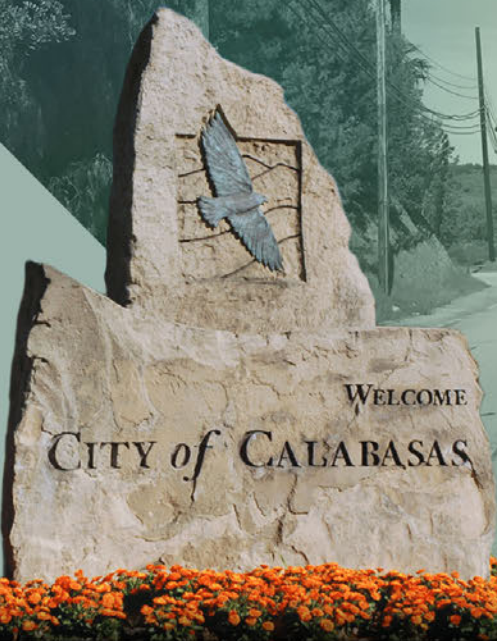




CITY of CALABASAS

MULHOLLAND HIGHWAY FEASIBILITY STUDY

DECEMBER 11, 2020



SUBMITTED TO:
CITY OF CALABASAS
PUBLIC WORKS DEPARTMENT
100 CIVIC CENTER WAY | CALABASAS, CA 91302

SUBMITTED BY:
Michael Baker
INTERNATIONAL

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1.0 Introduction

1.1 Executive Summary

The City of Calabasas (City) proposes to improve the safety and operational performance of Mulholland Highway from the City's southern boundary up to Old Topanga Canyon Road (East). The project is located within the City's southwestern half and is approximately 2.7 miles long encompassing multiple residential communities, Viewpoint School, and Wild Walnut Park with Calabasas High School located just northeast of the project. The existing roadway is rural and scenic with one lane in each direction that varies from 10' to 12' wide. The route primarily services local vehicular and cyclist traffic but is also a by-pass route for regional commuters, when alternative routes experience heavy congestion. Existing route issues include varying shoulder widths that are narrow, damaged guardrail, short-turn pocket lengths, no pedestrian sidewalk near Wild Walnut Park, poor edge conditions lined by trees, brush, erosion prone hillsides and above ground utility poles. During peak hours, the highway experiences heavy congestion near the Old Topanga Canyon Road (East and West) Intersections and near the Viewpoint School. The route is considered an emergency corridor that is frequently impaired by slope erosion debris on the shoulders and travel lanes, fire and other events.

The City has retained Michael Baker International (Michael Baker) to provide professional engineering services to study and develop feasible improvement alternatives and to assess their performance using existing and future traffic operational demands. Michael Baker has developed conceptual improvements that are presented in this report that address the above existing deficiencies of the corridor. The following improvements have been studied and recommended as part of this project:

- Signalize the Old Topanga Canyon Road (West) intersection.
- Lengthen existing turn lanes and add new turn lanes where needed to improve distribution and queuing.
- Widen the existing shoulder area by 4' to 6' where possible to improve rideability.
- Maintain a minimum 11' to 12' lane width.
- Modifying existing lane striping for improved traffic flow.
- Remove and replace existing guardrail.
- Relocate above ground utilities where in conflict.
- Address erosion prone hillsides with new retaining walls and erosion control measures.
- Improve sight distance.
- Add new sidewalk and crosswalks on Mulholland Highway near Wild Walnut Park between the Old Topanga Canyon Road intersections.
- Remove and replace conflicting and undersized drainage facilities.
- Permanent improvements are to remain within the existing right-of-way.

Environmentally, it is not anticipated that the project would result in significant impacts on the environment. It is anticipated that a Categorical Exemption would be appropriate for the proposed project, under CEQA Guidelines Section 15301, Existing Facilities. The City has solicited public and stakeholder input which is documented in this report. The project is funded through Los Angeles County Measure M funds and is proposed to be constructed in phases based upon available budget.

In support of this Feasibility Study the following reports and tasks were prepared and conducted (included in the Appendix).

- Traffic Study Report (Michael Baker, 2020)
- Preliminary Geotechnical Engineering Review (Geosoils, 2020)
- Mulholland Highway Concept Plans and Cost Estimate
- Public Outreach Meetings and Presentations

1.2 Project Location

The project is located on Mulholland Highway, in the City of Calabasas and within Los Angeles County, from the Old Topanga Canyon Road (east) intersection, near Calabasas High School, up to the southern City boundary, which is located south of Mountain Park Drive and north of Lyndon Drive. Mulholland Highway through the study area is situated within the rural, open space and residential areas of the City and is within the Santa Monica Mountain range. Mulholland Highway intersects with Dry Canyon Cold Creek Road, Mountain Park Drive, and Old Topanga Canyon Road within the study area. The project is approximately 2.7 miles long. Please refer to Figure 1 and 2 for the project location.

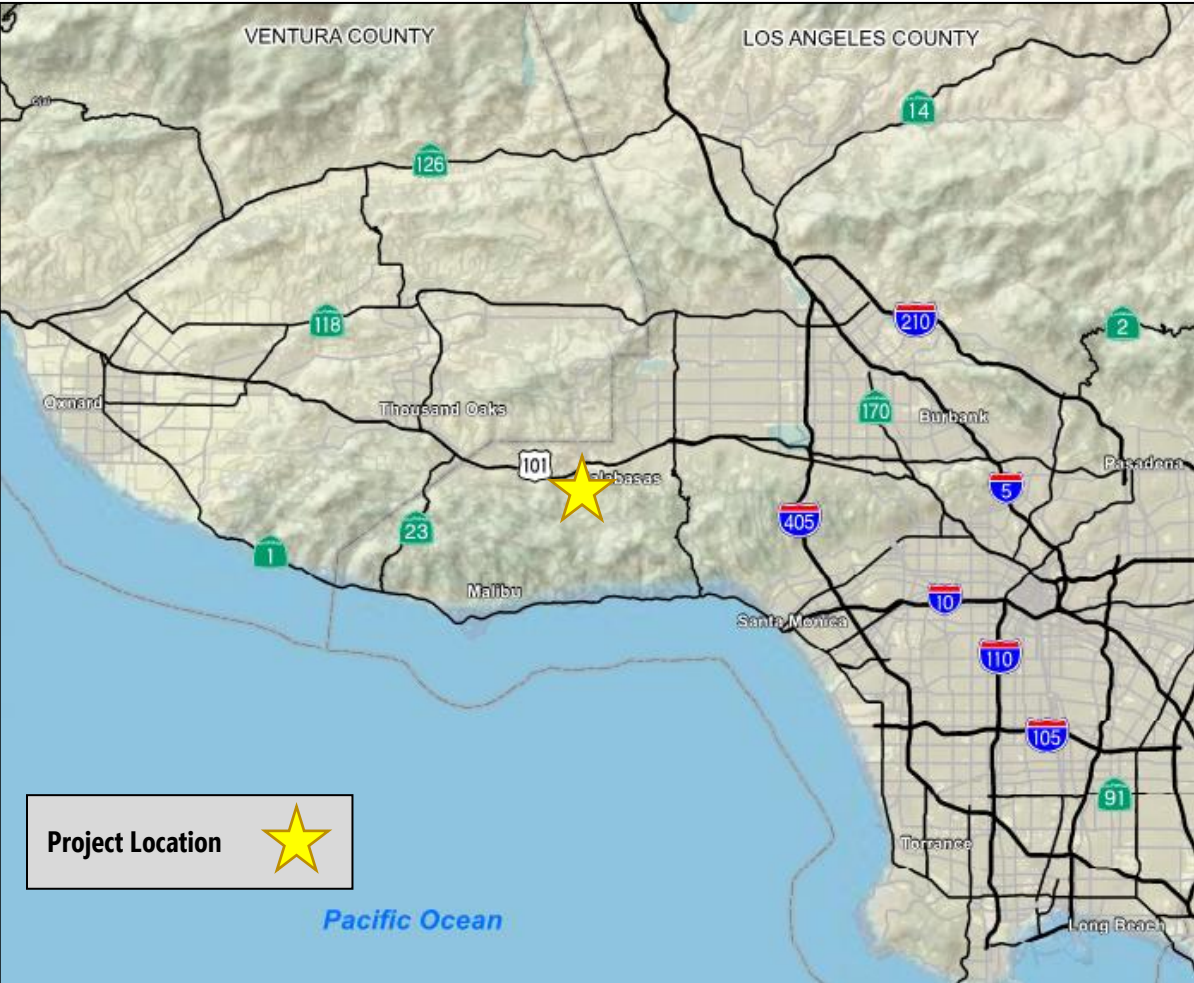


Figure 1. Regional Vicinity Map

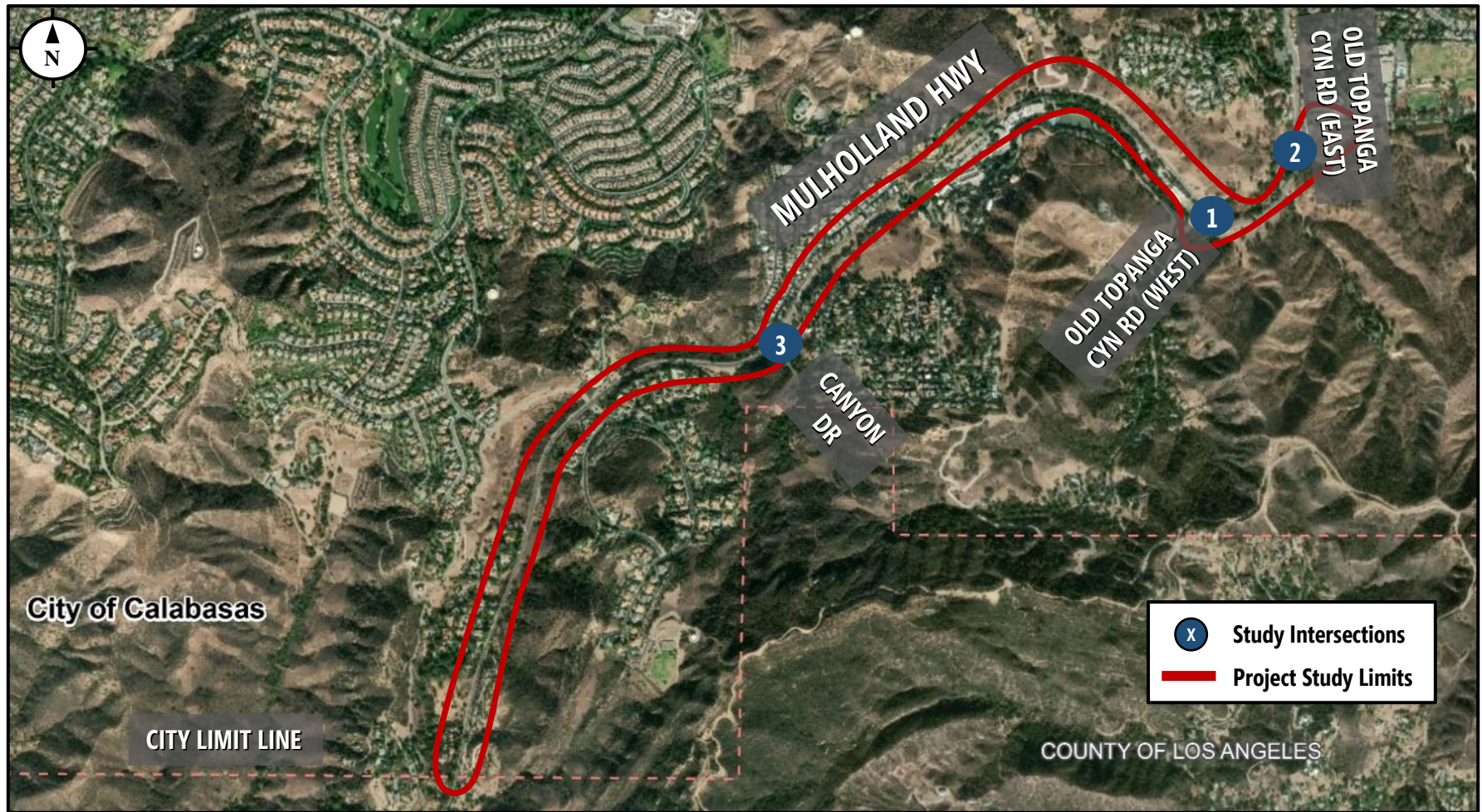


Figure 2. Project Area Map

1.3 Feasibility Study Objective

The City contracted with Michael Baker on October 31, 2019 to provide professional engineering services to develop conceptual corridor improvements for Mulholland Highway. This work will address issues that include traffic operations and safety for vehicles, bicyclists, and pedestrians. Michael Baker and its subconsultant prepared and performed the following documents and tasks in preparation of this Feasibility Study Report. See the Appendix for full copies of these supporting materials.

- Traffic Study Report (Michael Baker, 2020)
- Preliminary Geotechnical Report (Geosoils, 2020)
- Mulholland Highway Concept Plans (Concept Plans) and Cost Estimate
- Public Outreach Meetings and Presentations

The objective of this Feasibility Study is to ***study the existing conditions*** and deficiencies of the corridor, ***develop feasible conceptual improvements*** that meet the purpose and need of the project, ***prepare preliminary cost estimates*** of those improvements to guide the City in its decision making process of how to implement the next phases of the project based upon it's available project budget, whether in one phase or in multiple phases. This study also advises the City as to the ***required environmental document*** and environmental technical studies that need to be prepared in the next phase of the project to comply with the California Environmental Quality Act (CEQA). This report also ***documents the public outreach performed*** during this preliminary stage of the project, both to the public and to local stakeholders. Finally, this report ***provides an estimated schedule*** of the next phases of the project, which are the Project Approval and Environmental Document (PA & ED) phase and final engineering phase known as the Plans, Specifications, and Estimates (PS&E) phase. This study presents a single build alternative to meet the project's purpose and need.

In summary, this Feasibility Study:

1. Studies the existing condition and deficiencies of the corridor
2. Develops feasible conceptual improvements
3. Prepares preliminary cost estimates for those improvements
4. Presents the environmental CEQA requirements for the project
5. Documents public outreach performed during this phase of the project
6. Presents an estimated schedule for the next phases of the project

1.4 Local Planning

Mulholland Highway Gap Closure Project

The City initiated a two-phased approach to improve Mulholland Highway from Calabasas High School up to the City southern limit line near Lyndon Drive. Phase II improvements are the focus of this Feasibility Study. The City completed final engineering of Phase I work and is scheduled to begin construction of this segment in June of 2021 through March of 2022 (estimated). The project was funded through Los Angeles County Measure M funds. The work under this segment is from the Mulholland Highway and Old Topanga Canyon Road (East) intersection to 770-foot east of Mulholland Highway and to 1,000-foot north of Old Topanga Canyon Road (East). Phase I work will construct new sidewalk and extend the existing Class II bike lanes through the intersection to close the gap between the routes.

Mulholland Highway Master Plan for Capital Improvements

The Mulholland Highway Master Plan for Capital Improvements (August 2004) is a long-range planning document that provides recommendations for traffic, circulation, roadway, and landscaping improvements along Mulholland Highway from Mulholland Drive to Old Topanga Canyon Road (West) (1.7-mile segment). The master plan is divided into three zones with Zone 3 overlapping with the work under this Feasibility Study. Zone 3 is described as the transition zone from a suburban to rural environment and located between the two Old Topanga Canyon Road (West and East) intersections as shown on **Figure 2**. The master plan states that “the portion of Zone 3 between the two Old Topanga Canyon Road intersections will be analyzed by the City as part of another document.” This Zone 3 segment and beyond (Mulholland Highway up to the City Limit) is the focus of this Feasibility Study. Improvements recommended under this Feasibility Study are consistent with the transitional nature of this segment from urban to rural.

City of Calabasas 2030 General Plan (October 2015)

The City of Calabasas 2030 General Plan (October 2015) (City General Plan) is a comprehensive plan for guiding the future development of the City. Mulholland Highway is identified as a “Critical Roadway Corridor” and specific guidance is provided for the development of this route within the City, as summarized below:

- Preserve the riparian habitat in the Old Topanga Canyon Road-Mulholland Highway vicinity. Recognize that the presence of numerous driveways along Old Topanga Canyon Road, between Mulholland Highway and Park Ora, limits this route’s capacity.
- Recognize that Mulholland Highway, west of Old Topanga Canyon Road is a rural, twisting route with many driveways, and provides access to schools. As a result, the actual capacity of the roadway is less than its theoretical capacity.
- Maintain the rural character of lands along Old Topanga Canyon Road and Mulholland Hwy consistent with scenic corridor policies.
- No widening of Mulholland Highway to create additional travel lanes west of Old Topanga Canyon Road to the City boundary except to provide a Class II bike lane.

1.5 Existing Conditions

Mulholland Highway

Mulholland Highway is a winding road which travels both east-west and north-south within the project limits. For the purposes of this study, Mulholland Highway has been identified as an east-west road with Old Topanga Canyon Road (East) as the eastern terminus and the City southern boundary as the western terminus.

The California Road System classifies Mulholland Highway as a Major Collector and the City’s 2030 General Plan (October 2015) classifies the road as an Arterial. Regionally, Mulholland Highway extends from Mulholland Drive in the City of Calabasas to an intersection with Pacific Coast Highway near Leo Carrillo State Beach just west of the Malibu city limits. The road within the project limits is two, 12-foot lanes wide with one travel lane per direction. At intersections the road widens to accommodate left-turn lanes. The shoulder area varies from 0’ to 9’. The posted speed limit is 45 miles per hour (mph), with 35-mph warning signs posted near sharp bends in the road.

On-street parking is located just west of Topanga Canyon Road (West) and a small parking area exists on Mulholland Highway near the Santa Monica Mountains Conservancy Parkland trailhead located west of Mountain Park Drive. The corridor is constrained by overhead utility wood and steel post Southern California Edison (SCE) poles, fire hydrants, homes, driveways, trees, drainage structures, and steep hillsides. Power poles and other appurtenances are within the shoulder area or just beyond the edge of pavement.

The road serves as the primary route for multiple residential communities, schools, and recreational areas on Mulholland Highway. The existing conditions of the facilities, communities, and schools is provided below. Multiple signs exist as certain locations along the corridor warning motorists and bicyclists of falling rock. Damaged guardrail was spotted at multiple locations along the corridor. Pavement near Viewpoint School is deteriorated

Old Topanga Canyon Road (West)

Old Topanga Canyon Road (West) is generally a north-south roadway that extends south from Mulholland Highway towards Malibu where it intersects with S. Topanga Canyon Boulevard. This roadway operates as one travel lane per direction and is posted at 35 mph. The California Road System classifies Old Topanga Canyon Road (West) as Major Collector and the City's General Plan classifies it as a Collector. The existing Mulholland Highway and Old Topanga Canyon Road (West) intersection operates as a stop-controlled condition on Old Topanga Canyon Road (West) northbound only. The intersection is located at the northwest corner of Wild Walnut Park. The intersection is lined by guardrail, power poles and trees.

Old Topanga Canyon Road (East)

Old Topanga Canyon Road (East) is generally a north-south road that extends north from Mulholland Highway where it transitions to Valmar Road just south of Mulholland Drive. This roadway operates as one travel lane per direction near the project study area and is posted at 40 mph. The California Road System classifies Old Topanga Canyon Road (East) as a Major Collector and the City's General Plan classifies it as an Arterial.

A traffic signal exists at the intersection of Mulholland Highway and Old Topanga Canyon Road (East). Crosswalks do not exist at this intersection. Sidewalks are currently not provided at or near the intersection. In the eastbound direction, a bicycle lane exists on Mulholland Highway on the east leg of the intersection. Other approaches currently do not have bicycle lanes.

Communities and Schools

The City General Plan designates land use through the project limits as Rural Residential, Hillside Mountainous, Rural Community, Open Space-Resource Protection, Residential-Single Family, Residential-Mobile Home, Public Facilities-Recreational and Institutional. Within the project limits several residential communities exist. These communities include Mountain park, Calabasas Village, Calabasas Highlands, and Park South. Viewpoint School situated near Calabasas Village and Park south and east of Dry Canyon Cold Creek Rd is a key project study location due to congestion generated by the school peak traffic times. Mulholland Hwy and Old Topanga Canyon Road are the primary vehicle service routes as there are no other parallel streets.

2.0 Purpose and Need

2.1 Purpose

The purpose of this project is to:

- Improve the safety and dependability of Mulholland Highway
- Improve pedestrian connectivity between Wild Walnut Park and Calabasas High School
- Improve the roadside shoulder area for bicyclists and vehicles
- Improve traffic operations at the Old Topanga Canyon Road intersections and near Viewpoint School

2.2 Need

The project will address the following needs, transportation deficiencies and problems:

- Mulholland Highway from Old Topanga Canyon Road to the City limit serves local residence and schools but also acts as a cut-through for regional traffic. The segment between the two Old Topanga Canyon Road intersections experiences heavy congestion during peak school hours and is projected to worsen in the future without improvements.
- High-speeds, poor visibility and congestion warrant signalization of the existing Old Topanga Canyon Road (west) intersection for improved operations, especially for vehicle turn movements and pedestrians.
- The existing corridor is lined by steep hillsides that are susceptible to rockfall and erosion. Signs along the route warn users of potential rockfall. Mulholland Highway is designated as an emergency corridor in the City General Plan and is an alternative route to the 101 freeway in emergency. Addressing erosion prone areas will improve the dependability of the corridor for daily and emergency use.
- The existing corridor has inconsistent and narrow shoulder widths with rockfall and erosion prone areas. High speeds along the corridor make this a problem for bicyclist end users which frequent this segment of Mulholland Highway. The lack of a shoulder often requires motorists to encroach into the opposing lane in order to safely pass a bicyclist.
- There are no pedestrian facilities such as sidewalks or crosswalks to connect Wild Walnut Park, Calabasas High School, and nearby residential developments.
- The land use along the portion of the corridor west of Old Topanga Canyon Road (West) is inconsistent with pedestrian activity since it is generally rural residential, apart from Viewpoint School.

See **Figure 3** for photos of existing route issues.



No Pedestrian Facilities Near Wild Walnut Park



Narrow Shoulder Widths and High Speeds



Damaged Guardrail and Narrow Shoulder



Erosion Prone Hillsides and Narrow Shoulder



Narrow Shoulders for Bicycle Use



Traffic Congestion at Old Topanga Canyon Road (East)

Figure 3. Existing Route Issues (Site Photos)

3.0 Public and Stakeholder Involvement

Public outreach and stakeholder input were key components of project development. The City and the Michael Baker consultant team listened to residence and stakeholders to understand the existing deficiencies of the highway and prepare the appropriate design concepts. The City and the team conducted multiple outreach and review opportunities and the following is a summary of those events. Due to COVID-19 pre-cautions, all outreach after the initial Public Workshop was conducted virtually.

3.1 Public Workshop

The City hosted a public workshop on Wednesday, March 04, 2020 from 6:00 p.m. to 8:00 p.m. at City Hall to introduce the project and allow the public to comment on initial project development. There were approximately 26 attendees and Michael Baker presented preliminary findings of traffic and safety deficiencies. The team presented preliminary concept alternatives that were envisioned to improve the corridor. Residents & stakeholders were present and were given the opportunity to comment and a total of 45 comments were received verbally, by email, comment card and the City website between March to May 2020. All comments were organized into a comment matrix by category. Safety, Traffic, and Pedestrian / Bicycle facilities received the most comments. The Concept Plans were revised and updated to reflect these public comments. See Appendix C for the final comment matrix.



Michael Baker Presents at the March 04, 2020 Public Workshop

Residents & stakeholders were present and were given the opportunity to comment and a total of 45 comments were received verbally, by email, comment card and the City website between March to May 2020. All comments were organized into a comment matrix by category. Safety, Traffic, and Pedestrian / Bicycle facilities received the most comments. The Concept Plans were revised and updated to reflect these public comments. See Appendix C for the final comment matrix.

3.2 Traffic & Transportation Commission (TTC) Presentation

On Tuesday, September 22, 2020 from 7:30 p.m. to 8:30 p.m. Michael Baker presented the Mulholland Highway project to the TTC in a virtual meeting format. The purpose of the meeting was to obtain TTC input on the latest project status and work performed to date. The team presented the Traffic Study findings, the refined preliminary improvements, and environmental findings / considerations. The TTC provided valuable feedback and, overall, was in support of the project. Please see Appendix D for the PowerPoint presentation presented.

3.3 Additional Stakeholder Review

Revised preliminary Concept Plans were circulated via email on October 08, 2020 to the following project stakeholders for additional commenting. Comments were received and documented in the project comment response matrix, see Appendix C.

Calabasas Highlands
Nancy Rothenberg, President

Mountain Park HOA
Karl Reinecker, President

Old Topanga, Inc. HOA
Jody H. Thomas, President

Viewpoint School
Amy H. Maentz, Interim Assistant
Head of School for Advancement

Calabasas Village Mobile Estates
Derol Caraco, President

Parksouth Calabasas Estates HOA
Shawn Evenhaim, President

4.0 Traffic Study Findings

A Traffic Study Report (TSR) was prepared for the Mulholland Highway Feasibility Study to assess existing (2019) and future year (2045) traffic operations, historic collision data, and to determine if a traffic signal is warranted at the Old Topanga Canyon Road (West) intersection. The following sections summarize the key findings of the report. Please reference the full TSR attached under Appendix F for additional details and methodologies used.

4.1 Traffic Study Background

The traffic study report analyzed the following design scenarios:

- **Existing Year 2019** - Existing year traffic with no improvements
- **Existing Year 2019 Build** – Existing year traffic with improvements
- **Design Year 2045 No Build** – Future year traffic with no improvements
- **Design Year 2045 Build** – Future year traffic with improvements

The analysis focused on the evaluation of the following peak traffic time periods. The school PM Peak Hour was included due to the proximity of Calabasas High School and Viewpoint School to the corridor.

- **AM Peak Hour**
- **School PM Peak Hour**
- **PM Peak Hour**

Three study intersections were analyzed, as shown in **Table 1**. The intersections are referenced by their ID numbers throughout the analysis summary.

Table 1. Study Intersections

ID	Intersection	Control Type and Configuration
1	Mulholland Highway @ Old Topanga Canyon Rd (West)	One-way stop controlled "T" Intersection -- Old Topanga Canyon Road (West) is a controlled stop
2	Mulholland Highway @ Old Topanga Canyon Rd (East)	Signalized "T" Intersection
3	Mulholland Highway @ Canyon Drive	One-way stop controlled "T" Intersection – Canyon Drive is a controlled stop

Traffic Counts

Intersection counts were collected on Thursday, December 5, 2019 at intersections 1 and 2. At intersection 3, traffic counts were collected on Thursday, February 27, 2020. As supplement, the City provided intersection and 24-hour roadway segment count data collected prior to the initiation of this study. The City also provided previous count data for traffic entering and exiting Viewpoint School for improvement considerations beyond the study intersections noted above.

4.2 Traffic Analysis Results

Traffic Volumes

The count data was utilized to develop the Existing Year 2019 traffic volumes for study intersections 1 through 3 in the AM Peak Hour, School PM Peak Hour, and PM Peak Hour conditions. See **Figures 4** and **5** for a graphical representation of the data.

