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Basis of Design

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ATTACHMENT 1: BIKE TREATMENT EVALUATION MATRIX

Bikeway Facility Evaluation Matrix

The matrix below highlights the factors considered when deciding between implementing Class II bike lanes and Class IV bike lanes. Green indicates a positive evaluation, yellow indicates a neutral evaluation, and orange indicates a challenge.

Bikeway Facility	Precedence in Moraga	Support During Public Engagement	Recommended Per State and National Standards and Guidelines	Increased Safety	Included in Grant Application	Flexibility in Future Designs	Installation Costs	Maintenance Costs	Aesthetic
Class IIB (Buffered Bike Lanes)	Class II Buffered Bike Lanes exist in Moraga and on the project corridor south of the project area.	Class II Buffered Bike lanes were the most supported proposed treatment during the Pop-up Event for Phase I of the Public Outreach. They were also generally supported during Phases II and III.	Installing Class II Buffered Bike Lanes on the corridor will meet all necessary State and Federal Standards for a safe and operable bicycle facility. Various guidelines outlined above would recommend the installation of Class IV bikeways for the corridor but are not requirements.	Class II Buffered Bike Lanes provide a visual and spatial separation between bicycle riders and motor vehicle, which offers safer and more comfortable riding conditions than standard Class II bike lanes, but do not offer vertical or physical separation.	The Class II Buffered Bike Lanes were included in the grant awarded for this project and completely covered by the grant funding.	The Class II Buffered Bike Lanes are easily implemented striping treatments and can be easily reworked for future projects that align with the Town's masterplan for the corridor. The Class II Buffered Bike Lanes also allow for use of the bike lanes as an auxiliary lane during fire or natural disaster evacuations, for added flexibility.	The installation costs for the buffered bike lanes is minimal, as it is 1 additional traffic stripe with some cross-hatching.	The maintenance cost is minimal for buffered bike lanes, and the striping can be refreshed when the rest of the roadway striping is refreshed.	The Class II Buffered Bike Lanes would maintain the general existing aesthetic of the corridor.
Class IV (Separated)	No Class IV bike facilities currently exist in Moraga.	Class IV bike facilities were the most favored facilities during the VIrtual Public Meeting in Phase III of Outreach and requested by multiple participants for the Online Survey.	Installing Class IV bikeways on the corridor will meet all necessary State and Federal Standards for a safe and operable bicycle facility.	Class IV bikeways offer the highest level of separation between bicycle riders and motor vehicle drivers, resulting in the safest and most comfortable riding conditions. Level of separation can vary depending on the vertical elements chosen.	Class IV bikeway treatments (including the installation of vertical separation elements and the continual maintenance) were not included in the original grant awarded for this project, and will either need to be accommodated by making tradeoffs with other treatments or being paid for by the Town.	Class IV treatments introduce new vertical elements to the streetscape that may need to be removed in order to align with future projects.	The cost of installation of the Class IV bikeway treatments can vary greatly. Flexible delineators may be expected to cost ~$50-%100 each, but more robust treatments like K71 Bollards may cost ~$200-$300 each. More impactful solutions, such as curbed medians or raised bikeways may cost several hundred dollars per linear foot.	Maintenance cost can vary for Class IV separated facilities. Flexible vertical elements, like delineators or bollards, require regular replacement after a few strikes from motor vehicles.1 However, more permanent installations, like cubed medians, have a little to no maintenance costs associated with them. Additionally, during roadway resurfacing, additional equipment may be required to temporarily remove vertical elements or work around them.	The aesthetic of the corridor would be greatly changed. During public outreach, residents expressed concerns over the idea of the aesthetic of flexible delineators but some expressed support for more agreeable treatments such as movable planters.

positive → challenge

APPENDIX A: EXISTING CONDITIONS

0' 12' 30' 60' 120'

1 INCH = 60 FT

MATCHLINE - SEE SHEET TOPO-2

TOPO-1

MATCHLINE - SEE SHEET TOPO-1

0' 12' 30' 60' 120'
1 INCH = 60 FT

MORAGA RD
APN: 255-321-005

APN: 256-110-037

1799 ST MARYS RD
APN: 256-110-035

1799 ST MARYS RD
APN: 256-110-035

ST MARYS RD

ST MARY'S ROAD

RUSSELL J BRUZZONE INC
APN: 255-321-023

RUSSELL J BRUZZONE INC
APN: 255-321-019

MORAGA ROAD

VILLA MORAGA ASSOCIATION
APN: 256-591-005

SMITH GREGORY T & MARTIN PRE
APN: 256-591-009

RUSSELL J BRUZZONE INC
APN: 255-321-010

PART 3886 LOT 8 COMMON AREA
APN: 256-591-008

VILLA MORAGA ASSOCIATION
APN: 256-591-025

127 M 41

536.45
FND MON

542.82
FND MON

547.76
FND MON

542.37
FND MON

577.42
FND MON

614.08
FND MON

ALTA MESA DRIVE

OWNER RECORD
APN: 256-591-092

RUSSELL J BRUZZONE INC
APN: 255-321-006

RUSSELL J BRUZZONE INC
APN: 255-321-021

MORAGA ROAD

MORAGA RD

127 M 41

MORAGAS LOMAS
APN: 256-550-025

MORAGA GENERAL PROPERTIES, LLC
APN: 256-520-001

127 M 41

TOPO-2

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APPENDIX B: COLLECTED TRAFFIC DATA

Prepared by National Data & Surveying Services

Pedestrian & Bikes Study

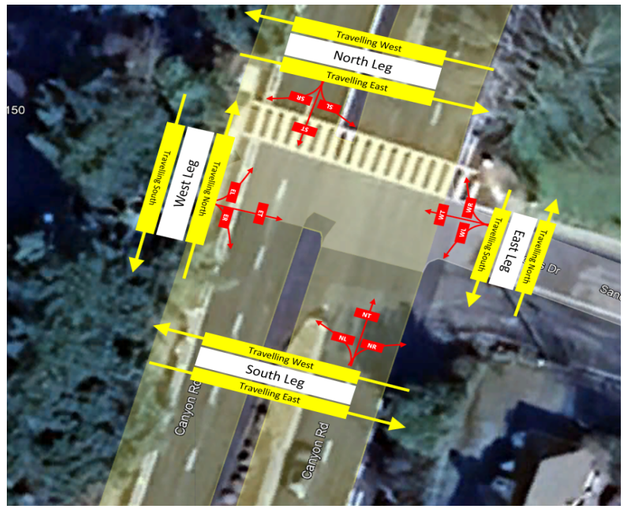
Location: Canyon Rd & Sanders Dr
City: Moraga, CA

Date: 9/17/2024
Day: Tuesday

TIME	Crossing Peds							
	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
12:00 AM	0	0	0	0	0	0	0	0
12:15 AM	0	0	0	0	0	0	0	0
12:30 AM	0	0	0	0	0	0	0	0
12:45 AM	0	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0	0
1:15 AM	0	0	0	0	0	0	0	0
1:30 AM	0	0	0	0	0	0	0	0
1:45 AM	0	0	0	0	0	0	0	0
2:00 AM	0	0	0	0	0	0	0	0
2:15 AM	0	0	0	0	0	0	0	0
2:30 AM	0	0	0	0	0	0	0	0
2:45 AM	0	0	0	0	0	0	0	0
3:00 AM	0	0	0	0	0	0	0	0
3:15 AM	0	0	0	0	0	0	0	0
3:30 AM	0	0	0	0	0	0	0	0
3:45 AM	0	0	0	0	0	0	0	0
4:00 AM	0	0	0	0	0	0	0	0
4:15 AM	0	0	0	0	0	0	0	0
4:30 AM	0	0	0	0	0	0	0	0
4:45 AM	0	0	0	0	0	0	0	0
5:00 AM	0	0	0	0	0	0	0	0
5:15 AM	0	0	0	0	0	0	0	0
5:30 AM	0	0	0	0	0	0	0	0
5:45 AM	0	0	0	0	0	0	0	0
6:00 AM	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0	0
6:30 AM	0	0	0	0	0	0	0	0
6:45 AM	0	1	0	0	2	1	0	0
7:00 AM	0	0	0	0	0	0	0	0
7:15 AM	0	1	0	0	0	2	0	0
7:30 AM	1	1	0	0	0	0	0	0
7:45 AM	0	0	0	0	2	1	0	0
8:00 AM	0	0	0	0	0	3	0	0
8:15 AM	0	0	0	0	2	1	0	0
8:30 AM	0	1	0	0	1	0	0	0
8:45 AM	1	0	0	0	1	1	0	0
9:00 AM	4	0	0	0	0	2	0	0
9:15 AM	0	3	0	0	1	0	0	0
9:30 AM	3	1	0	0	1	1	0	0
9:45 AM	2	0	0	0	1	1	0	0
10:00 AM	1	1	0	0	1	1	0	0
10:15 AM	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0
10:45 AM	0	1	0	0	0	0	0	0
11:00 AM	0	0	0	0	1	0	0	0
11:15 AM	1	1	0	0	1	0	0	0
11:30 AM	0	0	0	0	1	1	0	0
11:45 AM	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	1	0	0	0
12:15 PM	0	0	0	0	0	1	0	0
12:30 PM	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	1	0	0
1:45 PM	0	0	0	0	2	1	0	0
2:00 PM	0	0	0	0	1	0	0	0
2:15 PM	0	0	0	0	4	0	0	0
2:30 PM	0	0	0	0	1	0	0	0
2:45 PM	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0
3:15 PM	0	1	0	0	1	0	0	0
3:30 PM	0	0	0	0	0	0	0	0
3:45 PM	1	0	0	0	0	2	0	0
4:00 PM	0	1	0	0	1	0	0	0
4:15 PM	1	1	0	0	1	1	0	0
4:30 PM	2	0	0	0	0	3	0	0
4:45 PM	0	0	0	0	3	1	0	0
5:00 PM	0	0	0	0	0	2	0	0
5:15 PM	0	0	0	0	0	1	0	0
5:30 PM	1	0	0	0	2	0	0	0
5:45 PM	0	2	0	0	0	0	0	0
6:00 PM	0	0	0	0	0	0	0	0
6:15 PM	0	0	0	0	0	0	0	0
6:30 PM	0	0	0	0	2	0	0	0
6:45 PM	2	0	0	0	0	2	0	0
7:00 PM	2	0	0	0	0	0	0	0
7:15 PM	0	0	0	0	0	1	0	0
7:30 PM	0	0	0	0	0	0	0	0
7:45 PM	0	0	0	0	0	0	0	0
8:00 PM	0	0	0	0	0	0	0	0
8:15 PM	0	0	0	0	0	0	0	0
8:30 PM	0	0	0	0	0	0	0	0
8:45 PM	0	0	0	0	0	0	0	0
9:00 PM	0	0	0	0	0	0	0	0
9:15 PM	0	0	0	0	0	0	0	0
9:30 PM	0	0	0	0	1	1	0	0
9:45 PM	0	0	0	0	0	0	0	0
10:00 PM	0	0	0	0	0	0	0	0
10:15 PM	0	0	0	0	0	0	0	0
10:30 PM	0	0	0	0	0	0	0	0
10:45 PM	0	0	0	0	0	0	0	0
11:00 PM	0	0	0	0	0	0	0	0
11:15 PM	0	0	0	0	0	0	0	0
11:30 PM	0	0	0	0	1	0	0	0
11:45 PM	0	0	0	0	0	0	0	0
Totals	*22*	*16*	*0*	*0*	*36*	*32*	*0*	*0*

TIME	Crossing Bikes							
	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
12:00 AM	0	0	0	0	0	0	0	0
12:15 AM	0	0	0	0	0	0	0	0
12:30 AM	0	0	0	0	0	0	0	0
12:45 AM	0	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0	0
1:15 AM	0	0	0	0	0	0	0	0
1:30 AM	0	0	0	0	0	0	0	0
1:45 AM	0	0	0	0	0	0	0	0
2:00 AM	0	0	0	0	0	0	0	0
2:15 AM	0	0	0	0	0	0	0	0
2:30 AM	0	0	0	0	0	0	0	0
2:45 AM	0	0	0	0	0	0	0	0
3:00 AM	0	0	0	0	0	0	0	0
3:15 AM	0	0	0	0	0	0	0	0
3:30 AM	0	0	0	0	0	0	0	0
3:45 AM	0	0	0	0	0	0	0	0
4:00 AM	0	0	0	0	0	0	0	0
4:15 AM	0	0	0	0	0	0	0	0
4:30 AM	0	0	0	0	0	0	0	0
4:45 AM	0	0	0	0	0	0	0	0
5:00 AM	0	0	0	0	0	0	0	0
5:15 AM	0	0	0	0	0	0	0	0
5:30 AM	0	0	0	0	0	0	0	0
5:45 AM	0	0	0	0	0	0	0	0
6:00 AM	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0	0
6:30 AM	0	0	0	0	0	0	0	0
6:45 AM	0	0	0	0	0	0	0	0
7:00 AM	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0
9:00 AM	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0
9:45 AM	0	0	0	0	0	0	0	0
10:00 AM	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0
2:00 PM	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0
6:00 PM	0	0	0	0	0	0	0	0
6:15 PM	0	0	0	0	0	0	0	0
6:30 PM	0	0	0	0	0	0	0	0
6:45 PM	0	0	0	0	0	0	0	0
7:00 PM	0	0	0	0	0	0	0	0
7:15 PM	0	0	0	0	0	0	0	0
7:30 PM	0	0	0	0	0	0	0	0
7:45 PM	0	0	0	0	0	0	0	0
8:00 PM	0	0	0	0	0	0	0	0
8:15 PM	0	0	0	0	0	0	0	0
8:30 PM	0	0	0	0	0	0	0	0
8:45 PM	0	0	0	0	0	0	0	0
9:00 PM	0	0	0	0	0	0	0	0
9:15 PM	0	0	0	0	0	0	0	0
9:30 PM	0	0	0	0	0	0	0	0
9:45 PM	0	0	0	0	0	0	0	0
10:00 PM	0	0	0	0	0	0	0	0
10:15 PM	0	0	0	0	0	0	0	0
10:30 PM	0	0	0	0	0	0	0	0
10:45 PM	0	0	0	0	0	0	0	0
11:00 PM	0	0	0	0	0	0	0	0
11:15 PM	0	0	0	0	0	0	0	0
11:30 PM	0	0	0	0	0	0	0	0
11:45 PM	0	0	0	0	0	0	0	1
Totals	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*1*

TIME	Bikes															
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	NU	SU	EU	WU
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	1	0	0	3	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
1:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	*0*	*3*	*1*	*1*	*7*	*0*	*0*	*0*	*0*	*0*	*0*	*2*	*0*	*0*	*0*	*0*



Prepared by National Data & Surveying Services

SPEED

Canyon Rd Bet Larch Ave & Sanders Dr

Day: Tuesday
Date: 9/17/2024

City: Moraga
Project #: CA24_080251_001

HOURLY BREAKDOWN

Time	NORTHBOUND 5 15	15 20	20 25	25 30	30 35	35 40	40 45	45 50	50 55	55 60	60 65	65 70	70 99	Total	SOUTHBOUND 5 15	15 20	20 25	25 30	30 35	35 40	40 45	45 50	50 55	55 60	60 65	65 70	70 99	Total	TOTALS 5 15	15 20	20 25	25 30	30 35	35 40	40 45	45 50	50 55	55 60	60 65	65 70	70 99	Total
0:00	0	2	0	1	3	0	0	0	0	0	0	0	0	6	0	0	2	1	4	3	0	0	0	0	0	0	0	10	0	2	2	2	7	3	0	0	0	0	0	0	0	16
1:00	0	1	1	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	1	0	0	0	0	0	0	0	0	3	0	1	1	2	1	0	0	0	0	0	0	0	0	5
2:00	0	0	1	0	1	2	0	0	0	0	0	0	0	4	0	0	0	0	1	1	0	0	0	0	0	0	0	2	0	0	1	0	2	3	0	0	0	0	0	0	0	6
3:00	1	2	0	1	1	0	0	0	0	0	0	0	0	5	1	0	0	0	1	2	1	0	0	0	0	0	0	5	2	2	0	1	2	2	1	0	0	0	0	0	0	10
4:00	1	0	1	0	4	1	0	0	0	0	0	0	0	7	0	0	0	3	2	1	1	0	0	0	0	0	0	7	1	0	1	3	6	2	1	0	0	0	0	0	0	14
5:00	0	6	12	14	23	8	3	1	0	0	0	0	0	67	0	0	0	2	6	4	1	0	1	0	0	0	0	14	0	6	12	16	29	12	4	1	1	0	0	0	0	81
6:00	1	6	28	28	48	20	4	1	0	0	0	0	0	136	0	0	3	11	13	17	7	2	0	0	0	0	0	53	1	6	31	39	61	37	11	3	0	0	0	0	0	189
7:00	0	8	50	111	135	82	13	1	0	0	0	0	0	400	0	1	24	46	89	63	12	9	1	0	0	0	0	245	0	9	74	157	224	145	25	10	1	0	0	0	0	645
8:00	1	17	140	245	200	86	16	3	0	0	0	0	0	708	0	12	64	205	165	77	15	6	0	0	0	0	0	544	1	29	204	450	365	163	31	9	0	0	0	0	0	1252
9:00	1	18	65	103	122	69	10	3	0	0	0	0	0	391	0	5	26	73	96	62	16	2	0	0	0	0	0	280	1	23	91	176	218	131	26	5	0	0	0	0	0	671
10:00	0	6	53	67	98	55	15	2	0	0	0	0	0	296	0	1	22	41	100	53	10	4	0	0	0	0	0	231	0	7	75	108	198	108	25	6	0	0	0	0	0	527
11:00	0	23	40	71	113	55	14	2	1	0	0	0	0	319	0	1	19	57	94	57	16	3	1	0	0	0	0	248	0	24	59	128	207	112	30	5	2	0	0	0	0	567
12:00	2	16	41	58	112	66	18	2	0	0	0	0	0	315	0	2	42	71	136	57	13	4	0	0	0	0	0	325	2	18	83	129	248	123	31	6	0	0	0	0	0	640
13:00	1	8	46	47	94	68	10	5	0	0	0	0	0	279	0	0	32	87	143	81	21	4	2	0	0	0	0	370	1	8	78	134	237	149	31	9	2	0	0	0	0	649
14:00	1	8	78	147	170	91	26	2	0	0	0	0	0	523	2	10	77	126	165	74	11	8	0	0	0	0	0	473	3	18	155	273	335	165	37	10	0	0	0	0	0	996
15:00	2	17	65	114	183	129	27	11	1	0	0	0	0	549	0	4	55	105	183	93	24	11	1	0	0	0	0	476	2	21	120	219	366	222	51	22	2	0	0	0	0	1025
16:00	0	15	49	107	219	131	51	10	2	0	0	0	0	584	0	7	69	124	219	88	23	3	1	0	0	0	0	534	0	22	118	231	438	219	74	13	3	0	0	0	0	1118
17:00	0	8	46	96	230	146	47	15	0	0	0	0	0	588	0	4	65	108	214	94	27	6	3	0	0	0	0	521	0	12	111	204	444	240	74	21	3	0	0	0	0	1109
18:00	0	8	35	78	130	90	26	3	0	0	0	0	0	370	0	2	59	97	180	73	24	6	1	0	0	0	0	442	0	10	94	175	310	163	50	9	1	0	0	0	0	812
19:00	0	11	25	47	61	26	7	1	0	0	0	0	0	178	0	3	44	77	130	38	3	4	2	0	0	0	0	301	0	14	69	124	191	64	10	5	2	0	0	0	0	479
20:00	0	3	16	24	27	13	1	1	0	0	0	0	0	85	0	2	37	52	88	23	5	1	0	0	0	0	0	208	0	5	53	76	115	36	6	2	0	0	0	0	0	293
21:00	0	5	7	21	12	8	4	1	0	0	0	0	0	58	0	2	16	30	58	21	6	2	1	0	0	0	0	136	0	7	23	51	70	29	10	3	1	0	0	0	0	194
22:00	0	4	1	7	3	3	0	0	0	0	0	0	0	18	0	1	5	9	21	6	2	0	0	0	0	0	0	44	0	5	6	16	24	9	2	0	0	0	0	0	0	62
23:00	0	0	0	3	2	1	0	0	0	0	0	0	0	6	0	0	5	5	12	0	0	0	0	0	0	0	0	22	0	0	5	8	14	1	0	0	0	0	0	0	0	28
Totals	**11**	**192**	**800**	**1,390**	**1,991**	**1,150**	**292**	**64**	**4**	**0**	**0**	**0**	**0**	**5,894**	**3**	**57**	**666**	**1,332**	**2,121**	**988**	**238**	**75**	**14**	**0**	**0**	**0**	**0**	**5,494**	**14**	**249**	**1,466**	**2,722**	**4,112**	**2,138**	**530**	**139**	**18**	**0**	**0**	**0**	**0**	**11,388**
% of Totals	0%	3%	14%	24%	34%	20%	5%	1%	0%					100%	0%	1%	12%	24%	39%	18%	4%	1%	0%					100%	0%	2%	13%	24%	36%	19%	5%	1%	0%					100%

STATISTICS

00:00 - 12:00	5	89	391	641	748	378	75	13	1	0	0	0	0	2341	1	20	160	441	572	340	79	26	3	0	0	0	0	1642	6	109	551	1082	1320	718	154	39	4	0	0	0	0	3983
%	0%	2%	7%	11%	13%	6%	1%	0%	0%	0%	0%	0%	0%	40%	0%	0%	3%	7%	10%	6%	1%	0%	0%	0%	0%	0%	0%	28%	0%	2%	9%	18%	22%	12%	3%	1%	0%	0%	0%	0%	0%	68%
Peak Hour	3:30	11:00	8:00	7:45	7:45	7:30	7:15	7:30	10:45	0:00	0:00	0:00	0:00	7:45	2:45	8:15	7:30	7:45	8:00	7:45	8:15	7:45	4:45	0:00	0:00	0:00	0:00	7:45	3:30	8:15	8:00	7:45	7:45	7:30	10:30	7:45	11:00	0:00	0:00	0:00	0:00	7:45
Peak Volume	2	23	140	261	226	102	19	4	1	0	0	0	0	763	1	13	65	208	165	86	20	10	1	0	0	0	0	557	3	32	204	469	388	185	35	14	2	0	0	0	0	1320
12:00 - 24:00	6	103	409	749	1243	772	217	51	3	0	0	0	0	3553	2	37	506	891	1549	648	159	49	11	0	0	0	0	3852	8	140	915	1640	2792	1420	376	100	14	0	0	0	0	7405
%	0%	2%	7%	13%	21%	13%	4%	1%	0%	0%	0%	0%	0%	60%	0%	1%	9%	15%	26%	11%	3%	1%	0%	0%	0%	0%	0%	65%	0%	2%	16%	28%	47%	24%	6%	2%	0%	0%	0%	0%	0%	126%
Peak Hour	12:15	15:00	14:15	14:15	17:15	17:00	17:15	17:15	15:30	12:00	12:00	12:00	12:00	17:15	13:45	14:00	14:00	15:30	17:15	13:30	16:30	14:45	17:15	12:00	12:00	12:00	12:00	15:45	14:15	16:15	14:00	14:00	17:15	17:00	16:00	17:15	15:30	12:00	12:00	12:00	12:00	17:15
Peak Volume	3	17	82	152	246	146	52	16	3	0	0	0	0	601	2	10	77	131	221	97	30	13	4	0	0	0	0	544	4	23	155	273	467	240	74	25	5	0	0	0	0	1143
07:00 - 09:00	1	25	190	356	335	168	29	4	0	0	0	0	0	1108	0	13	88	251	254	140	27	15	1	0	0	0	0	789	1	38	278	607	589	308	56	19	1	0	0	0	0	1897
%	0%	0%	3%	6%	6%	3%	0%	0%	0%	0%	0%	0%	0%	19%	0%	0%	1%	4%	4%	2%	0%	0%	0%	0%	0%	0%	0%	13%	0%	1%	5%	10%	10%	5%	1%	0%	0%	0%	0%	0%	0%	32%
Peak Hour	7:45	7:45	8:00	7:45	7:45	7:30	7:15	7:30	7:00	7:00	7:00	7:00	7:00	7:45	7:00	8:00	7:30	7:45	8:00	7:45	7:45	7:45	7:00	7:00	7:00	7:00	7:00	7:45	7:45	7:45	8:00	7:45	7:45	7:30	7:45	7:45	7:00	7:00	7:00	7:00	7:00	7:45
Peak Volume	1	20	140	261	226	102	19	4	0	0	0	0	0	763	0	12	65	208	165	86	17	10	1	0	0	0	0	557	1	30	204	469	388	185	32	14	1	0	0	0	0	1320
16:00 - 18:00	0	23	95	203	449	277	98	25	2	0	0	0	0	1172	0	11	134	232	433	182	50	9	4	0	0	0	0	1055	0	34	229	435	882	459	148	34	6	0	0	0	0	2227
%	0%	0%	2%	3%	8%	5%	2%	0%	0%	0%	0%	0%	0%	20%	0%	0%	2%	4%	7%	3%	1%	0%	0%	0%	0%	0%	0%	18%	0%	1%	4%	7%	15%	8%	3%	1%	0%	0%	0%	0%	0%	38%
Peak Hour	16:00	16:00	16:30	16:30	17:00	17:00	16:00	17:00	16:00	16:00	16:00	16:00	16:00	16:30	16:00	16:15	16:15	16:00	16:00	16:30	16:30	17:00	17:00	16:00	16:00	16:00	16:00	16:00	16:00	16:15	16:30	16:30	17:00	17:00	16:00	17:00	16:00	16:00	16:00	16:00	16:00	16:00
Peak Volume	0	15	54	128	230	146	51	15	2	0	0	0	0	589	0	8	71	124	219	96	30	6	3	0	0	0	0	534	0	23	123	237	444	240	74	21	3	0	0	0	0	1118

Direction	Percentiles 15th	50th	Average	85th	95th	ADT
NORTHBOUND	24	31	31	38	41	5894
SOUTHBOUND	25	32	31	37	41	5494
TOTALS	25	32	31	38	41	11388

Prepared by National Data & Surveying Services

SPEED

Canyon Rd Bet Sanders Dr & Country Club Dr

Day: Tuesday

Date: 9/17/2024

City: Moraga

Project #: CA24_080251_002

HOURLY BREAKDOWN

Time	NORTHBOUND														SOUTHBOUND														TOTALS												
	5	15	20	25	30	35	40	45	50	55	60	65	70	Total	5	15	20	25	30	35	40	45	50	55	60	65	70	Total	5	15	20	25	30	35	40	45	50	55	60	65	70	Total
	15	20	25	30	35	40	45	50	55	60	65	70	99		15	20	25	30	35	40	45	50	55	60	65	70	99		15	20	25	30	35	40	45	50	55	60	65	70	99	
0:00	0	0	0	3	0	2	1	0	0	0	0	0	0	**6**	0	0	1	5	2	3	0	0	0	0	0	0	0	**11**	0	0	1	8	2	5	1	0	0	0	0	0	0	**17**
1:00	0	0	0	1	1	0	0	0	0	0	0	0	0	**2**	0	0	0	2	2	0	0	0	0	0	0	0	0	**4**	0	0	0	3	3	0	0	0	0	0	0	0	0	**6**
2:00	0	0	0	1	1	2	0	0	0	0	0	0	0	**4**	0	0	0	0	2	0	0	0	0	0	0	0	0	**2**	0	0	0	1	3	2	0	0	0	0	0	0	0	**6**
3:00	0	1	1	2	1	1	0	0	0	0	0	0	0	**6**	0	1	0	1	1	3	1	0	0	0	0	0	0	**7**	0	2	1	3	2	4	1	0	0	0	0	0	0	**13**
4:00	0	2	0	2	1	3	1	0	0	0	0	0	0	**9**	0	0	0	3	2	1	0	0	0	0	0	0	0	**6**	0	2	0	5	3	4	1	0	0	0	0	0	0	**15**
5:00	0	5	5	4	21	30	9	1	1	0	0	0	0	**76**	0	0	0	2	5	4	1	0	0	0	0	0	0	**12**	0	5	5	6	26	34	10	1	1	0	0	0	0	**88**
6:00	0	10	19	3	52	69	11	1	0	0	0	0	0	**165**	0	0	3	9	20	23	3	0	0	0	0	0	0	**58**	0	10	22	12	72	92	14	1	0	0	0	0	0	**223**
7:00	0	15	34	17	146	184	52	3	1	0	0	0	0	**452**	0	1	1	56	109	69	17	4	3	0	0	0	0	**260**	0	16	35	73	255	253	69	7	4	0	0	0	0	**712**
8:00	0	10	53	47	328	270	55	8	0	0	0	0	0	**771**	0	5	31	178	253	93	15	4	0	0	0	0	0	**579**	0	15	84	225	581	363	70	12	0	0	0	0	0	**1350**
9:00	0	6	29	39	167	140	43	1	0	0	0	0	0	**425**	1	2	17	77	143	53	8	2	1	0	0	0	0	**304**	1	8	46	116	310	193	51	3	1	0	0	0	0	**729**
10:00	0	6	27	21	111	117	35	7	0	0	0	0	0	**324**	0	0	7	56	127	61	8	2	0	0	0	0	0	**261**	0	6	34	77	238	178	43	9	0	0	0	0	0	**585**
11:00	0	8	40	17	116	131	51	4	1	0	0	0	0	**368**	1	2	3	53	142	63	17	2	0	1	0	0	0	**284**	1	10	43	70	258	194	68	6	1	1	0	0	0	**652**
12:00	0	10	29	19	88	135	50	12	1	0	0	0	0	**344**	1	1	9	59	174	66	12	3	0	1	0	0	0	**326**	1	11	38	78	262	201	62	15	1	1	0	0	0	**670**
13:00	0	5	15	6	90	124	50	6	1	1	0	0	0	**298**	0	0	7	90	198	92	14	7	2	0	0	0	0	**410**	0	5	22	96	288	216	64	13	3	1	0	0	0	**708**
14:00	0	11	27	29	156	237	79	19	1	0	0	0	0	**559**	1	1	17	117	256	88	28	6	0	0	0	0	0	**514**	1	12	44	146	412	325	107	25	1	0	0	0	0	**1073**
15:00	0	6	36	27	122	275	111	23	4	0	0	0	0	**604**	0	2	13	115	239	116	21	7	4	0	0	0	0	**517**	0	8	49	142	361	391	132	30	8	0	0	0	0	**1121**
16:00	0	8	46	20	143	268	128	26	5	0	0	0	0	**644**	0	1	18	121	286	132	22	8	0	0	0	0	0	**588**	0	9	64	141	429	400	150	34	5	0	0	0	0	**1232**
17:00	0	2	26	13	99	273	159	37	5	1	0	0	0	**615**	2	3	10	123	271	120	36	7	0	0	0	0	0	**572**	2	5	36	136	370	393	195	44	5	1	0	0	0	**1187**
18:00	0	6	27	16	85	183	75	15	0	0	0	0	0	**407**	0	0	14	101	242	99	23	5	2	0	0	0	0	**486**	0	6	41	117	327	282	98	20	2	0	0	0	0	**893**
19:00	0	6	15	12	66	79	13	6	1	0	0	0	0	**198**	0	1	5	84	176	63	9	0	2	0	0	0	0	**340**	0	7	20	96	242	142	22	6	3	0	0	0	0	**538**
20:00	0	1	7	11	25	39	8	1	1	0	0	0	0	**93**	0	0	10	57	113	49	10	1	0	0	0	0	0	**240**	0	1	17	68	138	88	18	2	1	0	0	0	0	**333**
21:00	0	1	2	7	23	17	11	0	1	0	0	0	0	**62**	0	0	3	22	73	35	13	1	0	1	0	0	0	**148**	0	1	5	29	96	52	24	1	1	1	0	0	0	**210**
22:00	0	0	0	2	9	6	0	2	0	0	0	0	0	**19**	0	0	2	13	24	7	3	2	0	0	0	0	0	**51**	0	0	2	15	33	13	3	4	0	0	0	0	0	**70**
23:00	0	0	1	1	2	2	1	0	0	0	0	0	0	**7**	0	0	0	5	12	4	1	0	0	0	0	0	0	**22**	0	0	1	6	14	6	2	0	0	0	0	0	0	**29**
Totals	**0**	**119**	**439**	**320**	**1,853**	**2,587**	**943**	**172**	**23**	**2**	**0**	**0**	**0**	**6,458**	**6**	**20**	**171**	**1,349**	**2,872**	**1,244**	**262**	**61**	**14**	**3**	**0**	**0**	**0**	**6,002**	**6**	**139**	**610**	**1,669**	**4,725**	**3,831**	**1,205**	**233**	**37**	**5**	**0**	**0**	**0**	**12,460**
% of Totals		**2%**	**7%**	**5%**	**29%**	**40%**	**15%**	**3%**	**0%**	**0%**				**100%**	**0%**	**0%**	**3%**	**22%**	**48%**	**21%**	**4%**	**1%**	**0%**	**0%**				**100%**	**0%**	**1%**	**5%**	**13%**	**38%**	**31%**	**10%**	**2%**	**0%**	**0%**				**100%**

STATISTICS

00:00 - 12:00	0	63	208	157	945	949	258	25	3	0	0	0	0	2608	2	11	63	442	808	373	70	14	4	1	0	0	0	1788	2	74	271	599	1753	1322	328	39	7	1	0	0	0	4396
%	0%	1%	3%	2%	15%	15%	4%	0%	0%	0%	0%	0%	0%	40%	0%	0%	1%	7%	13%	6%	1%	0%	0%	0%	0%	0%	0%	28%	0%	1%	4%	9%	27%	20%	5%	1%	0%	0%	0%	0%	0%	68%
Peak Hour	0:00	7:15	7:30	7:45	7:45	7:30	7:45	11:45	11:30	0:00	0:00	0:00	0:00	7:45	11:30	7:15	8:00	7:45	8:00	7:45	7:30	7:15	6:15	11:30	0:00	0:00	0:00	7:45	11:30	7:15	7:45	7:45	7:45	7:45	7:45	11:45	6:30	11:30	0:00	0:00	0:00	7:45
Peak Volume	0	18	60	50	339	299	72	10	2	0	0	0	0	839	2	6	31	186	253	100	21	5	3	2	0	0	0	594	2	24	89	236	589	398	92	15	4	2	0	0	0	1433
12:00 - 24:00	0	56	231	163	908	1638	685	147	20	2	0	0	0	3850	4	9	108	907	2064	871	192	47	10	2	0	0	0	4214	4	65	339	1070	2972	2509	877	194	30	4	0	0	0	8064
%	0%	1%	4%	3%	14%	25%	11%	2%	0%	0%	0%	0%	0%	60%	0%	0%	2%	14%	32%	13%	3%	1%	0%	0%	0%	0%	0%	65%	0%	1%	5%	17%	46%	39%	14%	3%	0%	0%	0%	0%	0%	125%
Peak Hour	12:00	14:00	15:45	14:15	14:00	15:15	17:15	17:00	15:30	12:45	12:00	12:00	12:00	16:00	17:00	16:45	15:45	15:30	16:00	15:30	17:00	13:30	14:45	12:00	12:00	12:00	12:00	17:15	17:00	14:15	15:45	13:45	16:00	17:15	17:15	17:00	15:00	12:00	12:00	12:00	12:00	15:45
Peak Volume	0	11	51	36	156	285	167	37	7	1	0	0	0	644	2	3	21	135	286	134	36	9	4	1	0	0	0	596	2	13	72	155	429	408	201	44	8	1	0	0	0	1232
07:00 - 09:00	0	25	87	64	474	454	107	11	1	0	0	0	0	1223	0	6	32	234	362	162	32	8	3	0	0	0	0	839	0	31	119	298	836	616	139	19	4	0	0	0	0	2062
%	0%	0%	1%	1%	7%	7%	2%	0%	0%	0%	0%	0%	0%	19%	0%	0%	0%	4%	6%	3%	0%	0%	0%	0%	0%	0%	0%	13%	0%	0%	2%	5%	13%	10%	2%	0%	0%	0%	0%	0%	0%	32%
Peak Hour	7:00	7:15	7:30	7:45	7:45	7:30	7:45	7:30	7:00	7:00	7:00	7:00	7:00	7:45	7:00	7:15	8:00	7:45	8:00	7:45	7:30	7:15	7:00	7:00	7:00	7:00	7:00	7:45	7:00	7:15	7:45	7:45	7:45	7:45	7:45	7:15	7:00	7:00	7:00	7:00	7:00	7:45
Peak Volume	0	18	60	50	339	299	72	9	1	0	0	0	0	839	0	6	31	186	253	100	21	5	3	0	0	0	0	594	0	24	89	236	589	398	92	13	4	0	0	0	0	1433
16:00 - 18:00	0	10	72	33	242	541	287	63	10	1	0	0	0	1259	2	4	28	244	557	252	58	15	0	0	0	0	0	1160	2	14	100	277	799	793	345	78	10	1	0	0	0	2419
%	0%	0%	1%	1%	4%	8%	4%	1%	0%	0%	0%	0%	0%	19%	0%	0%	0%	4%	9%	4%	1%	0%	0%	0%	0%	0%	0%	18%	0%	0%	2%	4%	12%	12%	5%	1%	0%	0%	0%	0%	0%	37%
Peak Hour	16:00	16:00	16:00	16:15	16:30	17:00	17:00	17:00	16:45	17:00	16:00	16:00	16:00	16:00	17:00	16:45	16:15	16:45	16:00	16:15	17:00	16:00	16:00	16:00	16:00	16:00	16:00	16:00	17:00	16:00	16:15	16:45	16:00	16:00	17:00	17:00	16:45	17:00	16:00	16:00	16:00	16:00
Peak Volume	0	8	46	22	154	273	159	37	6	1	0	0	0	644	2	3	21	134	286	134	36	8	0	0	0	0	0	588	2	9	65	152	429	400	195	44	6	1	0	0	0	1232

Direction	Percentiles					
	15th	50th	Average	85th	95th	ADT
NORTHBOUND	30	36	35	41	44	6458
SOUTHBOUND	28	33	33	38	41	6002
TOTALS	28	34	34	39	44	12460

Prepared by National Data & Surveying Services

Canyon Rd & Country Club Dr

Peak Hour Turning Movement Count

ID: 24-080249-001
City: Moraga

Day: Tuesday
Date: 9/17/2024

PEAK HOURS

AM	07:45 AM - 08:45 AM
NOON	01:00 PM - 02:00 PM
PM	04:00 PM - 05:00 PM

COUNT PERIODS

AM	12:00 AM - 10:00 AM
NOON	10:00 AM - 02:00 PM
PM	2:00 PM - 12:00 AM

Canyon Rd

SOUTHBOUND

AM	52	514	93	2	793	AM
NOON	38	369	45	4	312	NOON
PM	55	491	67	5	653	PM

Country Club Dr

EASTBOUND

AM	NOON	PM		
150	73	125		
0	0	1	0	
10	21	13	1	
2	4	4	2	
66	38	80	0	
AM	NOON	PM		

CONTROL

2-Way Stop(EB/WB)

TEV	1665 AM	854 NOON	1459 PM
PHF	0.79	0.86	0.95

WESTBOUND

PM	NOON	AM		
75	31	70	0	
7	3	3	1	
16	6	12	0	
0	0	0	0	
94	56	130		
PM	NOON	AM		

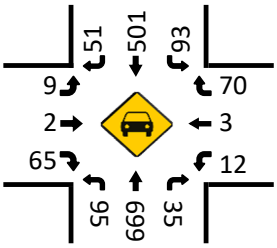
Country Club Dr

NORTHBOUND

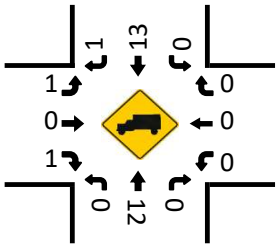
PM	587	0	62	560	23	PM
NOON	413	0	32	256	7	NOON
AM	592	0	95	711	35	AM

Canyon Rd

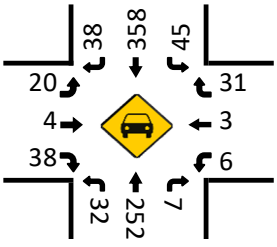
Cars (AM)



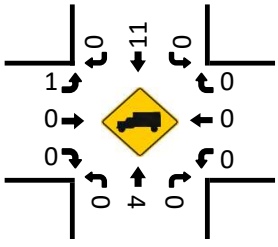
HT (AM)



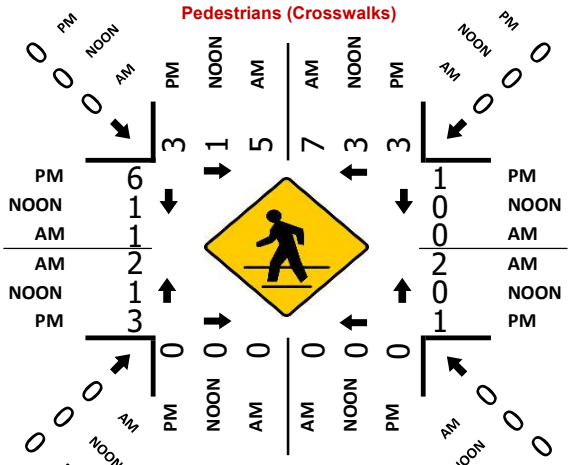
Cars (NOON)



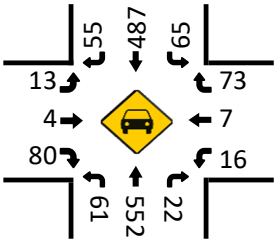
HT (NOON)



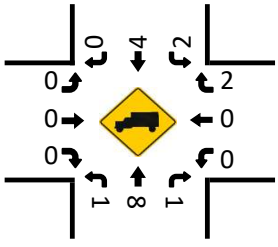
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Canyon Rd & Country Club Dr

Peak Hour Turning Movement Count

ID: 24-080249-001
City: Moraga

Day: Wednesday
Date: 9/18/2024

PEAK HOURS		COUNT PERIODS
AM	07:45 AM - 08:45 AM	12:00 AM - 10:00 AM
NOON	11:30 AM - 12:30 PM	10:00 AM - 02:00 PM
PM	03:00 PM - 04:00 PM	2:00 PM - 12:00 AM

Canyon Rd — SOUTHBOUND

	Right	Thru	Left	U-Turn	Exit (NB)
AM	45	553	90	2	801
NOON	46	279	43	1	380
PM	69	524	62	10	708
Lanes	0	2	1	0	

Country Club Dr — EASTBOUND

	AM	NOON	PM	Lanes
Exit (WB)	143	108	144	
U-Turn	1	2	2	0
Left	15	23	22	1
Thru	0	1	4	2
Right	65	35	60	0

Country Club Dr — WESTBOUND

	Lanes	PM	NOON	AM
Left	0	67	62	82
Thru	1	7	4	2
Right	0	11	5	11
U-Turn	0	0	0	0
Exit (EB)		79	53	123

Canyon Rd — NORTHBOUND

	Exit (SB)	U-Turn	Left	Thru	Right
Lanes		0	1	2	0
PM	596	1	66	609	13
NOON	319	0	56	294	9
AM	631	2	95	702	33

CONTROL

2-Way Stop(EB/WB)

	AM	NOON	PM
TEV	1698	860	1527
PHF	0.78	0.91	0.85

Cars (AM)

	Left	Thru	Right
SB	90	544	43
EB	15	0	65
WB	82	2	11
NB	94	694	33

HT (AM)

	Left	Thru	Right
SB	0	9	2
EB	0	0	0
WB	0	0	0
NB	1	8	0

Cars (NOON)

	Left	Thru	Right
SB	43	271	45
EB	22	1	33
WB	62	4	5
NB	54	286	8

HT (NOON)

	Left	Thru	Right
SB	0	8	1
EB	1	0	2
WB	0	0	0
NB	2	8	1

Cars (PM)

	Left	Thru	Right
SB	62	517	69
EB	22	4	60
WB	65	7	11
NB	65	595	13

HT (PM)

	Left	Thru	Right
SB	0	7	0
EB	0	0	0
WB	2	0	0
NB	1	14	0

Pedestrians (Crosswalks)

Crosswalk	Direction	AM	NOON	PM
North leg	Eastbound	1	2	0
North leg	Westbound	1	0	0
West leg	Southbound	2	0	7
West leg	Northbound	2	0	7
East leg	Southbound	3	2	1
East leg	Northbound	1	1	3
South leg	Eastbound	0	0	0
South leg	Westbound	0	0	0
Diagonal (NW)		0	0	0
Diagonal (NE)		0	0	0
Diagonal (SW)		0	0	0
Diagonal (SE)		0	0	0

National Data & Surveying Services

Intersection Turning Movement Count

Location: Canyon Rd & Country Club Dr
City: Moraga

Project ID: 24-080249-001
Date: 9/17/2024

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Canyon Rd		Canyon Rd		Country Club Dr		Country Club Dr		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
12:00 AM	0	0	0	0	0	0	0	0	0
12:15 AM	0	0	0	0	0	0	0	0	0
12:30 AM	0	0	0	0	0	0	0	0	0
12:45 AM	0	0	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0	0	0
1:15 AM	0	0	0	0	0	0	0	0	0
1:30 AM	0	0	0	0	0	0	0	0	0
1:45 AM	0	0	0	0	0	0	0	0	0
2:00 AM	0	0	0	0	0	0	0	0	0
2:15 AM	0	0	0	0	0	0	0	0	0
2:30 AM	0	0	0	0	0	0	0	0	0
2:45 AM	0	0	0	0	0	0	0	0	0
3:00 AM	0	0	0	0	0	0	0	0	0
3:15 AM	0	0	0	0	0	0	0	0	0
3:30 AM	0	0	0	0	0	0	0	0	0
3:45 AM	0	0	0	0	0	0	0	0	0
4:00 AM	0	0	0	0	0	0	0	0	0
4:15 AM	0	0	0	0	0	0	0	0	0
4:30 AM	0	0	0	0	0	0	0	0	0
4:45 AM	0	0	0	0	0	0	0	0	0
5:00 AM	0	0	0	0	0	0	0	0	0
5:15 AM	0	0	0	0	0	0	0	0	0
5:30 AM	0	0	0	0	0	0	0	0	0
5:45 AM	0	0	0	0	0	0	0	0	0
6:00 AM	0	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0	0	0
6:30 AM	0	0	0	0	0	0	0	0	0
6:45 AM	0	0	0	0	1	0	1	1	3
7:00 AM	0	0	0	1	0	1	0	0	2
7:15 AM	1	0	0	0	0	0	0	1	2
7:30 AM	1	0	0	0	0	1	2	2	6
7:45 AM	0	2	0	0	0	0	2	0	4
8:00 AM	1	3	0	0	1	0	0	1	6
8:15 AM	2	2	0	0	1	0	0	0	5
8:30 AM	2	0	0	0	0	0	0	0	2
8:45 AM	2	1	0	0	1	1	1	0	6
9:00 AM	0	2	1	0	0	1	0	0	4
9:15 AM	1	2	0	1	1	1	3	0	9
9:30 AM	1	2	0	0	2	1	0	1	7
9:45 AM	1	0	0	0	0	0	0	1	2
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	12	14	1	2	7	6	9	7	58
APPROACH %'s :	46.15%	53.85%	33.33%	66.67%	53.85%	46.15%	56.25%	43.75%	
PEAK HR :	07:45 AM - 08:45 AM								TOTAL
PEAK HR VOL :	5	7	0	0	2	0	2	1	17
PEAK HR FACTOR :	0.625	0.583			0.500		0.250	0.250	0.708
	0.750				0.500		0.375		

NOON	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
10:00 AM	1	0	0	0	0	1	0	1	3
10:15 AM	2	0	0	0	0	2	0	1	5
10:30 AM	0	0	0	0	1	0	0	0	1
10:45 AM	0	1	0	0	0	0	0	1	2
11:00 AM	0	0	0	0	1	0	0	0	1
11:15 AM	0	0	0	0	0	1	1	0	2
11:30 AM	1	0	0	0	0	1	1	0	3
11:45 AM	0	0	0	0	0	0	4	1	5
12:00 PM	0	1	0	0	1	0	0	0	2
12:15 PM	0	0	0	0	0	0	0	0	0
12:30 PM	1	0	0	0	0	0	0	0	1
12:45 PM	1	0	0	0	0	1	0	0	2
1:00 PM	1	1	0	0	0	0	0	0	2
1:15 PM	0	0	0	0	0	0	0	0	0
1:30 PM	0	2	0	0	0	0	0	1	3
1:45 PM	0	0	0	0	0	0	1	0	1
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	7	5	0	0	3	6	7	5	33
APPROACH %'s :	58.33%	41.67%			33.33%	66.67%	58.33%	41.67%	
PEAK HR :	01:00 PM - 02:00 PM								TOTAL
PEAK HR VOL :	1	3	0	0	0	0	1	1	6
PEAK HR FACTOR :	0.250	0.375					0.250	0.250	0.500
	0.500						0.500		

National Data & Surveying Services

Intersection Turning Movement Count

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
2:00 PM	2	0	0	0	0	0	1	1	4
2:15 PM	0	0	0	0	1	0	1	4	6
2:30 PM	0	0	0	0	0	0	9	0	9
2:45 PM	0	0	0	0	0	0	0	2	2
3:00 PM	0	0	0	0	0	0	0	0	0
3:15 PM	0	1	0	0	0	0	0	0	1
3:30 PM	0	0	0	0	0	0	1	0	1
3:45 PM	0	0	0	0	0	0	0	1	1
4:00 PM	2	3	0	0	0	1	0	0	6
4:15 PM	1	0	0	0	0	0	1	3	5
4:30 PM	0	0	0	0	1	0	2	2	5
4:45 PM	0	0	0	0	0	0	0	1	1
5:00 PM	0	1	0	0	0	0	0	0	1
5:15 PM	1	0	0	0	0	1	0	0	2
5:30 PM	0	2	0	0	2	0	0	0	4
5:45 PM	0	0	0	0	0	0	0	1	1
6:00 PM	0	0	0	0	0	0	0	0	0
6:15 PM	0	0	0	0	0	0	0	1	1
6:30 PM	0	1	0	0	2	0	0	1	4
6:45 PM	0	1	0	0	0	0	1	0	2
7:00 PM	1	0	0	0	0	1	0	0	2
7:15 PM	0	0	0	0	0	0	0	1	1
7:30 PM	0	0	0	0	0	0	0	0	0
7:45 PM	0	0	0	0	0	0	1	0	1
8:00 PM	0	0	0	0	0	0	0	1	1
8:15 PM	1	1	0	0	1	0	0	0	3
8:30 PM	1	0	0	0	0	0	0	1	2
8:45 PM	0	0	0	0	0	0	0	0	0
9:00 PM	0	0	0	0	0	0	0	1	1
9:15 PM	0	0	0	0	0	0	0	0	0
9:30 PM	1	0	0	1	0	0	1	0	3
9:45 PM	0	0	0	0	0	0	0	0	0
10:00 PM	0	0	0	0	0	0	0	0	0
10:15 PM	0	0	0	0	0	0	1	0	1
10:30 PM	0	0	0	0	0	0	0	0	0
10:45 PM	0	0	0	0	0	0	0	0	0
11:00 PM	0	0	0	0	0	0	0	0	0
11:15 PM	0	0	0	0	0	0	0	0	0
11:30 PM	0	0	0	0	0	0	0	0	0
11:45 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	10	10	0	1	7	3	19	21	71
APPROACH %'s :	50.00%	50.00%	0.00%	100.00%	70.00%	30.00%	47.50%	52.50%	
PEAK HR :	04:00 PM - 05:00 PM								TOTAL
PEAK HR VOL :	3	3	0	0	0	1	2	4	13
PEAK HR FACTOR :	0.375	0.250				0.250	0.500	0.333	0.542
	0.300				0.250		0.375		

National Data & Surveying Services

Intersection Turning Movement Count

Location: Canyon Rd & Country Club Dr
City: Moraga

Project ID: 24-080249-001
Date: 9/18/2024

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Canyon Rd		Canyon Rd		Country Club Dr		Country Club Dr		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
12:00 AM	0	0	0	0	0	0	0	0	0
12:15 AM	0	0	0	0	0	0	0	0	0
12:30 AM	0	0	0	0	0	0	0	0	0
12:45 AM	0	0	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0	0	0
1:15 AM	0	0	0	0	0	0	0	0	0
1:30 AM	0	0	0	0	0	0	0	0	0
1:45 AM	0	0	0	0	0	0	0	0	0
2:00 AM	0	0	0	0	0	0	0	0	0
2:15 AM	0	0	0	0	0	0	0	0	0
2:30 AM	0	0	0	0	0	0	0	0	0
2:45 AM	0	0	0	0	0	0	0	0	0
3:00 AM	0	0	0	0	0	0	0	0	0
3:15 AM	0	0	0	0	0	0	0	0	0
3:30 AM	0	0	0	0	0	0	0	0	0
3:45 AM	0	0	0	0	0	0	0	0	0
4:00 AM	0	0	0	0	0	0	0	0	0
4:15 AM	0	0	0	0	0	0	0	0	0
4:30 AM	0	0	0	0	0	0	0	0	0
4:45 AM	0	0	0	0	0	0	0	0	0
5:00 AM	0	0	0	0	0	0	0	0	0
5:15 AM	0	0	0	0	0	0	0	0	0
5:30 AM	0	0	0	0	0	0	0	0	0
5:45 AM	0	0	0	0	0	0	0	0	0
6:00 AM	0	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	1	0	0	0	1
6:30 AM	0	0	1	0	0	0	0	0	1
6:45 AM	1	0	0	1	1	1	0	0	4
7:00 AM	1	0	0	0	0	0	0	0	1
7:15 AM	0	0	0	0	1	1	1	0	3
7:30 AM	0	0	0	0	0	0	0	2	2
7:45 AM	0	1	0	0	0	0	1	0	2
8:00 AM	0	0	0	0	0	1	1	1	3
8:15 AM	0	0	0	0	0	1	0	0	1
8:30 AM	1	0	0	0	1	1	0	1	4
8:45 AM	0	0	0	0	0	0	1	0	1
9:00 AM	0	0	0	0	0	0	0	2	2
9:15 AM	0	0	0	0	2	0	0	2	4
9:30 AM	1	1	1	0	1	1	0	2	7
9:45 AM	0	1	0	0	0	0	0	0	1
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	4	3	2	1	7	6	4	10	37
APPROACH %'s :	57.14%	42.86%	66.67%	33.33%	53.85%	46.15%	28.57%	71.43%	
PEAK HR :	07:45 AM - 08:45 AM								TOTAL
PEAK HR VOL :	1	1	0	0	1	3	2	2	10
PEAK HR FACTOR :	0.250	0.250			0.250	0.750	0.500	0.500	0.625
	0.500				0.500		0.500		

NOON	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
10:00 AM	0	1	0	0	1	0	0	0	2
10:15 AM	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	1	0	0	1
10:45 AM	0	0	0	0	1	0	0	0	1
11:00 AM	0	0	0	0	1	0	0	0	1
11:15 AM	1	0	0	0	0	0	0	0	1
11:30 AM	1	0	0	0	1	1	0	0	3
11:45 AM	1	0	0	0	0	1	0	0	2
12:00 PM	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0
12:45 PM	0	1	0	0	1	0	0	0	2
1:00 PM	0	0	0	0	0	1	0	0	1
1:15 PM	0	0	0	0	0	0	0	0	0
1:30 PM	0	1	0	0	0	0	0	0	1
1:45 PM	0	0	1	0	0	0	0	0	1
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	3	3	1	0	5	4	0	0	16
APPROACH %'s :	50.00%	50.00%	100.00%	0.00%	55.56%	44.44%			
PEAK HR :	11:30 AM - 12:30 PM								TOTAL
PEAK HR VOL :	2	0	0	0	1	2	0	0	5
PEAK HR FACTOR :	0.500				0.250	0.500			0.417
	0.500				0.375				

National Data & Surveying Services

Intersection Turning Movement Count

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
2:00 PM	0	2	0	0	3	0	0	0	5
2:15 PM	1	1	0	0	0	0	2	0	4
2:30 PM	1	0	0	0	0	0	2	0	3
2:45 PM	0	0	0	0	0	0	0	2	2
3:00 PM	0	0	0	0	0	1	2	0	3
3:15 PM	0	0	0	0	0	0	3	0	3
3:30 PM	0	0	0	0	3	0	0	6	9
3:45 PM	0	0	0	0	0	0	2	1	3
4:00 PM	0	0	0	0	0	0	0	1	1
4:15 PM	0	1	0	0	0	0	0	0	1
4:30 PM	1	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	1	0	0	1	2
5:15 PM	1	0	0	0	1	2	0	0	4
5:30 PM	0	0	0	0	0	0	3	0	3
5:45 PM	0	0	0	0	0	0	0	0	0
6:00 PM	0	0	0	0	0	1	0	0	1
6:15 PM	0	0	0	0	0	0	0	1	1
6:30 PM	0	1	0	0	0	0	1	1	3
6:45 PM	1	0	0	0	0	1	0	0	2
7:00 PM	1	0	0	0	0	0	2	4	7
7:15 PM	0	0	0	0	0	0	2	2	4
7:30 PM	0	0	0	0	0	2	0	0	2
7:45 PM	0	0	0	0	0	0	0	0	0
8:00 PM	0	0	0	0	0	0	0	0	0
8:15 PM	0	0	0	0	0	0	0	0	0
8:30 PM	0	0	0	0	0	0	0	0	0
8:45 PM	0	0	0	0	0	0	0	0	0
9:00 PM	0	0	0	0	0	0	0	0	0
9:15 PM	0	0	0	0	1	0	0	0	1
9:30 PM	0	0	0	0	0	0	0	0	0
9:45 PM	0	0	0	0	0	0	0	0	0
10:00 PM	0	0	0	0	0	0	0	0	0
10:15 PM	0	0	0	0	0	0	0	0	0
10:30 PM	0	0	0	0	0	0	0	0	0
10:45 PM	0	0	0	0	0	0	0	0	0
11:00 PM	0	0	0	0	0	0	0	0	0
11:15 PM	0	0	0	0	0	0	0	0	0
11:30 PM	0	0	0	0	0	0	0	0	0
11:45 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	6	5	0	0	9	7	19	19	65
APPROACH %'s :	54.55%	45.45%			56.25%	43.75%	50.00%	50.00%	
PEAK HR :	**03:00 PM - 04:00 PM**								TOTAL
PEAK HR VOL :	1	0	0	0	0	1	7	2	11
PEAK HR FACTOR :	0.250					0.250	0.583	0.250	0.917
	0.250				0.250		0.750		

National Data & Surveying Services

Intersection Turning Movement Count

Location: Canyon Rd & Country Club Dr
City: Moraga
Control: 2-Way Stop(EB/WB)

Project ID: 24-080249-001
Date: 9/17/2024

Data - Total

NS/EW Streets:	Canyon Rd				Canyon Rd				Country Club Dr				Country Club Dr				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
12:00 AM	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	3
12:15 AM	0	1	1	0	0	6	0	0	0	0	0	0	1	0	0	0	9
12:30 AM	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2
12:45 AM	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	4
1:00 AM	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	3
1:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 AM	1	0	0	0	0	2	0	0	1	0	0	0	0	0	0	0	4
1:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
2:15 AM	0	2	0	0	0	0	0	1	1	0	0	0	0	0	0	0	4
2:30 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2:45 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
3:00 AM	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	4
3:15 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
3:30 AM	0	4	0	0	0	1	0	0	0	0	0	0	1	0	0	0	6
3:45 AM	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	3
4:00 AM	0	1	0	0	0	1	0	1	0	0	0	0	0	0	0	0	3
4:15 AM	0	3	0	0	0	2	0	0	0	0	1	0	0	0	0	0	6
4:30 AM	0	0	0	0	1	1	1	0	0	0	0	0	0	0	1	0	4
4:45 AM	0	5	0	0	0	1	0	0	1	0	0	0	0	0	0	0	7
5:00 AM	0	10	0	0	0	5	0	0	0	0	0	0	0	1	0	0	16
5:15 AM	0	18	0	0	0	1	4	0	0	0	0	0	0	0	0	0	23
5:30 AM	3	16	1	0	1	3	1	0	0	0	0	0	0	1	3	0	29
5:45 AM	7	21	0	0	0	3	5	0	2	0	1	0	0	0	1	0	40
6:00 AM	2	21	0	0	0	7	6	0	0	0	0	0	0	0	0	0	36
6:15 AM	5	34	0	0	2	14	4	0	3	0	0	0	0	0	0	0	62
6:30 AM	7	48	0	0	2	8	6	0	2	0	1	0	0	0	1	0	75
6:45 AM	7	41	1	0	4	24	5	0	4	0	4	0	1	0	3	0	94
7:00 AM	10	49	0	0	5	39	6	1	3	0	1	0	0	0	6	0	120
7:15 AM	11	84	1	0	5	40	10	0	4	0	6	0	0	0	5	0	166
7:30 AM	7	97	0	0	14	72	3	0	0	0	9	0	1	2	6	0	211
7:45 AM	14	173	4	0	19	80	7	0	3	2	10	0	1	1	6	0	320
8:00 AM	22	210	9	0	20	181	14	0	1	0	18	0	5	0	18	0	498
8:15 AM	45	226	12	0	28	151	21	0	4	0	24	0	0	0	19	0	530
8:30 AM	14	102	10	0	26	102	10	2	2	0	14	0	6	2	27	0	317
8:45 AM	18	95	9	0	28	63	12	0	0	0	8	0	6	2	24	0	265
9:00 AM	19	75	7	1	18	81	5	1	2	2	11	0	11	5	21	0	259
9:15 AM	20	93	4	0	8	73	12	1	4	0	9	0	2	2	19	0	247
9:30 AM	12	86	3	1	5	47	12	0	9	2	10	0	1	2	12	0	202
9:45 AM	20	83	2	0	3	48	4	0	6	3	8	0	0	3	4	0	184
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	245	1605	64	2	190	1068	149	7	53	9	135	0	37	21	176	0	3761
APPROACH %'s :	12.79%	83.77%	3.34%	0.10%	13.44%	75.53%	10.54%	0.50%	26.90%	4.57%	68.53%	0.00%	15.81%	8.97%	75.21%	0.00%	
PEAK HR :	07:45 AM - 08:45 AM																TOTAL
PEAK HR VOL :	95	711	35	0	93	514	52	2	10	2	66	0	12	3	70	0	1665
PEAK HR FACTOR :	0.528	0.787	0.729	0.000	0.830	0.710	0.619	0.250	0.625	0.250	0.688	0.000	0.500	0.375	0.648	0.000	0.785
		0.743				0.769				0.696				0.607			

NOON	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
10:00 AM	16	60	0	0	9	46	10	0	4	2	8	0	0	0	10	0	165
10:15 AM	5	72	3	0	9	57	15	0	5	0	6	1	1	4	8	0	186
10:30 AM	6	63	0	0	10	67	13	1	6	0	9	0	1	3	16	0	195
10:45 AM	9	85	2	0	10	51	13	0	6	1	14	0	0	0	8	0	199
11:00 AM	9	84	1	0	7	74	15	1	5	1	3	0	3	4	8	0	215
11:15 AM	9	80	1	0	7	60	10	0	3	3	8	0	1	2	6	0	190
11:30 AM	9	87	2	1	11	54	9	1	5	1	7	0	1	2	12	0	202
11:45 AM	9	72	4	0	21	62	8	1	8	4	8	1	3	2	11	0	214
12:00 PM	7	66	0	0	15	67	6	0	5	2	9	0	3	1	8	0	189
12:15 PM	10	78	4	0	5	72	7	0	6	1	8	0	0	1	8	0	200
12:30 PM	8	73	1	0	5	72	11	1	5	1	7	0	0	0	11	0	195
12:45 PM	10	78	0	0	15	77	6	1	8	1	10	0	1	3	6	0	216
1:00 PM	5	64	3	0	9	74	10	2	3	1	11	0	0	0	4	0	186
1:15 PM	9	74	2	0	11	72	4	0	7	0	10	0	1	1	12	0	203
1:30 PM	10	51	0	0	11	108	13	0	5	1	6	0	4	0	7	0	216
1:45 PM	8	67	2	0	14	115	11	2	6	2	11	0	1	2	8	0	249
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	139	1154	25	1	169	1128	161	10	87	21	135	2	20	25	143	0	3220
APPROACH %'s :	10.54%	87.49%	1.90%	0.08%	11.51%	76.84%	10.97%	0.68%	35.51%	8.57%	55.10%	0.82%	10.64%	13.30%	76.06%	0.00%	
PEAK HR :	01:00 PM - 02:00 PM																TOTAL
PEAK HR VOL :	32	256	7	0	45	369	38	4	21	4	38	0	6	3	31	0	854
PEAK HR FACTOR :	0.800	0.865	0.583	0.000	0.804	0.802	0.731	0.500	0.750	0.500	0.864	0.000	0.375	0.375	0.646	0.000	0.857
		0.868				0.803				0.829				0.714			

National Data & Surveying Services

Intersection Turning Movement Count

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	14	84	3	0	6	135	13	0	5	0	17	0	2	0	6	0	285
2:15 PM	14	171	6	1	12	127	8	1	3	1	9	0	5	0	12	0	370
2:30 PM	9	111	9	0	9	93	14	1	15	2	12	0	0	2	14	0	291
2:45 PM	17	107	8	0	25	97	13	1	4	2	13	0	6	1	16	0	310
3:00 PM	9	113	3	0	13	100	14	0	5	3	14	0	6	5	16	0	301
3:15 PM	16	168	1	0	12	101	18	0	4	2	9	0	0	2	17	0	350
3:30 PM	21	125	3	0	14	103	18	2	4	0	11	0	4	0	12	0	317
3:45 PM	18	126	1	0	20	157	16	0	1	1	16	0	2	2	20	0	380
4:00 PM	5	131	4	0	19	127	8	2	3	0	14	0	3	4	24	0	344
4:15 PM	20	147	3	0	15	127	16	2	3	1	23	0	3	0	12	0	372
4:30 PM	20	155	6	0	13	106	15	1	4	2	15	0	4	1	17	0	359
4:45 PM	17	127	10	0	20	131	16	0	3	1	28	1	6	2	22	0	384
5:00 PM	9	116	3	0	7	114	15	3	2	1	7	0	8	0	27	0	312
5:15 PM	17	152	1	0	7	130	8	3	1	0	13	0	5	2	15	0	354
5:30 PM	14	127	3	0	4	122	9	1	9	0	15	0	1	0	10	0	315
5:45 PM	18	149	1	0	10	142	18	0	10	0	14	0	2	0	9	0	373
6:00 PM	19	126	1	0	12	142	19	1	9	3	13	0	1	1	7	0	354
6:15 PM	6	87	2	0	4	103	18	1	6	0	8	0	3	2	9	0	249
6:30 PM	9	63	1	0	4	112	8	1	3	2	11	0	1	0	6	0	221
6:45 PM	9	81	1	0	11	80	6	1	7	1	9	0	0	0	7	0	213
7:00 PM	6	54	0	0	3	105	4	2	1	0	5	0	0	0	2	0	182
7:15 PM	14	52	0	0	5	73	15	1	1	2	6	2	1	1	5	0	178
7:30 PM	3	31	2	0	13	69	5	0	2	0	6	0	0	1	9	0	141
7:45 PM	3	33	0	0	1	60	4	0	8	0	6	0	0	0	4	0	119
8:00 PM	6	17	0	0	2	67	2	0	2	0	7	0	1	0	5	0	109
8:15 PM	4	20	0	0	5	42	7	2	1	0	2	0	1	0	3	0	87
8:30 PM	1	24	0	0	3	68	3	0	1	0	5	0	0	1	1	0	107
8:45 PM	3	18	0	0	3	46	4	1	2	1	3	0	0	0	1	0	82
9:00 PM	0	18	0	0	0	47	2	1	1	1	7	0	0	0	1	0	78
9:15 PM	1	16	0	0	2	38	3	0	0	0	5	0	0	0	2	0	67
9:30 PM	1	13	0	0	2	27	1	0	1	0	3	0	0	0	1	0	49
9:45 PM	0	12	0	0	2	19	2	0	1	0	1	0	0	0	1	0	38
10:00 PM	1	9	0	0	0	23	3	1	1	0	1	0	0	0	1	0	40
10:15 PM	0	3	0	0	0	17	1	0	2	0	0	1	1	0	0	0	25
10:30 PM	0	3	0	0	0	5	2	0	4	0	1	0	0	0	0	0	15
10:45 PM	1	3	0	0	0	9	2	1	0	0	1	0	0	1	0	0	18
11:00 PM	0	2	0	0	1	5	0	0	1	0	0	0	0	0	0	0	9
11:15 PM	0	2	0	0	3	5	1	0	1	0	0	0	0	0	1	0	13
11:30 PM	0	1	0	0	0	2	2	0	0	0	0	0	0	0	0	0	5
11:45 PM	0	2	0	0	2	6	2	0	1	0	0	0	0	0	1	0	14
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	325	2799	72	1	284	3082	335	30	132	26	330	4	66	28	316	0	7830
APPROACH %'s :	10.17%	87.55%	2.25%	0.03%	7.61%	82.61%	8.98%	0.80%	26.83%	5.28%	67.07%	0.81%	16.10%	6.83%	77.07%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	62	560	23	0	67	491	55	5	13	4	80	1	16	7	75	0	1459
PEAK HR FACTOR :	0.775	0.903	0.575	0.000	0.838	0.937	0.859	0.625	0.813	0.500	0.714	0.250	0.667	0.438	0.781	0.000	0.950
	0.891				0.925				0.742				0.790				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Canyon Rd & Country Club Dr
City: Moraga
Control: 2-Way Stop(EB/WB)

