though the Highway Safety Improvement Program (HSIP) to install new retroreflective backplates at all traffic signals citywide (120 intersections, $725,000).
- This intersection would be a beneficiary of this citywide project as it would enhance the visibility of the traffic signals. Construction is expected to start in the next couple of years.

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STAFF RECOMMENDATIONS

- Engineering staff requests that the Traffic Commission approves staff's recommendations for the installation of additional traffic signing and striping improvements consistent with CAMUTCD standards as low-cost and effective countermeasures for reducing vehicular speeds.
- The improvements are expected to warn drivers of the roadway curvature, and enhance visibility of the intersection.
- Engineering staff also recommends intermittent enforcement by the Sheriff's Department to help reduce red-light running and excessive speeding through the intersection.

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INFORMATION: Work Order Updates

- Melrose Drive Bike Sharrows – item was presented to Traffic Commission in March; Commission approved staff's recommendations to install bike shared lane markings (Sharrows) on Melrose Drive between San Elijo Road and Boulderidge Drive to improve bicycle operations and enhance motorists' awareness of bicyclists.

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INFORMATION: Work Order Updates

Looking southbound on Melrose Drive towards San Elijo Road

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INFORMATION: Work Order Updates

Looking eastbound on Melrose Drive towards Diamond Street

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City Staff Commentary

- Federal HSIP grant funds awarded to City to install retroreflective backplates - $725,000 – (120) traffic signals. Caltrans have started to replace their backplates at their ramp intersections.

Future Traffic Commission Agenda Items:

- Evaluate “No turn on Red” on eastbound San Elijo Road @ Doublepeak K-8 school entrance.
- Oleander Avenue – Traffic Calming/Truck Weight Restrictions
- Rancho Dorado Neighborhood – speeding and cut-through traffic issues, evaluating countermeasures for traffic calming (White Sands Dr., Coast Ave.)
- Guardrail Feasibility Study – evaluate San Elijo Road (adjacent to Elementary school), Twin Oaks Valley Road, and San Marcos Boulevard. Research grant funding opportunities for design/construction.

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