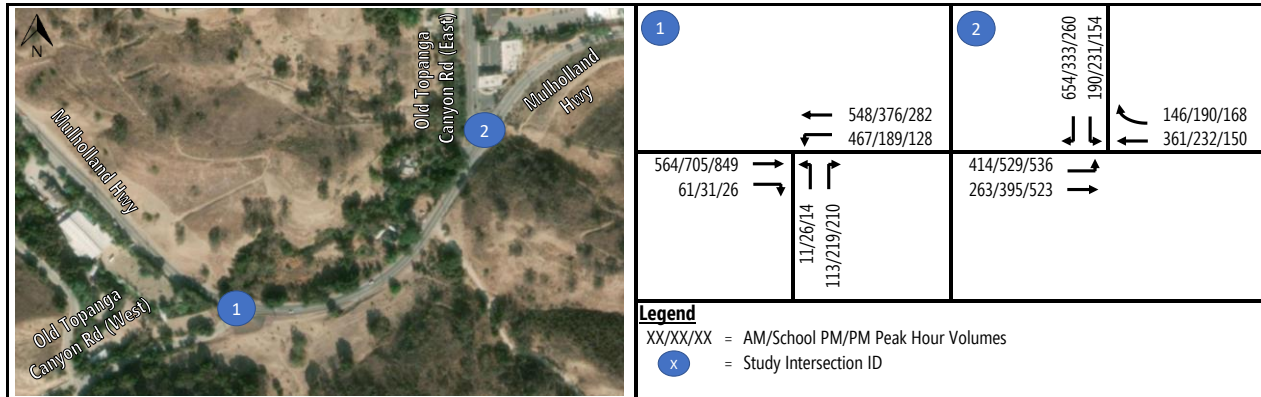


Figure 4. Existing Year (2019) Traffic Volumes – Intersections 1 & 2

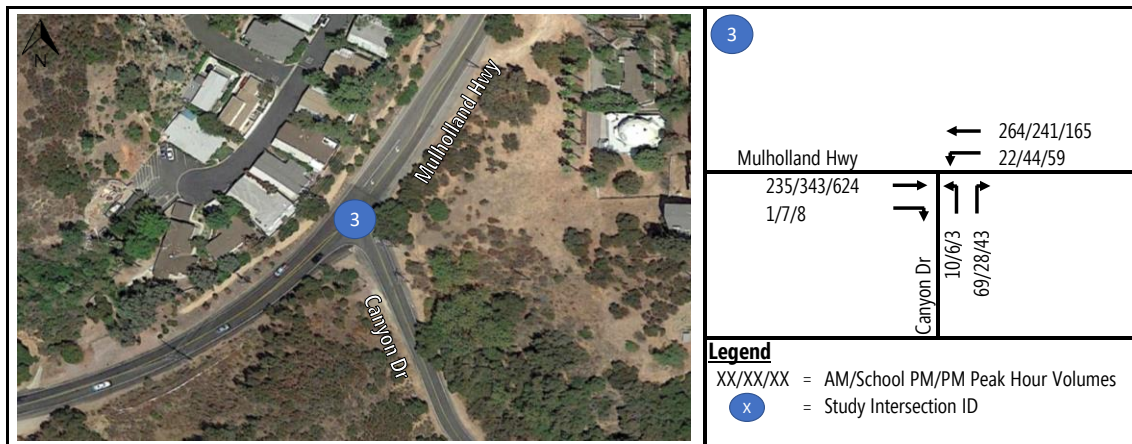


Figure 5. Existing Year (2019) Traffic Volumes – Intersection 3

Traffic Forecasts

Traffic forecast volumes were determined by applying a 1% growth rate (compounded) to the year 2025, and then a 0.3% growth rate (compounded) to the year 2045. This growth rate methodology was applied to the Existing Year 2019 traffic volumes, shown in **Figures 4** and **5**, to develop the Design Year 2045 traffic volumes shown in **Figures 6** and **7**.

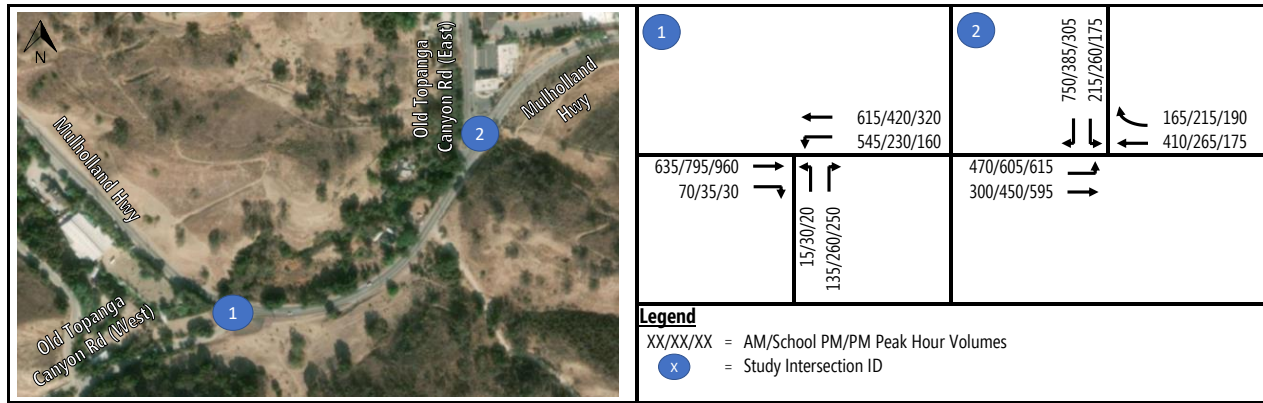


Figure 6. Future Year (2045) Traffic Volumes – Intersections 1 & 2

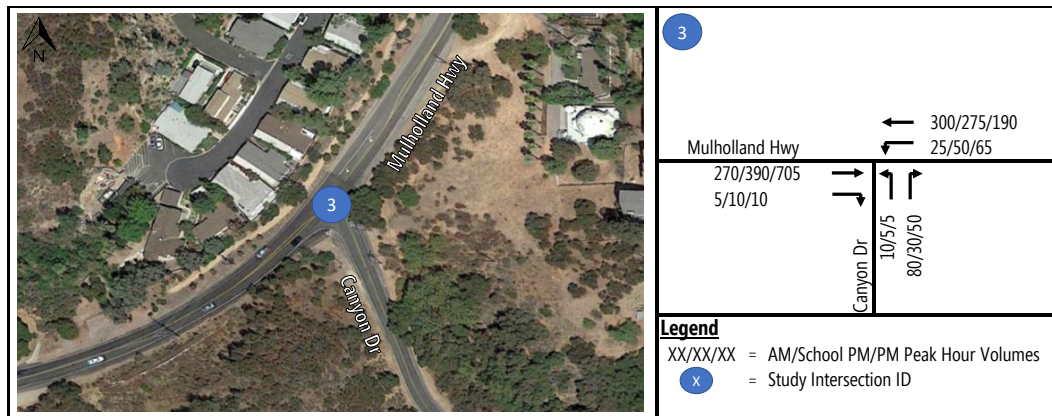


Figure 7. Future Year (2045) Traffic Volumes – Intersection 3

Table 2 provides the estimated Design Year 2045 No Build and Existing Year 2019 ADTs for comparison.

Table 2. Average Daily Traffic Volume Comparison

ID #	Location	ADTs (Estimate)		Phase
		Existing Year 2019	Design Year 2045	
1	Mulholland Highway E/O Old Topanga Canyon Road (West)	13,200	14,900	I
2	Old Topanga Canyon Rd (West) S/O Mulholland Highway	4,900	5,500	I
3	Mulholland Highway W/O Old Topanga Canyon Road (West)	10,300	11,600	I
4	Mulholland Highway between Parksouth St & Old Topanga Canyon Road	8,800	9,900	I
5	Mulholland Highway between Balder Dr & Condell Drive	7,300	8,200	I / II
6	Mulholland Highway S/O Dry Canyon Cold Creek Road (West)	4,300	4,800	II
7	Mulholland Highway S/O Turtle Creek Road	4,400	5,000	II

Note: E/O = east of; W/O = west of; S/O = south of

Traffic Operations Analysis Results

Mulholland Highway corridor traffic operations and safety assessments were examined to establish the Existing and Future No Build Conditions. Table 3 summarizes the Existing Year 2019, Design Year 2045 No Build, and Design Year 2045 Build LOS and vehicle delay analysis results. The results show minor improvements in LOS and delay when compared to the No Build condition, however the project is

anticipated to improve overall corridor safety and operations through the implementation of intersection improvements; installation of guardrail, sidewalk, and crosswalks; shoulder widening; and sight distance enhancements. Additional improvements beyond those documented in this study, such as providing additional through and/or turns lanes, would be required to obtain LOS D or better overall and on all individual movements. Additional lanes near intersections 1 and 2 would require new right of way, increase impacts and project cost. Analysis of the Mulholland Highway and Canyon Drive intersection indicates acceptable operations during both the Existing Year and Design Year No Build scenarios.

Table 3. LOS Analysis Results Comparison

Intersection / Direction / Movement			LOS / Delay (1)																	
			AM Peak Hour						School PM Peak Hour						PM Peak Hour					
			Existing 2019		No Build 2045		Build 2045		Existing 2019		No Build 2045		Build 2045		Existing 2019		No Build 2045		Build 2045	
1 - Mulholland Hwy @ Old Topanga Canyon Rd (West) (3)	Eastbound	Through	A	0.0	A	0.0	F	179.2	A	0.0	A	0.0	C	32.3	A	0.0	A	0.0	F	49.2
		Right																		
	Westbound	Left	C	18.6	D	34.0	C	33.3	B	11.1	B	12.5	E	58.6	B	11.9	B	13.8	E	59.6
		Through	A	0.0	A	0.0	A	0.1	A	0.0	A	0.0	A	0.6	A	0.0	A	0.0	A	0.4
	Northbound	Left	F	>300.0	F	>300.0	D	52.1	F	114.0	F	>300.0	D	42.5	F	63.5	F	143.7	D	46.5
		Right	C	21.6	D	31.1	C	21.2	D	34.7	F	77.2	D	44.2	E	48.3	F	127.3	D	48.6
Overall			-- (2)	-- (2)	-- (2)	-- (2)	E	74.1	-- (2)	-- (2)	-- (2)	-- (2)	C	29.0	-- (2)	-- (2)	-- (2)	-- (2)	D	40.4
2 - Mulholland Hwy @ Old Topanga Canyon Rd (East) (4)	Eastbound	Left	E	69.5	F	82.1	F	68.9	D	43.2	D	50.8	D	40.9	F	69.2	F	72.6	D	41.8
		Through	A	8.9	A	8.6	B	13.8	A	7.6	A	7.6	A	7.6	A	8.5	A	9.0	A	7.4
	Westbound	Through	E	59.0	E	68.4	F	213.9	D	36.0	E	56.6	D	50.4	C	24.2	C	27.2	C	33.0
		Right	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Southbound	Left	D	44.7	F	93.9	D	40.8	C	34.7	E	70.7	F	93.5	C	24.7	C	27.9	D	51.7
		Right	D	49.1	F	98.0	D	45.9	A	9.4	A	9.3	B	10.8	B	10.1	B	10.1	B	15.3
Overall			D	48.5	E	75.7	E	74.3	C	25.8	D	35.6	D	35.3	C	29.8	C	31.5	C	25.9
3 - Mulholland Hwy @ Canyon Drive (5)	Eastbound	Through & Right	A	0.0	A	0.0	--	--	A	0.0	A	0.0	--	--	A	0.0	A	0.0	--	--
	Westbound	Left	A	8.0	A	8.1	--	--	A	8.7	A	9.0	--	--	A	9.3	A	9.8	--	--
		Through	A	0.0	A	0.0	--	--	A	0.0	A	0.0	--	--	A	0.0	A	0.0	--	--
Northbound	Left & Right	B	11.4	B	12.0	--	--	B	13.2	B	14.2	--	--	B	14.6	C	17.1	--	--	

- Note:
- (1) Delay reported in seconds per vehicle
 - (2) Overall delay not reported by HCM for two-way stop-controlled intersections
 - (3) Intersection is One-Way Stop-Controlled under the Existing and No Build conditions and Signalized under the Build condition
 - (4) Intersection is Signalized under all conditions
 - (5) Goal of LOS D or better achieved

4.3 Traffic Signal Warrant Determination

The California Manual on Uniform Traffic Control Devices (CA MUTCD), 2014 Edition was utilized to conduct traffic signal warrant for the Mulholland Highway and Old Topanga Canyon Road (West) intersection for the existing conditions. The CA MUTCD includes nine (9) traffic signal warrant options. This study focused on the vehicular volume warrants, as follows:

1. Warrant 1, Eight-Hour Vehicular Volume
2. Warrant 2, Four-Hour Vehicular Volume
3. Warrant 3, Peak Hour

Signal Warrant Determination:

A signal was found to be warranted at the intersection of Mulholland Highway and Old Topanga Canyon Road (West) (intersection 1, see **Table 1**) based upon the Peak Hour (Warrant 3) and Four-Hour (Warrant 2) volume warrants. The Eight-Hour (Warrant 1) warrant is not currently met. Please refer to the full Traffic Study Report in Appendix F for a complete discussion on this topic.

A signal is warranted at the intersection of Mulholland Highway and Old Topanga Canyon Road (West)

4.4 Collision Analysis

A collision analysis of historic collision data was reviewed to determine correlations between historic collision data and geometric conditions and/or operational conditions. Crash data was provided by the City as obtained through the Los Angeles County Sheriff's Department. Additionally, Statewide Integrated Traffic Records System (SWITRS) collision data was evaluated. The time period evaluated was from January 1, 2016 through December 31, 2018 (3 years). The collision data Study Area is shown in **Figure 8**, Mulholland Highway from Old Topanga Canyon Road (East) to the City Limits, 2.7 miles. Reported collision locations are shown in **Figure 9**. Please see the Traffic Report in Appendix F for complete collision analysis. The following is a summary of the findings.

Collision Data Key Findings

Overall Findings

- A total of 18 collisions were reported during the analysis time period along the study area roadways.
- Most collision types within the study area are classified as "Broadside" (22%) and "Hit Object" (22%) followed closely by "Sideswipe" (17%). "Hit Object" is often an indication of the lack of a roadside clear zone which results in motorists hitting objects near the roadway such as utility poles, this type of collision may also indicate that drivers are unfamiliar with the geometrics of the roadway and thus have difficulty navigating turns or curves. At several locations within the project study area, guardrail was observed to have been impacted and damaged. Also, the City has noted that several exposed catch basins at intersection corners had been struck by vehicles in the past.
- Data shows a consistent collision trend over the 3-year period.
- Most collisions occurred under daylight conditions (73%), and thus the lack of lighting likely did not contribute to collisions.
- A higher proportion of collisions occurred on a Saturday (6 of 18, or 33%). 7 of the 18 collisions (39%) occurred between 9 AM and Noon.

- Ten (10) of the collisions involved a violation type of “Unsafe Speed” or “Improper Turning.” The highest number of collisions experienced a violation type of “Unsafe Speed” (5 of 18, or 28%) or “Improper Turning” (5 of 18, or 28%). The “Unsafe Speed” collisions indicate that drivers may tend to operate at speeds greater than the posted/design speed. The “Improper Turning” collisions indicates that drivers did not yield to another movement that had the right to proceed through the intersection.
- One collision was reported at the intersection of Mulholland Highway and Old Topanga Canyon Road (West).
- 4 collisions were reported at or in proximity to the signalized intersection of Mulholland Highway and Old Topanga Canyon Road (East).

Injuries and Fatalities

- Most reported collisions were “Property Damage Only” (9 of 18, or 50%) and thus did not involve injuries. The remaining 9 collisions (50%) resulted in some form of injury with no fatalities, 3 severe injuries, and 6 less severe injuries.

Pedestrian and Bicyclist Collisions

- There was one pedestrian-related collision reported within the Study Area during the analysis time period. The collision occurred near the Viewpoint School area of Mulholland Highway on Saturday, June 23rd, 2018 resulting in a severe injury for the pedestrian.
- There were 3 bicycle-related collisions reported within the study area during the study time period, including two which resulted in injury. Two of the collisions occurred on a Monday, while one collision occurred on a Saturday. Location and time of day varied (8:45 AM, 10:45 AM, and 6:19 PM).



Figure 8. Collision Analysis Study Area

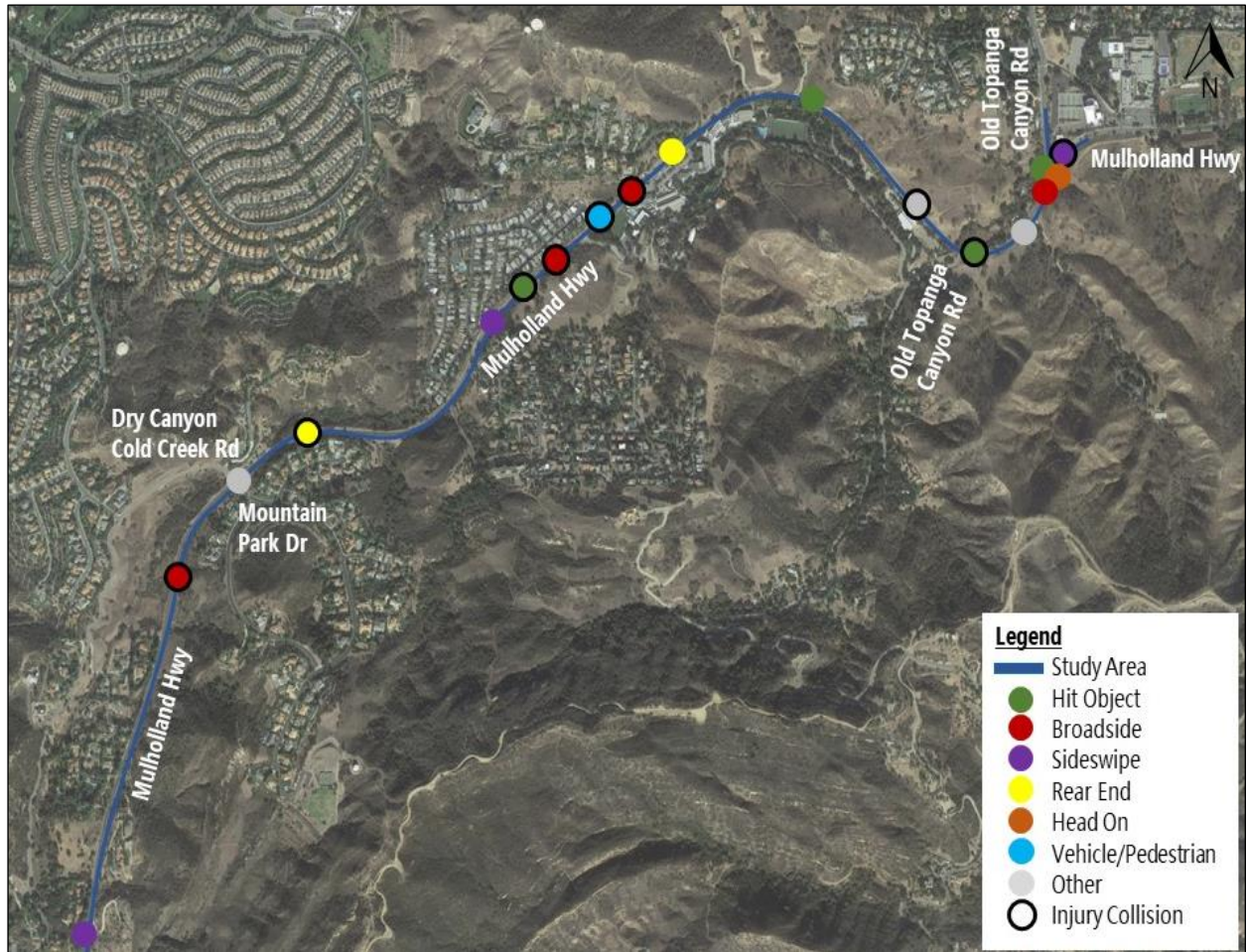


Figure 9. Crash Cluster Map of Reported Collisions.

5.0 Mulholland Highway Concept Plans

Concept Plans were developed on Mulholland Highway from Old Topanga Canyon Road (East) to the southern City limit line near Lyndon Drive (approximately 2.7 miles). These improvements were developed based on City and Public input to address existing issues, traffic congestion, and safety on the corridor. All preliminary improvements were developed on aerial imagery in this Feasibility Study phase and are, therefore, preliminary and intended for cost estimating and budget programming purposes only. Construction quantities calculated for the cost estimate were done so using the preliminary design on aerial imagery and will be refined during the next phase of the project. The design and cost estimate will be further developed in the next project phase with final design survey mapping, environmental review and additional public outreach. The Concept Plans were reviewed by the City and the stakeholders and finalized for this Feasibility Study. A Preliminary Cost Estimate (Cost Estimate) was prepared based on the final approved Concept Plans and is included in Appendix B of this report. The following sections discuss the proposed project improvements. Please see Appendix A for the Concept Plans.

5.1 Design Objectives

The City and project team established the following project design objectives based on the adopted City General Plan and Public / Stakeholder input:

- Preserve the rural characteristic of the Mulholland Highway Corridor.
- No widening of Mulholland Highway through lanes (as designated in the City General Plan).
- Improve the existing shoulder area for bicyclist end users.
- Protect existing power poles in place.
- Protect existing right-of-way in place.
- Improve pedestrian connections between Wild Walnut Park and communities north of the Old Topanga Canyon Road (East).
- Address traffic congestion between the Old Topanga Canyon Road intersections and Viewpoint School.
- Develop slope stability solutions for erosion prone areas.
- Improve the driving surface of Mulholland Highway from Canyon Drive to the Old Topanga Canyon Road (east) intersection.

These design objectives were used to develop the Concept Plans which were further refined through public outreach and stakeholder input.

5.2 Improvement Alternatives

Two alternatives were analyzed for this Feasibility Study which are described in further detail over the next several sections.

- **Alternative 1** – No Build
- **Alternative 2** – Build

Traffic analysis of the build and no build alternatives is provided in the Traffic Report (Appendix F) and under section 4.0 Traffic Study Findings.

5.3 Alternative 1: No Build

Under this alternative, no reconstruction or improvements would be made to the existing Mulholland Highway route other than routine maintenance. Typically, on highway improvement studies, Alternative 1 is the no-build alternative, since any other “build” alternative should be compared to the “no-build” alternative. This is typical engineering industry standard practice.

5.4 Alternative 2: Build

Alternative 2 is the build alternative. This alternative proposes multiple improvements to the Mulholland Highway corridor and its intersections. Due to the length of the project and funding availability, work within Alternative 2 is proposed to be constructed in two phases. The project phases have been divided based on cost and logical terminal points. See **Figure 10** for a map of the proposed phasing and phase descriptions below:

- **Phase I** improvements are from Old Topanga Canyon Road (East) to Condell Drive.
- **Phase II** improvements are from Condell Drive up to the City limit line near Lyndon Drive.

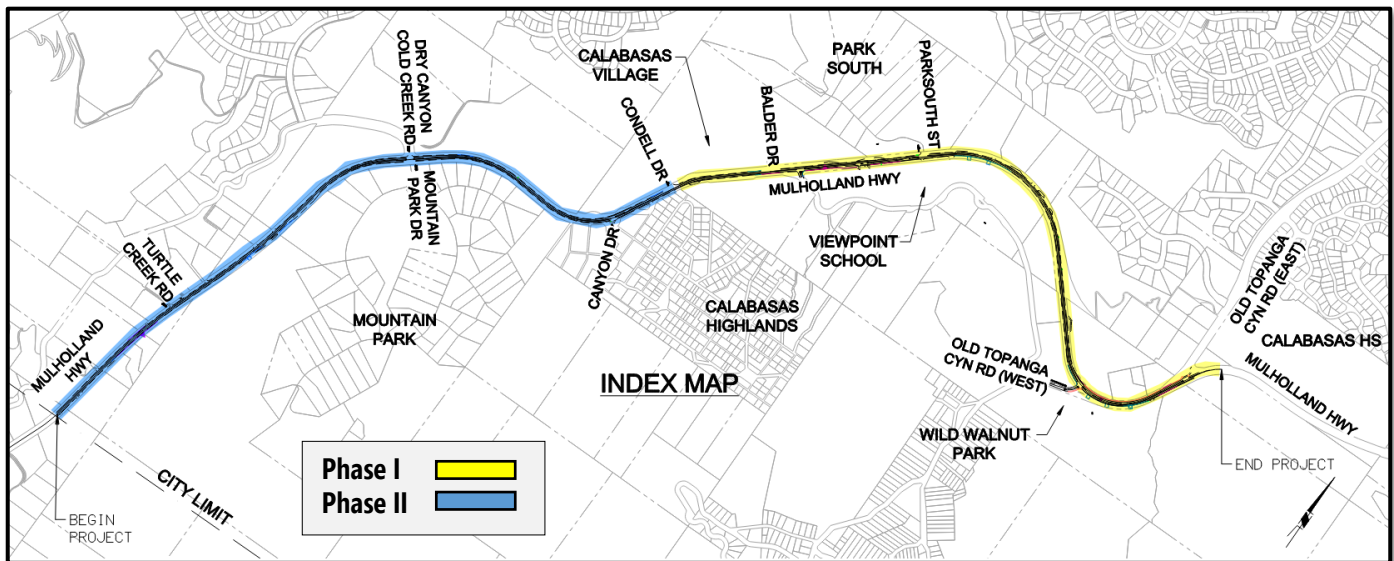


Figure 10. Phase I and Phase II Proposed Work Limits

Common Phase I and II Build Improvements:

The following improvements are included in both construction Phases I and II. Refer to the Concept Plans for the locations of the proposed improvements.

- Re-align Mulholland Highway at multiple locations to minimize widening impacts
- Spot widen Mulholland Highway to increase shoulder area 4’-6’, where possible
- Adjust above ground utility appurtenances, such as fire hydrants to widen road
- Adjust overside drain openings for road widening
- Adjust driveways to new road width
- Replace all pavement markings and modify striping for improved traffic flow and visibility

- Protect in place all existing power poles
- Protect in place existing right of way
- Maintain a minimum 11' lane width, with 12' as the typical lane width

Phase I Improvements

Phase I construction work limits are from Old Topanga Canyon Road (East) up to Condell Drive. This segment includes Viewpoint School, an equestrian center, Calabasas Village, and Park South communities, as well as, Wild Walnut Park. Within this segment, Mulholland Highway intersects with Old Topanga Canyon Road East and West, Parksouth Street, Dry Canyon Cold Creek Road, Balder Drive, and Condell Drive. These intersections are stop controlled on the minor road with exception to Old Topanga Canyon Road East which is signalized. Based on historic collision data, the Phase I segment of the route has a higher number of collision incidents as compared to Phase II. This is illustrated in **Figure 9** where 12 of the total 18 incidents are located within Phase I work limits. This collision rate is consistent with existing and forecast Phase I traffic volumes as the denser of the two design segments, experiencing higher traffic volumes as shown in **Table 2**. Although the entire route is considered rural, Phase I due to multiple communities, intersections, Viewpoint School, the equestrian center and park is more urbanized. For this reason, improvements within this segment will likely have a higher impact and benefit toward improving corridor operations and safety. A summary of improvements within this phase is provided below by major work elements:

Mulholland Highway Corridor Improvements – Old Topanga Canyon Road (East) to Condell Drive:

- Construct a retaining wall at Viewpoint School in the eastbound direction in support of road widening and a new right-turn pocket proposed into Viewpoint School.
- Construct a new eastbound right-turn pocket on Mulholland Highway into the Viewpoint School entrance. Widen roadway 12 – 20 feet to accommodate the new turn pocket and road shoulders.
- Adjust the Viewpoint School at Mulholland Highway driveway entrance to accommodate the new road width.
- Lengthen the Mulholland Highway to Dry Canyon Cold Creek Road left turn pocket (westbound) to 150 feet.
- Lengthen the Mulholland Highway to Viewpoint School entrance left turn pocket (westbound) to 325 feet.
- Install a new 100-foot-long left turn pocket on Mulholland Highway to Parksouth Street (eastbound).
- Widen the median to a consistent 11' near Viewpoint School to accommodate left-turn pockets.
- Remove existing catch basin at the Parksouth Street curb return and install new catch basin to accommodate the widened road width.
- Grind and overlay existing asphalt pavement between Old Topanga Canyon Road and Dry Canyon Cold Creek Road and adjust to grade manholes and water valves.
- Install new guardrail at stations 97+50, 102+50, 118+00 to 123+50, 145+50, and 148+00 to 154+50. Note the City may elect to install new guardrail between station 148+00 to 154+50 under emergency repair due to recent damage.
- Implement erosion control measures as discussed under Section 6.2

Mulholland Highway @ Old Topanga Canyon Road (West) Intersection

- Install new traffic signal based on the signal warrant performed under Section 4.3 Traffic Signal Warrant Analysis.
- Extend the Mulholland Highway westbound left turn lane storage bay to approximately 420 feet to increase vehicle storage length and improve safety.
- Reconfigure the northbound intersection approach to include a dedicated left and right turn lane with a storage length of approximately 170 feet. The through lane would extend directly into the right turn lane.
- Coordinate the traffic signal with the existing signal at the Mulholland Highway and Old Topanga Canyon Road (East) Intersection for improved operations.
- Install pedestrian crossing across Mulholland Highway to Wild Walnut Park and the new westbound sidewalk with new Americans with Disabilities Act (ADA) pedestrian access ramps.

Mulholland Highway @ Old Topanga Canyon Road (East) Intersection

- Extend the Mulholland Highway eastbound left turn lane storage bay to approximately 580 feet to improve traffic operations and safety.
- Coordinate and re-optimize traffic signal as noted above.
- Install new sidewalk, crosswalk connections, and ADA pedestrian ramps. This work will join future Mulholland Hwy Gap Closure project improvements.
- Modify the traffic signal poles and restripe the intersection layout to match new striping.