Project ID: 24-080249-001
Date: 9/18/2024

Data - Total

NS/EW Streets:	Canyon Rd				Canyon Rd				Country Club Dr				Country Club Dr				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
12:00 AM	0	2	0	0	0	1	0	0	1	0	0	0	0	0	1	0	5
12:15 AM	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	4
12:30 AM	0	2	0	0	0	5	2	0	0	0	0	0	0	0	0	0	9
12:45 AM	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2
1:00 AM	0	1	0	0	0	1	1	0	1	0	0	0	0	0	0	0	4
1:15 AM	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	2
1:30 AM	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	2
1:45 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
2:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 AM	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	2
2:45 AM	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	4
3:00 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
3:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 AM	0	1	0	0	1	1	0	0	0	0	0	0	1	0	1	0	5
4:00 AM	0	0	0	0	0	1	0	0	1	0	0	0	0	1	0	0	3
4:15 AM	1	3	0	0	0	1	0	0	0	0	0	0	0	0	0	0	5
4:30 AM	1	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	4
4:45 AM	0	2	0	0	0	0	2	0	1	0	0	0	0	0	0	0	5
5:00 AM	0	10	0	0	0	3	0	0	0	0	1	0	0	0	0	0	14
5:15 AM	1	22	1	0	1	2	4	0	0	0	0	0	0	1	0	0	32
5:30 AM	3	24	0	0	2	6	1	0	0	0	0	0	0	0	1	0	37
5:45 AM	4	12	0	0	0	7	6	0	1	0	0	0	0	0	1	0	31
6:00 AM	3	29	0	0	0	6	4	0	0	0	0	0	3	0	0	0	45
6:15 AM	3	30	0	0	0	15	8	0	3	0	0	0	0	0	2	0	61
6:30 AM	7	32	0	0	3	17	4	1	6	0	3	0	0	0	1	0	74
6:45 AM	6	39	0	0	8	23	3	0	0	0	0	0	0	0	2	0	81
7:00 AM	5	60	0	0	2	33	5	1	1	0	3	0	0	0	2	0	112
7:15 AM	9	67	0	0	8	41	6	0	2	0	6	0	0	0	3	0	142
7:30 AM	8	97	0	0	10	49	5	1	4	0	10	0	0	0	7	0	191
7:45 AM	21	143	4	0	17	90	6	0	5	0	12	0	1	1	5	0	305
8:00 AM	21	225	9	1	24	183	13	1	3	0	25	1	4	0	25	0	535
8:15 AM	39	234	12	1	25	165	20	1	2	0	19	0	2	1	21	0	542
8:30 AM	14	100	8	0	24	115	6	0	5	0	9	0	4	0	31	0	316
8:45 AM	14	82	13	0	32	88	9	1	5	0	14	0	9	1	22	0	290
9:00 AM	9	97	5	1	14	74	16	0	3	2	8	0	3	0	26	0	258
9:15 AM	14	84	0	0	7	56	9	0	2	0	6	0	0	1	7	0	186
9:30 AM	12	85	5	0	4	60	10	0	2	3	7	0	1	2	9	0	200
9:45 AM	13	82	1	0	10	56	10	0	6	1	6	0	3	1	9	0	198
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	208	1573	58	3	193	1108	151	6	58	6	129	1	31	9	176	0	3710
APPROACH %'s :	11.29%	85.40%	3.15%	0.16%	13.24%	75.99%	10.36%	0.41%	29.90%	3.09%	66.49%	0.52%	14.35%	4.17%	81.48%	0.00%	
PEAK HR :	07:45 AM - 08:45 AM																TOTAL
PEAK HR VOL :	95	702	33	2	90	553	45	2	15	0	65	1	11	2	82	0	1698
PEAK HR FACTOR :	0.609	0.750	0.688	0.500	0.900	0.755	0.563	0.500	0.750	0.000	0.650	0.250	0.688	0.500	0.661	0.000	0.783
		0.727				0.781				0.698				0.679			

NOON	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
10:00 AM	12	82	2	0	3	55	13	0	1	2	6	2	2	1	5	0	186
10:15 AM	9	70	2	0	10	60	10	0	4	1	9	0	2	2	11	0	190
10:30 AM	8	84	3	0	11	50	11	0	4	1	8	0	3	2	8	0	193
10:45 AM	3	67	2	0	12	75	13	0	8	1	4	0	1	1	11	0	198
11:00 AM	14	71	3	0	10	72	9	0	7	0	11	0	2	2	8	0	209
11:15 AM	6	70	1	0	9	66	9	0	7	2	5	1	2	1	10	0	189
11:30 AM	14	73	3	0	5	57	10	0	9	0	9	1	2	1	12	0	196
11:45 AM	16	79	3	0	22	73	8	0	7	0	12	1	2	1	13	0	237
12:00 PM	16	83	1	0	9	68	16	0	4	0	7	0	1	2	30	0	237
12:15 PM	10	59	2	0	7	81	12	1	3	1	7	0	0	0	7	0	190
12:30 PM	3	73	2	0	5	73	12	0	2	0	5	0	2	2	4	0	183
12:45 PM	9	72	6	0	8	82	19	1	7	3	8	1	1	1	7	0	225
1:00 PM	3	73	4	0	7	66	6	2	5	2	4	0	2	0	11	0	185
1:15 PM	9	69	0	0	11	73	12	0	5	3	8	0	3	4	10	0	207
1:30 PM	11	61	3	0	9	82	22	1	9	0	12	1	0	0	10	0	221
1:45 PM	13	82	5	0	15	74	14	0	4	1	11	2	3	0	13	0	237
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	156	1168	42	0	153	1107	196	5	86	17	126	9	28	20	170	0	3283
APPROACH %'s :	11.42%	85.51%	3.07%	0.00%	10.47%	75.77%	13.42%	0.34%	36.13%	7.14%	52.94%	3.78%	12.84%	9.17%	77.98%	0.00%	
PEAK HR :	11:30 AM - 12:30 PM																TOTAL
PEAK HR VOL :	56	294	9	0	43	279	46	1	23	1	35	2	5	4	62	0	860
PEAK HR FACTOR :	0.875	0.886	0.750	0.000	0.489	0.861	0.719	0.250	0.639	0.250	0.729	0.500	0.625	0.500	0.517	0.000	0.907
		0.898				0.896				0.763				0.538			

National Data & Surveying Services

Intersection Turning Movement Count

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	4	95	2	0	12	92	10	0	6	1	10	1	2	3	8	0	246
2:15 PM	8	89	5	0	16	75	7	0	2	1	6	0	1	1	8	0	219
2:30 PM	9	92	1	0	14	96	16	0	7	0	7	0	5	1	10	0	258
2:45 PM	14	77	4	0	23	133	16	1	11	0	16	0	4	0	15	0	314
3:00 PM	16	198	5	1	11	147	13	2	6	3	19	1	5	2	20	0	449
3:15 PM	19	167	3	0	17	143	29	5	4	0	14	1	1	3	12	0	418
3:30 PM	17	127	1	0	17	103	13	1	10	1	16	0	2	0	16	0	324
3:45 PM	14	117	4	0	17	131	14	2	2	0	11	0	3	2	19	0	336
4:00 PM	12	168	3	0	13	114	12	2	4	1	10	0	1	1	19	0	360
4:15 PM	20	159	4	0	15	111	15	0	6	1	17	0	5	3	11	0	367
4:30 PM	11	146	6	0	14	112	15	2	4	0	11	0	6	2	19	0	348
4:45 PM	15	102	10	0	20	113	19	2	5	3	10	0	8	1	20	0	328
5:00 PM	16	136	3	0	7	98	16	1	4	1	15	0	8	4	34	0	343
5:15 PM	22	178	2	0	12	125	19	2	5	2	10	0	0	2	15	0	394
5:30 PM	12	128	1	0	10	144	15	0	12	1	11	0	1	0	15	0	350
5:45 PM	9	106	0	0	4	123	3	2	5	0	14	0	4	0	12	0	282
6:00 PM	12	105	0	0	5	134	11	0	7	0	11	0	1	0	7	0	293
6:15 PM	12	78	0	0	5	112	9	0	4	1	9	0	1	1	9	0	241
6:30 PM	7	71	1	0	0	75	6	1	6	1	7	0	3	1	2	0	181
6:45 PM	7	84	0	0	6	98	10	0	4	0	0	0	0	1	4	0	214
7:00 PM	7	54	1	0	1	67	8	0	1	0	7	0	0	0	4	0	150
7:15 PM	8	46	0	0	7	106	15	0	6	1	6	0	1	0	4	0	200
7:30 PM	5	47	0	0	3	84	7	2	5	0	10	0	0	1	7	0	171
7:45 PM	5	44	0	0	6	59	8	0	0	0	5	0	1	0	1	0	129
8:00 PM	2	30	1	0	2	49	7	0	1	0	1	0	0	1	2	0	96
8:15 PM	5	29	0	0	2	74	4	1	1	1	8	0	0	0	1	0	126
8:30 PM	0	27	0	0	4	69	3	0	2	0	4	0	0	0	1	0	110
8:45 PM	2	20	0	0	2	44	5	3	1	0	5	0	0	0	0	0	82
9:00 PM	1	17	1	0	2	50	3	1	0	0	8	0	0	0	1	0	84
9:15 PM	2	17	0	0	0	39	6	1	1	0	2	0	1	0	0	0	69
9:30 PM	0	8	0	0	2	34	2	1	3	0	2	0	1	0	2	0	55
9:45 PM	1	8	0	0	2	23	2	0	2	0	1	0	0	0	0	0	39
10:00 PM	4	10	0	0	2	20	0	1	0	0	3	0	0	0	1	0	41
10:15 PM	1	10	0	0	2	16	2	1	0	0	0	1	0	0	0	0	33
10:30 PM	0	1	0	0	2	17	2	1	5	0	0	0	0	0	1	0	29
10:45 PM	0	3	0	0	0	13	0	0	6	0	0	0	0	0	0	0	22
11:00 PM	0	0	0	0	0	8	1	0	1	0	0	0	0	0	0	0	10
11:15 PM	0	4	0	0	0	9	1	0	0	0	0	0	0	1	2	0	17
11:30 PM	0	0	0	0	1	7	0	0	0	0	0	0	0	0	0	0	8
11:45 PM	0	4	0	0	0	3	1	0	0	0	0	0	0	0	1	0	9
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	299	2802	58	1	278	3070	345	35	149	19	286	4	65	31	303	0	7745
APPROACH %'s :	9.46%	88.67%	1.84%	0.03%	7.46%	82.35%	9.25%	0.94%	32.53%	4.15%	62.45%	0.87%	16.29%	7.77%	75.94%	0.00%	
PEAK HR :	03:00 PM - 04:00 PM																TOTAL
PEAK HR VOL :	66	609	13	1	62	524	69	10	22	4	60	2	11	7	67	0	1527
PEAK HR FACTOR :	0.868	0.769	0.650	0.250	0.912	0.891	0.595	0.500	0.550	0.333	0.789	0.500	0.550	0.583	0.838	0.000	0.850
		0.783				0.857				0.759				0.787			

Prepared by National Data & Surveying Services

SPEED

Canyon Rd Bet Larch Ave & Sanders Dr

Day: Tuesday
Date: 9/17/2024

City: Moraga
Project #: CA24_080251_001

HOURLY BREAKDOWN

Time	NORTHBOUND 5 15	15 20	20 25	25 30	30 35	35 40	40 45	45 50	50 55	55 60	60 65	65 70	70 99	Total	SOUTHBOUND 5 15	15 20	20 25	25 30	30 35	35 40	40 45	45 50	50 55	55 60	60 65	65 70	70 99	Total	TOTALS 5 15	15 20	20 25	25 30	30 35	35 40	40 45	45 50	50 55	55 60	60 65	65 70	70 99	Total
0:00	0	2	0	1	3	0	0	0	0	0	0	0	0	**6**	0	0	2	1	4	3	0	0	0	0	0	0	0	**10**	0	2	2	2	7	3	0	0	0	0	0	0	0	**16**
1:00	0	1	1	0	0	0	0	0	0	0	0	0	0	**2**	0	0	0	2	1	0	0	0	0	0	0	0	0	**3**	0	1	1	2	1	0	0	0	0	0	0	0	0	**5**
2:00	0	0	1	0	1	2	0	0	0	0	0	0	0	**4**	0	0	0	0	1	1	0	0	0	0	0	0	0	**2**	0	0	1	0	2	3	0	0	0	0	0	0	0	**6**
3:00	1	2	0	1	1	0	0	0	0	0	0	0	0	**5**	1	0	0	0	1	2	1	0	0	0	0	0	0	**5**	2	2	0	1	2	2	1	0	0	0	0	0	0	**10**
4:00	1	0	1	0	4	1	0	0	0	0	0	0	0	**7**	0	0	0	3	2	1	1	0	0	0	0	0	0	**7**	1	0	1	3	6	2	1	0	0	0	0	0	0	**14**
5:00	0	6	12	14	23	8	3	1	0	0	0	0	0	**67**	0	0	0	2	6	4	1	0	1	0	0	0	0	**14**	0	6	12	16	29	12	4	1	1	0	0	0	0	**81**
6:00	1	6	28	28	48	20	4	1	0	0	0	0	0	**136**	0	0	3	11	13	17	7	2	0	0	0	0	0	**53**	1	6	31	39	61	37	11	3	0	0	0	0	0	**189**
7:00	0	8	50	111	135	82	13	1	0	0	0	0	0	**400**	0	1	24	46	89	63	12	9	1	0	0	0	0	**245**	0	9	74	157	224	145	25	10	1	0	0	0	0	**645**
8:00	1	17	140	245	200	86	16	3	0	0	0	0	0	**708**	0	12	64	205	165	77	15	6	0	0	0	0	0	**544**	1	29	204	450	365	163	31	9	0	0	0	0	0	**1252**
9:00	1	18	65	103	122	69	10	3	0	0	0	0	0	**391**	0	5	26	73	96	62	16	2	0	0	0	0	0	**280**	1	23	91	176	218	131	26	5	0	0	0	0	0	**671**
10:00	0	6	53	67	98	55	15	2	0	0	0	0	0	**296**	0	1	22	41	100	53	10	4	0	0	0	0	0	**231**	0	7	75	108	198	108	25	6	0	0	0	0	0	**527**
11:00	0	23	40	71	113	55	14	2	1	0	0	0	0	**319**	0	1	19	57	94	57	16	3	1	0	0	0	0	**248**	0	24	59	128	207	112	30	5	2	0	0	0	0	**567**
12:00	2	16	41	58	112	66	18	2	0	0	0	0	0	**315**	0	2	42	71	136	57	13	4	0	0	0	0	0	**325**	2	18	83	129	248	123	31	6	0	0	0	0	0	**640**
13:00	1	8	46	47	94	68	10	5	0	0	0	0	0	**279**	0	0	32	87	143	81	21	4	2	0	0	0	0	**370**	1	8	78	134	237	149	31	9	2	0	0	0	0	**649**
14:00	1	8	78	147	170	91	26	2	0	0	0	0	0	**523**	2	10	77	126	165	74	11	8	0	0	0	0	0	**473**	3	18	155	273	335	165	37	10	0	0	0	0	0	**996**
15:00	2	17	65	114	183	129	27	11	1	0	0	0	0	**549**	0	4	55	105	183	93	24	11	1	0	0	0	0	**476**	2	21	120	219	366	222	51	22	2	0	0	0	0	**1025**
16:00	0	15	49	107	219	131	51	10	2	0	0	0	0	**584**	0	7	69	124	219	88	23	3	1	0	0	0	0	**534**	0	22	118	231	438	219	74	13	3	0	0	0	0	**1118**
17:00	0	8	46	96	230	146	47	15	0	0	0	0	0	**588**	0	4	65	108	214	94	27	6	3	0	0	0	0	**521**	0	12	111	204	444	240	74	21	3	0	0	0	0	**1109**
18:00	0	8	35	78	130	90	26	3	0	0	0	0	0	**370**	0	2	59	97	180	73	24	6	1	0	0	0	0	**442**	0	10	94	175	310	163	50	9	1	0	0	0	0	**812**
19:00	0	11	25	47	61	26	7	1	0	0	0	0	0	**178**	0	3	44	77	130	38	3	4	2	0	0	0	0	**301**	0	14	69	124	191	64	10	5	2	0	0	0	0	**479**
20:00	0	3	16	24	27	13	1	1	0	0	0	0	0	**85**	0	2	37	52	88	23	5	1	0	0	0	0	0	**208**	0	5	53	76	115	36	6	2	0	0	0	0	0	**293**
21:00	0	5	7	21	12	8	4	1	0	0	0	0	0	**58**	0	2	16	30	58	21	6	2	1	0	0	0	0	**136**	0	7	23	51	70	29	10	3	1	0	0	0	0	**194**
22:00	0	4	1	7	3	3	0	0	0	0	0	0	0	**18**	0	1	5	9	21	6	2	0	0	0	0	0	0	**44**	0	5	6	16	24	9	2	0	0	0	0	0	0	**62**
23:00	0	0	0	3	2	1	0	0	0	0	0	0	0	**6**	0	0	5	5	12	0	0	0	0	0	0	0	0	**22**	0	0	5	8	14	1	0	0	0	0	0	0	0	**28**
Totals	**11**	**192**	**800**	**1,390**	**1,991**	**1,150**	**292**	**64**	**4**	**0**	**0**	**0**	**0**	**5,894**	**3**	**57**	**666**	**1,332**	**2,121**	**988**	**238**	**75**	**14**	**0**	**0**	**0**	**0**	**5,494**	**14**	**249**	**1,466**	**2,722**	**4,112**	**2,138**	**530**	**139**	**18**	**0**	**0**	**0**	**0**	**11,388**
% of Totals	0%	3%	14%	24%	34%	20%	5%	1%	0%					100%	0%	1%	12%	24%	39%	18%	4%	1%	0%					100%	0%	2%	13%	24%	36%	19%	5%	1%	0%					100%

STATISTICS

00:00 - 12:00	5	89	391	641	748	378	75	13	1	0	0	0	0	2341	1	20	160	441	572	340	79	26	3	0	0	0	0	1642	6	109	551	1082	1320	718	154	39	4	0	0	0	0	3983
%	0%	2%	7%	11%	13%	6%	1%	0%	0%	0%	0%	0%	0%	40%	0%	0%	3%	7%	10%	6%	1%	0%	0%	0%	0%	0%	0%	28%	0%	2%	9%	18%	22%	12%	3%	1%	0%	0%	0%	0%	0%	68%
Peak Hour	3:30	11:00	8:00	7:45	7:45	7:30	7:15	7:30	10:45	0:00	0:00	0:00	0:00	7:45	2:45	8:15	7:30	7:45	8:00	7:45	8:15	7:45	4:45	0:00	0:00	0:00	0:00	7:45	3:30	8:15	8:00	7:45	7:45	7:30	10:30	7:45	11:00	0:00	0:00	0:00	0:00	7:45
Peak Volume	2	23	140	261	226	102	19	4	1	0	0	0	0	763	1	13	65	208	165	86	20	10	1	0	0	0	0	557	3	32	204	469	388	185	35	14	2	0	0	0	0	1320
12:00 - 24:00	6	103	409	749	1243	772	217	51	3	0	0	0	0	3553	2	37	506	891	1549	648	159	49	11	0	0	0	0	3852	8	140	915	1640	2792	1420	376	100	14	0	0	0	0	7405
%	0%	2%	7%	13%	21%	13%	4%	1%	0%	0%	0%	0%	0%	60%	0%	1%	9%	15%	26%	11%	3%	1%	0%	0%	0%	0%	0%	65%	0%	2%	16%	28%	47%	24%	6%	2%	0%	0%	0%	0%	0%	126%
Peak Hour	12:15	15:00	14:15	14:15	17:15	17:00	17:15	17:15	15:30	12:00	12:00	12:00	12:00	17:15	13:45	14:00	14:00	15:30	17:15	13:30	16:30	14:45	17:15	12:00	12:00	12:00	12:00	15:45	14:15	16:15	14:00	14:00	17:15	17:00	16:00	17:15	15:30	12:00	12:00	12:00	12:00	17:15
Peak Volume	3	17	82	152	246	146	52	16	3	0	0	0	0	601	2	10	77	131	221	97	30	13	4	0	0	0	0	544	4	23	155	273	467	240	74	25	5	0	0	0	0	1143
07:00 - 09:00	1	25	190	356	335	168	29	4	0	0	0	0	0	1108	0	13	88	251	254	140	27	15	1	0	0	0	0	789	1	38	278	607	589	308	56	19	1	0	0	0	0	1897
%	0%	0%	3%	6%	6%	3%	0%	0%	0%	0%	0%	0%	0%	19%	0%	0%	1%	4%	4%	2%	0%	0%	0%	0%	0%	0%	0%	13%	0%	1%	5%	10%	10%	5%	1%	0%	0%	0%	0%	0%	0%	32%
Peak Hour	7:45	7:45	8:00	7:45	7:45	7:30	7:15	7:30	7:00	7:00	7:00	7:00	7:00	7:45	7:00	8:00	7:30	7:45	8:00	7:45	7:45	7:45	7:00	7:00	7:00	7:00	7:00	7:45	7:45	7:45	8:00	7:45	7:45	7:30	7:45	7:45	7:00	7:00	7:00	7:00	7:00	7:45
Peak Volume	1	20	140	261	226	102	19	4	0	0	0	0	0	763	0	12	65	208	165	86	17	10	1	0	0	0	0	557	1	30	204	469	388	185	32	14	1	0	0	0	0	1320
16:00 - 18:00	0	23	95	203	449	277	98	25	2	0	0	0	0	1172	0	11	134	232	433	182	50	9	4	0	0	0	0	1055	0	34	229	435	882	459	148	34	6	0	0	0	0	2227
%	0%	0%	2%	3%	8%	5%	2%	0%	0%	0%	0%	0%	0%	20%	0%	0%	2%	4%	7%	3%	1%	0%	0%	0%	0%	0%	0%	18%	0%	1%	4%	7%	15%	8%	3%	1%	0%	0%	0%	0%	0%	38%
Peak Hour	16:00	16:00	16:30	16:30	17:00	17:00	16:00	17:00	16:00	16:00	16:00	16:00	16:00	16:30	16:00	16:15	16:15	16:00	16:00	16:30	16:30	17:00	17:00	16:00	16:00	16:00	16:00	16:00	16:00	16:15	16:30	16:30	17:00	17:00	16:00	17:00	16:00	16:00	16:00	16:00	16:00	16:00
Peak Volume	0	15	54	128	230	146	51	15	2	0	0	0	0	589	0	8	71	124	219	96	30	6	3	0	0	0	0	534	0	23	123	237	444	240	74	21	3	0	0	0	0	1118

Direction	Percentiles 15th	50th	Average	85th	95th	ADT
NORTHBOUND	24	31	31	38	41	5894
SOUTHBOUND	25	32	31	37	41	5494
TOTALS	25	32	31	38	41	11388

Prepared by National Data & Surveying Services

SPEED

Canyon Rd Bet Sanders Dr & Country Club Dr

Day: Tuesday
Date: 9/17/2024

City: Moraga
Project #: CA24_080251_002

HOURLY BREAKDOWN

Time	NORTHBOUND 5 15	15 20	20 25	25 30	30 35	35 40	40 45	45 50	50 55	55 60	60 65	65 70	70 99	Total	SOUTHBOUND 5 15	15 20	20 25	25 30	30 35	35 40	40 45	45 50	50 55	55 60	60 65	65 70	70 99	Total	TOTALS 5 15	15 20	20 25	25 30	30 35	35 40	40 45	45 50	50 55	55 60	60 65	65 70	70 99	Total
0:00	0	0	0	3	0	2	1	0	0	0	0	0	0	6	0	0	1	5	2	3	0	0	0	0	0	0	0	11	0	0	1	8	2	5	1	0	0	0	0	0	0	17
1:00	0	0	0	1	1	0	0	0	0	0	0	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0	4	0	0	0	3	3	0	0	0	0	0	0	0	0	6
2:00	0	0	0	1	1	2	0	0	0	0	0	0	0	4	0	0	0	0	2	0	0	0	0	0	0	0	0	2	0	0	0	1	3	2	0	0	0	0	0	0	0	6
3:00	0	1	1	2	1	1	0	0	0	0	0	0	0	6	0	1	0	1	1	3	1	0	0	0	0	0	0	7	0	2	1	3	2	4	1	0	0	0	0	0	0	13
4:00	0	2	0	2	1	3	1	0	0	0	0	0	0	9	0	0	0	3	2	1	0	0	0	0	0	0	0	6	0	2	0	5	3	4	1	0	0	0	0	0	0	15
5:00	0	5	5	4	21	30	9	1	1	0	0	0	0	76	0	0	0	2	5	4	1	0	0	0	0	0	0	12	0	5	5	6	26	34	10	1	1	0	0	0	0	88
6:00	0	10	19	3	52	69	11	1	0	0	0	0	0	165	0	0	3	9	20	23	3	0	0	0	0	0	0	58	0	10	22	12	72	92	14	1	0	0	0	0	0	223
7:00	0	15	34	17	146	184	52	3	1	0	0	0	0	452	0	1	1	56	109	69	17	4	3	0	0	0	0	260	0	16	35	73	255	253	69	7	4	0	0	0	0	712
8:00	0	10	53	47	328	270	55	8	0	0	0	0	0	771	0	5	31	178	253	93	15	4	0	0	0	0	0	579	0	15	84	225	581	363	70	12	0	0	0	0	0	1350
9:00	0	6	29	39	167	140	43	1	0	0	0	0	0	425	1	2	17	77	143	53	8	2	1	0	0	0	0	304	1	8	46	116	310	193	51	3	1	0	0	0	0	729
10:00	0	6	27	21	111	117	35	7	0	0	0	0	0	324	0	0	7	56	127	61	8	2	0	0	0	0	0	261	0	6	34	77	238	178	43	9	0	0	0	0	0	585
11:00	0	8	40	17	116	131	51	4	1	0	0	0	0	368	1	2	3	53	142	63	17	2	0	1	0	0	0	284	1	10	43	70	258	194	68	6	1	1	0	0	0	652
12:00	0	10	29	19	88	135	50	12	1	0	0	0	0	344	1	1	9	59	174	66	12	3	0	1	0	0	0	326	1	11	38	78	262	201	62	15	1	1	0	0	0	670
13:00	0	5	15	6	90	124	50	6	1	1	0	0	0	298	0	0	7	90	198	92	14	7	2	0	0	0	0	410	0	5	22	96	288	216	64	13	3	1	0	0	0	708
14:00	0	11	27	29	156	237	79	19	1	0	0	0	0	559	1	1	17	117	256	88	28	6	0	0	0	0	0	514	1	12	44	146	412	325	107	25	1	0	0	0	0	1073
15:00	0	6	36	27	122	275	111	23	4	0	0	0	0	604	0	2	13	115	239	116	21	7	4	0	0	0	0	517	0	8	49	142	361	391	132	30	8	0	0	0	0	1121
16:00	0	8	46	20	143	268	128	26	5	0	0	0	0	644	0	1	18	121	286	132	22	8	0	0	0	0	0	588	0	9	64	141	429	400	150	34	5	0	0	0	0	1232
17:00	0	2	26	13	99	273	159	37	5	1	0	0	0	615	2	3	10	123	271	120	36	7	0	0	0	0	0	572	2	5	36	136	370	393	195	44	5	1	0	0	0	1187
18:00	0	6	27	16	85	183	75	15	0	0	0	0	0	407	0	0	14	101	242	99	23	5	2	0	0	0	0	486	0	6	41	117	327	282	98	20	2	0	0	0	0	893
19:00	0	6	15	12	66	79	13	6	1	0	0	0	0	198	0	1	5	84	176	63	9	0	2	0	0	0	0	340	0	7	20	96	242	142	22	6	3	0	0	0	0	538
20:00	0	1	7	11	25	39	8	1	1	0	0	0	0	93	0	0	10	57	113	49	10	1	0	0	0	0	0	240	0	1	17	68	138	88	18	2	1	0	0	0	0	333
21:00	0	1	2	7	23	17	11	0	1	0	0	0	0	62	0	0	3	22	73	35	13	1	0	1	0	0	0	148	0	1	5	29	96	52	24	1	1	1	0	0	0	210
22:00	0	0	0	2	9	6	0	2	0	0	0	0	0	19	0	0	2	13	24	7	3	2	0	0	0	0	0	51	0	0	2	15	33	13	3	4	0	0	0	0	0	70
23:00	0	0	1	1	2	2	1	0	0	0	0	0	0	7	0	0	0	5	12	4	1	0	0	0	0	0	0	22	0	0	1	6	14	6	2	0	0	0	0	0	0	29
Totals	**0**	**119**	**439**	**320**	**1,853**	**2,587**	**943**	**172**	**23**	**2**	**0**	**0**	**0**	**6,458**	**6**	**20**	**171**	**1,349**	**2,872**	**1,244**	**262**	**61**	**14**	**3**	**0**	**0**	**0**	**6,002**	**6**	**139**	**610**	**1,669**	**4,725**	**3,831**	**1,205**	**233**	**37**	**5**	**0**	**0**	**0**	**12,460**
% of Totals		2%	7%	5%	29%	40%	15%	3%	0%	0%				100%	0%	0%	3%	22%	48%	21%	4%	1%	0%	0%				100%	0%	1%	5%	13%	38%	31%	10%	2%	0%	0%				100%

STATISTICS

00:00 - 12:00	0	63	208	157	945	949	258	25	3	0	0	0	0	2608	2	11	63	442	808	373	70	14	4	1	0	0	0	1788	2	74	271	599	1753	1322	328	39	7	1	0	0	0	4396
%	0%	1%	3%	2%	15%	15%	4%	0%	0%	0%	0%	0%	0%	40%	0%	0%	1%	7%	13%	6%	1%	0%	0%	0%	0%	0%	0%	28%	0%	1%	4%	9%	27%	20%	5%	1%	0%	0%	0%	0%	0%	68%
Peak Hour	0:00	7:15	7:30	7:45	7:45	7:30	7:45	11:45	11:30	0:00	0:00	0:00	0:00	7:45	11:30	7:15	8:00	7:45	8:00	7:45	7:30	7:15	6:15	11:30	0:00	0:00	0:00	7:45	11:30	7:15	7:45	7:45	7:45	7:45	7:45	11:45	6:30	11:30	0:00	0:00	0:00	7:45
Peak Volume	0	18	60	50	339	299	72	10	2	0	0	0	0	839	2	6	31	186	253	100	21	5	3	2	0	0	0	594	2	24	89	236	589	398	92	15	4	2	0	0	0	1433
12:00 - 24:00	0	56	231	163	908	1638	685	147	20	2	0	0	0	3850	4	9	108	907	2064	871	192	47	10	2	0	0	0	4214	4	65	339	1070	2972	2509	877	194	30	4	0	0	0	8064
%	0%	1%	4%	3%	14%	25%	11%	2%	0%	0%	0%	0%	0%	60%	0%	0%	2%	14%	32%	13%	3%	1%	0%	0%	0%	0%	0%	65%	0%	1%	5%	17%	46%	39%	14%	3%	0%	0%	0%	0%	0%	125%
Peak Hour	12:00	14:00	15:45	14:15	14:00	15:15	17:15	17:00	15:30	12:45	12:00	12:00	12:00	16:00	17:00	16:45	15:45	15:30	16:00	15:30	17:00	13:30	14:45	12:00	12:00	12:00	12:00	17:15	17:00	14:15	15:45	13:45	16:00	17:15	17:15	17:00	15:00	12:00	12:00	12:00	12:00	15:45
Peak Volume	0	11	51	36	156	285	167	37	7	1	0	0	0	644	2	3	21	135	286	134	36	9	4	1	0	0	0	596	2	13	72	155	429	408	201	44	8	1	0	0	0	1232
07:00 - 09:00	0	25	87	64	474	454	107	11	1	0	0	0	0	1223	0	6	32	234	362	162	32	8	3	0	0	0	0	839	0	31	119	298	836	616	139	19	4	0	0	0	0	2062
%	0%	0%	1%	1%	7%	7%	2%	0%	0%	0%	0%	0%	0%	19%	0%	0%	0%	4%	6%	3%	0%	0%	0%	0%	0%	0%	0%	13%	0%	0%	2%	5%	13%	10%	2%	0%	0%	0%	0%	0%	0%	32%
Peak Hour	7:00	7:15	7:30	7:45	7:45	7:30	7:45	7:30	7:00	7:00	7:00	7:00	7:00	7:45	7:00	7:15	8:00	7:45	8:00	7:45	7:30	7:15	7:00	7:00	7:00	7:00	7:00	7:45	7:00	7:15	7:45	7:45	7:45	7:45	7:45	7:15	7:00	7:00	7:00	7:00	7:00	7:45
Peak Volume	0	18	60	50	339	299	72	9	1	0	0	0	0	839	0	6	31	186	253	100	21	5	3	0	0	0	0	594	0	24	89	236	589	398	92	13	4	0	0	0	0	1433
16:00 - 18:00	0	10	72	33	242	541	287	63	10	1	0	0	0	1259	2	4	28	244	557	252	58	15	0	0	0	0	0	1160	2	14	100	277	799	793	345	78	10	1	0	0	0	2419
%	0%	0%	1%	1%	4%	8%	4%	1%	0%	0%	0%	0%	0%	19%	0%	0%	0%	4%	9%	4%	1%	0%	0%	0%	0%	0%	0%	18%	0%	0%	2%	4%	12%	12%	5%	1%	0%	0%	0%	0%	0%	37%
Peak Hour	16:00	16:00	16:00	16:15	16:30	17:00	17:00	17:00	16:45	17:00	16:00	16:00	16:00	16:00	17:00	16:45	16:15	16:45	16:00	16:15	17:00	16:00	16:00	16:00	16:00	16:00	16:00	16:00	17:00	16:00	16:15	16:45	16:00	16:00	17:00	17:00	16:45	17:00	16:00	16:00	16:00	16:00
Peak Volume	0	8	46	22	154	273	159	37	6	1	0	0	0	644	2	3	21	134	286	134	36	8	0	0	0	0	0	588	2	9	65	152	429	400	195	44	6	1	0	0	0	1232

Direction	Percentiles 15th	50th	Average	85th	95th	ADT
NORTHBOUND	30	36	35	41	44	6458
SOUTHBOUND	28	33	33	38	41	6002
TOTALS	28	34	34	39	44	12460

TRAFFIC COUNTS PLUS
mietekm@comcast.net
925.305.4358

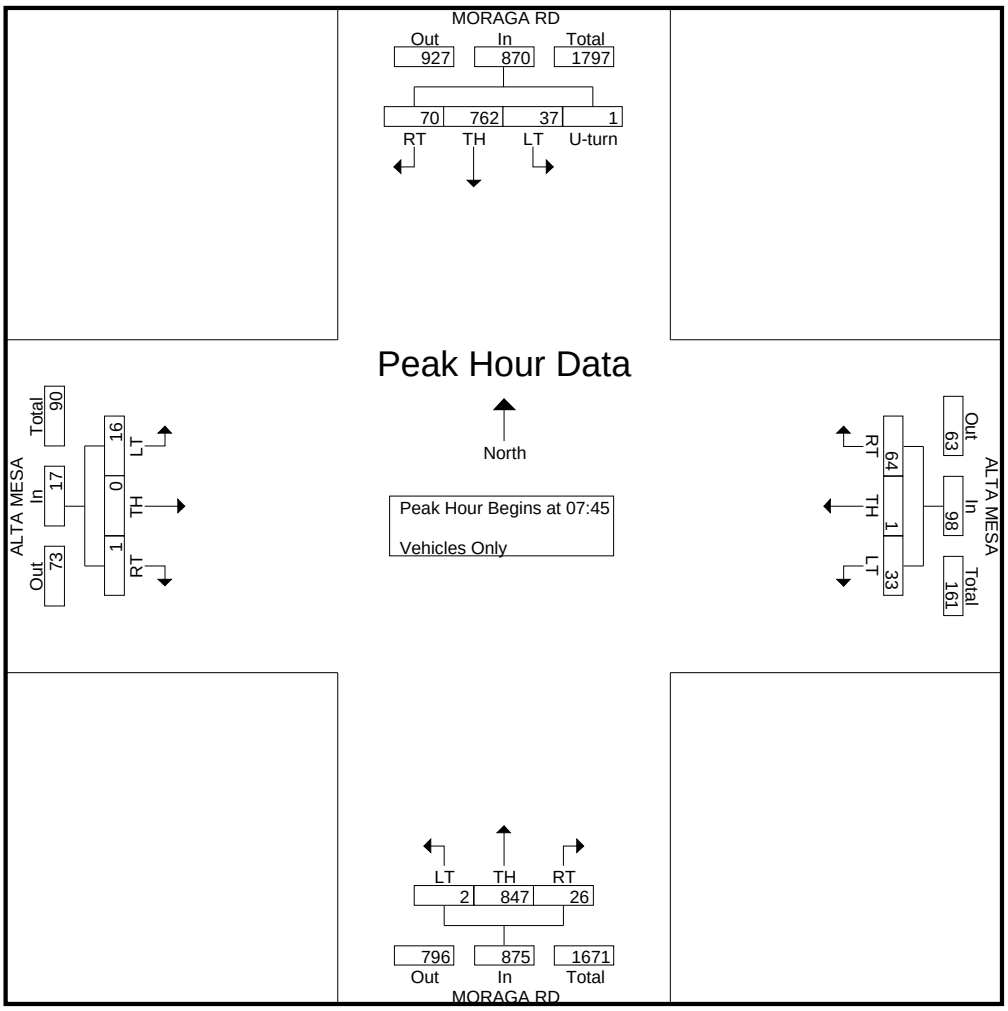
TOWN OF MORAGA
Moraga Rd. & Alta Mesa
Latitude: 37.837473
Longitude: -122.1275777

File Name : moraga-alta mesa-a
Site Code : 2
Start Date : 9/17/2024
Page No : 1

Groups Printed- Vehicles Only

	MORAGA RD Southbound					ALTA MESA Westbound				MORAGA RD Northbound				ALTA MESA Eastbound				
Start Time	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
07:00	8	66	0	0	74	6	3	3	12	4	59	0	63	1	0	2	3	152
07:15	14	78	1	0	93	4	2	5	11	1	77	0	78	0	0	2	2	184
07:30	15	108	1	1	125	7	2	4	13	0	120	0	120	0	2	2	4	262
07:45	16	146	12	0	174	24	0	7	31	4	185	0	189	1	0	5	6	400
Total	53	398	14	1	466	41	7	19	67	9	441	0	450	2	2	11	15	998
08:00	17	238	5	1	261	23	1	14	38	7	233	0	240	0	0	1	1	540
08:15	17	238	9	0	264	13	0	9	22	8	240	1	249	0	0	4	4	539
08:30	20	140	11	0	171	4	0	3	7	7	189	1	197	0	0	6	6	381
08:45	11	141	0	1	153	9	3	3	15	1	150	0	151	1	0	9	10	329
Total	65	757	25	2	849	49	4	29	82	23	812	2	837	1	0	20	21	1789
Grand Total	118	1155	39	3	1315	90	11	48	149	32	1253	2	1287	3	2	31	36	2787
Apprch %	9	87.8	3	0.2		60.4	7.4	32.2		2.5	97.4	0.2		8.3	5.6	86.1		
Total %	4.2	41.4	1.4	0.1	47.2	3.2	0.4	1.7	5.3	1.1	45	0.1	46.2	0.1	0.1	1.1	1.3	

	MORAGA RD Southbound					ALTA MESA Westbound				MORAGA RD Northbound				ALTA MESA Eastbound				
Start Time	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 07:45																		
07:45	16	146	**12**	0	174	**24**	0	7	31	4	185	0	189	**1**	0	5	**6**	400
08:00	17	**238**	5	**1**	261	23	**1**	**14**	**38**	7	233	0	240	0	0	1	1	**540**
08:15	17	238	9	0	**264**	13	0	9	22	**8**	**240**	**1**	**249**	0	0	4	4	539
08:30	**20**	140	11	0	171	4	0	3	7	7	189	1	197	0	0	**6**	6	381
Total Volume	70	762	37	1	870	64	1	33	98	26	847	2	875	1	0	16	17	1860
% App. Total	8	87.6	4.3	0.1		65.3	1	33.7		3	96.8	0.2		5.9	0	94.1		
PHF	.875	.800	.771	.250	.824	.667	.250	.589	.645	.813	.882	.500	.879	.250	.000	.667	.708	.861



TRAFFIC COUNTS PLUS
mietekm@comcast.net
925.305.4358

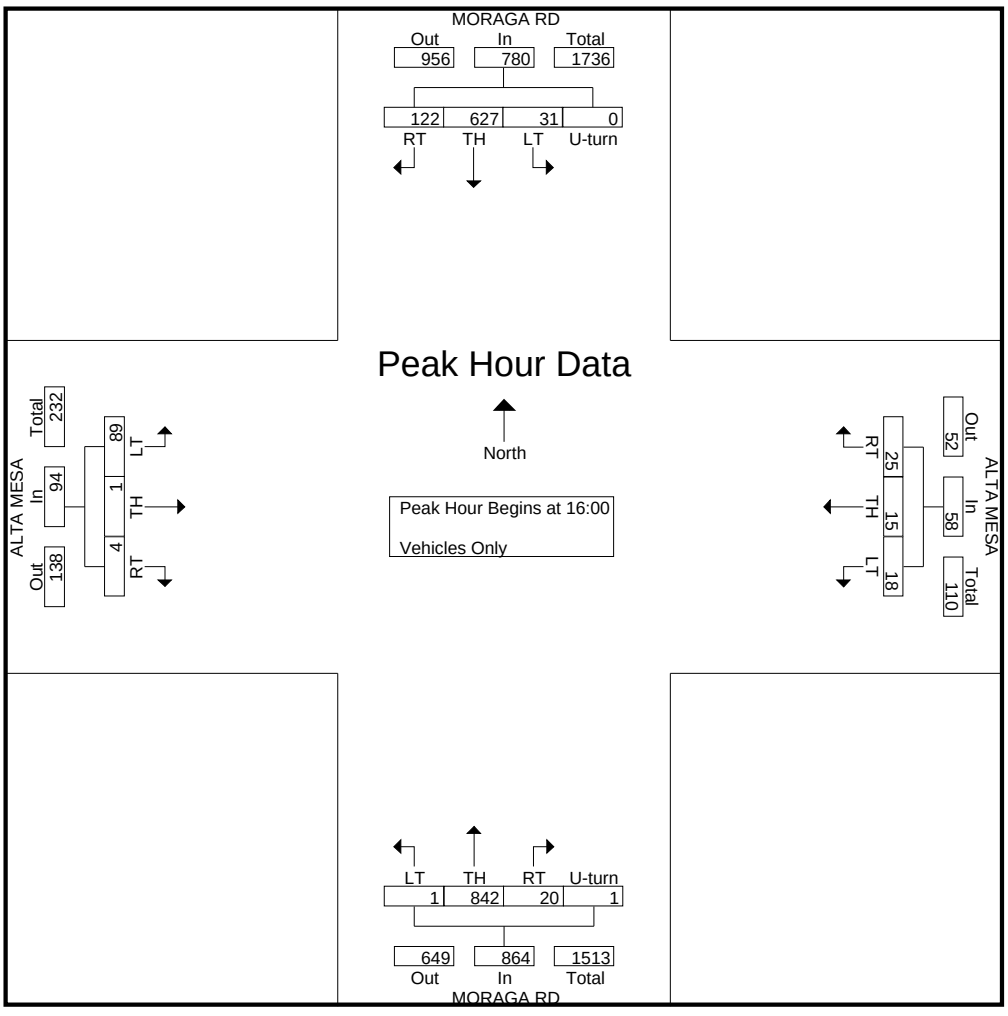
TOWN OF MORAGA
Moraga Rd. & Alta Mesa
Latitude: 37.837473
Longitude: -122.1275777

File Name : moraga-alta mesa-p
Site Code : 2
Start Date : 9/17/2024
Page No : 1

Groups Printed- Vehicles Only

	MORAGA RD Southbound					ALTA MESA Westbound				MORAGA RD Northbound					ALTA MESA Eastbound				
Start Time	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	24	140	8	0	172	5	4	5	14	4	209	1	1	215	0	0	18	18	419
16:15	35	176	9	0	220	5	1	0	6	5	236	0	0	241	2	0	26	28	495
16:30	36	140	8	0	184	10	3	6	19	1	226	0	0	227	2	0	23	25	455
16:45	27	171	6	0	204	5	7	7	19	10	171	0	0	181	0	1	22	23	427
Total	122	627	31	0	780	25	15	18	58	20	842	1	1	864	4	1	89	94	1796
17:00	29	121	7	2	159	12	1	4	17	8	203	2	0	213	3	0	20	23	412
17:15	24	141	8	0	173	10	0	3	13	7	202	0	0	209	1	2	19	22	417
17:30	30	167	14	0	211	9	0	5	14	9	205	0	0	214	0	0	23	23	462
17:45	31	174	19	0	224	8	1	8	17	10	213	0	0	223	1	2	14	17	481
Total	114	603	48	2	767	39	2	20	61	34	823	2	0	859	5	4	76	85	1772
Grand Total	236	1230	79	2	1547	64	17	38	119	54	1665	3	1	1723	9	5	165	179	3568
Apprch %	15.3	79.5	5.1	0.1		53.8	14.3	31.9		3.1	96.6	0.2	0.1		5	2.8	92.2		
Total %	6.6	34.5	2.2	0.1	43.4	1.8	0.5	1.1	3.3	1.5	46.7	0.1	0	48.3	0.3	0.1	4.6	5	

	MORAGA RD Southbound					ALTA MESA Westbound				MORAGA RD Northbound					ALTA MESA Eastbound				
Start Time	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 16:00																			
16:00	24	140	8	0	172	5	4	5	14	4	209	**1**	**1**	215	0	0	18	18	419
16:15	35	**176**	**9**	0	**220**	5	1	0	6	5	**236**	0	0	**241**	**2**	0	**26**	**28**	**495**
16:30	**36**	140	8	0	184	**10**	3	6	**19**	1	226	0	0	227	2	0	23	25	455
16:45	27	171	6	0	204	5	**7**	**7**	19	**10**	171	0	0	181	0	**1**	22	23	427
Total Volume	122	627	31	0	780	25	15	18	58	20	842	1	1	864	4	1	89	94	1796
% App. Total	15.6	80.4	4	0		43.1	25.9	31		2.3	97.5	0.1	0.1		4.3	1.1	94.7		
PHF	.847	.891	.861	.000	.886	.625	.536	.643	.763	.500	.892	.250	.250	.896	.500	.250	.856	.839	.907



TRAFFIC COUNTS PLUS
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925.305.4358

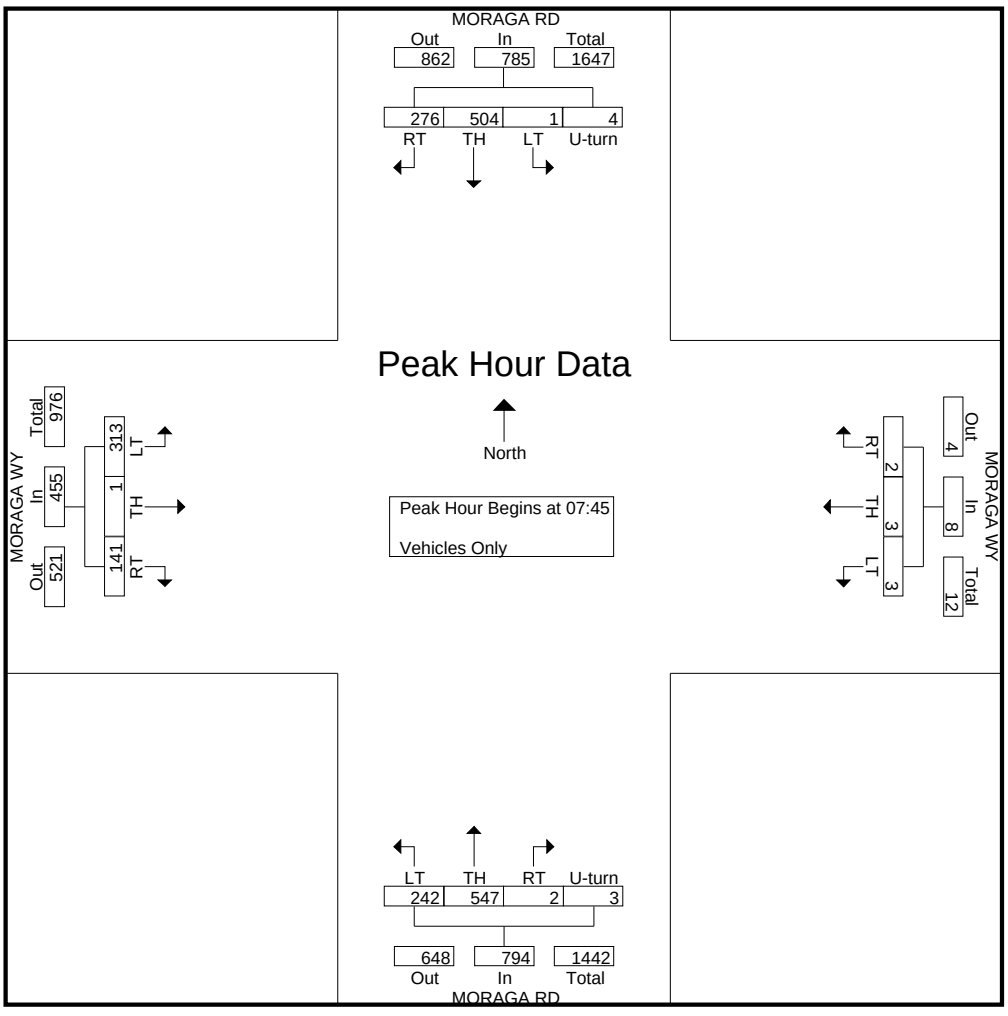
TOWN OF MORAGA
Moraga Rd. & Moraga Way
Latitude: 37.834005
Longitude: -122.127462

File Name : moraga-moraga-a
Site Code : 1
Start Date : 9/17/2024
Page No : 1

Groups Printed- Vehicles Only

	MORAGA RD Southbound					MORAGA WY Westbound				MORAGA RD Northbound					MORAGA WY Eastbound				
Start Time	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	Int. Total
07:00	29	39	0	0	68	4	0	0	4	1	34	23	0	58	10	0	26	36	166
07:15	28	46	0	0	74	0	0	0	0	0	52	40	0	92	9	0	26	35	201
07:30	49	66	0	0	115	2	2	0	4	0	73	30	0	103	22	0	52	74	296
07:45	58	77	0	1	136	2	2	1	5	0	124	49	0	173	24	0	63	87	401
Total	164	228	0	1	393	8	4	1	13	1	283	142	0	426	65	0	167	232	1064
08:00	74	173	1	1	249	0	1	2	3	1	163	62	3	229	40	1	68	109	590
08:15	80	165	0	2	247	0	0	0	0	1	170	89	0	260	34	0	92	126	633
08:30	64	89	0	0	153	0	0	0	0	0	90	42	0	132	43	0	90	133	418
08:45	59	75	1	1	136	0	0	0	0	0	83	36	0	119	36	0	65	101	356
Total	277	502	2	4	785	0	1	2	3	2	506	229	3	740	153	1	315	469	1997
Grand Total	441	730	2	5	1178	8	5	3	16	3	789	371	3	1166	218	1	482	701	3061
Apprch %	37.4	62	0.2	0.4		50	31.2	18.8		0.3	67.7	31.8	0.3		31.1	0.1	68.8		
Total %	14.4	23.8	0.1	0.2	38.5	0.3	0.2	0.1	0.5	0.1	25.8	12.1	0.1	38.1	7.1	0	15.7	22.9	

	MORAGA RD Southbound					MORAGA WY Westbound				MORAGA RD Northbound					MORAGA WY Eastbound				
Start Time	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 07:45																			
07:45	58	77	0	1	136	**2**	**2**	1	**5**	0	124	49	0	173	24	0	63	87	401
08:00	74	**173**	**1**	1	**249**	0	1	**2**	3	**1**	163	62	**3**	229	40	**1**	68	109	590
08:15	**80**	165	0	**2**	247	0	0	0	0	1	**170**	**89**	0	**260**	34	0	**92**	126	**633**
08:30	64	89	0	0	153	0	0	0	0	0	90	42	0	132	**43**	0	90	**133**	418
Total Volume	276	504	1	4	785	2	3	3	8	2	547	242	3	794	141	1	313	455	2042
% App. Total	35.2	64.2	0.1	0.5		25	37.5	37.5		0.3	68.9	30.5	0.4		31	0.2	68.8		
PHF	.863	.728	.250	.500	.788	.250	.375	.375	.400	.500	.804	.680	.250	.763	.820	.250	.851	.855	.806



TRAFFIC COUNTS PLUS
mietekm@comcast.net
925.305.4358

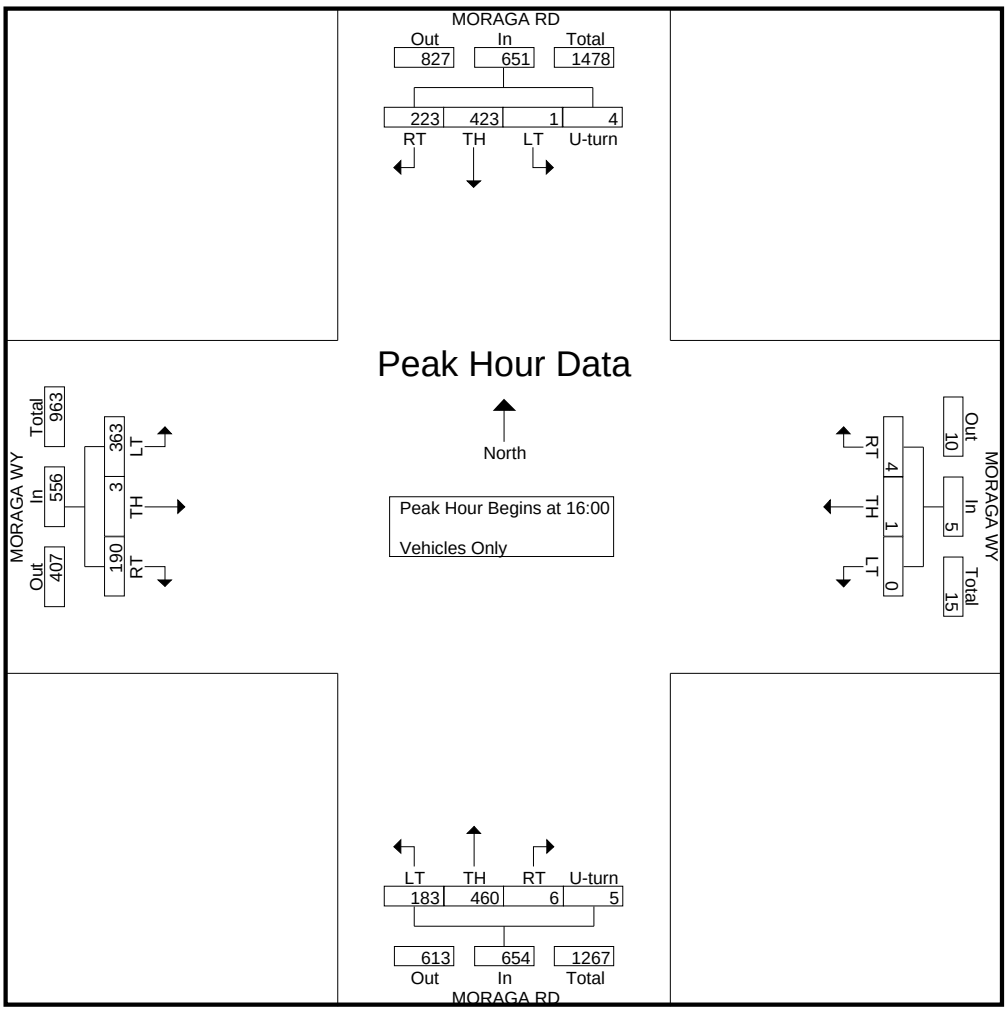
TOWN OF MORAGA
Moraga Rd. & Moraga Way
Latitude: 37.834005
Longitude: -122.127462

File Name : moraga-moraga-p
Site Code : 1
Start Date : 9/17/2024
Page No : 1

Groups Printed- Vehicles Only

	MORAGA RD Southbound					MORAGA WY Westbound				MORAGA RD Northbound					MORAGA WY Eastbound				
Start Time	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	40	108	0	1	149	1	1	0	2	1	116	44	1	162	47	2	97	146	459
16:15	57	113	1	2	173	0	0	0	0	0	126	34	3	163	39	0	97	136	472
16:30	58	95	0	1	154	2	0	0	2	0	125	55	1	181	40	0	87	127	464
16:45	68	107	0	0	175	1	0	0	1	5	93	50	0	148	64	1	82	147	471
Total	223	423	1	4	651	4	1	0	5	6	460	183	5	654	190	3	363	556	1866
17:00	37	98	1	1	137	0	0	0	0	0	106	45	1	152	40	0	107	147	436
17:15	48	105	0	0	153	0	1	0	1	0	117	53	1	171	46	0	81	127	452
17:30	67	109	0	1	177	0	0	0	0	0	110	34	2	146	38	3	105	146	469
17:45	56	119	0	1	176	1	1	0	2	0	128	32	2	162	49	0	84	133	473
Total	208	431	1	3	643	1	2	0	3	0	461	164	6	631	173	3	377	553	1830
Grand Total	431	854	2	7	1294	5	3	0	8	6	921	347	11	1285	363	6	740	1109	3696
Apprch %	33.3	66	0.2	0.5		62.5	37.5	0		0.5	71.7	27	0.9		32.7	0.5	66.7		
Total %	11.7	23.1	0.1	0.2	35	0.1	0.1	0	0.2	0.2	24.9	9.4	0.3	34.8	9.8	0.2	20	30	

	MORAGA RD Southbound					MORAGA WY Westbound				MORAGA RD Northbound					MORAGA WY Eastbound				
Start Time	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 16:00																			
16:00	40	108	0	1	149	1	**1**	0	**2**	1	116	44	1	162	47	**2**	**97**	146	459
16:15	57	**113**	**1**	**2**	173	0	0	0	0	0	**126**	34	**3**	163	39	0	97	136	**472**
16:30	58	95	0	1	154	**2**	0	0	2	0	125	**55**	1	**181**	40	0	87	127	464
16:45	**68**	107	0	0	**175**	1	0	0	1	**5**	93	50	0	148	**64**	1	82	**147**	471
Total Volume	223	423	1	4	651	4	1	0	5	6	460	183	5	654	190	3	363	556	1866
% App. Total	34.3	65	0.2	0.6		80	20	0		0.9	70.3	28	0.8		34.2	0.5	65.3		
PHF	.820	.936	.250	.500	.930	.500	.250	.000	.625	.300	.913	.832	.417	.903	.742	.375	.936	.946	.988



TRAFFIC COUNTS PLUS

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925.305.4358

TOWN OF MORAGA
MORAGA RD. btwn ST. MARYS RD. & ALTA MESA

moraga-n
Site Code: 1n

NORTHBOUND

Start Time	1 8	9 10	11 12	13 14	15 16	17 18	19 20	21 22	23 24	25 26	27 28	29 30	31 32	33 34	35 36	37 38	39 40	41 42	43 44	45 9999	Hour Totals
09/17/24	0	0	0	0	0	0	1	0	1	1	0	1	3	0	1	1	0	0	0	1	10
01:00	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	2
02:00	1	0	0	0	0	0	0	1	1	0	0	1	1	1	1	0	0	0	0	0	8
03:00	0	0	0	0	0	0	0	0	0	0	2	2	5	3	0	0	1	0	0	0	13
04:00	1	0	0	0	0	1	2	1	1	2	1	2	4	0	0	1	0	1	0	0	17
05:00	5	0	0	0	0	3	1	7	7	4	7	14	18	13	10	4	1	1	2	1	98
06:00	8	0	0	0	1	3	7	10	11	10	23	32	23	13	12	5	6	0	0	0	164
07:00	16	8	7	5	12	23	37	42	37	49	55	75	66	36	29	12	4	1	0	0	514
08:00	22	9	8	13	35	44	50	68	79	113	111	125	87	58	47	18	4	0	1	0	892
09:00	17	5	7	7	12	26	38	43	53	65	74	99	79	51	25	19	4	4	0	0	628
10:00	10	5	8	7	6	20	24	29	48	53	67	81	58	45	38	19	9	3	2	0	532
11:00	12	2	4	7	12	23	38	55	66	68	85	92	61	43	32	11	3	2	0	0	616
12 PM	16	3	5	6	10	20	42	52	71	67	79	103	73	52	43	21	4	1	0	0	668
13:00	24	3	3	5	12	21	41	51	66	64	72	85	48	51	33	13	5	1	0	1	599
14:00	26	7	9	11	19	36	59	79	76	85	112	137	69	56	36	21	6	1	0	1	846
15:00	22	15	14	24	25	39	64	93	87	102	118	126	84	58	37	25	8	0	2	0	943
16:00	27	10	12	19	18	42	57	78	94	106	138	127	93	62	39	19	5	2	0	1	949
17:00	21	8	14	13	26	33	44	71	67	105	124	159	105	55	45	25	11	0	1	1	928
18:00	16	3	8	10	12	27	41	64	66	71	105	118	73	58	23	17	5	0	1	0	718
19:00	9	1	1	2	2	10	24	33	33	38	41	84	59	40	16	11	3	1	0	0	408
20:00	3	0	0	1	2	10	12	25	21	34	42	45	25	25	13	6	3	1	0	1	269
21:00	5	0	0	0	1	3	10	10	10	17	17	22	26	19	9	5	2	0	1	0	157
22:00	1	0	0	0	0	1	5	6	11	3	6	7	8	9	9	4	4	1	0	0	75
23:00	0	0	0	0	0	0	0	2	0	4	4	3	6	6	4	2	1	1	0	0	33
Total	262	79	100	130	205	385	597	820	906	1061	1283	1540	1074	755	503	260	89	21	10	7	10087
Percent	2.6%	0.8%	1.0%	1.3%	2.0%	3.8%	5.9%	8.1%	9.0%	10.5%	12.7%	15.3%	10.6%	7.5%	5.0%	2.6%	0.9%	0.2%	0.1%	0.1%	

Statistic	
15th Percentile :	18 MPH
50th Percentile :	26 MPH
85th Percentile :	32 MPH
95th Percentile :	35 MPH
Mean Speed(Average) :	26 MPH
10 MPH Pace Speed :	24-33 MPH
Number in Pace :	5567
Percent in Pace :	55.2%
Number of Vehicles > 35 MPH :	721
Percent of Vehicles > 35 MPH :	7.2%

Grand Total	262	79	100	130	205	385	597	820	906	1061	1283	1540	1074	755	503	260	89	21	10	7	10087

TRAFFIC COUNTS PLUS

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925.305.4358

TOWN OF MORAGA
MORAGA RD. btwn ST. MARYS RD. & ALTA MESA

moraga-s
Site Code: 1s

SOUTHBOUND

Start Time	1 12	13 14	15 16	17 18	19 20	21 22	23 24	25 26	27 28	29 30	31 32	33 34	35 36	37 38	39 40	41 42	43 44	45 46	47 48	49 9999	Hour Totals
09/17/24	0	0	0	0	0	1	0	3	2	3	0	5	2	1	0	0	0	0	0	0	17
01:00	0	0	0	0	0	0	0	1	0	1	1	1	1	0	0	1	0	0	0	0	6
02:00	0	0	0	0	0	0	1	1	1	0	2	1	3	0	0	0	0	0	0	0	9
03:00	0	0	0	0	0	0	0	1	0	3	3	2	0	1	1	0	0	1	0	0	12
04:00	0	0	0	0	0	0	2	0	6	6	3	3	3	1	3	0	0	0	0	0	27
05:00	0	0	0	1	0	0	2	5	12	12	8	11	5	6	2	3	2	2	0	0	71
06:00	0	0	0	2	3	4	8	14	24	25	22	21	14	12	7	2	1	0	0	0	159
07:00	7	0	0	10	6	13	33	61	81	102	55	54	21	20	5	1	0	1	0	0	470
08:00	10	1	0	2	8	23	38	117	166	162	144	96	45	18	5	3	2	0	0	0	840
09:00	12	0	2	4	3	19	41	75	83	90	40	52	27	20	6	1	0	0	0	0	475
10:00	1	0	0	2	9	13	32	54	81	89	56	37	26	13	5	3	0	2	1	0	424
11:00	4	1	0	1	8	39	46	91	90	91	66	40	32	18	5	0	0	1	0	0	533
12 PM	5	1	0	6	10	22	51	92	123	109	57	48	25	17	11	1	2	0	0	0	580
13:00	5	1	1	1	5	19	32	81	131	109	91	48	54	28	14	5	4	2	0	0	631
14:00	5	0	0	1	1	10	37	82	132	133	125	65	66	33	9	2	3	1	0	0	705
15:00	3	0	1	2	6	19	39	59	133	160	131	89	74	36	20	8	0	0	0	0	780
16:00	4	0	0	1	9	12	31	73	132	151	132	84	71	42	14	8	2	0	0	0	766
17:00	10	1	1	0	4	16	38	65	104	134	141	106	92	44	11	4	3	0	0	1	775
18:00	5	1	1	5	6	16	48	68	124	145	105	67	56	32	8	6	4	0	0	0	697
19:00	2	0	0	0	3	9	28	57	79	94	88	66	53	23	8	3	1	0	0	0	514
20:00	2	0	0	0	3	6	16	34	44	61	42	40	42	16	10	2	1	0	0	0	319
21:00	0	0	0	0	2	2	3	15	30	29	28	19	27	16	9	4	3	0	0	0	187
22:00	0	0	0	0	0	1	3	10	10	19	12	6	8	4	0	0	1	0	0	1	75
23:00	0	0	0	0	0	1	1	3	2	6	5	1	7	1	2	0	1	0	0	0	30
Total	75	6	6	38	86	245	530	1062	1590	1734	1357	962	754	402	155	57	30	10	1	2	9102
Percent	0.8%	0.1%	0.1%	0.4%	0.9%	2.7%	5.8%	11.7%	17.5%	19.1%	14.9%	10.6%	8.3%	4.4%	1.7%	0.6%	0.3%	0.1%	0.0%	0.0%	

Statistic	
15th Percentile :	24 MPH
50th Percentile :	29 MPH
85th Percentile :	34 MPH
95th Percentile :	37 MPH
Mean Speed(Average) :	30 MPH
10 MPH Pace Speed :	26-35 MPH
Number in Pace :	6488
Percent in Pace :	71.3%
Number of Vehicles > 35 MPH :	1194
Percent of Vehicles > 35 MPH :	13.1%

Grand Total	75	6	6	38	86	245	530	1062	1590	1734	1357	962	754	402	155	57	30	10	1	2	9102

TRAFFIC COUNTS PLUS
mietekm@comcast.net
925.305.4358

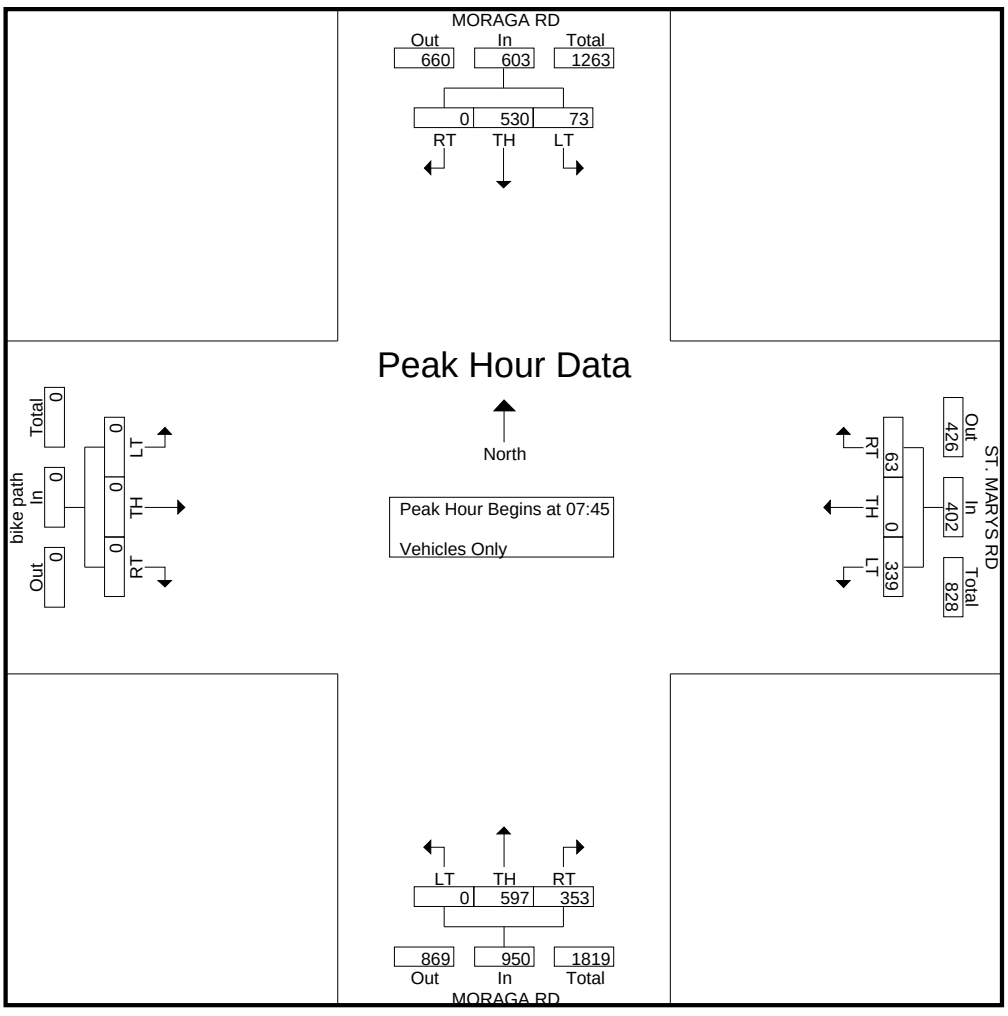
TOWN OF MORAGA
Moraga Rd. & St. Marys Rd.
Latitude: 37.838506
Longitude: -122.126129

File Name : moraga-st. marys-a
Site Code : 3
Start Date : 9/17/2024
Page No : 1

Groups Printed- Vehicles Only

	MORAGA RD Southbound				ST. MARYS RD Westbound				MORAGA RD Northbound				bike path Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
07:00	0	40	5	45	6	0	35	41	18	48	0	66	0	0	0	0	152
07:15	0	56	3	59	4	0	37	41	23	56	0	79	0	0	0	0	179
07:30	0	62	15	77	5	0	65	70	35	96	0	131	0	0	0	0	278
07:45	0	91	18	109	10	0	84	94	68	147	0	215	0	0	0	0	418
Total	0	249	41	290	25	0	221	246	144	347	0	491	0	0	0	0	1027
08:00	0	165	15	180	18	0	99	117	73	193	0	266	0	0	0	0	563
08:15	0	170	27	197	16	0	91	107	115	151	0	266	0	0	0	0	570
08:30	0	104	13	117	19	0	65	84	97	106	0	203	0	0	0	0	404
08:45	0	94	8	102	11	0	59	70	81	85	0	166	0	0	0	0	338
Total	0	533	63	596	64	0	314	378	366	535	0	901	0	0	0	0	1875
Grand Total	0	782	104	886	89	0	535	624	510	882	0	1392	0	0	0	0	2902
Apprch %	0	88.3	11.7		14.3	0	85.7		36.6	63.4	0		0	0	0		
Total %	0	26.9	3.6	30.5	3.1	0	18.4	21.5	17.6	30.4	0	48	0	0	0	0	

	MORAGA RD Southbound				ST. MARYS RD Westbound				MORAGA RD Northbound				bike path Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45																	
07:45	0	91	18	109	10	0	84	94	68	147	0	215	0	0	0	0	418
08:00	0	165	15	180	18	0	**99**	**117**	73	**193**	0	**266**	0	0	0	0	563
08:15	0	**170**	**27**	**197**	16	0	91	107	**115**	151	0	266	0	0	0	0	**570**
08:30	0	104	13	117	**19**	0	65	84	97	106	0	203	0	0	0	0	404
Total Volume	0	530	73	603	63	0	339	402	353	597	0	950	0	0	0	0	1955
% App. Total	0	87.9	12.1		15.7	0	84.3		37.2	62.8	0		0	0	0		
PHF	.000	.779	.676	.765	.829	.000	.856	.859	.767	.773	.000	.893	.000	.000	.000	.000	.857



TRAFFIC COUNTS PLUS
mietekm@comcast.net
925.305.4358

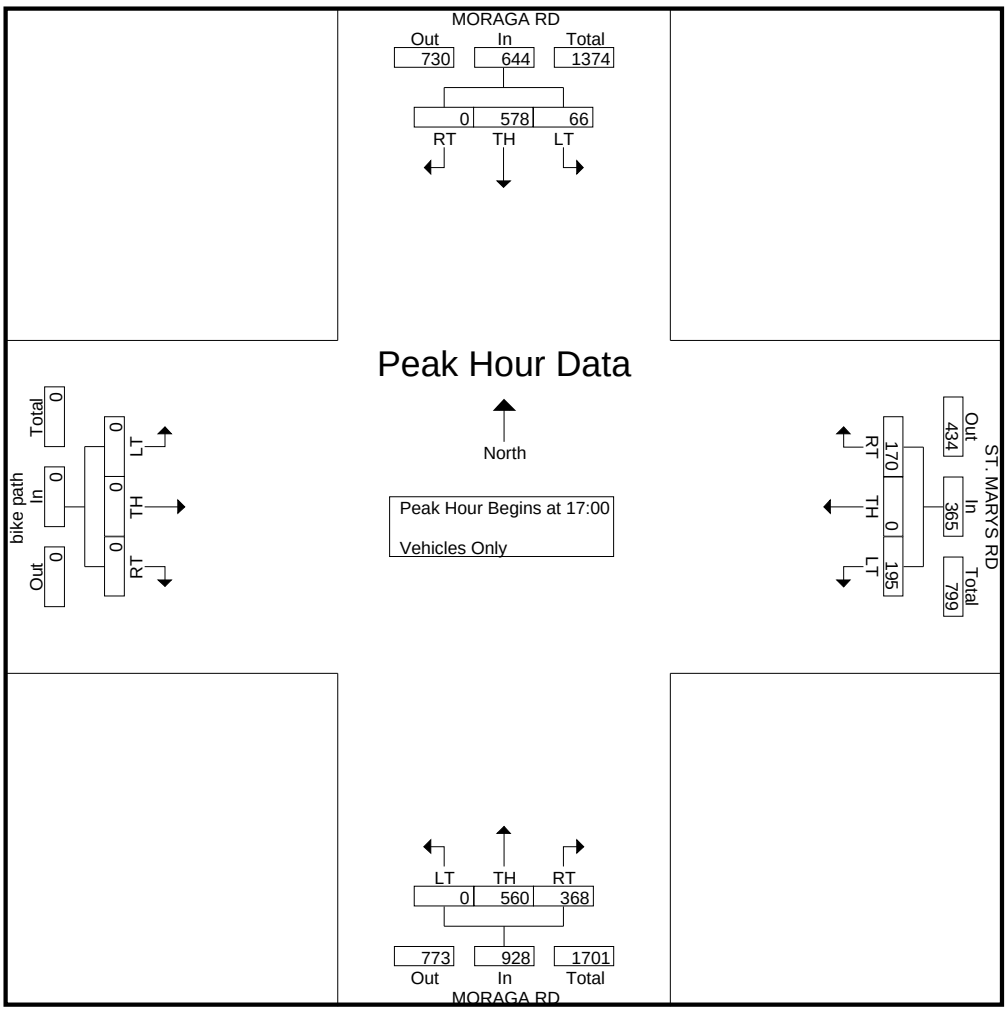
TOWN OF MORAGA
Moraga Rd. & St. Marys Rd.
Latitude: 37.838506
Longitude: -122.126129

File Name : moraga-st. marys-p
Site Code : 3
Start Date : 9/17/2024
Page No : 1

Groups Printed- Vehicles Only

	MORAGA RD Southbound				ST. MARYS RD Westbound				MORAGA RD Northbound				bike path Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	0	116	14	130	44	0	57	101	99	129	0	228	0	0	0	0	459
16:15	0	148	6	154	31	0	69	100	100	169	0	269	0	0	0	0	523
16:30	0	132	14	146	43	0	35	78	112	143	0	255	0	0	0	0	479
16:45	0	135	15	150	25	0	67	92	91	115	0	206	0	0	0	0	448
Total	0	531	49	580	143	0	228	371	402	556	0	958	0	0	0	0	1909
17:00	0	116	24	140	48	0	49	97	97	118	0	215	0	0	0	0	452
17:15	0	140	9	149	71	0	27	98	78	155	0	233	0	0	0	0	480
17:30	0	145	26	171	35	0	69	104	97	142	0	239	0	0	0	0	514
17:45	0	177	7	184	16	0	50	66	96	145	0	241	0	0	0	0	491
Total	0	578	66	644	170	0	195	365	368	560	0	928	0	0	0	0	1937
Grand Total	0	1109	115	1224	313	0	423	736	770	1116	0	1886	0	0	0	0	3846
Apprch %	0	90.6	9.4		42.5	0	57.5		40.8	59.2	0		0	0	0		
Total %	0	28.8	3	31.8	8.1	0	11	19.1	20	29	0	49	0	0	0	0	

	MORAGA RD Southbound				ST. MARYS RD Westbound				MORAGA RD Northbound				bike path Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	0	116	24	140	48	0	49	97	**97**	118	0	215	0	0	0	0	452
17:15	0	140	9	149	**71**	0	27	98	78	**155**	0	233	0	0	0	0	480
17:30	0	145	**26**	171	35	0	**69**	**104**	97	142	0	239	0	0	0	0	**514**
17:45	0	**177**	7	**184**	16	0	50	66	96	145	0	**241**	0	0	0	0	491
Total Volume	0	578	66	644	170	0	195	365	368	560	0	928	0	0	0	0	1937
% App. Total	0	89.8	10.2		46.6	0	53.4		39.7	60.3	0		0	0	0		
PHF	.000	.816	.635	.875	.599	.000	.707	.877	.948	.903	.000	.963	.000	.000	.000	.000	.942



TRAFFIC COUNTS PLUS

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925.305.4358

TOWN OF MORAGA
ALTA MESA - CAM PERAL to PASEO BERNAL

alta mesa 1
Site Code: 1w

WESTBOUND

Start Time	1 8	9 10	11 12	13 14	15 16	17 18	19 20	21 22	23 24	25 26	27 28	29 30	31 32	33 34	35 36	37 38	39 40	41 42	43 44	45 9999	Hour Totals
01/14/25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	2
05:00	0	0	0	0	1	0	0	0	1	1	1	1	0	1	0	0	0	0	0	0	6
06:00	0	0	0	2	0	1	0	2	3	2	0	1	0	2	0	0	1	0	0	0	14
07:00	0	0	2	2	1	0	0	2	5	9	3	6	2	1	3	1	0	1	0	0	38
08:00	1	0	0	0	0	3	0	4	4	15	2	4	3	2	1	0	2	0	0	0	41
09:00	0	0	0	0	0	0	0	0	2	2	5	1	5	2	0	0	0	1	0	1	19
10:00	2	0	0	0	0	0	2	0	3	0	1	3	1	1	3	2	2	1	0	0	21
11:00	0	0	0	0	0	2	2	1	1	6	4	2	3	3	3	0	1	0	0	0	28
12 PM	0	0	0	0	0	0	1	4	2	3	5	6	3	1	1	1	0	0	0	0	27
13:00	0	0	0	0	0	1	1	0	2	4	5	1	3	0	0	1	1	0	0	0	19
14:00	0	0	0	0	0	0	1	2	4	5	4	2	6	2	1	0	0	1	0	0	28
15:00	0	0	0	0	0	0	2	3	1	3	3	2	2	1	4	2	2	0	0	0	25
16:00	4	0	0	0	0	0	1	1	1	5	3	2	1	1	3	0	0	0	0	0	22
17:00	0	0	0	0	0	2	1	4	4	3	5	2	3	3	0	0	1	0	0	0	28
18:00	0	0	0	0	0	0	1	1	5	1	3	1	0	0	0	0	0	1	0	0	13
19:00	1	1	0	0	0	0	0	1	1	2	4	3	0	1	0	0	0	0	0	0	14
20:00	0	0	0	0	0	1	0	0	1	0	0	1	1	1	1	0	0	0	0	0	6
21:00	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	0	4
22:00	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	2
23:00	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Total	8	1	2	4	2	10	13	26	43	63	49	38	34	23	20	7	10	5	0	1	359
Percent	2.2%	0.3%	0.6%	1.1%	0.6%	2.8%	3.6%	7.2%	12.0%	17.5%	13.6%	10.6%	9.5%	6.4%	5.6%	1.9%	2.8%	1.4%	0.0%	0.3%	

Statistic	
15th Percentile :	20 MPH
50th Percentile :	26 MPH
85th Percentile :	33 MPH
95th Percentile :	37 MPH
Mean Speed(Average) :	27 MPH
10 MPH Pace Speed :	23-32 MPH
Number in Pace :	217
Percent in Pace :	60.6%
Number of Vehicles > 25 MPH :	225
Percent of Vehicles > 25 MPH :	62.9%

Grand Total	8	1	2	4	2	10	13	26	43	63	49	38	34	23	20	7	10	5	0	1	359

TRAFFIC COUNTS PLUS

mietekm@comcast.net
925.305.4358

TOWN OF MORAGA
ALTA MESA - CAM PERAL to PASEO BERNAL

alta mesa 1
Site Code: 1w

EASTBOUND

Start Time	1 8	9 10	11 12	13 14	15 16	17 18	19 20	21 22	23 24	25 26	27 28	29 30	31 32	33 34	35 36	37 38	39 40	41 42	43 44	45 9999	Hour Totals
01/14/25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
05:00	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
06:00	0	0	0	0	0	0	0	0	1	0	2	0	0	2	0	0	0	0	0	0	5
07:00	1	0	0	0	0	0	0	1	3	0	1	1	1	3	0	1	0	0	0	0	12
08:00	0	0	0	0	1	0	1	2	2	5	8	5	3	2	1	0	0	0	0	0	30
09:00	0	0	0	0	0	0	0	0	0	1	1	6	3	0	2	0	2	0	0	0	15
10:00	2	0	0	0	0	0	0	1	2	1	4	4	2	0	1	0	1	1	0	0	19
11:00	0	0	0	0	0	1	1	0	0	4	3	1	1	4	1	1	1	0	0	0	18
12 PM	0	0	0	0	0	1	2	1	1	8	2	4	0	1	1	1	0	1	0	0	23
13:00	0	0	0	0	1	0	0	1	2	4	4	3	4	1	0	0	2	0	1	0	23
14:00	0	0	0	0	0	0	2	1	2	1	9	4	3	2	0	0	1	0	0	0	25
15:00	0	0	0	0	0	0	1	0	4	2	6	5	2	3	1	3	0	0	0	0	27
16:00	1	1	0	0	0	0	3	5	5	2	4	3	5	4	2	0	0	0	0	0	35
17:00	0	0	1	0	0	1	1	2	2	5	8	4	3	5	2	3	0	0	0	1	38
18:00	0	0	0	0	0	1	1	5	3	6	3	3	1	2	0	0	1	0	0	0	26
19:00	0	0	0	0	0	0	2	2	2	2	1	3	5	1	3	0	0	0	0	0	21
20:00	0	0	0	0	0	0	0	2	1	2	3	2	2	3	2	1	0	0	0	0	18
21:00	0	0	0	0	0	1	0	2	0	1	2	1	0	1	0	0	0	1	0	0	9
22:00	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	1	0	0	0	4
23:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Total	4	1	1	0	2	5	14	25	30	45	63	51	36	34	16	10	9	3	1	1	351
Percent	1.1%	0.3%	0.3%	0.0%	0.6%	1.4%	4.0%	7.1%	8.5%	12.8%	17.9%	14.5%	10.3%	9.7%	4.6%	2.8%	2.6%	0.9%	0.3%	0.3%	

Statistic	
15th Percentile :	22 MPH
50th Percentile :	27 MPH
85th Percentile :	33 MPH
95th Percentile :	37 MPH
Mean Speed(Average) :	28 MPH
10 MPH Pace Speed :	25-34 MPH
Number in Pace :	224
Percent in Pace :	64.0%
Number of Vehicles > 25 MPH :	252
Percent of Vehicles > 25 MPH :	71.9%

Grand Total	4	1	1	0	2	5	14	25	30	45	63	51	36	34	16	10	9	3	1	1	351

TRAFFIC COUNTS PLUS
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925.305.4358

TOWN OF MORAGA
Moraga Rd. & Alta Mesa
Latitude: 37.837473
Longitude: -122.1275777

File Name : moraga-alta mesa-14 60-min intervals
Site Code : 2
Start Date : 1/15/2025
Page No : 1

Groups Printed- Vehicles Only

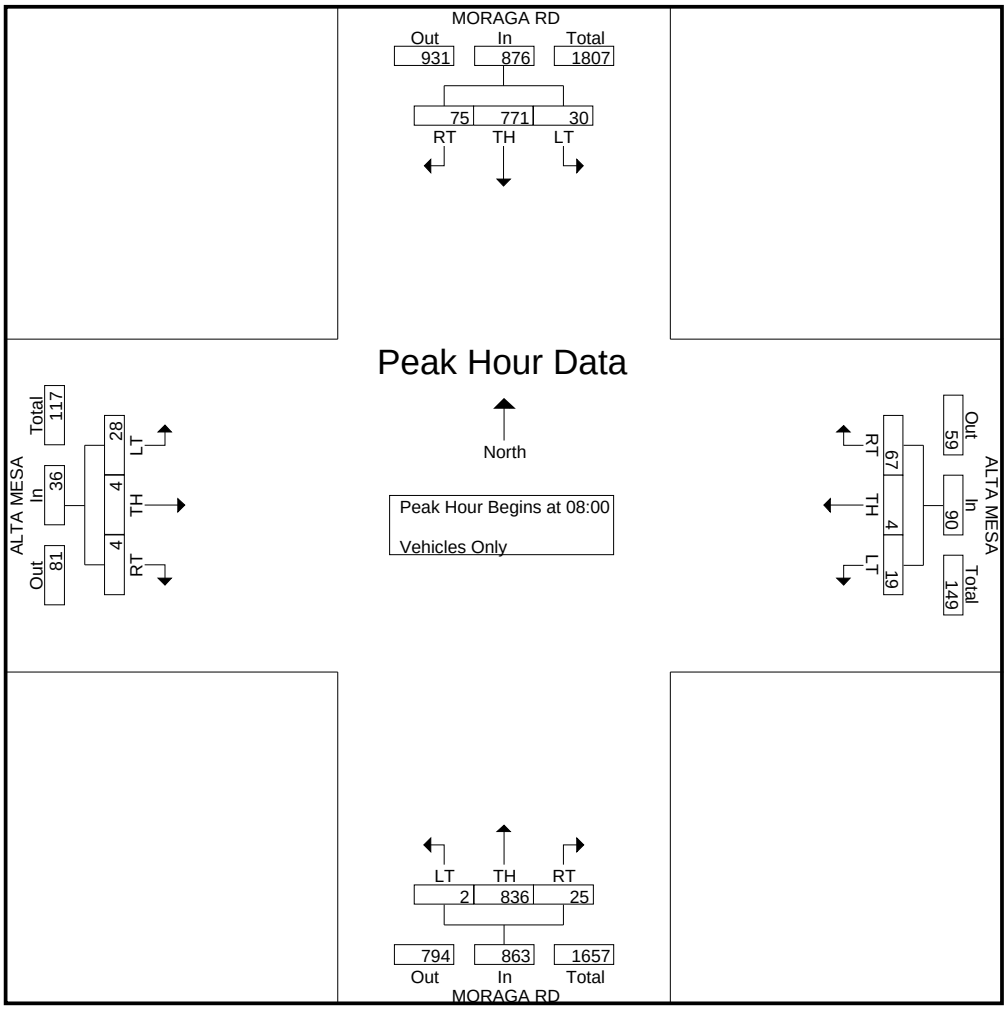
	MORAGA RD Southbound				ALTA MESA Westbound				MORAGA RD Northbound				ALTA MESA Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
06:00	15	127	8	150	19	2	14	35	3	127	0	130	0	0	6	6	321
07:00	43	369	13	425	35	9	24	68	6	411	0	417	1	1	12	14	924
08:00	75	771	30	876	67	4	19	90	25	836	2	863	4	4	28	36	1865
09:00	53	424	12	489	25	2	17	44	15	508	0	523	0	1	44	45	1101
10:00	104	345	18	467	29	5	11	45	15	453	0	468	1	2	51	54	1034
11:00	104	450	18	572	41	9	16	66	9	577	0	586	1	3	65	69	1293
12:00	125	420	24	569	29	11	8	48	16	526	1	543	2	9	83	94	1254
13:00	128	563	26	717	27	5	12	44	19	530	0	549	3	6	72	81	1391
14:00	116	609	40	765	30	7	24	61	27	665	0	692	2	3	91	96	1614
15:00	129	672	35	836	40	2	11	53	23	835	1	859	4	3	65	72	1820
16:00	139	553	32	724	24	4	16	44	34	881	1	916	6	7	74	87	1771
17:00	148	603	36	787	34	5	8	47	34	877	2	913	3	3	82	88	1835
18:00	81	430	32	543	25	4	5	34	27	508	2	537	3	6	76	85	1199
19:00	36	334	22	392	15	8	7	30	23	247	1	271	1	3	56	60	753
Grand Total	1296	6670	346	8312	440	77	192	709	276	7981	10	8267	31	51	805	887	18175
Apprch %	15.6	80.2	4.2		62.1	10.9	27.1		3.3	96.5	0.1		3.5	5.7	90.8		
Total %	7.1	36.7	1.9	45.7	2.4	0.4	1.1	3.9	1.5	43.9	0.1	45.5	0.2	0.3	4.4	4.9	

TRAFFIC COUNTS PLUS
mietekm@comcast.net
925.305.4358

TOWN OF MORAGA
Moraga Rd. & Alta Mesa
Latitude: 37.837473
Longitude: -122.1275777

File Name : moraga-alta mesa-14 60-min intervals
Site Code : 2
Start Date : 1/15/2025
Page No : 2

	MORAGA RD Southbound				ALTA MESA Westbound				MORAGA RD Northbound				ALTA MESA Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 06:00 to 08:00 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00																	
08:00	**75**	**771**	**30**	**876**	**67**	**4**	**19**	**90**	**25**	**836**	**2**	**863**	**4**	**4**	**28**	**36**	**1865**
Total Volume	75	771	30	876	67	4	19	90	25	836	2	863	4	4	28	36	1865
% App. Total	8.6	88	3.4		74.4	4.4	21.1		2.9	96.9	0.2		11.1	11.1	77.8		
PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00



TRAFFIC COUNTS PLUS
mietekm@comcast.net
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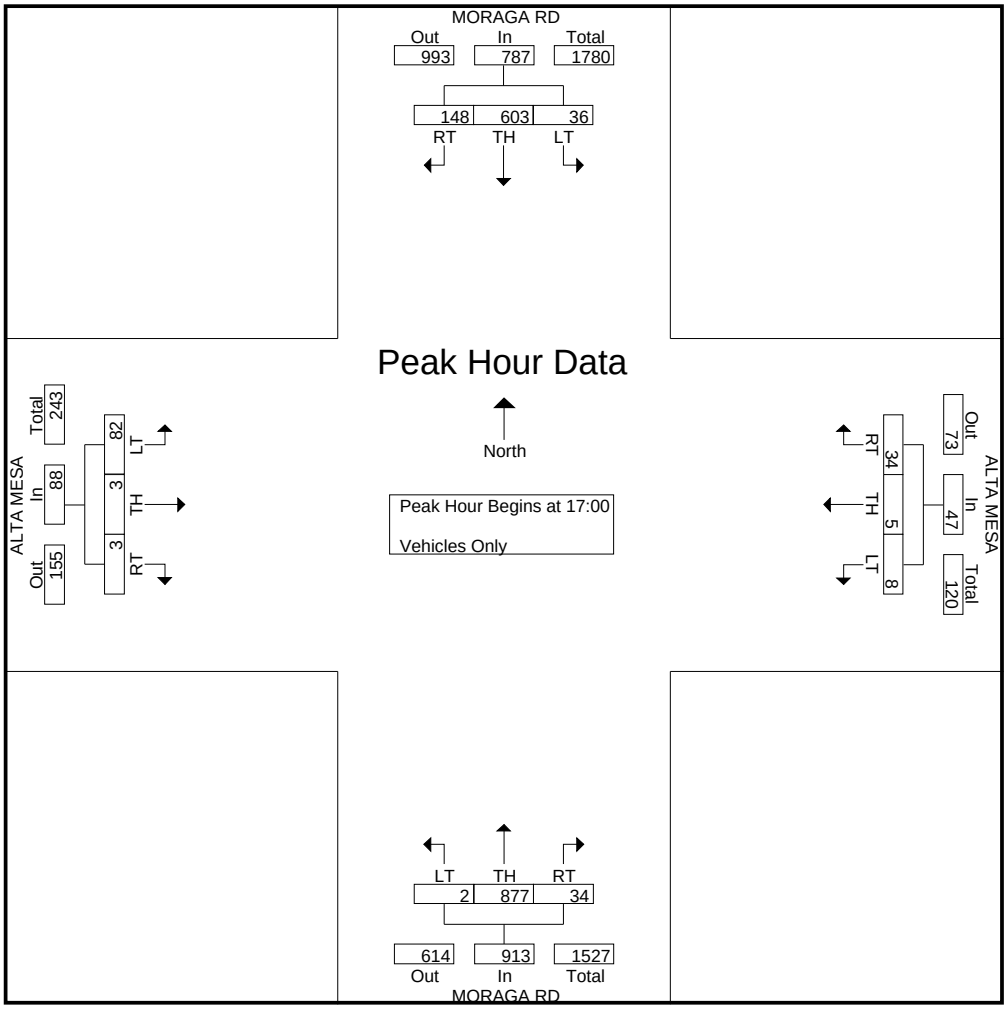
TOWN OF MORAGA
Moraga Rd. & Alta Mesa
Latitude: 37.837473
Longitude: -122.1275777

File Name : moraga-alta mesa-14 60-min intervals
Site Code : 2
Start Date : 1/15/2025
Page No : 3

	MORAGA RD Southbound				ALTA MESA Westbound				MORAGA RD Northbound				ALTA MESA Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 15:00 to 19:00 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	**148**	**603**	**36**	**787**	**34**	**5**	**8**	**47**	**34**	**877**	**2**	**913**	**3**	**3**	**82**	**88**	**1835**
Total Volume	148	603	36	787	34	5	8	47	34	877	2	913	3	3	82	88	1835
% App. Total	18.8	76.6	4.6		72.3	10.6	17		3.7	96.1	0.2		3.4	3.4	93.2		
PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00



TRAFFIC COUNTS PLUS
mietekm@comcast.net
925.305.4358

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Start Date : 1/15/2025
Page No : 1

Groups Printed- Vehicles Only

	MORAGA RD Southbound				ALTA MESA Westbound				MORAGA RD Northbound				ALTA MESA Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
06:00	2	30	2	34	3	0	4	7	2	18	0	20	0	0	2	2	63
06:15	6	32	2	40	5	0	3	8	0	36	0	36	0	0	0	0	84
06:30	2	27	0	29	5	1	3	9	0	33	0	33	0	0	2	2	73
06:45	5	38	4	47	6	1	4	11	1	40	0	41	0	0	2	2	101
Total	15	127	8	150	19	2	14	35	3	127	0	130	0	0	6	6	321
07:00	8	42	3	53	2	1	3	6	0	40	0	40	0	0	2	2	101
07:15	15	79	1	95	8	2	5	15	1	84	0	85	0	0	3	3	198
07:30	9	103	3	115	10	4	6	20	4	127	0	131	0	1	4	5	271
07:45	11	145	6	162	15	2	10	27	1	160	0	161	1	0	3	4	354
Total	43	369	13	425	35	9	24	68	6	411	0	417	1	1	12	14	924
08:00	20	247	6	273	34	1	12	47	6	243	0	249	1	1	3	5	574
08:15	22	226	10	258	14	1	4	19	9	245	1	255	1	2	6	9	541
08:30	17	157	10	184	9	0	3	12	3	178	0	181	1	1	9	11	388
08:45	16	141	4	161	10	2	0	12	7	170	1	178	1	0	10	11	362
Total	75	771	30	876	67	4	19	90	25	836	2	863	4	4	28	36	1865
09:00	12	106	2	120	4	0	6	10	3	130	0	133	0	0	10	10	273
09:15	3	110	4	117	10	2	4	16	7	131	0	138	0	1	13	14	285
09:30	17	101	4	122	6	0	5	11	3	138	0	141	0	0	15	15	289
09:45	21	107	2	130	5	0	2	7	2	109	0	111	0	0	6	6	254
Total	53	424	12	489	25	2	17	44	15	508	0	523	0	1	44	45	1101
10:00	19	81	7	107	12	3	3	18	4	94	0	98	1	0	6	7	230
10:15	24	77	0	101	8	1	1	10	2	111	0	113	0	1	9	10	234
10:30	23	87	4	114	7	1	4	12	3	127	0	130	0	0	18	18	274
10:45	38	100	7	145	2	0	3	5	6	121	0	127	0	1	18	19	296
Total	104	345	18	467	29	5	11	45	15	453	0	468	1	2	51	54	1034
11:00	25	111	5	141	12	1	4	17	4	136	0	140	0	0	13	13	311
11:15	26	98	4	128	8	2	0	10	1	139	0	140	0	0	22	22	300
11:30	23	110	6	139	10	2	7	19	3	135	0	138	0	0	12	12	308
11:45	30	131	3	164	11	4	5	20	1	167	0	168	1	3	18	22	374
Total	104	450	18	572	41	9	16	66	9	577	0	586	1	3	65	69	1293
12:00	31	107	9	147	11	4	2	17	5	154	0	159	0	5	17	22	345
12:15	39	92	3	134	9	4	2	15	4	116	0	120	0	2	24	26	295
12:30	32	100	6	138	6	3	3	12	2	125	0	127	0	0	26	26	303
12:45	23	121	6	150	3	0	1	4	5	131	1	137	2	2	16	20	311
Total	125	420	24	569	29	11	8	48	16	526	1	543	2	9	83	94	1254
13:00	26	127	3	156	5	2	3	10	2	127	0	129	1	1	16	18	313
13:15	30	98	4	132	7	0	2	9	4	120	0	124	1	2	20	23	288
13:30	43	185	13	241	9	1	4	14	4	147	0	151	1	2	16	19	425
13:45	29	153	6	188	6	2	3	11	9	136	0	145	0	1	20	21	365
Total	128	563	26	717	27	5	12	44	19	530	0	549	3	6	72	81	1391
14:00	28	171	14	213	4	1	5	10	5	130	0	135	1	0	16	17	375
14:15	33	146	6	185	4	0	7	11	8	206	0	214	0	0	33	33	443
14:30	28	137	7	172	9	2	6	17	4	197	0	201	0	1	20	21	411
14:45	27	155	13	195	13	4	6	23	10	132	0	142	1	2	22	25	385
Total	116	609	40	765	30	7	24	61	27	665	0	692	2	3	91	96	1614
15:00	34	148	6	188	8	0	4	12	3	178	0	181	0	1	20	21	402
15:15	40	163	10	213	14	0	3	17	4	198	0	202	2	0	11	13	445
15:30	22	152	5	179	9	1	3	13	7	208	0	215	0	2	13	15	422
15:45	33	209	14	256	9	1	1	11	9	251	1	261	2	0	21	23	551
Total	129	672	35	836	40	2	11	53	23	835	1	859	4	3	65	72	1820
16:00	34	131	12	177	10	1	3	14	9	246	0	255	1	2	11	14	460
16:15	32	120	5	157	7	1	6	14	7	205	0	212	1	3	19	23	406
16:30	34	155	6	195	3	2	5	10	5	209	0	214	2	0	21	23	442
16:45	39	147	9	195	4	0	2	6	13	221	1	235	2	2	23	27	463
Total	139	553	32	724	24	4	16	44	34	881	1	916	6	7	74	87	1771
17:00	47	144	10	201	8	1	1	10	7	212	1	220	0	0	10	10	441
17:15	32	137	9	178	9	1	4	14	5	233	0	238	1	0	21	22	452
17:30	38	158	10	206	8	1	1	10	11	233	1	245	1	0	29	30	491
17:45	31	164	7	202	9	2	2	13	11	199	0	210	1	3	22	26	451
Total	148	603	36	787	34	5	8	47	34	877	2	913	3	3	82	88	1835
18:00	29	132	12	173	8	0	2	10	6	152	0	158	2	2	20	24	365
18:15	14	107	8	129	7	1	0	8	6	139	1	146	0	0	17	17	300
18:30	19	89	6	114	3	2	1	6	9	113	0	122	1	2	20	23	265
18:45	19	102	6	127	7	1	2	10	6	104	1	111	0	2	19	21	269
Total	81	430	32	543	25	4	5	34	27	508	2	537	3	6	76	85	1199

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Groups Printed- Vehicles Only

	MORAGA RD Southbound				ALTA MESA Westbound				MORAGA RD Northbound				ALTA MESA Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
19:00	10	93	6	109	3	2	3	8	6	79	1	86	0	1	13	14	217
19:15	12	96	6	114	3	1	2	6	8	56	0	64	1	0	20	21	205
19:30	3	75	3	81	5	2	2	9	4	66	0	70	0	0	17	17	177
19:45	11	70	7	88	4	3	0	7	5	46	0	51	0	2	6	8	154
Total	36	334	22	392	15	8	7	30	23	247	1	271	1	3	56	60	753
Grand Total	1296	6670	346	8312	440	77	192	709	276	7981	10	8267	31	51	805	887	18175
Apprch %	15.6	80.2	4.2		62.1	10.9	27.1		3.3	96.5	0.1		3.5	5.7	90.8		
Total %	7.1	36.7	1.9	45.7	2.4	0.4	1.1	3.9	1.5	43.9	0.1	45.5	0.2	0.3	4.4	4.9	

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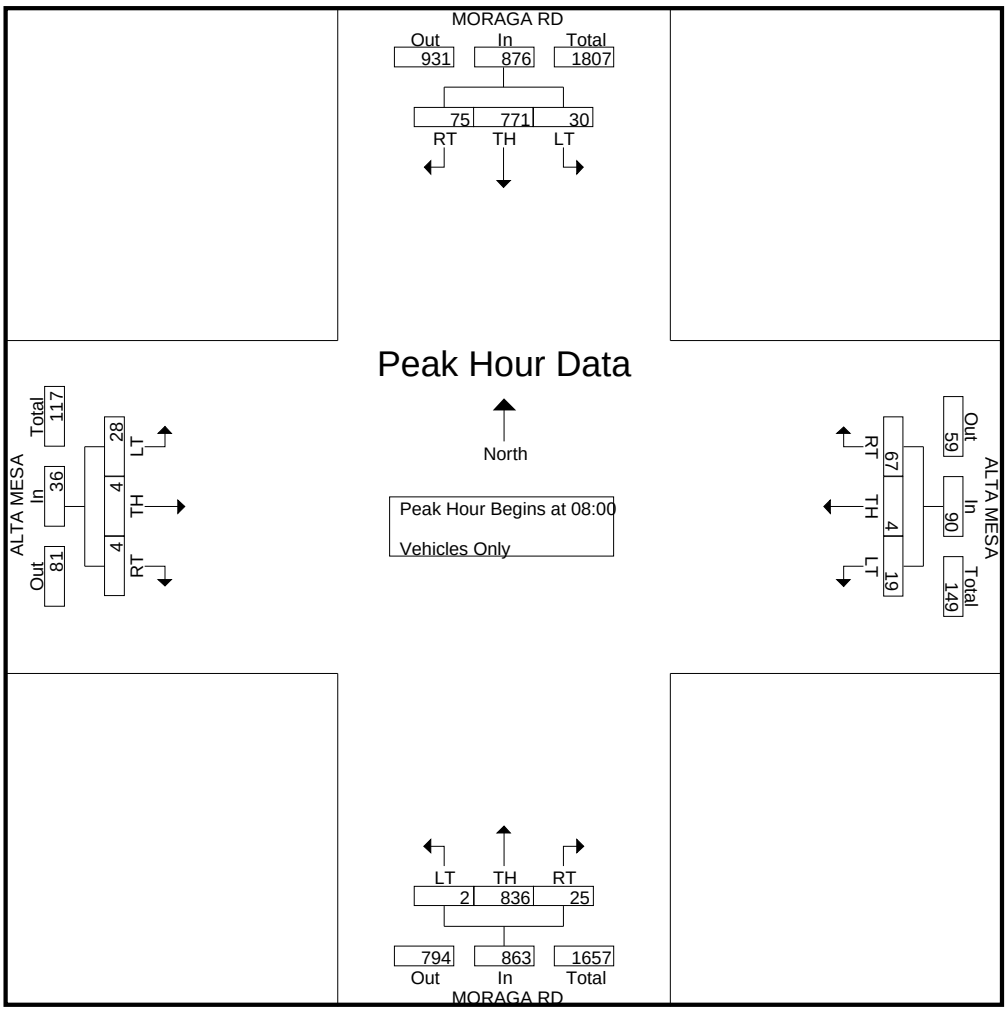
	MORAGA RD Southbound				ALTA MESA Westbound				MORAGA RD Northbound				ALTA MESA Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 06:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00																	
08:00	20	**247**	6	**273**	**34**	1	**12**	**47**	6	243	0	249	**1**	1	3	5	**574**
08:15	**22**	226	**10**	258	14	1	4	19	**9**	**245**	**1**	**255**	1	**2**	6	9	541
08:30	17	157	10	184	9	0	3	12	3	178	0	181	1	1	9	**11**	388
08:45	16	141	4	161	10	**2**	0	12	7	170	1	178	1	0	**10**	11	362
Total Volume	75	771	30	876	67	4	19	90	25	836	2	863	4	4	28	36	1865
% App. Total	8.6	88	3.4		74.4	4.4	21.1		2.9	96.9	0.2		11.1	11.1	77.8		
PHF	.852	.780	.750	.802	.493	.500	.396	.479	.694	.853	.500	.846	1.00	.500	.700	.818	.812



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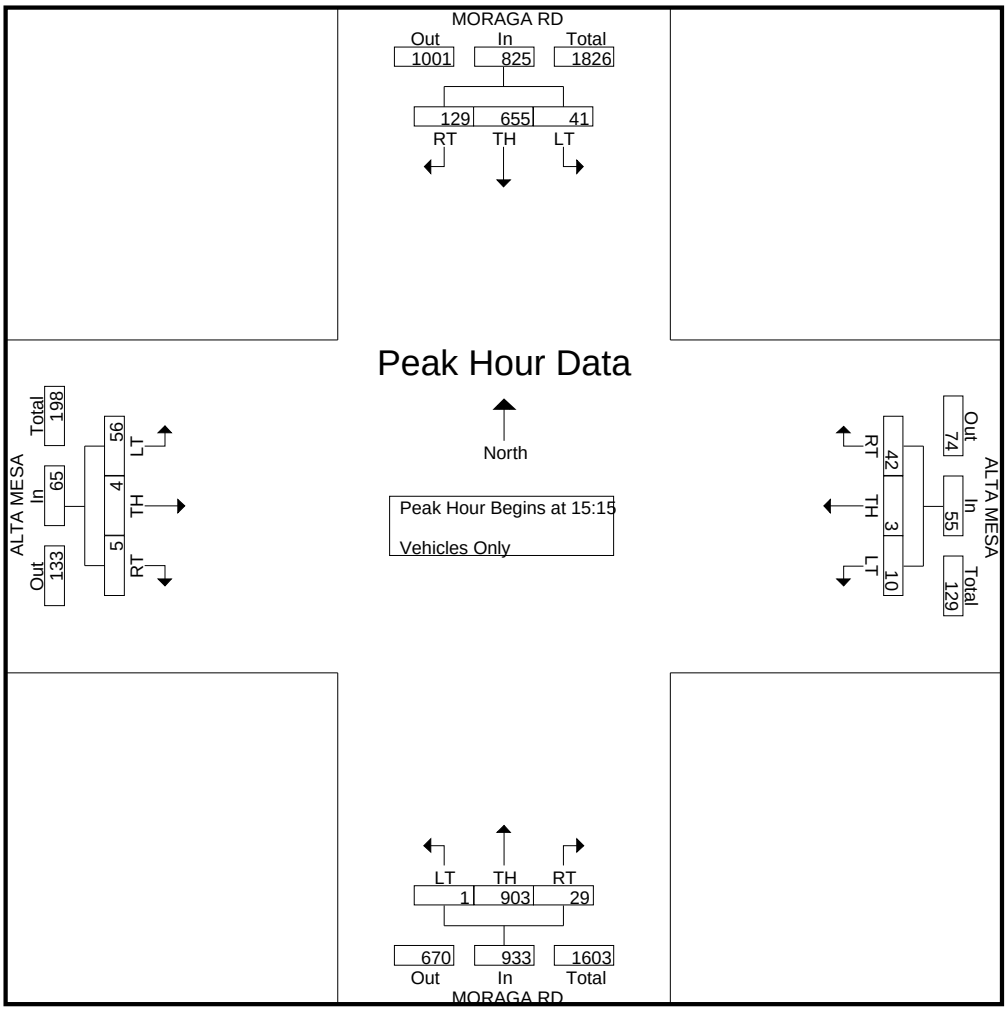
	MORAGA RD Southbound				ALTA MESA Westbound				MORAGA RD Northbound				ALTA MESA Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 15:00 to 19:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 15:15																	
15:15	**40**	163	10	213	**14**	0	**3**	**17**	4	198	0	202	**2**	0	11	13	445
15:30	22	152	5	179	9	**1**	3	13	7	208	0	215	0	**2**	13	15	422
15:45	33	**209**	**14**	**256**	9	1	1	11	**9**	**251**	**1**	**261**	2	0	**21**	**23**	**551**
16:00	34	131	12	177	10	1	3	14	9	246	0	255	1	2	11	14	460
Total Volume	129	655	41	825	42	3	10	55	29	903	1	933	5	4	56	65	1878
% App. Total	15.6	79.4	5		76.4	5.5	18.2		3.1	96.8	0.1		7.7	6.2	86.2		
PHF	.806	.783	.732	.806	.750	.750	.833	.809	.806	.899	.250	.894	.625	.500	.667	.707	.852



APPENDIX C: TRAFFIC EVALUATIONS AND REPORTS

FEHR PEERS

Memorandum

Date: March 6, 2025

To: Nate Levine, Town of Moraga

From: Mark Howard, PE Rob Rees, PE, and Jackson Zeng, Fehr & Peers

Subject: Moraga Road and Alta Mesa – Operational Analysis

WC24-4102

Fehr & Peers analyzed peak hour traffic operations at Moraga Road and Alta Mesa in the Town of Moraga as part of the Moraga Road and Canyon Road Complete Streets Project (Project). The purpose of this analysis was to compare the Existing Conditions intersection operations to the Project's proposed road diet conditions between Moraga Way and St Marys Road. Additionally, Sandis conducted a signal warrant analysis at Moraga Road and Alta Mesa to determine if a signal is warranted at this intersection. This memorandum summarizes our methodology and analysis results.

Study Area

The study area includes Moraga Road from St. Mary's Road to Moraga Way in the Town of Moraga, as shown on **Figure 1** (all figures provided at the end of this memorandum). This corridor experiences high traffic volume during peak hours and provides access to many parts of Moraga.

Moraga Road is an arterial roadway with a posted speed limit of 35 mph that runs north-south through the Town of Moraga and extends north to the City of Lafayette. South of Moraga Way, Moraga Road becomes Canyon Road.

In the study area, Moraga Road has two travel lanes in each direction with left-turn pockets at the intersections. Sidewalk infrastructure is inconsistent with gaps in the network, and there are standard bike lanes on both sides of the street. County Connection transit lines 6 and 606 serve Moraga Road and provide connections to the Orinda and Lafayette BART stations. Land uses along this roadway include residential and commercial.

The study intersection analyzed in this memorandum, shown in **Figure 1**, is:

1. Moraga Way/Alta Mesa

Data Collection

Fehr & Peers used traffic counts provided by the Town of Moraga from September 17, 2024, for the study intersection on Moraga Road at Alta Mesa. The intersection turning movement counts included pedestrians and bicyclists and were collected during the weekday morning (7:00 to 9:00 AM) and the weekday evening (4:00 to 6:00 PM) periods. The peak hour vehicle traffic volumes are summarized in **Figure 2**. The traffic count datasheets are provided in **Attachment A.**

Analysis Methodology

Traffic conditions at signalized intersections were evaluated using Synchro and SimTraffic 12.0 software using methods developed by the Transportation Research Board (TRB), as documented in the *Highway Capacity Manual* (HCM), 6th Edition for vehicles. Intersection operation inputs include vehicle, bicycle, and pedestrian volumes, lane geometry, intersection control, and peak hour factors.

Unsignalized Intersections

Intersection operations are described using the term "Level of Service" (LOS). LOS is a qualitative description of traffic flow based on factors such as speed, travel time, delay, and freedom to maneuver. Letter grades range from LOS A, with no congestion and little delay, to LOS F, which represents over-capacity conditions with excessive vehicle delay. The Transportation Research Board's Highway Capacity Manual (HCM) provides a methodology to calculate LOS at intersections based on average vehicle delay. The relationship between LOS and delay for unsignalized intersections is summarized in **Table 1.**

Table 1: Unsignalized Intersection Level of Service Definitions

Level of Service	Average Control Vehicle Delay (seconds)	Description
A	≤10.0	Little or No Delays
B	>10.0 and 15.0	Short Traffic Delays
C	>15.0 and 25.0	Average Traffic Delays
D	>25.0 and 35.0	Long Traffic Delays
E	>35.0 and 50.0	Very Long Traffic Delays
F	>50.0	Extreme traffic Delays with Intersection Capacity Extended

Source: *Highway Capacity Manual* 6th Edition (Transportation Research Board).

Existing Traffic Conditions

Existing Intersection Level of Service

Based on the existing lane configurations, intersection control, peak hour traffic volumes, and pedestrian and bicycle activity, operations of the study intersections were evaluated using the SimTraffic 12.0 analysis tool. The study intersection operates at an LOS A for the overall intersection delay under both the AM and PM peak hour conditions. The worst side street stop-controlled movements are the left turning movements out of Alta Mesa and the shopping center, which operate at an LOS D and F under the AM and PM peak hour, respectively. Intersection average and LOS results are presented in **Table 2**. The detailed LOS calculation results can be found in **Attachment B**.

Table 1: Existing Conditions Peak Hour Intersection LOS Summary

Intersection	Control	Peak Hour	Delay (seconds)[1,2]	LOS
Moraga Road/Alta Mesa	Side-Street Stop	AM	2 (33)	A (D)
		PM	6 **(67)**	A **(F)**

Notes:

1. Results are presented as Intersection Delay (Worst Movement Delay)
2. Reported delay accounts for the worst-case condition and does not account for any drivers attempting to make a two stage left-turn onto Moraga Road.

Source: Fehr & Peers, December 2024.

Existing Queues

Although the side-street stop-controlled movements currently operate at LOS D and F, the vehicle queues do not spillback out of the provided storage area. **Table 3** presents AM and PM peak hour average and 95th percentile queues for movements. The 95th percentile queues are indicative of maximum design queues occurring during periods of peak traffic. Detailed queue worksheets are provided in **Attachment C**.

Table 3: Average and 95th Percentile Queue Length Results

Intersection	Movement[2]	Storage Length (feet)[1]	Peak Hour	Existing	
				Average Queue (feet)	95th Percentile Queue (feet)
Moraga Road/ Alta Mesa	EB Left/ Through/Right	500	AM	25	50
			PM	75	125
	WB Left/ Through/Right	200	AM	50	100
			PM	50	100
	NB Left	100	AM	25	25
			PM	25	25
	SB Left	100	AM	25	50
			PM	25	50

Notes:
1. Reflects the total length of the left-turn pocket from the stop-bar in feet, not including the bay taper which can provide an additional 50 to 70 feet of storage outside of the adjacent travel lane. Storage length above.
2. WB = Westbound, EB = Eastbound, NB = Northbound, SB = Southbound

Source: Fehr & Peers, December 2024

Existing Intersection Signal Warrant Analysis

A signal warrant analysis was conducted by Sandis at Moraga Road and Alta Mesa as part of the intersection evaluation to determine if a traffic signal would be warranted. Based on Sandis's analysis of existing traffic characteristics, and volumes, the Alta Mesa intersection satisfies Warrant 2 for signalization. Although the signal satisfies Warrant 2, it was not recommended to install a traffic signal as part of this Project. Installing a traffic signal was not recommended as part of this project as it would have a large impact to the project's cost, it would primarily service the needs of a commercial driveway, would not address the needs of the public corridors, and would not be an advisable act of stewardship of the grant funds allocated. It was recommended that the Town further evaluate all options for managing the flow, access, and circulation of the Moraga Center Plaza, including a future installation of a traffic signal at this location as one possible alternative. The results of Sandis's signal warrant analysis and additional information can be found in **Attachment D**.

Existing with Project Traffic Conditions

The analysis evaluated a design concept which incorporates a road diet along either side of Moraga Road, extending from St. Mary's Road to Alta Mesa. The proposed project would remove the right-most travel lane on both sides of Moraga Road and convert the remaining through lane

into a shared through-right lane at Alta Mesa. The lane modifications under "Existing Plus Project" are presented in **Figure 3**. Turning movement volumes remained the same as Existing Conditions.

Existing with Project Intersection Level of Service

Level of service calculations were conducted to evaluate intersection operations under the Existing with Project conditions. The Existing with Project analysis results for study intersection are presented in **Table 4**.

Results of the Existing with Project analysis indicate that the study intersection experiences increased delay on the side-street approaches. The worst movement delay are the left turning movements out of Alta Mesa and the shopping center, which increase to 67 seconds during the AM peak hour and 200 seconds during the PM peak hour. The detailed LOS calculation results can be found in **Attachment B**.

Table 4: Level of Service Results

Intersection	Peak Hour	Existing[1]		Existing with Project[1]	
		Delay[2] (seconds)	LOS	Delay[2] (seconds)	LOS
Moraga Road/Alta Mesa	AM	2 (33)	A (D)	5 **(67)**	A **(F)**
	PM	6 **(67)**	A **(F)**	13 **(200)**	B **(F)**

Notes:

1. Results are presented as Intersection Delay (Worst Movement Delay)
2. Reported delay accounts for the worst-case condition and does not account for any drivers attempting to make a two stage left-turn onto Moraga Road.

Source: Fehr & Peers, December 2024.

Existing with Project Queues

Table 5 presents AM and PM peak hour average and 95th percentile queues for the Existing with Project analysis. The 95th percentile queues are indicative of maximum design queues occurring during periods of peak traffic. The reported delay and queueing accounts for the worst-case condition and does not account for any drivers attempting to make a two stage left-turn onto Moraga Road. Additionally, the isolated intersection analysis does not account for any upstream intersection controls that may affect vehicle platooning. Detailed queue worksheets are provided in **Attachment C**.

Results of the Existing with Project queue analysis indicate that side-street queues at the study intersection increase by 25 feet or more compared to existing conditions, with the eastbound approach's 95th percentile queue increasing by 150 feet. However, there are no queue increases for the northbound left or southbound left movements, and all queues remain within the available vehicle storage length for every movement.

Table 5: Average and 95th Percentile Queue Length Results

Intersection	Movement[2]	Storage Length (feet)[1]	Peak Hour	Existing		Existing with Project[3]	
				Average Queue (feet)	95th Percentile Queue (feet)	Average Queue (feet)	95th Percentile Queue (feet)
Moraga Road/Alta Mesa	EB Left/ Through/Right	500	AM	25	50	25	50
			PM	75	125	125	275
	WB Left/ Through/Right	200	AM	50	100	75	125
			PM	50	100	75	125
	NB Left	100	AM	25	25	25	25
			PM	25	25	25	25
	SB Left	100	AM	25	50	25	50
			PM	25	50	25	50

Notes:
1. Reflects the total length of the left-turn pocket from the stop-bar in feet, not including the bay taper which can provide and additional 50 to 70 feet of storage outside of the adjacent travel lane. storage length above.
2. WB = Westbound, EB = Eastbound, NB = Northbound, SB = Southbound

Source: Fehr & Peers, December 2024

A further analysis is recommended to determine the feasibility of restricting left turning movements from the shopping center and Alta Mesa onto Moraga Road to minimize delays and queuing that occur from the left turning vehicles. This completes our assessment of Existing and Existing with Project Conditions peak hour traffic operations at the Moraga Road/Alta Mesa intersection. Please call Mark Howard at (925) 357-3375 with any questions.

Attachments:

Figure 1 Project Site Vicinity and Study Location
Figure 2 Existing Peak Hour Intersection Traffic Volumes, Lane Configuration and Traffic Control
Figure 3 Existing with Project Peak Hour Intersection Traffic Volumes, Lane Configuration and Traffic Control

Attachment A: Traffic Counts
Attachment B: SimTraffic 12.0 Approach Delay and LOS Reports
Attachment C: SimTraffic 12.0 Queue Reports
Attachment D: Signal Warrant Analysis

Figure 1

Project Site Vicinity and Study Location

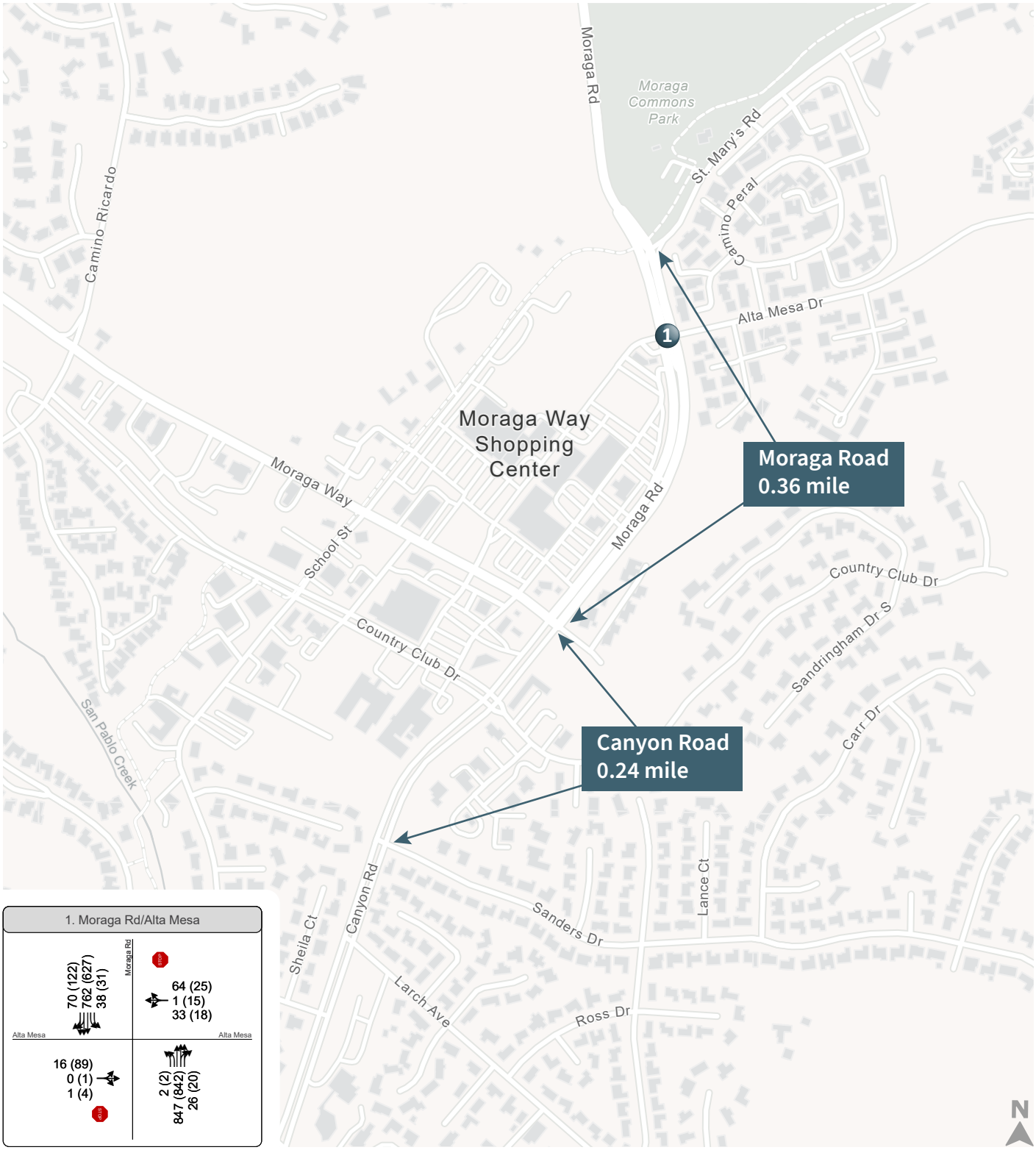


Figure 3

Existing Plus Project Peak Hour Intersection Traffic Volumes, Lane Configurations and Traffic Control

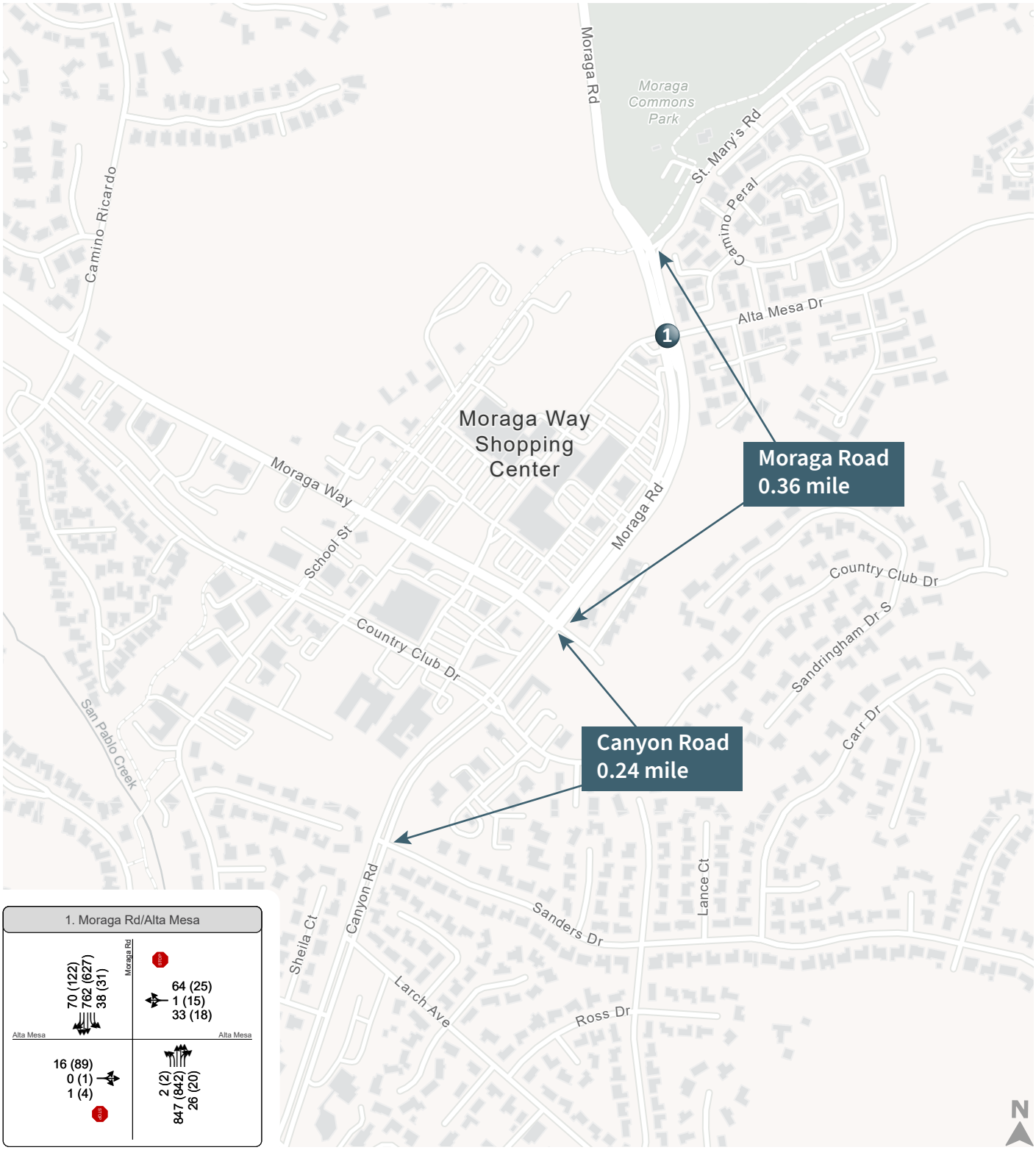


Figure 3

Existing with Project Peak Hour Intersection Traffic Volumes, Lane Configurations and Traffic Control

Attachment A: Traffic Counts

TRAFFIC COUNTS PLUS
mietekm@comcast.net
925.305.4358

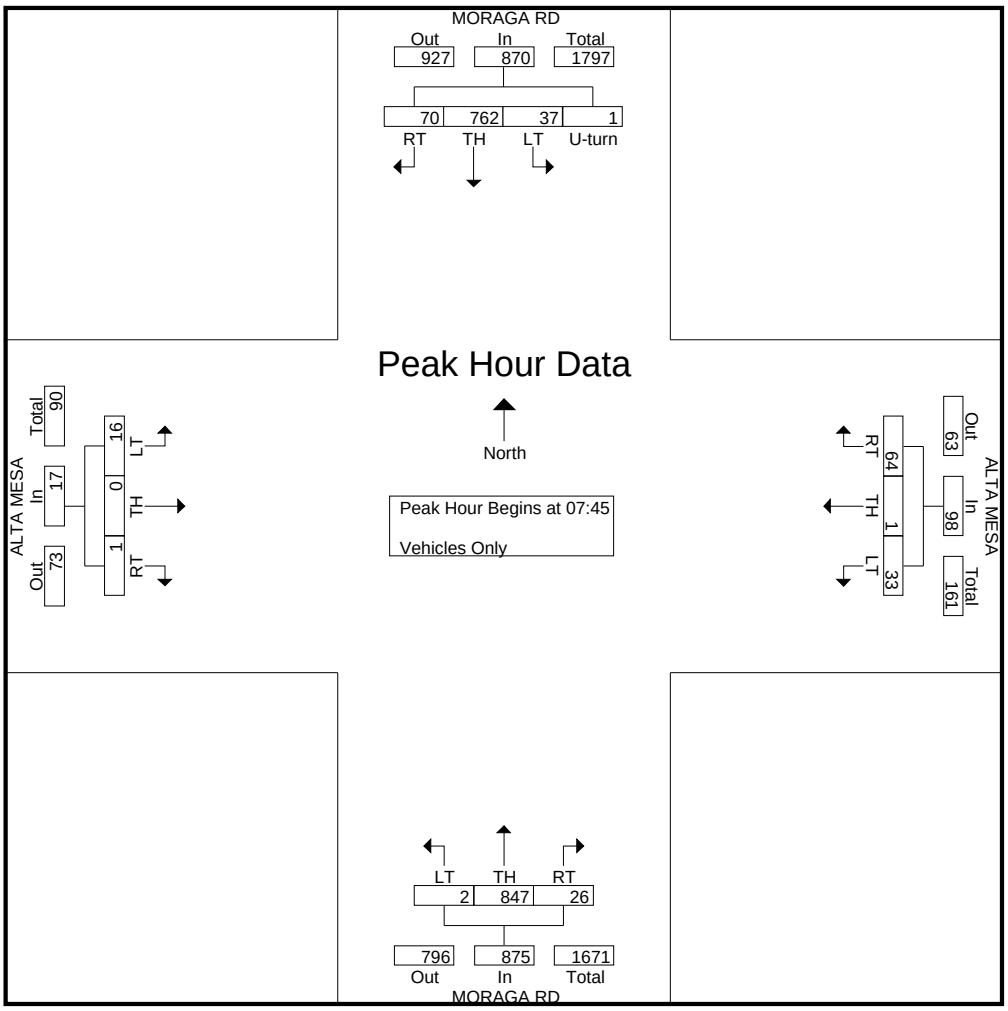
TOWN OF MORAGA
Moraga Rd. & Alta Mesa
Latitude: 37.837473
Longitude: -122.1275777