Phase II Improvements

Phase II construction work limits are from Condell Drive to the City limit line near Lyndon Drive. This segment includes the Calabasas Highlands and Mountain Park communities. Within this segment Mulholland Highway intersects with Canyon Drive, Mountain Park Drive and Turtle Creek Road. These intersections are stop controlled on the minor road. Based on historic collision data, this segment of the route has fewer collisions compared to Phase I. This is illustrated in **Figure 9** where 4 of the total 18 incidents are located within Phase II work limits. This collision rate is consistent with existing and forecast traffic volumes as this segment of Mulholland Hwy is less dense with lower segment traffic volumes as shown in **Table 2**. Phase II is less urbanized than Phase I with a higher number of residential driveways, mailboxes, and other roadside appurtenances, such as, overside drains on Mulholland Highway. This will require additional coordination to widen and adjust these roadside features. In addition to spot widening and guardrail installation, the major work elements within this segment are to address hillside erosion, especially between stations 25+00 to 29+00 near Turtle Creek Road where the hillside has heavily eroded. A summary of specific improvements is provided below:

Route Improvements:

- Construct a new retaining wall in the eastbound direction from Station 24+50 to 29+80, just north of the City limit line, near Turtle Creek Road.
- Construct new retaining wall in the westbound direction from Station 26+50 to 28+80, just north just north of the City limit line, near Turtle Creek Road.
- Install new guardrail at stations 24+00, 41+50, 46+00, 66+00, and 87+50.
- Implement erosion control measures as discussed under Section 6.2

5.5 Other Key Design Considerations

Safety is a key community and City objective for Mulholland Highway. Improvements on the corridor will enhance safety and operations through shoulder widening, signalization, traffic striping, and roadside adjustments. Key considerations related to safety are discussed in the following sections.

Evacuation

Evacuation of the corridor is a key community concern. Mulholland Highway within the project limits serves as the primary route in and out of the area. Mulholland Highway in its existing configuration is two, 12-foot lanes wide with variable shoulder widths from approximately 0' to 9'. The project proposes to widen Mulholland Highway's paved shoulder width to 4' to 6'. This will increase the total paved width of the road to 30.2'-36' (at the narrowest segments) and 41'-48' at locations with left turn lanes. In the event of an emergency, special traffic control could be implemented to configure Mulholland Highway as three 10' lanes, with two-lanes in one direction and one lane in the opposite direction, using all the available paved shoulder width.

Shoulder Widening

The existing paved shoulder width is inconsistent and varies from 0' to 9'. The project proposes to spot widen and restripe Mulholland Highway to provide a consistent shoulder width that will improve spacing between roadside objects, vehicles and bicycle users.

Roadside Objects

The project proposes to relocate fire hydrants and other utility appurtenances within the widened shoulder area. Trees are to be protected in place unless directly within proposed improvements. Power poles, due to cost of relocation, will be protected in place. Several "guy wire" support poles are proposed for relocation to accommodate new road widths. Support pole relocation cost is anticipated to be much less than relocating overhead transmission line power poles.

Existing guardrail at certain locations on the route was found to be damaged and constructed with wood posts rather than steel posts. Based on historic collision data, Hit Object is a collision category likely related to guardrail impacts within the project area and within the collision period. The project proposes to replace all existing guardrail and locate new guardrail just beyond the widened shoulder area providing a greater buffer between vehicles, barriers and bicycle users. All new guardrail is proposed as steel post as opposed to wood post systems to increase the fire resistance of the route.

Due to the narrow and constrained nature of the corridor in most instances the minimum 20-foot⁽¹⁾⁽²⁾ Clear Recovery Zone (CRZ) cannot be achieved at most locations on the route. The CRZ is a highway engineering concept in which the area beyond the edge of traveled way is made traversable and clear of objects for a width based on the roads design speed and traffic volumes. Many times, along Mulholland Highway, necessary highway features such as retaining walls or steep embankments cannot be relocated beyond the CRZ and were shielded with guardrail to protect vehicles from these objects. Because guardrail is a roadside object itself, placement is assessed on a case by case basis specific to

¹ Road Side Design Guide - American Association of State Highway Transportation Officials (AASHTO). *Table 3-1. Suggested Clear-Zone Distance is 20-22 feet for a Design Speed of 45 mph and ADT over 6,000.* 4th Edition 2011.

² Caltrans Highway Design Manual (HDM). *HDM Topic 309 – Clearances. Minimum CRZ is 20-feet for conventional highways.* HDM Dated July 1, 2020.

site conditions. In this Feasibility Study all roadside design decisions were made based on aerial imagery and are, therefore, preliminary recommendations intended for cost estimating. All proposed roadside design features will be further evaluated in the next project phase with final design survey mapping.

Passing Lanes and Turnouts

Passing lanes are auxiliary lanes provided on two-lane highways, over a set distance, to enhance overtaking and to improve traffic operations. These lanes allow slower-moving traffic to maneuver into a right-side lane allowing faster traffic to pass in the left, number 1 lane. According to the Caltrans Highway Design Manual (HDM), passing lanes are most effective on uphill grades and curving alignments where vehicles tend to slow the most. Additionally, on two-lane highways, passing lanes are considered when sight distance is restricted or there is heavy oncoming traffic that prevents overtaking in the left lane. Visibility for passing in the left lane is restricted on Mulholland Highway due to the curving alignment and mountainous terrain of the highway. The road is also busy with high traffic volumes. Therefore, passing in the opposing traffic direction is not recommended at any location within the project limits. A dedicated passing lane at spot locations may be feasible on the roadway but will impact existing power poles, hillsides, right of way, and other roadside features. This will inevitably increase the project scope and cost.

Turnouts are a potentially effective alternative to passing lanes on two-lane highways when the route is restricted. Designated turnouts allow slower-moving traffic to pull off the main highway to yield to faster traffic. According to the Caltrans HDM, designated turnouts should be from 200 feet to 500 feet long including a 50-foot taper at each end. Turnouts are generally more feasible on Mulholland Highway as they require less length and will have fewer roadside impacts but will require widening of approximately 12 – 15 feet³, an increase to project cost.

Passing lanes and other alternative options, such as turnouts, will be further explored in the next project phase with final design level topographic mapping.

Pedestrian Facilities

The project proposes to construct new sidewalk, crosswalks, and ADA curb ramps between the Old Topanga Canyon Road Intersections near Wild Walnut Park. This will improve pedestrian access between Wild Walnut Park, Calabasas High School and communities north of the park. In the existing condition no pedestrian facilities exist at this location, and pedestrians use the narrow shoulder area to traverse Mulholland Highway and cross the route at unmarked locations.

Bicycle Facilities

The City General Plan designates Mulholland Highway, within the project limits, as a Class II bike facility. However, providing a continuous bike lane is cost prohibitive due to existing road conditions. Mulholland Highway through this segment is lined, typically on both sides, by utilities, power poles, steep hill sides, drainage structures, and homes that constrain the widening capacity of the route. Widening beyond these existing features would significantly increase project cost. The project proposes to widen the paved shoulder width of Mulholland Highway, where feasible, to improve the rideability

³ Caltrans Highway Design Manual (HDM). *HDM Topic 204.5 – Sustained Grades. See sections (3) and (4).* HDM Dated July 1, 2020.

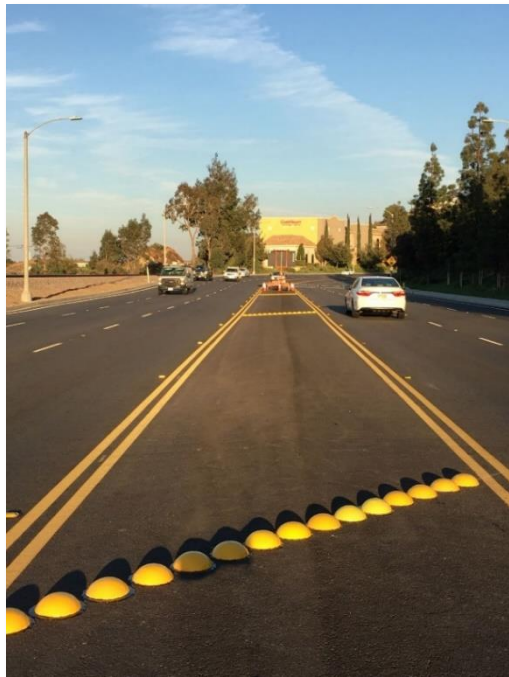
and use of the shoulder area for bicyclists. The widened area would provide a smooth consistent surface for bicyclist use and would relocate low cost, high impact roadside objects such as guardrail and fire hydrants to provide a wider, more consistent shoulder width. These improvements are likely to enhance safety for bicyclists and vehicles on the route by increasing the paved shoulder width.

Potential Speed Reduction Measures

Mulholland Highway’s posted speed limit is 45-mph and at sharp bends advisory speed signs of 35-mph are posted. The City may elect to implement speed reduction measures at key locations to encourage drivers not to exceed posted speed signs. Such measures include:

- Raised Pavement Markers
- Flexible Channelizers
- Longitudinal Rumble Strips
- Advisory speed limit signs
- Speed limit pavement marking
- Speed feedback signs
- Additional warning signs

See **Figures 11** for examples of Raised Pavement Markers and Longitudinal Rumble strips within median and or centerline locations.



Raised Pavement Markers in Median



Longitudinal Rumble Strip on Centerline

Figure 11. Potential Speed Reduction Measures

Sight Distance Enhancement

The project will enhance visibility and sight distance by widening Mulholland Highway between the Old Topanga Canyon Road intersections near Wild Walnut Park. Mulholland Highway between this segment is curved sharply and along the westbound or interior of the curve visibility is constrained by existing trees. The project will widen Mulholland Highway increasing visibility through this segment up to the new, proposed signalized intersection at Old Topanga Canyon Road (West).

5.6 Right-of-Way Impacts

Right-of-way mapping shown in this Feasibility Study is preliminary and, at this time, only one permanent right-of-way impact was identified along Old Topanga Canyon Road (West) at the Acres West Equestrian Center. This impact will be verified in the next project phase by obtaining existing surveys, maps, plats and deeds for the impacted parcel. It is anticipated that the project will need temporary construction easements (TCEs) to construct erosion control and retaining wall features as identified on the project Concept Plans in Appendix A.

5.7 Utility Coordination

Preliminary contact with utility owners and agencies were established and responses were logged. Please see Appendix E for the project utility coordination log. All known utility facilities within the project area were mapped and are shown on the project Concept Plans in Appendix A. All utilities shown are based on agency provided mapping and are approximate. Further utility investigation is needed to determine impacts and required relocations. Utility coordination will be continued in the next project phase. The following companies / agencies were found to include facilities within the project limits:

- *AT&T*
- *Verizon*
- *Charter/ Time Warner*
- *Las Virgenes Municipal Water District (LVMWD)*
- *Southern California Edison Co.*
- *Southern California Gas Co.*
- *LA County Sewer Maintenance Division*

The project proposes to maintain all overhead utility power poles in place, except for certain “guy” wire support poles, identified for relocation. A LVMWD vault near station 154+80 will need to be adjusted to match the new sidewalk grade. Several fire hydrants are proposed to be relocated just outside the new paved shoulder width. Manholes and valve covers impacted by the work will be adjusted in place.

5.8 Aesthetic Considerations

The natural terrain and hillsides within the project limits are a significant visual and biological resource and a key factor in the City's unique community character. Protecting the natural, rustic setting of the roadside terrain and hillsides is a key design priority for this project as Mulholland Highway, within the project limits is designated as a scenic corridor per the City General Plan. Through public discourse and community feedback the following aesthetic considerations were documented in this Feasibility Study:

- Consider aesthetics of new signal poles and lighting posts at Old Topanga Canyon Road (East)
- Minimize new lighting on corridor (new lighting is required at signalized intersections)
- Consider special wall facades that will blend with adjacent hillsides
- Consider aesthetic treatment of new sidewalk for rustic appearance such as using a decomposed granite walking surface and resurface Mulholland Highway's asphalt pavement

These aesthetic considerations will be further explored in the next project phase as discussed under Section 8.2 Key Environmental Constraints.

6.0 Preliminary Geotechnical Review

A preliminary geotechnical review was performed by Geosoils based on a draft copy of the Concept Plans dated May 2020. The review evaluated proposed retaining wall and erosion locations marked on the preliminary design plans. A summary of the proposed geotechnical recommendations is provided in the next two sections. Please refer to Appendix G, Preliminary Geotechnical Engineering Review (PGER) (Geosoils, 2020), for the full geotechnical review. These recommendations are preliminary and will be further evaluated and refined in the next project phase with final design survey and geotechnical investigation.

6.1 Preliminary Retaining Wall Recommendations

To support new paved shoulder widths and to minimize erosion and to improve the dependability of Mulholland Highway, the project proposes retaining walls at the locations listed under **Table 4**.

Table 4. Preliminary Retaining Wall Recommendations

Retaining Wall No.	Approximate Station (See Concept Plans)	Description	Construction Phase
1	26+50 to 28+80	This is a cut wall approximately 15 to 25 feet tall and 230' long to address erosion.	II
2	24+50 to 29+80	This is a cut wall approximately 10 to 25 feet tall and 530' long to address erosion.	II
3 (Deleted)	98+75 to 100+60	This wall is not required based on Geotechnical review and was removed from the Concept Plans based on the site's suitability for rock cut.	II
4	102+80 to 108+30	This is a fill retaining wall in support of road widening and the new right-turn pocket at Viewpoint School. This wall varies in height from 2' to 20' and is 550' long. Its tallest point is located near the school entrance where the road is widest. This wall impacts trees.	I
5 (Deleted)	109+00 to 112+00	This wall is not required based on Geotechnical review and was removed from the Concept Plans based on the site's suitability for rock cut.	I
6	146+00 to 151+00	This is a fill retaining wall in support of road widening and the new sidewalk near Wild Walnut Park. This wall varies in height from 2' to 7'. This wall is recommended to minimize impacts to existing right of way and vegetation and trees within the sloping hillside adjacent to the road. This wall impacts trees.	I
7	155+50 to 157+50	This is a cut retaining wall approximately 4' tall and 205' long in support of road widening.	I
8	156+00 to 157+00	This is a fill retaining wall approximately 5' tall and 100' long in support of road widening. This wall may impact trees.	I

Note: Please refer to the attached PGER in Appendix G for a complete description of Geotechnical recommendation.

A total of 8 retaining walls were identified in the design analysis to support new paved shoulder widths and act as debris control at locations with severe erosion, i.e. at retaining walls no. 1 and 2. Based on the preliminary geotechnical review walls 3 and 5 were eliminated. The existing hillside at these locations is suitable for rock cut at a 1:1 ratio and a wall is not required to support the new paved shoulder width. Eliminating walls 3 and 5 reduced project construction cost as rock cutting or slope trimming is estimated to cost less than retaining wall construction. Rock cutting may also provide a more natural aesthetic as compared to a retaining wall. Retaining walls 4, 6, 7 and 8 are in support of the new paved shoulder width, new sidewalk near Wild Walnut Park and the new right turn pocket at Viewpoint School.

The PGER provides preliminary wall and foundation type guidance at each of the wall locations. Based on preliminary investigation, reinforced concrete wall types with either spread footing or pile type foundations are recommended depending on site constraints, such as right of way or existing infrastructure. Retaining wall dimensions are based on aerial imagery and are therefore preliminary and for cost estimating only. Retaining wall design will be further refined in the next project phase with final design survey mapping and a geologic survey.

For cost estimating purposes, retaining walls were assumed as Type 1 Caltrans walls on pile foundations. Wall costs include structural excavation, backfill, temporary shoring, and raw material costs, such as structural concrete and reinforcement. An additional cost was added to account for potential wall aesthetics. See Appendix B for the project Cost Estimate.

6.2 Preliminary Erosion Control Recommendations

Erosion control areas are marked on the Concept Plans provided in Appendix G. The PGER assessed each site location and provided preliminary recommendations for erosion control methods that include:

- **Slope Trimming**
- **Debris Fences / Walls at the Slope Toe**
- **Wire Mesh / Cable Netting**
- **Alternative Debris Limiting Devices**

All full description of these methods is provided in the PGER. These erosion control methods are recommended to be deployed in combination and or independently depending on site conditions. A summary of the erosion control locations and recommendations is provided in **Table 5**.

Table 5. Preliminary Erosion Control Recommendations

Erosion Locations (Approx. Station)	Recommendations Summary	Construction Phase
23+00 to 24+30	2: 1 slope trimming is recommended, but if constrained by existing improvements or right of way, a debris fence / wall is recommended at the toe of slope.	II
33+00 to 36+00	2: 1 slope trimming is recommended, but if constrained by existing improvements or right of way, a debris fence / wall is recommended at the toe of slope.	II
41+70 to 44+60	2:1 slope trimming is recommended.	II
90+80 to 92+10	1:1 slope trimming with a debris fence / wall at the toe of slope. A wire mesh / cable net system could be deployed to preclude larger blocks from impacting the road.	I
104+00 to 110+65	Slope trimming is not recommended. A debris fence is recommended at the toe of slope, but due to height and steep slope of the hillside a debris fence may not prevent all debris from entering the roadway. A wire / mesh cable net system could be deployed to preclude larger blocks from the road.	I
117+65 to 119+50	2:1 slope trimming is recommended.	I
122+70 to 129+60	Debris fence / wall is recommended at the toe of slope for areas not able to be trimmed at a 2:1 gradient.	I
139+65 to 141+40	Debris fence / wall is recommended at the toe of slope for areas not able to be trimmed at a 2:1 gradient.	I

Note: Please refer to the attached PGER in Appendix G for a complete description of recommendations.

Depending on site conditions and right of way constraints slope trimming may not be suitable and further investigation and analysis is needed for each site. All erosion control recommendations listed within this report and the attached PGER are preliminary and further evaluation and exploration is needed to finalize stability and erosion control methods and recommendations.

7.0 Preliminary Drainage and Water Quality Review

7.1 Regional Drainage Systems

The project is located within the Malibu Creek Watershed. Malibu Creek Watershed covers 70,651 acres at the northwestern end of Los Angeles County and the southern end of Ventura County. It is the largest watershed to drain into the Santa Monica Bay. Runoff from the project site is conveyed via draws to Malibu Creek and eventually outlets to the Pacific Ocean.

The topography for this project primarily drains from southwest to northeast with elevations along the project site ranging from 1040 feet above mean sea level to 1460 feet above mean sea level. The existing topography consists of steep and mild hills that drain to Malibu Creek.

The project site falls within the Federal Emergency Management Agency (FEMA) Panels 06037C1268F, 06037C1269F, and 06037C1531F dated September 26th, 2008. The panels are included in Appendix H with the project site identified on each panel. The project is primarily within a FEMA Zone D, with some zone AE in adjacent draws. FEMA defines each zone as Zone AE – “Base Flood Elevations determined” or Zone D – “Areas in which flood hazards are undetermined, but possible.” No affects to the FEMA floodplain or floodplain mapping are anticipated from this project.

The State of California Department of Water Resources (DWR) has developed Awareness Floodplain Maps to identify all pertinent flood hazard areas for areas that are not mapped under the FEMA National Flood Insurance Program (NFIP). The DWR does not impose guidelines or restrictions for an awareness floodplain. The Awareness Floodplain Maps display the 100-year flood hazard areas using approximate assessment procedures. These floodplains are shown simply as flood prone areas without specific depths. This project does not affect an Awareness Floodplain.

The findings of this preliminary drainage study are from HEC-GeoHMS generated catchment drainage areas and review of existing documents available from FEMA and other sources. Further, detailed, study of the project drainage and potential effects on the floodplain are anticipated for the next project phase.

7.2 Local Drainage Systems

Primarily, most of the onsite flow drains towards the shoulders into overside drains (OSDs) or down drains. Existing corrugated steel crossing culverts convey flow from smaller offsite sub watersheds to draws adjacent to the roadway. Existing systems near the Viewpoint School have curb opening inlets that collect roadway flow that is concentrated on the existing curb and gutter.

Due to the proposed roadway improvements, improvements to the drainage systems at the project site are recommended to address the potential impacts to the existing systems. The improvements described in this document will not impact the existing drainage patterns. The existing drainage conditions and patterns will be mimicked with the implementation of all proposed drainage improvements and crossing culverts will be resized to convey the appropriate design flow. Most existing drainage systems do not have as-built plans available from Los Angeles County Department of Public Works. Further investigation with the City of Calabasas Department of Public Works for as-built plans or field survey of drainage invert elevations is recommended in the next project phase.

7.3 Preliminary Drainage Impacts and Improvements

In the proposed condition, most of the onsite flow drains towards the shoulders into overside drains (OSDs) or down drains. At a few locations, drainage systems collect onsite flow to larger systems that outlet into draws near the roadway. Where existing systems are impacted by the project, impacted inlets and systems will be moved. All proposed overside drains, downdrains, and inlets will be spaced to meet local flooded width requirements. Storm runoff will be concentrated in wall gutters at the retaining walls shown in the typical sections and will be collected in existing curb opening drains or new systems will be proposed.

A preliminary hydrologic review was performed, and watersheds were delineated along the corridor to determine the volumetric flow at multiple crossing culverts. ArcGIS and HEC GeoHMS were used to delineate the watersheds. Los Angeles County Hydrology Manual, HydroCalc and associated GIS layers were used to calculate the 50-year 1-hour storm runoff from each watershed shown in **Figure 12**. Culvert hydraulics were analyzed in Bentley FlowMaster from slope in the preliminary surface to determine if they have the capacity to convey the 50-year 1-hour storm flow from the sub watershed. **Table 6** shows the culverts that were analyzed and results from the analysis. Assumed crossing culvert slopes were calculated from the existing ground surface. Drainage costs were developed from this assesment.

In the next design phase, a Preliminary Hydrologic and Hydraulic Drainage Report will be prepared as well as a Final Hydrologic and Hydraulic Drainage Report per City of Calabasas Land Development Form 225 to fully assess roadside drainage items.

7.4 Preliminary Water Quality Assessment

This project will result in the construction of 10,000 square feet or more of impervious area or roadway, thus meeting the criteria of a Designated Project per the State Water Board Order No R4-2012-0175 and is therefore subject to addressing the water quality impacts of the project. In addition to complying with the requirements identified in the County of Los Angeles Low Impact Development (LID) Standard Manual, this project will follow the USEPA guidance, Managing Wet Weather with Green Infrastructure: Green Streets, to the maximum extent practicable. This will include incorporating treatment and source control Best Management Practices (BMP) to minimize adverse storm water impacts and reduce the discharge of pollutants wherever feasible while maintaining the ability to meet the project's goal of improving the safety and operational performance of the roadway. Future analysis may determine sediment control from the existing hillside may be needed. BMPs will be implemented if it is determined to be feasible within the project right of way.

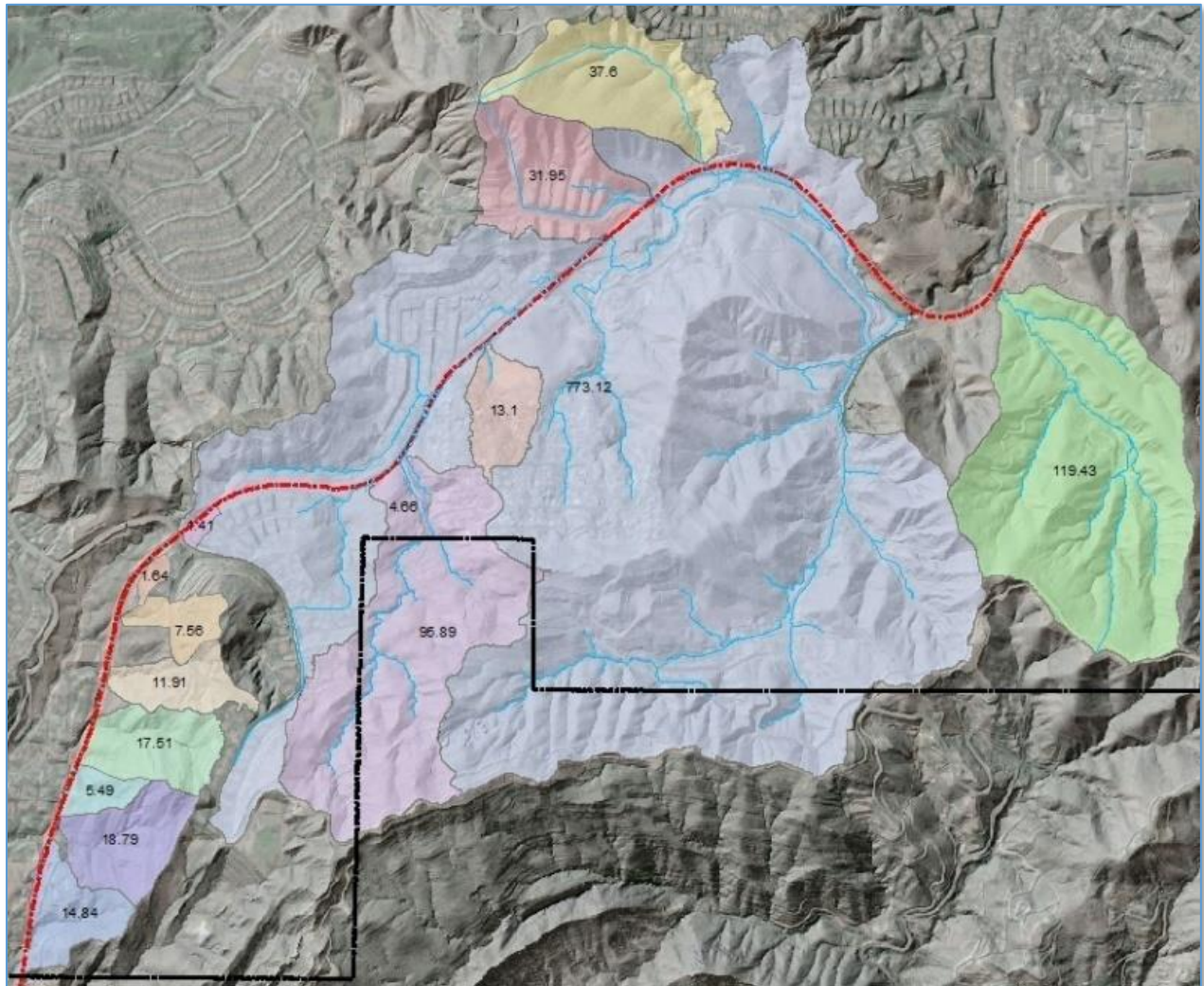


Figure 12. Preliminary Drainage Watersheds in Crossing Culverts Along Mulholland Highway

Table 6. Preliminary Culvert Recommendations

Drainage Feature	Size	Assumed Slope (%)	Max Capacity (CFS)	Tributary Area (Acres)	Preliminary Q (CFS)	Deficient	Notes:	Recommended Size
Station 154+30 Crossing Culvert	24" CSP	5%	23.48	120	244	Yes	-	48" RCP
Station 146+00 Crossing Culvert	Unknown	Unknown	Unknown	775	Unknown	Unknown	-	TBD
Station 95+70 Crossing Culvert	Assumed 24" CSP	Unknown	Unknown	13	43	Unknown	This crossing culvert enters another system of unknown size and slope.	TBD
Station 82+80 Crossing Culvert	Assumed 36" CSP	3%	53.6	95.89	195	Yes	Assumed downstream elevation of culvert based on surface minus 6 feet	4' RCP
Station 65+95 Crossing Culvert	Assumed 24" CSP	3%	19.17	1.41	5	No	-	Not Deficient
Station 56+70 Crossing Culvert	Assumed 24" CSP	20%	14.85	1.64	6	No	-	Not Deficient
Station 50+90 Crossing Culvert	Assumed 24" CSP	15%	40.68	7.56	29	No	-	Not Deficient
Station 45+50 Crossing Culvert	Assumed 24" CSP	6%	25.73	11.91	39	Yes	-	24" RCP
Station 41+10 Crossing Culvert	Assumed 24" CSP	2%	14.85	17.51	64	Yes	-	24" RCP
Station 36+50 Crossing Culvert	Assumed 24" CSP	4%	21.01	5.49	18	No	-	Not Deficient
Station 31+00 Crossing Culvert	Assumed 24" CSP	15%	40.68	18.79	43	Yes	-	24" RCP
Station 20+00 Crossing Culvert	Assumed 24" CSP	31%	58.48	14.84	44	No	-	Not Deficient

Note: Culvert findings are preliminary and will be refined in the next project phase.

8.0 Environmental Assessment

8.1 Existing Environmental Setting

The project area can generally be characterized as rural in nature. Gated and non-gated, secluded single-family residences and residential communities (for example, The Calabasas Village and Mountain Park) are in various locations throughout the corridor and in most cases are adjacent to Mulholland Highway. The project segment also borders the Viewpoint School, an equestrian center, and a City park. The project intersects with Old Topanga Canyon Road, where a shopping center and a recreational center are located at the eastside of Old Topanga Canyon Road, and a Chabad and a single-family residential home are located on the west side.