File Name : moraga-alta mesa-a
Site Code : 2
Start Date : 9/17/2024
Page No : 1

Groups Printed- Vehicles Only

	MORAGA RD Southbound					ALTA MESA Westbound				MORAGA RD Northbound				ALTA MESA Eastbound				
Start Time	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
07:00	8	66	0	0	74	6	3	3	12	4	59	0	63	1	0	2	3	152
07:15	14	78	1	0	93	4	2	5	11	1	77	0	78	0	0	2	2	184
07:30	15	108	1	1	125	7	2	4	13	0	120	0	120	0	2	2	4	262
07:45	16	146	12	0	174	24	0	7	31	4	185	0	189	1	0	5	6	400
Total	53	398	14	1	466	41	7	19	67	9	441	0	450	2	2	11	15	998
08:00	17	238	5	1	261	23	1	14	38	7	233	0	240	0	0	1	1	540
08:15	17	238	9	0	264	13	0	9	22	8	240	1	249	0	0	4	4	539
08:30	20	140	11	0	171	4	0	3	7	7	189	1	197	0	0	6	6	381
08:45	11	141	0	1	153	9	3	3	15	1	150	0	151	1	0	9	10	329
Total	65	757	25	2	849	49	4	29	82	23	812	2	837	1	0	20	21	1789
Grand Total	118	1155	39	3	1315	90	11	48	149	32	1253	2	1287	3	2	31	36	2787
Apprch %	9	87.8	3	0.2		60.4	7.4	32.2		2.5	97.4	0.2		8.3	5.6	86.1		
Total %	4.2	41.4	1.4	0.1	47.2	3.2	0.4	1.7	5.3	1.1	45	0.1	46.2	0.1	0.1	1.1	1.3	

	MORAGA RD Southbound					ALTA MESA Westbound				MORAGA RD Northbound				ALTA MESA Eastbound				
Start Time	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 07:45																		
07:45	16	146	**12**	0	174	**24**	0	7	31	4	185	0	189	**1**	0	5	**6**	400
08:00	17	**238**	5	**1**	261	23	**1**	**14**	**38**	7	233	0	240	0	0	1	1	**540**
08:15	17	238	9	0	**264**	13	0	9	22	**8**	**240**	**1**	**249**	0	0	4	4	539
08:30	**20**	140	11	0	171	4	0	3	7	7	189	1	197	0	0	**6**	6	381
Total Volume	70	762	37	1	870	64	1	33	98	26	847	2	875	1	0	16	17	1860
% App. Total	8	87.6	4.3	0.1		65.3	1	33.7		3	96.8	0.2		5.9	0	94.1		
PHF	.875	.800	.771	.250	.824	.667	.250	.589	.645	.813	.882	.500	.879	.250	.000	.667	.708	.861



TRAFFIC COUNTS PLUS
mietekm@comcast.net
925.305.4358

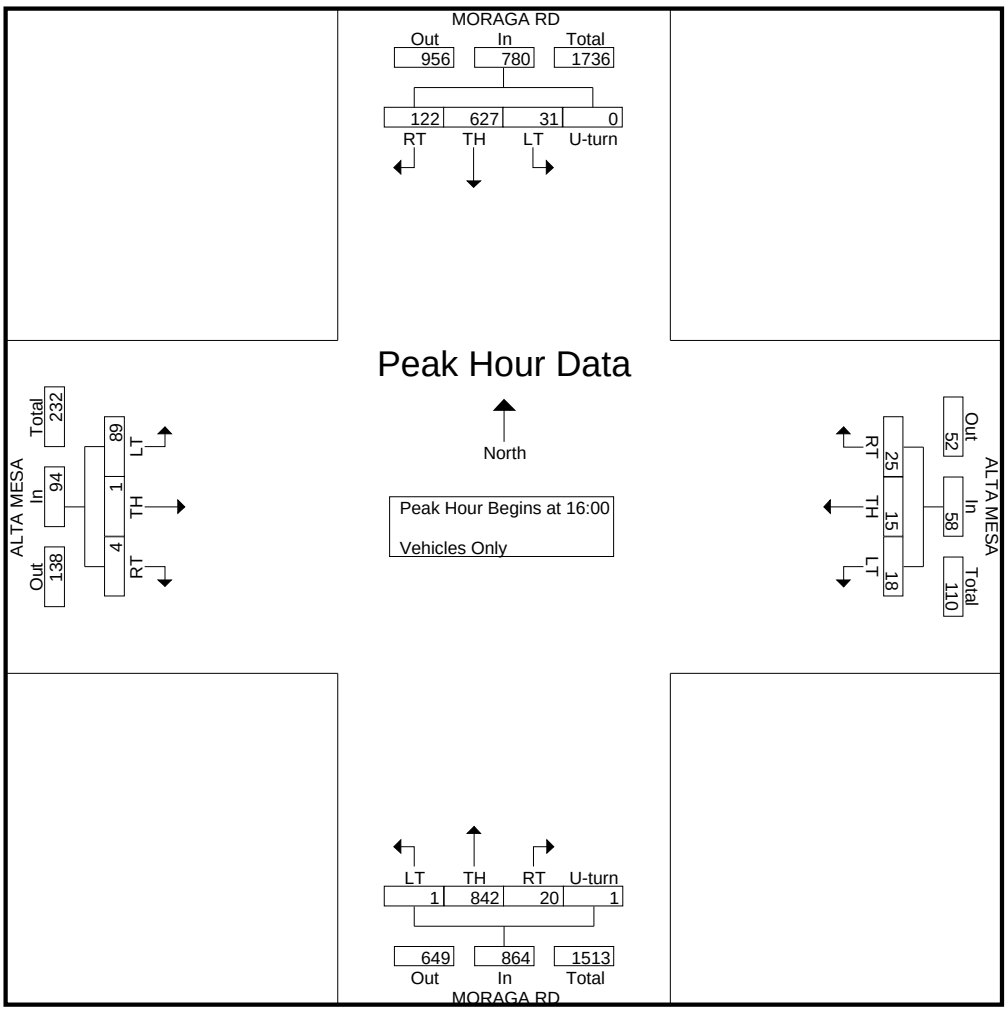
TOWN OF MORAGA
Moraga Rd. & Alta Mesa
Latitude: 37.837473
Longitude: -122.1275777

File Name : moraga-alta mesa-p
Site Code : 2
Start Date : 9/17/2024
Page No : 1

Groups Printed- Vehicles Only

	MORAGA RD Southbound					ALTA MESA Westbound				MORAGA RD Northbound					ALTA MESA Eastbound				
Start Time	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	24	140	8	0	172	5	4	5	14	4	209	1	1	215	0	0	18	18	419
16:15	35	176	9	0	220	5	1	0	6	5	236	0	0	241	2	0	26	28	495
16:30	36	140	8	0	184	10	3	6	19	1	226	0	0	227	2	0	23	25	455
16:45	27	171	6	0	204	5	7	7	19	10	171	0	0	181	0	1	22	23	427
Total	122	627	31	0	780	25	15	18	58	20	842	1	1	864	4	1	89	94	1796
17:00	29	121	7	2	159	12	1	4	17	8	203	2	0	213	3	0	20	23	412
17:15	24	141	8	0	173	10	0	3	13	7	202	0	0	209	1	2	19	22	417
17:30	30	167	14	0	211	9	0	5	14	9	205	0	0	214	0	0	23	23	462
17:45	31	174	19	0	224	8	1	8	17	10	213	0	0	223	1	2	14	17	481
Total	114	603	48	2	767	39	2	20	61	34	823	2	0	859	5	4	76	85	1772
Grand Total	236	1230	79	2	1547	64	17	38	119	54	1665	3	1	1723	9	5	165	179	3568
Apprch %	15.3	79.5	5.1	0.1		53.8	14.3	31.9		3.1	96.6	0.2	0.1		5	2.8	92.2		
Total %	6.6	34.5	2.2	0.1	43.4	1.8	0.5	1.1	3.3	1.5	46.7	0.1	0	48.3	0.3	0.1	4.6	5	

	MORAGA RD Southbound					ALTA MESA Westbound				MORAGA RD Northbound					ALTA MESA Eastbound				
Start Time	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 16:00																			
16:00	24	140	8	0	172	5	4	5	14	4	209	**1**	**1**	215	0	0	18	18	419
16:15	35	**176**	**9**	0	**220**	5	1	0	6	5	**236**	0	0	**241**	**2**	0	**26**	**28**	**495**
16:30	**36**	140	8	0	184	**10**	3	6	**19**	1	226	0	0	227	2	0	23	25	455
16:45	27	171	6	0	204	5	**7**	**7**	19	**10**	171	0	0	181	0	**1**	22	23	427
Total Volume	122	627	31	0	780	25	15	18	58	20	842	1	1	864	4	1	89	94	1796
% App. Total	15.6	80.4	4	0		43.1	25.9	31		2.3	97.5	0.1	0.1		4.3	1.1	94.7		
PHF	.847	.891	.861	.000	.886	.625	.536	.643	.763	.500	.892	.250	.250	.896	.500	.250	.856	.839	.907



Attachment B: SimTraffic 12.0 Approach Delay and LOS Reports

SimTraffic Post-Processor **Moraga Road and Canyon Road Complete Streets Improvements**
Average Results from 10 Runs **EX**
Volume and Delay by Movement **AM Peak Hours**

Intersection 1 **Moraga Rd/Alta Mesa** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	2	1	60.0%	1.0	2.2	A
	Through	847	831	98.1%	0.9	0.2	A
	Right Turn	26	27	102.7%	0.6	0.5	A
	Subtotal	875	859	98.2%	0.9	0.2	A
SB	Left Turn	38	39	101.6%	6.5	1.7	A
	Through	762	769	100.9%	0.7	0.2	A
	Right Turn	70	70	100.4%	0.7	0.4	A
	Subtotal	870	878	100.9%	0.9	0.2	A
EB	Left Turn	16	14	86.3%	31.6	9.1	D
	Through						
	Right Turn	1	2	150.0%	7.9	20.7	A
	Subtotal	17	15	90.0%	29.1	7.2	D
WB	Left Turn	33	30	91.2%	33.2	12.6	D
	Through	1	1	110.0%	19.7	53.7	C
	Right Turn	64	64	100.3%	16.7	8.5	C
	Subtotal	98	95	97.3%	22.7	8.9	C
Total		1,860	1,848	99.3%	2.2	0.3	A

SimTraffic Post-Processor **Moraga Road and Canyon Road Complete Streets Improvements**
Average Results from 10 Runs **EX**
Volume and Delay by Movement **PM Peak Hours**

Intersection 3 **Moraga Rd/Alta Mesa** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	2	2	80.0%	2.6	4.4	A
	Through	842	846	100.5%	1.0	0.2	A
	Right Turn	20	21	102.5%	0.5	0.5	A
	Subtotal	864	868	100.5%	1.0	0.2	A
SB	Left Turn	31	28	90.0%	6.3	2.4	A
	Through	627	622	99.2%	0.9	0.2	A
	Right Turn	122	119	97.9%	0.7	0.1	A
	Subtotal	780	769	98.6%	1.0	0.3	A
EB	Left Turn	89	84	94.8%	67.2	34.0	F
	Through	1	1	120.0%	9.6	12.6	A
	Right Turn	4	4	110.0%	6.5	9.8	A
	Subtotal	94	90	95.7%	65.3	33.5	F
WB	Left Turn	18	16	89.4%	43.7	19.4	E
	Through	15	17	114.7%	61.2	38.6	F
	Right Turn	25	28	110.4%	27.8	28.9	D
	Subtotal	58	61	105.0%	42.2	27.8	E
Total		1,796	1,788	99.6%	5.6	2.2	A

SimTraffic Post-Processor **Moraga Road and Canyon Road Complete Streets Improvements**
Average Results from 10 Runs **PP**
Volume and Delay by Movement **AM Peak Hours**

Intersection 1 **Moraga Rd/Alta Mesa** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	2	1	55.0%	2.7	3.8	A
	Through	847	838	98.9%	2.8	0.4	A
	Right Turn	26	24	91.9%	1.8	1.0	A
	Subtotal	875	863	98.6%	2.7	0.4	A
SB	Left Turn	38	37	97.4%	13.6	5.6	B
	Through	762	763	100.1%	3.1	0.5	A
	Right Turn	70	72	102.7%	1.5	0.6	A
	Subtotal	870	872	100.2%	3.4	0.5	A
EB	Left Turn	16	15	93.8%	50.8	24.7	F
	Through						
	Right Turn	1	2	160.0%	10.4	23.1	B
	Subtotal	17	17	97.6%	47.2	24.0	E
WB	Left Turn	33	29	89.1%	66.5	29.2	F
	Through	1	1	70.0%	14.1	44.5	B
	Right Turn	64	64	100.5%	36.0	17.6	E
	Subtotal	98	94	96.3%	45.3	20.8	E
Total		1,860	1,846	99.2%	5.4	1.2	A

SimTraffic Post-Processor **Moraga Road and Canyon Road Complete Streets Improvements**
Average Results from 10 Runs **PP**
Volume and Delay by Movement **PM Peak Hours**

Intersection 1 **Moraga Rd/Alta Mesa** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	2	1	55.0%	3.3	6.5	A
	Through	842	843	100.2%	2.7	0.7	A
	Right Turn	20	21	106.5%	1.5	0.8	A
	Subtotal	864	866	100.2%	2.7	0.7	A
SB	Left Turn	31	28	90.6%	11.0	5.9	B
	Through	627	619	98.7%	3.3	0.5	A
	Right Turn	122	125	102.3%	1.9	0.5	A
	Subtotal	780	772	98.9%	3.4	0.5	A
EB	Left Turn	89	84	94.2%	199.9	76.5	F
	Through	1	1	80.0%	32.6	95.1	D
	Right Turn	4	4	97.5%	134.1	182.1	F
	Subtotal	94	89	94.1%	200.9	82.1	F
WB	Left Turn	18	15	81.7%	82.0	67.6	F
	Through	15	17	114.0%	113.4	71.0	F
	Right Turn	25	26	104.8%	72.2	56.6	F
	Subtotal	58	58	100.0%	93.0	60.4	F
Total		1,796	1,784	99.3%	12.8	3.7	B

Attachment C: SimTraffic 12.0 Queue Reports

Intersection 1 **Moraga Rd & Alta Mesa** **Side-street Stop**

Direction	Movement	Lane	Storage (ft)	Average Queue (ft) Average	Average Queue (ft) Std. Dev.	95th Queue (ft) Average	95th Queue (ft) Std. Dev.	Maximum Queue (ft) Average	Maximum Queue (ft) Std. Dev.	Block Time Pocket	Block Time Upstream
EB	Shared	1	350	25	2	50	4	50	13	0%	0%
WB	Shared	1	200	50	3	100	9	125	22	0%	0%
NB	Left Turn	1	100	25	1	25	6	25	14	0%	0%
NB	Through	1	1,025	25	1	25	8	75	23	0%	0%
NB	Through/Right	1	1,025	25	2	25	9	50	13	0%	0%
SB	Left Turn	1	100	25	3	50	4	75	14	0%	0%
SB	Through	1	400	25	2	25	12	50	29	0%	0%
SB	Through/Right	1	400	25	1	25	5	25	15	0%	0%

Intersection 1 **Moraga Rd & Alta Mesa**

Direction	Movement	Lane	Storage (ft)	Average Queue (ft)		95th Queue (ft)		Maximum Queue (ft)		Block Time	
				Average	Std. Dev.	Average	Std. Dev.	Average	Std. Dev.	Pocket	Upstream
EB	Shared	1	325	75	29	125	53	100	40	0%	0%
WB	Shared	1	200	50	21	100	38	100	34	0%	0%
NB	Left Turn	1	100	25	2	25	9	25	10	0%	0%
NB	Through	1	1,025	25	7	25	22	25	20	0%	0%
NB	Through/Right	1	1,025	25	4	25	13	25	13	0%	0%
SB	Left Turn	1	100	25	6	50	6	50	1	0%	0%
SB	Through	1	400	25	5	25	20	25	24	0%	0%
SB	Through/Right	1	400	25	4	25	18	25	20	0%	0%

Intersection 1 **Moraga Rd & Alta Mesa** **Side-street Stop**

Direction	Movement	Lane	Storage (ft)	Average Queue (ft)		95th Queue (ft)		Maximum Queue (ft)		Block Time	
				Average	Std. Dev.	Average	Std. Dev.	Average	Std. Dev.	Pocket	Upstream
EB	Shared	1	575	25	4	50	8	75	23	0%	0%
WB	Shared	1	200	75	9	125	25	175	57	0%	0%
NB	Left Turn	1	100	25	1	25	7	25	16	0%	0%
NB	Through/Right	1	1,025	25	4	50	19	75	33	0%	0%
SB	Left Turn	1	100	25	1	50	3	75	11	0%	0%
SB	Through/Right	1	400	25	3	50	19	100	48	0%	0%

Intersection 1 **Moraga Rd & Alta Mesa** **Side-street Stop**

Direction	Movement	Lane	Storage (ft)	Average Queue (ft)		95th Queue (ft)		Maximum Queue (ft)		Block Time	
				Average	Std. Dev.	Average	Std. Dev.	Average	Std. Dev.	Pocket	Upstream
EB	Shared	1	600	125	22	275	46	325	58	0%	0%
WB	Shared	1	200	75	8	125	26	150	37	0%	0%
NB	Left Turn	1	100	25	1	25	7	25	16	0%	0%
NB	Through/Right	1	1,025	25	3	50	11	100	35	0%	0%
SB	Left Turn	1	100	25	3	50	5	75	9	0%	0%
SB	Through/Right	1	400	25	5	50	24	125	71	0%	0%

Attachment D: Signal Warrant Analysis

Basis of Design (DRAFT)

Date: February 7, 2025

To: Nate Levine |Town of Moraga, Andrew Dillard | CCTA

From: Joseph Paull, Brendan Pang | Sandis

Subject: Moraga Road @ Alta Mesa Warrant Analysis (Moraga SS4A)

624081

Introduction

Sandis completed the following warrant analysis for the Moraga Road / Canyon Road Complete Streets Project (SS4A) in Moraga, CA at the intersection of Moraga Road & Alta Mesa.

A traffic signal warrant study is an analysis conducted to determine whether a signal is justified based on California Manual on Traffic Control Devices (CA MUCTCD).
This traffic assessment was conducted for the intersection of Moraga Rd and Alta Mesa. Moraga Rd is a north/south roadway with one to two vehicular lanes and one bike lane in each direction. Alta Mesa is an east/west roadway with only one vehicle lane and no bike lanes in each direction.

At that intersection, the east side of Alta Mesa is primarily for residential areas only. There is no other outlet for the neighborhood that stems from Alta Mesa that connects the residents to the larger Moraga street-network.

The west side direction is a commercial driveway leading into Moraga Center shopping plaza, which is one of 9 major driveways connecting the shopping plaza to public streets.

Methodology

To determine whether a signal is justified, we referred to the 2018 CA MUTCD Revision 8. The CAMUTCD provides 9 different traffic signal warrants to examine whether a signal is justified at an intersection.
The warrants include:

- Warrant 1, Eight-Hour Vehicular Volume
- Warrant 2, Four-Hour Vehicular Volume
- Warrant 3, Peak Hour
- Warrant 4, Pedestrian Volume
- Warrant 5, School Crossing
- Warrant 6, Coordinated Signal System
- Warrant 7, Crash Experience
- Warrant 8, Roadway Network

- Warrant 9, Intersection Near a Grade Crossing

These warrants were evaluated based on traffic counts collected on January 15, 2025, and collision data for the last 3 years collected from the Transportation Injury Mapping System (TIMS). The collected counts and collision data are attached to this report.

Conclusions and Recommendation:

After examining all the warrants, warrant 2 (four-hour vehicular volume) was the only warrant that was satisfied. Warrant 2 is primarily concerned with reducing waiting times at an intersection, as it evaluates the number of gaps in travel against the amount of traffic looking for those gaps.

See the Warrant Worksheets attached for the calculations and results.

While this does allow for a traffic signal to be installed, it does not require one to be and it does not indicate that a traffic signal is the best improvement for the area. Looking more holistically at the data, it is evident that warrant 2 is only triggered due to volumes from the eastbound approach (the commercial driveway), and the volumes from Alta Mesa itself do not trigger any warrants on their own. It is recommended that the Town further evaluate all options for managing the flow, access, and circulation of the Moraga Center Plaza, including a future installation of a traffic signal at this location as one possible alternative. Including this evaluation in a future project will allow the Town to account for the changing infrastructure landscape, such as the future School Street Extension that will have major impacts on the intersections of Moraga Road at St. Mary's Road and Moraga Road at Alta Mesa, as well as allow the Town to work directly with the property owners of the Plaza to identify their goals for access and circulation in and out of their site.

This report does not recommend installing a traffic signal at the Morag Road and Alta Mesa intersection as part of the project Moraga Road / Canyon Road Complete Streets Project (SS4A). This would have a large impact to the project's cost, and since it would primarily service the needs of a commercial driveway, and not address the needs of the public corridors, it would not be an advisable act of stewardship of the grant funds allocated. It also does not directly align with the goals of the Safe Streets for All program, which is dedicated to improving the safety of all roadway users, not just reducing congestion and travel times for vehicular drivers.

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 1 of 5)

4	CC	N/A	N/A
DIST	CO	RTE	PM

COUNT DATE 09/17/24
CALC BP & WH DATE 01/13/25
CHK JFP DATE 01/14/25

Major St: Moraga Rd — Critical Approach Speed 35 mph
Minor St: Alta Mesa — Critical Approach Speed 35 mph

Speed limit or critical speed on major street traffic > 40 mph..... ☐
or
In built up area of isolated community of < 10,000 population..... ☐
☑ URBAN (U)
RURAL (R)

WARRANT 1 - Eight Hour Vehicular Volume SATISFIED YES ☐ NO ☑
(Condition A or Condition B or combination of A and B must be satisfied)

Condition A - Minimum Vehicle Volume 100% SATISFIED YES ☐ NO ☑
80% SATISFIED YES ☐ NO ☑

	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)											
	U	R	U	R								Hour
APPROACH LANES	1		2 or More									
Both Approaches Major Street	500 (400)	350 (280)	600 (480)	420 (336)	1158	1112	1266	1457	1695	1640	1700	1080
Highest Approach Minor Street	150 (120)	105 (84)	200 (160)	140 (112)	69	94	81	96	72	87	88	85

Condition B - Interruption of Continuous Traffic 100% SATISFIED YES ☐ NO ☑
80% SATISFIED YES ☑ NO ☐

	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)											
	U	R	U	R								Hour
APPROACH LANES	1		2 or More									
Both Approaches Major Street	750 (600)	525 (420)	900 (720)	630 (504)	1112	1266	1457	1640	1700	1080	1695	1158
Highest Approach Minor Street	75 (60)	53 (42)	100 (80)	70 (56)	94	81	96	87	88	85	72	69

Combination of Conditions A & B SATISFIED YES ☐ NO ☑

REQUIREMENT	CONDITION	✓	FULFILLED
TWO CONDITIONS SATISFIED 80%	A. MINIMUM VEHICULAR VOLUME		Yes ☐ No ☑
	AND, B. INTERRUPTION OF CONTINUOUS TRAFFIC		
AND, AN ADEQUATE TRIAL OF OTHER ALTERNATIVES THAT COULD CAUSE LESS DELAY AND INCONVENIENCE TO TRAFFIC HAS FAILED TO SOLVE THE TRAFFIC PROBLEMS			Yes ☐ No ☐

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 2 of 5)

WARRANT 2 - Four Hour Vehicular Volume **SATISFIED* YES ☑ NO ☐**

Record hourly vehicular volumes for any four hours of an average day.

APPROACH LANES	One	2 or More	Hour			
Both Approaches - Major Street			1457	1266	1640	1700
Higher Approach - Minor Street			96	81	87	88

*All plotted points fall above the applicable curve in Figure 4C-1. (URBAN AREAS)	Yes ☑	No ☐
OR, All plotted points fall above the applicable curve in Figure 4C-2. (RURAL AREAS)	Yes ☐	No ☐

WARRANT 3 - Peak Hour **SATISFIED YES ☐ NO ☑**
(Part A or Part B must be satisfied)

PART A **SATISFIED YES ☐ NO ☐**

(All parts 1, 2, and 3 below must be satisfied for the same one hour, for any four consecutive 15-minute periods)

1. The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach, or five vehicle-hours for a two-lane approach; AND	Yes ☐	No ☐
2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	Yes ☐	No ☐
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches.	Yes ☐	No ☐

PART B **SATISFIED YES ☐ NO ☑**

APPROACH LANES	One	2 or More	Hour
Both Approaches - Major Street		1745	
Higher Approach - Minor Street	98		

The plotted point falls above the applicable curve in Figure 4C-3. (URBAN AREAS)	Yes ☐	No ☑
OR, The plotted point falls above the applicable curve in Figure 4C-4. (RURAL AREAS)	Yes ☐	No ☐

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 3 of 5)

WARRANT 4 - Pedestrian Volume
(Parts 1 and 2 Must Be Satisfied)

SATISFIED YES ☐ NO ☑

Part 1 (Parts A or B must be satisfied)

	Hours - - ->				
A.	Vehicles per hour for any 4 hours		1644		
	Pedestrians per hour for any 4 hours		29		

Figure 4C-5 or Figure 4C-6
SATISFIED YES ☐ NO ☑

	Hours - - ->				
B.	Vehicles per hour for any 1 hour				
	Pedestrians per hour for any 1 hour				

Figure 4C-7 or Figure 4C-8
SATISFIED YES ☐ NO ☐

Part 2 **SATISFIED YES ☐ NO ☐**

AND, The distance to the nearest traffic signal along the major street is greater than 300 ft	Yes ☐ No ☐
OR, The proposed traffic signal will not restrict progressive traffic flow along the major street.	Yes ☐ No ☐

WARRANT 5 - School Crossing
(Parts A and B Must Be Satisfied)

SATISFIED YES ☐ NO ☐

Warrant 5
Not applicable - no major school nearby.

Part A
Gap/Minutes and # of Children

SATISFIED YES ☐ NO ☐

		Hour
Gaps vs Minutes	Minutes Children Using Crossing	
	Number of Adequate Gaps	
School Age Pedestrians Crossing Street / hr		

Gaps < Minutes YES ☐ NO ☐
AND Children > 20/hr YES ☐ NO ☐

AND, Consideration has been given to less restrictive remedial measures.	Yes ☐ No ☐

Part B **SATISFIED YES ☐ NO ☐**

The distance to the nearest traffic signal along the major street is greater than 300 ft	Yes ☐ No ☐
OR, The proposed signal will not restrict the progressive movement of traffic.	Yes ☐ No ☐

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 4 of 5)

Warrant 6
Not applicable - intersection does not have a connected signal system for platooning of vehicles

WARRANT 6 - Coordinated Signal System **SATISFIED YES ☐ NO ☐**
(All Parts Must Be Satisfied)

MINIMUM REQUIREMENTS	DISTANCE TO NEAREST SIGNAL	
≥ 1000 ft	N _____ ft, S _____ ft, E _____ ft, W _____ ft	Yes ☐ No ☐
On a one-way street or a street that has traffic predominantly in one direction, the adjacent traffic control signals are so far apart that they do not provide the necessary degree of vehicular platooning.		Yes ☐ No ☐
OR, On a two-way street, adjacent traffic control signals do not provide the necessary degree of platooning and the proposed and adjacent traffic control signals will collectively provide a progressive operation.		

WARRANT 7 - Crash Experience Warrant **SATISFIED YES ☐ NO ☑**
(All Parts Must Be Satisfied)

Adequate trial of alternatives with satisfactory observance and enforcement has failed to reduce the crash frequency.			Yes ☐ No ☐
REQUIREMENTS	Number of crashes reported within a 12 month period susceptible to correction by a traffic signal, and involving injury or damage exceeding the requirements for a reportable crash.		Yes ☐ No ☑
5 OR MORE			
REQUIREMENTS	CONDITIONS	✓	
ONE CONDITION SATISFIED 80%	Warrant 1, Condition A - Minimum Vehicular Volume		Yes ☐ No ☐
	OR, Warrant 1, Condition B - Interruption of Continuous Traffic		
	OR, Warrant 4, Pedestrian Volume Condition Ped Vol ≥ 80% of Figure 4C-5 through Figure 4C-8		

Warrant 8
Not applicable - Alta Mesa is not a major road.

WARRANT 8 - Roadway Network **SATISFIED YES ☐ NO ☐**
(All Parts Must Be Satisfied)

MINIMUM VOLUME REQUIREMENTS	ENTERING VOLUMES - ALL APPROACHES	✓	FULFILLED
1000 Veh/Hr	During Typical Weekday Peak Hour _____ Veh/Hr and has 5-year projected traffic volumes that meet one or more of Warrants 1, 2, and 3 during an average weekday.		Yes ☐ No ☐
	OR During Each of Any 5 Hrs. of a Sat. or Sun _____ Veh/Hr		

CHARACTERISTICS OF MAJOR ROUTES	MAJOR ROUTE A	MAJOR ROUTE B	
Hwy. System Serving as Principal Network for Through Traffic			
Rural or Suburban Highway Outside Of, Entering, or Traversing a City			
Appears as Major Route on an Official Plan			
Any Major Route Characteristics Met, Both Streets			Yes ☐ No ☐

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 5 of 5)

Warrant 9
Not applicable - no nearby rail network.

WARRANT 9 - Intersection Near a Grade Crossing **SATISFIED YES ☐ NO ☐**
(Both Parts A and B Must Be Satisfied)

PART A A grade crossing exists on an approach controlled by a STOP or YIELD sign and the center of the track nearest to the intersection is within 140 feet of the stop line or yield line on the approach. Track Center Line to Limit Line _____ ft	Yes ☐ No ☐
PART B **There is one minor street approach lane at the track crossing -** During the highest traffic volume hour during which rail traffic uses the crossing, the plotted point falls above the applicable curve in Figure 4C-9. Major Street - Total of both approaches: _____ VPH Minor Street - Crosses the track (one direction only, approaching the intersection): _____ VPH X AF (Use Tables 4C-2, 3, & 4 below to calculate AF) = _____ VPH	Yes ☐ No ☐
OR, There are two or more minor street approach lanes at the track crossing - During the highest traffic volume hour during which rail traffic uses the crossing, the plotted point falls above the applicable curve in Figure 4C-10. Major Street - Total of both approaches : _____ VPH Minor Street - Crosses the track (one direction only, approaching the intersection): _____ VPH X AF (Use Tables 4C-2, 3, & 4 below to calcualte AF) = _____ VPH	

The minor street approach volume may be multiplied by up to three following adjustment factors (AF) as described in Section 4C.10.

1- Number of Rail Traffic per Day_____ Adjustment factor from table 4C-2____

2- Percentage of High-Occupancy Buses on Minor Street Approach_____ Adjustment factor from table 4C-3____

3- Percentage of Tractor-Trailer Trucks on Minor Street Approach_____ Adjustment factor from table 4C-4____

NOTE: If no data is availale or known, then use AF = 1 (no adjustment)

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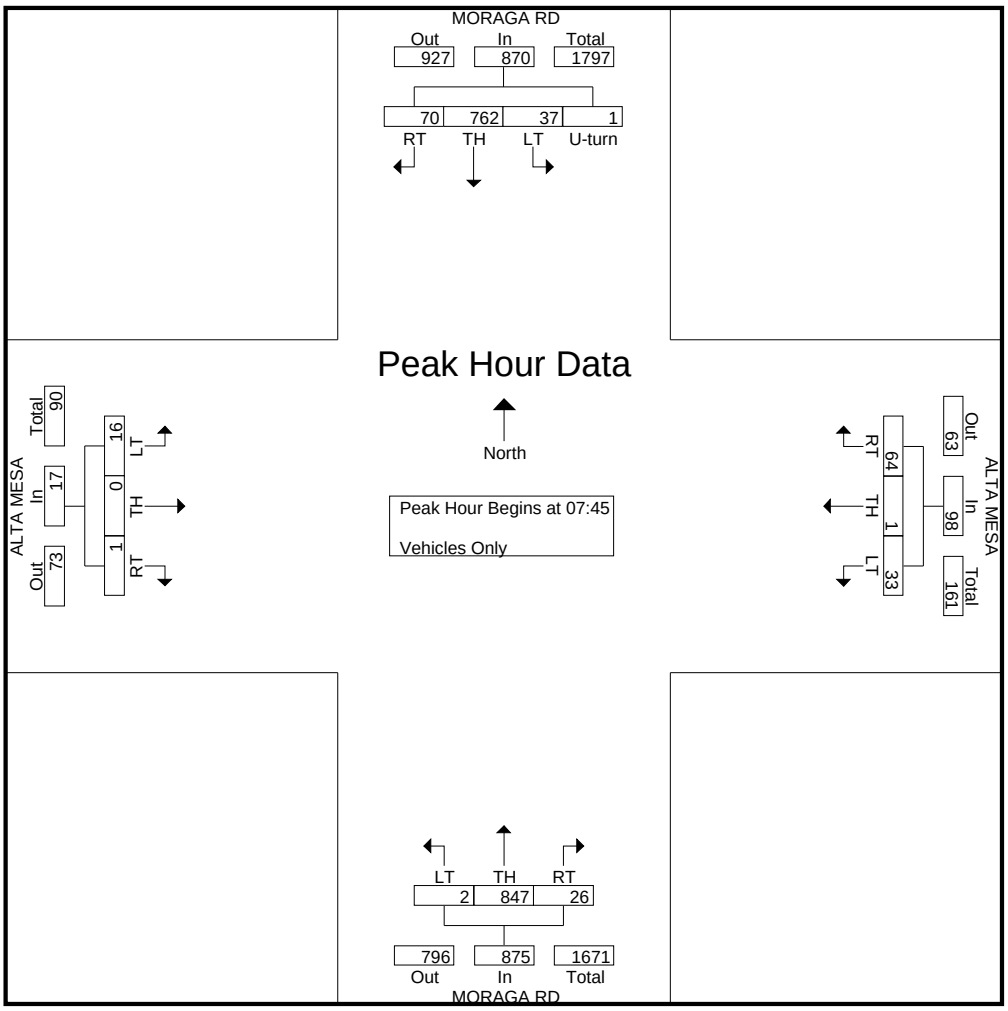
TOWN OF MORAGA
Moraga Rd. & Alta Mesa
Latitude: 37.837473
Longitude: -122.1275777

File Name : moraga-alta mesa-a
Site Code : 2
Start Date : 9/17/2024
Page No : 1

Groups Printed- Vehicles Only

	MORAGA RD Southbound					ALTA MESA Westbound				MORAGA RD Northbound				ALTA MESA Eastbound				
Start Time	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
07:00	8	66	0	0	74	6	3	3	12	4	59	0	63	1	0	2	3	152
07:15	14	78	1	0	93	4	2	5	11	1	77	0	78	0	0	2	2	184
07:30	15	108	1	1	125	7	2	4	13	0	120	0	120	0	2	2	4	262
07:45	16	146	12	0	174	24	0	7	31	4	185	0	189	1	0	5	6	400
Total	53	398	14	1	466	41	7	19	67	9	441	0	450	2	2	11	15	998
08:00	17	238	5	1	261	23	1	14	38	7	233	0	240	0	0	1	1	540
08:15	17	238	9	0	264	13	0	9	22	8	240	1	249	0	0	4	4	539
08:30	20	140	11	0	171	4	0	3	7	7	189	1	197	0	0	6	6	381
08:45	11	141	0	1	153	9	3	3	15	1	150	0	151	1	0	9	10	329
Total	65	757	25	2	849	49	4	29	82	23	812	2	837	1	0	20	21	1789
Grand Total	118	1155	39	3	1315	90	11	48	149	32	1253	2	1287	3	2	31	36	2787
Apprch %	9	87.8	3	0.2		60.4	7.4	32.2		2.5	97.4	0.2		8.3	5.6	86.1		
Total %	4.2	41.4	1.4	0.1	47.2	3.2	0.4	1.7	5.3	1.1	45	0.1	46.2	0.1	0.1	1.1	1.3	

	MORAGA RD Southbound					ALTA MESA Westbound				MORAGA RD Northbound				ALTA MESA Eastbound				
Start Time	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 07:45																		
07:45	16	146	**12**	0	174	**24**	0	7	31	4	185	0	189	**1**	0	5	**6**	400
08:00	17	**238**	5	**1**	261	23	**1**	**14**	**38**	7	233	0	240	0	0	1	1	**540**
08:15	17	238	9	0	**264**	13	0	9	22	**8**	**240**	**1**	**249**	0	0	4	4	539
08:30	**20**	140	11	0	171	4	0	3	7	7	189	1	197	0	0	**6**	6	381
Total Volume	70	762	37	1	870	64	1	33	98	26	847	2	875	1	0	16	17	1860
% App. Total	8	87.6	4.3	0.1		65.3	1	33.7		3	96.8	0.2		5.9	0	94.1		
PHF	.875	.800	.771	.250	.824	.667	.250	.589	.645	.813	.882	.500	.879	.250	.000	.667	.708	.861



TRAFFIC COUNTS PLUS
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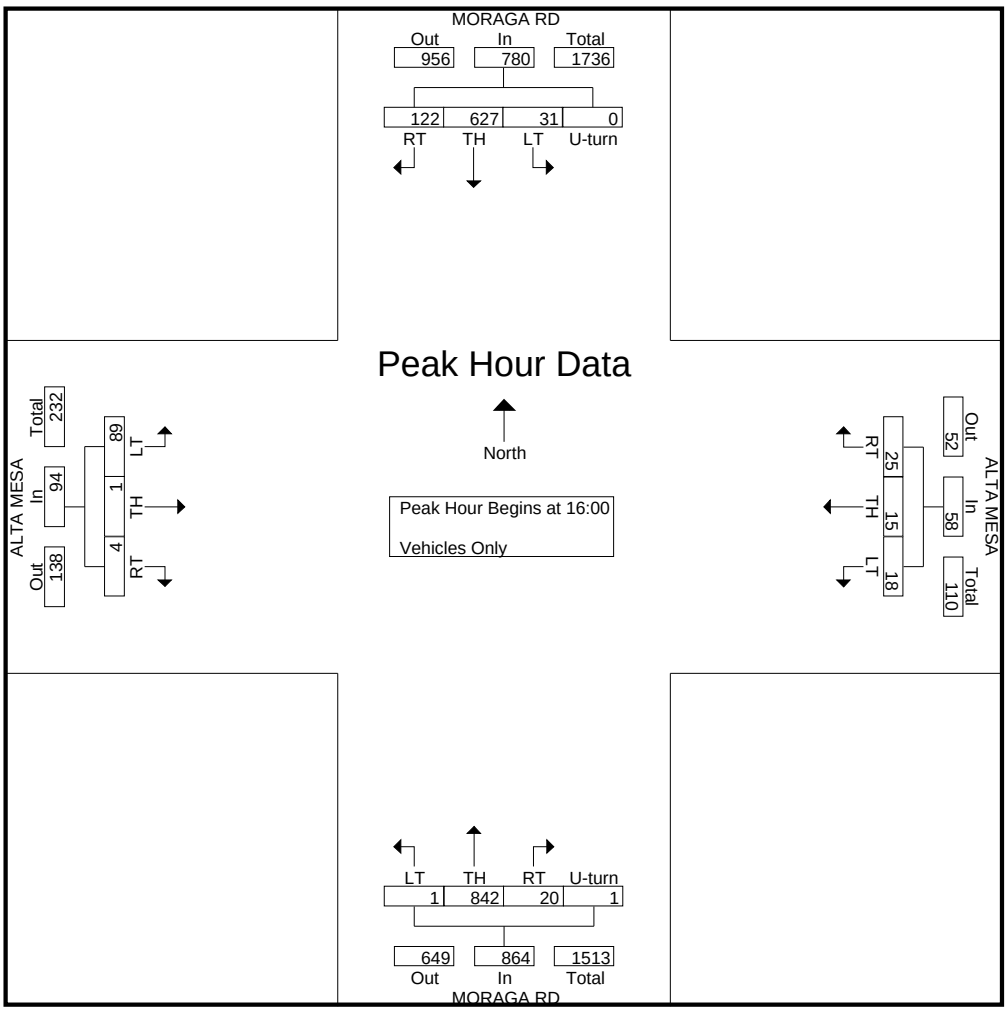
TOWN OF MORAGA
Moraga Rd. & Alta Mesa
Latitude: 37.837473
Longitude: -122.1275777

File Name : moraga-alta mesa-p
Site Code : 2
Start Date : 9/17/2024
Page No : 1

Groups Printed- Vehicles Only

	MORAGA RD Southbound					ALTA MESA Westbound				MORAGA RD Northbound					ALTA MESA Eastbound				
Start Time	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	24	140	8	0	172	5	4	5	14	4	209	1	1	215	0	0	18	18	419
16:15	35	176	9	0	220	5	1	0	6	5	236	0	0	241	2	0	26	28	495
16:30	36	140	8	0	184	10	3	6	19	1	226	0	0	227	2	0	23	25	455
16:45	27	171	6	0	204	5	7	7	19	10	171	0	0	181	0	1	22	23	427
Total	122	627	31	0	780	25	15	18	58	20	842	1	1	864	4	1	89	94	1796
17:00	29	121	7	2	159	12	1	4	17	8	203	2	0	213	3	0	20	23	412
17:15	24	141	8	0	173	10	0	3	13	7	202	0	0	209	1	2	19	22	417
17:30	30	167	14	0	211	9	0	5	14	9	205	0	0	214	0	0	23	23	462
17:45	31	174	19	0	224	8	1	8	17	10	213	0	0	223	1	2	14	17	481
Total	114	603	48	2	767	39	2	20	61	34	823	2	0	859	5	4	76	85	1772
Grand Total	236	1230	79	2	1547	64	17	38	119	54	1665	3	1	1723	9	5	165	179	3568
Apprch %	15.3	79.5	5.1	0.1		53.8	14.3	31.9		3.1	96.6	0.2	0.1		5	2.8	92.2		
Total %	6.6	34.5	2.2	0.1	43.4	1.8	0.5	1.1	3.3	1.5	46.7	0.1	0	48.3	0.3	0.1	4.6	5	

	MORAGA RD Southbound					ALTA MESA Westbound				MORAGA RD Northbound					ALTA MESA Eastbound				
Start Time	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 16:00																			
16:00	24	140	8	0	172	5	4	5	14	4	209	**1**	**1**	215	0	0	18	18	419
16:15	35	**176**	**9**	0	**220**	5	1	0	6	5	**236**	0	0	**241**	**2**	0	**26**	**28**	**495**
16:30	**36**	140	8	0	184	**10**	3	6	**19**	1	226	0	0	227	2	0	23	25	455
16:45	27	171	6	0	204	5	**7**	**7**	19	**10**	171	0	0	181	0	**1**	22	23	427
Total Volume	122	627	31	0	780	25	15	18	58	20	842	1	1	864	4	1	89	94	1796
% App. Total	15.6	80.4	4	0		43.1	25.9	31		2.3	97.5	0.1	0.1		4.3	1.1	94.7		
PHF	.847	.891	.861	.000	.886	.625	.536	.643	.763	.500	.892	.250	.250	.896	.500	.250	.856	.839	.907



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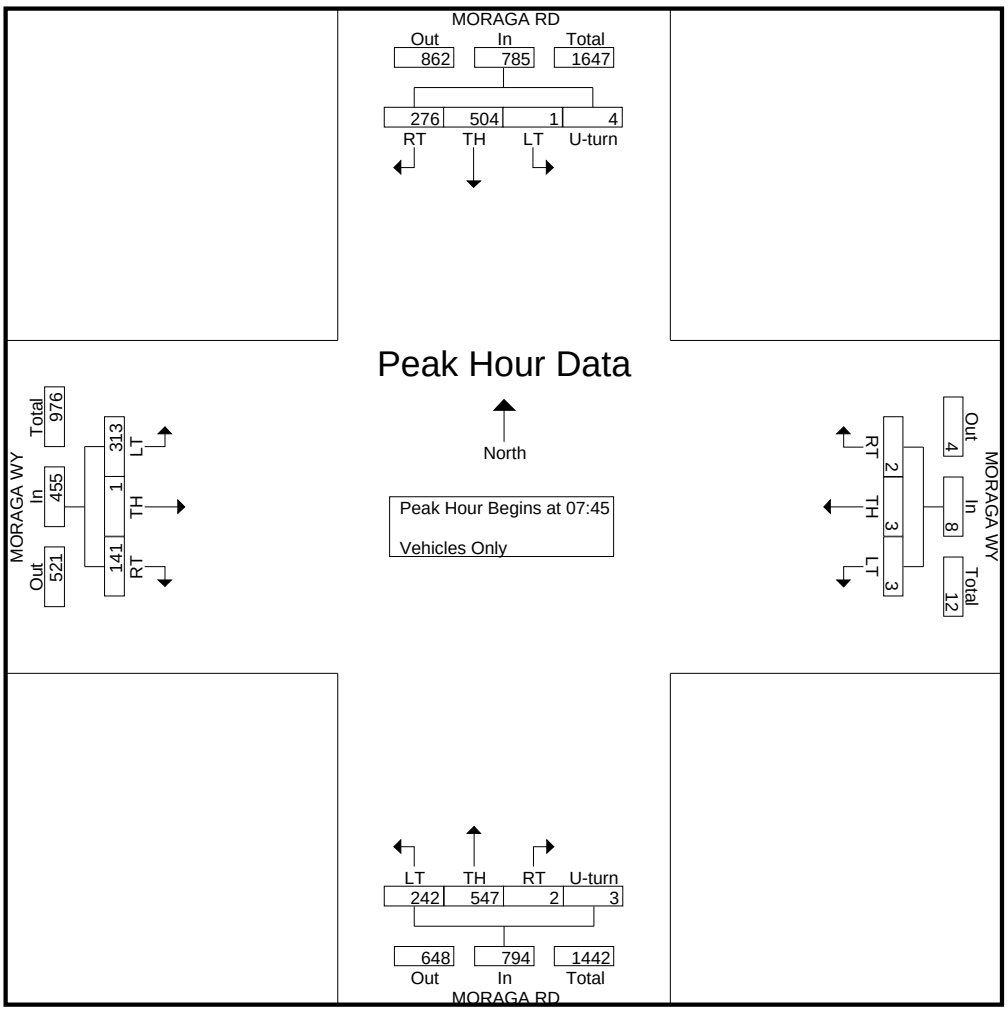
TOWN OF MORAGA
Moraga Rd. & Moraga Way
Latitude: 37.834005
Longitude: -122.127462

File Name : moraga-moraga-a
Site Code : 1
Start Date : 9/17/2024
Page No : 1

Groups Printed- Vehicles Only

	MORAGA RD Southbound					MORAGA WY Westbound				MORAGA RD Northbound					MORAGA WY Eastbound				
Start Time	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	Int. Total
07:00	29	39	0	0	68	4	0	0	4	1	34	23	0	58	10	0	26	36	166
07:15	28	46	0	0	74	0	0	0	0	0	52	40	0	92	9	0	26	35	201
07:30	49	66	0	0	115	2	2	0	4	0	73	30	0	103	22	0	52	74	296
07:45	58	77	0	1	136	2	2	1	5	0	124	49	0	173	24	0	63	87	401
Total	164	228	0	1	393	8	4	1	13	1	283	142	0	426	65	0	167	232	1064
08:00	74	173	1	1	249	0	1	2	3	1	163	62	3	229	40	1	68	109	590
08:15	80	165	0	2	247	0	0	0	0	1	170	89	0	260	34	0	92	126	633
08:30	64	89	0	0	153	0	0	0	0	0	90	42	0	132	43	0	90	133	418
08:45	59	75	1	1	136	0	0	0	0	0	83	36	0	119	36	0	65	101	356
Total	277	502	2	4	785	0	1	2	3	2	506	229	3	740	153	1	315	469	1997
Grand Total	441	730	2	5	1178	8	5	3	16	3	789	371	3	1166	218	1	482	701	3061
Apprch %	37.4	62	0.2	0.4		50	31.2	18.8		0.3	67.7	31.8	0.3		31.1	0.1	68.8		
Total %	14.4	23.8	0.1	0.2	38.5	0.3	0.2	0.1	0.5	0.1	25.8	12.1	0.1	38.1	7.1	0	15.7	22.9	

	MORAGA RD Southbound					MORAGA WY Westbound				MORAGA RD Northbound					MORAGA WY Eastbound				
Start Time	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 07:45																			
07:45	58	77	0	1	136	**2**	**2**	1	**5**	0	124	49	0	173	24	0	63	87	401
08:00	74	**173**	**1**	1	**249**	0	1	**2**	3	**1**	163	62	**3**	229	40	**1**	68	109	590
08:15	**80**	165	0	**2**	247	0	0	0	0	1	**170**	**89**	0	**260**	34	0	**92**	126	**633**
08:30	64	89	0	0	153	0	0	0	0	0	90	42	0	132	**43**	0	90	**133**	418
Total Volume	276	504	1	4	785	2	3	3	8	2	547	242	3	794	141	1	313	455	2042
% App. Total	35.2	64.2	0.1	0.5		25	37.5	37.5		0.3	68.9	30.5	0.4		31	0.2	68.8		
PHF	.863	.728	.250	.500	.788	.250	.375	.375	.400	.500	.804	.680	.250	.763	.820	.250	.851	.855	.806



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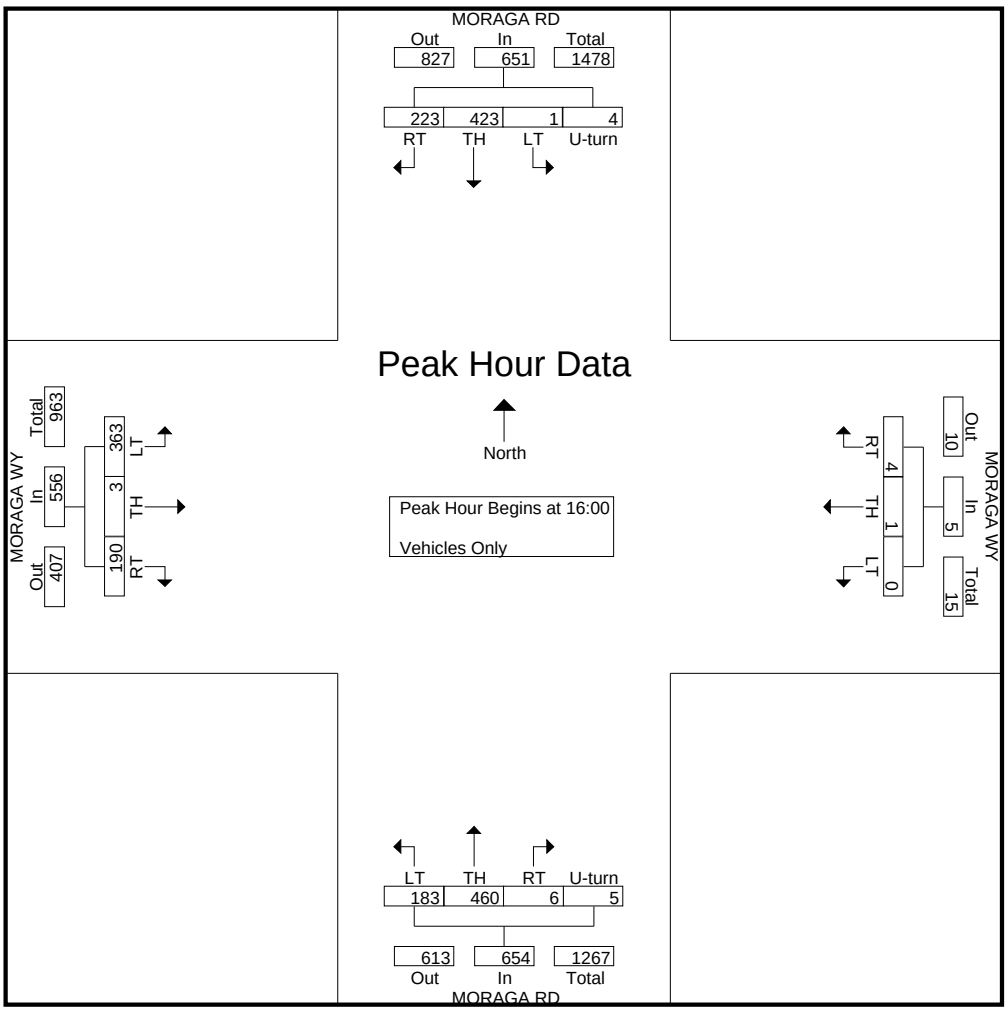
TOWN OF MORAGA
Moraga Rd. & Moraga Way
Latitude: 37.834005
Longitude: -122.127462

File Name : moraga-moraga-p
Site Code : 1
Start Date : 9/17/2024
Page No : 1

Groups Printed- Vehicles Only

	MORAGA RD Southbound					MORAGA WY Westbound				MORAGA RD Northbound					MORAGA WY Eastbound				
Start Time	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	40	108	0	1	149	1	1	0	2	1	116	44	1	162	47	2	97	146	459
16:15	57	113	1	2	173	0	0	0	0	0	126	34	3	163	39	0	97	136	472
16:30	58	95	0	1	154	2	0	0	2	0	125	55	1	181	40	0	87	127	464
16:45	68	107	0	0	175	1	0	0	1	5	93	50	0	148	64	1	82	147	471
Total	223	423	1	4	651	4	1	0	5	6	460	183	5	654	190	3	363	556	1866
17:00	37	98	1	1	137	0	0	0	0	0	106	45	1	152	40	0	107	147	436
17:15	48	105	0	0	153	0	1	0	1	0	117	53	1	171	46	0	81	127	452
17:30	67	109	0	1	177	0	0	0	0	0	110	34	2	146	38	3	105	146	469
17:45	56	119	0	1	176	1	1	0	2	0	128	32	2	162	49	0	84	133	473
Total	208	431	1	3	643	1	2	0	3	0	461	164	6	631	173	3	377	553	1830
Grand Total	431	854	2	7	1294	5	3	0	8	6	921	347	11	1285	363	6	740	1109	3696
Apprch %	33.3	66	0.2	0.5		62.5	37.5	0		0.5	71.7	27	0.9		32.7	0.5	66.7		
Total %	11.7	23.1	0.1	0.2	35	0.1	0.1	0	0.2	0.2	24.9	9.4	0.3	34.8	9.8	0.2	20	30	

	MORAGA RD Southbound					MORAGA WY Westbound				MORAGA RD Northbound					MORAGA WY Eastbound				
Start Time	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 16:00																			
16:00	40	108	0	1	149	1	**1**	0	**2**	1	116	44	1	162	47	**2**	**97**	146	459
16:15	57	**113**	**1**	**2**	173	0	0	0	0	0	**126**	34	**3**	163	39	0	97	136	**472**
16:30	58	95	0	1	154	**2**	0	0	2	0	125	**55**	1	**181**	40	0	87	127	464
16:45	**68**	107	0	0	**175**	1	0	0	1	**5**	93	50	0	148	**64**	1	82	**147**	471
Total Volume	223	423	1	4	651	4	1	0	5	6	460	183	5	654	190	3	363	556	1866
% App. Total	34.3	65	0.2	0.6		80	20	0		0.9	70.3	28	0.8		34.2	0.5	65.3		
PHF	.820	.936	.250	.500	.930	.500	.250	.000	.625	.300	.913	.832	.417	.903	.742	.375	.936	.946	.988



TRAFFIC COUNTS PLUS
mietekm@comcast.net
925.305.4358

TOWN OF MORAGA
Moraga Rd. & Alta Mesa
Latitude: 37.837473
Longitude: -122.1275777

File Name : moraga-alta mesa-14
Site Code : 2
Start Date : 1/15/2025
Page No : 1

Groups Printed- Vehicles Only

	MORAGA RD Southbound				ALTA MESA Westbound				MORAGA RD Northbound				ALTA MESA Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
06:00	2	30	2	34	3	0	4	7	2	18	0	20	0	0	2	2	63
06:15	6	32	2	40	5	0	3	8	0	36	0	36	0	0	0	0	84
06:30	2	27	0	29	5	1	3	9	0	33	0	33	0	0	2	2	73
06:45	5	38	4	47	6	1	4	11	1	40	0	41	0	0	2	2	101
Total	15	127	8	150	19	2	14	35	3	127	0	130	0	0	6	6	321
07:00	8	42	3	53	2	1	3	6	0	40	0	40	0	0	2	2	101
07:15	15	79	1	95	8	2	5	15	1	84	0	85	0	0	3	3	198
07:30	9	103	3	115	10	4	6	20	4	127	0	131	0	1	4	5	271
07:45	11	145	6	162	15	2	10	27	1	160	0	161	1	0	3	4	354
Total	43	369	13	425	35	9	24	68	6	411	0	417	1	1	12	14	924
08:00	20	247	6	273	34	1	12	47	6	243	0	249	1	1	3	5	574
08:15	22	226	10	258	14	1	4	19	9	245	1	255	1	2	6	9	541
08:30	17	157	10	184	9	0	3	12	3	178	0	181	1	1	9	11	388
08:45	16	141	4	161	10	2	0	12	7	170	1	178	1	0	10	11	362
Total	75	771	30	876	67	4	19	90	25	836	2	863	4	4	28	36	1865
09:00	12	106	2	120	4	0	6	10	3	130	0	133	0	0	10	10	273
09:15	3	110	4	117	10	2	4	16	7	131	0	138	0	1	13	14	285
09:30	17	101	4	122	6	0	5	11	3	138	0	141	0	0	15	15	289
09:45	21	107	2	130	5	0	2	7	2	109	0	111	0	0	6	6	254
Total	53	424	12	489	25	2	17	44	15	508	0	523	0	1	44	45	1101
10:00	19	81	7	107	12	3	3	18	4	94	0	98	1	0	6	7	230
10:15	24	77	0	101	8	1	1	10	2	111	0	113	0	1	9	10	234
10:30	23	87	4	114	7	1	4	12	3	127	0	130	0	0	18	18	274
10:45	38	100	7	145	2	0	3	5	6	121	0	127	0	1	18	19	296
Total	104	345	18	467	29	5	11	45	15	453	0	468	1	2	51	54	1034
11:00	25	111	5	141	12	1	4	17	4	136	0	140	0	0	13	13	311
11:15	26	98	4	128	8	2	0	10	1	139	0	140	0	0	22	22	300
11:30	23	110	6	139	10	2	7	19	3	135	0	138	0	0	12	12	308
11:45	30	131	3	164	11	4	5	20	1	167	0	168	1	3	18	22	374
Total	104	450	18	572	41	9	16	66	9	577	0	586	1	3	65	69	1293
12:00	31	107	9	147	11	4	2	17	5	154	0	159	0	5	17	22	345
12:15	39	92	3	134	9	4	2	15	4	116	0	120	0	2	24	26	295
12:30	32	100	6	138	6	3	3	12	2	125	0	127	0	0	26	26	303
12:45	23	121	6	150	3	0	1	4	5	131	1	137	2	2	16	20	311
Total	125	420	24	569	29	11	8	48	16	526	1	543	2	9	83	94	1254
13:00	26	127	3	156	5	2	3	10	2	127	0	129	1	1	16	18	313
13:15	30	98	4	132	7	0	2	9	4	120	0	124	1	2	20	23	288
13:30	43	185	13	241	9	1	4	14	4	147	0	151	1	2	16	19	425
13:45	29	153	6	188	6	2	3	11	9	136	0	145	0	1	20	21	365
Total	128	563	26	717	27	5	12	44	19	530	0	549	3	6	72	81	1391
14:00	28	171	14	213	4	1	5	10	5	130	0	135	1	0	16	17	375
14:15	33	146	6	185	4	0	7	11	8	206	0	214	0	0	33	33	443
14:30	28	137	7	172	9	2	6	17	4	197	0	201	0	1	20	21	411
14:45	27	155	13	195	13	4	6	23	10	132	0	142	1	2	22	25	385
Total	116	609	40	765	30	7	24	61	27	665	0	692	2	3	91	96	1614
15:00	34	148	6	188	8	0	4	12	3	178	0	181	0	1	20	21	402
15:15	40	163	10	213	14	0	3	17	4	198	0	202	2	0	11	13	445
15:30	22	152	5	179	9	1	3	13	7	208	0	215	0	2	13	15	422
15:45	33	209	14	256	9	1	1	11	9	251	1	261	2	0	21	23	551
Total	129	672	35	836	40	2	11	53	23	835	1	859	4	3	65	72	1820
16:00	34	131	12	177	10	1	3	14	9	246	0	255	1	2	11	14	460
16:15	32	120	5	157	7	1	6	14	7	205	0	212	1	3	19	23	406
16:30	34	155	6	195	3	2	5	10	5	209	0	214	2	0	21	23	442
16:45	39	147	9	195	4	0	2	6	13	221	1	235	2	2	23	27	463
Total	139	553	32	724	24	4	16	44	34	881	1	916	6	7	74	87	1771
17:00	47	144	10	201	8	1	1	10	7	212	1	220	0	0	10	10	441
17:15	32	137	9	178	9	1	4	14	5	233	0	238	1	0	21	22	452
17:30	38	158	10	206	8	1	1	10	11	233	1	245	1	0	29	30	491
17:45	31	164	7	202	9	2	2	13	11	199	0	210	1	3	22	26	451
Total	148	603	36	787	34	5	8	47	34	877	2	913	3	3	82	88	1835
18:00	29	132	12	173	8	0	2	10	6	152	0	158	2	2	20	24	365
18:15	14	107	8	129	7	1	0	8	6	139	1	146	0	0	17	17	300
18:30	19	89	6	114	3	2	1	6	9	113	0	122	1	2	20	23	265
18:45	19	102	6	127	7	1	2	10	6	104	1	111	0	2	19	21	269
Total	81	430	32	543	25	4	5	34	27	508	2	537	3	6	76	85	1199

TRAFFIC COUNTS PLUS
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TOWN OF MORAGA
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Groups Printed- Vehicles Only

	MORAGA RD Southbound				ALTA MESA Westbound				MORAGA RD Northbound				ALTA MESA Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
19:00	10	93	6	109	3	2	3	8	6	79	1	86	0	1	13	14	217
19:15	12	96	6	114	3	1	2	6	8	56	0	64	1	0	20	21	205
19:30	3	75	3	81	5	2	2	9	4	66	0	70	0	0	17	17	177
19:45	11	70	7	88	4	3	0	7	5	46	0	51	0	2	6	8	154
Total	36	334	22	392	15	8	7	30	23	247	1	271	1	3	56	60	753
Grand Total	1296	6670	346	8312	440	77	192	709	276	7981	10	8267	31	51	805	887	18175
Apprch %	15.6	80.2	4.2		62.1	10.9	27.1		3.3	96.5	0.1		3.5	5.7	90.8		
Total %	7.1	36.7	1.9	45.7	2.4	0.4	1.1	3.9	1.5	43.9	0.1	45.5	0.2	0.3	4.4	4.9	

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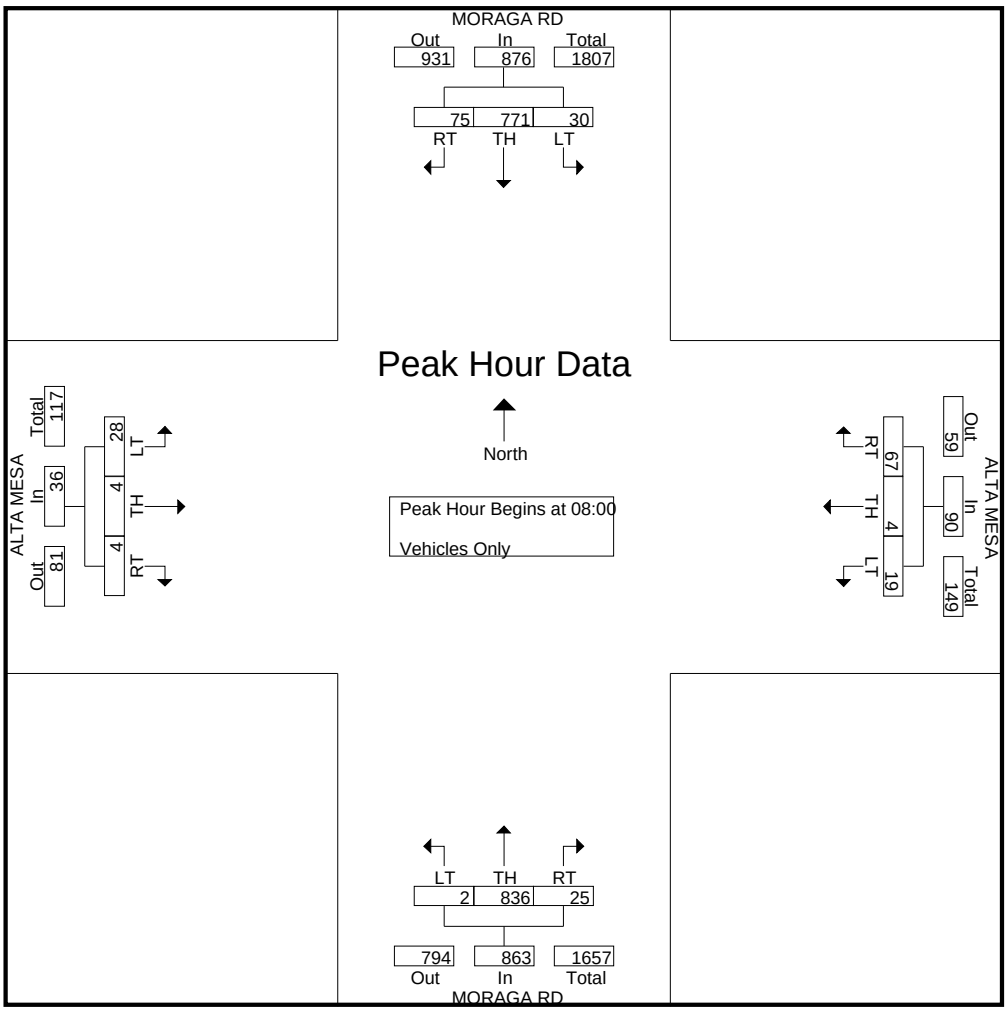
	MORAGA RD Southbound				ALTA MESA Westbound				MORAGA RD Northbound				ALTA MESA Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 06:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00																	
08:00	20	**247**	6	**273**	**34**	1	**12**	**47**	6	243	0	249	**1**	1	3	5	**574**
08:15	**22**	226	**10**	258	14	1	4	19	**9**	**245**	**1**	**255**	1	**2**	6	9	541
08:30	17	157	10	184	9	0	3	12	3	178	0	181	1	1	9	**11**	388
08:45	16	141	4	161	10	**2**	0	12	7	170	1	178	1	0	**10**	11	362
Total Volume	75	771	30	876	67	4	19	90	25	836	2	863	4	4	28	36	1865
% App. Total	8.6	88	3.4		74.4	4.4	21.1		2.9	96.9	0.2		11.1	11.1	77.8		
PHF	.852	.780	.750	.802	.493	.500	.396	.479	.694	.853	.500	.846	1.00	.500	.700	.818	.812



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TOWN OF MORAGA
Moraga Rd. & Alta Mesa
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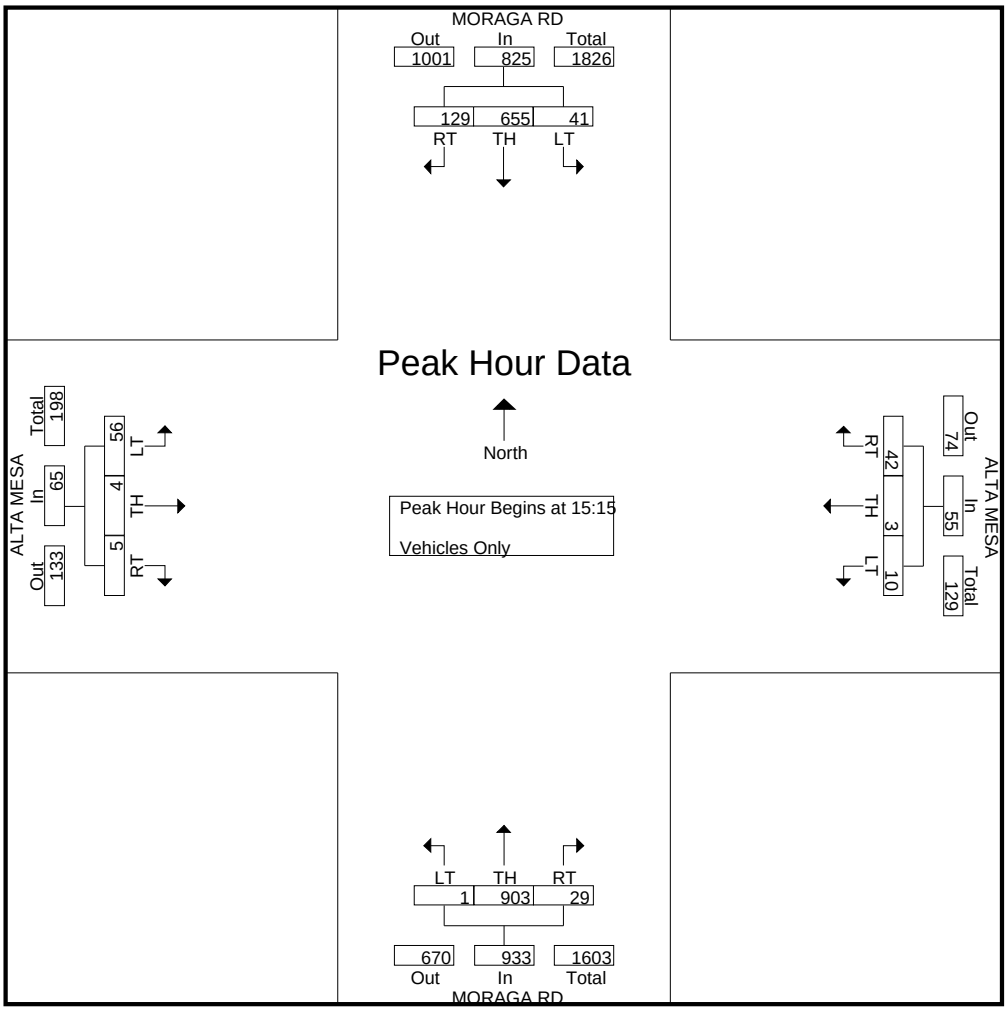
Start Date : 1/15/2025
Page No : 4

	MORAGA RD Southbound				ALTA MESA Westbound				MORAGA RD Northbound				ALTA MESA Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 15:00 to 19:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 15:15																	
15:15	**40**	163	10	213	**14**	0	**3**	**17**	4	198	0	202	**2**	0	11	13	445
15:30	22	152	5	179	9	**1**	3	13	7	208	0	215	0	**2**	13	15	422
15:45	33	**209**	**14**	**256**	9	1	1	11	**9**	**251**	**1**	**261**	2	0	**21**	**23**	**551**
16:00	34	131	12	177	10	1	3	14	9	246	0	255	1	2	11	14	460
Total Volume	129	655	41	825	42	3	10	55	29	903	1	933	5	4	56	65	1878
% App. Total	15.6	79.4	5		76.4	5.5	18.2		3.1	96.8	0.1		7.7	6.2	86.2		
PHF	.806	.783	.732	.806	.750	.750	.833	.809	.806	.899	.250	.894	.625	.500	.667	.707	.852



CASE_ID	ACCIDENT YEAR	PRIMARY RD	SECONDARY RD	DISTANCE	DIRECTION	INTERSECTION	WEATHER_1	COLLISION SEVERITY	NUMBER KILLED	NUMBER INJURED	PARTY COUNT	PRIMARY COLL FACTOR	HIT AND RUN	TYPE OF COLLISION	PED ACTION	ROAD SURFACE	LIGHTING	PEDESTRIAN ACCIDENT	BICYCLE ACCIDENT	ALCOHOL INVOLVED
91589538	2021	SR-24 EB	CAMINO PABLO	1000	W	N	A	3	0	2	2	A	N	B	A	A	A			
9166185	2020	MORAGA RD	LUCAS DR	0		Y	A	3	0	2	2	A	N	A	A	A	A			
9166186	2020	CANYON RD	LARCH AV	0		Y	A	3	0	1	2	A	N	C	A	A	A		Y	
9187901	2020	WANDEL DR	LARCH AV	0		Y	A	4	0	1	3	A	N	E	A	A	C			Y
9250540	2021	SAINT MARYS	RHEEM BL	0		Y	A	3	0	1	2	A	N	D	A	A	A		Y	
9267078	2021	CANYON RD	LARCH AV	106	N	N	A	4	0	1	2	C	N	E	A	A	A			
9282110	2021	MORAGA RD	MORAGA WY	378		N	A	4	0	1	4	A	N	H	A	A	A			
9320684	2021	MORAGA RD	MORAGA RD 523	0		N	A	1	1	0	2	A	N	H	A	A	A		Y	
9351626	2021	MORAGA RD	CAMPOLIONDO DR	0		Y	A	3	0	1	2	A	N	D	A	A	A			
9368755	2021	MORAGA RD	BUCKINGHAM DR	0		Y	A	3	0	1	4	A	N	C	A	A	A			
9369139	2021	FERNWOOD DR	WILLOW SPRINGS	0		Y	A	3	0	1	2	A	N	D	A	A	A		Y	
9369140	2021	MORAGA RD	MARYS RD	452	N	N	A	3	0	1	1	A	N	E	A	-	C			Y
9380606	2021	MORAGA RD	RHEEM BL	0		Y	A	3	0	2	3	A	N	D	A	A	A			
9424918	2022	MORAGA RD	ALTA MESA	0		Y	B	4	0	2	2	A	N	D	A	B	A			
9437425	2022	RHEEM BL	CENTER ST	375	W	N	A	3	0	1	2	A	N	C	A	A	A			
9459062	2022	MORAGA RD	ASCOT DR	0		Y	A	3	0	1	2	A	N	B	A	A	A		Y	
9465047	2022	MORAGA RD	CORLISS DR	0		Y	B	4	0	1	3	A	N	C	A	B	A			
9465202	2022	MORAGA RD	CORLISS DR	0		Y	A	2	0	1	2	A	N	B	A	A	A		Y	
9465203	2022	CAMINO PABLO	SANDERS RANCH	18	S	N	A	2	0	1	1	C	N	E	A	A	A			Y
9471831	2023	ASCOT DR	ASCOT DR 2009	0		N	B	4	0	1	1	A	N	E	A	A	C			Y
9471832	2023	CAMINO PABLO	DUARTE CT	108	W	N	A	4	0	1	2	A	N	E	A	A	A		Y	
9474778	2022	MORAGA WY	MIRAMONTE DR	0		N	A	4	0	1	2	A	N	F	E	A	C	Y		Y
9493743	2022	MORAGA RD	CORLISS DR	0		Y	A	3	0	2	2	A	N	F	A	A	A			
9518921	2022	MADRONE PKWY	BUTTERFIELD BL	830	E	N	A	4	0	1	1	A	N	E	A	A	A			
9566663	2022	MORAGA RD	SAINT MARYS RD	967	N	N	A	4	0	1	3	A	N	C	A	A	A			
9576559	2023	BOLLINGER	JOSEPH DR	580	W	N	A	4	0	1	1	A	N	E	A	A	A			
9577060	2023	MORAGA WY	HARDIE DR	72	W	N	A	3	0	1	3	A	N	C	A	A	A			
9577312	2023	RHEEM BL	CENTER ST	0		Y	A	4	0	2	3	A	N	D	A	A	A			
9612327	2023	MORAGA WY	VILLA LN	0		Y	A	3	0	1	2	A	N	E	A	A	A			
9641702	2023	FERNWOOD DR	FERNWOOD DR	0		N	A	4	0	1	2	A	N	D	A	A	A			Y
9641800	2023	SAINT MARYS	ST MARYS PKWY	0		Y	A	2	0	1	2	A	N	G	C	A	A	Y		
9689240	2023	MORAGA RD	RHEEM BL	6	S	N	C	4	0	2	2	A	N	A	A	B	C			
9690892	2024	MORAGA RD	ALTA MESA DR	0		Y	A	4	0	1	2	A	N	D	A	A	A			
9699435	2024	MORAGA WY	SAINT ANDREWS	0		Y	A	4	0	1	2	A	N	H	A	A	A			Y

FEHR PEERS

Memorandum

Date: March 6, 2025

To: Nate Levine, Town of Moraga

From: Mark Howard, PE, Rob Rees, PE and Ken Der, Fehr & Peers

Subject: Canyon Road Traffic Study from Larch Avenue to Country Club Drive

WC24-4102.00

Fehr & Peers conducted a focused analysis to determine the feasibility of removing the crosswalk at Canyon Road and Sanders Drive and to evaluate the existing user experience as part of the Moraga Road and Canyon Road Complete Streets Improvement Project (Project). Additionally, a traffic signal warrant analysis was conducted at Canyon Road and Country Club Drive as part of the crosswalk evaluation. The results of the signal warrant analysis are shown in **Attachment B**. This memorandum summarizes existing conditions at the Canyon Road and Sanders Drive intersection and provides recommendations to improve the crosswalk user experience.

Study Area

Canyon Road is an arterial roadway with a posted speed limit of 35 mph that runs north-south through the Town of Moraga and extends from Pinehurst Road and becomes Moraga Road north of Country Club Drive. In the study area, Canyon Road has two travel lanes in each direction that are separated by a median. Sidewalks are provided on both sides of the roadway and buffered bike lanes are provided in both directions.

The minor street, ***Sanders Drive***, is a local roadway with a posted speed limit of 25 mph that extends east from a T-intersection with Canyon Road. In the study area, Sanders Drive has one travel lane in each direction. Sidewalks are provided only on the northern side of the roadway.

The intersection includes side-street stop control (SSSC) on the Sanders Drive approach. Pedestrians cross Canyon Road using an existing crosswalk on the northern leg of the intersection.

Data Collection

Fehr & Peers retained a traffic count firm to conduct 24-hour pedestrian counts, as well as conduct a 24-hour speed and average daily traffic survey north and south of the study intersection. Counts were collected on clear weather days, while area schools were in session in September 2024. **Attachment A** presents the existing pedestrian counts for the study intersection and speed survey data.

Pedestrian Volumes

A daily total of 106 pedestrians crosses the Canyon/Sanders intersection, with 38 of them utilizing the northern crosswalk. The peak pedestrian crossing hour is between 9:00 AM and 10:00 AM, when 13 pedestrians utilize the northern crosswalk. Although most crossings occur during daylight hours, about 15% of pedestrians cross after sunset. **Table 1** presents pedestrian volumes at the Canyon/Sanders intersection.

Table 1: Pedestrian Volumes Crossing at Canyon/Sanders

From	To	Northern Crosswalk	Eastern Crosswalk	Total
12:00 AM	1:00 AM	0	0	0
1:00 AM	2:00 AM	0	0	0
2:00 AM	3:00 AM	0	0	0
3:00 AM	4:00 AM	0	0	0
4:00 AM	5:00 AM	0	0	0
5:00 AM	6:00 AM	0	0	0
6:00 AM	7:00 AM	1	3	4
7:00 AM	8:00 AM	3	5	8
8:00 AM	9:00 AM	2	9	11
9:00 AM	**10:00 AM**	**13**	**7**	**20**
10:00 AM	11:00 AM	3	2	5
11:00 AM	12:00 PM	2	4	6
12:00 PM	1:00 PM	0	2	2
1:00 PM	2:00 PM	0	4	4
2:00 PM	3:00 PM	0	6	6
3:00 PM	4:00 PM	2	3	5
4:00 PM	5:00 PM	5	10	15

Table 1: Pedestrian Volumes Crossing at Canyon/Sanders

From	To	Northern Crosswalk	Eastern Crosswalk	Total
5:00 PM	6:00 PM	3	5	8
6:00 PM	7:00 PM	2	4	6
7:00 PM	8:00 PM	2	1	3
8:00 PM	9:00 PM	0	0	0
9:00 PM	10:00 PM	0	2	2
10:00 PM	11:00 PM	0	0	0
11:00 PM	12:00 AM	0	1	1
Total		**38**	**68**	**106**

Source: Fehr & Peers, 2024

Vehicle Speeds and Daily Traffic Volumes

The posted speed limits on Canyon Road are 35 miles-per-hour. Traveling northbound on Canyon Road average vehicle speeds ranged between 31 to 35 miles-per-hour, and 85th percentile speed ranged from 38 to 41 miles-per-hour. In the southbound direction, average vehicle speeds ranged between 31 to 33 miles-per-hour, and 85th percentile speed ranged from 37 to 38 miles-per-hour, as summarized in **Table 2**.

Table 2: Average and 85th Percentile Speeds

#	Location	Average (mph)		85th Percentile (mph)	
		NB	SB	NB	SB
1	Canyon Road – Between Country Club Drive & Sanders Drive	35	33	41	38
2	Canyon Road – Between Sanders Drive & Larch Avenue	31	31	38	37

Source: Fehr & Peers, 2024

Average daily traffic (ADT) on Canyon Drive reaches 12,460 vehicles north of Sanders Drive and 11,388 vehicles south of Sanders Drive. ADT data is presented in **Table 3**.

Table 3: ADT

#	Location	NB	SB	Total
1	Canyon Road – Between Country Club Drive & Sanders Drive	6458	6002	12460
2	Canyon Road – Between Sanders Drive & Larch Avenue	5894	5494	11388

Source: Fehr & Peers, 2024

Collision History

This analysis incorporates crashes resulting in injuries and fatalities from 2014 to 2023 available through the Transportation Injury Mapping System (TIMS). TIMS was created by the Safe Transportation Research and Education Center (SafeTREC) and reports crashes using data from the Statewide Integrated Traffic Records System (SWITRS).

During the 10-year period from 2014 through 2023, there were 6 collisions that occurred on Canyon Road between Moraga Way and Larch Avenue. Of these collisions, 3 involved bicycles, but none involved pedestrians, as presented in **Table 4**.

Table 4: Corridor Collision History

Collision Year	Location	Crash Severity	Type of Crash	Violation	Pedestrian Involved?	Bicycle Involved?
2017	Canyon Dr & Country Club Drive	4 - Injury (complaint of pain)	Hit Object	Improper Turning	No	No
2019	Sanders Dr & Canyon Dr	3 - Injury (Other Visible)	Sideswipe	Improper Passing	No	Yes
2021	Canyon Dr & Larch Ave	4 - Injury (complaint of pain)	Hit Object	Other Than Driver (or Pedestrian)	No	No
2020	Canyon Dr & Larch Ave	3 - Injury (Other Visible)	Rear End	Unsafe Speed	No	Yes
2021	Moraga Rd & Moraga Way	4 - Injury (complaint of pain)	Other	Improper Turning	No	No
2021	Moraga Rd & Moraga Way	1 - Fatal	Other	Improper Turning	No	Yes

Notes:
1. TIMS corridor collision data pulled on Canyon Road between Larch Avenue and Moraga Way from 2014-2023

Source: Fehr & Peers, 2024

Stopping Sight Distance

A minimum stopping sight distance of 300-feet was used based on the 85th percentile speed of 40 miles-per-hour. Stopping sight distance in the southbound direction approaching the Sanders Drive crosswalk across Canyon Road, particularly for motorists in the left lane, is affected by the roadway curve, and vegetation in the median. Motorists in the left northbound lane and right lanes in both directions have adequate stopping sight distance, with few to no obstructions blocking visibility of the crosswalk. See **Figure 1** and **Figure 2** for the Existing Sight Distance and Proposed Project Sight Distance exhibits, respectively.

Signal Warrant Analysis

A signal warrant analysis was conducted at Canyon Road and Country Club Drive as part of the crosswalk evaluation to determine if a traffic signal would be warranted at the intersection where pedestrians could be rerouted to, if the crosswalk at Canyon Road and Sanders Drive was removed. Based on our analysis of existing traffic characteristics and volumes, the Country Club Drive intersection satisfies Warrant 1, the eight-hour vehicle warrant for signalization. The results of the signal warrant analysis are shown in **Attachment B**.

Crosswalk Recommendations

Based on the data above, the crosswalk cannot be removed due to the pedestrian demand in the area. The following crosswalk improvements are recommended to maintain a crosswalk at the Canyon Road and Sanders Drive location based on the data above:

- Relocate the crosswalk to the south side of the Canyon Road and Sanders Drive intersection to improve southbound stopping sight distance.
- Install a high-visibility crosswalk and advanced yield markings on Canyon Road.
- Install a pedestrian refuge island so pedestrians can cross one direction of traffic at a time.
- Install additional intersection lighting and a rectangular rapid-flashing beacon (RRFB) system to heighten pedestrian visibility and improve vehicle yield rates to pedestrians in the crosswalk.
- Implement a road diet with one travel lane in each direction on Canyon Road to reduce vehicle speeds and eliminate multiple-threat pedestrian conflicts.

This concludes our analysis of the Canyon Road and Sanders Drive study intersection. Please contact Mark Howard at 925-357-3375 with any questions or comments.

Attachments:

Figure 1 – Existing Stopping Sight Distance
Figure 2 – Proposed Project Stopping Sight Distance
Attachment A – Canyon Road and Sanders Drive Speed and Volume Data
Attachment B – Moraga Road and Canyon Road Complete Streets – Signal Warrants Analysis

Note: A minimum stopping sight distance of 300′ was used based on the 85th percentile speed of 40 miles-per-hour

X′ Stopping Sight Distance (Feet)

Feet
0 50 100 200 400

Figure 1

Existing Stopping Sight Distance

Note: A minimum stopping sight distance of 300′ was used based on the 85th percentile speed of 40 miles-per-hour

X′ Stopping Sight Distance (Feet)

Feet
0 50 100 200 400

Figure 2

Proposed Project Stopping Sight Distance

Attachment A: Speed and Volume Data

Prepared by National Data & Surveying Services

Pedestrian & Bikes Study

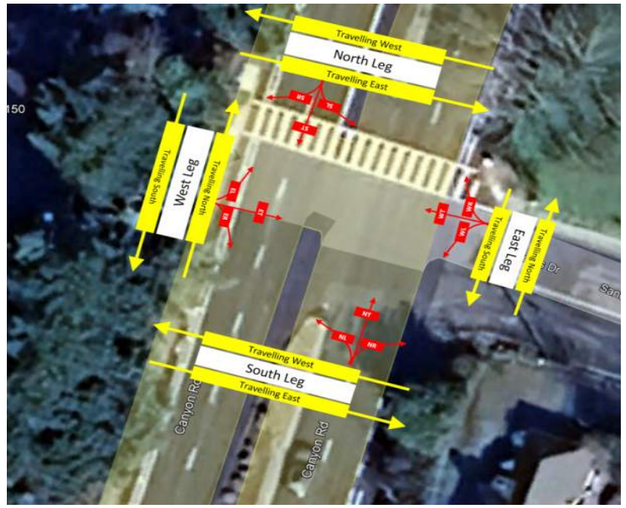
Location: Canyon Rd & Sanders Dr
City: Moraga, CA

Date: 9/17/2024
Day: Tuesday

TIME	Crossing Peds							
	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
12:00 AM	0	0	0	0	0	0	0	0
12:15 AM	0	0	0	0	0	0	0	0
12:30 AM	0	0	0	0	0	0	0	0
12:45 AM	0	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0	0
1:15 AM	0	0	0	0	0	0	0	0
1:30 AM	0	0	0	0	0	0	0	0
1:45 AM	0	0	0	0	0	0	0	0
2:00 AM	0	0	0	0	0	0	0	0
2:15 AM	0	0	0	0	0	0	0	0
2:30 AM	0	0	0	0	0	0	0	0
2:45 AM	0	0	0	0	0	0	0	0
3:00 AM	0	0	0	0	0	0	0	0
3:15 AM	0	0	0	0	0	0	0	0
3:30 AM	0	0	0	0	0	0	0	0
3:45 AM	0	0	0	0	0	0	0	0
4:00 AM	0	0	0	0	0	0	0	0
4:15 AM	0	0	0	0	0	0	0	0
4:30 AM	0	0	0	0	0	0	0	0
4:45 AM	0	0	0	0	0	0	0	0
5:00 AM	0	0	0	0	0	0	0	0
5:15 AM	0	0	0	0	0	0	0	0
5:30 AM	0	0	0	0	0	0	0	0
5:45 AM	0	0	0	0	0	0	0	0
6:00 AM	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0	0
6:30 AM	0	0	0	0	0	0	0	0
6:45 AM	0	1	0	0	2	1	0	0
7:00 AM	0	0	0	0	0	0	0	0
7:15 AM	0	1	0	0	0	2	0	0
7:30 AM	1	1	0	0	0	0	0	0
7:45 AM	0	0	0	0	2	1	0	0
8:00 AM	0	0	0	0	0	3	0	0
8:15 AM	0	0	0	0	2	1	0	0
8:30 AM	0	1	0	0	1	0	0	0
8:45 AM	1	0	0	0	1	1	0	0
9:00 AM	4	0	0	0	0	2	0	0
9:15 AM	0	3	0	0	1	0	0	0
9:30 AM	3	1	0	0	1	1	0	0
9:45 AM	2	0	0	0	1	1	0	0
10:00 AM	1	1	0	0	1	1	0	0
10:15 AM	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0
10:45 AM	0	1	0	0	0	0	0	0
11:00 AM	0	0	0	0	1	0	0	0
11:15 AM	1	1	0	0	1	0	0	0
11:30 AM	0	0	0	0	1	1	0	0
11:45 AM	0	0	0	0	1	0	0	0
12:00 PM	0	0	0	0	1	0	0	0
12:15 PM	0	0	0	0	0	1	0	0
12:30 PM	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	1	0	0
1:45 PM	0	0	0	0	2	1	0	0
2:00 PM	0	0	0	0	1	0	0	0
2:15 PM	0	0	0	0	4	0	0	0
2:30 PM	0	0	0	0	1	0	0	0
2:45 PM	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0
3:15 PM	0	1	0	0	1	0	0	0
3:30 PM	0	0	0	0	0	0	0	0
3:45 PM	1	0	0	0	0	2	0	0
4:00 PM	0	1	0	0	1	0	0	0
4:15 PM	1	1	0	0	1	1	0	0
4:30 PM	2	0	0	0	0	3	0	0
4:45 PM	0	0	0	0	3	1	0	0
5:00 PM	0	0	0	0	0	2	0	0
5:15 PM	0	0	0	0	0	1	0	0
5:30 PM	1	0	0	0	2	0	0	0
5:45 PM	0	2	0	0	0	0	0	0
6:00 PM	0	0	0	0	0	0	0	0
6:15 PM	0	0	0	0	0	0	0	0
6:30 PM	0	0	0	0	2	0	0	0
6:45 PM	2	0	0	0	0	2	0	0
7:00 PM	2	0	0	0	0	0	0	0
7:15 PM	0	0	0	0	0	1	0	0
7:30 PM	0	0	0	0	0	0	0	0
7:45 PM	0	0	0	0	0	0	0	0
8:00 PM	0	0	0	0	0	0	0	0
8:15 PM	0	0	0	0	0	0	0	0
8:30 PM	0	0	0	0	0	0	0	0
8:45 PM	0	0	0	0	0	0	0	0
9:00 PM	0	0	0	0	0	0	0	0
9:15 PM	0	0	0	0	0	0	0	0
9:30 PM	0	0	0	0	1	1	0	0
9:45 PM	0	0	0	0	0	0	0	0
10:00 PM	0	0	0	0	0	0	0	0
10:15 PM	0	0	0	0	0	0	0	0
10:30 PM	0	0	0	0	0	0	0	0
10:45 PM	0	0	0	0	0	0	0	0
11:00 PM	0	0	0	0	0	0	0	0
11:15 PM	0	0	0	0	0	0	0	0
11:30 PM	0	0	0	0	1	0	0	0
11:45 PM	0	0	0	0	0	0	0	0
Totals	*22*	*16*	*0*	*0*	*36*	*32*	*0*	*0*

TIME	Crossing Bikes							
	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
12:00 AM	0	0	0	0	0	0	0	0
12:15 AM	0	0	0	0	0	0	0	0
12:30 AM	0	0	0	0	0	0	0	0
12:45 AM	0	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0	0
1:15 AM	0	0	0	0	0	0	0	0
1:30 AM	0	0	0	0	0	0	0	0
1:45 AM	0	0	0	0	0	0	0	0
2:00 AM	0	0	0	0	0	0	0	0
2:15 AM	0	0	0	0	0	0	0	0
2:30 AM	0	0	0	0	0	0	0	0
2:45 AM	0	0	0	0	0	0	0	0
3:00 AM	0	0	0	0	0	0	0	0
3:15 AM	0	0	0	0	0	0	0	0
3:30 AM	0	0	0	0	0	0	0	0
3:45 AM	0	0	0	0	0	0	0	0
4:00 AM	0	0	0	0	0	0	0	0
4:15 AM	0	0	0	0	0	0	0	0
4:30 AM	0	0	0	0	0	0	0	0
4:45 AM	0	0	0	0	0	0	0	0
5:00 AM	0	0	0	0	0	0	0	0
5:15 AM	0	0	0	0	0	0	0	0
5:30 AM	0	0	0	0	0	0	0	0
5:45 AM	0	0	0	0	0	0	0	0
6:00 AM	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0	0
6:30 AM	0	0	0	0	0	0	0	0
6:45 AM	0	0	0	0	0	0	0	0
7:00 AM	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0
9:00 AM	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0
9:45 AM	0	0	0	0	0	0	0	0
10:00 AM	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0
2:00 PM	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0
6:00 PM	0	0	0	0	0	0	0	0
6:15 PM	0	0	0	0	0	0	0	0
6:30 PM	0	0	0	0	0	0	0	0
6:45 PM	0	0	0	0	0	0	0	0
7:00 PM	0	0	0	0	0	0	0	0
7:15 PM	0	0	0	0	0	0	0	0
7:30 PM	0	0	0	0	0	0	0	0
7:45 PM	0	0	0	0	0	0	0	0
8:00 PM	0	0	0	0	0	0	0	0
8:15 PM	0	0	0	0	0	0	0	0
8:30 PM	0	0	0	0	0	0	0	0
8:45 PM	0	0	0	0	0	0	0	0
9:00 PM	0	0	0	0	0	0	0	0
9:15 PM	0	0	0	0	0	0	0	0
9:30 PM	0	0	0	0	0	0	0	0
9:45 PM	0	0	0	0	0	0	0	0
10:00 PM	0	0	0	0	0	0	0	0
10:15 PM	0	0	0	0	0	0	0	0
10:30 PM	0	0	0	0	0	0	0	0
10:45 PM	0	0	0	0	0	0	0	0
11:00 PM	0	0	0	0	0	0	0	0
11:15 PM	0	0	0	0	0	0	0	0
11:30 PM	0	0	0	0	0	0	0	0
11:45 PM	0	0	0	0	0	0	0	1
Totals	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*1*

TIME	Bikes															
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	NU	SU	EU	WU
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
1:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	*0*	*3*	*1*	*1*	*7*	*0*	*0*	*0*	*0*	*0*	*0*	*2*	*0*	*0*	*0*	*0*



Prepared by National Data & Surveying Services

SPEED

Canyon Rd Bet Larch Ave & Sanders Dr

Day: Tuesday
Date: 9/17/2024

City: Moraga
Project #: CA24_080251_001

HOURLY BREAKDOWN

Time	NORTHBOUND 5 15	15 20	20 25	25 30	30 35	35 40	40 45	45 50	50 55	55 60	60 65	65 70	70 99	Total	SOUTHBOUND 5 15	15 20	20 25	25 30	30 35	35 40	40 45	45 50	50 55	55 60	60 65	65 70	70 99	Total	TOTALS 5 15	15 20	20 25	25 30	30 35	35 40	40 45	45 50	50 55	55 60	60 65	65 70	70 99	Total
0:00	0	2	0	1	3	0	0	0	0	0	0	0	0	6	0	0	2	1	4	3	0	0	0	0	0	0	0	10	0	2	2	2	7	3	0	0	0	0	0	0	0	16
1:00	0	1	1	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	1	0	0	0	0	0	0	0	0	3	0	1	1	2	1	0	0	0	0	0	0	0	0	5
2:00	0	0	1	0	1	2	0	0	0	0	0	0	0	4	0	0	0	0	1	1	0	0	0	0	0	0	0	2	0	0	1	0	2	3	0	0	0	0	0	0	0	6
3:00	1	2	0	1	1	0	0	0	0	0	0	0	0	5	1	0	0	0	1	2	1	0	0	0	0	0	0	5	2	2	0	1	2	2	1	0	0	0	0	0	0	10
4:00	1	0	1	0	4	1	0	0	0	0	0	0	0	7	0	0	0	3	2	1	1	0	0	0	0	0	0	7	1	0	1	3	6	2	1	0	0	0	0	0	0	14
5:00	0	6	12	14	23	8	3	1	0	0	0	0	0	67	0	0	0	2	6	4	1	0	1	0	0	0	0	14	0	6	12	16	29	12	4	1	1	0	0	0	0	81
6:00	1	6	28	28	48	20	4	1	0	0	0	0	0	136	0	0	3	11	13	17	7	2	0	0	0	0	0	53	1	6	31	39	61	37	11	3	0	0	0	0	0	189
7:00	0	8	50	111	135	82	13	1	0	0	0	0	0	400	0	1	24	46	89	63	12	9	1	0	0	0	0	245	0	9	74	157	224	145	25	10	1	0	0	0	0	645
8:00	1	17	140	245	200	86	16	3	0	0	0	0	0	708	0	12	64	205	165	77	15	6	0	0	0	0	0	544	1	29	204	450	365	163	31	9	0	0	0	0	0	1252
9:00	1	18	65	103	122	69	10	3	0	0	0	0	0	391	0	5	26	73	96	62	16	2	0	0	0	0	0	280	1	23	91	176	218	131	26	5	0	0	0	0	0	671
10:00	0	6	53	67	98	55	15	2	0	0	0	0	0	296	0	1	22	41	100	53	10	4	0	0	0	0	0	231	0	7	75	108	198	108	25	6	0	0	0	0	0	527
11:00	0	23	40	71	113	55	14	2	1	0	0	0	0	319	0	1	19	57	94	57	16	3	1	0	0	0	0	248	0	24	59	128	207	112	30	5	2	0	0	0	0	567
12:00	2	16	41	58	112	66	18	2	0	0	0	0	0	315	0	2	42	71	136	57	13	4	0	0	0	0	0	325	2	18	83	129	248	123	31	6	0	0	0	0	0	640
13:00	1	8	46	47	94	68	10	5	0	0	0	0	0	279	0	0	32	87	143	81	21	4	2	0	0	0	0	370	1	8	78	134	237	149	31	9	2	0	0	0	0	649
14:00	1	8	78	147	170	91	26	2	0	0	0	0	0	523	2	10	77	126	165	74	11	8	0	0	0	0	0	473	3	18	155	273	335	165	37	10	0	0	0	0	0	996
15:00	2	17	65	114	183	129	27	11	1	0	0	0	0	549	0	4	55	105	183	93	24	11	1	0	0	0	0	476	2	21	120	219	366	222	51	22	2	0	0	0	0	1025
16:00	0	15	49	107	219	131	51	10	2	0	0	0	0	584	0	7	69	124	219	88	23	3	1	0	0	0	0	534	0	22	118	231	438	219	74	13	3	0	0	0	0	1118
17:00	0	8	46	96	230	146	47	15	0	0	0	0	0	588	0	4	65	108	214	94	27	6	3	0	0	0	0	521	0	12	111	204	444	240	74	21	3	0	0	0	0	1109
18:00	0	8	35	78	130	90	26	3	0	0	0	0	0	370	0	2	59	97	180	73	24	6	1	0	0	0	0	442	0	10	94	175	310	163	50	9	1	0	0	0	0	812
19:00	0	11	25	47	61	26	7	1	0	0	0	0	0	178	0	3	44	77	130	38	3	4	2	0	0	0	0	301	0	14	69	124	191	64	10	5	2	0	0	0	0	479
20:00	0	3	16	24	27	13	1	1	0	0	0	0	0	85	0	2	37	52	88	23	5	1	0	0	0	0	0	208	0	5	53	76	115	36	6	2	0	0	0	0	0	293
21:00	0	5	7	21	12	8	4	1	0	0	0	0	0	58	0	2	16	30	58	21	6	2	1	0	0	0	0	136	0	7	23	51	70	29	10	3	1	0	0	0	0	194
22:00	0	4	1	7	3	3	0	0	0	0	0	0	0	18	0	1	5	9	21	6	2	0	0	0	0	0	0	44	0	5	6	16	24	9	2	0	0	0	0	0	0	62
23:00	0	0	0	3	2	1	0	0	0	0	0	0	0	6	0	0	5	5	12	0	0	0	0	0	0	0	0	22	0	0	5	8	14	1	0	0	0	0	0	0	0	28
Totals	**11**	**192**	**800**	**1,390**	**1,991**	**1,150**	**292**	**64**	**4**	**0**	**0**	**0**	**0**	**5,894**	**3**	**57**	**666**	**1,332**	**2,121**	**988**	**238**	**75**	**14**	**0**	**0**	**0**	**0**	**5,494**	**14**	**249**	**1,466**	**2,722**	**4,112**	**2,138**	**530**	**139**	**18**	**0**	**0**	**0**	**0**	**11,388**
% of Totals	0%	3%	14%	24%	34%	20%	5%	1%	0%					100%	0%	1%	12%	24%	39%	18%	4%	1%	0%					100%	0%	2%	13%	24%	36%	19%	5%	1%	0%					100%

STATISTICS

00:00 - 12:00	5	89	391	641	748	378	75	13	1	0	0	0	0	2341	1	20	160	441	572	340	79	26	3	0	0	0	0	1642	6	109	551	1082	1320	718	154	39	4	0	0	0	0	3983
%	0%	2%	7%	11%	13%	6%	1%	0%	0%	0%	0%	0%	0%	40%	0%	0%	3%	7%	10%	6%	1%	0%	0%	0%	0%	0%	0%	28%	0%	2%	9%	18%	22%	12%	3%	1%	0%	0%	0%	0%	0%	68%
Peak Hour	3:30	11:00	8:00	7:45	7:45	7:30	7:15	7:30	10:45	0:00	0:00	0:00	0:00	7:45	2:45	8:15	7:30	7:45	8:00	7:45	8:15	7:45	4:45	0:00	0:00	0:00	0:00	7:45	3:30	8:15	8:00	7:45	7:45	7:30	10:30	7:45	11:00	0:00	0:00	0:00	0:00	7:45
Peak Volume	2	23	140	261	226	102	19	4	1	0	0	0	0	763	1	13	65	208	165	86	20	10	1	0	0	0	0	557	3	32	204	469	388	185	35	14	2	0	0	0	0	1320
12:00 - 24:00	6	103	409	749	1243	772	217	51	3	0	0	0	0	3553	2	37	506	891	1549	648	159	49	11	0	0	0	0	3852	8	140	915	1640	2792	1420	376	100	14	0	0	0	0	7405
%	0%	2%	7%	13%	21%	13%	4%	1%	0%	0%	0%	0%	0%	60%	0%	1%	9%	15%	26%	11%	3%	1%	0%	0%	0%	0%	0%	65%	0%	2%	16%	28%	47%	24%	6%	2%	0%	0%	0%	0%	0%	126%
Peak Hour	12:15	15:00	14:15	14:15	17:15	17:00	17:15	17:15	15:30	12:00	12:00	12:00	12:00	17:15	13:45	14:00	14:00	15:30	17:15	13:30	16:30	14:45	17:15	12:00	12:00	12:00	12:00	15:45	14:15	16:15	14:00	14:00	17:15	17:00	16:00	17:15	15:30	12:00	12:00	12:00	12:00	17:15
Peak Volume	3	17	82	152	246	146	52	16	3	0	0	0	0	601	2	10	77	131	221	97	30	13	4	0	0	0	0	544	4	23	155	273	467	240	74	25	5	0	0	0	0	1143
07:00 - 09:00	1	25	190	356	335	168	29	4	0	0	0	0	0	1108	0	13	88	251	254	140	27	15	1	0	0	0	0	789	1	38	278	607	589	308	56	19	1	0	0	0	0	1897
%	0%	0%	3%	6%	6%	3%	0%	0%	0%	0%	0%	0%	0%	19%	0%	0%	1%	4%	4%	2%	0%	0%	0%	0%	0%	0%	0%	13%	0%	1%	5%	10%	10%	5%	1%	0%	0%	0%	0%	0%	0%	32%
Peak Hour	7:45	7:45	8:00	7:45	7:45	7:30	7:15	7:30	7:00	7:00	7:00	7:00	7:00	7:45	7:00	8:00	7:30	7:45	8:00	7:45	7:45	7:45	7:00	7:00	7:00	7:00	7:00	7:45	7:45	7:45	8:00	7:45	7:45	7:30	7:45	7:45	7:00	7:00	7:00	7:00	7:00	7:45
Peak Volume	1	20	140	261	226	102	19	4	0	0	0	0	0	763	0	12	65	208	165	86	17	10	1	0	0	0	0	557	1	30	204	469	388	185	32	14	1	0	0	0	0	1320
16:00 - 18:00	0	23	95	203	449	277	98	25	2	0	0	0	0	1172	0	11	134	232	433	182	50	9	4	0	0	0	0	1055	0	34	229	435	882	459	148	34	6	0	0	0	0	2227
%	0%	0%	2%	3%	8%	5%	2%	0%	0%	0%	0%	0%	0%	20%	0%	0%	2%	4%	7%	3%	1%	0%	0%	0%	0%	0%	0%	18%	0%	1%	4%	7%	15%	8%	3%	1%	0%	0%	0%	0%	0%	38%
Peak Hour	16:00	16:00	16:30	16:30	17:00	17:00	16:00	17:00	16:00	16:00	16:00	16:00	16:00	16:30	16:00	16:15	16:15	16:00	16:00	16:30	16:30	17:00	17:00	16:00	16:00	16:00	16:00	16:00	16:00	16:15	16:30	16:30	17:00	17:00	16:00	17:00	16:00	16:00	16:00	16:00	16:00	16:00
Peak Volume	0	15	54	128	230	146	51	15	2	0	0	0	0	589	0	8	71	124	219	96	30	6	3	0	0	0	0	534	0	23	123	237	444	240	74	21	3	0	0	0	0	1118

Direction	Percentiles 15th	50th	Average	85th	95th	ADT
NORTHBOUND	24	31	31	38	41	5894
SOUTHBOUND	25	32	31	37	41	5494
TOTALS	25	32	31	38	41	11388

Prepared by National Data & Surveying Services

SPEED

Canyon Rd Bet Sanders Dr & Country Club Dr

Day: Tuesday

Date: 9/17/2024

City: Moraga

Project #: CA24_080251_002

HOURLY BREAKDOWN

Time	NORTHBOUND														SOUTHBOUND														TOTALS												
	5	15	20	25	30	35	40	45	50	55	60	65	70	Total	5	15	20	25	30	35	40	45	50	55	60	65	70	Total	5	15	20	25	30	35	40	45	50	55	60	65	70	Total
	15	20	25	30	35	40	45	50	55	60	65	70	99		15	20	25	30	35	40	45	50	55	60	65	70	99		15	20	25	30	35	40	45	50	55	60	65	70	99	
0:00	0	0	0	3	0	2	1	0	0	0	0	0	0	**6**	0	0	1	5	2	3	0	0	0	0	0	0	0	**11**	0	0	1	8	2	5	1	0	0	0	0	0	0	**17**
1:00	0	0	0	1	1	0	0	0	0	0	0	0	0	**2**	0	0	0	2	2	0	0	0	0	0	0	0	0	**4**	0	0	0	3	3	0	0	0	0	0	0	0	0	**6**
2:00	0	0	0	1	1	2	0	0	0	0	0	0	0	**4**	0	0	0	0	2	0	0	0	0	0	0	0	0	**2**	0	0	0	1	3	2	0	0	0	0	0	0	0	**6**
3:00	0	1	1	2	1	1	0	0	0	0	0	0	0	**6**	0	1	0	1	1	3	1	0	0	0	0	0	0	**7**	0	2	1	3	2	4	1	0	0	0	0	0	0	**13**
4:00	0	2	0	2	1	3	1	0	0	0	0	0	0	**9**	0	0	0	3	2	1	0	0	0	0	0	0	0	**6**	0	2	0	5	3	4	1	0	0	0	0	0	0	**15**
5:00	0	5	5	4	21	30	9	1	1	0	0	0	0	**76**	0	0	0	2	5	4	1	0	0	0	0	0	0	**12**	0	5	5	6	26	34	10	1	1	0	0	0	0	**88**
6:00	0	10	19	3	52	69	11	1	0	0	0	0	0	**165**	0	0	3	9	20	23	3	0	0	0	0	0	0	**58**	0	10	22	12	72	92	14	1	0	0	0	0	0	**223**
7:00	0	15	34	17	146	184	52	3	1	0	0	0	0	**452**	0	1	1	56	109	69	17	4	3	0	0	0	0	**260**	0	16	35	73	255	253	69	7	4	0	0	0	0	**712**
8:00	0	10	53	47	328	270	55	8	0	0	0	0	0	**771**	0	5	31	178	253	93	15	4	0	0	0	0	0	**579**	0	15	84	225	581	363	70	12	0	0	0	0	0	**1350**
9:00	0	6	29	39	167	140	43	1	0	0	0	0	0	**425**	1	2	17	77	143	53	8	2	1	0	0	0	0	**304**	1	8	46	116	310	193	51	3	1	0	0	0	0	**729**
10:00	0	6	27	21	111	117	35	7	0	0	0	0	0	**324**	0	0	7	56	127	61	8	2	0	0	0	0	0	**261**	0	6	34	77	238	178	43	9	0	0	0	0	0	**585**
11:00	0	8	40	17	116	131	51	4	1	0	0	0	0	**368**	1	2	3	53	142	63	17	2	0	1	0	0	0	**284**	1	10	43	70	258	194	68	6	1	1	0	0	0	**652**
12:00	0	10	29	19	88	135	50	12	1	0	0	0	0	**344**	1	1	9	59	174	66	12	3	0	1	0	0	0	**326**	1	11	38	78	262	201	62	15	1	1	0	0	0	**670**
13:00	0	5	15	6	90	124	50	6	1	1	0	0	0	**298**	0	0	7	90	198	92	14	7	2	0	0	0	0	**410**	0	5	22	96	288	216	64	13	3	1	0	0	0	**708**
14:00	0	11	27	29	156	237	79	19	1	0	0	0	0	**559**	1	1	17	117	256	88	28	6	0	0	0	0	0	**514**	1	12	44	146	412	325	107	25	1	0	0	0	0	**1073**
15:00	0	6	36	27	122	275	111	23	4	0	0	0	0	**604**	0	2	13	115	239	116	21	7	4	0	0	0	0	**517**	0	8	49	142	361	391	132	30	8	0	0	0	0	**1121**
16:00	0	8	46	20	143	268	128	26	5	0	0	0	0	**644**	0	1	18	121	286	132	22	8	0	0	0	0	0	**588**	0	9	64	141	429	400	150	34	5	0	0	0	0	**1232**
17:00	0	2	26	13	99	273	159	37	5	1	0	0	0	**615**	2	3	10	123	271	120	36	7	0	0	0	0	0	**572**	2	5	36	136	370	393	195	44	5	1	0	0	0	**1187**
18:00	0	6	27	16	85	183	75	15	0	0	0	0	0	**407**	0	0	14	101	242	99	23	5	2	0	0	0	0	**486**	0	6	41	117	327	282	98	20	2	0	0	0	0	**893**
19:00	0	6	15	12	66	79	13	6	1	0	0	0	0	**198**	0	1	5	84	176	63	9	0	2	0	0	0	0	**340**	0	7	20	96	242	142	22	6	3	0	0	0	0	**538**
20:00	0	1	7	11	25	39	8	1	1	0	0	0	0	**93**	0	0	10	57	113	49	10	1	0	0	0	0	0	**240**	0	1	17	68	138	88	18	2	1	0	0	0	0	**333**
21:00	0	1	2	7	23	17	11	0	1	0	0	0	0	**62**	0	0	3	22	73	35	13	1	0	1	0	0	0	**148**	0	1	5	29	96	52	24	1	1	1	0	0	0	**210**
22:00	0	0	0	2	9	6	0	2	0	0	0	0	0	**19**	0	0	2	13	24	7	3	2	0	0	0	0	0	**51**	0	0	2	15	33	13	3	4	0	0	0	0	0	**70**
23:00	0	0	1	1	2	2	1	0	0	0	0	0	0	**7**	0	0	0	5	12	4	1	0	0	0	0	0	0	**22**	0	0	1	6	14	6	2	0	0	0	0	0	0	**29**
Totals	**0**	**119**	**439**	**320**	**1,853**	**2,587**	**943**	**172**	**23**	**2**	**0**	**0**	**0**	**6,458**	**6**	**20**	**171**	**1,349**	**2,872**	**1,244**	**262**	**61**	**14**	**3**	**0**	**0**	**0**	**6,002**	**6**	**139**	**610**	**1,669**	**4,725**	**3,831**	**1,205**	**233**	**37**	**5**	**0**	**0**	**0**	**12,460**
% of Totals		**2%**	**7%**	**5%**	**29%**	**40%**	**15%**	**3%**	**0%**	**0%**				**100%**	**0%**	**0%**	**3%**	**22%**	**48%**	**21%**	**4%**	**1%**	**0%**	**0%**				**100%**	**0%**	**1%**	**5%**	**13%**	**38%**	**31%**	**10%**	**2%**	**0%**	**0%**				**100%**

STATISTICS

00:00 - 12:00	0	63	208	157	945	949	258	25	3	0	0	0	0	2608	2	11	63	442	808	373	70	14	4	1	0	0	0	1788	2	74	271	599	1753	1322	328	39	7	1	0	0	0	4396
%	0%	1%	3%	2%	15%	15%	4%	0%	0%	0%	0%	0%	0%	40%	0%	0%	1%	7%	13%	6%	1%	0%	0%	0%	0%	0%	0%	28%	0%	1%	4%	9%	27%	20%	5%	1%	0%	0%	0%	0%	0%	68%
Peak Hour	0:00	7:15	7:30	7:45	7:45	7:30	7:45	11:45	11:30	0:00	0:00	0:00	0:00	7:45	11:30	7:15	8:00	7:45	8:00	7:45	7:30	7:15	6:15	11:30	0:00	0:00	0:00	7:45	11:30	7:15	7:45	7:45	7:45	7:45	7:45	11:45	6:30	11:30	0:00	0:00	0:00	7:45
Peak Volume	0	18	60	50	339	299	72	10	2	0	0	0	0	839	2	6	31	186	253	100	21	5	3	2	0	0	0	594	2	24	89	236	589	398	92	15	4	2	0	0	0	1433
12:00 - 24:00	0	56	231	163	908	1638	685	147	20	2	0	0	0	3850	4	9	108	907	2064	871	192	47	10	2	0	0	0	4214	4	65	339	1070	2972	2509	877	194	30	4	0	0	0	8064
%	0%	1%	4%	3%	14%	25%	11%	2%	0%	0%	0%	0%	0%	60%	0%	0%	2%	14%	32%	13%	3%	1%	0%	0%	0%	0%	0%	65%	0%	1%	5%	17%	46%	39%	14%	3%	0%	0%	0%	0%	0%	125%
Peak Hour	12:00	14:00	15:45	14:15	14:00	15:15	17:15	17:00	15:30	12:45	12:00	12:00	12:00	16:00	17:00	16:45	15:45	15:30	16:00	15:30	17:00	13:30	14:45	12:00	12:00	12:00	12:00	17:15	17:00	14:15	15:45	13:45	16:00	17:15	17:15	17:00	15:00	12:00	12:00	12:00	12:00	15:45
Peak Volume	0	11	51	36	156	285	167	37	7	1	0	0	0	644	2	3	21	135	286	134	36	9	4	1	0	0	0	596	2	13	72	155	429	408	201	44	8	1	0	0	0	1232
07:00 - 09:00	0	25	87	64	474	454	107	11	1	0	0	0	0	1223	0	6	32	234	362	162	32	8	3	0	0	0	0	839	0	31	119	298	836	616	139	19	4	0	0	0	0	2062
%	0%	0%	1%	1%	7%	7%	2%	0%	0%	0%	0%	0%	0%	19%	0%	0%	0%	4%	6%	3%	0%	0%	0%	0%	0%	0%	0%	13%	0%	0%	2%	5%	13%	10%	2%	0%	0%	0%	0%	0%	0%	32%
Peak Hour	7:00	7:15	7:30	7:45	7:45	7:30	7:45	7:30	7:00	7:00	7:00	7:00	7:00	7:45	7:00	7:15	8:00	7:45	8:00	7:45	7:30	7:15	7:00	7:00	7:00	7:00	7:00	7:45	7:00	7:15	7:45	7:45	7:45	7:45	7:45	7:15	7:00	7:00	7:00	7:00	7:00	7:45
Peak Volume	0	18	60	50	339	299	72	9	1	0	0	0	0	839	0	6	31	186	253	100	21	5	3	0	0	0	0	594	0	24	89	236	589	398	92	13	4	0	0	0	0	1433
16:00 - 18:00	0	10	72	33	242	541	287	63	10	1	0	0	0	1259	2	4	28	244	557	252	58	15	0	0	0	0	0	1160	2	14	100	277	799	793	345	78	10	1	0	0	0	2419
%	0%	0%	1%	1%	4%	8%	4%	1%	0%	0%	0%	0%	0%	19%	0%	0%	0%	4%	9%	4%	1%	0%	0%	0%	0%	0%	0%	18%	0%	0%	2%	4%	12%	12%	5%	1%	0%	0%	0%	0%	0%	37%
Peak Hour	16:00	16:00	16:00	16:15	16:30	17:00	17:00	17:00	16:45	17:00	16:00	16:00	16:00	16:00	17:00	16:45	16:15	16:45	16:00	16:15	17:00	16:00	16:00	16:00	16:00	16:00	16:00	16:00	17:00	16:00	16:15	16:45	16:00	16:00	17:00	17:00	16:45	17:00	16:00	16:00	16:00	16:00
Peak Volume	0	8	46	22	154	273	159	37	6	1	0	0	0	644	2	3	21	134	286	134	36	8	0	0	0	0	0	588	2	9	65	152	429	400	195	44	6	1	0	0	0	1232

Direction	Percentiles					
	15th	50th	Average	85th	95th	ADT
NORTHBOUND	30	36	35	41	44	6458
SOUTHBOUND	28	33	33	38	41	6002
TOTALS	28	34	34	39	44	12460

Attachment B: Signal Warrant Analysis

FEHR PEERS

Memorandum

Date: November 20, 2024

To: Nate Levine, PE, Town of Moraga

From: Mark Howard, PE, Rob Rees, PE, and Richelle Villa, Fehr & Peers

Subject: Moraga Road and Canyon Road Complete Streets – Signal Warrants Analysis

WC24-4102.00

Fehr & Peers conducted a crosswalk evaluation and signal warrant analysis as part of the Moraga Road and Canyon Road Complete Streets Improvement Project (Project). The purpose of this memorandum is to summarize the signal warrant analysis for the study intersection of Canyon Road and Country Club Drive, as shown on **Figure 1** (all figures are provided at the end of this memorandum), in Moraga, California.

The analysis followed the California Manual on Uniform Traffic Control Devices (CA-MUTCD) 2014 Edition, Revision 8 and the Federal Highway Administration Manual on Uniform Traffic Control Devices (FHWA-MUTCD) 11th Edition. Based on our analysis of existing traffic characteristics and volumes, the intersection satisfies Warrant 1 for signalization. The results of the analysis are presented below.

Data Collection

Fehr & Peers retained a traffic count firm to conduct 48-hour turning movement counts on two continuous weekdays, as well as conduct a 24-hour speed survey south of the study intersection. The peak hour counts included automobiles, trucks, and bicycles by turning movement and pedestrians by approach. Counts were collected on clear weather days, while area schools were in session in September 2024. **Attachment A** presents the existing traffic counts for the study intersection and speed survey data.

Signal Warrants

The CA-MUTCD has the following nine signal warrants and a criterion for school crossings to guide the justification for a new traffic signal:

- Warrant 1: Eight-Hour Vehicular Warrant
- Warrant 2: Four-Hour Vehicular Warrant
- Warrant 3: Peak Hour

- Warrant 4: Pedestrian Volume
- Warrant 5: School Crossing
- Warrant 6: Coordinated Signal System
- Warrant 7: Crash Experience
- Warrant 8: Roadway Network
- Warrant 9: Intersection Near a Grade Crossing

Warrant Analysis Assumptions and Methodologies

Each signal warrant requires specific inputs and calculations as outlined in the CA-MUTCD. To evaluate the warrants, Fehr & Peers used the following key assumptions in **Table 1** for lane geometry and travel speed as inputs for each intersection.

Table 1: Intersection Lane Geometry and Travel Speed

#	Intersection	Number of Lanes		Speed (mph)	
		Major[1]	Minor[2]	Major[1]	Minor[2]
1	Canyon Road[1]/Country Club Drive[2]	2	1	38-41	25

Notes:
1. Classified as the major roadway in the signal warrant analysis; 85th percentile speed used in the signal warrant analysis.
2. Classified as the minor roadway in the signal warrant analysis; posted speed limit used in the signal warrant analysis.

Based on the number of lanes, the population of Moraga exceeding 10,000 people, and northbound 85th percentile speed on Canyon Road exceeding 40 miles-per-hour on the major street, the analysis for volume-based warrants (Warrants 1-4) is based on the 70 percent volume criteria of the CA-MUTCD for all study intersections. The following is a description of each signal warrant. The warrant analysis worksheets are provided in **Attachment B.**

Warrant 1: Eight Hour Vehicular Warrant

Warrant 1 requires that vehicular volumes over an eight-hour period meet certain minimum thresholds (known as Condition A) and/or meet thresholds that suggest the interruption of a continuous traffic stream (known as Condition B). The warrant requires that these conditions be met for eight hours of a typical day.

Warrant 2: Four Hour Vehicular Warrant

Warrant 2 is intended to be applied where the volume of intersecting traffic is the principal reason to consider installing a traffic signal. The warrant requires that traffic volumes for four hours meet thresholds as described in the warrant.

Warrant 3: Peak Hour

Warrant 3 studies an intersection where traffic conditions are such that for a minimum of one hour on an average day, the minor street traffic suffers unreasonable delay when entering or crossing the major street. The warrant requires that traffic volumes for the hour selected meet thresholds as described in the warrant.

Warrant 4: Pedestrian Volume

Warrant 4 is intended where the traffic volumes on a major street are so abundant that pedestrians experience excessive delays in crossing. The warrant requires that certain pedestrian and traffic volume criteria be met.

Warrant 5: School Crossing

Warrant 5 is analyzed for locations where schoolchildren crossing the major street is the principle reason to consider installing a traffic control signal. "Schoolchildren" in this context includes elementary through high school students.

Warrant 6: Coordinated Signal System

Warrant 6 notes that unsignalized locations along coordinated signal systems may require signalization to promote the proper platooning of vehicles. This warrant should not be applied where the resultant spacing of traffic control signals would be less than 1,000 feet.

Warrant 7: Crash Experience

Warrant 7 is intended to analyze conditions where the severity and frequency of crashes are the guiding reasons to consider installing a traffic signal. Three conditions must be met: other strategies have failed to reduce crash frequency, and specific crash frequency and volume thresholds are satisfied.

Federal MUTCD 11th Edition Warrant 7: Crash Experience

The Federal MUTCD 11th Edition outlines specific thresholds for reported crashes, which vary based on the number of major and minor street approach lanes and the number of intersection legs. These thresholds are categorized into two sets of crash types: (1) total angle and pedestrian crashes, and (2) total fatal-and-injury angle and pedestrian crashes. Although this warrant has not yet been adopted in the California MUTCD, the results of this analysis are included in this memorandum in case of future adoption.

Warrant 8: Roadway Network

Warrant 8 states that this warrant may be used to justify signalization at locations where two or more major routes intersect, and it is desired to encourage the concentration and organization of traffic flow at the location.

Warrant 9: Intersection Near a Grade Crossing

Warrant 9 is intended for use at a location where none of the conditions described in the other eight traffic signal warrants are met, but the proximity of a railroad grade crossing is the primary reason to consider installing a traffic signal. It requires that a yield or stop control is on the rail crossing approach.

Signal Warrant Analysis Results

Existing intersection lane configurations, roadway speeds, volumes, and collision history were inputted into the signal warrants to determine if any of the signal warrants were satisfied. As shown in **Table 2**, the unsignalized intersection satisfies Warrant 1, the eight-hour vehicle warrant. Detailed warrant analysis worksheets are provided in Attachment B.

Table 2: Existing Conditions Signal Warrant Results

Signal Warrant	Canyon Road/County Club Drive
Warrant 1 – Eight Hour Vehicular Warrant	**Met**
Warrant 2- Four Hour Vehicular Warrant	Not Met
Warrant 3 – Peak Hour	Not Met
Warrant 4 – Pedestrian Volume	Not Met
Warrant 5 – School Crossing	Not Met
Warrant 6 – Coordinated Signal System	Not Met
Warrant 7 – Crash Experience	Not Met
Federal MUTCD 11th Edition Warrant 7 – Crash Experience	Not Met
Warrant 8 – Roadway Network	Not Met
Warrant 9 – Intersection Near a Grade Crossing	Not Met

Source: Fehr & Peers, November 2024.

This completes our signal warrant analysis of the Canyon Road and Country Club Drive study intersection. Please call Mark Howard at (925) 357-3375 with any questions.