The project segment runs through the Santa Monica Mountains Recreational Area. Due to the rural and urban viewsheds throughout the corridor, the project segment in its entirety is designated as part of a Scenic Corridor under the City of Calabasas General Plan.

Vegetation is present along both sides of the corridor and includes both native and non-native vegetation. Numerous oak trees are situated immediately adjacent to Mulholland Drive, with several mature oaks located within the limits of disturbance. Drainage along Mulholland Drive is generally accommodated via sheet flow and roadside ditches; short portions of curb and gutter with catch basins are in limited locations along the project alignment. Wooden and steel Southern California Edison (SCE) utility poles supporting overhead utility lines are adjacent to both northbound and southbound of Mulholland Highway and extend throughout the project alignment.

8.2 Key Environmental Constraints

Based on a preliminary review of environmental impacts associated with the project, it is anticipated that aesthetics, biology, cultural resources, and noise will be key environmental constraints. Additional environmental constraints such as hydrology/water quality, construction traffic, construction air quality, and utility relocation are acknowledged, but compliance with existing City/agency requirements would minimize impacts.

Aesthetics

As noted above, the proposed project occurs along a segment of Mulholland Highway that is designated a Scenic Corridor. The proposed project is not anticipated to result in a conflict with the scenic characteristics of the existing roadway. Short-term construction activities associated with the project may result in a temporary change in the aesthetic character along portions of the project corridor (e.g., exposed soils due to grading, construction equipment/stockpiles); however, these activities would be short-term in nature, and would conclude once construction is completed. Long term impacts are similarly not expected to result in substantial changes in visual character. The project would not result in the addition of travel lanes or a substantial widening of Mulholland Highway. Consistent with the City's General Plan, the project would maintain the rural character of lands along Mulholland Highway and Old Topanga Canyon Road consistent with scenic corridor policies.

Biology

The proposed widening of the corridor's existing shoulders, removing and replacing existing guardrail, and the implementation of retaining walls could require the removal of existing vegetation within limited segments of the project corridor.

Project implementation could impact numerous oak trees adjacent that exist along the shoulder of Mulholland Drive. Removal of any oak trees within the City is subject to the City of Calabasas' Code of Ordinance Chapter 17.32 and the adopted City of Calabasas "Oak Tree Preservation and Protection Guidelines." Both the ordinance and the adopted guidelines require the preservation of all healthy oak trees unless compelling reasons of removing such trees. Should there be a compelling reason, both the Code of Ordinance and the adopted City Guidelines requires a valid oak tree permit to be issued, should an oak tree be altered/removed within the City limits.⁴ As a roadway improvement project that facilitates improved safety and mobility, it is anticipated that the project would qualify for an oak tree permit, and compliance with existing City standards would minimize impacts in this regard.

Based on the City's General Plan, the project area provides habitat for the coast horned lizard and portions of the site are occupied by California walnut woodland habitat. The project site is a developed, highly utilized transportation corridor subject to substantial human disturbance and noise due to vehicular use. While it is not anticipated that the project would result in significant impacts to sensitive biological resources, it is suggested that a site-specific biological technical letter is prepared to confirm impacts in this regard.

Cultural Resources

The City of Calabasas has identified two areas within the project segment as local historic landmarks: the William C. Masson Residence (now known as the Mountain Restoration Trust), and Old Topanga Canyon Road (from Mulholland Highway to the southern City limits).

Project improvements would occur entirely within City right-of-way, and no direct impacts to the William C. Masson Residence would occur. However, the project would include roadway widening and relocation of the existing driveway adjacent to the residence. The project would also include widening, sidewalk, and installation of a new signal at the intersection of Old Topanga Canyon Road. As noted above, the project design would be sensitive to the rural character of the existing Mulholland Highway corridor. While it is not anticipated that a significant impact to these locally designated historic resources would occur, it is suggested that a site-specific analysis of historic resources be conducted to verify impacts in this regard.

Noise

The project would result in short-term noise impacts. The project alignment is adjacent to multiple sensitive receptors, such as residential and school uses. The construction phase of the project would likely produce ground-borne vibrations and noise levels that would possibly disturb sensitive receptors within the project area. However, construction noise would be acoustically dispersed throughout the project site and not concentrated in one area near adjacent sensitive uses. Pursuant to the City of Calabasas Municipal Code, all construction activities may only occur between the hours of 7:00 AM and

⁴ City of Calabasas. *Oak Tree and Preservation Guidelines* <https://www.cityofcalabasas.com/home/showdocument?id=710>. Accessed September 16, 2020.

6:00 PM, Monday through Friday, and between the hours of 8:00 AM and 5:00 PM on Saturday. Construction activities are prohibited on Sundays.⁵ Adherence to these construction hours would minimize impacts in this regard.

8.3 CEQA Recommendation

Based on the preliminary environmental analysis above, key environmental constraints for the proposed project are associated with aesthetics, biological resources, cultural resources, and construction noise. Based on a preliminary review of the proposed project, it is not anticipated that the project would result in significant impacts on the environment. It is anticipated that a Categorical Exemption would be appropriate for the proposed project, under CEQA Guidelines Section 15301,

It is not anticipated that the project would result in significant impacts on the environment. It is anticipated that a Categorical Exemption would be appropriate for the proposed project, under CEQA Guidelines Section 15301, Existing Facilities.

Existing Facilities. This Categorical Exemption allows for the repair and minor alteration of existing highways and streets, provided that negligible or no expansion of use occurs. However, as noted above, it is recommended that additional, site-specific confirmatory analysis be conducted to verify that no significant impacts will occur to biological and cultural resources. This additional analysis can be conducted as a brief technical letter or memorandum focusing on key areas of biological/cultural concern along the project corridor.

If the additional site-specific biological/cultural analysis determines the potential for a significant impact, or if substantial controversy or extensive public interest/input is expected, preparation of an Initial Study/Mitigated Negative Declaration (IS/MND) may be warranted.

In regard to potential phasing of the project, this can be done defensibly under CEQA, provided that each phase can show independent utility (i.e., one phase is not dependent on another phase to be feasible or become operational). It appears that the City would be able to demonstrate independent utility, in the event a phased approach to this project is preferred. In this situation, the City would have the option of processing a single CEQA action for all phases, or separate CEQA actions for each individual phase.

⁵ City of Calabasas. Code of Ordinances-Title 17-Land Use and Development. https://library.municode.com/ca/city_of_calabasas/codes/code_of_ordinances?nodeId=TIT17LAUSDE_ARTIIISIPRDEST_CH17.2_0GEPREUSST_17.20.160NO. Accessed September 17, 2020.

9.0 Additional Project Considerations

9.1 Construction Staging

The project is anticipated to be constructed in two overall work phases, Phase I and II. Within these work phases, it is anticipated the work will be staged to minimize traffic impacts and to prioritize access and safety in compliance with City construction work specifications. The project Cost Estimate anticipates the use of temporary traffic control measures such as k-rail, traffic delineators, temporary signs, flaggers, changeable message signs, and temporary crash cushions to be deployed for the major work elements that include:

- Road Widening and Resurfacing
- Retaining Wall Construction
- New Signal Installation at Old Topanga Canyon Road (West)
- Erosion Control Measures: Slope Trimming, Debris Fence / Walls, and or Cable Mesh

Traffic handling plans are typically prepared in the final design phase and implemented by the project contractor.

9.2 Funding

The project is funded through public, Los Angeles County Measure M funds. At this time, the City is slated to receive \$6 million of Measure M funds for this project, which is less than the total construction cost, not including support costs as detailed in the following sections. The City continues to pursue additional funding sources for the project. Project funding and the proposed work will be resolved in the next project phase as the proposed improvements are refined.

9.3 Preliminary Cost Estimate

Table 7 summarizes the capital outlay project estimates based upon recent unit cost values plus the addition of a 25% contingency. The Cost Estimate is based on the Concept Plans and are useful for planning purposes only. It was assumed that private right of way acquisition is not required. The cost of additional utility relocations and other items unaccounted for are assumed to be captured in the 25% contingency in this Feasibility Study stage. Please refer to Appendix B for the Cost Estimate breakdown sheet.

Table 7. Preliminary Cost Estimate Summary

	Phase I	Phase II
<i>Sub-Total</i>	\$5,809,317.00	\$5,815,407.00
<i>Contingency Cost (25%)</i>	\$1,453,000.00	\$1,454,000.00
<i>Total Construction Cost (Rounded)</i>	\$7,300,000.00	\$7,300,000.00

Phase I and II construction improvement costs are nearly identical and when rounded are the same. Phase II costs are driven by the construction of the two large retaining walls between Stations 25+00 to

29+00. These walls are nearly two-thirds of Phase II construction costs. Phase I retaining walls are smaller and cost less but are more numerous and account for nearly half of Phase I work cost.

Project Support Costs

Project development support costs will be required as part of the project development process in addition to the construction costs identified in the previous section. These additional project costs include the following:

- Project Approval & Environmental Document (PA/ED) phase
- Plans, Specifications and Estimate (PS&E) phase (Final Design)
- Construction Management and Inspection

9.4 Anticipated Project Schedule

Upon the City's approval of this Feasibility Study, the City could proceed with the PA/ED and PS&E Phases concurrently of either Phase I of the project or the entire Phase I and II. It is estimated that the PA/ED Phase would include the following items & steps.

PA/ED Phase Work Tasks and Steps:

- Obtain Aerial topography Surveys & R/W Mapping
- Refine Design Concepts into final Geometric Approval Drawings (GAD) (30% plans)
- Prepare refined cost estimates
- Prepare Environmental Document and Technical Studies
- Perform any supplement public outreach
- Prepare Project Report, if required

PS&E Phase Work Tasks and Steps:

- Perform supplemental land surveying field shots
- Prepare Geotechnical, Drainage and Water Quality Studies
- Prepare 65%, 95% and 100% Plans, Specifications, and Cost Estimates (PS&E)
- Obtain any necessary R/W or temporary construction easements (TCEs)

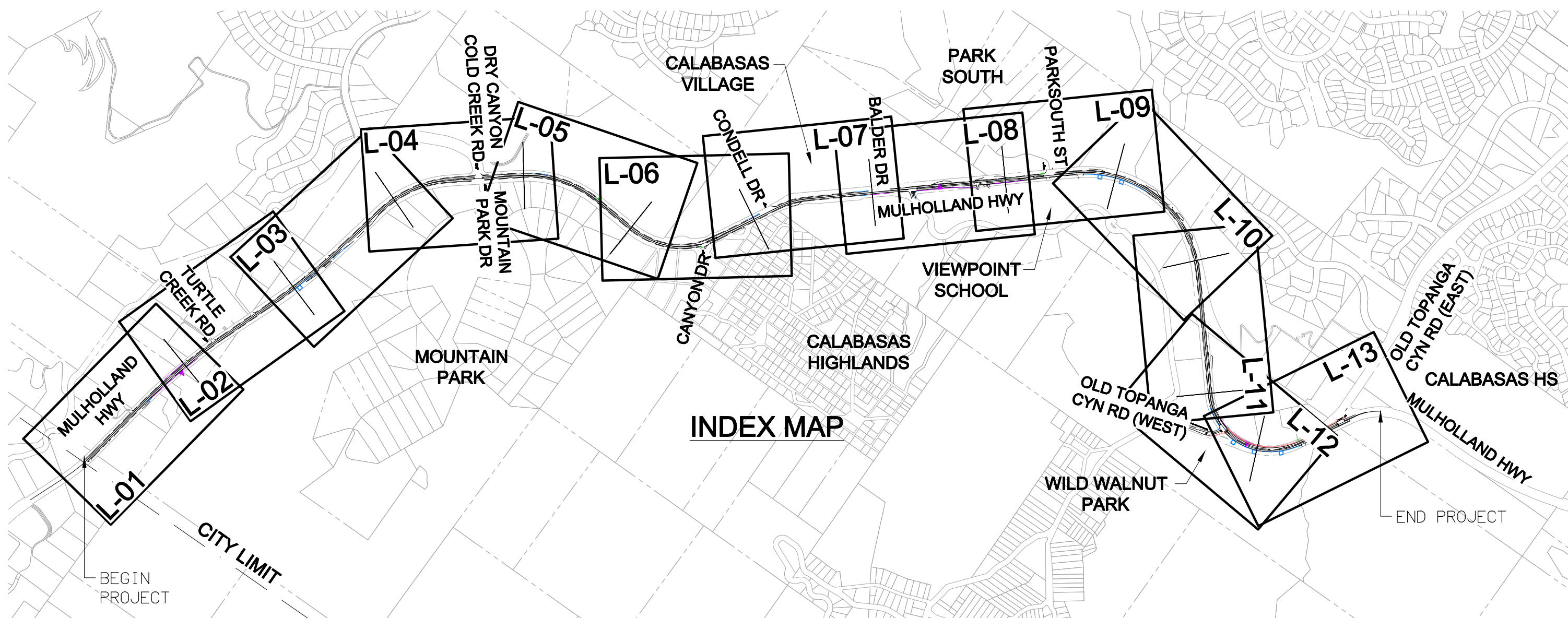
The PA/ED phase would take approximately 12 months. If performed independently, the PS&E Phase would also take approximately 12 months. If both PA/ED and PS&E were contracted together, both phases could be completed within approximately 20 months, which would include some overlap of both PA/ED and PS&E phases.

10.0 Appendix

Please see the following appendix sections for the attachments listed below:

- Appendix A.** Mulholland Highway Concept Plans
- Appendix B.** Preliminary Cost Estimate
- Appendix C.** Public Outreach Comment Summary Sheet with Responses
- Appendix D.** City of Calabasas Traffic and Transportation Commission (TTC) PowerPoint Presentation
- Appendix E.** Utility Coordination Log
- Appendix F.** Traffic Study Report (Michael Baker, 2020)
- Appendix G.** Preliminary Geotechnical Engineering Review (Geosoils, 2020)
- Appendix H.** Federal Emergency Management Agency (FEMA) Maps

APPENDIX A – Mulholland Highway Concept Plans



INDEX MAP

ABBREVIATIONS

CL	CENTERLINE	PROP	PROPOSED
(XX)	EXISTING DIMENSION	R/W	RIGHT-OF-WAY
AC	ASPHALT CONCRETE	R	RADIUS
ETW	EDGE OF TRAVEL WAY	RD	ROAD
EX	EXISTING	SHLD	SHOULDER
FG	FINISHED GROUND	SW	SIDEWALK
FH	FIRE HYDRANT	TCE	TEMPORARY CONSTRUCTION EASEMENT
H	HEIGHT	OSD	OVERSIDE DRAIN
HWY	HIGHWAY		
L	LENGTH		
OG	ORIGINAL GROUND		
PP	POWER POLE		

LEGEND

	EXISTING K-RAIL
	EXISTING WALL
	EXISTING GUARDRAIL
	EXISTING ETW
	EXISTING APPURTENANCE (PP, FH, ETC.)
	EXISTING R/W
	PROPOSED RETAINING WALL
	PROPOSED GUARDRAIL
	PROPOSED SIDEWALK
	PROPOSED EDGE OF SHOULDER
	PROPOSED ETW
	PROPOSED HEADWALL
	PROPOSED PP / FH
	EROSION CONTROL

SHEET INDEX

SHEET NO	DESCRIPTION
1	INDEX MAP
2	TYPICAL CROSS SECTIONS
3-15	LAYOUT SHEETS

CONCEPT PLANS

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MULHOLLAND HIGHWAY FEASIBILITY STUDY
 OLD TOPANGA CYN RD - CITY LIMIT
 INDEX MAP

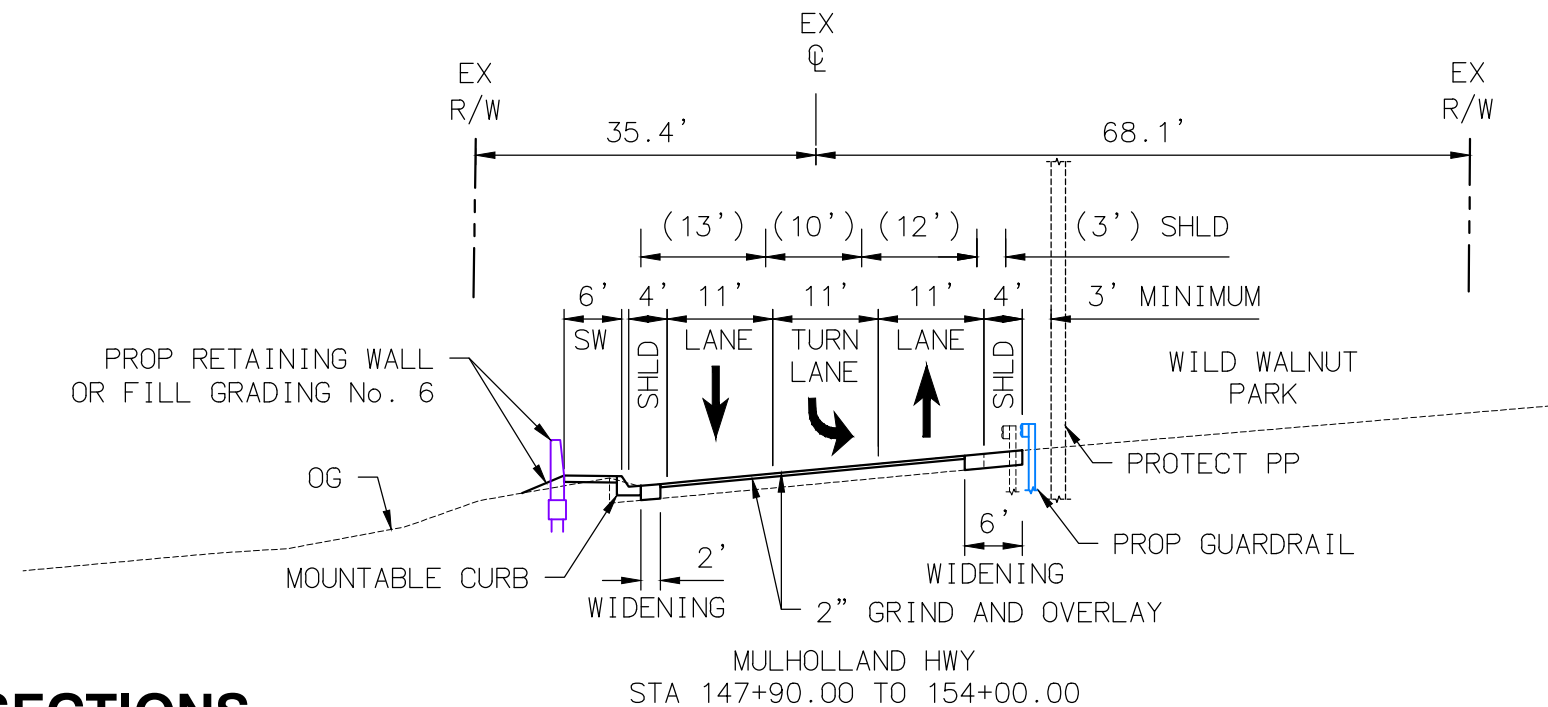
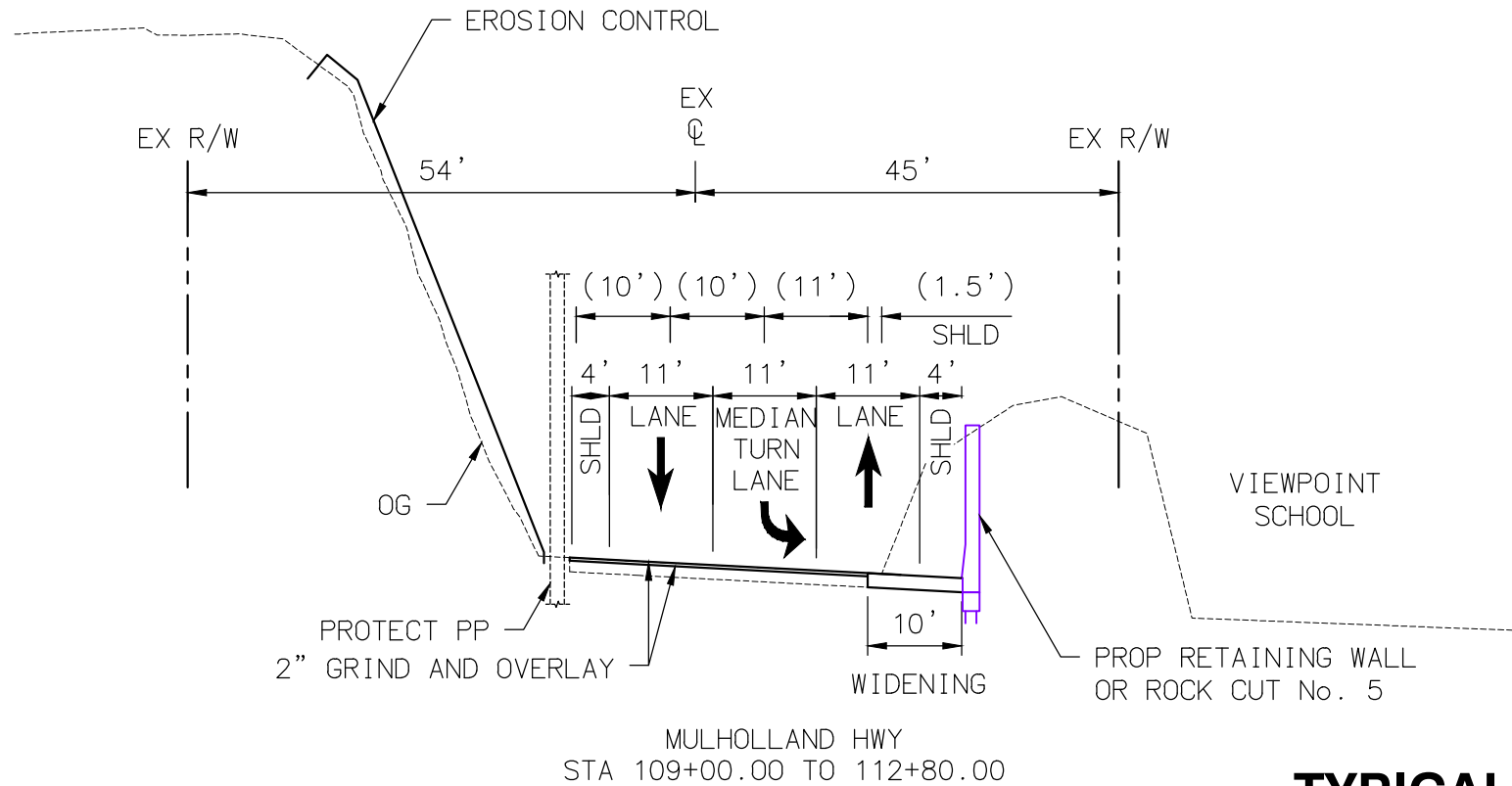
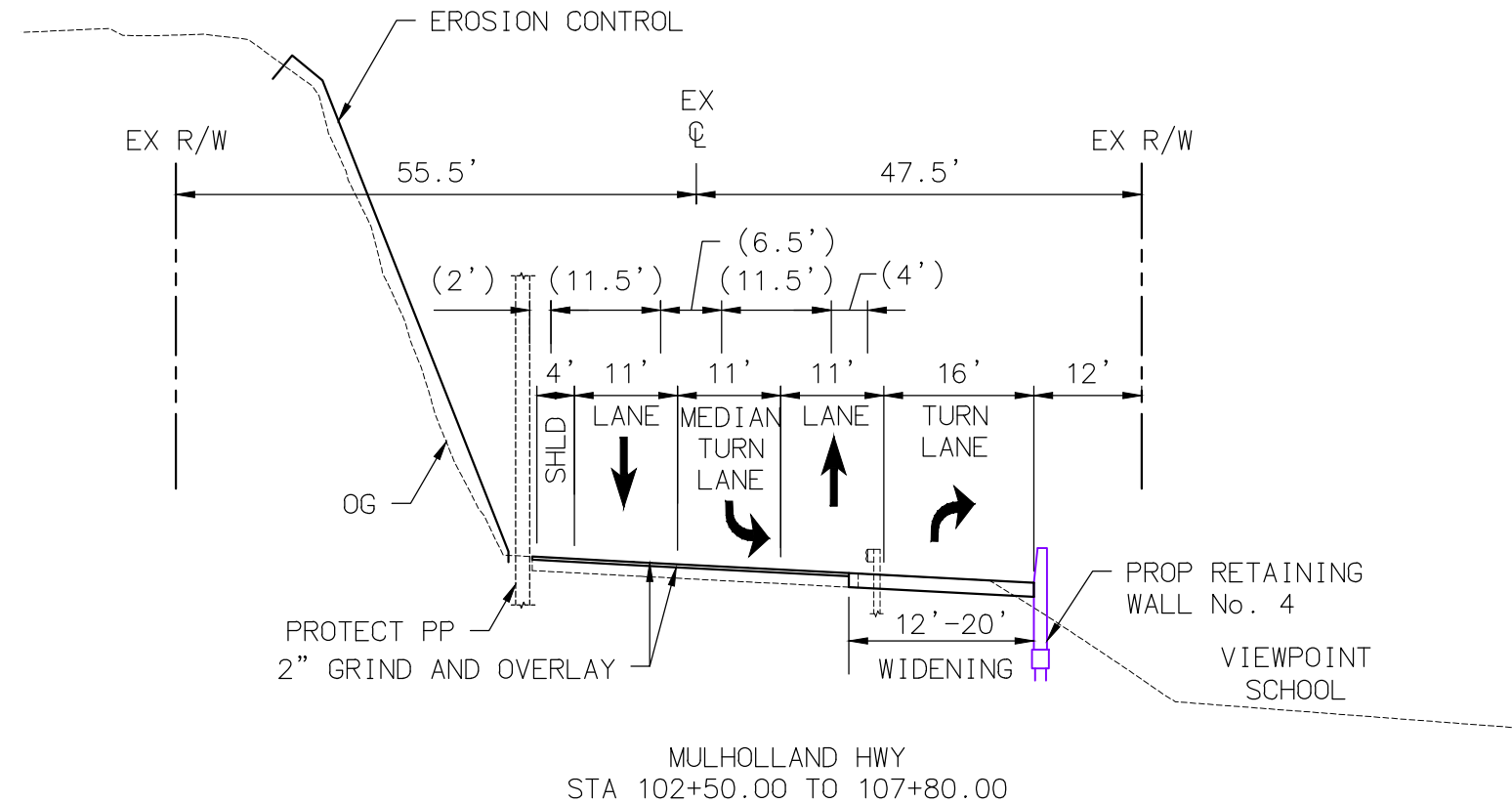
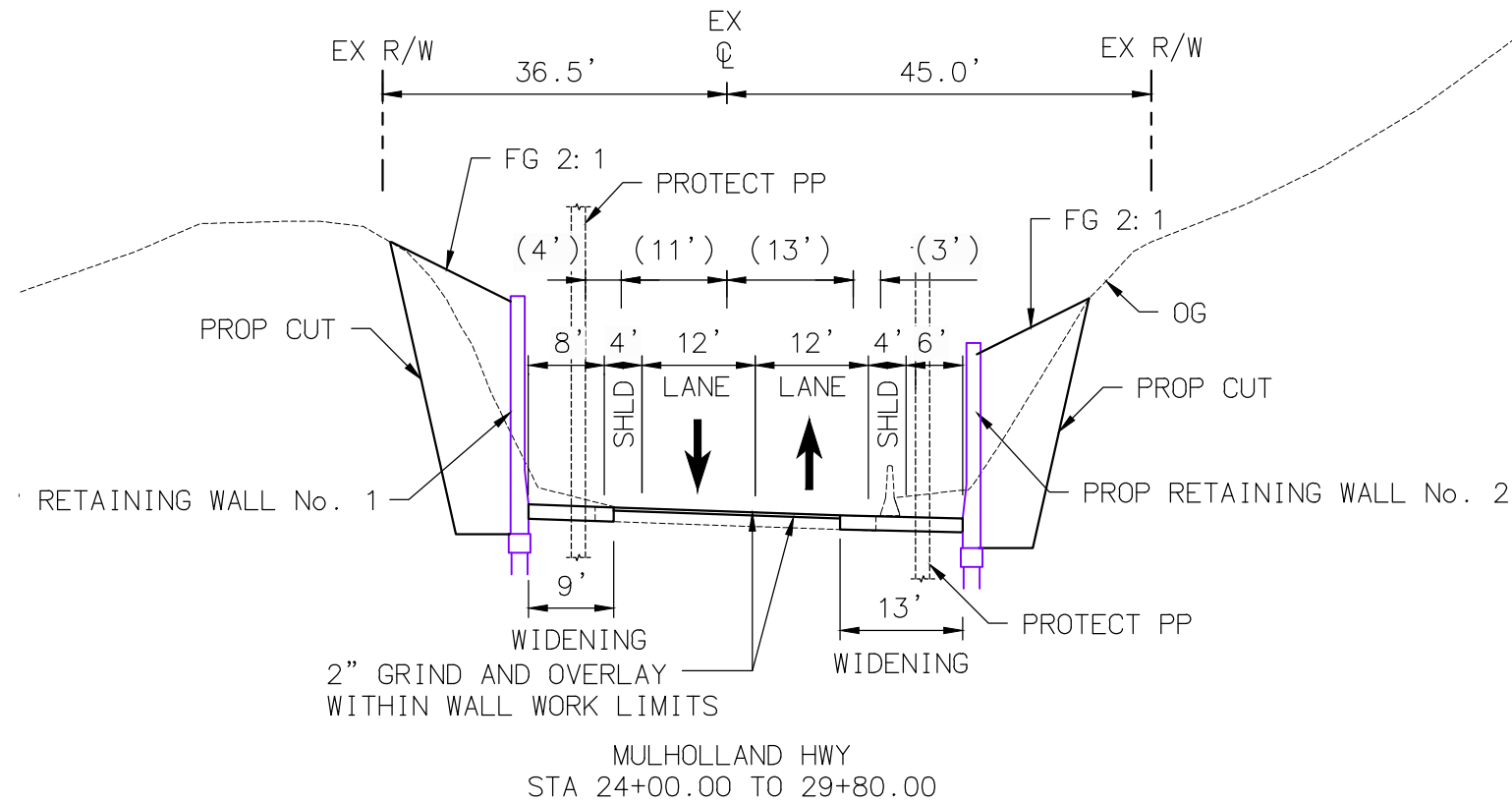
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NOTE:

- MULHOLLAND HWY PAVEMENT GRIND AND OVERLAY LIMITS ARE FROM DRY CANYON COLD CREEK ROAD TO OLD TOPANGA CANYON ROAD (EAST) EXCEPT AS NOTED.



TYPICAL SECTIONS KEY SEGMENTS ON MULHOLLAND HWY

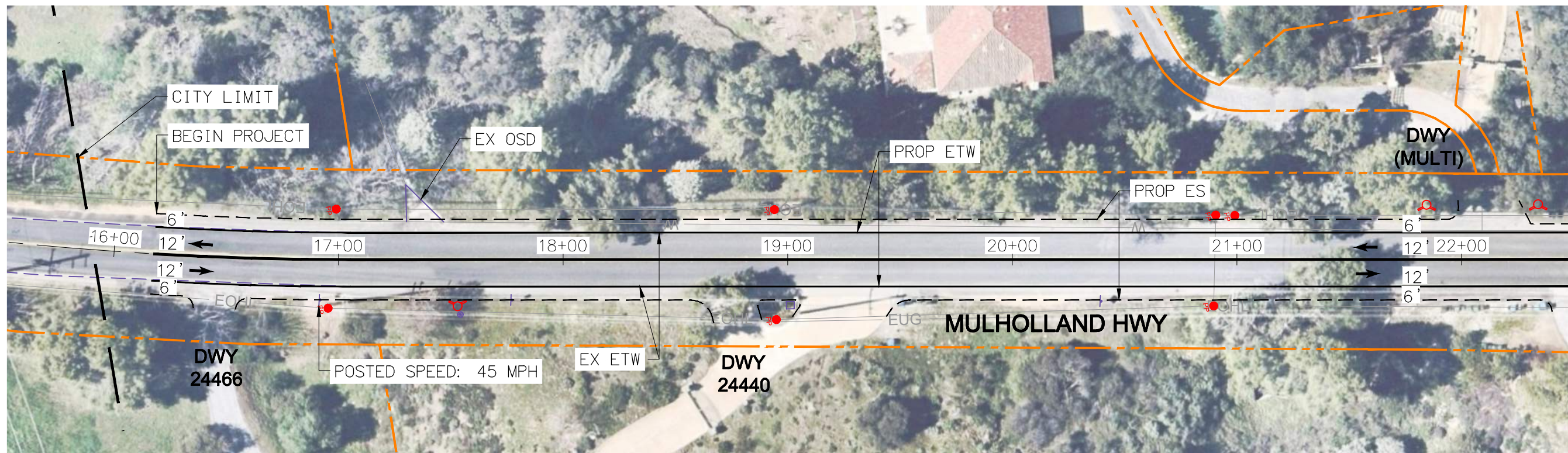
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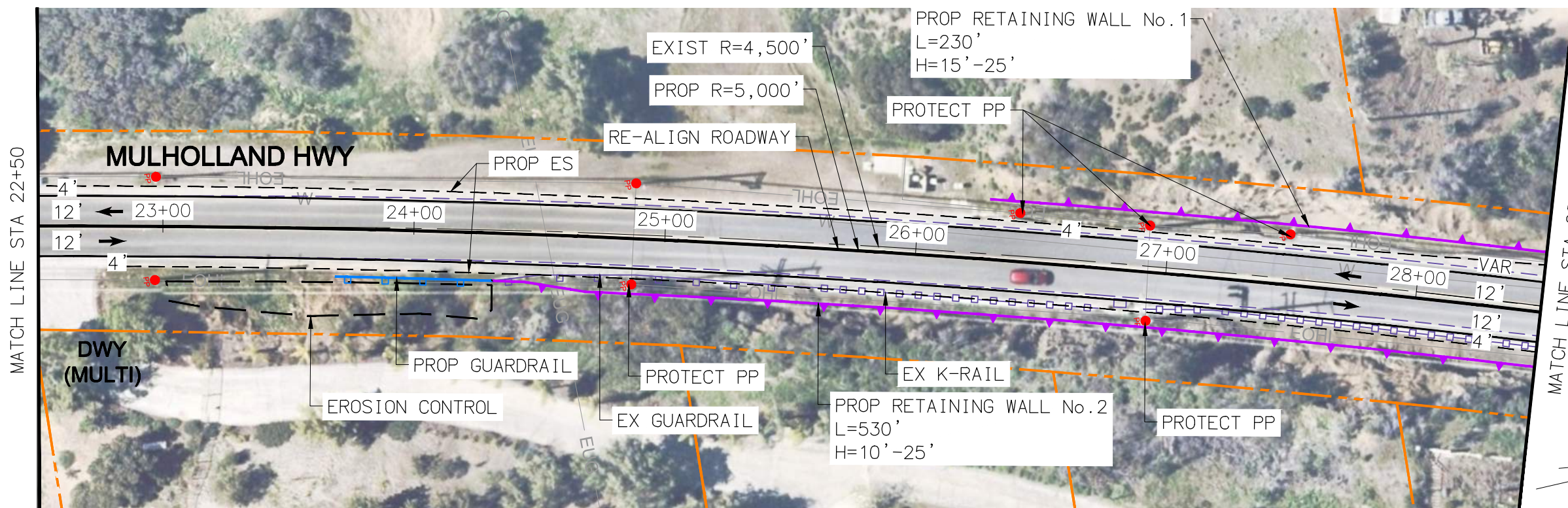
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 TYPICAL CROSS SECTIONS

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MATCH LINE STA 22+50



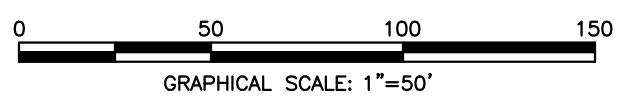
MATCH LINE STA 22+50

MATCH LINE STA 28+50



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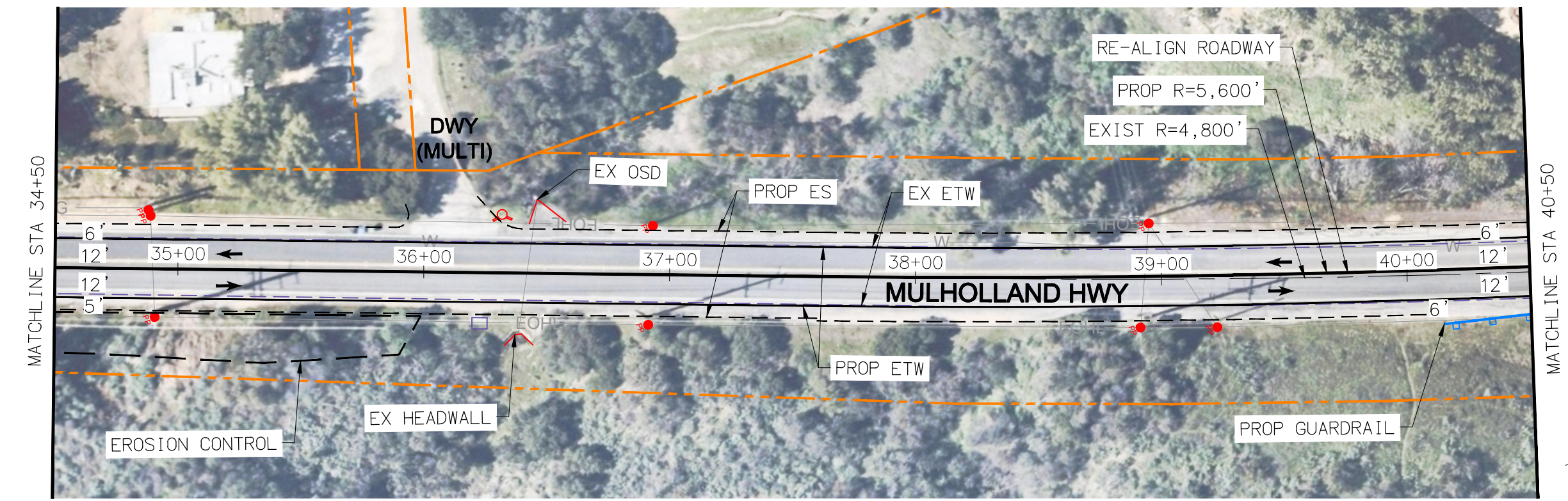
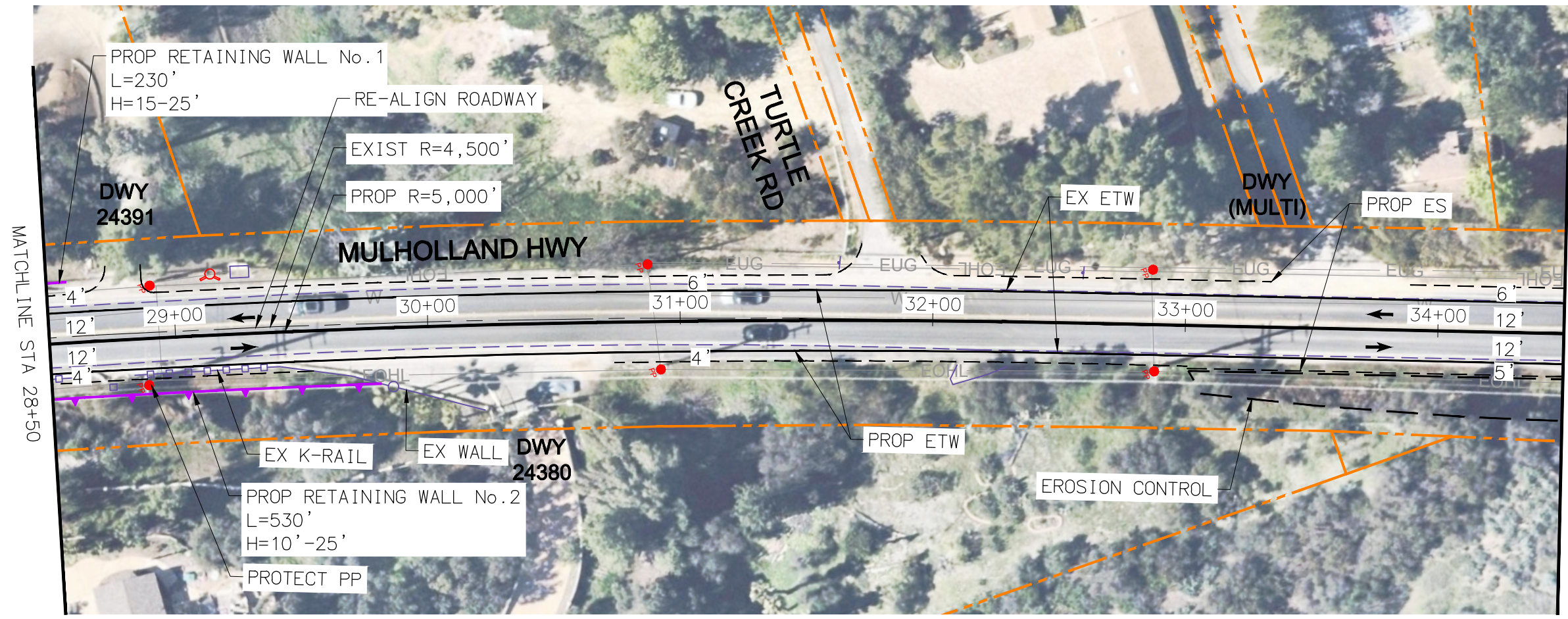
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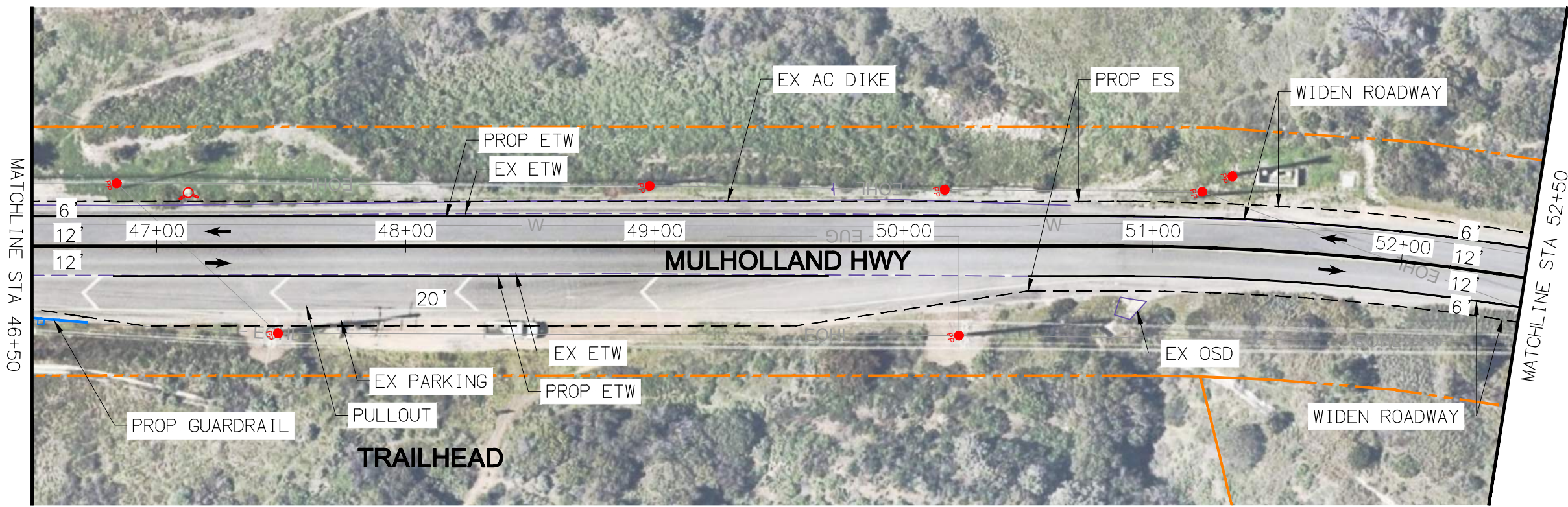
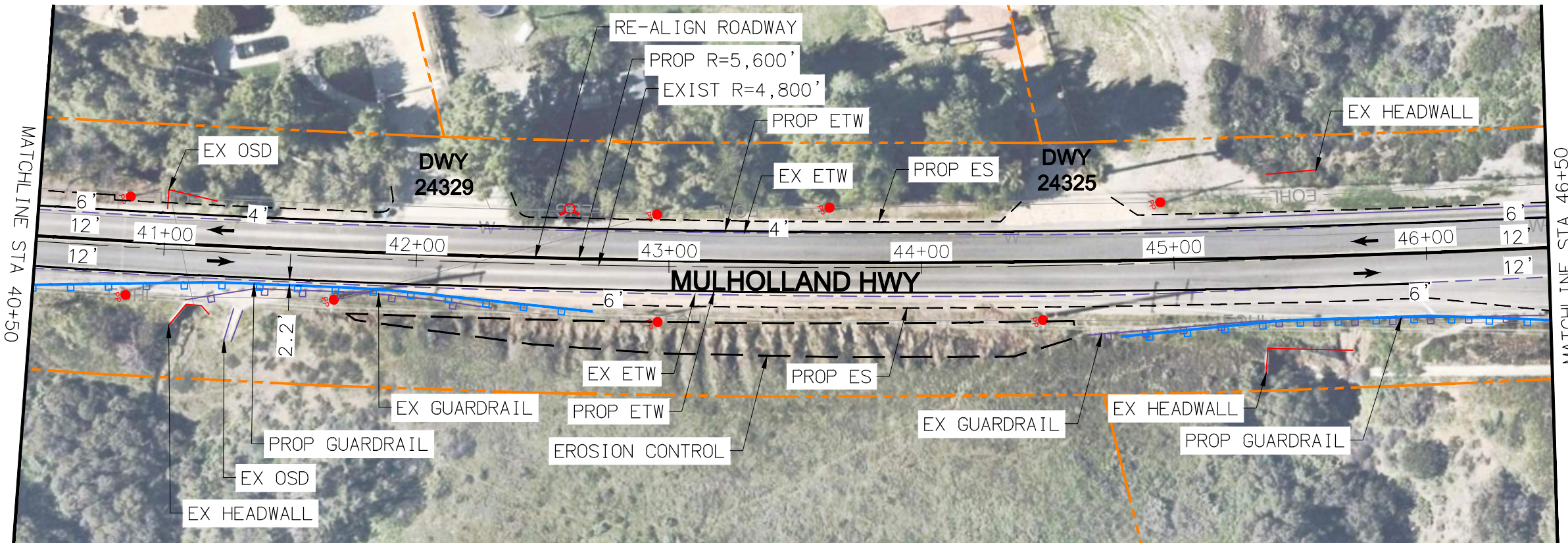


CONCEPT PLANS

MULHOLLAND HIGHWAY FEASIBILITY STUDY
 OLD TOPONGA CYN RD - CITY LIMIT
 LAYOUT SHEETS

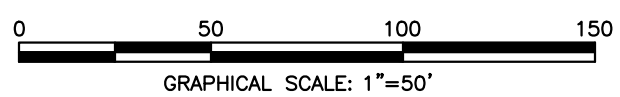
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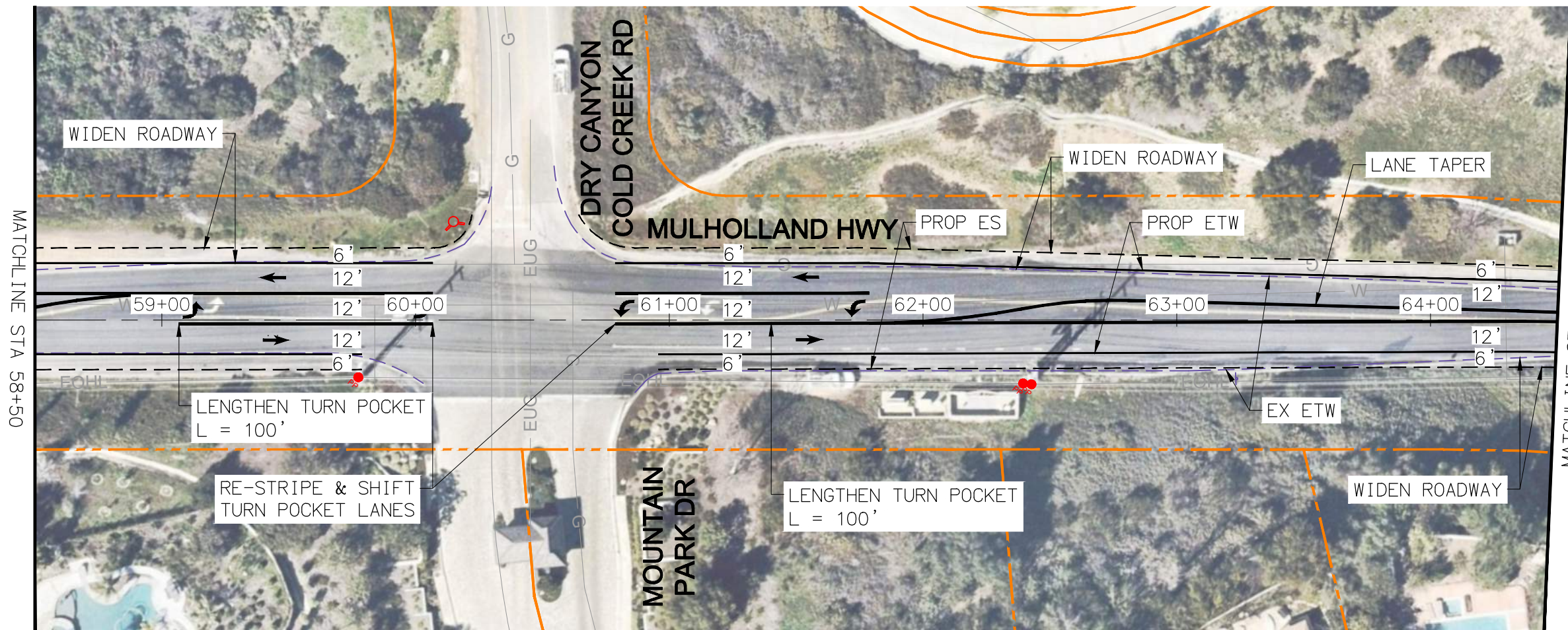
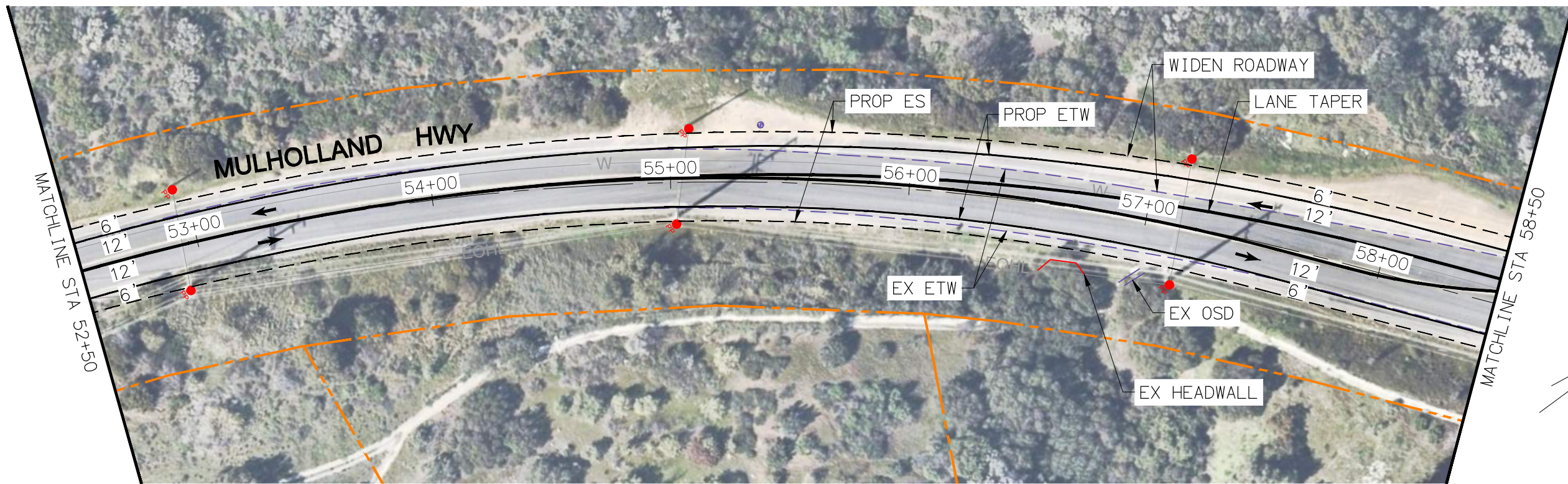


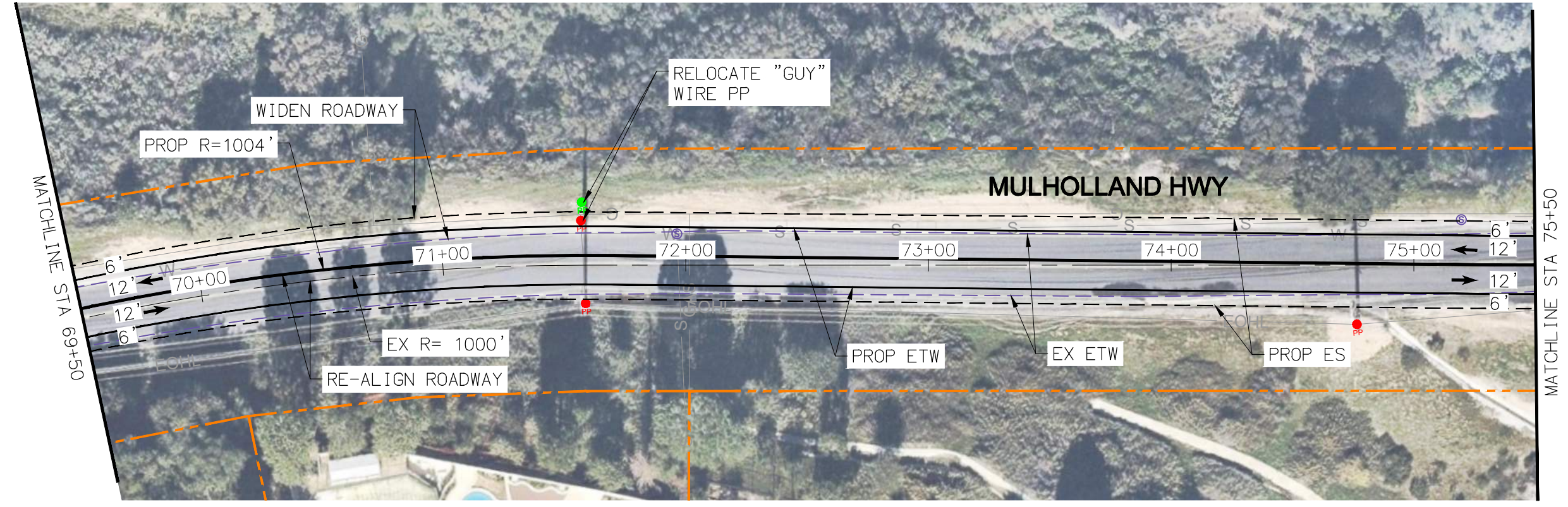
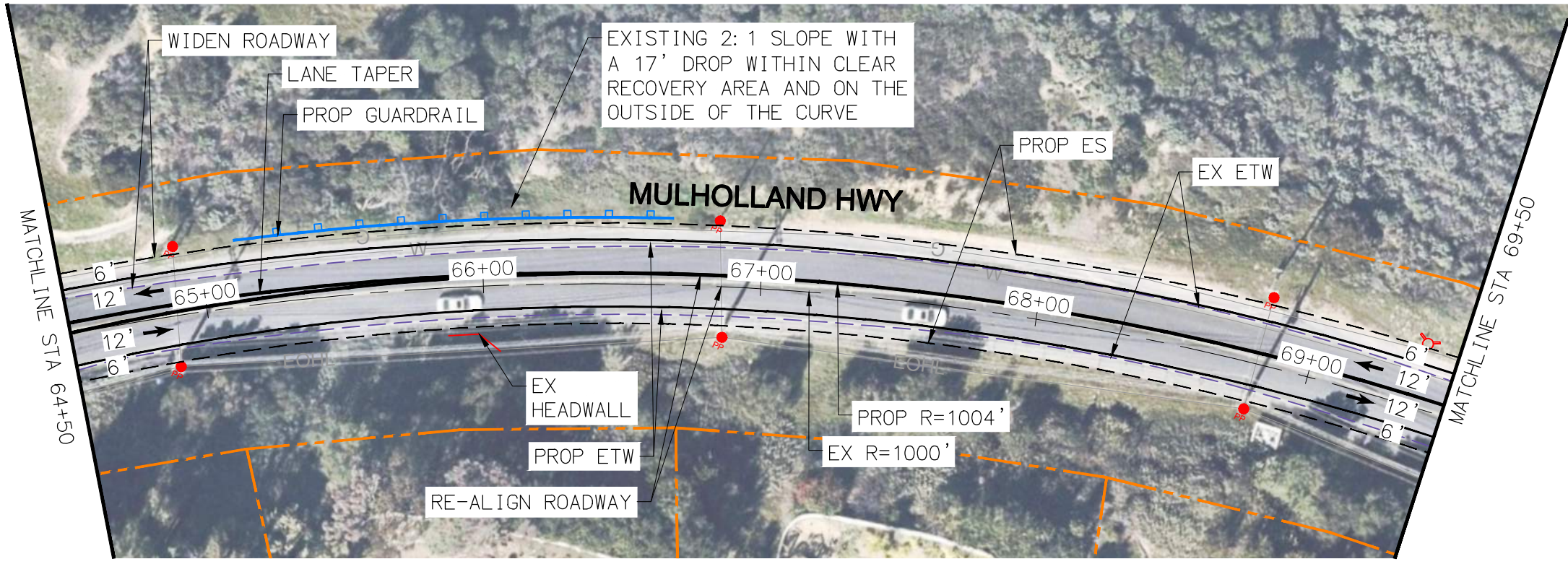
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MULHOLLAND HIGHWAY FEASIBILITY STUDY
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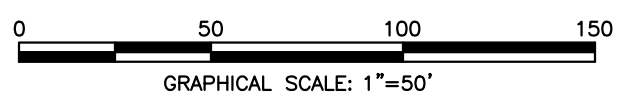