Attachments:

Figure 1 Moraga Road and Canyon Road Complete Streets Improvement Project Site Vicinity and Study Location

Attachment A: Traffic Counts for Study Intersection
Attachment B: Signal Warrant Analysis Worksheets

Figure 1

Signal Warrant Analysis Site Vicinity and Study Location

Attachment A: Traffic Counts for Study Intersections

Prepared by National Data & Surveying Services

Canyon Rd & Country Club Dr

Peak Hour Turning Movement Count

ID: 24-080249-001
City: Moraga

Day: Tuesday
Date: 9/17/2024

PEAK HOURS

AM	07:45 AM - 08:45 AM
NOON	01:00 PM - 02:00 PM
PM	04:00 PM - 05:00 PM

COUNT PERIODS

AM	12:00 AM - 10:00 AM
NOON	10:00 AM - 02:00 PM
PM	2:00 PM - 12:00 AM

Canyon Rd

SOUTHBOUND

AM	52	514	93	2	793	AM
NOON	38	369	45	4	312	NOON
PM	55	491	67	5	653	PM

EASTBOUND

AM	NOON	PM	
150	73	125	
0	0	1	0
10	21	13	1
2	4	4	2
66	38	80	0
AM	NOON	PM	

WESTBOUND

PM	NOON	AM	
75	31	70	0
7	3	3	1
16	6	12	0
0	0	0	0
94	56	130	
PM	NOON	AM	

CONTROL

2-Way Stop(EB/WB)

TEV	1665	854	1459
	AM	NOON	PM
PHF	0.79	0.86	0.95

NORTHBOUND

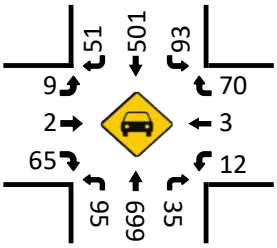
PM	587	0	62	560	23	PM
NOON	413	0	32	256	7	NOON
AM	592	0	95	711	35	AM

Canyon Rd

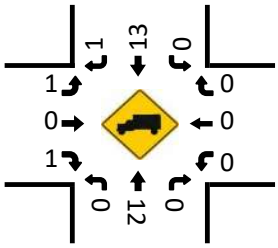
Country Club Dr (EASTBOUND side)

Country Club Dr (WESTBOUND side)

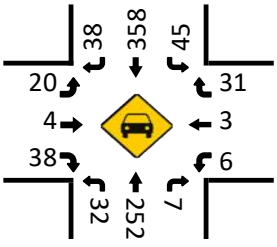
Cars (AM)



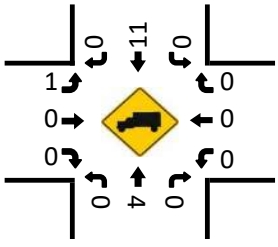
HT (AM)



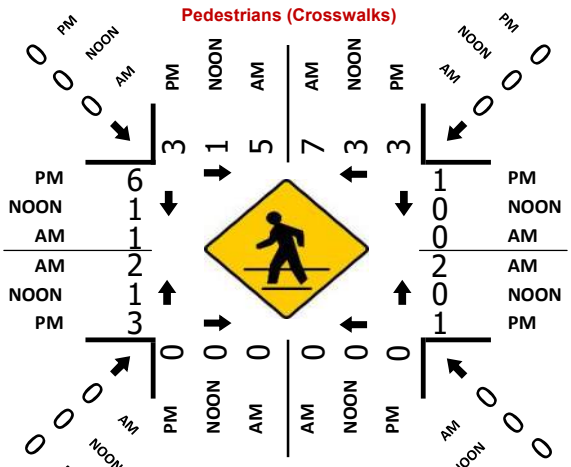
Cars (NOON)



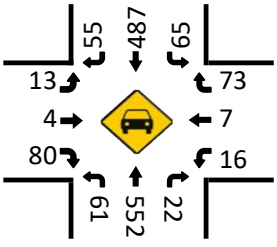
HT (NOON)



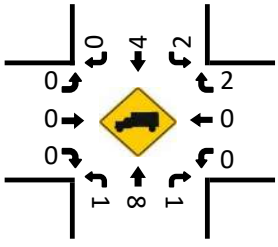
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Canyon Rd & Country Club Dr

Peak Hour Turning Movement Count

ID: 24-080249-001
City: Moraga

Day: Wednesday
Date: 9/18/2024

PEAK HOURS

AM	07:45 AM - 08:45 AM
NOON	11:30 AM - 12:30 PM
PM	03:00 PM - 04:00 PM

COUNT PERIODS

AM	12:00 AM - 10:00 AM
NOON	10:00 AM - 02:00 PM
PM	2:00 PM - 12:00 AM

SOUTHBOUND (Canyon Rd)

AM	45	553	90	2	801	AM
NOON	46	279	43	1	380	NOON
PM	69	524	62	10	708	PM

EASTBOUND (Country Club Dr)

AM	NOON	PM		
143	108	144	⇦	
1	2	2	↶	0
15	23	22	↰	1
0	1	4	→	2
65	35	60	↷	0
AM	NOON	PM		

WESTBOUND (Country Club Dr)

PM	NOON	AM		
67	62	82	↷	0
7	4	2	←	1
11	5	11	↶	0
0	0	0	↰	0
79	53	123	⇨	
PM	NOON	AM		

NORTHBOUND (Canyon Rd)

PM	596	1	66	609	13	PM
NOON	319	0	56	294	9	NOON
AM	631	2	95	702	33	AM

	0	2	1	0
	↶	↓	↷	⇧

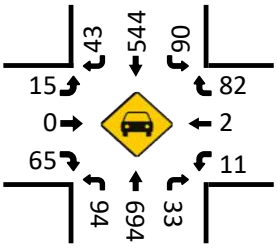
	0	1	2	0
	↶	↰	↑	↷

CONTROL

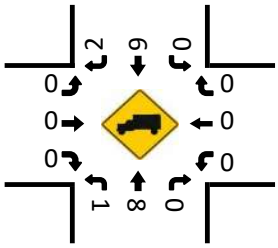
2-Way Stop(EB/WB)

TEV	1698 AM	860 NOON	1527 PM
PHF	0.78	0.91	0.85

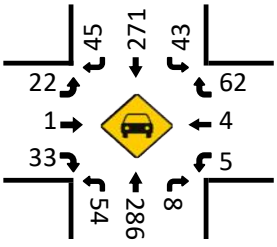
Cars (AM)



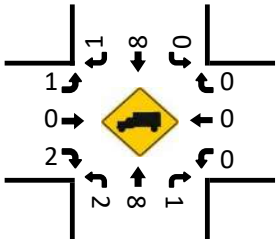
HT (AM)



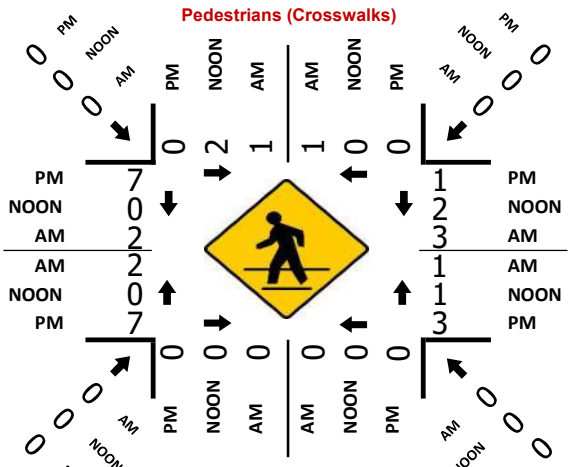
Cars (NOON)



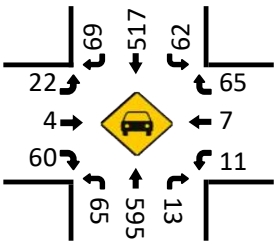
HT (NOON)



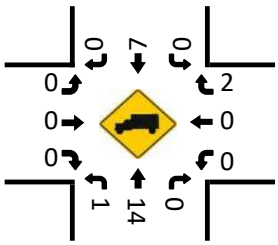
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Canyon Rd & Country Club Dr
City: Moraga

Project ID: 24-080249-001
Date: 9/17/2024

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Canyon Rd		Canyon Rd		Country Club Dr		Country Club Dr		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
12:00 AM	0	0	0	0	0	0	0	0	0
12:15 AM	0	0	0	0	0	0	0	0	0
12:30 AM	0	0	0	0	0	0	0	0	0
12:45 AM	0	0	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0	0	0
1:15 AM	0	0	0	0	0	0	0	0	0
1:30 AM	0	0	0	0	0	0	0	0	0
1:45 AM	0	0	0	0	0	0	0	0	0
2:00 AM	0	0	0	0	0	0	0	0	0
2:15 AM	0	0	0	0	0	0	0	0	0
2:30 AM	0	0	0	0	0	0	0	0	0
2:45 AM	0	0	0	0	0	0	0	0	0
3:00 AM	0	0	0	0	0	0	0	0	0
3:15 AM	0	0	0	0	0	0	0	0	0
3:30 AM	0	0	0	0	0	0	0	0	0
3:45 AM	0	0	0	0	0	0	0	0	0
4:00 AM	0	0	0	0	0	0	0	0	0
4:15 AM	0	0	0	0	0	0	0	0	0
4:30 AM	0	0	0	0	0	0	0	0	0
4:45 AM	0	0	0	0	0	0	0	0	0
5:00 AM	0	0	0	0	0	0	0	0	0
5:15 AM	0	0	0	0	0	0	0	0	0
5:30 AM	0	0	0	0	0	0	0	0	0
5:45 AM	0	0	0	0	0	0	0	0	0
6:00 AM	0	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0	0	0
6:30 AM	0	0	0	0	0	0	0	0	0
6:45 AM	0	0	0	0	1	0	1	1	3
7:00 AM	0	0	0	1	0	1	0	0	2
7:15 AM	1	0	0	0	0	0	0	1	2
7:30 AM	1	0	0	0	0	1	2	2	6
7:45 AM	0	2	0	0	0	0	2	0	4
8:00 AM	1	3	0	0	1	0	0	1	6
8:15 AM	2	2	0	0	1	0	0	0	5
8:30 AM	2	0	0	0	0	0	0	0	2
8:45 AM	2	1	0	0	1	1	1	0	6
9:00 AM	0	2	1	0	0	1	0	0	4
9:15 AM	1	2	0	1	1	1	3	0	9
9:30 AM	1	2	0	0	2	1	0	1	7
9:45 AM	1	0	0	0	0	0	0	1	2
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	12	14	1	2	7	6	9	7	58
APPROACH %'s :	46.15%	53.85%	33.33%	66.67%	53.85%	46.15%	56.25%	43.75%	
PEAK HR :	07:45 AM - 08:45 AM								TOTAL
PEAK HR VOL :	5	7	0	0	2	0	2	1	17
PEAK HR FACTOR :	0.625	0.583			0.500		0.250	0.250	0.708
	0.750				0.500		0.375		

NOON	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
10:00 AM	1	0	0	0	0	1	0	1	3
10:15 AM	2	0	0	0	0	2	0	1	5
10:30 AM	0	0	0	0	1	0	0	0	1
10:45 AM	0	1	0	0	0	0	0	1	2
11:00 AM	0	0	0	0	1	0	0	0	1
11:15 AM	0	0	0	0	0	1	1	0	2
11:30 AM	1	0	0	0	0	1	1	0	3
11:45 AM	0	0	0	0	0	0	4	1	5
12:00 PM	0	1	0	0	1	0	0	0	2
12:15 PM	0	0	0	0	0	0	0	0	0
12:30 PM	1	0	0	0	0	0	0	0	1
12:45 PM	1	0	0	0	0	1	0	0	2
1:00 PM	1	1	0	0	0	0	0	0	2
1:15 PM	0	0	0	0	0	0	0	0	0
1:30 PM	0	2	0	0	0	0	0	1	3
1:45 PM	0	0	0	0	0	0	1	0	1
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	7	5	0	0	3	6	7	5	33
APPROACH %'s :	58.33%	41.67%			33.33%	66.67%	58.33%	41.67%	
PEAK HR :	01:00 PM - 02:00 PM								TOTAL
PEAK HR VOL :	1	3	0	0	0	0	1	1	6
PEAK HR FACTOR :	0.250	0.375					0.250	0.250	0.500
	0.500						0.500		

National Data & Surveying Services

Intersection Turning Movement Count

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
2:00 PM	2	0	0	0	0	0	1	1	4
2:15 PM	0	0	0	0	1	0	1	4	6
2:30 PM	0	0	0	0	0	0	9	0	9
2:45 PM	0	0	0	0	0	0	0	2	2
3:00 PM	0	0	0	0	0	0	0	0	0
3:15 PM	0	1	0	0	0	0	0	0	1
3:30 PM	0	0	0	0	0	0	1	0	1
3:45 PM	0	0	0	0	0	0	0	1	1
4:00 PM	2	3	0	0	0	1	0	0	6
4:15 PM	1	0	0	0	0	0	1	3	5
4:30 PM	0	0	0	0	1	0	2	2	5
4:45 PM	0	0	0	0	0	0	0	1	1
5:00 PM	0	1	0	0	0	0	0	0	1
5:15 PM	1	0	0	0	0	1	0	0	2
5:30 PM	0	2	0	0	2	0	0	0	4
5:45 PM	0	0	0	0	0	0	0	1	1
6:00 PM	0	0	0	0	0	0	0	0	0
6:15 PM	0	0	0	0	0	0	0	1	1
6:30 PM	0	1	0	0	2	0	0	1	4
6:45 PM	0	1	0	0	0	0	1	0	2
7:00 PM	1	0	0	0	0	1	0	0	2
7:15 PM	0	0	0	0	0	0	0	1	1
7:30 PM	0	0	0	0	0	0	0	0	0
7:45 PM	0	0	0	0	0	0	1	0	1
8:00 PM	0	0	0	0	0	0	0	1	1
8:15 PM	1	1	0	0	1	0	0	0	3
8:30 PM	1	0	0	0	0	0	0	1	2
8:45 PM	0	0	0	0	0	0	0	0	0
9:00 PM	0	0	0	0	0	0	0	1	1
9:15 PM	0	0	0	0	0	0	0	0	0
9:30 PM	1	0	0	1	0	0	1	0	3
9:45 PM	0	0	0	0	0	0	0	0	0
10:00 PM	0	0	0	0	0	0	0	0	0
10:15 PM	0	0	0	0	0	0	1	0	1
10:30 PM	0	0	0	0	0	0	0	0	0
10:45 PM	0	0	0	0	0	0	0	0	0
11:00 PM	0	0	0	0	0	0	0	0	0
11:15 PM	0	0	0	0	0	0	0	0	0
11:30 PM	0	0	0	0	0	0	0	0	0
11:45 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	10	10	0	1	7	3	19	21	71
APPROACH %'s :	50.00%	50.00%	0.00%	100.00%	70.00%	30.00%	47.50%	52.50%	
PEAK HR :	04:00 PM - 05:00 PM								TOTAL
PEAK HR VOL :	3	3	0	0	0	1	2	4	13
PEAK HR FACTOR :	0.375	0.250				0.250	0.500	0.333	0.542
	0.300				0.250		0.375		

National Data & Surveying Services

Intersection Turning Movement Count

Location: Canyon Rd & Country Club Dr
City: Moraga

Project ID: 24-080249-001
Date: 9/18/2024

Data - Pedestrians (Crosswalks)

NS/EW Streets:	Canyon Rd		Canyon Rd		Country Club Dr		Country Club Dr		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
12:00 AM	0	0	0	0	0	0	0	0	0
12:15 AM	0	0	0	0	0	0	0	0	0
12:30 AM	0	0	0	0	0	0	0	0	0
12:45 AM	0	0	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0	0	0
1:15 AM	0	0	0	0	0	0	0	0	0
1:30 AM	0	0	0	0	0	0	0	0	0
1:45 AM	0	0	0	0	0	0	0	0	0
2:00 AM	0	0	0	0	0	0	0	0	0
2:15 AM	0	0	0	0	0	0	0	0	0
2:30 AM	0	0	0	0	0	0	0	0	0
2:45 AM	0	0	0	0	0	0	0	0	0
3:00 AM	0	0	0	0	0	0	0	0	0
3:15 AM	0	0	0	0	0	0	0	0	0
3:30 AM	0	0	0	0	0	0	0	0	0
3:45 AM	0	0	0	0	0	0	0	0	0
4:00 AM	0	0	0	0	0	0	0	0	0
4:15 AM	0	0	0	0	0	0	0	0	0
4:30 AM	0	0	0	0	0	0	0	0	0
4:45 AM	0	0	0	0	0	0	0	0	0
5:00 AM	0	0	0	0	0	0	0	0	0
5:15 AM	0	0	0	0	0	0	0	0	0
5:30 AM	0	0	0	0	0	0	0	0	0
5:45 AM	0	0	0	0	0	0	0	0	0
6:00 AM	0	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	1	0	0	0	1
6:30 AM	0	0	1	0	0	0	0	0	1
6:45 AM	1	0	0	1	1	1	0	0	4
7:00 AM	1	0	0	0	0	0	0	0	1
7:15 AM	0	0	0	0	1	1	1	0	3
7:30 AM	0	0	0	0	0	0	0	2	2
7:45 AM	0	1	0	0	0	0	1	0	2
8:00 AM	0	0	0	0	0	1	1	1	3
8:15 AM	0	0	0	0	0	1	0	0	1
8:30 AM	1	0	0	0	1	1	0	1	4
8:45 AM	0	0	0	0	0	0	1	0	1
9:00 AM	0	0	0	0	0	0	0	2	2
9:15 AM	0	0	0	0	2	0	0	2	4
9:30 AM	1	1	1	0	1	1	0	2	7
9:45 AM	0	1	0	0	0	0	0	0	1
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	4	3	2	1	7	6	4	10	37
APPROACH %'s :	57.14%	42.86%	66.67%	33.33%	53.85%	46.15%	28.57%	71.43%	
PEAK HR :	07:45 AM - 08:45 AM								TOTAL
PEAK HR VOL :	1	1	0	0	1	3	2	2	10
PEAK HR FACTOR :	0.250	0.250			0.250	0.750	0.500	0.500	0.625
	0.500				0.500		0.500		

NOON	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
10:00 AM	0	1	0	0	1	0	0	0	2
10:15 AM	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	1	0	0	1
10:45 AM	0	0	0	0	1	0	0	0	1
11:00 AM	0	0	0	0	1	0	0	0	1
11:15 AM	1	0	0	0	0	0	0	0	1
11:30 AM	1	0	0	0	1	1	0	0	3
11:45 AM	1	0	0	0	0	1	0	0	2
12:00 PM	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0
12:45 PM	0	1	0	0	1	0	0	0	2
1:00 PM	0	0	0	0	0	1	0	0	1
1:15 PM	0	0	0	0	0	0	0	0	0
1:30 PM	0	1	0	0	0	0	0	0	1
1:45 PM	0	0	1	0	0	0	0	0	1
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	3	3	1	0	5	4	0	0	16
APPROACH %'s :	50.00%	50.00%	100.00%	0.00%	55.56%	44.44%			
PEAK HR :	11:30 AM - 12:30 PM								TOTAL
PEAK HR VOL :	2	0	0	0	1	2	0	0	5
PEAK HR FACTOR :	0.500				0.250	0.500			0.417
	0.500				0.375				

National Data & Surveying Services

Intersection Turning Movement Count

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
2:00 PM	0	2	0	0	3	0	0	0	5
2:15 PM	1	1	0	0	0	0	2	0	4
2:30 PM	1	0	0	0	0	0	2	0	3
2:45 PM	0	0	0	0	0	0	0	2	2
3:00 PM	0	0	0	0	0	1	2	0	3
3:15 PM	0	0	0	0	0	0	3	0	3
3:30 PM	0	0	0	0	3	0	0	6	9
3:45 PM	0	0	0	0	0	0	2	1	3
4:00 PM	0	0	0	0	0	0	0	1	1
4:15 PM	0	1	0	0	0	0	0	0	1
4:30 PM	1	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	1	0	0	1	2
5:15 PM	1	0	0	0	1	2	0	0	4
5:30 PM	0	0	0	0	0	0	3	0	3
5:45 PM	0	0	0	0	0	0	0	0	0
6:00 PM	0	0	0	0	0	1	0	0	1
6:15 PM	0	0	0	0	0	0	0	1	1
6:30 PM	0	1	0	0	0	0	1	1	3
6:45 PM	1	0	0	0	0	1	0	0	2
7:00 PM	1	0	0	0	0	0	2	4	7
7:15 PM	0	0	0	0	0	0	2	2	4
7:30 PM	0	0	0	0	0	2	0	0	2
7:45 PM	0	0	0	0	0	0	0	0	0
8:00 PM	0	0	0	0	0	0	0	0	0
8:15 PM	0	0	0	0	0	0	0	0	0
8:30 PM	0	0	0	0	0	0	0	0	0
8:45 PM	0	0	0	0	0	0	0	0	0
9:00 PM	0	0	0	0	0	0	0	0	0
9:15 PM	0	0	0	0	1	0	0	0	1
9:30 PM	0	0	0	0	0	0	0	0	0
9:45 PM	0	0	0	0	0	0	0	0	0
10:00 PM	0	0	0	0	0	0	0	0	0
10:15 PM	0	0	0	0	0	0	0	0	0
10:30 PM	0	0	0	0	0	0	0	0	0
10:45 PM	0	0	0	0	0	0	0	0	0
11:00 PM	0	0	0	0	0	0	0	0	0
11:15 PM	0	0	0	0	0	0	0	0	0
11:30 PM	0	0	0	0	0	0	0	0	0
11:45 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	6	5	0	0	9	7	19	19	65
APPROACH %'s :	54.55%	45.45%			56.25%	43.75%	50.00%	50.00%	
PEAK HR :	**03:00 PM - 04:00 PM**								TOTAL
PEAK HR VOL :	1	0	0	0	0	1	7	2	11
PEAK HR FACTOR :	0.250					0.250	0.583	0.250	0.917
	0.250				0.250		0.750		

National Data & Surveying Services

Intersection Turning Movement Count

Location: Canyon Rd & Country Club Dr
City: Moraga
Control: 2-Way Stop(EB/WB)

Project ID: 24-080249-001
Date: 9/17/2024

Data - Total

NS/EW Streets:	Canyon Rd				Canyon Rd				Country Club Dr				Country Club Dr				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
12:00 AM	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	3
12:15 AM	0	1	1	0	0	6	0	0	0	0	0	0	1	0	0	0	9
12:30 AM	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2
12:45 AM	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	4
1:00 AM	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	3
1:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 AM	1	0	0	0	0	2	0	0	1	0	0	0	0	0	0	0	4
1:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
2:15 AM	0	2	0	0	0	0	0	1	1	0	0	0	0	0	0	0	4
2:30 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2:45 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
3:00 AM	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	4
3:15 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
3:30 AM	0	4	0	0	0	1	0	0	0	0	0	0	1	0	0	0	6
3:45 AM	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	3
4:00 AM	0	1	0	0	0	1	0	1	0	0	0	0	0	0	0	0	3
4:15 AM	0	3	0	0	0	2	0	0	0	0	1	0	0	0	0	0	6
4:30 AM	0	0	0	0	1	1	1	0	0	0	0	0	0	0	1	0	4
4:45 AM	0	5	0	0	0	1	0	0	1	0	0	0	0	0	0	0	7
5:00 AM	0	10	0	0	0	5	0	0	0	0	0	0	0	1	0	0	16
5:15 AM	0	18	0	0	0	1	4	0	0	0	0	0	0	0	0	0	23
5:30 AM	3	16	1	0	1	3	1	0	0	0	0	0	0	1	3	0	29
5:45 AM	7	21	0	0	0	3	5	0	2	0	1	0	0	0	1	0	40
6:00 AM	2	21	0	0	0	7	6	0	0	0	0	0	0	0	0	0	36
6:15 AM	5	34	0	0	2	14	4	0	3	0	0	0	0	0	0	0	62
6:30 AM	7	48	0	0	2	8	6	0	2	0	1	0	0	0	1	0	75
6:45 AM	7	41	1	0	4	24	5	0	4	0	4	0	1	0	3	0	94
7:00 AM	10	49	0	0	5	39	6	1	3	0	1	0	0	0	6	0	120
7:15 AM	11	84	1	0	5	40	10	0	4	0	6	0	0	0	5	0	166
7:30 AM	7	97	0	0	14	72	3	0	0	0	9	0	1	2	6	0	211
7:45 AM	14	173	4	0	19	80	7	0	3	2	10	0	1	1	6	0	320
8:00 AM	22	210	9	0	20	181	14	0	1	0	18	0	5	0	18	0	498
8:15 AM	45	226	12	0	28	151	21	0	4	0	24	0	0	0	19	0	530
8:30 AM	14	102	10	0	26	102	10	2	2	0	14	0	6	2	27	0	317
8:45 AM	18	95	9	0	28	63	12	0	0	0	8	0	6	2	24	0	265
9:00 AM	19	75	7	1	18	81	5	1	2	2	11	0	11	5	21	0	259
9:15 AM	20	93	4	0	8	73	12	1	4	0	9	0	2	2	19	0	247
9:30 AM	12	86	3	1	5	47	12	0	9	2	10	0	1	2	12	0	202
9:45 AM	20	83	2	0	3	48	4	0	6	3	8	0	0	3	4	0	184
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	245	1605	64	2	190	1068	149	7	53	9	135	0	37	21	176	0	3761
APPROACH %'s :	12.79%	83.77%	3.34%	0.10%	13.44%	75.53%	10.54%	0.50%	26.90%	4.57%	68.53%	0.00%	15.81%	8.97%	75.21%	0.00%	
PEAK HR :	07:45 AM - 08:45 AM																TOTAL
PEAK HR VOL :	95	711	35	0	93	514	52	2	10	2	66	0	12	3	70	0	1665
PEAK HR FACTOR :	0.528	0.787	0.729	0.000	0.830	0.710	0.619	0.250	0.625	0.250	0.688	0.000	0.500	0.375	0.648	0.000	0.785
		0.743				0.769				0.696				0.607			

NOON	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
10:00 AM	16	60	0	0	9	46	10	0	4	2	8	0	0	0	10	0	165
10:15 AM	5	72	3	0	9	57	15	0	5	0	6	1	1	4	8	0	186
10:30 AM	6	63	0	0	10	67	13	1	6	0	9	0	1	3	16	0	195
10:45 AM	9	85	2	0	10	51	13	0	6	1	14	0	0	0	8	0	199
11:00 AM	9	84	1	0	7	74	15	1	5	1	3	0	3	4	8	0	215
11:15 AM	9	80	1	0	7	60	10	0	3	3	8	0	1	2	6	0	190
11:30 AM	9	87	2	1	11	54	9	1	5	1	7	0	1	2	12	0	202
11:45 AM	9	72	4	0	21	62	8	1	8	4	8	1	3	2	11	0	214
12:00 PM	7	66	0	0	15	67	6	0	5	2	9	0	3	1	8	0	189
12:15 PM	10	78	4	0	5	72	7	0	6	1	8	0	0	1	8	0	200
12:30 PM	8	73	1	0	5	72	11	1	5	1	7	0	0	0	11	0	195
12:45 PM	10	78	0	0	15	77	6	1	8	1	10	0	1	3	6	0	216
1:00 PM	5	64	3	0	9	74	10	2	3	1	11	0	0	0	4	0	186
1:15 PM	9	74	2	0	11	72	4	0	7	0	10	0	1	1	12	0	203
1:30 PM	10	51	0	0	11	108	13	0	5	1	6	0	4	0	7	0	216
1:45 PM	8	67	2	0	14	115	11	2	6	2	11	0	1	2	8	0	249
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	139	1154	25	1	169	1128	161	10	87	21	135	2	20	25	143	0	3220
APPROACH %'s :	10.54%	87.49%	1.90%	0.08%	11.51%	76.84%	10.97%	0.68%	35.51%	8.57%	55.10%	0.82%	10.64%	13.30%	76.06%	0.00%	
PEAK HR :	01:00 PM - 02:00 PM																TOTAL
PEAK HR VOL :	32	256	7	0	45	369	38	4	21	4	38	0	6	3	31	0	854
PEAK HR FACTOR :	0.800	0.865	0.583	0.000	0.804	0.802	0.731	0.500	0.750	0.500	0.864	0.000	0.375	0.375	0.646	0.000	0.857
		0.868				0.803				0.829				0.714			

National Data & Surveying Services

Intersection Turning Movement Count

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	14	84	3	0	6	135	13	0	5	0	17	0	2	0	6	0	285
2:15 PM	14	171	6	1	12	127	8	1	3	1	9	0	5	0	12	0	370
2:30 PM	9	111	9	0	9	93	14	1	15	2	12	0	0	2	14	0	291
2:45 PM	17	107	8	0	25	97	13	1	4	2	13	0	6	1	16	0	310
3:00 PM	9	113	3	0	13	100	14	0	5	3	14	0	6	5	16	0	301
3:15 PM	16	168	1	0	12	101	18	0	4	2	9	0	0	2	17	0	350
3:30 PM	21	125	3	0	14	103	18	2	4	0	11	0	4	0	12	0	317
3:45 PM	18	126	1	0	20	157	16	0	1	1	16	0	2	2	20	0	380
4:00 PM	5	131	4	0	19	127	8	2	3	0	14	0	3	4	24	0	344
4:15 PM	20	147	3	0	15	127	16	2	3	1	23	0	3	0	12	0	372
4:30 PM	20	155	6	0	13	106	15	1	4	2	15	0	4	1	17	0	359
4:45 PM	17	127	10	0	20	131	16	0	3	1	28	1	6	2	22	0	384
5:00 PM	9	116	3	0	7	114	15	3	2	1	7	0	8	0	27	0	312
5:15 PM	17	152	1	0	7	130	8	3	1	0	13	0	5	2	15	0	354
5:30 PM	14	127	3	0	4	122	9	1	9	0	15	0	1	0	10	0	315
5:45 PM	18	149	1	0	10	142	18	0	10	0	14	0	2	0	9	0	373
6:00 PM	19	126	1	0	12	142	19	1	9	3	13	0	1	1	7	0	354
6:15 PM	6	87	2	0	4	103	18	1	6	0	8	0	3	2	9	0	249
6:30 PM	9	63	1	0	4	112	8	1	3	2	11	0	1	0	6	0	221
6:45 PM	9	81	1	0	11	80	6	1	7	1	9	0	0	0	7	0	213
7:00 PM	6	54	0	0	3	105	4	2	1	0	5	0	0	0	2	0	182
7:15 PM	14	52	0	0	5	73	15	1	1	2	6	2	1	1	5	0	178
7:30 PM	3	31	2	0	13	69	5	0	2	0	6	0	0	1	9	0	141
7:45 PM	3	33	0	0	1	60	4	0	8	0	6	0	0	0	4	0	119
8:00 PM	6	17	0	0	2	67	2	0	2	0	7	0	1	0	5	0	109
8:15 PM	4	20	0	0	5	42	7	2	1	0	2	0	1	0	3	0	87
8:30 PM	1	24	0	0	3	68	3	0	1	0	5	0	0	1	1	0	107
8:45 PM	3	18	0	0	3	46	4	1	2	1	3	0	0	0	1	0	82
9:00 PM	0	18	0	0	0	47	2	1	1	1	7	0	0	0	1	0	78
9:15 PM	1	16	0	0	2	38	3	0	0	0	5	0	0	0	2	0	67
9:30 PM	1	13	0	0	2	27	1	0	1	0	3	0	0	0	1	0	49
9:45 PM	0	12	0	0	2	19	2	0	1	0	1	0	0	0	1	0	38
10:00 PM	1	9	0	0	0	23	3	1	1	0	1	0	0	0	1	0	40
10:15 PM	0	3	0	0	0	17	1	0	2	0	0	1	1	0	0	0	25
10:30 PM	0	3	0	0	0	5	2	0	4	0	1	0	0	0	0	0	15
10:45 PM	1	3	0	0	0	9	2	1	0	0	1	0	0	1	0	0	18
11:00 PM	0	2	0	0	1	5	0	0	1	0	0	0	0	0	0	0	9
11:15 PM	0	2	0	0	3	5	1	0	1	0	0	0	0	0	1	0	13
11:30 PM	0	1	0	0	0	2	2	0	0	0	0	0	0	0	0	0	5
11:45 PM	0	2	0	0	2	6	2	0	1	0	0	0	0	0	1	0	14
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	325	2799	72	1	284	3082	335	30	132	26	330	4	66	28	316	0	7830
APPROACH %'s :	10.17%	87.55%	2.25%	0.03%	7.61%	82.61%	8.98%	0.80%	26.83%	5.28%	67.07%	0.81%	16.10%	6.83%	77.07%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	62	560	23	0	67	491	55	5	13	4	80	1	16	7	75	0	1459
PEAK HR FACTOR :	0.775	0.903	0.575	0.000	0.838	0.937	0.859	0.625	0.813	0.500	0.714	0.250	0.667	0.438	0.781	0.000	0.950
	0.891				0.925				0.742				0.790				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Canyon Rd & Country Club Dr
City: Moraga
Control: 2-Way Stop(EB/WB)

Project ID: 24-080249-001
Date: 9/18/2024

Data - Total

NS/EW Streets:	Canyon Rd				Canyon Rd				Country Club Dr				Country Club Dr				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
12:00 AM	0	2	0	0	0	1	0	0	1	0	0	0	0	0	1	0	5
12:15 AM	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	4
12:30 AM	0	2	0	0	0	5	2	0	0	0	0	0	0	0	0	0	9
12:45 AM	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2
1:00 AM	0	1	0	0	0	1	1	0	1	0	0	0	0	0	0	0	4
1:15 AM	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	2
1:30 AM	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	2
1:45 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
2:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 AM	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	2
2:45 AM	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	4
3:00 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
3:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 AM	0	1	0	0	1	1	0	0	0	0	0	0	1	0	1	0	5
4:00 AM	0	0	0	0	0	1	0	0	1	0	0	0	0	1	0	0	3
4:15 AM	1	3	0	0	0	1	0	0	0	0	0	0	0	0	0	0	5
4:30 AM	1	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	4
4:45 AM	0	2	0	0	0	0	2	0	1	0	0	0	0	0	0	0	5
5:00 AM	0	10	0	0	0	3	0	0	0	0	1	0	0	0	0	0	14
5:15 AM	1	22	1	0	1	2	4	0	0	0	0	0	0	1	0	0	32
5:30 AM	3	24	0	0	2	6	1	0	0	0	0	0	0	0	1	0	37
5:45 AM	4	12	0	0	0	7	6	0	1	0	0	0	0	0	1	0	31
6:00 AM	3	29	0	0	0	6	4	0	0	0	0	0	3	0	0	0	45
6:15 AM	3	30	0	0	0	15	8	0	3	0	0	0	0	0	2	0	61
6:30 AM	7	32	0	0	3	17	4	1	6	0	3	0	0	0	1	0	74
6:45 AM	6	39	0	0	8	23	3	0	0	0	0	0	0	0	2	0	81
7:00 AM	5	60	0	0	2	33	5	1	1	0	3	0	0	0	2	0	112
7:15 AM	9	67	0	0	8	41	6	0	2	0	6	0	0	0	3	0	142
7:30 AM	8	97	0	0	10	49	5	1	4	0	10	0	0	0	7	0	191
7:45 AM	21	143	4	0	17	90	6	0	5	0	12	0	1	1	5	0	305
8:00 AM	21	225	9	1	24	183	13	1	3	0	25	1	4	0	25	0	535
8:15 AM	39	234	12	1	25	165	20	1	2	0	19	0	2	1	21	0	542
8:30 AM	14	100	8	0	24	115	6	0	5	0	9	0	4	0	31	0	316
8:45 AM	14	82	13	0	32	88	9	1	5	0	14	0	9	1	22	0	290
9:00 AM	9	97	5	1	14	74	16	0	3	2	8	0	3	0	26	0	258
9:15 AM	14	84	0	0	7	56	9	0	2	0	6	0	0	1	7	0	186
9:30 AM	12	85	5	0	4	60	10	0	2	3	7	0	1	2	9	0	200
9:45 AM	13	82	1	0	10	56	10	0	6	1	6	0	3	1	9	0	198
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	208	1573	58	3	193	1108	151	6	58	6	129	1	31	9	176	0	3710
APPROACH %'s :	11.29%	85.40%	3.15%	0.16%	13.24%	75.99%	10.36%	0.41%	29.90%	3.09%	66.49%	0.52%	14.35%	4.17%	81.48%	0.00%	
PEAK HR :	07:45 AM - 08:45 AM																TOTAL
PEAK HR VOL :	95	702	33	2	90	553	45	2	15	0	65	1	11	2	82	0	1698
PEAK HR FACTOR :	0.609	0.750	0.688	0.500	0.900	0.755	0.563	0.500	0.750	0.000	0.650	0.250	0.688	0.500	0.661	0.000	0.783
		0.727				0.781				0.698				0.679			

NOON	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
10:00 AM	12	82	2	0	3	55	13	0	1	2	6	2	2	1	5	0	186
10:15 AM	9	70	2	0	10	60	10	0	4	1	9	0	2	2	11	0	190
10:30 AM	8	84	3	0	11	50	11	0	4	1	8	0	3	2	8	0	193
10:45 AM	3	67	2	0	12	75	13	0	8	1	4	0	1	1	11	0	198
11:00 AM	14	71	3	0	10	72	9	0	7	0	11	0	2	2	8	0	209
11:15 AM	6	70	1	0	9	66	9	0	7	2	5	1	2	1	10	0	189
11:30 AM	14	73	3	0	5	57	10	0	9	0	9	1	2	1	12	0	196
11:45 AM	16	79	3	0	22	73	8	0	7	0	12	1	2	1	13	0	237
12:00 PM	16	83	1	0	9	68	16	0	4	0	7	0	1	2	30	0	237
12:15 PM	10	59	2	0	7	81	12	1	3	1	7	0	0	0	7	0	190
12:30 PM	3	73	2	0	5	73	12	0	2	0	5	0	2	2	4	0	183
12:45 PM	9	72	6	0	8	82	19	1	7	3	8	1	1	1	7	0	225
1:00 PM	3	73	4	0	7	66	6	2	5	2	4	0	2	0	11	0	185
1:15 PM	9	69	0	0	11	73	12	0	5	3	8	0	3	4	10	0	207
1:30 PM	11	61	3	0	9	82	22	1	9	0	12	1	0	0	10	0	221
1:45 PM	13	82	5	0	15	74	14	0	4	1	11	2	3	0	13	0	237
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	156	1168	42	0	153	1107	196	5	86	17	126	9	28	20	170	0	3283
APPROACH %'s :	11.42%	85.51%	3.07%	0.00%	10.47%	75.77%	13.42%	0.34%	36.13%	7.14%	52.94%	3.78%	12.84%	9.17%	77.98%	0.00%	
PEAK HR :	11:30 AM - 12:30 PM																TOTAL
PEAK HR VOL :	56	294	9	0	43	279	46	1	23	1	35	2	5	4	62	0	860
PEAK HR FACTOR :	0.875	0.886	0.750	0.000	0.489	0.861	0.719	0.250	0.639	0.250	0.729	0.500	0.625	0.500	0.517	0.000	0.907
		0.898				0.896				0.763				0.538			

National Data & Surveying Services

Intersection Turning Movement Count

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	2	0	0	1	2	0	0	1	2	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	4	95	2	0	12	92	10	0	6	1	10	1	2	3	8	0	246
2:15 PM	8	89	5	0	16	75	7	0	2	1	6	0	1	1	8	0	219
2:30 PM	9	92	1	0	14	96	16	0	7	0	7	0	5	1	10	0	258
2:45 PM	14	77	4	0	23	133	16	1	11	0	16	0	4	0	15	0	314
3:00 PM	16	198	5	1	11	147	13	2	6	3	19	1	5	2	20	0	449
3:15 PM	19	167	3	0	17	143	29	5	4	0	14	1	1	3	12	0	418
3:30 PM	17	127	1	0	17	103	13	1	10	1	16	0	2	0	16	0	324
3:45 PM	14	117	4	0	17	131	14	2	2	0	11	0	3	2	19	0	336
4:00 PM	12	168	3	0	13	114	12	2	4	1	10	0	1	1	19	0	360
4:15 PM	20	159	4	0	15	111	15	0	6	1	17	0	5	3	11	0	367
4:30 PM	11	146	6	0	14	112	15	2	4	0	11	0	6	2	19	0	348
4:45 PM	15	102	10	0	20	113	19	2	5	3	10	0	8	1	20	0	328
5:00 PM	16	136	3	0	7	98	16	1	4	1	15	0	8	4	34	0	343
5:15 PM	22	178	2	0	12	125	19	2	5	2	10	0	0	2	15	0	394
5:30 PM	12	128	1	0	10	144	15	0	12	1	11	0	1	0	15	0	350
5:45 PM	9	106	0	0	4	123	3	2	5	0	14	0	4	0	12	0	282
6:00 PM	12	105	0	0	5	134	11	0	7	0	11	0	1	0	7	0	293
6:15 PM	12	78	0	0	5	112	9	0	4	1	9	0	1	1	9	0	241
6:30 PM	7	71	1	0	0	75	6	1	6	1	7	0	3	1	2	0	181
6:45 PM	7	84	0	0	6	98	10	0	4	0	0	0	0	1	4	0	214
7:00 PM	7	54	1	0	1	67	8	0	1	0	7	0	0	0	4	0	150
7:15 PM	8	46	0	0	7	106	15	0	6	1	6	0	1	0	4	0	200
7:30 PM	5	47	0	0	3	84	7	2	5	0	10	0	0	1	7	0	171
7:45 PM	5	44	0	0	6	59	8	0	0	0	5	0	1	0	1	0	129
8:00 PM	2	30	1	0	2	49	7	0	1	0	1	0	0	1	2	0	96
8:15 PM	5	29	0	0	2	74	4	1	1	1	8	0	0	0	1	0	126
8:30 PM	0	27	0	0	4	69	3	0	2	0	4	0	0	0	1	0	110
8:45 PM	2	20	0	0	2	44	5	3	1	0	5	0	0	0	0	0	82
9:00 PM	1	17	1	0	2	50	3	1	0	0	8	0	0	0	1	0	84
9:15 PM	2	17	0	0	0	39	6	1	1	0	2	0	1	0	0	0	69
9:30 PM	0	8	0	0	2	34	2	1	3	0	2	0	1	0	2	0	55
9:45 PM	1	8	0	0	2	23	2	0	2	0	1	0	0	0	0	0	39
10:00 PM	4	10	0	0	2	20	0	1	0	0	3	0	0	0	1	0	41
10:15 PM	1	10	0	0	2	16	2	1	0	0	0	1	0	0	0	0	33
10:30 PM	0	1	0	0	2	17	2	1	5	0	0	0	0	0	1	0	29
10:45 PM	0	3	0	0	0	13	0	0	6	0	0	0	0	0	0	0	22
11:00 PM	0	0	0	0	0	8	1	0	1	0	0	0	0	0	0	0	10
11:15 PM	0	4	0	0	0	9	1	0	0	0	0	0	0	1	2	0	17
11:30 PM	0	0	0	0	1	7	0	0	0	0	0	0	0	0	0	0	8
11:45 PM	0	4	0	0	0	3	1	0	0	0	0	0	0	0	1	0	9
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	299	2802	58	1	278	3070	345	35	149	19	286	4	65	31	303	0	7745
APPROACH %'s :	9.46%	88.67%	1.84%	0.03%	7.46%	82.35%	9.25%	0.94%	32.53%	4.15%	62.45%	0.87%	16.29%	7.77%	75.94%	0.00%	
PEAK HR :	03:00 PM - 04:00 PM																TOTAL
PEAK HR VOL :	66	609	13	1	62	524	69	10	22	4	60	2	11	7	67	0	1527
PEAK HR FACTOR :	0.868	0.769	0.650	0.250	0.912	0.891	0.595	0.500	0.550	0.333	0.789	0.500	0.550	0.583	0.838	0.000	0.850
		0.783				0.857				0.759				0.787			

Prepared by National Data & Surveying Services

SPEED

Canyon Rd Bet Larch Ave & Sanders Dr

Day: Tuesday
Date: 9/17/2024

City: Moraga
Project #: CA24_080251_001

HOURLY BREAKDOWN

Time	NORTHBOUND 5 15	15 20	20 25	25 30	30 35	35 40	40 45	45 50	50 55	55 60	60 65	65 70	70 99	Total	SOUTHBOUND 5 15	15 20	20 25	25 30	30 35	35 40	40 45	45 50	50 55	55 60	60 65	65 70	70 99	Total	TOTALS 5 15	15 20	20 25	25 30	30 35	35 40	40 45	45 50	50 55	55 60	60 65	65 70	70 99	Total
0:00	0	2	0	1	3	0	0	0	0	0	0	0	0	**6**	0	0	2	1	4	3	0	0	0	0	0	0	0	**10**	0	2	2	2	7	3	0	0	0	0	0	0	0	**16**
1:00	0	1	1	0	0	0	0	0	0	0	0	0	0	**2**	0	0	0	2	1	0	0	0	0	0	0	0	0	**3**	0	1	1	2	1	0	0	0	0	0	0	0	0	**5**
2:00	0	0	1	0	1	2	0	0	0	0	0	0	0	**4**	0	0	0	0	1	1	0	0	0	0	0	0	0	**2**	0	0	1	0	2	3	0	0	0	0	0	0	0	**6**
3:00	1	2	0	1	1	0	0	0	0	0	0	0	0	**5**	1	0	0	0	1	2	1	0	0	0	0	0	0	**5**	2	2	0	1	2	2	1	0	0	0	0	0	0	**10**
4:00	1	0	1	0	4	1	0	0	0	0	0	0	0	**7**	0	0	0	3	2	1	1	0	0	0	0	0	0	**7**	1	0	1	3	6	2	1	0	0	0	0	0	0	**14**
5:00	0	6	12	14	23	8	3	1	0	0	0	0	0	**67**	0	0	0	2	6	4	1	0	1	0	0	0	0	**14**	0	6	12	16	29	12	4	1	1	0	0	0	0	**81**
6:00	1	6	28	28	48	20	4	1	0	0	0	0	0	**136**	0	0	3	11	13	17	7	2	0	0	0	0	0	**53**	1	6	31	39	61	37	11	3	0	0	0	0	0	**189**
7:00	0	8	50	111	135	82	13	1	0	0	0	0	0	**400**	0	1	24	46	89	63	12	9	1	0	0	0	0	**245**	0	9	74	157	224	145	25	10	1	0	0	0	0	**645**
8:00	1	17	140	245	200	86	16	3	0	0	0	0	0	**708**	0	12	64	205	165	77	15	6	0	0	0	0	0	**544**	1	29	204	450	365	163	31	9	0	0	0	0	0	**1252**
9:00	1	18	65	103	122	69	10	3	0	0	0	0	0	**391**	0	5	26	73	96	62	16	2	0	0	0	0	0	**280**	1	23	91	176	218	131	26	5	0	0	0	0	0	**671**
10:00	0	6	53	67	98	55	15	2	0	0	0	0	0	**296**	0	1	22	41	100	53	10	4	0	0	0	0	0	**231**	0	7	75	108	198	108	25	6	0	0	0	0	0	**527**
11:00	0	23	40	71	113	55	14	2	1	0	0	0	0	**319**	0	1	19	57	94	57	16	3	1	0	0	0	0	**248**	0	24	59	128	207	112	30	5	2	0	0	0	0	**567**
12:00	2	16	41	58	112	66	18	2	0	0	0	0	0	**315**	0	2	42	71	136	57	13	4	0	0	0	0	0	**325**	2	18	83	129	248	123	31	6	0	0	0	0	0	**640**
13:00	1	8	46	47	94	68	10	5	0	0	0	0	0	**279**	0	0	32	87	143	81	21	4	2	0	0	0	0	**370**	1	8	78	134	237	149	31	9	2	0	0	0	0	**649**
14:00	1	8	78	147	170	91	26	2	0	0	0	0	0	**523**	2	10	77	126	165	74	11	8	0	0	0	0	0	**473**	3	18	155	273	335	165	37	10	0	0	0	0	0	**996**
15:00	2	17	65	114	183	129	27	11	1	0	0	0	0	**549**	0	4	55	105	183	93	24	11	1	0	0	0	0	**476**	2	21	120	219	366	222	51	22	2	0	0	0	0	**1025**
16:00	0	15	49	107	219	131	51	10	2	0	0	0	0	**584**	0	7	69	124	219	88	23	3	1	0	0	0	0	**534**	0	22	118	231	438	219	74	13	3	0	0	0	0	**1118**
17:00	0	8	46	96	230	146	47	15	0	0	0	0	0	**588**	0	4	65	108	214	94	27	6	3	0	0	0	0	**521**	0	12	111	204	444	240	74	21	3	0	0	0	0	**1109**
18:00	0	8	35	78	130	90	26	3	0	0	0	0	0	**370**	0	2	59	97	180	73	24	6	1	0	0	0	0	**442**	0	10	94	175	310	163	50	9	1	0	0	0	0	**812**
19:00	0	11	25	47	61	26	7	1	0	0	0	0	0	**178**	0	3	44	77	130	38	3	4	2	0	0	0	0	**301**	0	14	69	124	191	64	10	5	2	0	0	0	0	**479**
20:00	0	3	16	24	27	13	1	1	0	0	0	0	0	**85**	0	2	37	52	88	23	5	1	0	0	0	0	0	**208**	0	5	53	76	115	36	6	2	0	0	0	0	0	**293**
21:00	0	5	7	21	12	8	4	1	0	0	0	0	0	**58**	0	2	16	30	58	21	6	2	1	0	0	0	0	**136**	0	7	23	51	70	29	10	3	1	0	0	0	0	**194**
22:00	0	4	1	7	3	3	0	0	0	0	0	0	0	**18**	0	1	5	9	21	6	2	0	0	0	0	0	0	**44**	0	5	6	16	24	9	2	0	0	0	0	0	0	**62**
23:00	0	0	0	3	2	1	0	0	0	0	0	0	0	**6**	0	0	5	5	12	0	0	0	0	0	0	0	0	**22**	0	0	5	8	14	1	0	0	0	0	0	0	0	**28**
Totals	**11**	**192**	**800**	**1,390**	**1,991**	**1,150**	**292**	**64**	**4**	**0**	**0**	**0**	**0**	**5,894**	**3**	**57**	**666**	**1,332**	**2,121**	**988**	**238**	**75**	**14**	**0**	**0**	**0**	**0**	**5,494**	**14**	**249**	**1,466**	**2,722**	**4,112**	**2,138**	**530**	**139**	**18**	**0**	**0**	**0**	**0**	**11,388**
% of Totals	0%	3%	14%	24%	34%	20%	5%	1%	0%					100%	0%	1%	12%	24%	39%	18%	4%	1%	0%					100%	0%	2%	13%	24%	36%	19%	5%	1%	0%					100%

STATISTICS

00:00 - 12:00	5	89	391	641	748	378	75	13	1	0	0	0	0	2341	1	20	160	441	572	340	79	26	3	0	0	0	0	1642	6	109	551	1082	1320	718	154	39	4	0	0	0	0	3983
%	0%	2%	7%	11%	13%	6%	1%	0%	0%	0%	0%	0%	0%	40%	0%	0%	3%	7%	10%	6%	1%	0%	0%	0%	0%	0%	0%	28%	0%	2%	9%	18%	22%	12%	3%	1%	0%	0%	0%	0%	0%	68%
Peak Hour	3:30	11:00	8:00	7:45	7:45	7:30	7:15	7:30	10:45	0:00	0:00	0:00	0:00	7:45	2:45	8:15	7:30	7:45	8:00	7:45	8:15	7:45	4:45	0:00	0:00	0:00	0:00	7:45	3:30	8:15	8:00	7:45	7:45	7:30	10:30	7:45	11:00	0:00	0:00	0:00	0:00	7:45
Peak Volume	2	23	140	261	226	102	19	4	1	0	0	0	0	763	1	13	65	208	165	86	20	10	1	0	0	0	0	557	3	32	204	469	388	185	35	14	2	0	0	0	0	1320
12:00 - 24:00	6	103	409	749	1243	772	217	51	3	0	0	0	0	3553	2	37	506	891	1549	648	159	49	11	0	0	0	0	3852	8	140	915	1640	2792	1420	376	100	14	0	0	0	0	7405
%	0%	2%	7%	13%	21%	13%	4%	1%	0%	0%	0%	0%	0%	60%	0%	1%	9%	15%	26%	11%	3%	1%	0%	0%	0%	0%	0%	65%	0%	2%	16%	28%	47%	24%	6%	2%	0%	0%	0%	0%	0%	126%
Peak Hour	12:15	15:00	14:15	14:15	17:15	17:00	17:15	17:15	15:30	12:00	12:00	12:00	12:00	17:15	13:45	14:00	14:00	15:30	17:15	13:30	16:30	14:45	17:15	12:00	12:00	12:00	12:00	15:45	14:15	16:15	14:00	14:00	17:15	17:00	16:00	17:15	15:30	12:00	12:00	12:00	12:00	17:15
Peak Volume	3	17	82	152	246	146	52	16	3	0	0	0	0	601	2	10	77	131	221	97	30	13	4	0	0	0	0	544	4	23	155	273	467	240	74	25	5	0	0	0	0	1143
07:00 - 09:00	1	25	190	356	335	168	29	4	0	0	0	0	0	1108	0	13	88	251	254	140	27	15	1	0	0	0	0	789	1	38	278	607	589	308	56	19	1	0	0	0	0	1897
%	0%	0%	3%	6%	6%	3%	0%	0%	0%	0%	0%	0%	0%	19%	0%	0%	1%	4%	4%	2%	0%	0%	0%	0%	0%	0%	0%	13%	0%	1%	5%	10%	10%	5%	1%	0%	0%	0%	0%	0%	0%	32%
Peak Hour	7:45	7:45	8:00	7:45	7:45	7:30	7:15	7:30	7:00	7:00	7:00	7:00	7:00	7:45	7:00	8:00	7:30	7:45	8:00	7:45	7:45	7:45	7:00	7:00	7:00	7:00	7:00	7:45	7:45	7:45	8:00	7:45	7:45	7:30	7:45	7:45	7:00	7:00	7:00	7:00	7:00	7:45
Peak Volume	1	20	140	261	226	102	19	4	0	0	0	0	0	763	0	12	65	208	165	86	17	10	1	0	0	0	0	557	1	30	204	469	388	185	32	14	1	0	0	0	0	1320
16:00 - 18:00	0	23	95	203	449	277	98	25	2	0	0	0	0	1172	0	11	134	232	433	182	50	9	4	0	0	0	0	1055	0	34	229	435	882	459	148	34	6	0	0	0	0	2227
%	0%	0%	2%	3%	8%	5%	2%	0%	0%	0%	0%	0%	0%	20%	0%	0%	2%	4%	7%	3%	1%	0%	0%	0%	0%	0%	0%	18%	0%	1%	4%	7%	15%	8%	3%	1%	0%	0%	0%	0%	0%	38%
Peak Hour	16:00	16:00	16:30	16:30	17:00	17:00	16:00	17:00	16:00	16:00	16:00	16:00	16:00	16:30	16:00	16:15	16:15	16:00	16:00	16:30	16:30	17:00	17:00	16:00	16:00	16:00	16:00	16:00	16:00	16:15	16:30	16:30	17:00	17:00	16:00	17:00	16:00	16:00	16:00	16:00	16:00	16:00
Peak Volume	0	15	54	128	230	146	51	15	2	0	0	0	0	589	0	8	71	124	219	96	30	6	3	0	0	0	0	534	0	23	123	237	444	240	74	21	3	0	0	0	0	1118

Direction	Percentiles 15th	50th	Average	85th	95th	ADT
NORTHBOUND	24	31	31	38	41	5894
SOUTHBOUND	25	32	31	37	41	5494
TOTALS	25	32	31	38	41	11388

Prepared by National Data & Surveying Services

SPEED

Canyon Rd Bet Sanders Dr & Country Club Dr

Day: Tuesday
Date: 9/17/2024

City: Moraga
Project #: CA24_080251_002

HOURLY BREAKDOWN

Time	NORTHBOUND 5 15	15 20	20 25	25 30	30 35	35 40	40 45	45 50	50 55	55 60	60 65	65 70	70 99	Total	SOUTHBOUND 5 15	15 20	20 25	25 30	30 35	35 40	40 45	45 50	50 55	55 60	60 65	65 70	70 99	Total	TOTALS 5 15	15 20	20 25	25 30	30 35	35 40	40 45	45 50	50 55	55 60	60 65	65 70	70 99	Total
0:00	0	0	0	3	0	2	1	0	0	0	0	0	0	6	0	0	1	5	2	3	0	0	0	0	0	0	0	11	0	0	1	8	2	5	1	0	0	0	0	0	0	17
1:00	0	0	0	1	1	0	0	0	0	0	0	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0	4	0	0	0	3	3	0	0	0	0	0	0	0	0	6
2:00	0	0	0	1	1	2	0	0	0	0	0	0	0	4	0	0	0	0	2	0	0	0	0	0	0	0	0	2	0	0	0	1	3	2	0	0	0	0	0	0	0	6
3:00	0	1	1	2	1	1	0	0	0	0	0	0	0	6	0	1	0	1	1	3	1	0	0	0	0	0	0	7	0	2	1	3	2	4	1	0	0	0	0	0	0	13
4:00	0	2	0	2	1	3	1	0	0	0	0	0	0	9	0	0	0	3	2	1	0	0	0	0	0	0	0	6	0	2	0	5	3	4	1	0	0	0	0	0	0	15
5:00	0	5	5	4	21	30	9	1	1	0	0	0	0	76	0	0	0	2	5	4	1	0	0	0	0	0	0	12	0	5	5	6	26	34	10	1	1	0	0	0	0	88
6:00	0	10	19	3	52	69	11	1	0	0	0	0	0	165	0	0	3	9	20	23	3	0	0	0	0	0	0	58	0	10	22	12	72	92	14	1	0	0	0	0	0	223
7:00	0	15	34	17	146	184	52	3	1	0	0	0	0	452	0	1	1	56	109	69	17	4	3	0	0	0	0	260	0	16	35	73	255	253	69	7	4	0	0	0	0	712
8:00	0	10	53	47	328	270	55	8	0	0	0	0	0	771	0	5	31	178	253	93	15	4	0	0	0	0	0	579	0	15	84	225	581	363	70	12	0	0	0	0	0	1350
9:00	0	6	29	39	167	140	43	1	0	0	0	0	0	425	1	2	17	77	143	53	8	2	1	0	0	0	0	304	1	8	46	116	310	193	51	3	1	0	0	0	0	729
10:00	0	6	27	21	111	117	35	7	0	0	0	0	0	324	0	0	7	56	127	61	8	2	0	0	0	0	0	261	0	6	34	77	238	178	43	9	0	0	0	0	0	585
11:00	0	8	40	17	116	131	51	4	1	0	0	0	0	368	1	2	3	53	142	63	17	2	0	1	0	0	0	284	1	10	43	70	258	194	68	6	1	1	0	0	0	652
12:00	0	10	29	19	88	135	50	12	1	0	0	0	0	344	1	1	9	59	174	66	12	3	0	1	0	0	0	326	1	11	38	78	262	201	62	15	1	1	0	0	0	670
13:00	0	5	15	6	90	124	50	6	1	1	0	0	0	298	0	0	7	90	198	92	14	7	2	0	0	0	0	410	0	5	22	96	288	216	64	13	3	1	0	0	0	708
14:00	0	11	27	29	156	237	79	19	1	0	0	0	0	559	1	1	17	117	256	88	28	6	0	0	0	0	0	514	1	12	44	146	412	325	107	25	1	0	0	0	0	1073
15:00	0	6	36	27	122	275	111	23	4	0	0	0	0	604	0	2	13	115	239	116	21	7	4	0	0	0	0	517	0	8	49	142	361	391	132	30	8	0	0	0	0	1121
16:00	0	8	46	20	143	268	128	26	5	0	0	0	0	644	0	1	18	121	286	132	22	8	0	0	0	0	0	588	0	9	64	141	429	400	150	34	5	0	0	0	0	1232
17:00	0	2	26	13	99	273	159	37	5	1	0	0	0	615	2	3	10	123	271	120	36	7	0	0	0	0	0	572	2	5	36	136	370	393	195	44	5	1	0	0	0	1187
18:00	0	6	27	16	85	183	75	15	0	0	0	0	0	407	0	0	14	101	242	99	23	5	2	0	0	0	0	486	0	6	41	117	327	282	98	20	2	0	0	0	0	893
19:00	0	6	15	12	66	79	13	6	1	0	0	0	0	198	0	1	5	84	176	63	9	0	2	0	0	0	0	340	0	7	20	96	242	142	22	6	3	0	0	0	0	538
20:00	0	1	7	11	25	39	8	1	1	0	0	0	0	93	0	0	10	57	113	49	10	1	0	0	0	0	0	240	0	1	17	68	138	88	18	2	1	0	0	0	0	333
21:00	0	1	2	7	23	17	11	0	1	0	0	0	0	62	0	0	3	22	73	35	13	1	0	1	0	0	0	148	0	1	5	29	96	52	24	1	1	1	0	0	0	210
22:00	0	0	0	2	9	6	0	2	0	0	0	0	0	19	0	0	2	13	24	7	3	2	0	0	0	0	0	51	0	0	2	15	33	13	3	4	0	0	0	0	0	70
23:00	0	0	1	1	2	2	1	0	0	0	0	0	0	7	0	0	0	5	12	4	1	0	0	0	0	0	0	22	0	0	1	6	14	6	2	0	0	0	0	0	0	29
Totals	**0**	**119**	**439**	**320**	**1,853**	**2,587**	**943**	**172**	**23**	**2**	**0**	**0**	**0**	**6,458**	**6**	**20**	**171**	**1,349**	**2,872**	**1,244**	**262**	**61**	**14**	**3**	**0**	**0**	**0**	**6,002**	**6**	**139**	**610**	**1,669**	**4,725**	**3,831**	**1,205**	**233**	**37**	**5**	**0**	**0**	**0**	**12,460**
% of Totals		2%	7%	5%	29%	40%	15%	3%	0%	0%				100%	0%	0%	3%	22%	48%	21%	4%	1%	0%	0%				100%	0%	1%	5%	13%	38%	31%	10%	2%	0%	0%				100%

STATISTICS

00:00 - 12:00	0	63	208	157	945	949	258	25	3	0	0	0	0	2608	2	11	63	442	808	373	70	14	4	1	0	0	0	1788	2	74	271	599	1753	1322	328	39	7	1	0	0	0	4396
%	0%	1%	3%	2%	15%	15%	4%	0%	0%	0%	0%	0%	0%	40%	0%	0%	1%	7%	13%	6%	1%	0%	0%	0%	0%	0%	0%	28%	0%	1%	4%	9%	27%	20%	5%	1%	0%	0%	0%	0%	0%	68%
Peak Hour	0:00	7:15	7:30	7:45	7:45	7:30	7:45	11:45	11:30	0:00	0:00	0:00	0:00	7:45	11:30	7:15	8:00	7:45	8:00	7:45	7:30	7:15	6:15	11:30	0:00	0:00	0:00	7:45	11:30	7:15	7:45	7:45	7:45	7:45	7:45	11:45	6:30	11:30	0:00	0:00	0:00	7:45
Peak Volume	0	18	60	50	339	299	72	10	2	0	0	0	0	839	2	6	31	186	253	100	21	5	3	2	0	0	0	594	2	24	89	236	589	398	92	15	4	2	0	0	0	1433
12:00 - 24:00	0	56	231	163	908	1638	685	147	20	2	0	0	0	3850	4	9	108	907	2064	871	192	47	10	2	0	0	0	4214	4	65	339	1070	2972	2509	877	194	30	4	0	0	0	8064
%	0%	1%	4%	3%	14%	25%	11%	2%	0%	0%	0%	0%	0%	60%	0%	0%	2%	14%	32%	13%	3%	1%	0%	0%	0%	0%	0%	65%	0%	1%	5%	17%	46%	39%	14%	3%	0%	0%	0%	0%	0%	125%
Peak Hour	12:00	14:00	15:45	14:15	14:00	15:15	17:15	17:00	15:30	12:45	12:00	12:00	12:00	16:00	17:00	16:45	15:45	15:30	16:00	15:30	17:00	13:30	14:45	12:00	12:00	12:00	12:00	17:15	17:00	14:15	15:45	13:45	16:00	17:15	17:15	17:00	15:00	12:00	12:00	12:00	12:00	15:45
Peak Volume	0	11	51	36	156	285	167	37	7	1	0	0	0	644	2	3	21	135	286	134	36	9	4	1	0	0	0	596	2	13	72	155	429	408	201	44	8	1	0	0	0	1232
07:00 - 09:00	0	25	87	64	474	454	107	11	1	0	0	0	0	1223	0	6	32	234	362	162	32	8	3	0	0	0	0	839	0	31	119	298	836	616	139	19	4	0	0	0	0	2062
%	0%	0%	1%	1%	7%	7%	2%	0%	0%	0%	0%	0%	0%	19%	0%	0%	0%	4%	6%	3%	0%	0%	0%	0%	0%	0%	0%	13%	0%	0%	2%	5%	13%	10%	2%	0%	0%	0%	0%	0%	0%	32%
Peak Hour	7:00	7:15	7:30	7:45	7:45	7:30	7:45	7:30	7:00	7:00	7:00	7:00	7:00	7:45	7:00	7:15	8:00	7:45	8:00	7:45	7:30	7:15	7:00	7:00	7:00	7:00	7:00	7:45	7:00	7:15	7:45	7:45	7:45	7:45	7:45	7:15	7:00	7:00	7:00	7:00	7:00	7:45
Peak Volume	0	18	60	50	339	299	72	9	1	0	0	0	0	839	0	6	31	186	253	100	21	5	3	0	0	0	0	594	0	24	89	236	589	398	92	13	4	0	0	0	0	1433
16:00 - 18:00	0	10	72	33	242	541	287	63	10	1	0	0	0	1259	2	4	28	244	557	252	58	15	0	0	0	0	0	1160	2	14	100	277	799	793	345	78	10	1	0	0	0	2419
%	0%	0%	1%	1%	4%	8%	4%	1%	0%	0%	0%	0%	0%	19%	0%	0%	0%	4%	9%	4%	1%	0%	0%	0%	0%	0%	0%	18%	0%	0%	2%	4%	12%	12%	5%	1%	0%	0%	0%	0%	0%	37%
Peak Hour	16:00	16:00	16:00	16:15	16:30	17:00	17:00	17:00	16:45	17:00	16:00	16:00	16:00	16:00	17:00	16:45	16:15	16:45	16:00	16:15	17:00	16:00	16:00	16:00	16:00	16:00	16:00	16:00	17:00	16:00	16:15	16:45	16:00	16:00	17:00	17:00	16:45	17:00	16:00	16:00	16:00	16:00
Peak Volume	0	8	46	22	154	273	159	37	6	1	0	0	0	644	2	3	21	134	286	134	36	8	0	0	0	0	0	588	2	9	65	152	429	400	195	44	6	1	0	0	0	1232

Direction	Percentiles 15th	50th	Average	85th	95th	ADT
NORTHBOUND	30	36	35	41	44	6458
SOUTHBOUND	28	33	33	38	41	6002
TOTALS	28	34	34	39	44	12460

Attachment B: Signal Warrant Analysis Worksheets

Canyon Rd & Country Club Dr Existing Conditions Signal Warrant Summary

Warrant 1: 8-Hour Vehicular Volume	**Met**
Warrant 1A: Minimum Vehicular Volume	Not Met
OR	
Warrant 1B: Interruption of Continuous Traffic	Met
OR	
Warrant 1C: 80% of Warrant 1A and 1B	Met
Warrant 2: 4-Hour Vehicular Volume	**Not Met**
Warrant 3: Peak Hour Vehicular Volume	**Not Met**
Warrant 3A: Peak Hour Delay	Not Met
OR	
Warrant 3B: Peak Hour Volume	Not Met
Warrant 4: Pedestrian Volume	**Not Met**
Warrant 4A: 4 Hours Pedestrian Volume	Not Met
OR	
Warrant 4B: Peak Hour Pedestrian Volume	Not Met
Warrant 5: School Crossing	**Not Met**
Warrant 6: Coordinated Signal System	**Not Met**
Warrant 7: Crash Experience	**Not Met**
Warrant 7A: Five or more reported crashes	Not Met
AND ONE OF	
Warrant 7B: 80% of Warrant 1A Met?	Not Met
OR	
Warrant 7C: 80% of Warrant 1B Met?	Met
OR	
Warrant 7D: 80% of Warrant 4 Met?	Not Met
Federal MUTCD 11th Ed. Warrant 7: Crash Experience	**Not Met**
Warrant 8: Roadway Network	**Not Met**
Warrant 9: Intersection near a Grade Crossing	**Not Met**

Warrant 1A: Minimum Vehicular Volume

The warrant is satisfied when, for each of any 8 hours of an average day, the traffic volumes given in the table below exist on the major street and on the higher-volume minor street approach to the intersection.

Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total ofboth approaches)	Vehicles per hour on higher-volume minor-street approach (one direction only)
Major Street	Minor Street		
1	1	500	150
2 or more	1	600	150
2 or more	2 or more	600	200
1	2 or more	500	200

When the 85-percentile speed of major-street exceeds 40 mph in either an urban or rural area, or when the intersection lies within the built-up area of an isolated community having a population of less than 10,000, the Minimum Vehicular Volume warrant is 70 percent of the requirements above.

Analysis

Major/Minor Info	1
Speed >40?	1

1 => N/S is major
2 => E/W is major

	No of lanes
Major Street	2
Minor Street	1

100% Warrant

Time	Major Street: Volume on major street (total of both approaches)	Major Street: Threshhold URBAN	Minor Street: Veh/hour on higher volume minor street (one direction only)	Minor Street: Threshhold URBAN	Warrants MET/NOT
		600		150	
12:00 AM	16		2		NOT MET
1:00 AM	6		1		NOT MET
2:00 AM	7		1		NOT MET
3:00 AM	12		2		NOT MET
4:00 AM	17		3		NOT MET
5:00 AM	99		8		NOT MET
6:00 AM	250		15		NOT MET
7:00 AM	760		40		NOT MET
8:00 AM	1,441		118		NOT MET
9:00 AM	749		99		NOT MET
10:00 AM	640		68		NOT MET
11:00 AM	715		66		NOT MET
12:00 PM	703		66		NOT MET
1:00 PM	760		63		NOT MET
2:00 PM	1,120		91		NOT MET
3:00 PM	1,197		86		NOT MET
4:00 PM	1,277		113		NOT MET
5:00 PM	1,209		108		NOT MET
6:00 PM	943		72		NOT MET
7:00 PM	561		41		NOT MET
8:00 PM	348		25		NOT MET
9:00 PM	207		20		NOT MET
10:00 PM	84		11		NOT MET
11:00 PM	36		3		NOT MET

Number of hours for which warrant met	0
Percentage by which warrant met	0.0%

Warrant: Not Met

70% Warrant

Time	Major Street: Volume on major street (total of both approaches)	Major Street: Threshhold URBAN	Minor Street: Veh/hour on higher volume minor street (one direction only)	Minor Street: Threshhold URBAN	Warrants MET/NOT
		420		105	
12:00 AM	16		2		NOT MET
1:00 AM	6		1		NOT MET
2:00 AM	7		1		NOT MET
3:00 AM	12		2		NOT MET
4:00 AM	17		3		NOT MET
5:00 AM	99		8		NOT MET
6:00 AM	250		15		NOT MET
7:00 AM	760		40		NOT MET
8:00 AM	1,441		118		MET
9:00 AM	749		99		NOT MET
10:00 AM	640		68		NOT MET
11:00 AM	715		66		NOT MET
12:00 PM	703		66		NOT MET
1:00 PM	760		63		NOT MET
2:00 PM	1,120		91		NOT MET
3:00 PM	1,197		86		NOT MET
4:00 PM	1,277		113		MET
5:00 PM	1,209		108		MET
6:00 PM	943		72		NOT MET
7:00 PM	561		41		NOT MET
8:00 PM	348		25		NOT MET
9:00 PM	207		20		NOT MET
10:00 PM	84		11		NOT MET
11:00 PM	36		3		NOT MET

Number of hours for which warrant met	3
Percentage by which warrant met	37.5%

Warrant: Not Met

80% Warrant

Time	Major Street: Volume on major street (total of both approaches)	Major Street: Threshhold URBAN	Minor Street: Veh/hour on higher volume minor street (one direction only)	Minor Street: Threshhold URBAN	Warrants MET/NOT
		480		120	
12:00 AM	16		2		NOT MET
1:00 AM	6		1		NOT MET
2:00 AM	7		1		NOT MET
3:00 AM	12		2		NOT MET
4:00 AM	17		3		NOT MET
5:00 AM	99		8		NOT MET
6:00 AM	250		15		NOT MET
7:00 AM	760		40		NOT MET
8:00 AM	1,441		118		NOT MET
9:00 AM	749		99		NOT MET
10:00 AM	640		68		NOT MET
11:00 AM	715		66		NOT MET
12:00 PM	703		66		NOT MET
1:00 PM	760		63		NOT MET
2:00 PM	1,120		91		NOT MET
3:00 PM	1,197		86		NOT MET
4:00 PM	1,277		113		NOT MET
5:00 PM	1,209		108		NOT MET
6:00 PM	943		72		NOT MET
7:00 PM	561		41		NOT MET
8:00 PM	348		25		NOT MET
9:00 PM	207		20		NOT MET
10:00 PM	84		11		NOT MET
11:00 PM	36		3		NOT MET

Number of hours for which warrant met	0
Percentage by which warrant met	0.0%

Warrant: Not Met

56% Warrant

Time	Major Street: Volume on major street (total of both approaches)	Major Street: Threshhold URBAN	Minor Street: Veh/hour on higher volume minor street (one direction only)	Minor Street: Threshhold URBAN	Warrants MET/NOT
		336		84	
12:00 AM	16		2		NOT MET
1:00 AM	6		1		NOT MET
2:00 AM	7		1		NOT MET
3:00 AM	12		2		NOT MET
4:00 AM	17		3		NOT MET
5:00 AM	99		8		NOT MET
6:00 AM	250		15		NOT MET
7:00 AM	760		40		NOT MET
8:00 AM	1,441		118		MET
9:00 AM	749		99		MET
10:00 AM	640		68		NOT MET
11:00 AM	715		66		NOT MET
12:00 PM	703		66		NOT MET
1:00 PM	760		63		NOT MET
2:00 PM	1,120		91		MET
3:00 PM	1,197		86		MET
4:00 PM	1,277		113		MET
5:00 PM	1,209		108		MET
6:00 PM	943		72		NOT MET
7:00 PM	561		41		NOT MET
8:00 PM	348		25		NOT MET
9:00 PM	207		20		NOT MET
10:00 PM	84		11		NOT MET
11:00 PM	36		3		NOT MET

Number of hours for which warrant met	6
Percentage by which warrant met	75.0%

Warrant: Not Met

Warrant 1B: Interruption of Continuous Traffic

The warrant is satisfied when, for each of any 8 hours of an average day, the traffic volumes given in the table below exist on the major street and on the higher-volume minor street approach to the intersection, and signal installation will not seriously disrupt progressive traffic flow.

Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total ofboth approaches)	Vehicles per hour on higher-volume minor-street approach (one direction only)
Major Street	Minor Street		
1	1	750	75
2 or more	1	900	75
2 or more	2 or more	900	100
1	2 or more	750	100

The major-street and minor -street volumes are for the same 8 hours. During those 8 hours, the direction of higher volume on the minor street may be on one approach during some hours and on the opposite approach during other hours.

When the 85-percentile speed of major-street exceeds 40 mph in either an urban or rural area, or when the intersection lies within the built-up area of an isolated community having a population of less than 10,000, the Interruption of Continuous Traffic warrant is 70 percent of the requirements above.