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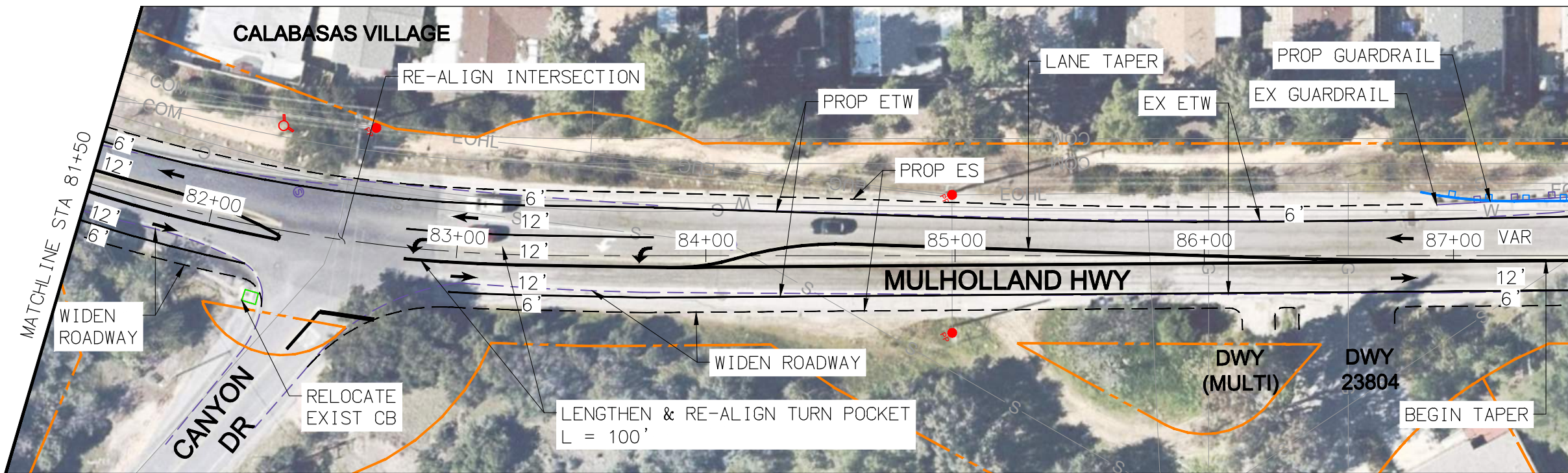
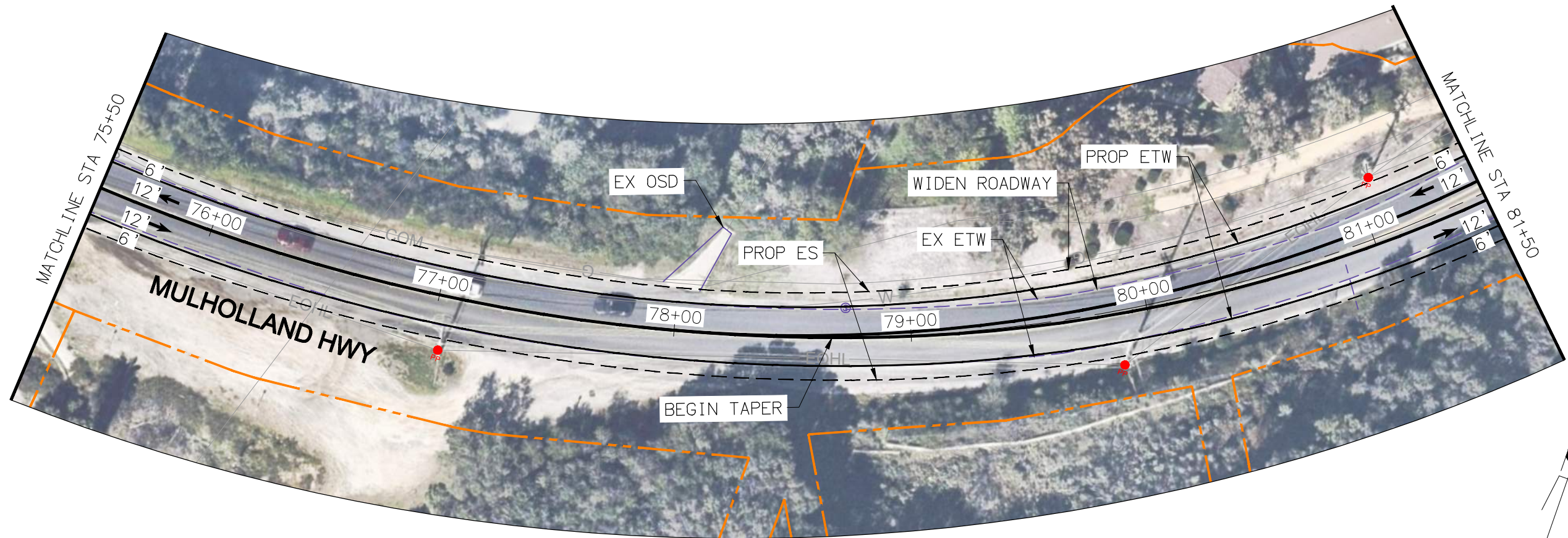
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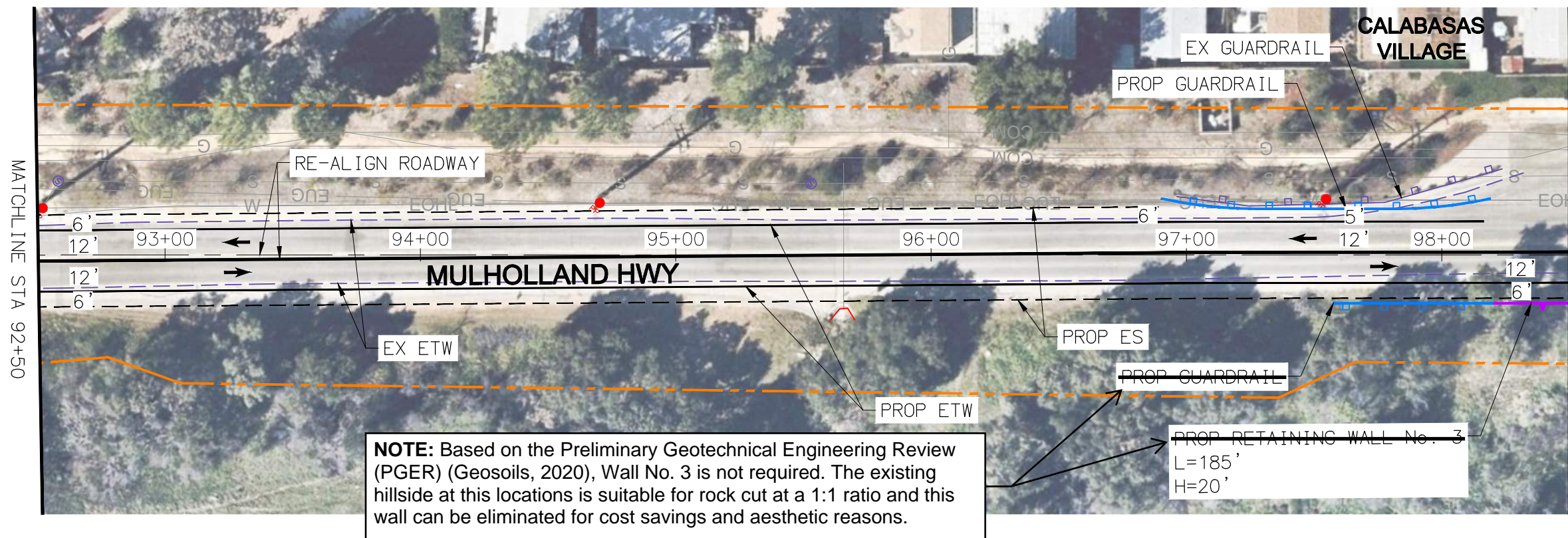
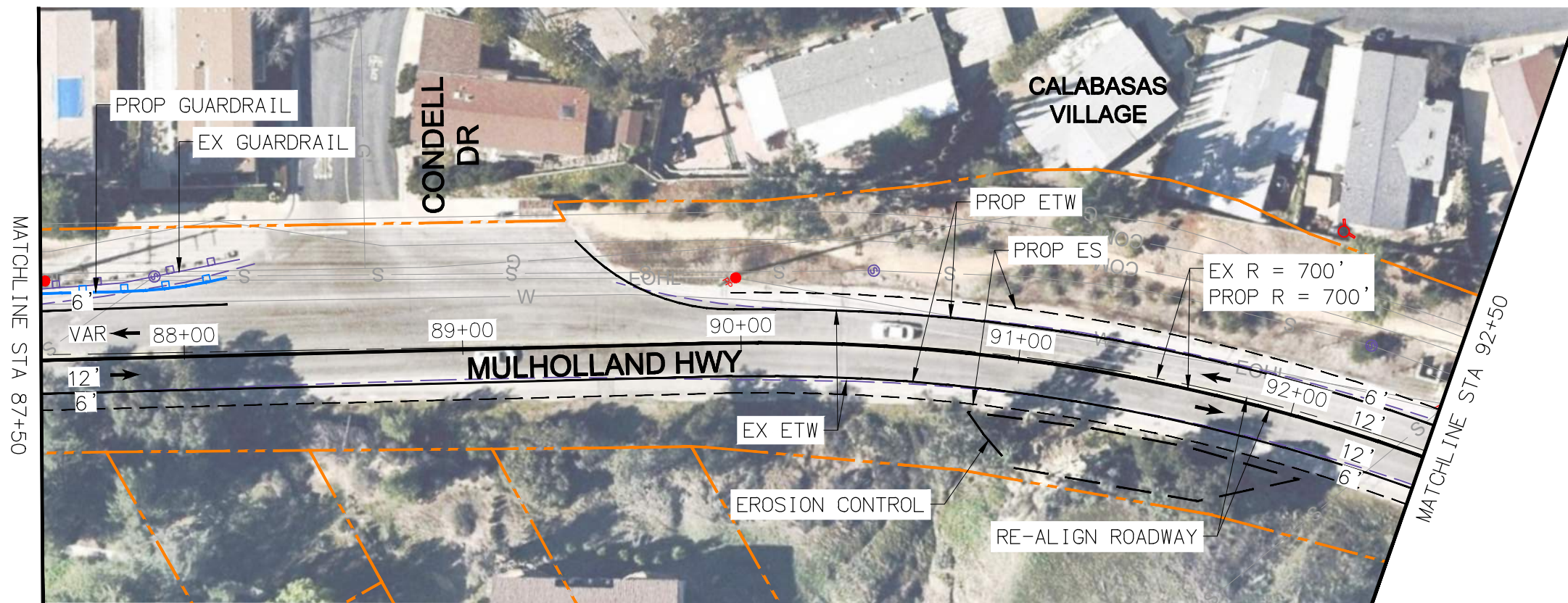


CONCEPT PLANS


MULHOLLAND HIGHWAY FEASIBILITY STUDY
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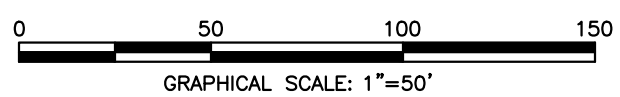




NOTE: Based on the Preliminary Geotechnical Engineering Review (PGER) (Geosols, 2020), Wall No. 3 is not required. The existing hillside at this locations is suitable for rock cut at a 1:1 ratio and this wall can be eliminated for cost savings and aesthetic reasons.

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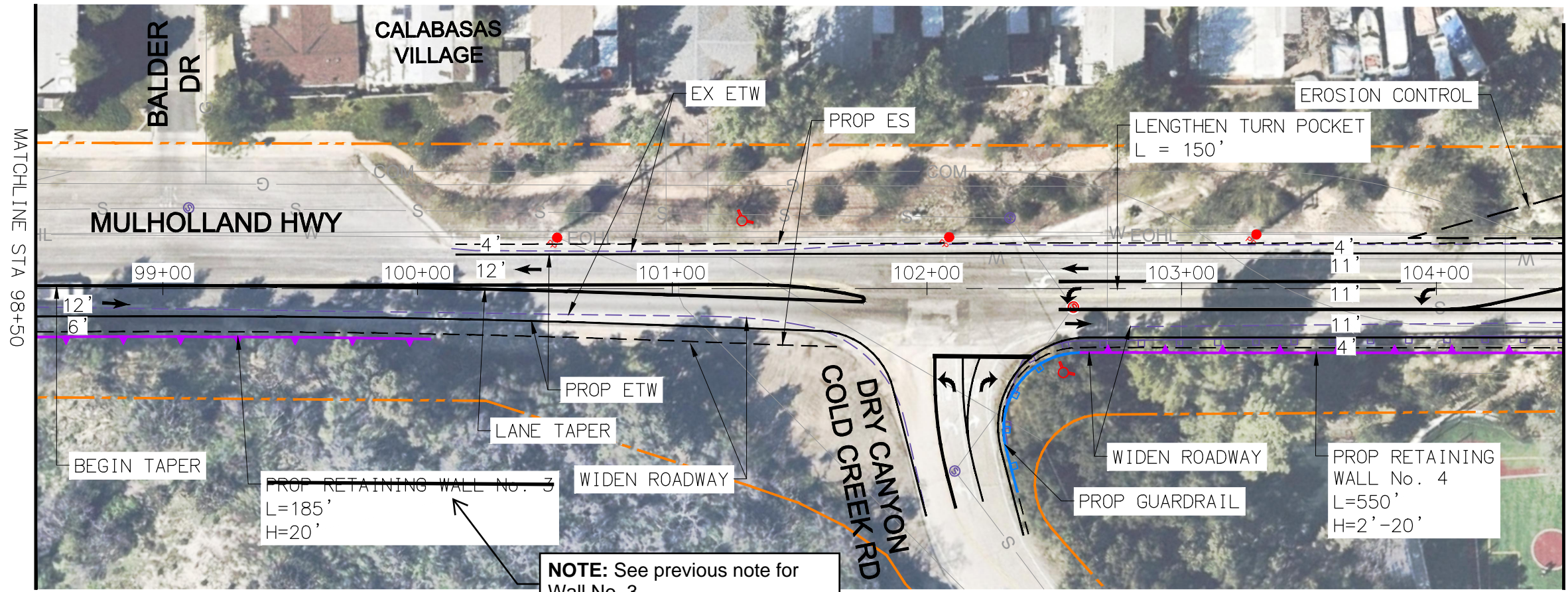
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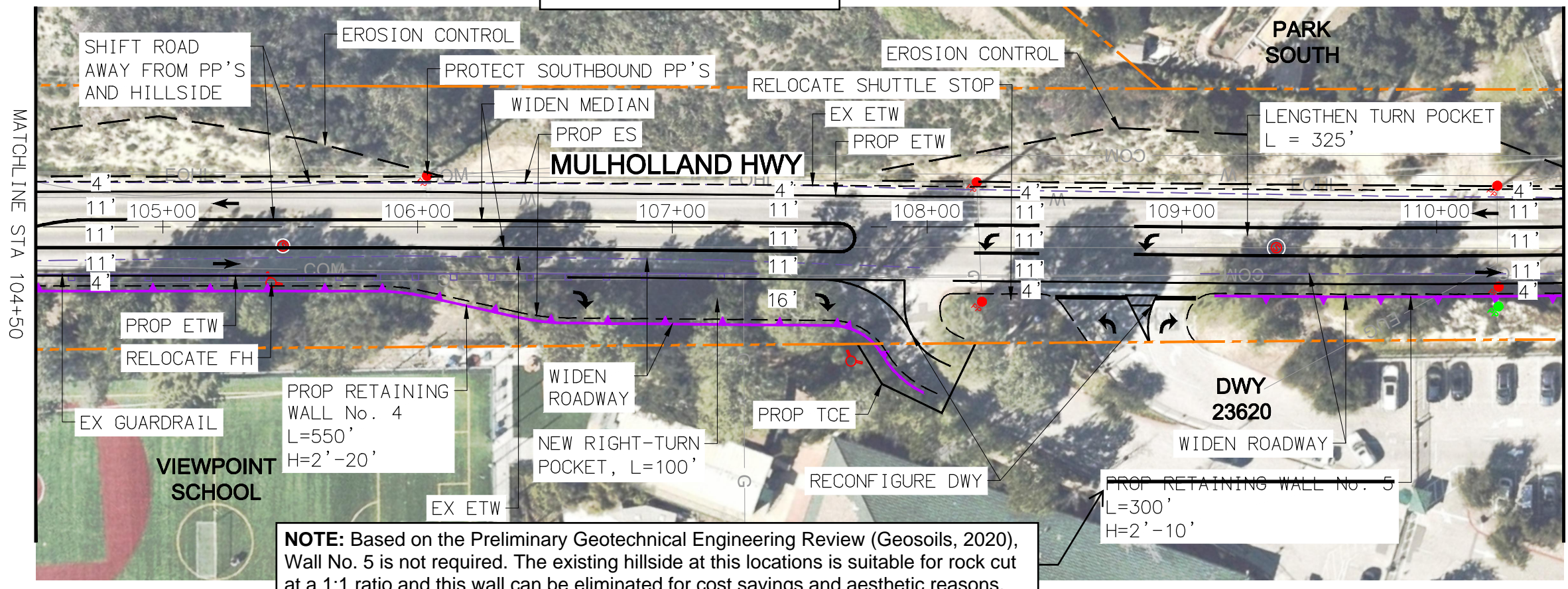
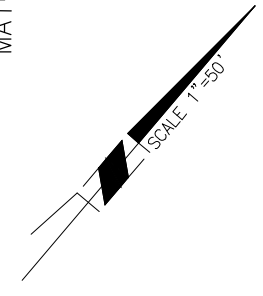
MULHOLLAND HIGHWAY FEASIBILITY STUDY
 OLD TOPONGA CYN RD - CITY LIMIT
 LAYOUT SHEETS

SCALE:
 1"=50'
 SHEET NO.
 9 of 15



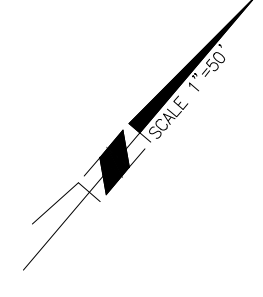
NOTE: See previous note for Wall No. 3


MATCHLINE STA 104+50



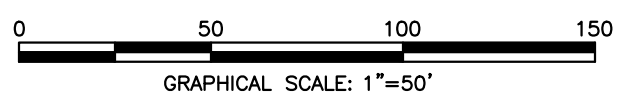
NOTE: Based on the Preliminary Geotechnical Engineering Review (Geosoils, 2020), Wall No. 5 is not required. The existing hillside at this locations is suitable for rock cut at a 1:1 ratio and this wall can be eliminated for cost savings and aesthetic reasons.

MATCHLINE STA 110+50



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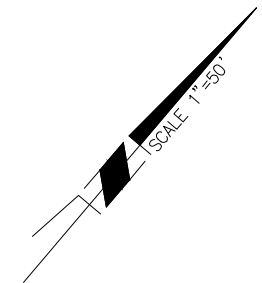
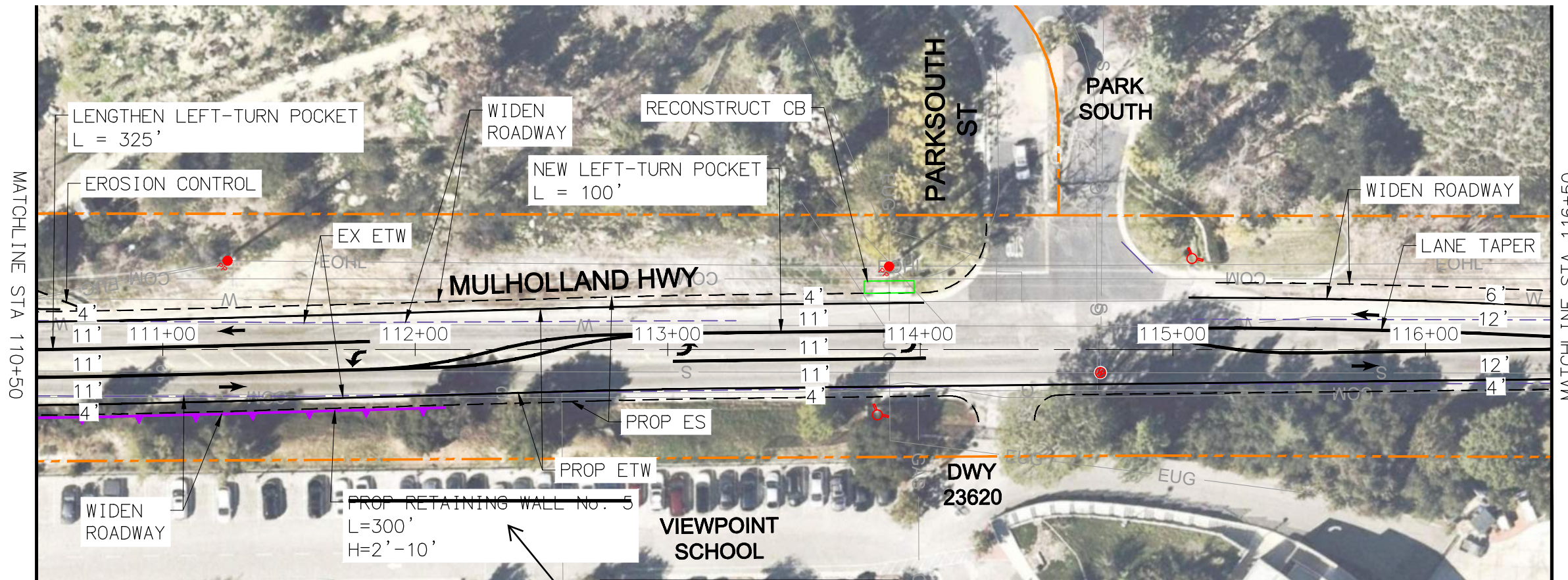
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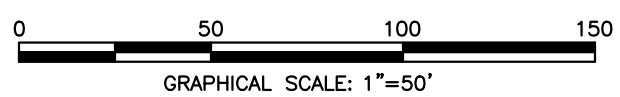
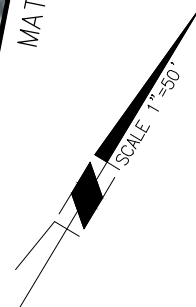
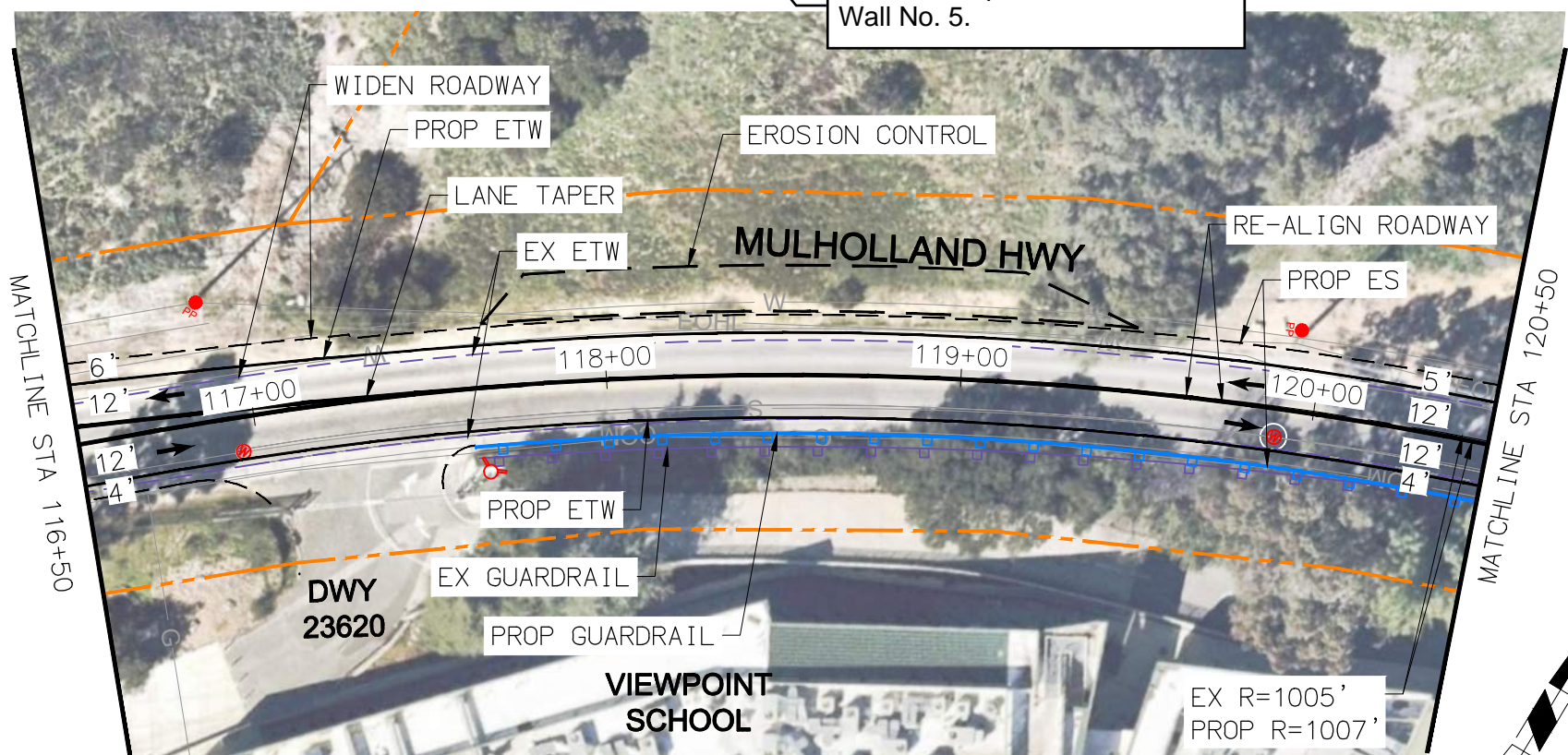
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MULHOLLAND HIGHWAY FEASIBILITY STUDY
 OLD TOPONGA CYN RD - CITY LIMIT
 LAYOUT SHEETS