Table 4C-1. Warrant 1, Eight-Hour Vehicular Volume

Condition A—Minimum Vehicular Volume

Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor-street approach (one direction only)			
Major Street	Minor Street	100%[a]	80%[b]	70%[c]	56%[d]	100%[a]	80%[b]	70%[c]	56%[d]
1	1	500	400	350	280	150	120	105	84
2 or more	1	600	480	420	336	150	120	105	84
2 or more	2 or more	600	480	420	336	200	160	140	112
1	2 or more	500	400	350	280	200	160	140	112

Condition B—Interruption of Continuous Traffic

Number of lanes for moving traffic on each approach		Vehicles per hour on major street (total of both approaches)				Vehicles per hour on higher-volume minor-street approach (one direction only)			
Major Street	Minor Street	100%[a]	80%[b]	70%[c]	56%[d]	100%[a]	80%[b]	70%[c]	56%[d]
1	1	750	600	525	420	75	60	53	42
2 or more	1	900	720	630	504	75	60	53	42
2 or more	2 or more	900	720	630	504	100	80	70	56
1	2 or more	750	600	525	420	100	80	70	56

[a] Basic minimum hourly volume
[b] Used for combination of Conditions A and B after adequate trial of other remedial measures
[c] May be used when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000
[d] May be used for combination of Conditions A and B after adequate trial of other remedial measures when the major-street speed exceeds 40 mph or in an isolated community with a population of less than 10,000

Analysis

Major/Minor Info	1
Speed >40?	1

	No of lanes
Major Street	2
Minor Street	1

100% Warrant

Time	Major Street: Volume on major street (total of both approaches)	Major Street: Threshhold URBAN	Minor Street: Veh/hour on higher volume minor street (one direction only)	Minor Street: Threshhold URBAN	Warrants MET/NOT
		900		75	
12:00 AM	16		2		NOT MET
1:00 AM	6		1		NOT MET
2:00 AM	7		1		NOT MET
3:00 AM	12		2		NOT MET
4:00 AM	17		3		NOT MET
5:00 AM	99		8		NOT MET
6:00 AM	250		15		NOT MET
7:00 AM	760		40		NOT MET
8:00 AM	1,441		118		MET
9:00 AM	749		99		NOT MET
10:00 AM	640		68		NOT MET
11:00 AM	715		66		NOT MET
12:00 PM	703		66		NOT MET
1:00 PM	760		63		NOT MET
2:00 PM	1,120		91		MET
3:00 PM	1,197		86		MET
4:00 PM	1,277		113		MET
5:00 PM	1,209		108		MET
6:00 PM	943		72		NOT MET
7:00 PM	561		41		NOT MET
8:00 PM	348		25		NOT MET
9:00 PM	207		20		NOT MET
10:00 PM	84		11		NOT MET
11:00 PM	36		3		NOT MET
	Number of hours for which warrant met				5
	Percentage by which warrant met				62.5%
	Warrant				**Not Met**

70% Warrant

Time	Major Street: Volume on major street (total of both approaches)	Major Street: Threshhold URBAN	Minor Street: Veh/hour on higher volume minor street (one direction only)	Minor Street: Threshhold URBAN	Warrants MET/NOT
		630		53	
12:00 AM	16		2		NOT MET
1:00 AM	6		1		NOT MET
2:00 AM	7		1		NOT MET
3:00 AM	12		2		NOT MET
4:00 AM	17		3		NOT MET
5:00 AM	99		8		NOT MET
6:00 AM	250		15		NOT MET
7:00 AM	760		40		NOT MET
8:00 AM	1,441		118		MET
9:00 AM	749		99		MET
10:00 AM	640		68		MET
11:00 AM	715		66		MET
12:00 PM	703		66		MET
1:00 PM	760		63		MET
2:00 PM	1,120		91		MET
3:00 PM	1,197		86		MET
4:00 PM	1,277		113		MET
5:00 PM	1,209		108		MET
6:00 PM	943		72		MET
7:00 PM	561		41		NOT MET
8:00 PM	348		25		NOT MET
9:00 PM	207		20		NOT MET
10:00 PM	84		11		NOT MET
11:00 PM	36		3		NOT MET
	Number of hours for which warrant met				11
	Percentage by which warrant met				137.5%
	Warrant				**Met**

80% Warrant

Time	Major Street: Volume on major street (total of both approaches)	Major Street: Threshhold URBAN	Minor Street: Veh/hour on higher volume minor street (one direction only)	Minor Street: Threshhold URBAN	Warrants MET/NOT
		720		60	
12:00 AM	16		2		NOT MET
1:00 AM	6		1		NOT MET
2:00 AM	7		1		NOT MET
3:00 AM	12		2		NOT MET
4:00 AM	17		3		NOT MET
5:00 AM	99		8		NOT MET
6:00 AM	250		15		NOT MET
7:00 AM	760		40		NOT MET
8:00 AM	1,441		118		MET
9:00 AM	749		99		MET
10:00 AM	640		68		NOT MET
11:00 AM	715		66		NOT MET
12:00 PM	703		66		NOT MET
1:00 PM	760		63		MET
2:00 PM	1,120		91		MET
3:00 PM	1,197		86		MET
4:00 PM	1,277		113		MET
5:00 PM	1,209		108		MET
6:00 PM	943		72		MET
7:00 PM	561		41		NOT MET
8:00 PM	348		25		NOT MET
9:00 PM	207		20		NOT MET
10:00 PM	84		11		NOT MET
11:00 PM	36		3		NOT MET
	Number of hours for which warrant met				8
	Percentage by which warrant met				100.0%
	Warrant				**Met**

56% Warrant

Time	Major Street: Volume on major street (total of both approaches)	Major Street: Threshhold URBAN	Minor Street: Veh/hour on higher volume minor street (one direction only)	Minor Street: Threshhold URBAN	Warrants MET/NOT
		504		42	
12:00 AM	16		2		NOT MET
1:00 AM	6		1		NOT MET
2:00 AM	7		1		NOT MET
3:00 AM	12		2		NOT MET
4:00 AM	17		3		NOT MET
5:00 AM	99		8		NOT MET
6:00 AM	250		15		NOT MET
7:00 AM	760		40		NOT MET
8:00 AM	1,441		118		MET
9:00 AM	749		99		MET
10:00 AM	640		68		MET
11:00 AM	715		66		MET
12:00 PM	703		66		MET
1:00 PM	760		63		MET
2:00 PM	1,120		91		MET
3:00 PM	1,197		86		MET
4:00 PM	1,277		113		MET
5:00 PM	1,209		108		MET
6:00 PM	943		72		MET
7:00 PM	561		41		NOT MET
8:00 PM	348		25		NOT MET
9:00 PM	207		20		NOT MET
10:00 PM	84		11		NOT MET
11:00 PM	36		3		NOT MET
	Number of hours for which warrant met				11
	Percentage by which warrant met				137.5%
	Warrant				**Met**

Warrant 1C: Combination of Warrants

In exceptional cases, signals occasionally may be justified where no single warrant is satisfied but where Warrants 1A and 1B are satisfied to the extent of 80% or more of the stated values.

If the posted or statutory speed limit or the 85th-percentile speed on the major street exceeds 40 mph, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, Warrants 1A and 1B may be evaluated to the extent of 56% or more of the stated values.

Analysis

80% of Warrant 1A Met	NO
80% of Warrant 1B Met	YES

Warrant	**Not Met**

56% of Warrant 1A Met	YES
56% of Warrant 1B Met	YES

Warrant	**Met**

Warrant 2: Four-Hour Vehicular Volumes

The Four Hour Volume Warrant is satisfied when each of any four hours of an average day the plotted points representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the higher volume minor street approach (one direction only) all fall above the curve in Figure 4C-1 for the existing combination of approach lanes.

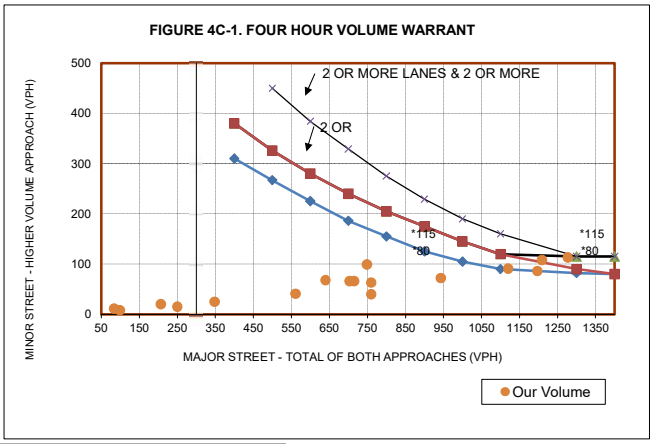
If the posted or statutory speed limit or the 85th-percentile speed on the major street exceeds 40 mph, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, Figure 4C-2 may be used in place of Figure 4C-1.

Analysis

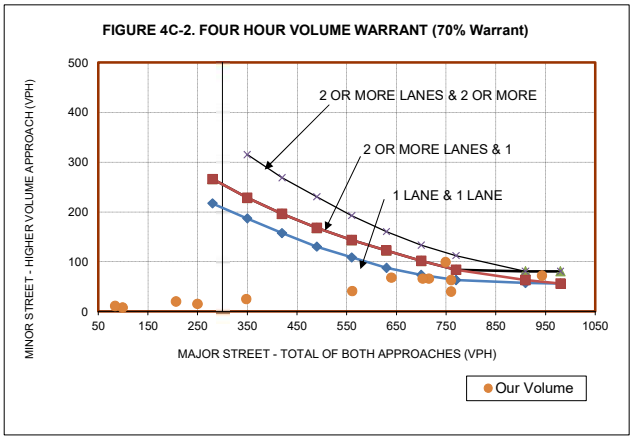
Major/Minor Inf	1
Speed >40?	1

	No of lanes
Major Street	2
Minor Street	1

Peak Four Hours		
Time	Vehicles Per Hour	
	Major Street (Sum of both approaches)	Minor street (High volume approach)
12:00 AM	16	2
1:00 AM	6	1
2:00 AM	7	1
3:00 AM	12	2
4:00 AM	17	3
5:00 AM	99	8
6:00 AM	250	15
7:00 AM	760	40
8:00 AM	1,441	118
9:00 AM	749	99
10:00 AM	640	68
11:00 AM	715	66
12:00 PM	703	66
1:00 PM	760	63
2:00 PM	1,120	91
3:00 PM	1,197	86
4:00 PM	1,277	113
5:00 PM	1,209	108
6:00 PM	943	72
7:00 PM	561	41
8:00 PM	348	25
9:00 PM	207	20
10:00 PM	84	11
11:00 PM	36	3



Warrant	Not Met



Warrant	Not Met

FEHR PEERS

Project	Moraga Rd & Canyon Rd Complete Streets		
Major Street	Canyon Rd	Scenario	Existing Conditions
Minor Street	Country Club Dr	Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left	95	95	10	12
Through	711	514	2	3
Right	35	52	66	70
Total	841	661	78	85

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	70.9
Approach with Worst Case Delay	WB
Total Vehicles on Approach	85

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
Existing Conditions	**1.7**	**85**	**1,665**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Not Met**	**Not Met**	**Met**
Warrant 3A	**Not Met**		

FEHR PEERS

Project	Moraga Rd & Canyon Rd Complete Streets		
Major Street	Canyon Rd	Scenario	Existing Conditions
Minor Street	Country Club Dr	Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left	64	61	14	12
Through	532	461	6	9
Right	8	66	50	65
Total	604	588	70	86

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	21.9
Approach with Worst Case Delay	WB
Total Vehicles on Approach	86

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
Existing Conditions	**0.5**	**86**	**1,348**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Not Met**	**Not Met**	**Met**
Warrant 3A	**Not Met**		

FEHR PEERS

Project	Moraga Rd & Canyon Rd Complete Streets		
Major Street	Canyon Rd	Scenario	Existing Conditions
Minor Street	Country Club Dr	Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left	62	72	14	16
Through	560	491	4	7
Right	23	55	80	75
Total	645	618	98	98

Major Street Direction

X	North/South
	East/West

Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	22.2
Approach with Worst Case Delay	WB
Total Vehicles on Approach	98

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	**Peak Hour Volume on Minor Approach (vph)**	**Peak Hour Entering Volume Serviced (vph)**
Existing Conditions	**0.6**	**98**	**1,459**
Limiting Value	**4**	**100**	**800**
Condition Satisfied?	**Not Met**	**Not Met**	**Met**
Warrant 3A	**Not Met**		

FEHR PEERS

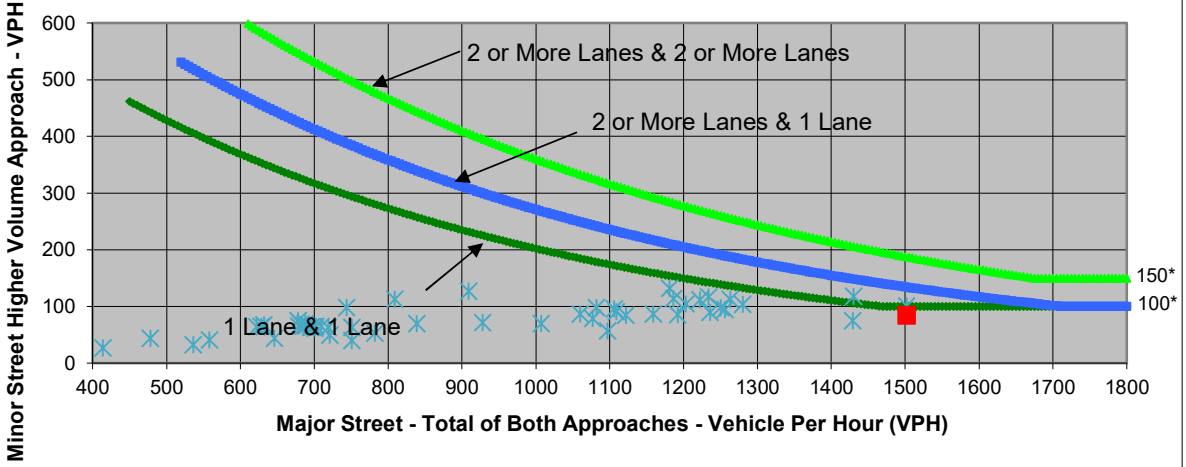
Major Street	Canyon Rd	Project	Moraga Rd & Canyon Rd Complete Streets
Minor Street	Country Club Dr	Scenario	Existing Conditions
		Peak Hour	AM

Turn Movement Volumes

	NB	SB	EB	WB
Left+U-turns	95	95	10	12
Through	711	514	2	3
Right	35	52	66	70
Total	841	661	78	85

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant 3B
	Canyon Rd	Country Club Dr	
Number of Approach Lanes	**2**	**1**	**Not Met**
Traffic Volume (VPH) *	**1,502**	**85**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

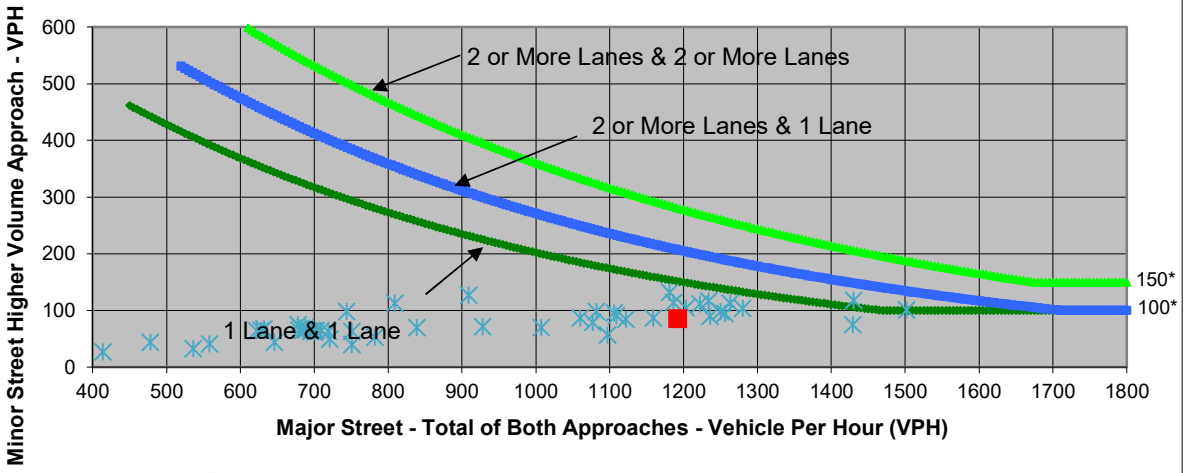
Major Street	Canyon Rd	Project	Moraga Rd & Canyon Rd Complete Streets
Minor Street	Country Club Dr	Scenario	Existing Conditions
		Peak Hour	MD

Turn Movement Volumes

	NB	SB	EB	WB
Left+U-turns	64	61	14	12
Through	532	461	6	9
Right	8	66	50	65
Total	604	588	70	86

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant 3B
	Canyon Rd	Country Club Dr	
Number of Approach Lanes	**2**	**1**	**Not Met**
Traffic Volume (VPH) *	**1,192**	**86**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

FEHR PEERS

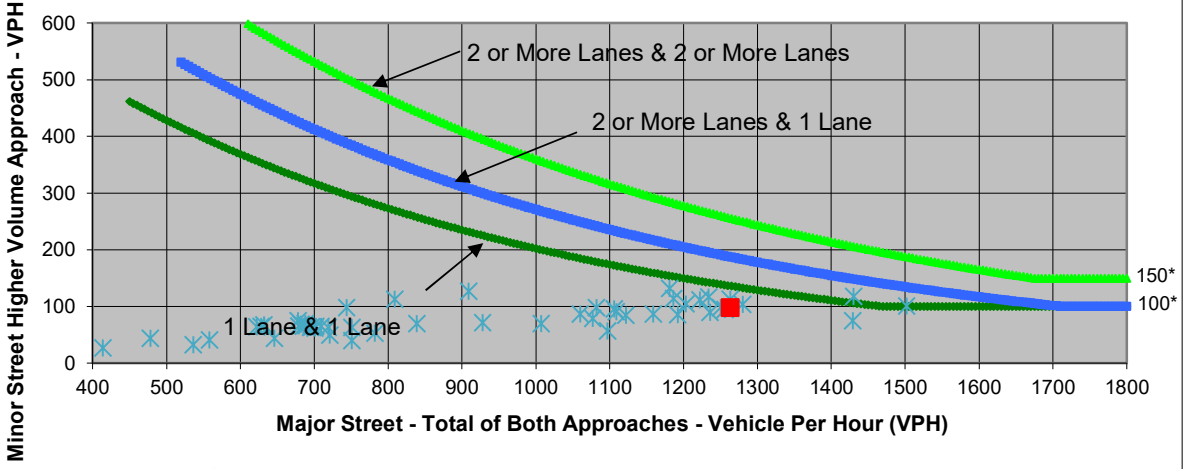
Major Street	Canyon Rd	Project	Moraga Rd & Canyon Rd Complete Streets
Minor Street	Country Club Dr	Scenario	Existing Conditions
		Peak Hour	PM

Turn Movement Volumes

	NB	SB	EB	WB
Left+U-turns	62	72	14	16
Through	560	491	4	7
Right	23	55	80	75
Total	645	618	98	98

Major Street Direction

X	North/South
	East/West



* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant 3B
	Canyon Rd	Country Club Dr	
Number of Approach Lanes	**2**	**1**	**Not Met**
Traffic Volume (VPH) *	**1,263**	**98**	

* Note: Traffic Volume for Major Street is Total Volume of Both Approches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

Warrant 4: Pedestrian Volume

The Pedestrian Volume signal warrant is intended for application where the traffic volume on a major street is so heavy that pedestrians experience excessive delay in crossing the major street.

Standard: The need for a traffic control signal at an intersection or midblock crossing shall be considered if an engineering study finds that both of the following criteria are met:
A. For each of any 4 hours of an average day, the plotted points representing the vehicles per hour on the major street and the corresponding pedestrians per hour crossing the major street all fall above the curve in Figure 4C-5; or
B. For 1 hour of an average day, the plotted point representing the vehicles per hour on the major street and the corresponding pedestrians per hour crossing the major street falls above the curve in Figure 4C-7.

The Pedestrian Volume signal warrant shall not be applied at locations where the distance to the nearest traffic control signal or STOP sign controlling the street that pedestrians desire to cross is less than 300 feet, unless the proposed traffic control signal will not restrict the progressive movement of traffic.

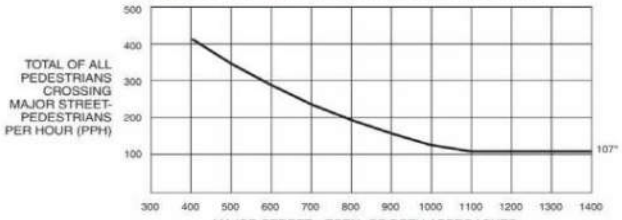
Analysis

Warrant 4A - 4 Hours Major Street Pedestrian Volume

Time	Pedestrian Volume	Greater than the threshold 107?	Greater than the threshold 75?
12:00 AM	0	No	No
1:00 AM	0	No	No
2:00 AM	0	No	No
3:00 AM	0	No	No
4:00 AM	0	No	No
5:00 AM	0	No	No
6:00 AM	3	No	No
7:00 AM	11	No	No
8:00 AM	13	No	No
9:00 AM	11	No	No
10:00 AM	4	No	No
11:00 AM	2	No	No
12:00 PM	5	No	No
1:00 PM	2	No	No
2:00 PM	2	No	No
3:00 PM	6	No	No
4:00 PM	6	No	No
5:00 PM	4	No	No
6:00 PM	3	No	No
7:00 PM	3	No	No
8:00 PM	3	No	No
9:00 PM	2	No	No
10:00 PM	0	No	No
11:00 PM	0	No	No

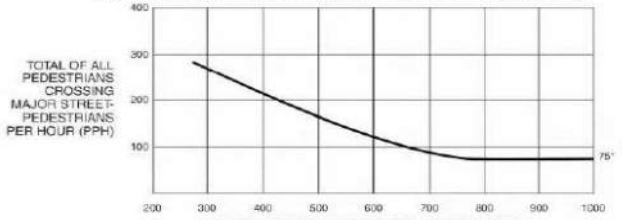
Warrant 4A	Not Met

Figure 4C-5. Warrant 4, Pedestrian Four-Hour Volume



*Note: 107 pph applies as the lower threshold volume.

Figure 4C-6. Warrant 4, Pedestrian Four-Hour Volume (70% Factor)



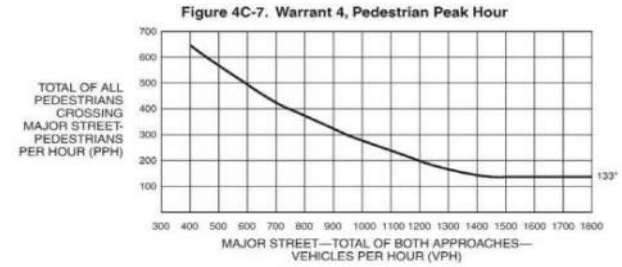
*Note: 75 pph applies as the lower threshold volume.

Warrant 4B - Peak Hour Pedestrian Volume

Hour	Pedestrian Volume	Greater than threshold 133?	Greater than threshold 93?
12:00 AM	0	No	No
1:00 AM	0	No	No
2:00 AM	0	No	No
3:00 AM	0	No	No
4:00 AM	0	No	No
5:00 AM	0	No	No
6:00 AM	3	No	No
7:00 AM	11	No	No
8:00 AM	13	No	No
9:00 AM	11	No	No
10:00 AM	4	No	No
11:00 AM	2	No	No
12:00 PM	5	No	No
1:00 PM	2	No	No
2:00 PM	2	No	No
3:00 PM	6	No	No
4:00 PM	6	No	No
5:00 PM	4	No	No
6:00 PM	3	No	No
7:00 PM	3	No	No
8:00 PM	3	No	No
9:00 PM	2	No	No
10:00 PM	0	No	No
11:00 PM	0	No	No

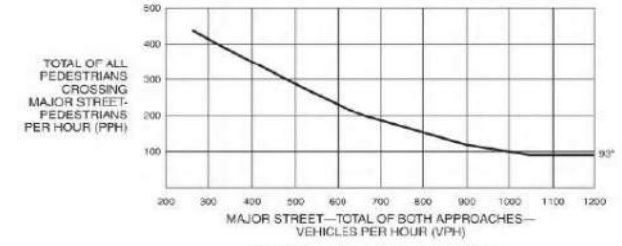
Warrant 4B	Not Met

Figure 4C-7. Warrant 4, Pedestrian Peak Hour



*Note: 133 pph applies as the lower threshold volume.

Figure 4C-8. Warrant 4, Pedestrian Peak Hour (70% Factor)



*Note: 93 pph applies as the lower threshold volume.

Warrant 5: School Crossing

The School Crossing signal warrant is intended for applicaiton where the fact that schoolchildren cross the major street is the principal reason to consider installing a traffic control signal. For the purposes of this warrant, the word "schoolchildren" includes elementary through high school students.

Standard: The need for a traffic control signal shall be considered when an engineering study of the frequency and adequacy of gaps in the vehicular traffic stream as related to the number and size of groups of schoolchildren at an established school crossing across the major street shows that the number of adequate gaps in the traffic stream during the period when the schoolchildren are using the crossing is less than the number of minutes in the same period and there are a minimum of 20 schoolchildren during the highest crossing hour.

Analysis

Warrant 5A - School present?

Yes	No
X	

Warrant 5A	Met

Warrant 5B - Pedestrians across major street

Hour	Pedestrian Major Volume	Pedestrian Minor Volume	Total Pedestrian Volume	Major Street Crossing Greater than 20?
12:00 AM	0	0	0	No
1:00 AM	0	0	0	No
2:00 AM	0	0	0	No
3:00 AM	0	0	0	No
4:00 AM	0	0	0	No
5:00 AM	0	0	0	No
6:00 AM	3	10	13	No
7:00 AM	11	10	21	No
8:00 AM	13	13	26	No
9:00 AM	11	11	22	No
10:00 AM	4	7	11	No
11:00 AM	2	10	12	No
12:00 PM	5	2	7	No
1:00 PM	2	18	20	No
2:00 PM	2	19	21	No
3:00 PM	6	11	17	No
4:00 PM	6	11	17	No
5:00 PM	4	4	8	No
6:00 PM	3	6	9	No
7:00 PM	3	4	7	No
8:00 PM	3	3	6	No
9:00 PM	2	2	4	No
10:00 PM	0	1	1	No
11:00 PM	0	0	0	No

Warrant 5B	Not Met

Warrant	Not Met

Warrant 6: Coordinated Signal System

Progressive movement in a coordinated signal system sometimes necessitates installing traffic control signals at intersections where they would not otherwise be needed in order to maintain proper platooning of vehicles.

Standard: The need for a traffic control signal shall be considered if an engineering study finds that one of the following criteria is met:

A. On a one-way street or a street that has traffic predominantly in one direction, the adjacent traffic control signals are so far apart (>=1,000 ft) that they do not provide the necessary degree of vehicular platooning.

B. On a two-way street, adjacent traffic control signals do not provide the necessary degree of platooning and the proposed and adjacent traffic control signals will collectively provide a progressive operation.

Guidance: The Coordinated Signal System signal warrant should not be applied where the

Distance to nearest signalized intersection (ft). Include Google Maps aerial with distance to the right.	450
Adjacent signalized intersections on major street are coordinated?	N/A

Warrant	Not Met

Warrant 7: Crash Experience

The Crash Experience signal warrant conditions are intended for application where severity and frequency of crashes are the principal reasons to consider installing a traffic control signal.

Standard:

A. Five or more reported crashes, of types susceptible to correction by a traffic control signal, have occured within a 12-month period, each crash involving

Warrant 7A - Five or more reported crashes

Year	Collisions at the Intersection
2014	1
2015	1
2016	0
2017	1
2018	0
2019	0
2020	0
2021	0
2022	0
2023	1

	Number	5 or more?
Number of crashes within a 12-month period, of types susceptible to correction by a traffic signal, each involving personal injury or property damage (reportable)	1	N

Warrant 7A	Not Met

Warrant 7B - 80% Warrant 1A

Warrant 1A: 80% threshold met?	Not Met

Warrant 7C - 80% Warrant 1B

Warrant 1B: 80% threshold met?	Met

Warrant 7D - 80% Warrant 4

Warrant 4: 80% threshold met?	Not Met

Warrant	Not Met

Federal MUTCD 11th Ed. Warrant 7: Crash Experience

The 11th Edition of the federal MUTCD has different methods of analyzing crash experience and thresholds to warrant installation of a traffic control signal. This method has not yet been adopted in California at the time that the signal warrant analysis was conducted, though the federal MUTCD method is also presented in the case it is later adopted.

Standard:
The need for a traffic signal should be considered if an engineering study finds that all of the following criteria are met:

A. Adequate trial of alternatives with satisfactory observance and enforcement has failed to reduce the crash frequency; and

B. At least one of the following conditions applies to the reported crash history (where each reported crash considered is related to the intersection and apparently exceeds the applicable requirements for a reportable crash):

- The number of reported angle crashes and pedestrian crashes within a 1-year period equals or exceeds the threshold number shown below, or in Table 4C-2, for total angle crashes and pedestrian crashes. This may be evaluated for all severities or fatal-and-injury crashes, and both have separate thresholds.

- The number of reported angle crashes and pedestrian crashes within a 3-year period equals or exceeds the threshold number shown below, or in Table 4C-3, for total angle crashes and pedestrian crashes. This may be evaluated for all severities or fatal-and-injury crashes, and both have separate thresholds.

B. Either of Warrant 1A, Warrant 1B, or Warrant 4 is met at the 80% threshold. For Warrant 1A and

Table 4C-2. Minimum Number of Reported Crashes in a One-Year Period

Number of through lanes on each approach		Total of angle and pedestrian crashes (all severities)[a]		Total of fatal-and-injury angle and pedestrian crashes[a]	
Major Street	Minor Street	Four Legs	Three Legs	Four Legs	Three Legs
1	1	5	4	3	3
2 or more	1	5	4	3	3
2 or more	2 or more	5	4	3	3
1	2 or more	5	4	3	3

[a] Angle crashes include all crashes that occur at an angle and involve one or more vehicles on the major street and one or more vehicles on the minor street

Table 4C-3. Minimum Number of Reported Crashes in a Three-Year Period

Number of through lanes on each approach		Total of angle and pedestrian crashes (all severities)[a]		Total of fatal-and-injury angle and pedestrian crashes[a]	
Major Street	Minor Street	Four Legs	Three Legs	Four Legs	Three Legs
1	1	6	5	4	4
2 or more	1	6	5	4	4
2 or more	2 or more	6	5	4	4
1	2 or more	6	5	4	4

[a] Angle crashes include all crashes that occur at an angle and involve one or more vehicles on the major street and one or more vehicles on the minor street

Total Intersection Approaches	4

Warrant 7B

One-Year Thresholds	
Total of angle and pedestrian crashes (all severities)	5
Total of fatal-and-injury angle and pedestrian crashes	3

Three-Year Thresholds	
Total of angle and pedestrian crashes (all severities)	6
Total of fatal-and-injury angle and pedestrian crashes	4

Year	Angle crashes and pedestrian crashes (all severities)		Fatal-and-injury angle crashes and pedestrian crashes	
	Count	Three-Year Totals	Count	Three-Year Totals
2014	1	1	1	1
2015	0	0	0	1
2016	0	0	0	1
2017	0	0	1	1
2018	0	0	0	0
2019	0	0	0	0
2020	0	0	0	0
2021	0	0	0	0
2022	0	0	0	0
2023	0	-	0	-
2024		-		-

	One-Year Threshold Met?	Three-Year Threshold Met?
	No	No
Warrant 7B	**Not Met**	

Warrant 7C

Warrant 7C-1 - 80% Warrant 1A	
Warrant 1A: 80% threshold met?	Not Met

Warrant 7C-2 - 80% Warrant 1B	
Warrant 1B: 80% threshold met?	Met

Warrant 7C-3 - 80% Warrant 4	
Warrant 4: 80% threshold met?	Not Met

Warrant 7C	**Met**

Warrant	**Not Met**

Warrant 8: Roadway Network

Installing a traffic control signal at some intersections might be justified to encourage concentration and organization of traffic flow on a roadway network.

Standard: The need for a traffic control signal shall be considered if an engineering study finds that the common intersection of two or more major routes meets one or both of the following criteria:

A. The intersection has a total existing, or immediately projected, entering volume of at least 1,000 vehicles per hour during the peak hour of a typical weekday and has 5-year projected volumes, based on an engineering study, that meet one or more of Warrants 1, 2, and 3 during an average weekday; or

B. The intersection has a total existing or immediately projected entering volume of at least 1,000 vehicles per hour for each of any 5 hours of a non-normal business day (Saturday or Sunday)

C. A major route as used in this signal warrant shall have at least one of the following characteristics:

1. It is part of the street or highway system that serves as the principal roadway network for through traffic flow.

2. It includes rural or suburban highways outside, entering, or traversing a city.

3. It appears as a major route on an official plan, such as a major street plan in an urban area traffic and transportation study.

Warrant 8A - Peak Hour Volume of At Least 1,000 Vehicles Per Hour

Max Per Hour Volume	1,665
5-year projected volumes available?	No
5-year projected volumes meet Warrants 1, 2, and 3?	Yes
Warrant 8A	**Not Met**

Warrant 8C - Major Route

Characteristic 1	**Met**
Major Roadway	Arterial
Minor Roadway	Collector
Source	https://library.municode.com/ca/moraga/codes/municipal_code?nodeId=MOCA_TIT12STSIPUPL_CH12.06STEXPARERE
Characteristic 2	**Not Met**
Includes rural or suburban highways outside, entering, traversing a city?	No
Characteristic 3	**Met**
Appears as a major route on an official plan?	Yes
Warrant 8C	**Met**

Warrant 8	**Not Met**

Warrant 9: Intersection near a Grade Crossing

The Intersection Near a Grade Crossing signal warrant is intended for use at a location where none of the conditions described in the other eight traffic signal warrants are met, but the proximity to the intersection of a grade crossing on an intersection approach controlled by a STOP or YIELD sign is the principal reason to consider installing a traffic control signal.

Standard: The need for a traffic control signal shall be considered if an engineering study finds that both of the following criteria are met:

A. A grade crossing exists of an approach controlled by a STOP or YIELD sign and the center of the track nearest to the intersection is within 140 feet of the stop line or yield line on the approach; and

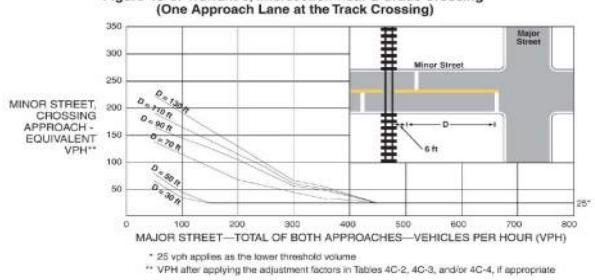
B. During the highest traffic volume hour during which rail traffic uses the crossing, the plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour of the minor-street approach that crosses the track (one direction only, approaching the intersection) falls above the applicable curve in Figure 4C-9 or 4C-10 for the existing combination of approach lanes over the track and the distance D, which is the clear storage distance as defined in Section 1A.13.

Warrant 9A - Grade Crossing on Approach Controlled by STOP or YIELD Sign	
Grade Crossing on Approach?	No
Approach is Stop or Yield Controlled?	Yes
Distance from Center of Track Nearest Intersection to Stop/Yield Line (ft). Show Google Maps aerial screenshot with measurement on the right.	N/A
Warrant 9A	**Not Met**

Warrant 9B - only evaluate if 9A is Met	
Warrant 9B	**N/A**

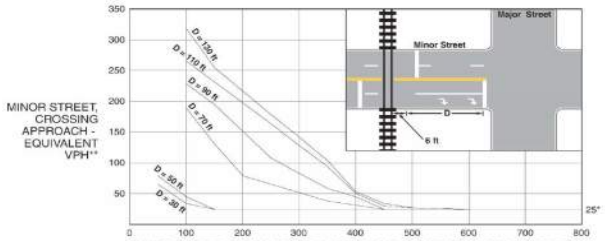
Warrant 9	
Warrant 9	**Not Met**

Figure 4C-9. Warrant 9, Intersection Near a Grade Crossing (One Approach Lane at the Track Crossing)



* 25 vph applies as the lower threshold volume
** VPH after applying the adjustment factors in Tables 4C-2, 4C-3, and/or 4C-4, if appropriate

Figure 4C-10. Warrant 9, Intersection Near a Grade Crossing (Two or More Approach Lanes at the Track Crossing)



* 25 vph applies as the lower threshold volume
** VPH after applying the adjustment factors in Tables 4C-2, 4C-3, and/or 4C-4, if appropriate

32. **Clear Storage Distance**—when used in Part 8, the distance available for vehicle storage measured between 6 feet from the rail nearest the intersection to the intersection stop line or the normal stopping point on the highway. At skewed grade crossings and intersections, the 6-foot distance shall be measured perpendicular to the nearest rail either along the center line or edge line of the highway, as appropriate, to obtain the shorter distance. Where exit gates are used, the distance available for vehicle storage is measured from the point where the rear of the vehicle would be clear of the exit gate arm. In cases where the exit gate arm is parallel to the track(s) and is not perpendicular to the highway, the distance is measured either along the center line or edge line of the highway, as appropriate, to obtain the shorter distance.

APPENDIX D: OUTREACH SUMMARY

FEHR PEERS

Memorandum

Date: February 28, 2025

To: Nate Levine, PE, Town of Moraga

From: Marisa Lee, Fehr & Peers

Subject: Moraga Road and Canyon Road Complete Streets – Public Outreach Summary

WC24-4102

Purpose

The purpose of this memo is to summarize the public outreach process that was conducted as part of the Moraga Road and Canyon Road Complete Streets Project.

Project Overview

The project was aimed at delivering corridor improvements that would provide continuous routes for outlying areas and connect residents to schools, services, and amenities within Moraga and the Moraga Shopping Center through improved safety and access to walking and biking.

Community Outreach Plan

The Moraga Road and Canyon Road Complete Streets Project (project) included development of a community outreach strategy to engage with stakeholders including residents, community businesses and merchants, multimodal road users, teachers, and students to advise and gather feedback at various stages of the crosswalk. The Moraga Road and Canyon Road Complete Streets Community Engagement Plan (CEP) was prepared to guide the stakeholder engagement process. This document detailed the project outreach approach via in-person, digital, and virtual engagement events. An overview of this plan was provided on the project's website. The CEP is attached to this memorandum (**Attachment 1**).

Outreach and Engagement Phases

Community outreach and engagement occurred in three phases:

- **Phase 1: Confirm Project Need (September 2024)** – The first phase focused on informing the community of the project purpose and confirming the project met existing needs.
- **Phase 2: Preliminary Concept Share (October – November 2024)** – Preliminary concept drawings were completed in this phase and shared with stakeholders and the public. Comments were collected and incorporated into the final concept drawings in the following phase.
- **Phase 3: Confirm and Refine Concept (December 2024 – March 2025)** – The last phase finalized the 15% Conceptual Design in preparation for proceeding with design and construction documents. The final concept drawings were presented to the public via a virtual open house and will ultimately be presented at a Town Council meeting for approval.

Phase 1: Confirm Project Need

Phase 1 aimed to meet the community where they were and gather information via a pop-up event. A pop-up event is an event held in a public space, near the project corridor, with the goal of directly engaging the community who spends time living, working, or visiting the project area, to gain insights into the needs of the corridor users. Pop-up events generally last a few hours and are held at locations that are already busy, high-traffic areas, so that information is gathered from a range of individuals, without members of the public needing to go out of their way to participate and provide valuable input.

Phase 1 Goals

- Inform the community about the purpose and intent of the project.
- Confirm draft project goals, and respond to community issues, priorities, and values for the corridor.

Pop-up event details:

Location: Moraga Canyon Brewery

Date: Saturday, September 14, 2024, from 11 AM–1 PM.

Attendees: Approximately 23 people engaged in the event, including people who live, work, and recreate in Moraga.

At the pop-up, two graphic boards were used to visualize potential project elements and treatment options, and collect feedback from community members. The first board included the project description and project goals using language from the CEP, as well as a project schedule graphic. The second board included photo examples of proposed safety improvements, such as ADA-accessible curb ramps, high- visibility crosswalks, rectangular rapid flashing beacons (RRFBs),

buffered bikeways, and bus shelters, where participants were asked to place stickers on the types of improvements they most wanted to see. The second board also included a section where participants could place sticky notes for open comments.

Based on the feedback received, participants supported:

- Buffered bike lanes
- Rectangular rapid flashing beacons
- High-visibility crosswalks
- Bicyclist and pedestrian safety measures
- Crosswalks with lighting

Engagement at the Pop-Up event

Engagement at the Pop-Up event

An outreach board from the Pop-Up event

Phase 2: Preliminary Concept Share

Phase 2 focused on collecting community feedback on the preliminary conceptual plans that were designed to align with the needs confirmed in Phase 1. Concept plan development began at the end of Phase 1 (late September) so that Phase 2 outreach could receive feedback on the draft conceptual plans and have a final set of conceptual plans by December 2024.

Phase 2 Goals

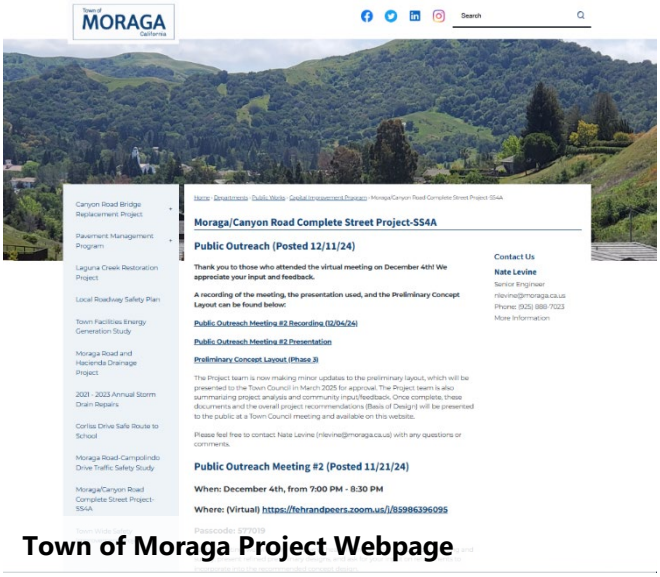
- Educate the community on technical issues and considerations to help them provide informed comments and feedback
- Provide stakeholders and community members with the opportunity to comment on the project and express their concerns or ideas
- Confirm the preliminary concept plan reflects the community's vision from Phase 1

Phase 2 consisted of the following activities:

- Project page on the Town website
- Preliminary Concept Share Public Meeting
- Online public survey that was available to all community members
- Stakeholder group meeting

Town Webpage

The Town created a page on their website dedicated to the project—to inform the community of the project need and purpose—and included the preliminary 15% concept plans for all to view. The webpage also informed community members of upcoming General Public Meetings.



Town of Moraga Project Webpage

Preliminary Concept Share Public Meeting

One in-person public meeting was planned for Phase 2.

Meeting Details:

Date: Tuesday, October 22, 2024, from 7 PM–8:30 PM

Location: Joaquin Moraga Intermediate School Library in Moraga

Participants: 21

Meeting Goals:

- Educating the community on technical issues and considerations to help them provide informed comments and feedback
- Providing stakeholders and community members the opportunity to comment on the project and express their concerns or ideas
- Confirming the preliminary concept plan reflects the community's vision from Phase 1

Boards from the Community Meeting

At the public meeting, Town staff gave a presentation that summarized the project purpose, reviewed the public engagement already compiled, and then showed the preliminary 15% design in the form of conceptual plans, cross sections, and renderings. The presentation explained relevant technical concepts in accessible terms and hosted a Q&A geared toward project and design questions. The group then broke out to three stations where concept drawings, cross sections, and intersection treatments were presented on posters for attendees to mark with sticky notes and comments, as well as ask more detailed questions of the design team and give feedback.

The three stations included the following:

1. Intersection Improvements – a board showing photos of typical intersection improvements for discussion on crosswalks, RRFBs, and other intersection treatments. Feedback was requested on likes and dislikes.
2. Cross Sections – a board showing typical corridor cross sections for discussion on corridor treatments, buffered bike lanes, street typology, etc. Feedback was requested on likes and dislikes.
3. Sanders Drive – a board showing the crosswalk at Sanders Drive, requesting feedback on current use of the existing crosswalk, and input on the possibility of relocating it to Country Club Drive.

Feedback Summary:

- Overall support for the project and for bicycle and pedestrian improvements along the corridor
- Interest in increased physical separation between vehicles and bike lanes
- Support for further narrowing of vehicle lanes to facilitate slower vehicle speeds

Online Public Survey

The Town hosted a survey through their website which included the preliminary 15% concept plans with a set of questions to solicit public input and gain insight on current uses and biggest concerns along the corridor.

Survey Goals:

- Establish transportation priorities in the community and along the corridor
- Seek insight into current travel patterns along the corridor
- Inform prioritization of treatment alternatives based on community interest

Survey Details:

Dates: October 22–November 12, 2024

Responses: 30 responses

Feedback Summary:

- Most of the respondents use the corridor to access recreation and trails, their homes, and local businesses.
- Common concerns included speeding vehicles, bicycle and pedestrian safety, and comfort.
- Eighty-seven percent of respondents did not feel comfortable walking or biking along the corridor.

More detailed survey findings are available in **Attachment 2: Survey Results Summary**.

Stakeholder Meeting

A one-hour meeting was held with interested participants identified as stakeholders. The goal of the meeting was to discuss the preliminary 15% concept plans and receive feedback. The stakeholder meeting was held virtually. A slide deck was presented that summarized the project purpose, engagement completed to date, and the preliminary concept.

Attendees:

- Bike East Bay
- County Connection (CCCTA)

Feedback Summary:

- Requests for protected Class IV bikeways with vertical separation for increased protection from vehicle traffic
- Requests for a lane reduction from two lanes to one lane in each direction
- Requests for reduced width for vehicle lanes to facilitate slower traffic
- More alignment with the design with NACTO design guidelines for corridors of this type, volume, and speed

Phase 3: Confirm and Refine Concept

Phase 3 was focused on finalizing the conceptual design based on public comments and feedback.

Phase 3 Goals

- Ensure stakeholders and residents have access to information about the finalized concept design
- Confirm the final concept design reflects community needs and priorities
- Present concept design to Town Council to provide the community an opportunity to comment and to formally approve the design

Meeting Details:

Date: Wednesday, December 4, 2024

Location: Virtual (Zoom)

At the virtual public meeting, Town staff and consultants gave a presentation (**Attachment 3: Phase 3 Presentation**) with the goals of ensuring community members have access to

information about the finalized concept design, confirming the final concept design reflects community needs and priorities, and providing the community an opportunity to comment and receive confirmation that the design reflects previous community input. The design team presented a slide deck with the following components:

- Summary of the project purpose and background
- Review of the public engagement completed to date and feedback received
- Summary of public response to the online survey
- Refined project plans
- Discussion of how refined project plans incorporate public input from previous outreach meetings and online survey
- Q&A
- Opportunity for final feedback

There was a log-in issue at the beginning of the meeting, which was resolved quickly. The team delayed the start of the meeting for a few minutes for any additional participants to join. Town staff did not receive any comments from residents saying they could not access the meeting.

Feedback Summary:

- Requests for Class IV protected bikeways instead of Class II buffered bike lanes
- General support for pedestrian safety improvements at intersections and lighting at crossings
- Questions about specific turning movements for adjacent connecting streets along the corridor
- Request for a protected intersection at Moraga Road and St Mary's Road.

Summary

The engagement for this project was considered successful, involving 88 responses and participants across all outreach phases, and providing meaningful insight into travel patterns, preferences, needs, and concerns for the project corridor. The feedback that was received informed the selection of treatments for the corridor to meet community needs and provide a safer and more comfortable connection for people living, working, and recreating in adjacent areas. The input received will continue to inform the design phase of the project.

Outreach Summary Table

Event	Purpose & Outcome	Feedback
Pop-Up Event **Saturday, September 14** Canyon Club Brewery 23 attendees	• Provided an opportunity for the public to obtain general information about the project, showing project maps, and example photos of improvements • Informed the community about the purpose and intent of the Project • Confirmed draft project goals were responding to community issues, priorities, and values for the corridor	• Support for the overall project • Support for bicyclist and pedestrian safety measures
Phase 2 Public Outreach Mtg **Tuesday, October 22** Joaquin Moraga Intermediate School 21 attendees	• Provided the community with information project details and technical considerations to help them provide informed comments and feedback • Provided stakeholders and community members with the opportunity to comment on the Project and express their concerns or ideas • Confirmed the preliminary concept plan reflected the community's vision from Phase 1	• Request for Class IV protected bikeways instead of Class IIB buffered bike lanes • Request for additional narrowing of travel lanes • Request for road diet/ lane reduction
Online Public Survey **Open October 22–November 12** Advertised on Town website 30 responses	• Established transportation priorities in the community and along the corridor • Sought insight into current travel patterns along the corridor • Informed prioritization of treatment alternatives based on community interest	• Biggest concern and priority was bicycle and pedestrian safety improvements • Speeding vehicles was a top concern

Event	Purpose & Outcome	Feedback
Stakeholder Group Meeting **December 3, 2024** Virtual Meeting 2 attendees	• Attendees included Bike East Bay, CCCTA • Sought technical feedback from stakeholders	• Request for Class IV protected bikeways instead of Class IIB Buffered Bike Lanes • Request for road diet and vehicle lane reduction
Phase 3 Virtual Public Meeting **December 4, 2024** Virtual Meeting 14 attendees	• Provided the community with information on the finalized concept design • Confirmed the final design concept reflected community needs and priorities	• Request for Class IV protected bikeways instead of Class IIB buffered bike lanes • Support for pedestrian safety measures including crossings and lighting

Attachment 1:
Moraga Road and Canyon Road Complete Streets Community Engagement Plan (CEP)

FEHR PEERS

FEHR PEERS

Final Memorandum

Date: August 28, 2024

To: Nate Levine, PE, Town of Moraga

From: Kayla Gonzalez, Karina Schneider, and Mark Howard, PE, Fehr & Peers

Subject: Moraga Road and Canyon Road Complete Streets – Community Engagement Plan

WC24-4102.00

The Moraga Road and Canyon Road Complete Streets Community Engagement Plan (CEP) provides an outline for engaging stakeholders, including residents, community businesses and merchants, multimodal road users, teachers, and students, throughout the Moraga Road and Canyon Road Complete Streets Project (Project). The Project seeks to improve safety and access for residents living in outlying residential areas and connect low-income residents to schools and services within Moraga through improved active transportation infrastructure. This is a living document that will be updated with additional details at the outset of each phase of engagement. This current iteration (June 2024) presents an outline of the overall document and engagement process for feedback from Town staff.

Overview

The purpose of the CEP is to:

- Identify the goals and focal points of the community engagement process, including decision-makers, stakeholders and other priority audiences.
- Identify outreach and engagement techniques to engage the public, decision-makers, stakeholders, and other priority audiences.
- Define a process for where, when, and how to receive and document comments and feedback; listen to decision-makers, stakeholders and other priority audiences' ideas, concerns, issues, and preferences; critically analyze and incorporate relevant information into the decision-making processes and outcomes, or document justifications for not incorporating.
- Provide reasonable public access to the Moraga Road and Canyon Road Complete Streets process, including technical information.

Priority Audiences

While the engagement process will broadly engage the general public, decision-makers, stakeholders and other priority audiences for engagement include:

- Moraga School District and nearby schools
  - Staff, parents, and students at Joaquin Moraga Intermediate School
  - Staff, parents, and students at Camino Pablo Elementary School
  - Staff and students at Saint Mary's College of California
  - Staff, parents, and students (Cycling Team) at Campolindo High School
- Fire Departments
  - Moraga-Orinda Fire Protection District
  - MOFD Fire Station 42
- County Connection
- Bike East Bay
- Business owners along Moraga Road and Canyon Road, including the Moraga Shopping Center
- Lamorinda Planning and Management Committee (LPMC)

The community engagement plan will include strategies to specifically engage these audiences through targeted pop-up events, meeting attendance, and accessible online engagement on the Town's website.

Outreach and Engagement Phases

Community outreach and engagement will occur in three phases:

- **Phase 1: Confirm Project Need** – The first phase focuses on informing the community of the Project purpose and confirming with the community that the project meets existing needs.
- **Phase 2: Preliminary Concept Share** – Preliminary concept drawings will be completed in this phase and shared to stakeholders and the general public. Comments will be collected and incorporated into the final concept drawings in the next phase.
- **Phase 3: Confirm and Refine Concept** – The last phase will conclude with the finalization of the 15% Conceptual Design in preparation for proceeding with Task 3, Design Services. The final concept drawings will be presented to the public via a virtual open house and at the Town Council meeting for approval.

Phase 1: Confirm Project Need

Timeline: August 2024

The content of Phase 1 outreach will focus on providing information to the public regarding the Project and listening to the needs of the community.

Phase 1 Goals

- Inform the community about the purpose and intent of the Project.
- Confirm draft project goals respond to community issues, priorities, and values for the corridor.

Phase 1 Outreach Activities	Additional Details	Target Month
Pop-up Event at Canyon Club Brewery	The pop-up event will provide an opportunity for the public to obtain general information on the Project, including a map and conceptual plans from the grant application, or examples of improvements that are being proposed.	September 2024
Establish Stakeholder Group	An email will be sent out to potential stakeholders providing them with general information about the Project and an opportunity to participate in an upcoming stakeholder meeting. A Doodle Poll link will be included to begin scheduling the stakeholder meeting in the following month. Potential stakeholders may include: • County Connection • Bike East Bay • Moraga School District • St. Mary's College • Moraga Shopping Center	August 2024

Phase 2: Preliminary Concept Share

Timeline: September – October 2024

Phase 2 will focus on collecting community feedback on the preliminary conceptual plans that would aim to align with the needs confirmed in Phase 1. Concept plans development will begin toward the end of Phase 1 (late September) so that Phase 2 outreach can receive feedback on the draft conceptual plans and have a final set of conceptual plans by December 2024.

Phase 2 Goals

- Educate the community on some of the technical issues and considerations to help them provide informed comments and feedback.
- Provide stakeholders and community members the opportunity to comment on the Project and express their concerns or ideas
- Confirm the preliminary concept plan reflects the community's vision from Phase 1

Phase 2 Outreach Activities	Additional Details	Target Month
Town Website	The Town will create a webpage on their website to inform the community of the project and include the preliminary 15% concept plans for all to view. The webpage will also inform community members of the General Public Meeting to occur the following month at Joaquin Moraga Intermediate School.	September 2024
Stakeholder Group Meeting	A 1-hour meeting will be scheduled with interested participants identified in Phase 1. The goal of the meeting will be to discuss the preliminary 15% concept plans and receive feedback. The stakeholder meeting will be held virtually. A PowerPoint deck will be prepared that summarizes the Project purpose, engagement completed to date, and the preliminary concept.	September 2024
General Public Meeting at Joaquin Moraga Intermediate School	A 1- to 2-hour public community meeting will be scheduled to present the Project's preliminary 15% concept plans with opportunities for the public to provide input. Fehr & Peers will coordinate the meeting with the school. A PowerPoint deck will be prepared that summarizes the Project purpose, engagement completed to date, and the preliminary design. Large concept drawings will be provided for attendees to markup and provide feedback on.	October 2024
Online Survey	The Town will host a survey through their website which will include the preliminary 15% concept plans with a set of questions to solicit public input and share transportation priorities in the community. Fehr & Peers will assist the Town in developing questions for the survey.	September – November 2024

Phase 3: Confirm and Refine Concept

Timeline: November – December 2024

Phase 3 will focus on finalizing the conceptual design based on public comments and feedback.

Phase 3 Goals

- Ensure stakeholders and residents have access to information about the finalized concept design
- Confirm the final concept design reflects community needs and priorities
- Present concept design to Town Council to provide the community an opportunity to comment and to formally approve the design

Phase 3 Outreach Activities	Additional Details	Target Month
Town Website	Town website will be updated to include the updated 15% concept plans and inform community members about the virtual open house.	November 2024
Virtual Open House	A 1-hour virtual meeting will be scheduled with attendance open to both the Stakeholder Group and members of the community. The goal of the meeting will be to share the updated 15% concept plans and confirm the design responds to comments heard in Phase 2. A PowerPoint deck will be prepared that summarizes the engagement completed to date and the updated concept.	November or December 2024
Town Council Presentation	Presentation of the updated concept design for Town Council approval.	January 2025

Outreach Language

The following language will be vetted and used across outreach platforms, including the Town website.

Project Description

The Moraga Road and Canyon Road Complete Streets Project proposes roadway updates that will provide continuous routes for the residents of outlying rural areas and connect low-income residents to schools and services within Moraga through improved access and safety to walking and biking. The Project proposes to:

- repair or add new sidewalks,
- install high-visibility crosswalks and ADA-accessible curb ramps,
- support intersection safety through traffic signals and/or warning devices,
- manage speeds through radar speed feedback signage
- enhance bike lanes with high-visibility markings and buffer zones, and
- install new bus stop shelters with people-friendly benches.

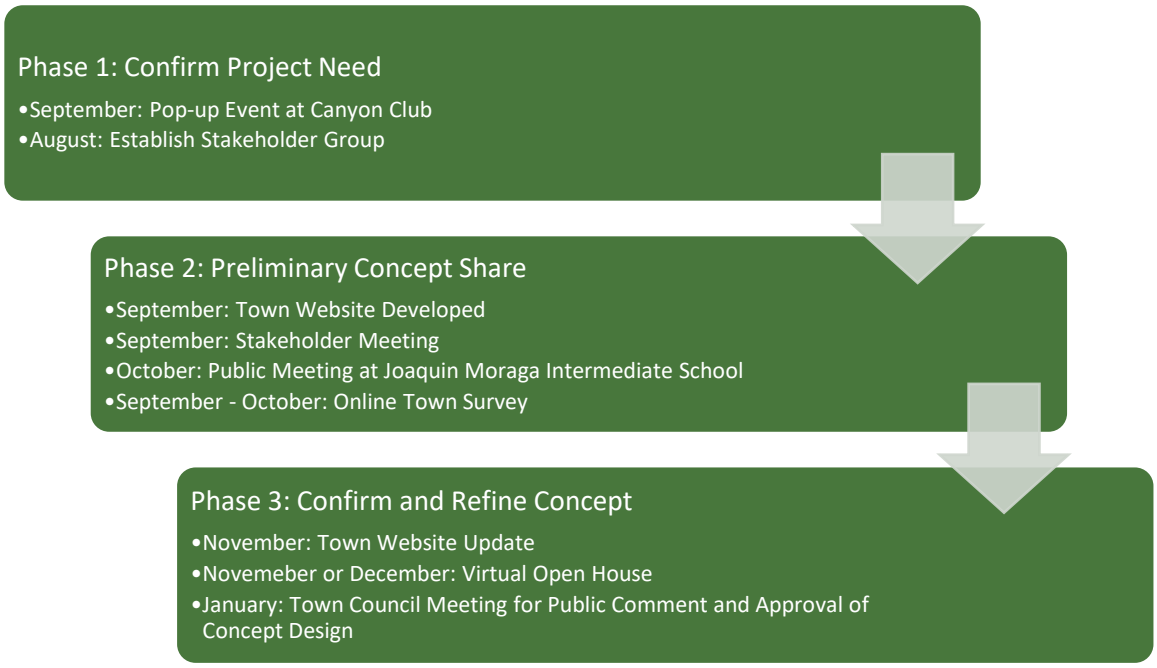
These improvements will encourage multimodal travel within the Town of Moraga. Your input is needed for a successful project and will be solicited across three phases of engagement.

Project Goals

The Project aims to achieve three primary goals:

- **Safety:** align with the Town's Local Roadway Safety Plan and the USDOT Safe Streets and Roads for All (SS4A) Program, which focuses on increasing access and comfort while also eliminating roadway fatalities and serious injuries. Advance improvements that promote safe mobility for all roadway users along the entire corridor, regardless of their mode of transportation, through a cohesive safe systems approach.
- **Community-responsiveness:** integrate principles of equity, engagement, and collaboration into determining strategies.
- **Sustainability:** by making walking and biking safer and more comfortable, reduce vehicle miles traveled, thereby reducing greenhouse gas emissions and criteria air pollutants.

Outreach Schedule

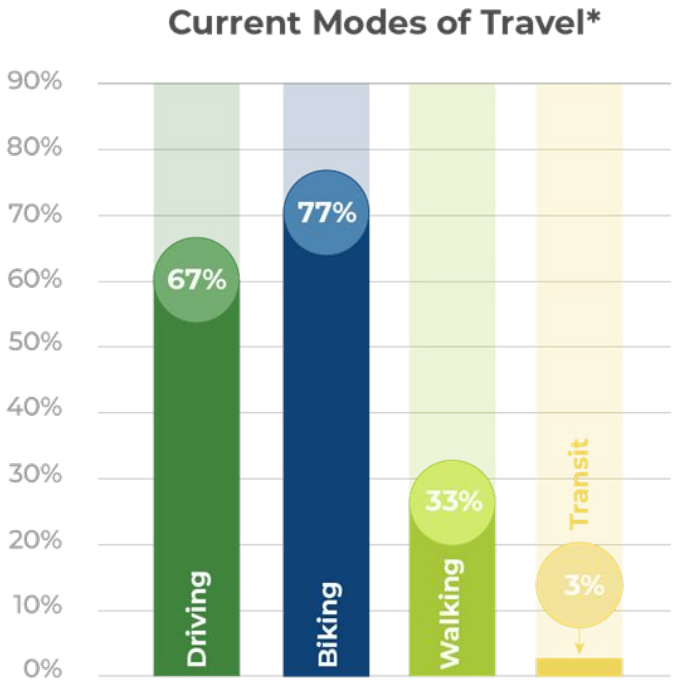


Attachment 2:
Survey Results Summary

Online Engagement Response Summary

Community Engagement: Online Poll

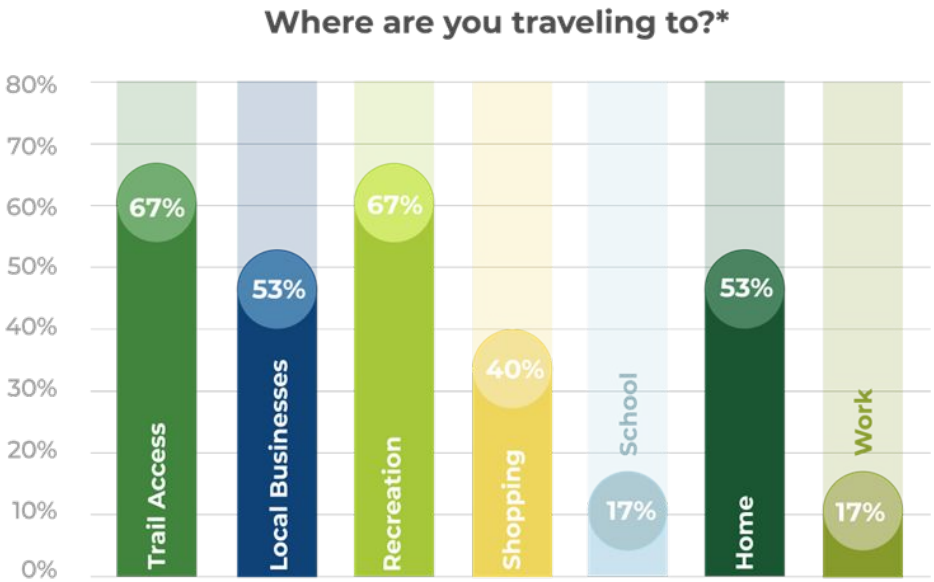
Current Travel Behavior and Culture

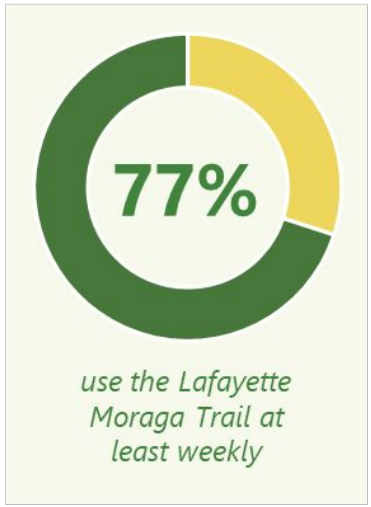


*When using the Moraga Road / Canyon Road corridor

Community Engagement: Online Poll

Current Travel Behavior and Culture



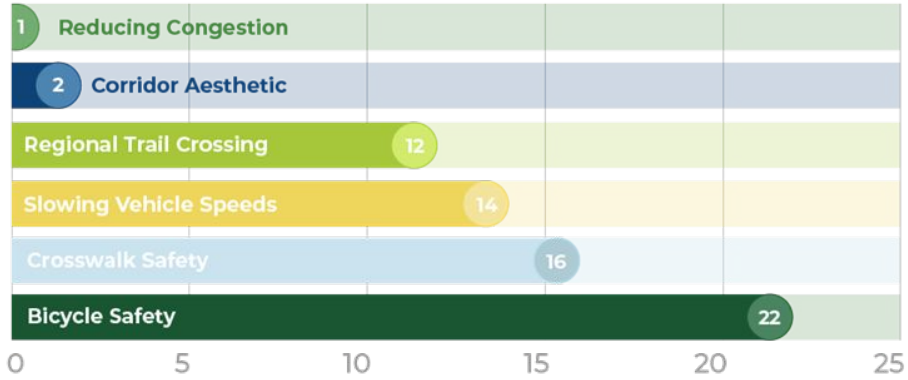


*When using the Moraga Road / Canyon Road corridor

Community Engagement: Online Poll

Community Concerns

Corridor Priorities



Community Engagement: Online Poll

Highest Concerns by Travel Mode

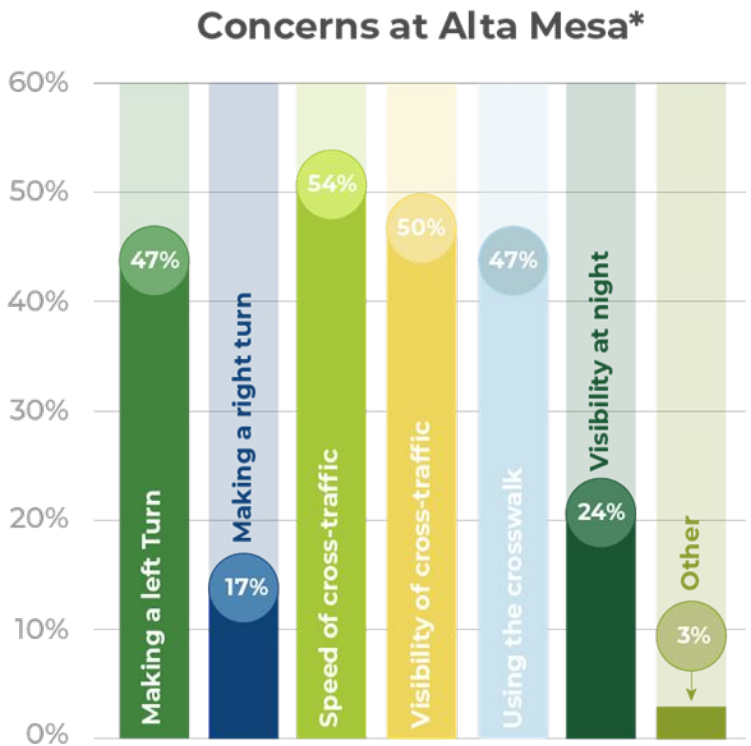
Biking:
Vehicles driving too close to bicyclists

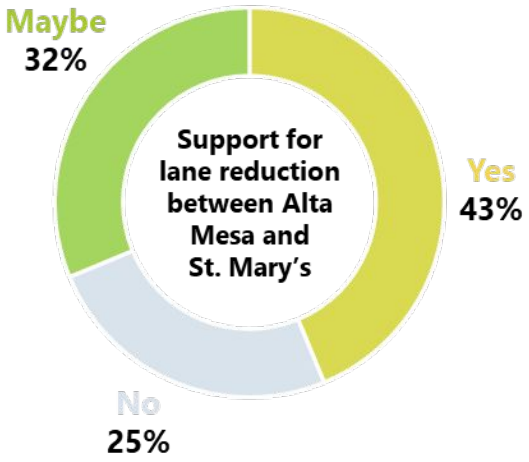
Driving:
Ensuring bicycle and pedestrian safety

Walking:
Visibility of pedestrians and vehicles yielding to pedestrians at crosswalks

Community Engagement: Online Poll

Key Project Locations – Alta Mesa





**Alta Mesa, along with St. Mary's Road and Country Club Drive, were the top 3 priority intersections for survey respondents.*

Attachment 3:
Phase 3 Presentation

Moraga Road / Canyon Road Complete Streets - SS4A Project

December 4, 2023

Project Website

www.moraga.ca.us/606/MoragaCanyon-Road-Complete-Street-Projec

Questions or Comments

Nate Levine, PE, Senior Engineer
nlevine@moraga.ca.us

CONTRA COSTA transportation authority

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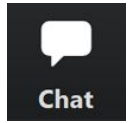
4 | A

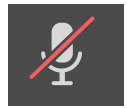
Agenda

- Project Overview and Background
- Public Engagement Process To-Date
- Online Engagement Feedback Summary
- Analysis
- Concept Plans
- Next Steps
- Q&A / Feedback

Using Zoom

- The chat will be open and monitored during the presentation.
- Type questions and comments in the Q&A window.
- Raise your hand to speak during Q&A sessions. You will be asked to unmute when it's your turn.
- This meeting will be recorded and posted online.