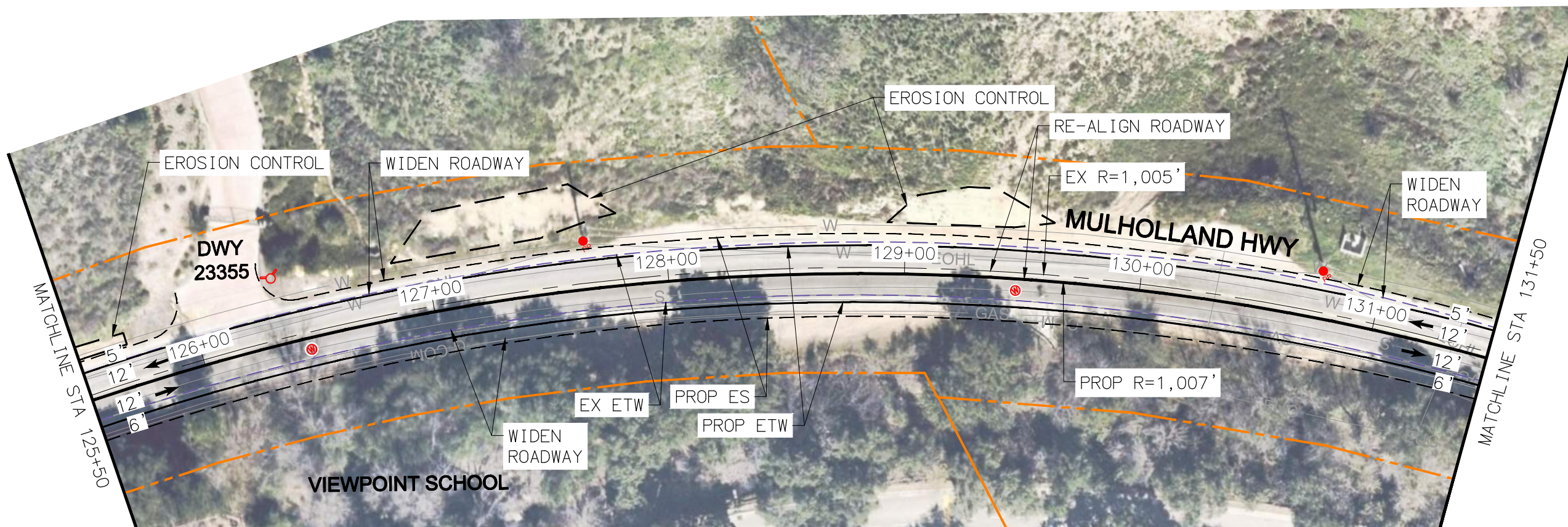
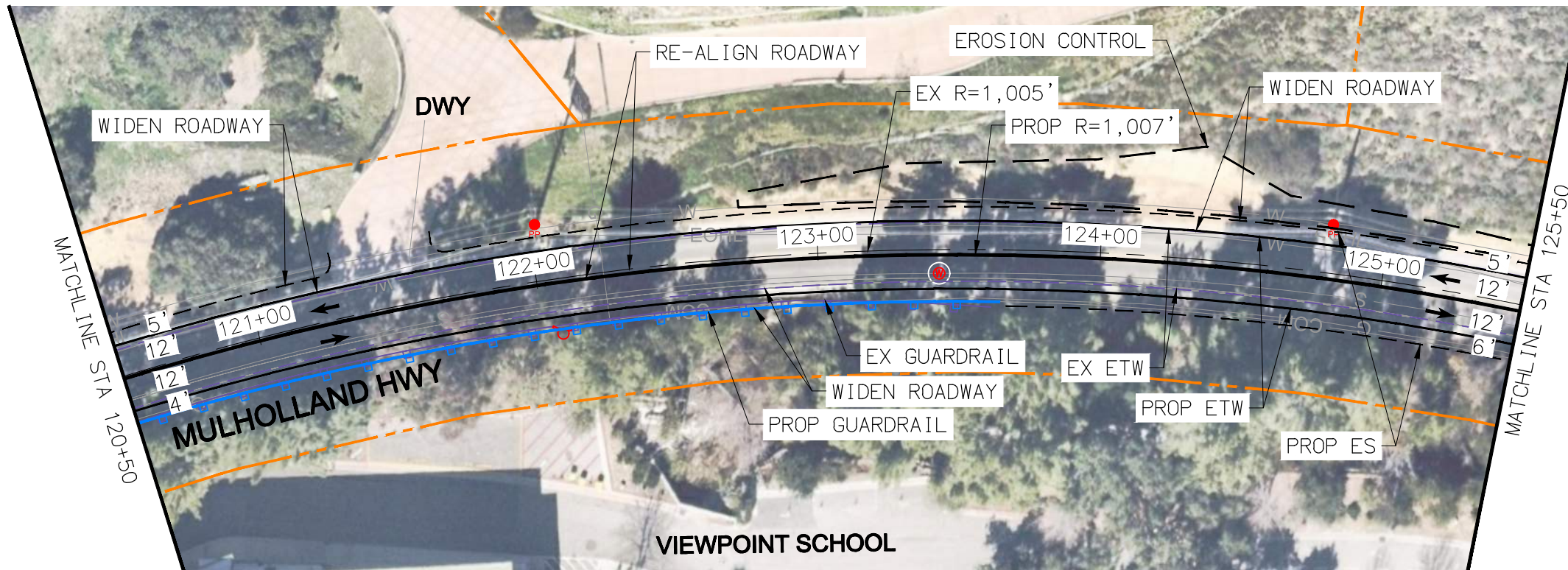
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 SHEET NO.
 10 of 15

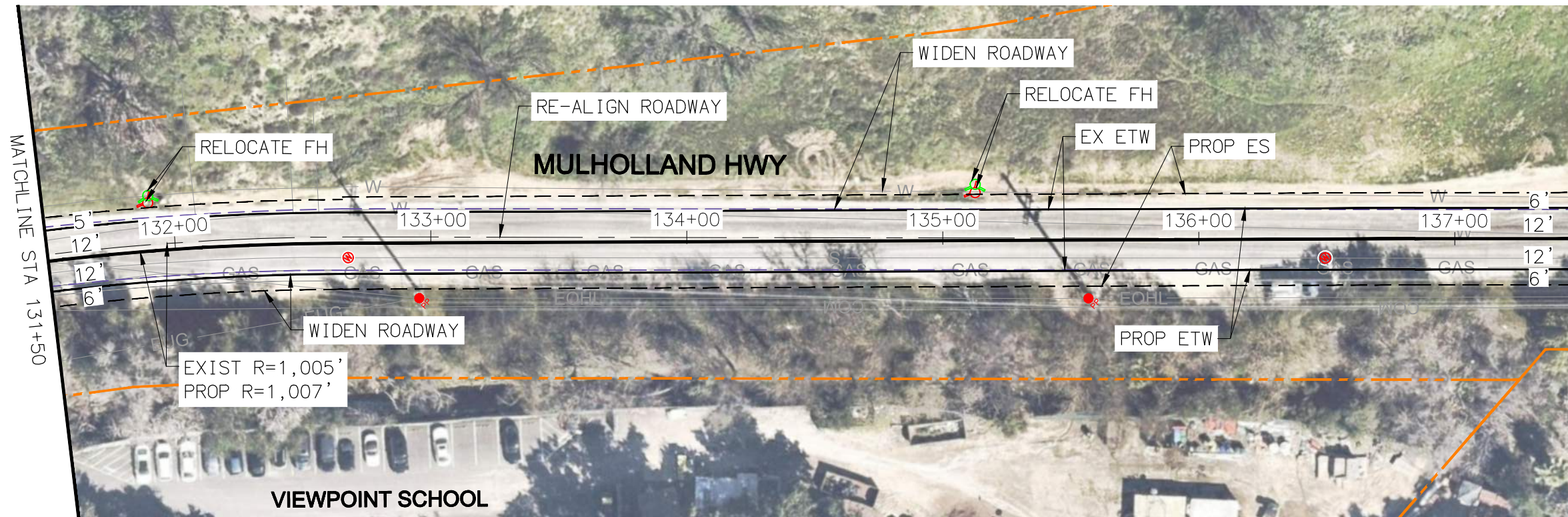


NOTE: See previous note for Wall No. 5.



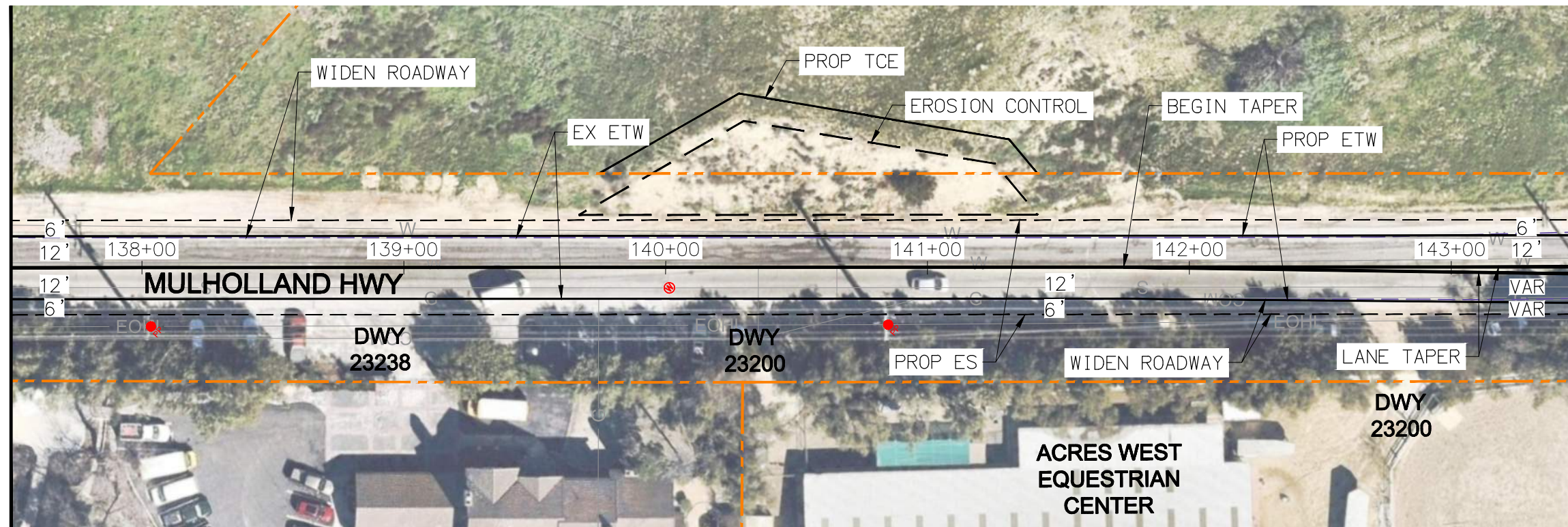
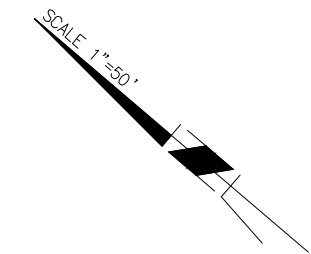
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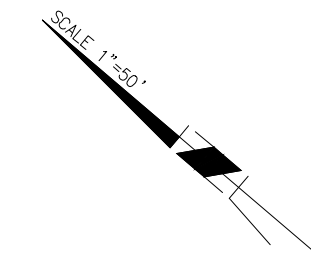
MATCHLINE STA 137+50

MATCHLINE STA 131+50




MATCHLINE STA 143+50

MATCHLINE STA 137+50



L-11

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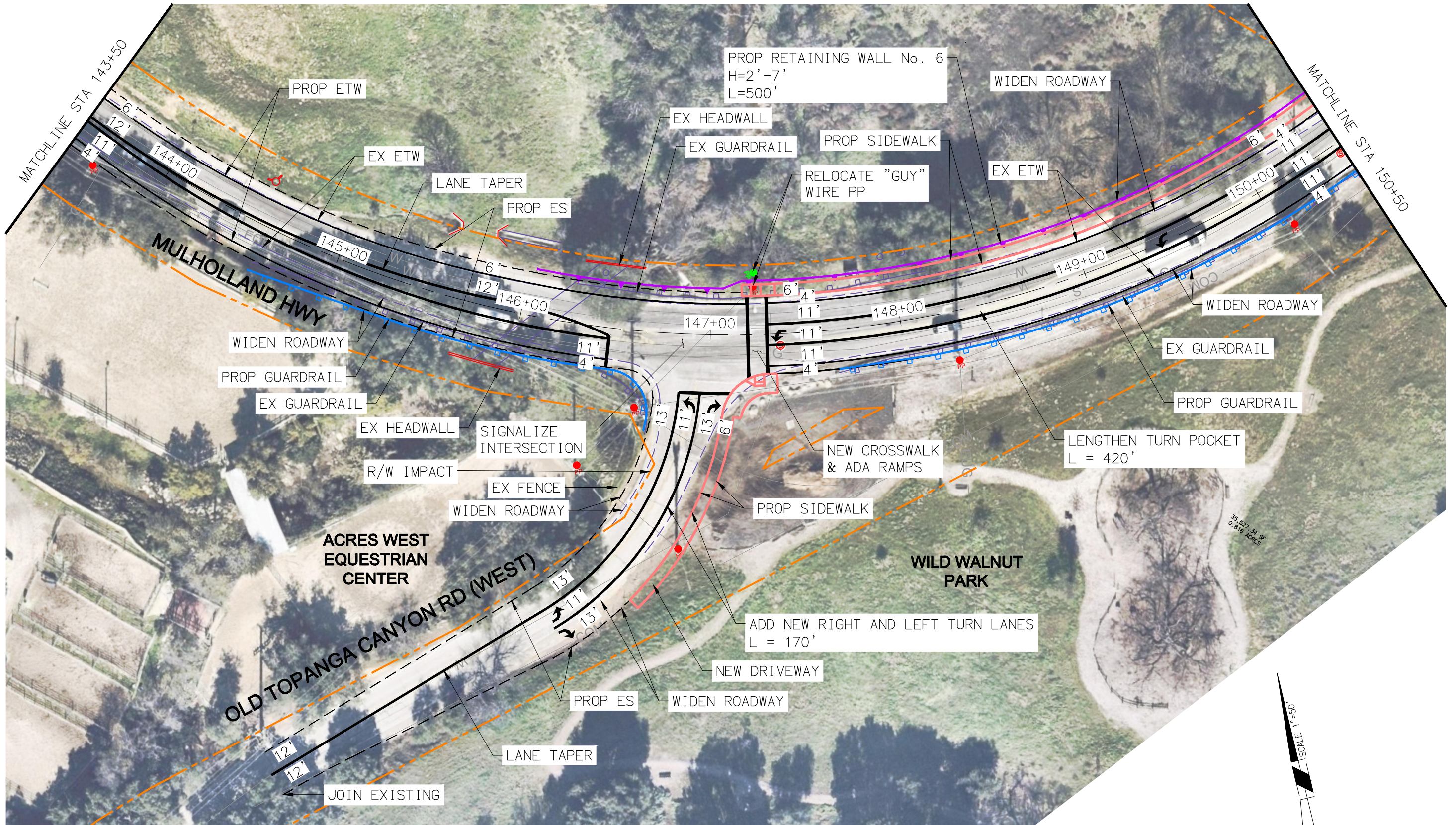
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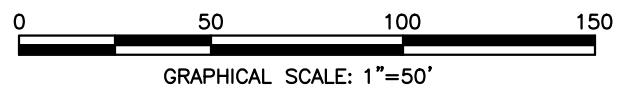
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MULHOLLAND HIGHWAY FEASIBILITY STUDY
 OLD TOPONGA CYN RD - CITY LIMIT
 LAYOUT SHEETS

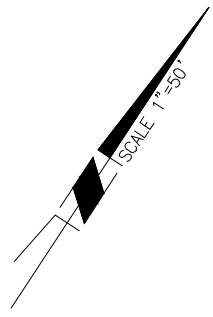
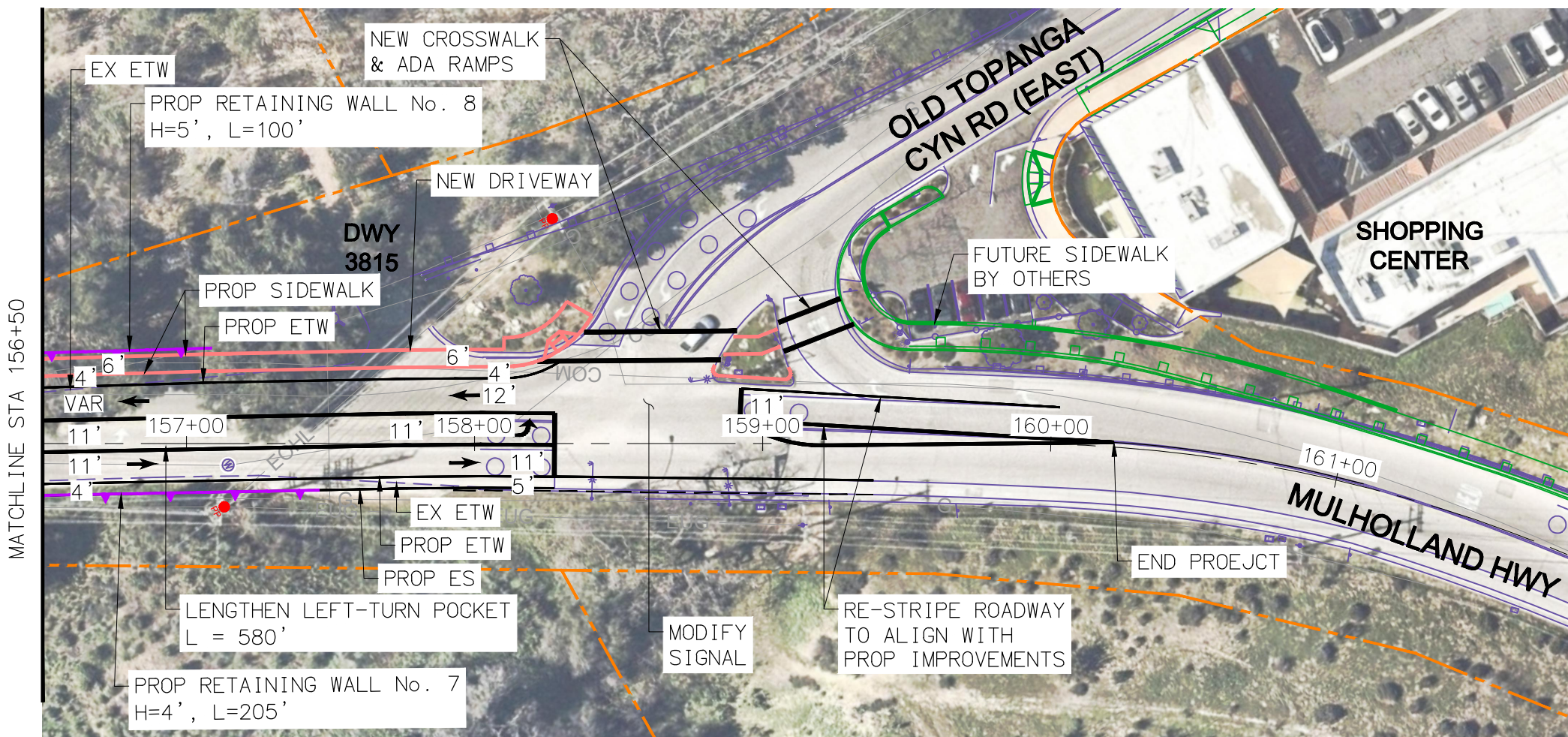
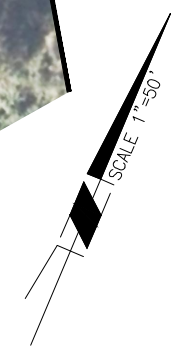
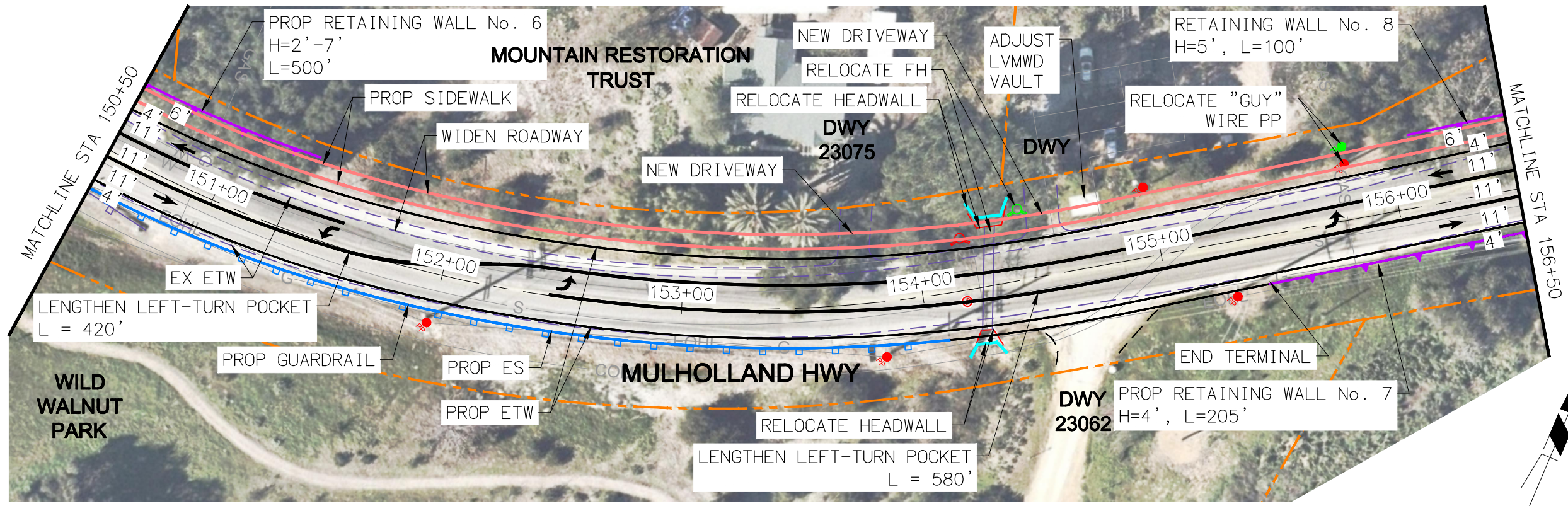
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 SHEET NO.
 13 of 15




L-12

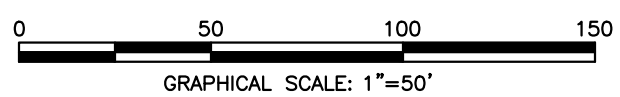


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CONCEPT PLANS

MULHOLLAND HIGHWAY FEASIBILITY STUDY
 OLD TOPONGA CYN RD - CITY LIMIT
 LAYOUT SHEETS

SCALE:
 1"=50'
 SHEET NO.
 15 of 15

APPENDIX B – Preliminary Cost Estimate

MULHOLLAND HIGHWAY FEASIBILITY STUDY

COST ESTIMATE

					PHASE 2		PHASE 1				
					CITY LIMIT TO SOUTH OF CONDELL DR (STATION 16+00 - 87+00)		CONDELL DR TO VIEWPOINT SCHOOL END (STATION 87+00- 136+00)		VIEWPOINT SCHOOL END TO OLD TOPENGA CANYON RD (EAST) (STATION 136+00-161+00)		
TOTAL OF ALL PHASES											
#	BID ITEM	UNIT	UNIT COST	QUANTITY	COST	QUANTITY	COST	QUANTITY	COST	QUANTITY	COST
1	MISC. ITEMS										
2	MOBILIZATION	LS	\$ 150,000.00	1.00	\$ 150,000.00	1.00	\$ 50,000.00	1.00	\$ 50,000.00	1.00	\$ 50,000.00
3											
4	REMOVALS & ADJUSTMENTS										
5	CLEARING AND GRUBBING	LS	\$ 200,000.00	1.00	\$ 200,000.00	1.00	\$ 50,000.00	1.00	\$ 75,000.00	1.00	\$ 75,000.00
6	ROCK CUT - WALL NO. 3 (CUT DEPTH = 6')	CY	\$ 250.00	620.00	\$ 155,000.00	-	\$ -	620.00	\$ 155,000.00	-	\$ -
7	ROCK CUT - WALL NO. 5 (CUT DEPTH = 4')	CY	\$ 250.00	360.00	\$ 90,000.00	-	\$ -	-	\$ -	360.00	\$ 90,000.00
8	REMOVE EXISTING WALL (STA 29+80)	LF	\$ 150.00	40.00	\$ 6,000.00	40.00	\$ 6,000.00	-	\$ -	-	\$ -
9	REMOVE ASPHALT CONCRETE PAVEMENT	SF	\$ 5.00	28,960.00	\$ 144,800.00	11,360.00	\$ 56,800.00	9,600.00	\$ 48,000.00	8,000.00	\$ 40,000.00
10	REMOVE BARRIER (K-RAIL)	LF	\$ 50.00	345.00	\$ 17,250.00	345.00	\$ 17,250.00	-	\$ -	-	\$ -
11	REMOVE GUARDRAIL	LF	\$ 20.00	2,560.00	\$ 51,200.00	430.00	\$ 8,600.00	1,380.00	\$ 27,600.00	750.00	\$ 15,000.00
12	REMOVE INLET	EA	\$ 1,200.00	4.00	\$ 4,800.00	1.00	\$ 1,200.00	2.00	\$ 2,400.00	1.00	\$ 1,200.00
13	REMOVE OVERSIDE DRAIN	EA	\$ 760.00	21.00	\$ 15,960.00	12.00	\$ 9,120.00	3.00	\$ 2,280.00	6.00	\$ 4,560.00
14	REMOVE HEADWALL	EA	\$ 2,500.00	4.00	\$ 10,000.00	2.00	\$ 5,000.00	-	\$ -	2.00	\$ 5,000.00
15	REMOVE CORRUGATED STEEL PIPE	LF	\$ 65.00	185.00	\$ 12,025.00	145.00	\$ 9,425.00	-	\$ -	40.00	\$ 2,600.00
16	REMOVE FIREHYDRANT	EA	\$ 2,000.00	1.00	\$ 2,000.00	-	\$ -	1.00	\$ 2,000.00	-	\$ -
17	RELOCATE FIREHYDRANT	EA	\$ 5,000.00	3.00	\$ 15,000.00	-	\$ -	1.00	\$ 5,000.00	2.00	\$ 10,000.00
18	RELOCATE "GUY WIRE" SUPPORT POLE	EA	\$ 20,000.00	3.00	\$ 60,000.00	1.00	\$ 20,000.00	-	\$ -	2.00	\$ 40,000.00
19	ADJUST FRAME AND COVER TO GRADE	EA	\$ 1,000.00	16.00	\$ 16,000.00	-	\$ -	10.00	\$ 10,000.00	6.00	\$ 6,000.00
20	ADJUST LVMWD STEEL VAULT (STA 154+80)	EA	\$ 7,000.00	1.00	\$ 7,000.00	-	\$ -	-	\$ -	1.00	\$ 7,000.00
21											
22	ROADWAY ITEMS										
23	CONSTRUCT ADA CURB RAMP PER CTSP A88A & A88B)	EA	\$ 6,000.00	4.00	\$ 24,000.00	-	\$ -	-	\$ -	4.00	\$ 24,000.00
24	MINOR CONCRETE (SIDEWALK 4" THICK PER XX)	CY	\$ 550.00	95.00	\$ 52,250.00	-	\$ -	-	\$ -	95.00	\$ 52,250.00
25	MINOR CONCRETE (MOUNTABLE CURB AND GUTTER PER SPPWC STD 121-2)	CY	\$ 900.00	75.00	\$ 67,500.00	-	\$ -	-	\$ -	75.00	\$ 67,500.00
26	CONSTRUCT DRIVEWAY PER CTSP A88A)(6" THICK)	EA	\$ 6,000.00	8.00	\$ 48,000.00	-	\$ -	4.00	\$ 24,000.00	4.00	\$ 24,000.00
27	MIDWEST GUARDRAIL SYSTEM (STEEL POST)	LF	\$ 40.00	1,859.50	\$ 74,380.00	375.00	\$ 15,000.00	672.00	\$ 26,880.00	812.50	\$ 32,500.00
28	ALTERNATIVE IN-LINE TERMINAL SYSTEM	EA	\$ 6,000.00	15.00	\$ 90,000.00	4.00	\$ 24,000.00	8.00	\$ 48,000.00	3.00	\$ 18,000.00
29	COLD PLANE ASPHALT CONCRETE PAVEMENT	SQYD	\$ 4.00	17,070.00	\$ 68,280.00	1,870.00	\$ 7,480.00	8,800.00	\$ 35,200.00	6,400.00	\$ 25,600.00
30	TACK COAT	TON	\$ 2,000.00	8.40	\$ 16,800.00	1.90	\$ 3,800.00	3.70	\$ 7,400.00	2.80	\$ 5,600.00
31	HOT MIX ASPHALT (TYPE A)(WIDENING)(6" THICK)	TON	\$ 150.00	5,285.00	\$ 792,750.00	2,130.00	\$ 319,500.00	1,800.00	\$ 270,000.00	1,355.00	\$ 203,250.00
32	HOT MIX ASPHALT (TYPE A)(2" OVERLAY)	TON	\$ 150.00	1,920.00	\$ 288,000.00	210.00	\$ 31,500.00	990.00	\$ 148,500.00	720.00	\$ 108,000.00
33	CLASS 2 AGGREGATE BASE (WIDENING)(8" THICK)	CY	\$ 150.00	2,630.00	\$ 394,500.00	1,060.00	\$ 159,000.00	890.00	\$ 133,500.00	680.00	\$ 102,000.00
34	CONSTRUCT CONCRETE DRIVEWAY (VIEWPOINT SCHOOL)	CY	\$ 1,500.00	53.00	\$ 79,500.00	-	\$ -	53.00	\$ 79,500.00	-	\$ -
35											
36	TRAFFIC SIGNING, STRIPING & SIGNALIZATION ITEMS										
37	TRAFFIC STRIPING, SIGNAGE AND MARKINGS	LS	\$ 107,000.00	1.00	\$ 107,000.00	1.00	\$ 40,000.00	1.00	\$ 40,000.00	1.00	\$ 27,000.00
38	INSTALL NEW TRAFFIC SIGNAL (OTCR WEST & MULHOLLAND HWY)	LS	\$ 270,000.00	1.00	\$ 270,000.00	-	\$ -	-	\$ -	1.00	\$ 270,000.00
39	MODIFY EXISTING TRAFFIC SIGNAL (OTCR EAST & MULHOLLAND HWY)	LS	\$ 90,000.00	1.00	\$ 90,000.00	-	\$ -	-	\$ -	1.00	\$ 90,000.00
40											
41	TEMPORARY TRAFFIC CONTROL ITEMS										
42	TEMPORARY RAILING (TYPE K)	LF	\$ 25.00	4,500.00	\$ 112,500.00	1,000.00	\$ 25,000.00	1,800.00	\$ 45,000.00	1,700.00	\$ 42,500.00
43	TEMPORARY CRASH CUSHION (PER OPENING)	EA	\$ 3,000.00	10.00	\$ 30,000.00	2.00	\$ 6,000.00	4.00	\$ 12,000.00	4.00	\$ 12,000.00
44	CHANGEABLE MESSAGE SIGN (CMS)	EA	\$ 5,000.00	6.00	\$ 30,000.00	2.00	\$ 10,000.00	2.00	\$ 10,000.00	2.00	\$ 10,000.00
45	TEMPORARY TRAFFIC SIGNS	EA	\$ 300.00	55.00	\$ 16,500.00	15.00	\$ 4,500.00	20.00	\$ 6,000.00	20.00	\$ 6,000.00
46	TEMPORARY TRAFFIC CONTROL (MISC)	LS	\$ 180,000.00	1.00	\$ 180,000.00	1.00	\$ 60,000.00	1.00	\$ 60,000.00	1.00	\$ 60,000.00
47											