Project Team

Town Staff *(Local Agency)*

Nate Levine | Senior Engineer

CCTA Staff *(Implementing Agency)*

Andrew Dillard | Senior Engineer

Consultant Team

Joe Paull | Project Manager, *Sandis*

Marisa Lee | Associate, *Fehr & Peers*

Project Background

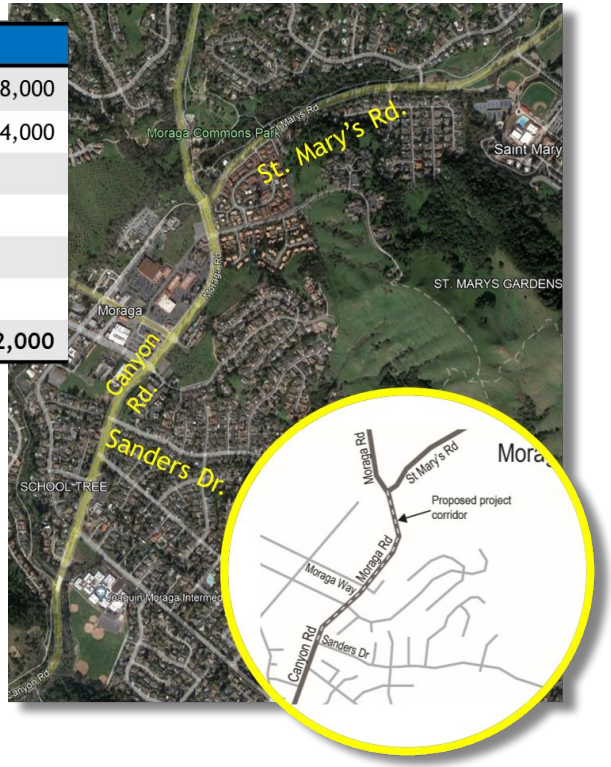
Project Extents

Moraga Road / Canyon Road

- St. Mary's Road (north) to Sander's Drive (south)
- Includes Lafayette-Moraga Regional Trail Crossing @ St. Mary's Road
- Includes all intersections in between

Project Purpose and History

Estimated Cost		Estimated Funding	
CCTA Project Management	$248,000	Local Funds (Measure J/LFFA)	$878,000
Environmental Clearance	$115,000	SS4A Federal Funds	$3,004,000
Design	$400,000		
Right-of-Way Acquisition	$115,000		
Construction	$2,620,000		
Construction Management	$384,000		
Total	**$3,882,000**	**Total**	**$3,882,000**

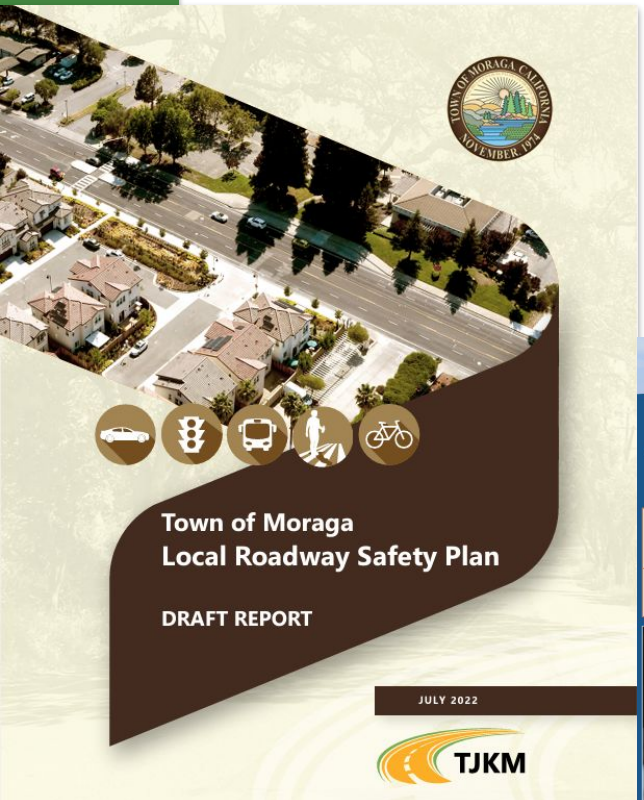


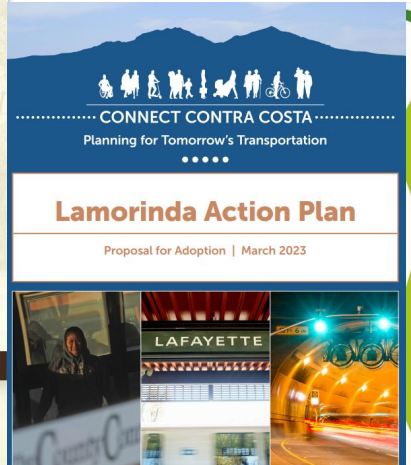
Key Milestones

- **2016 -** Moraga/Canyon Rd was identified for safety improvements in the Walk and Bike Plan and CIP Project.
- **2022** - Moraga's SS4a grant application was selected for inclusion in USDOT's SS4A Grant Program
- **Winter 2023** - CCTA was awarding funding to deliver the SS4A projects, Moraga's project was selected and funded
- **Spring 2024** - CCTA and the Town selected a consultant team to deliver the planning and design phases of the project

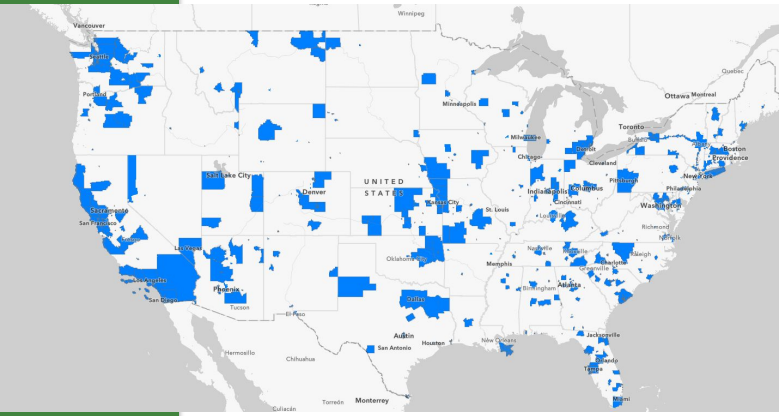
Planning Studies That Led us Here

ID	Intersection	Total Injury Collisions
1	Moraga Rd at Lucas Dr	6
2	Moraga Wy at Moraga Valley Ln	1
3	Moraga Rd at Campolindo Dr	3
4	Moraga Rd at St. Marys Rd	3
5	Moraga Rd at Alta Mesa	3
6	Camino Pablo at Sanders Ranch Rd	2
7	Moraga Rd at Ascot Dr	3
8	Moraga Rd at Donald Dr	2
9	Rheem Blvd at St. Marys Rd	2
10	Moraga Wy at School St	2
11	Moraga Rd at Corliss Dr	1





Safe Streets for All (SS4A) Funding



- Bicycle and Pedestrian Safety Improvements To Improve Equity Countywide in Contra Costa includes the following five projects:

  - Antioch Bicycle Garden ($4,000,000)
  - Antioch L Street Pathway to Transit – Bicycle and Pedestrian Improvements ($13,008,000)
  - Richmond Street Complete Streets Improvements ($8,003,000)
  - Moraga Road and Canyon Road Complete Streets Improvements ($3,004,000)
  - San Francisco Bay Trail Gap Closure-Martinez Intermodal Station to Crockett
    ($925,000)

Town / CCTA Partnership

- **Town of Moraga:** Local Agency
- **CCTA:** Implementing Agency (Project/Contract Management, Federal Funds Administration)
  - Town is ultimate decision-making authority on project design.
  - CCTA streamlined agreement with FHWA to expedite project delivery.
  - SS4A projects must be completed within 5 years (Spring 2029)

SS4A - Safe Systems Approach

Objectives

- Safer People
- Safer Roads
- Safer Vehicles
- Safer Speeds
- Post-Crash Care

WHAT IS A COMPLETE STREET?

Project Schedule

Public Engagement Process

Community Engagement Schedule

Phase 1: Confirm Project Need

- September: Pop-up event at Canyon Club Brewery

Phase 2: Preliminary Concepts

- October: Community Meeting on Project Alternatives
- October-November: Online Alternatives and Priorities Survey

Current Phase

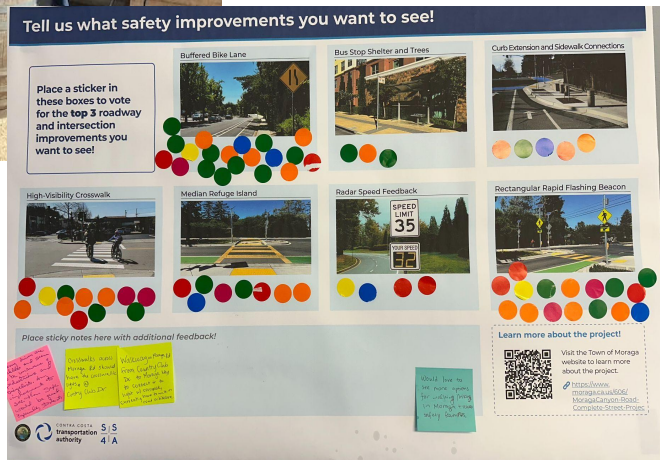
Phase 3: Confirm and Refine

- Finalized Concept for Public Comment at virtual meeting
- Town Council Meeting for Public Comment and Presentation of Finalized Concept

Community Engagement Process

Phase 1: Confirm Project Need

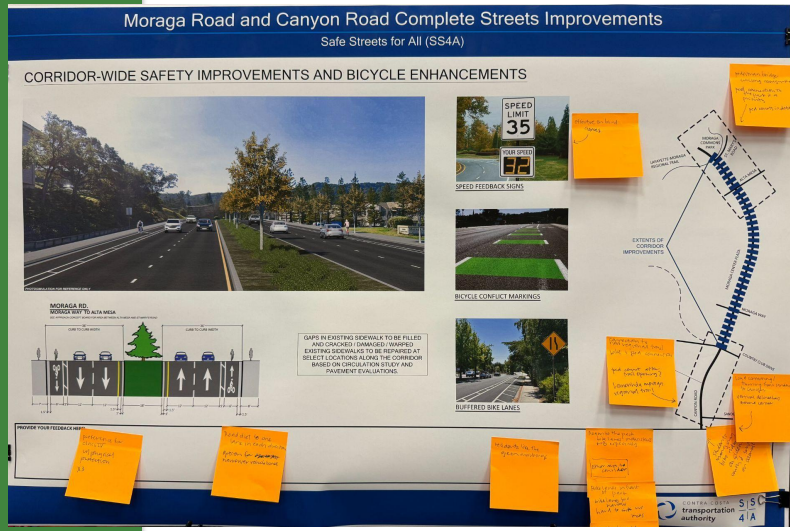
- September: Pop-up event at Canyon Club Brewery

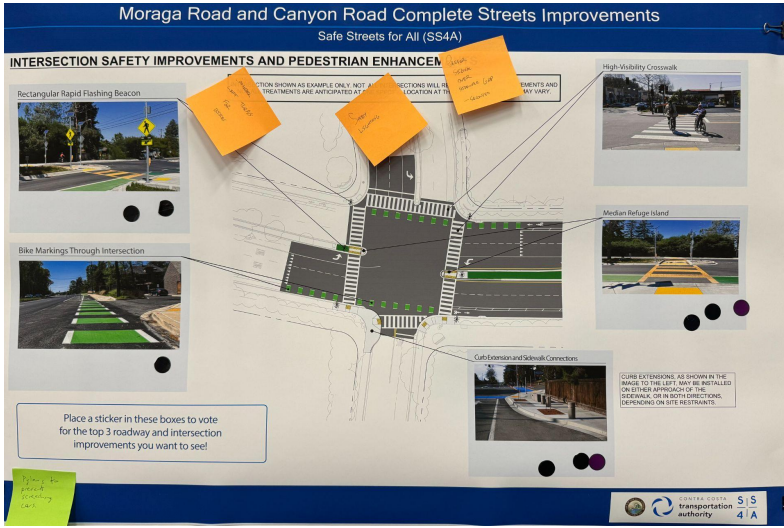


Community Engagement Process

Phase 2: Preliminary Concepts

- October: Community Meeting on Project Alternatives





Community Engagement Process

Phase 2: Preliminary Concepts

- October: Community Meeting on Project Alternatives

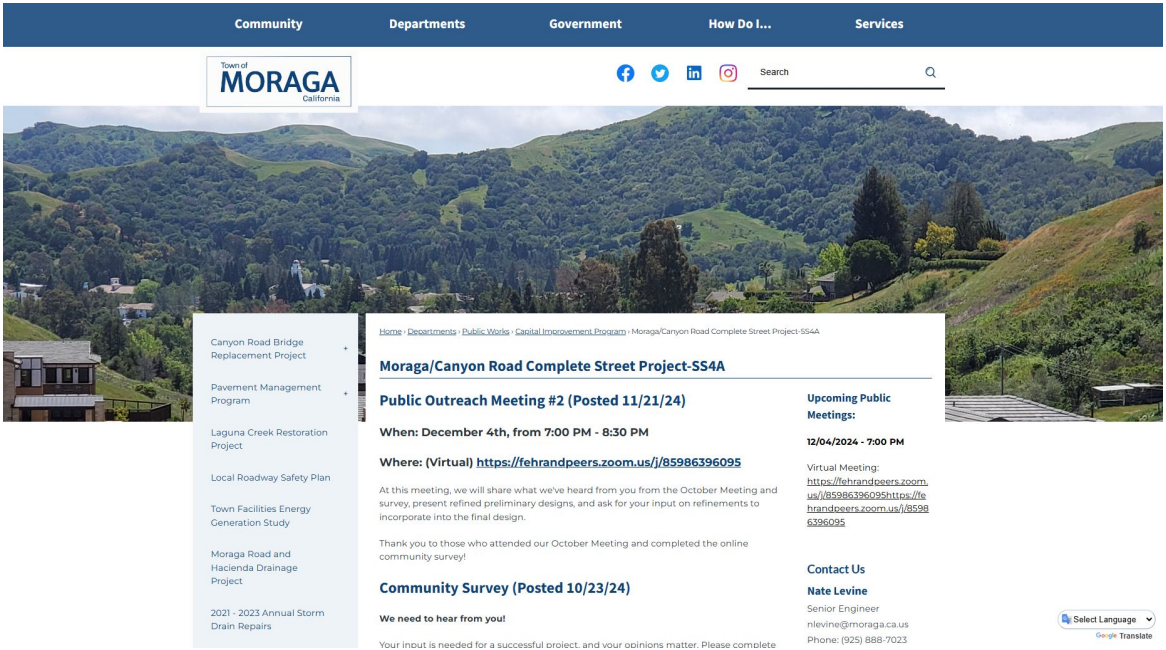
Outcomes of the Community Meeting:

- Overall support for the project
- Desire for bicycle and pedestrian safety
- Support for:
  - buffered bike lanes
  - enhanced pedestrian crossings
  - improved connectivity in sidewalks

Community Engagement Process

Phase 2: Preliminary Concepts (continued)

- October-November: Online Survey - Alternatives and Priorities



Community Engagement Summary

Online Engagement

30

Survey Responses

The online survey asked about current uses and biggest concerns on the corridor.

Community Meeting

21

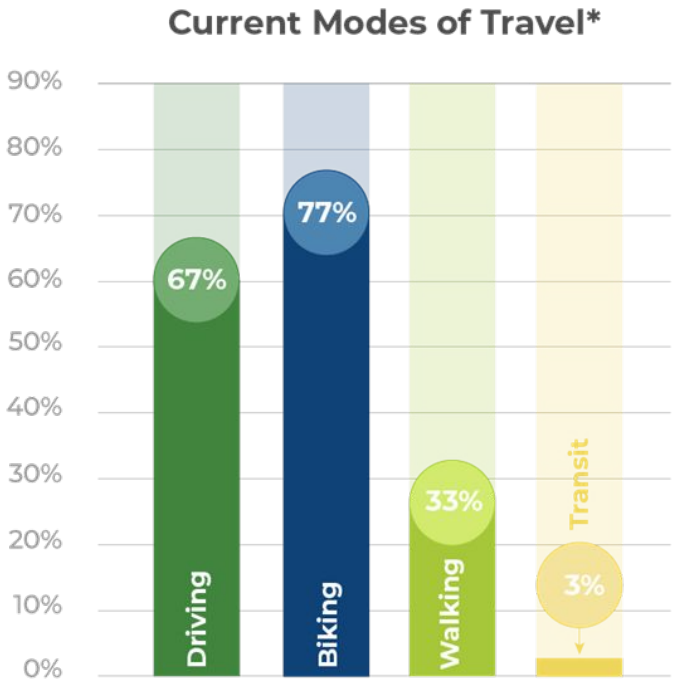
Meeting Attendants & Poll Participants

The community meeting presented preliminary conceptual drawings and asked residents about their preferences for improvements.

Online Engagement Response Summary

Community Engagement: Online Poll

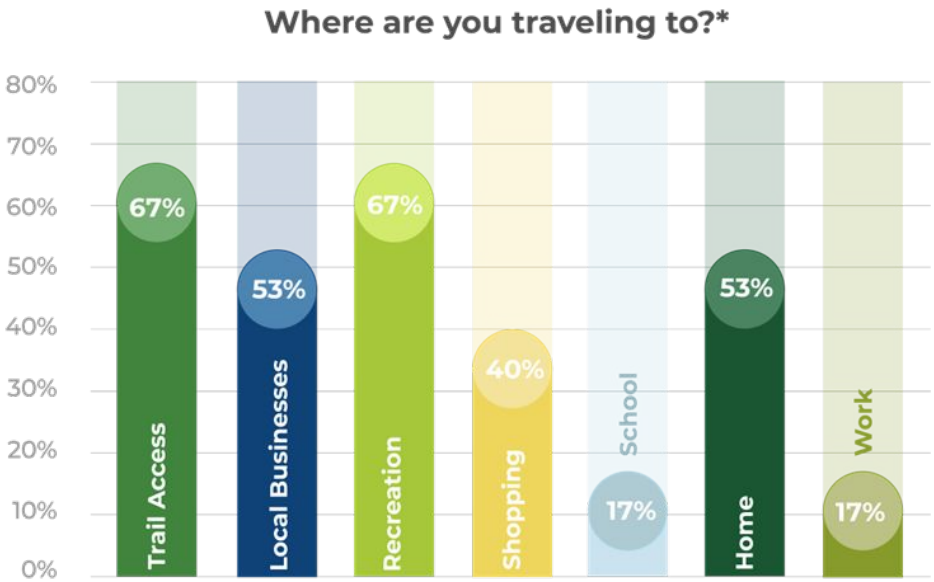
Current Travel Behavior and Culture

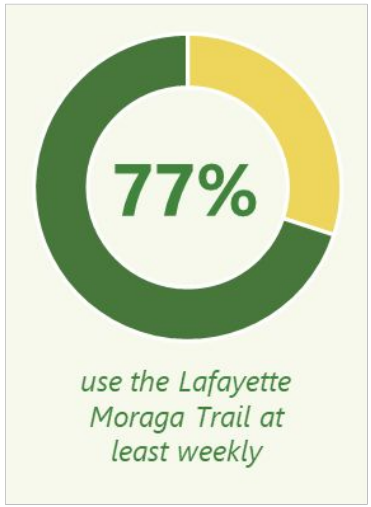


*When using the Moraga Road / Canyon Road corridor

Community Engagement: Online Poll

Current Travel Behavior and Culture



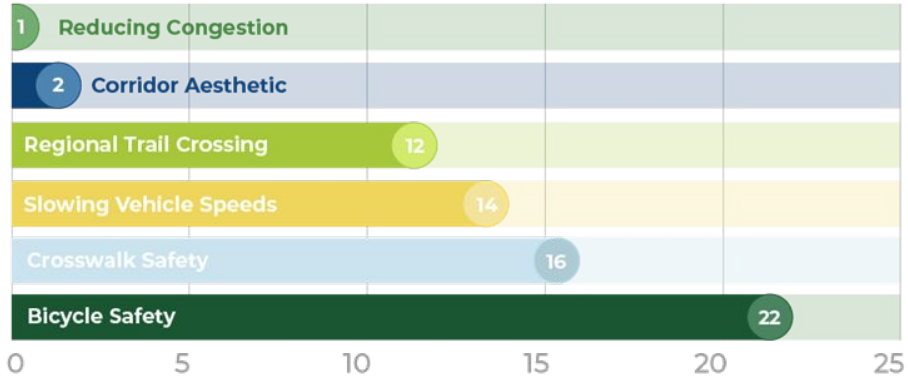


*When using the Moraga Road / Canyon Road corridor

Community Engagement: Online Poll

Community Concerns

Corridor Priorities



Community Engagement: Online Poll

Highest Concerns by Travel Mode

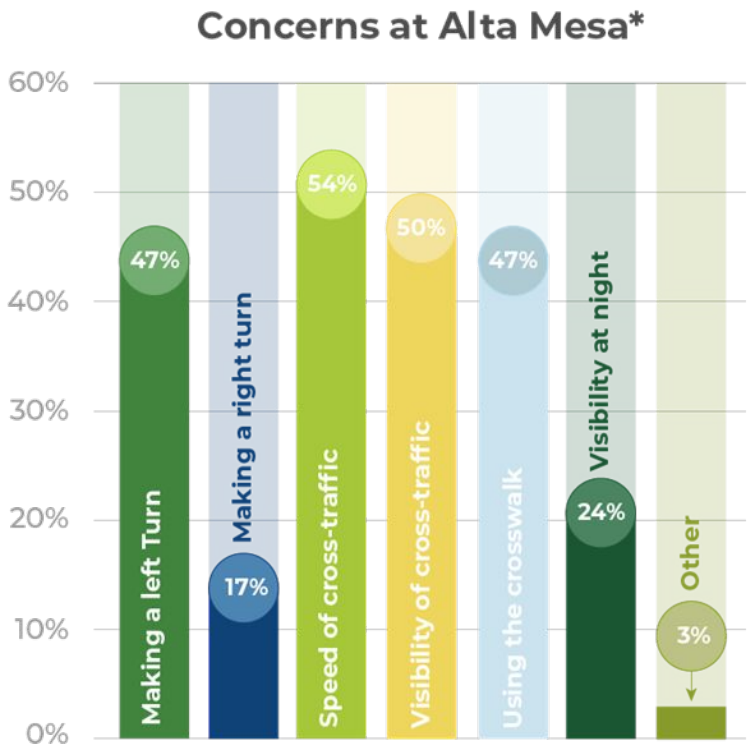
Biking:
Vehicles driving too close to bicyclists

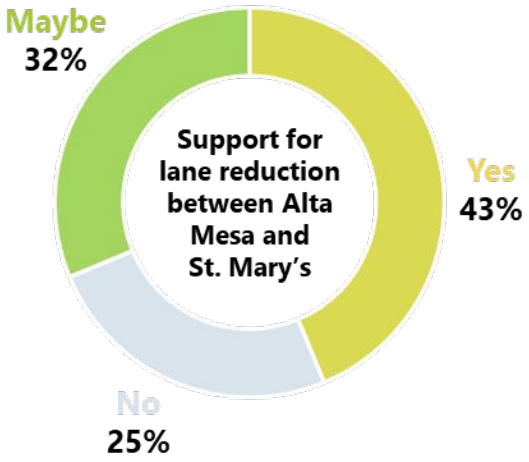
Driving:
Ensuring bicycle and pedestrian safety

Walking:
Visibility of pedestrians and vehicles yielding to pedestrians at crosswalks

Community Engagement: Online Poll

Key Project Locations – Alta Mesa





**Alta Mesa, along with St. Mary's Road and Country Club Drive, were the top 3 priority intersections for survey respondents.*

Analysis

Signal Warrant Analysis Summary

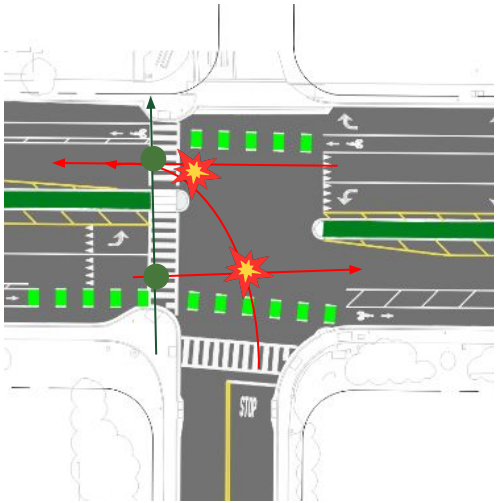
- The need/justification for signalization was reviewed at two locations (Warrant Analysis)
- The Analysis utilized 2024 data, which included traffic volumes, speeds, and collision data

Country Club Drive	Alta Mesa
☑	✗
Met	Not Met

Operations Analysis Summary

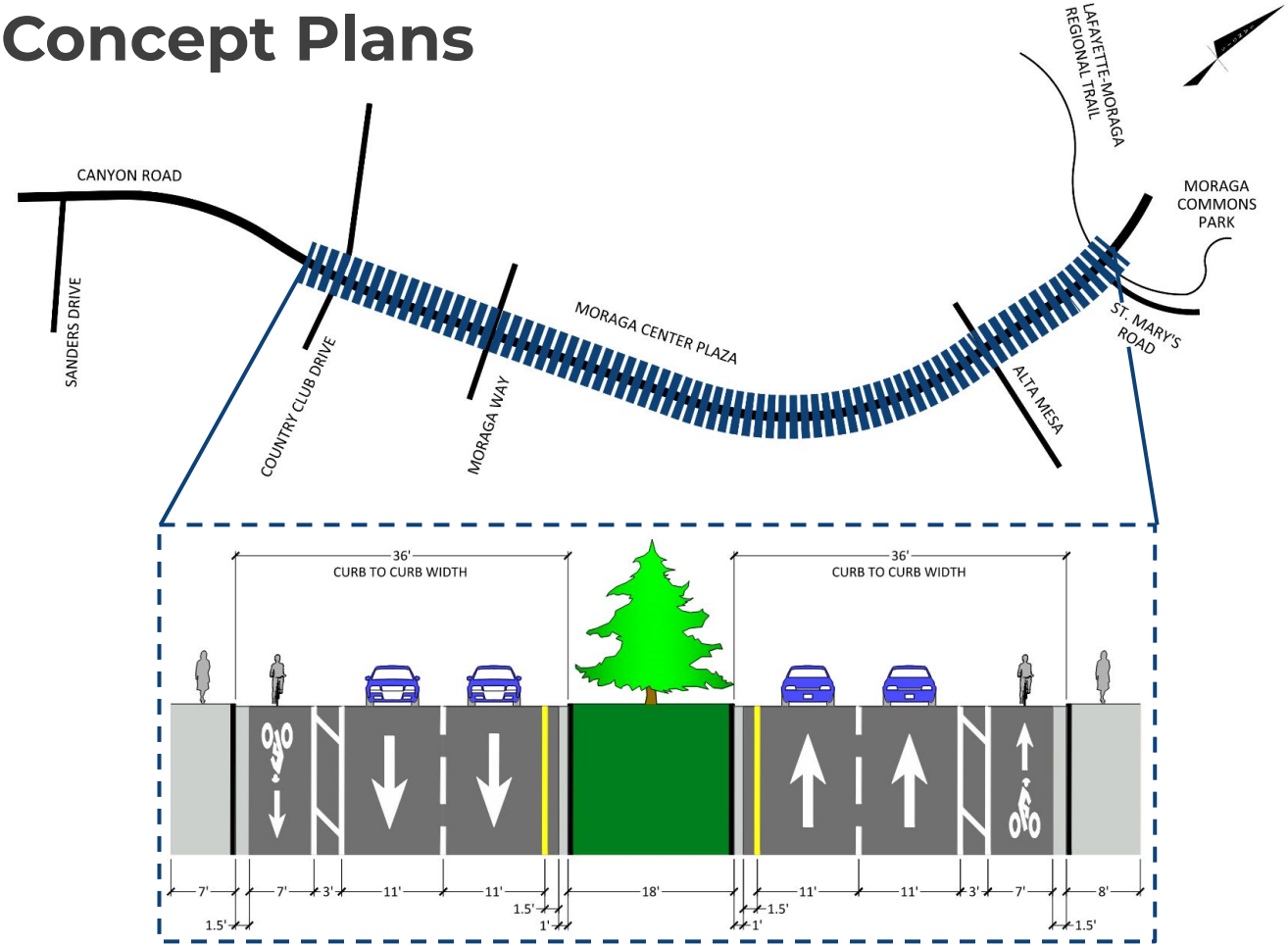
Alta Mesa: Road Diet

- Increased Safety for Pedestrians and Vehicles
- A minor increase in delay for vehicles turning from Alta Mesa onto Moraga Rd may occur
- No impact on delay for vehicles on Moraga Rd
- Restricting left turns out is not recommended at this time



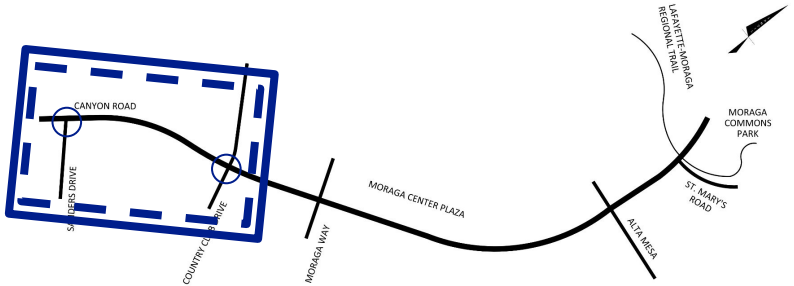
Concept Plans

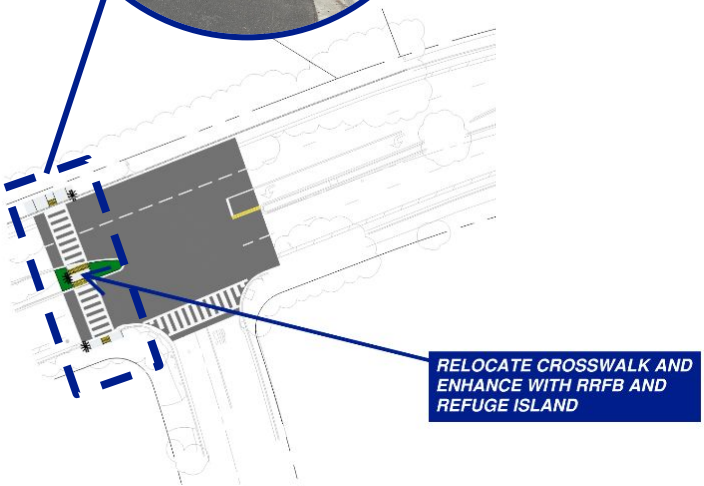
Concept Plans

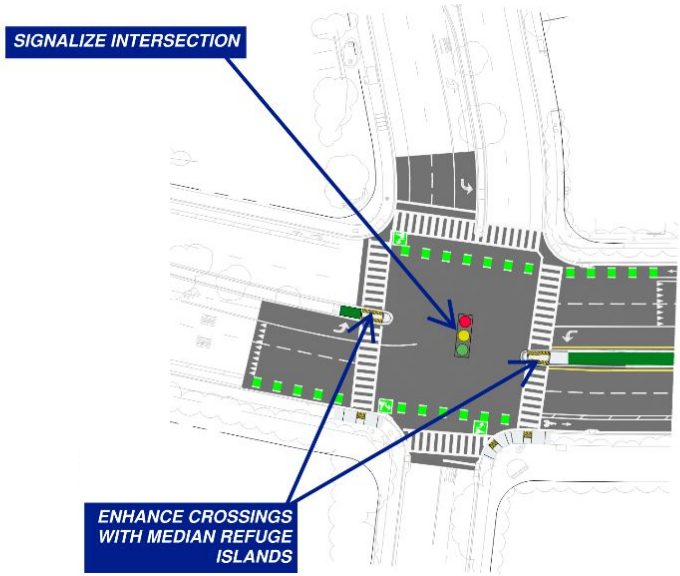


Concept Rendering

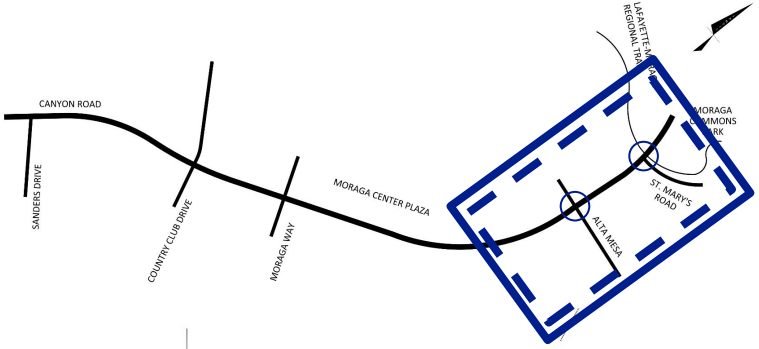
Concept Plans

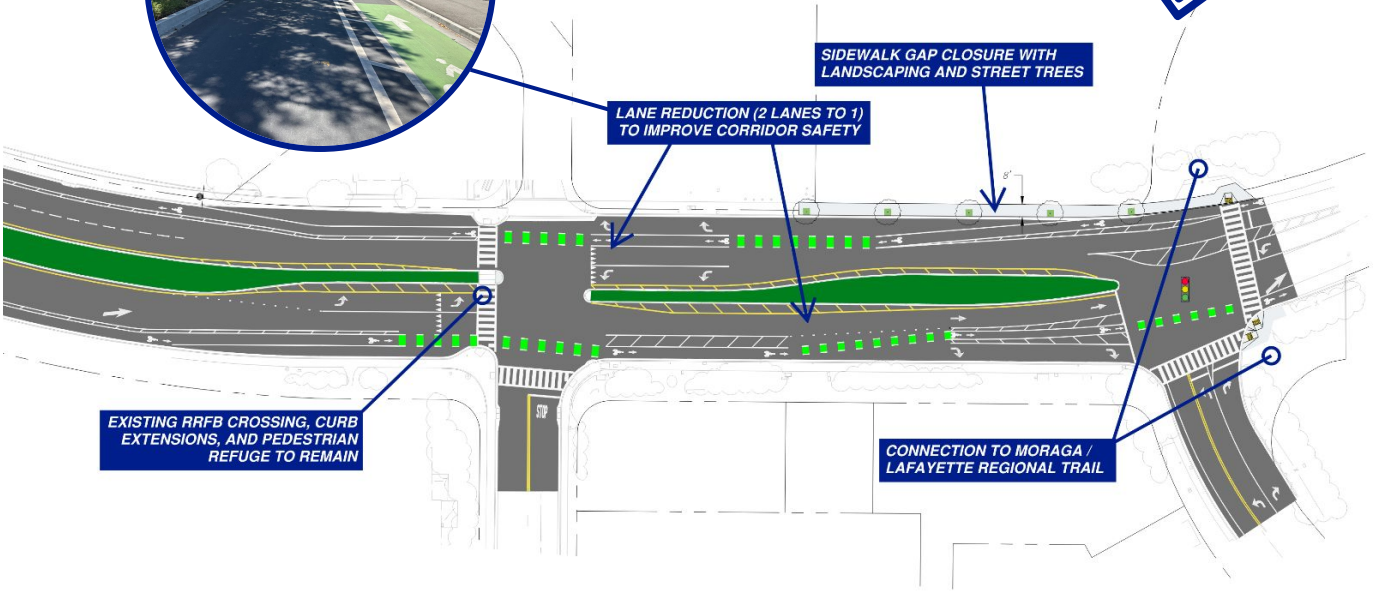






Concept Plans





Concept Plans
Additional Treatments

Bus Stop Improvements

Speed Feedback Signs

Bike Conflict Markings

Concept Plans

See the full Concept Plans on the project website, here:

https://www.moraga.ca.us/DocumentCenter/View/9488

Next Steps

Next Steps

Phase 1: Confirm Project Need

- September: Pop up at Canyon Club Brewery

Phase 2: Preliminary Concepts

- October: Community Meeting on Project Alternatives
- October-November: Online Alternatives and Priorities Survey

Current Phase

Phase 3: Confirm and Refine

- Preferred Alternative for Online Public Comment
- Town Council Meeting for Public Comment and Presentation of Finalized Concept

Q&A

Questions

Please use “raise hand” feature to speak OR Q&A feature in Zoom to leave a written question in the chat box.

Thank you!

Feedback

Comments and Feedback

Please use “raise hand” feature to speak OR Q&A feature in Zoom to leave a written comment in the chat box.

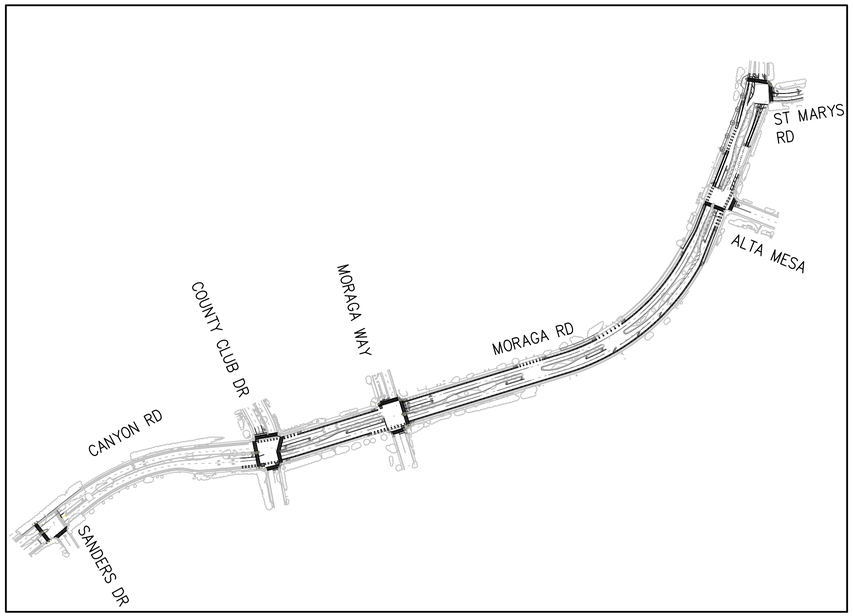
Thank you!

APPENDIX E: PREFERRED CONCEPT DESIGNS

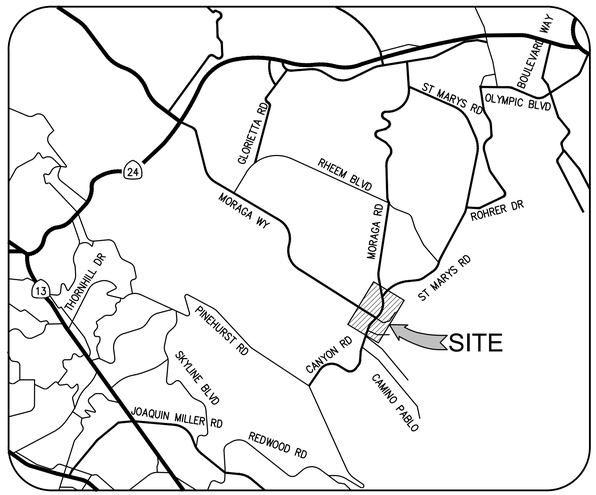
MORAGA ROAD AND CANYON ROAD COMPLETE STREETS

SAFE STREET FOR ALL

MORAGA, CA



KEY MAP
1"=250'



VICINITY MAP
N.T.S.

LEGEND

	EXISTING	PROPOSED
SAWCUT AND CONFORM LINE		
RETAINING WALL		
A.C. PAVEMENT		
CONC. VALLEY GUTTER		
CONC. SIDEWALK OR PAD		
6" CURB & GUTTER		
EDGE OF A.C. PAVEMENT	EP	
6" VERTICAL CURB		
CENTER LINE		
SANITARY SEWER MAIN	8" SS	8" SS
STORM DRAIN MAIN	12" SD	15" SD
PERFORATED PIPE		6" SD
WATER MAIN	6" W	6" W
FIRE WATER MAIN	6" FW	4" FW
DOMESTIC WATER MAIN	6" DW	4" DW
CHILLED WATER MAIN	6" CHW	4" CHW
IRRIGATION LINE	2" IRR	4" IRR
HOT WATER SUPPLY & RETURN	HWS–HWR	HWS HWR
STEAM LINE	ST	ST
TRENCH DRAIN		
CONDENSATE RETURN	CR	CR
FLOW LINE		
CHAIN LINK FENCE	x x	x x
GAS MAIN	G	2" G
ELECTRIC AND SIGNAL DUCT BANK	E	E
OVERHEAD ELECTRIC LINE	OHE	OHE
UNDERGROUND ELECTRIC LINE	UGE	UGE
STREET LIGHT CONDUIT	SL	SL
CONTOUR ELEVATION LINE	85	90 89
SPOT ELEVATION	x 95.94	FG 95.94
DIRECTION OF SLOPE		2:1 1%
GAS METER		GM
GAS VALVE		GV
WATER METER		WM
WATER VALVE	WV	WV
FIRE HYDRANT		
BACK FLOW PREVENTOR		
POST INDICATOR VALVE	PIV	PIV
FIRE DEPARTMENT CONNECTION		FDC
WATER LINE TEE		
CAP AND PLUG END		
AIR RELEASE VALVE		ARV
SIGN		
ACCESSIBLE RAMP		
CONCRETE THRUST BLOCK		
REDUCER		
SANITARY SEWER MANHOLE		
SANITARY SEWER CLEANOUT	SSCO	SSCO
STORM DRAIN MANHOLE		
STORM DRAIN AREA DRAIN		
STORM DRAIN CATCH BASIN	CB	
STORM DRAIN CURB INLET		
STORM DRAIN CLEANOUT	SDCO	SDCO
ELECTROLIER		
JOINT POLE		JP
OVERLAND RELEASE		
CONSTRUCTION DETAIL REFERENCE		15 / C5.2 DETAIL REFERENCE, SHEET REFERENCE

###

ABBREVIATIONS

AB	–	AGGREGATE BASE
AC	–	ASPHALT CONCRETE
AD	–	AREA DRAIN
ADA	–	AMERICANS WITH DISABILITIES ACT
ASB	–	AGGREGATE SUBBASE
BC	–	BEGINNING OF CURVE
BFP	–	BACK FLOW PREVENTOR
BLDC	–	BUILDING CORNER
BLDG	–	BUILDING
BOD	–	BOTTOM OF DOCK
BOL	–	BOLLARD
BOS	–	BOTTOM OF STEP
BOW	–	FG @ BOTTOM OF WALL
BVC	–	BEGIN VERTICAL CURVE
BW	–	BACK OF WALK
C	–	CONCRETE OR CIVIL
C&G	–	CURB AND GUTTER
CB	–	CATCH BASIN
CI	–	COMBINATION INLET
CIP	–	CAST IRON PIPE
CL	–	CENTER LINE OR CLASS
CMP	–	CORRUGATED METAL PIPE
CO	–	CLEANOUT
COI	–	CURB OPENING INLET
CONC	–	CONCRETE
CONST	–	CONSTRUCTION OR CONSTRUCT
CY	–	CUBIC YARD
DCDA	–	DOUBLE CHECK DETECTOR ASSEMBLY
DI	–	DROP INLET
DIP	–	DUCTILE IRON PIPE
DOM	–	DOMESTIC
DW	–	DOMESTIC WATER
DWG	–	DRAWING
E	–	EAST
EC	–	END OF CURVE
EP	–	EDGE OF PAVEMENT
ER	–	END OF RETURN
EVC	–	END VERTICAL CURVE
ELEV	–	ELEVATION
EX., EXIST.	–	EXISTING
FC	–	FACE OF CURB
FDC	–	FIRE DEPARTMENT CONNECTION
FF	–	FINISHED FLOOR
FG	–	FINISHED GRADE
FH	–	FIRE HYDRANT
FL	–	FLOW LINE
FOUND	–	FOUNDATION
FS	–	FINISHED SURFACE
FT	–	FOOT
FW	–	FIRE WATER
G	–	GROUND ELEVATION
GB	–	GRADE BREAK
GV	–	GATE VALVE
HCR	–	ACCESSIBLE RAMP
HP	–	HIGH POINT
INV	–	INVERT ELEVATION
JP	–	JOINT POLE
JT	–	JOINT TRENCH
LIP	–	LIP OF GUTTER
LP	–	LOW POINT
LSA	–	LANDSCAPE ARCHITECT
MAX	–	MAXIMUM
MEP	–	MECHANICAL/ELECTRICAL/PLUMBING
MH	–	MANHOLE
MIN	–	MINIMUM
MPVC	–	MIDPOINT OF VERTICAL CURVE
MON	–	MONUMENT
N	–	NORTH
N.I.C.	–	NOT IN CONTRACT
NO	–	NUMBER
NTS	–	NOT TO SCALE
P	–	PAVEMENT ELEVATION
PCC	–	PORTLAND CEMENT CONCRETE / POINT OF CONTINUOUS CURVATURE
PIV	–	POST INDICATOR VALVE
PL	–	PROPERTY LINE
PMH	–	POWER MANHOLE
POC	–	POINT ON CURVE
PP	–	POWER POLE
PRC	–	POINT OF REVERSE CURVATURE
PVC	–	POLYVINYL CHLORIDE PIPE
R	–	RADIUS
RC	–	RELATIVE COMPACTION
RCP	–	REINFORCED CONCRETE PIPE
RPPA	–	REDUCED PRESSURE PRINCIPLE ASSEMBLY
R/W	–	RIGHT OF WAY
S	–	SLOPE OR SOUTH
S.A.D.	–	SEE ARCHITECTURAL DRAWINGS
SB	–	SEDIMENT BASIN
SD	–	STORM DRAIN
S.E.D.	–	SEE ELECTRICAL DRAWINGS
SF	–	SILT FENCE
SG	–	SUBGRADE
S.L.D.	–	SEE LANDSCAPE DRAWINGS
S.M.D.	–	SEE MECHANICAL DRAWINGS
SMH	–	SIGNAL MANHOLE
S.P.D.	–	SEE PLUMBING DRAWINGS
SS	–	SANITARY SEWER
STA	–	STATION
STD	–	STANDARD
S/W	–	SIDEWALK
TC	–	TOP OF CURB
TD	–	TRENCH DRAIN
TOD	–	TOP OF DOCK
TOE	–	TOE OF SLOPE
TOS	–	TOP OF STAIR
TOW	–	FG @ TOP OF WALL
TS	–	TOP OF SLAB
TYP	–	TYPICAL
UON	–	UNLESS OTHERWISE NOTED
U/G	–	UNDERGROUND
VC	–	VERTICAL CURVE
WM	–	WATER METER
WV	–	WATER VALVE
W	–	WEST
WWF	–	WELDED WIRE FABRIC
W/	–	WITH

PROJECT DESCRIPTION

PROVIDE SAFETY IMPROVEMENTS ALONG CANYON ROAD AND MORAGA ROAD THROUGH IMPLEMENTATION OF BUFFERED BIKE LANES, CORNER BULBOUTS, HIGH VISIBILITY CROSSWALK, BUS STOP ENHANCEMENTS, SIGNALIZATION OF INTERSECTION.

OWNER INFO

TOWN OF MORAGA
PUBLIC WORKS DEPARTMENT
329 RHEEM BOULEVARD
MORAGA, CA 94556

PH: (925)888-7026
EMAIL: publicworks@moraga.ca.us

SHEET INDEX

CONSTRUCTION CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONSTRUCTION CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS AND CONSTRUCTION CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD DESIGN PROFESSIONAL HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING LIABILITY ARISING FROM SOLE NEGLIGENCE OF DESIGN PROFESSIONAL.

UNAUTHORIZED CHANGES AND USES

CAUTION : THE ENGINEER PREPARING THESE PLANS WILL NOT BE RESPONSIBLE FOR, OR LIABLE FOR, UNAUTHORIZED CHANGES TO OR USES OF THESE PLANS. ALL CHANGES TO THE PLANS MUST BE IN WRITING AND MUST BE APPROVED BY THE PREPARER OF THE PLANS.

811 Know what's below. Call before you dig.

SANDIS

BUILD ON.
SANDIS.NET

DATE: 02-28-2025
SCALE: N.T.S.
PROJECT No.: 623081

DATE _____, 2025

RONALD EDMUND SANZO III
R.C.E. NO. 79305, EXPIRES 3-31-26

15% PLANS NOT FOR CONSTRUCTION

No.	REVISION	DATE	BY

CANYON ROAD/ MORAGA ROAD
SAFE STREET FOR ALL
MORAGA CALIFORNIA

COVER SHEET

SHEET 1 OF 4 SHEETS

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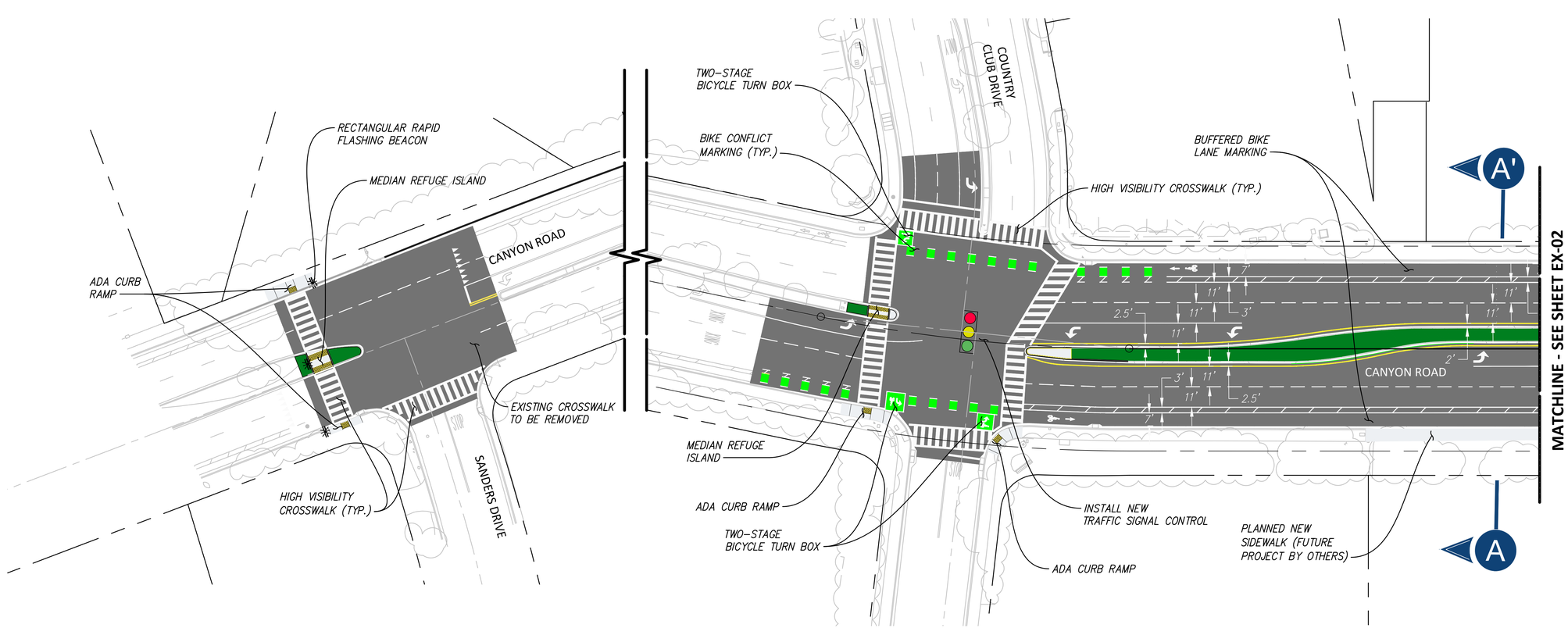
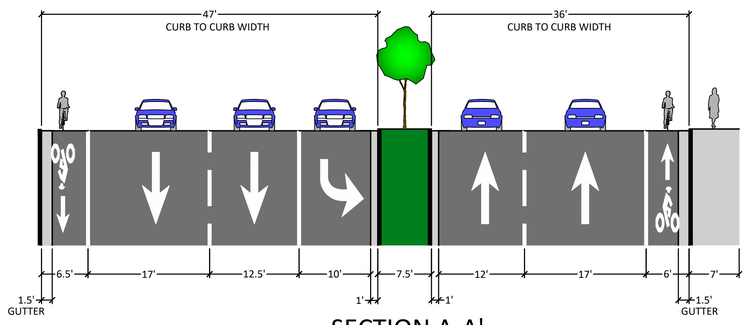


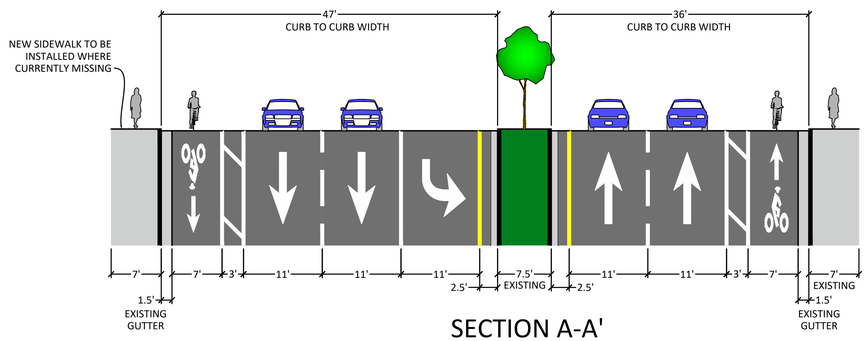
MORAGA RD.
COUNTRY CLUB DR. TO MORAGA WAY

EXISTING



SECTION A-A'

PROPOSED



SECTION A-A'

L-1

SANDIS

BUILD ON.
SANDIS.NET

DATE: 02-28-2025
SCALE: 1"=30'
PROJECT No.: 623081

DATE _____, 2025

RONALD EDMUND SANZO III
R.C.E. NO. 79305, EXPIRES 3-31-26

15% PLANS NOT FOR CONSTRUCTION

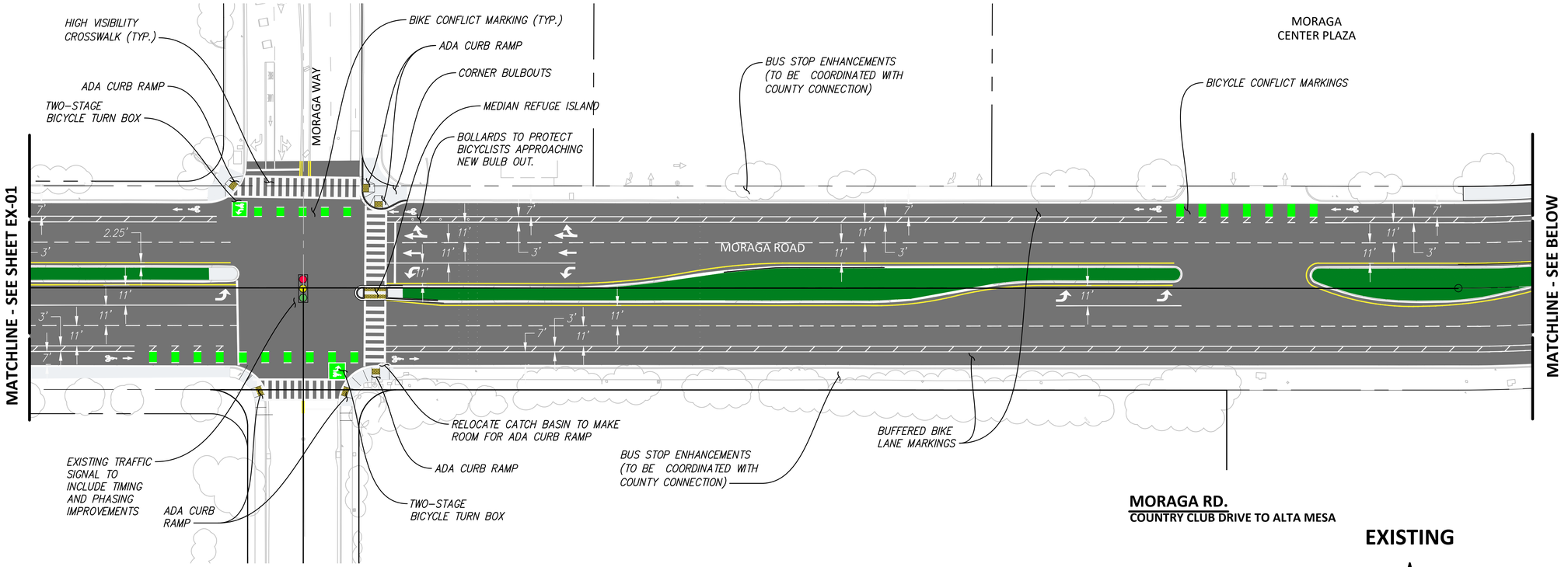
No.	REVISION	DATE	BY

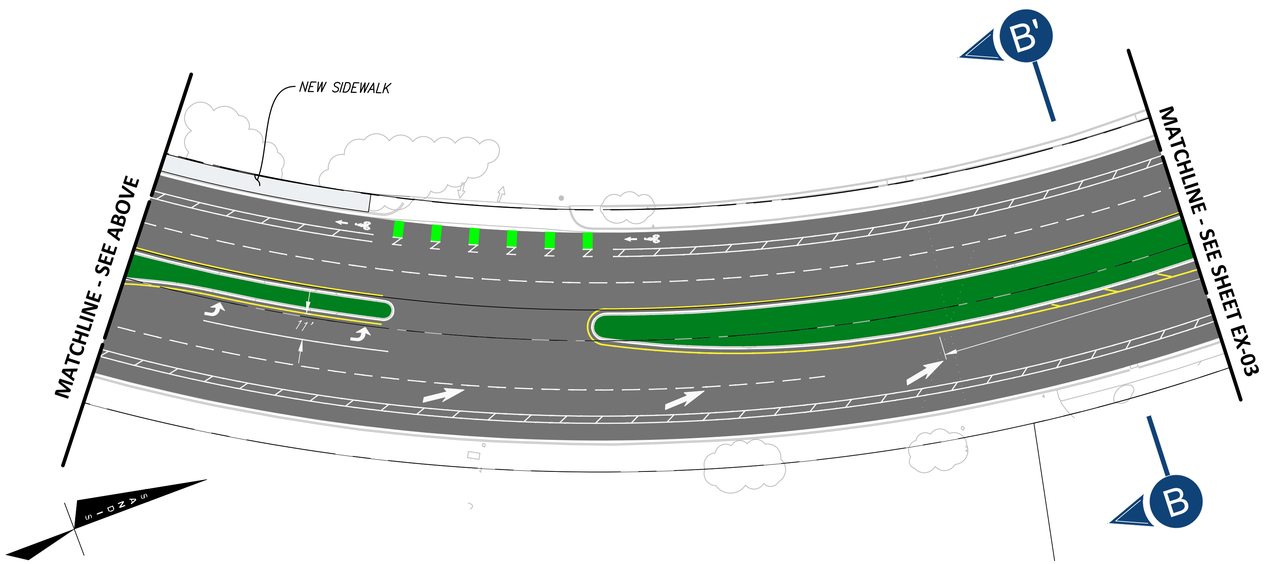
CANYON ROAD/ MORAGA ROAD
SAFE STREET FOR ALL

MORAGA CALIFORNIA

LAYOUT PLAN

SHEET 2 OF 4 SHEETS



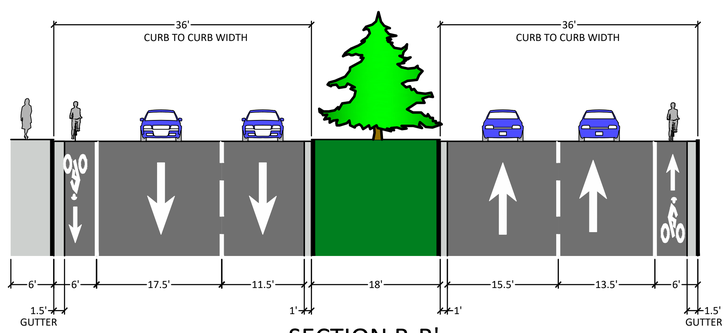


L-2

0' 6' 15' 30' 60'
1 INCH = 30 FT

MORAGA RD.
COUNTRY CLUB DRIVE TO ALTA MESA

EXISTING



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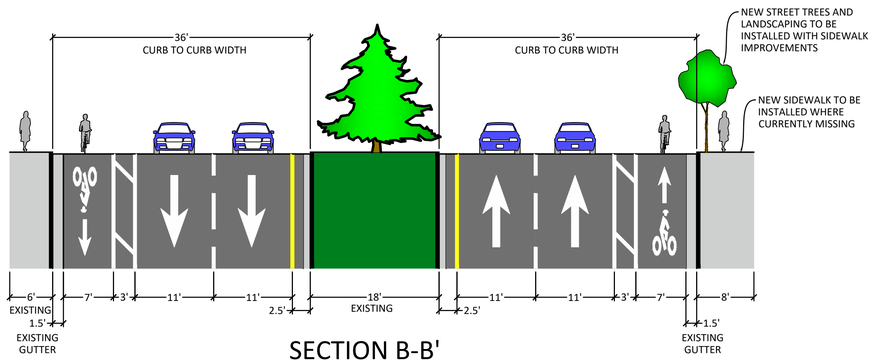

SECTION B-B'

SANDIS
BUILD ON.
SANDIS.NET

DATE: 02-28-2025
SCALE: 1"=30'
PROJECT No.: 623081

DATE _____, 2025

RONALD EDMUND SANZO III
R.C.E. NO. 79305, EXPIRES 3-31-26

15% PLANS
NOT FOR CONSTRUCTION

No.	REVISION	DATE	BY

CANYON ROAD/ MORAGA ROAD
SAFE STREET FOR ALL
MORAGA CALIFORNIA

LAYOUT PLAN

SHEET 3 OF 4 SHEETS

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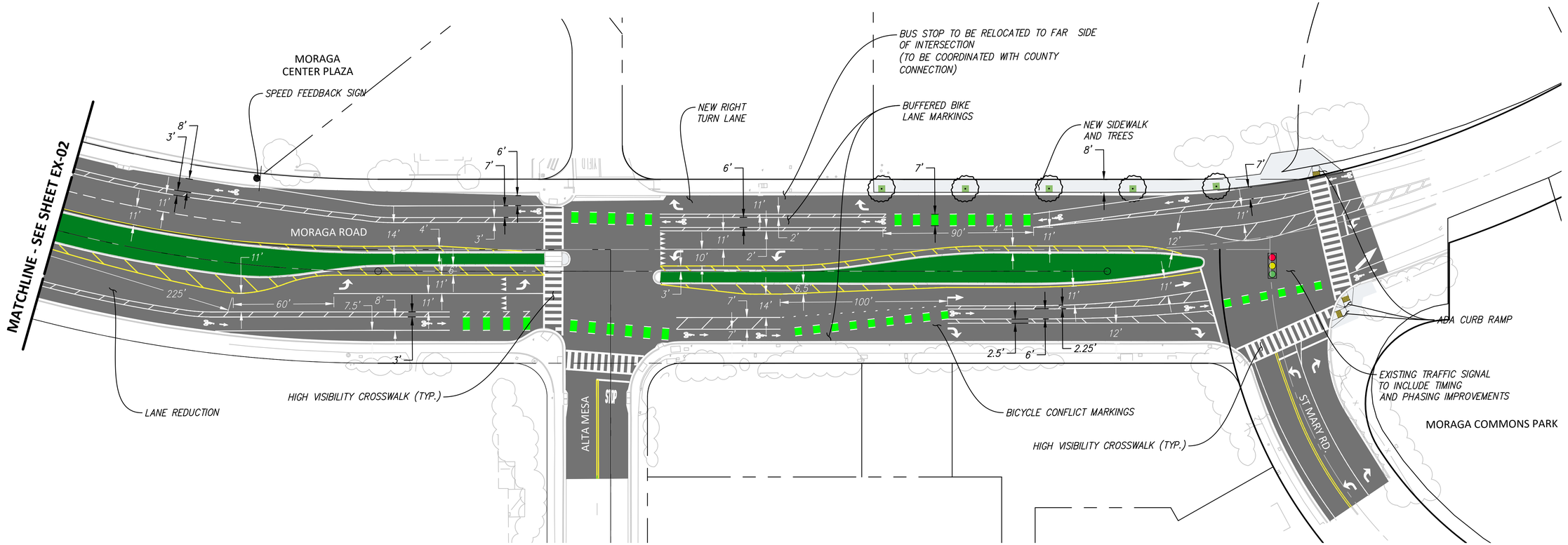

L-3

SANDIS
BUILD ON.
SANDIS.NET

DATE: 02-28-2025
SCALE: 1"=30'
PROJECT No.: 623081

DATE _____, 2025

RONALD EDMUND SANZO III
R.C.E. NO. 79305, EXPIRES 3-31-26

15% PLANS NOT FOR CONSTRUCTION

No.	REVISION	DATE	BY

CANYON ROAD/ MORAGA ROAD
SAFE STREET FOR ALL
MORAGA CALIFORNIA

LAYOUT PLAN

SHEET 4 OF 4 SHEETS

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