MULHOLLAND HIGHWAY FEASIBILITY STUDY

COST ESTIMATE

						PHASE 2		PHASE 1			
						CITY LIMIT TO SOUTH OF CONDELL DR (STATION 16+00 - 87+00)		CONDELL DR TO VIEWPOINT SCHOOL END (STATION 87+00- 136+00)		VIEWPOINT SCHOOL END TO OLD TOPENGA CANYON RD (EAST) (STATION 136+00-161+00)	
TOTAL OF ALL PHASES											
#	BID ITEM	UNIT	UNIT COST	QUANTITY	COST	QUANTITY	COST	QUANTITY	COST	QUANTITY	COST
48	DRAINAGE ITEMS										
49	CURB OPENING CATCH BASIN (L=21 FT)	EA	\$ 15,000.00	1.00	\$ 15,000.00	-	\$ -	1.00	\$ 15,000.00	-	\$ -
50	CURB OPENING CATCH BASIN (L=7 FT)	EA	\$ 5,000.00	1.00	\$ 5,000.00	-	\$ -	1.00	\$ 5,000.00	-	\$ -
51	HYDROSEED	SQFT	\$ 0.10	116,000.00	\$ 11,600.00	57,360.00	\$ 5,736.00	38,640.00	\$ 3,864.00	20,000.00	\$ 2,000.00
52	MINOR HOT MIX ASPHALT	TON	\$ 700.00	2.10	\$ 1,470.00	1.20	\$ 840.00	0.30	\$ 210.00	0.60	\$ 420.00
53	STRUCTURAL CONCRETE, HEADWALL	CY	\$ 1,375.00	49.00	\$ 67,375.00	35.00	\$ 48,125.00	-	\$ -	14.00	\$ 19,250.00
54	MINOR CONCRETE (MINOR STRUCTURE)	CY	\$ 2,000.00	0.30	\$ 600.00	0.30	\$ 600.00	-	\$ -	-	\$ -
55	BAR REINFORCING STEEL	LB	\$ 1.20	3,150.00	\$ 3,780.00	2,250.00	\$ 2,700.00	-	\$ -	900.00	\$ 1,080.00
56	24" REINFORCED CONCRETE PIPE	LF	\$ 130.00	138.00	\$ 17,940.00	138.00	\$ 17,940.00	-	\$ -	-	\$ -
57	48" REINFORCED CONCRETE PIPE	LF	\$ 275.00	105.00	\$ 28,875.00	50.00	\$ 13,750.00	-	\$ -	55.00	\$ 15,125.00
58	24" CORRUGATED STEEL PIPE (.109" THICK)	LF	\$ 175.00	9.00	\$ 1,575.00	9.00	\$ 1,575.00	-	\$ -	-	\$ -
59	DRAINAGE INLET MARKER	EA	\$ 200.00	3.00	\$ 600.00	1.00	\$ 200.00	2.00	\$ 400.00	-	\$ -
60	CONCRETE (CONCRETE APRON)	CY	\$ 1,450.00	1.00	\$ 1,450.00	1.00	\$ 1,450.00	-	\$ -	-	\$ -
61	ROCK SLOPE PROTECTION (150 LB, CLASS III, METHOD B)	CY	\$ 260.00	2.00	\$ 520.00	1.50	\$ 390.00	-	\$ -	0.50	\$ 130.00
62	ROCK SLOPE PROTECTION FABRIC (CLASS 8)	SQYD	\$ 4.50	16.00	\$ 72.00	12.00	\$ 54.00	-	\$ -	4.00	\$ 18.00
63	MISCELLANEOUS IRON AND STEEL	LB	\$ 2.00	236.00	\$ 472.00	236.00	\$ 472.00	-	\$ -	-	\$ -
64											
65	EROSION CONTROL ITEMS										
66	EROSION CONTROL (DEBRIS BARRIER / FENCE)	LF	\$ 500.00	1,680.00	\$ 840,000.00	430.00	\$ 215,000.00	1,050.00	\$ 525,000.00	200.00	\$ 100,000.00
67											
68	STRUCTURAL ITEMS										
69	RETAINING WALL NO. 1	SF	\$ 350.00	4,600.00	\$ 1,610,000.00	4,600.00	\$ 1,610,000.00	-	\$ -	-	\$ -
70	RETAINING WALL NO. 2	SF	\$ 310.00	9,540.00	\$ 2,957,400.00	9,540.00	\$ 2,957,400.00	-	\$ -	-	\$ -
71	RETAINING WALL NO. 3 (GEOTECH RECOMMENDS ROCK CUT, SEE REMOVALS)	SF	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -
72	RETAINING WALL NO. 4	SF	\$ 250.00	6,600.00	\$ 1,650,000.00	-	\$ -	6,600.00	\$ 1,650,000.00	-	\$ -
73	RETAINING WALL NO. 5 (GEOTECH RECOMMENDS ROCK CUT, SEE REMOVALS)	SF	\$ -	-	\$ -	-	\$ -	-	\$ -	-	\$ -
74	RETAINING WALL NO. 6	SF	\$ 200.00	2,000.00	\$ 400,000.00	-	\$ -	-	\$ -	2,000.00	\$ 400,000.00
75	RETAINING WALL NO. 7	SF	\$ 165.00	800.00	\$ 132,000.00	-	\$ -	-	\$ -	800.00	\$ 132,000.00
76	RETAINING WALL NO. 8	SF	\$ 180.00	500.00	\$ 90,000.00	-	\$ -	-	\$ -	500.00	\$ 90,000.00

TOTALS	SUMMARY	PHASE 2	PHASE 1
SUB TOTAL	\$ 11,624,724.00	\$ 5,815,407.00	\$ 2,286,583.00
CONTINGENCY	\$ 2,907,000.00	\$ 1,454,000.00	\$ 572,000.00
TOTAL CONSTRUCTION COST	\$ 14,531,724.00	\$ 7,269,407.00	\$ 2,858,583.00
TOTAL CONSTRUCTION COST (ROUNDED)	\$ 14,600,000.00	\$ 7,300,000.00	\$ 7,300,000.00

APPENDIX C – Public Outreach Comment Summary Sheet with Responses

Mulholland Highway Feasibility Study

Public Outreach Comment Summary Sheet with Responses

ID	Source	Date	Comment	Topic	Comment Response
1	Public Workshop - Comment Card	3/4/2020	Is this already approved by the City because it sounds that way. IE, when suggested a bike lane it was stated the city is planning/prefers shoulders. A response would be appreciated if possible. Thank you.	Pedestrian / Bike	The City has reviewed the possibility of installing continuous width bike lanes through this segment of Mulholland Highway. Because of existing constraints (power poles, hillsides and property lines), providing a continuous bikeway would be cost and environmentally prohibitive given the Project's measure M budget and the continuous roadway width required for a bike lane. Alternatively, narrowing Mulholland Highway to provide additional bikeway width is not possible because the existing roadway is one lane in each direction. A widened shoulder with varying width, as proposed, would accommodate existing project constraints and improve cycling conditions by increasing the cycling area and providing a more level riding surface.
2	Public Workshop - Comment Card	3/4/2020	Protect the poles!	Utilities	The Project will evaluate Traffic safety measures that include guardrail placement at power pole locations. The power poles along the corridor are owned by Southern California Edison.
3	Public Workshop - Comment Card	3/4/2020	Think about fire evacuation eventually!	Safety	The Sheriff's Office is in command during major evacuation incidents such as fire or earthquake. City emergency evacuation information is available on the City website at https://www.cityofcalabasas.com/emergency.html . In addition, Mulholland Highway is constrained and widening the roadway to provide additional lanes is cost and environmentally prohibitive. Also, note that the roads capacity bordering the City limits and within other jurisdictions, is also limited.
4	Public Workshop - Comment Card	3/4/2020	Linkages amongst CHS, Headwaters Corner, Wild Walnut Park, MRCA Parkland, Creekside Park/ Kamp Calabasas etc. -underpass between wild walnut pk & headwaters using old & new drainage culverts.	Pedestrian / Bike	A pedestrian underpass under Old Topanga Canyon Road (West) and/or Mulholland Highway using existing or new drainage culverts is not recommended because of its high cost, environmental impact, and safety concerns. Safety concerns include: the underpass may encourage homeless encampments, be unsafe or difficult to access during storm events, may encourage crime, and would require additional lighting.
5	Public Workshop - Comment Card	3/4/2020	Undergrounding utilities where feasible should be on the wish list- we did it at Alice C. Stelle [Middle] School.	Utilities	Undergrounding overhead utilities is considered cost prohibitive on this project, given the Project's Measure M budget.
6	Public Workshop - Comment Card	3/4/2020	Watershed management planning would help find other budgeting resources to help with enhancing the corridor & its "utility" water storage & reclaimed water availability for firefighting & resiliency.	Funding	Noted. The City will work with the LA County Flood Control District for watershed planning in the area.
7	Public Workshop - Comment Card	3/4/2020	Rounded curb & gutters on "sidewalks" for emergency lane making.	Safety	Noted. The Project will investigate curb and gutter alternatives.

Mulholland Highway Feasibility Study

Public Outreach Comment Summary Sheet with Responses

ID	Source	Date	Comment	Topic	Comment Response
8	Public Workshop - Comment Card	3/4/2020	Expand the budget and time horizon - more MTA money over time, water supply, and reclamation money, MRCA/SMMC Money & USDA/NRCS money.	Funding	Noted. The City has been diligently working and will continue to work with various funding agencies to secure additional funding for improvement and/or construction of new infrastructures in the City.
9	Public Workshop - Comment Card	3/4/2020	Please do not urbanize the scenic corridor.	Aesthetics	It is not the intent of this project to alter the aesthetic appearance of the corridor. In fact, the City General Plan designates this segment of Mulholland Highway as a scenic / rural corridor. The purpose of this project is to improve safety, reduce erosion and improve traffic flow between Viewpoint School and Old Topanga Canyon Road (East) while preserving the rural/rustic appearance of Mulholland Highway.
10	Public Workshop - Comment Card	3/4/2020	Work with schools to stagger hours & viewpoint to bus.	Traffic	Staggered school hours have been implemented. Currently, Viewpoint school offers busing as well as other transportation means.
11	Public Workshop - Comment Card	3/4/2020	Widening Mulholland will not solve the issues. This is caused by Waze & schools as you can tell by lack of traffic "off peak" hours.	Traffic	It is not the intent of this project to widen Mulholland Highway within the City for an additional lane. The issues this project intends to solve are: improve safety, reduce erosion and improve traffic flow between Viewpoint School and Old Topanga Canyon Road (East) on Mulholland Highway.
12	Public Workshop - Comment Card	3/4/2020	The park is WILD walnut. It is not for urbanization or sidewalks or retaining walls. Thank you.	Aesthetics	Noted. It is the intent of this project to improve safety and accessibility for all modes of transportation especially pedestrian access to a recreation area (Wild Walnut Park). The sidewalk proposed on this project will connect Old Topanga Canyon Road East to Old Topanga Canyon West on Mulholland Highway. Additionally the City will be constructing/improving sidewalk on Mulholland Highway, east of Old Topanga Canyon Road East adjacent to Calabasas High School, further improving pedestrian access. The City will investigate alternative sidewalk materials to blend into the rural character of the roadway.
13	Public Workshop - Comment Card	3/4/2020	Please add an option to your website where residents can enter comments directly.	General Comment	A comment section has been added to the Project website found here: http://www.cityofcalabasas.com/projects/mulholland-highway-corridor.html
14	Public Workshop - Comment Card	3/4/2020	I would like to have a pedestrian accommodation (sidewalks) to Wild Walnut P[ark] from Valmar to Old Topanga as there will be a dog/kid within Wild Walnut.	Pedestrian / Bike	Noted. It is the intent of this project to improve safety and accessibility for all modes of transportation especially pedestrian access to a recreation area (Wild Walnut Park). The sidewalk proposed on this project will connect Old Topanga Canyon Road (East) to Old Topanga Canyon Road (West) on Mulholland Highway. Additionally, the City in a separate project will be constructing/improving the sidewalk on Mulholland Highway, east of Old Topanga Canyon Road (East) adjacent to Calabasas High School, further improving pedestrian access.

Mulholland Highway Feasibility Study

Public Outreach Comment Summary Sheet with Responses

ID	Source	Date	Comment	Topic	Comment Response
15	Public Workshop - Comment Card	3/4/2020	Mulholland Highway road is terrible. It is loud and noisy. Need new paving.	General Comment	The City, in a separate project, will be resurfacing the segment of Mulholland Highway between Canyon Drive and Dry Canyon Cold Creek Road in the Summer of 2020. The remaining segment between Dry Canyon Cold Creek Road and Old Topanga Canyon Road (East) will be done in conjunction with improvements identified in this study.
16	Public Workshop - Comment Card	3/4/2020	Power poles along the corridor are metal now. Are they going to be painted brown? The scenic corridor is not very scenic.	Aesthetics	The project is not proposing to paint the power poles. This comment has been sent to SCE for consideration. SCE is the owner and operator of utility poles along Mulholland Highway.
17	Public Workshop - Comment Card	3/4/2020	Love the sidewalk or decomposed granite pathway. Happy to address Viewpoint School concerns	Pedestrian / Bike	Noted.
18	Public Workshop - Verbal Comment	3/4/2020	The Community expressed concerns with Viewpoint School: -parents will utilize widened shoulder as parking. -Bus to viewpoint is cost prohibitive. -Can school start times be changed? -Viewpoint parents make illegal u-turns at Park South driveway entrance.	Traffic	The project proposes to widen the existing shoulder to 4' or 6', which is too narrow of a space to safely park within and will discourage people from utilizing the shoulder as parking. Staggered school start times have been implemented and Viewpoint school offers busing as well as other transportation means.
19	Public Workshop - Verbal Comment	3/4/2020	-Community questioned the purpose/need of sidewalk. Who will use the sidewalk? -Community expressed the desire for a sidewalk near Mulholland as they believe Mulholland is unsafe for pedestrians near Wild Walnut Park. -Can a multi-use path be built over a sidewalk? -Can sidewalks be rolled curb over standard curb/gutter? -Can the sidewalk be asphalt or decomposed granite (DG) over concrete? -Community would like to retain their rural character which does not include sidewalks.	Pedestrian / Bike	It is the intent of this project to improve safety and accessibility for all modes of transportation especially pedestrian access to a recreation area (Wild Walnut Park). The sidewalk proposed on this project will connect Old Topanga Canyon Road East to Old Topanga Canyon West on Mulholland Highway. Additionally the City will be constructing/improving sidewalk on Mulholland Highway, east of Old Topanga Canyon Road East adjacent to Calabasas High School, further improving pedestrian access. The City will investigate alternative sidewalk materials to keep the rural character of the roadway. A wide multi-use trail is not recommended due to the additional roadway width required.
20	Public Workshop - Verbal Comment	3/4/2020	Community member expressed concern over left-turn into Wild Walnut Park from OTCR (W) during peak queuing times. How will this be resolved?	Traffic	A "Keep Clear" zone with supplemental pavement marking and signage will be designated adjacent to the entry of the park. This is to prohibit cars from blocking the park's entrance.

Mulholland Highway Feasibility Study

Public Outreach Comment Summary Sheet with Responses

ID	Source	Date	Comment	Topic	Comment Response
21	Public Workshop - Verbal Comment	3/4/2020	Community members expressed the desire for bike lane over a widened shoulder noting Mulholland is currently unsafe for bikes.	Pedestrian / Bike	The City has reviewed the possibility of installing bike lanes through this segment of Mulholland Highway. Because of existing constraints (power poles, hillsides and property lines), providing a continuous width bikeway would be cost and environmentally prohibitive given the Project's measure M budget and the continuous roadway width required for a bike lane. Alternatively, narrowing Mulholland Highway to provide additional bikeway width is not possible because the existing roadway is one lane in each direction. A widened shoulder with varying width, as proposed, would accommodate existing project constraints and improve cycling conditions by increasing the cycling area and providing a more level riding surface.
22	Public Workshop - Verbal Comment	3/4/2020	-A community member noted that all poles should be steel as a fire was started in the past due to a wooden pole. -Can Power Poles be undergrounded? -All above ground poles should be protected.	Utilities	This comment has been forwarded to SCE for input. SCE is the owner and operator of utility poles along Mulholland Highway. Undergrounding power lines as part of this project is considered cost prohibitive given the Project's Measure M budget. Also, as noted above, this Project will evaluate traffic safety systems that includes evaluating existing and new guardrail placement.
23	Public Workshop - Verbal Comment	3/4/2020	-Aesthetics are important. Please preserve the rural / rustic / natural character of the corridor. -Rustic / blended retaining walls are preferred.	Aesthetics	It is not the goal of this project to alter the appearance of Mulholland Highway. As a matter of fact, Mulholland Highway is classified as a rural highway in the City's General Plan.
24	Public Workshop - Verbal Comment	3/4/2020	-One community member noted that OTCR (W) / Dry Canyon Cold Creek Rd is utilized as a detour around viewpoint for bikers. Will this project affect the ability to use that road? -In addition, turning left from Mulholland to OTCR(W) is dangerous for bikers. Can it be made better?	Pedestrian / Bike	The project will not affect Old Topanga Canyon Road (West) behind Viewpoint School. Signalization of Old Topanga Canyon Road (West) at Mulholland Highway will provide a dedicated left-turn phase which will greatly improve left-turn safety.
25	Public Workshop - Verbal Comment	3/4/2020	Please do not add lighting along Mulholland Highway.	Utilities	Lighting is required for safety purposes with the new proposed signalized intersection at Mulholland Hwy/Old Topanga Canyon Rd West. No lighting otherwise will be implemented with the Project.
26	Public Workshop - Verbal Comment	3/4/2020	Can traffic circles be implemented to help slow traffic?	Safety	The available roadway space is prohibitive to installing traffic circles (roundabouts) without notable environmental and right of way impacts.
27	Public Workshop - Verbal Comment	3/4/2020	The community inquired on the project construction schedule and whether or not temporary roadway / detours would be built.	Schedule	The Project would likely be phased due to the Project's measure M budget.

Mulholland Highway Feasibility Study

Public Outreach Comment Summary Sheet with Responses

ID	Source	Date	Comment	Topic	Comment Response
28	Public Workshop - Verbal Comment	3/4/2020	Please post PowerPoint to City website	General Comment	The March 4, 2020 Public Workshop PowerPoint is available at: http://www.cityofcalabasas.com/projects/Mulholland-Highway-Corridor/Mulholland-Pub-Workshop-PP.pdf
29	Public Workshop - Verbal Comment	3/4/2020	Community member expressed concern over corridor evacuation plan. Are additional lanes possible?	Safety	The Sheriff's Office is in command of evacuation during major incidents such as fire or earthquake. City emergency evacuation information can be found on the City website at https://www.cityofcalabasas.com/emergency.html . Mulholland Highway through this segment is topographically constrained. Widening the roadway to provide additional lanes would cause notable environmental and right of way impacts and would be cost-prohibitive, given the Project's Measure M budget. Also, please note that the roadway capacity bordering the City limits with other jurisdictions is also limited.
30	Public Workshop - Verbal Comment	3/4/2020	Community expressed concern over future development and traffic impacts.	Traffic	All known future development projects have been accounted for in the traffic growth projection.
31	Public Workshop - Verbal Comment	3/4/2020	On Topanga Canyon there is a wire mesh installation that the community referenced.	General Comment	Noted. The project will reference this installation.
32	Public Workshop - Verbal Comment	3/4/2020	Community member stressed that many of the issues along the corridor have existed for many years and the community and the project should plan for the long-term future.	General Comment	Noted.
33	Public Workshop - Verbal Comment	3/4/2020	Community member stated that drivers pass other vehicles in areas where passing is prohibited.	Safety	The project will implement signage to discourage this behavior.
34	Email Comment	3/7/2020	One of the company representatives asked me if I would be more likely to ride up Mulholland Highway in front of Viewpoint if there was a paved shoulder of sufficient space. While this would be a drastic improvement, there is still the danger of riding along a highway where vehicles are going 55 MPH or more. When I ride from Mountain Park and head West I prefer to use Dry Canyon Cold Creek even though there is more room and visibility.	Safety	Comment noted.

Mulholland Highway Feasibility Study

Public Outreach Comment Summary Sheet with Responses

ID	Source	Date	Comment	Topic	Comment Response
35	Email Comment	3/7/2020	Heading West between Valmar [Old Topanga Canyon East] and Old Topanga [West] - Lack of visibility and space make it very dangerous to merge from the right hand side of Mulholland to the left hand turn lane to Old Topanga [cycling].	Safety	It is the intent of this project to improve the safety and accessibility of Mulholland Highway through this segment by lengthening left-turn lanes, increasing visibility, adding sidewalk, widening the shoulder and signaling Old Topanga Canyon Road West.
36	Email Comment	3/7/2020	Heading East between Old Topanga and Valmar – Lack of space (in parts less than a yard) between the driving land and the barrier does not give enough safe space between the a pedestrian or bicyclist. Especially if traffic is also heading West.	Safety	It is the intent of this project to improve the safety and accessibility of Mulholland Highway through this segment by lengthening left-turn lanes, increasing visibility, adding sidewalk, widening the shoulder and signaling Old Topanga Canyon Road West.
37	Email Comment	3/7/2020	Heading West between Old Topanga until the West end of Viewpoint – Lack of space, lack of a paved shoulder, rock debris, what little paved shoulder there is has been broken to pieces, trees and bushes infringe into the bicycle/pedestrian area.	Safety	It is the intent of this project to widen the shoulder of Mulholland Highway through this segment and to study the feasibility of installing retaining walls or other erosion control measures where erosion is prevalent, as noted in your comment.
38	Email Comment	3/7/2020	Heading East between the West end of Viewpoint and Old Topanga – Lack of space, uneven pavement in areas and untrimmed bushes.	Safety	It is the intent of this project to widen the paved shoulder of Mulholland Highway which will increase space for bicyclists. The project will also resurface Mulholland Highway to provide a level riding surface.
39	Email Comment	3/7/2020	Traffic back up in front of Viewpoint and at the corner of Valmar and Mulholland Highway during peak traffic hours, much of which is caused by both Viewpoint and Calabasas High School	Traffic	The proposed project improvements will help to alleviate this traffic. The intent of this project is to lengthen the existing turn lane through this segment to better manage peak traffic.
40	Email Comment	3/7/2020	Difficulty in turning left from Old Topanga onto Mulholland Highway.	Traffic	It is the intent of this project to signalize the Old Topanga Canyon Road West intersection to provide a dedicated turning phase and, thus, resolve this issue.
41	Email Comment	3/7/2020	Heading West on Canyon towards Mountain Park – on bicycle the shoulder is very narrow and there is little room for cars to safely pass. (this hill is known as Cardiac Hill by the local bicycle community).	Safety	It is the intent of this project to widen the paved shoulder of Mulholland Highway to improve the riding surface and provide additional space for cyclists.
42	Email Comment	3/7/2020	Using safer electrical transmission lines/components to reduce fire risk.	Utilities	This comment has been sent to SCE. SCE is the owner and operator of utility poles along Mulholland Highway.

Mulholland Highway Feasibility Study

Public Outreach Comment Summary Sheet with Responses

ID	Source	Date	Comment	Topic	Comment Response
43	City Website Comment	5/14/2020	<p>Do new sidewalks include the stretches from the high school parking lot entrances (on both M HWY and Old Topg Rd) to the signaled intersection? Currently pedestrians cannot walk from Mulwood to Wild Walnut Park or simply walk around the high school (cutting across the CHS parking lots is the only way to do that now).</p>	Pedestrian / Bike	<p>There are two separate projects addressing sidewalk on the route:</p> <p>1) The Mulholland Highway Gap Closure project will construct new sidewalk from the Mulholland Highway and Old Topanga Canyon Road (East) intersection, 770-feet east of Mulholland Highway and 1,000-feet north of Old Topanga Canyon Road (East). This will provide sidewalk from the high school up to Old Topanga Canyon Road (East). This work is estimated to begin construction in 2021.</p> <p>2) The Mulholland Highway Feasibility Study (current project) proposes new Sidewalk from Old Topanga Canyon Road (East) up to Old Topanga Canyon Road (West) along westbound Mulholland Highway. A crosswalk is proposed across Mulholland Highway at OTCR (West) to connect to Wild Walnut Park.</p> <p>These two projects will provide sidewalk / connectivity between Wild Walnut Park and the Highschool.</p>
44	City Website Comment	5/14/2020	<p>Mulholland Highway along this narrowed corridor as well as Okd Topanga/Valmar do not provide safety in case if fire—both for rapid fire fighter response and for evacuation during school start and end times.</p> <p>We need immediate LA County Fire evaluation and public meetings to mitigate the potential disaster and provide an evacuation plan to community.</p>	Safety	<p>The Sheriff's Office is in command during major evacuation incidents such as fire or earthquake. City emergency evacuation information is available on the City website at https://www.cityofcalabasas.com/emergency.html. In addition, Mulholland Highway is constrained and widening the roadway to provide additional lanes is cost and environmentally prohibitive. Also, note that the roads capacity bordering the City limits and within other jurisdictions, is also limited. The project will widen the existing Mulholland Highway paved shoulder width 4' to 6'. This will provide additional paved width for use in emergency situations.</p>
45	City Website Comment	5/14/2020	<p>I echo what others have said. The stretch of road from Valmar to Mountain Park is in poor condition, lacks adequate space for cyclists, lacks any meaningful pedestrian access, and is insufficiently policed for speeders. I understand that a bike lane is not possible. However, I recommend that "share the road" signs be placed, and "sharrows"/sharing arrows be painted such as those on Mulholland near the (big) Topanga Canyon intersection. Additionally, please increase speed limit enforcement in that corridor, as weekend sports car clubs regularly travel in excess of 60 MPH on that road, even when school is in session. In the meantime, the conditions of that road have seriously deteriorated over the last several months, with several large potholes.</p>	Pedestrian / Bike	<p>It is the intent of this project to widen the paved shoulder of Mulholland Highway which will increase space for bicyclists. The project will also resurface Mulholland Highway to provide a more level riding surface for bicyclists and vehicles. Additional speed enforcement measures can be implemented on the route to discourage speeding such as raised pavement markers, longitudinal rumble strips and warning signs as discussed in the Project Report. Signing and striping concept plans will be developed in the next project phase to encourage bicycle and vehicle sharing of the road.</p>

Mulholland Highway Feasibility Study

Public Outreach Comment Summary Sheet with Responses

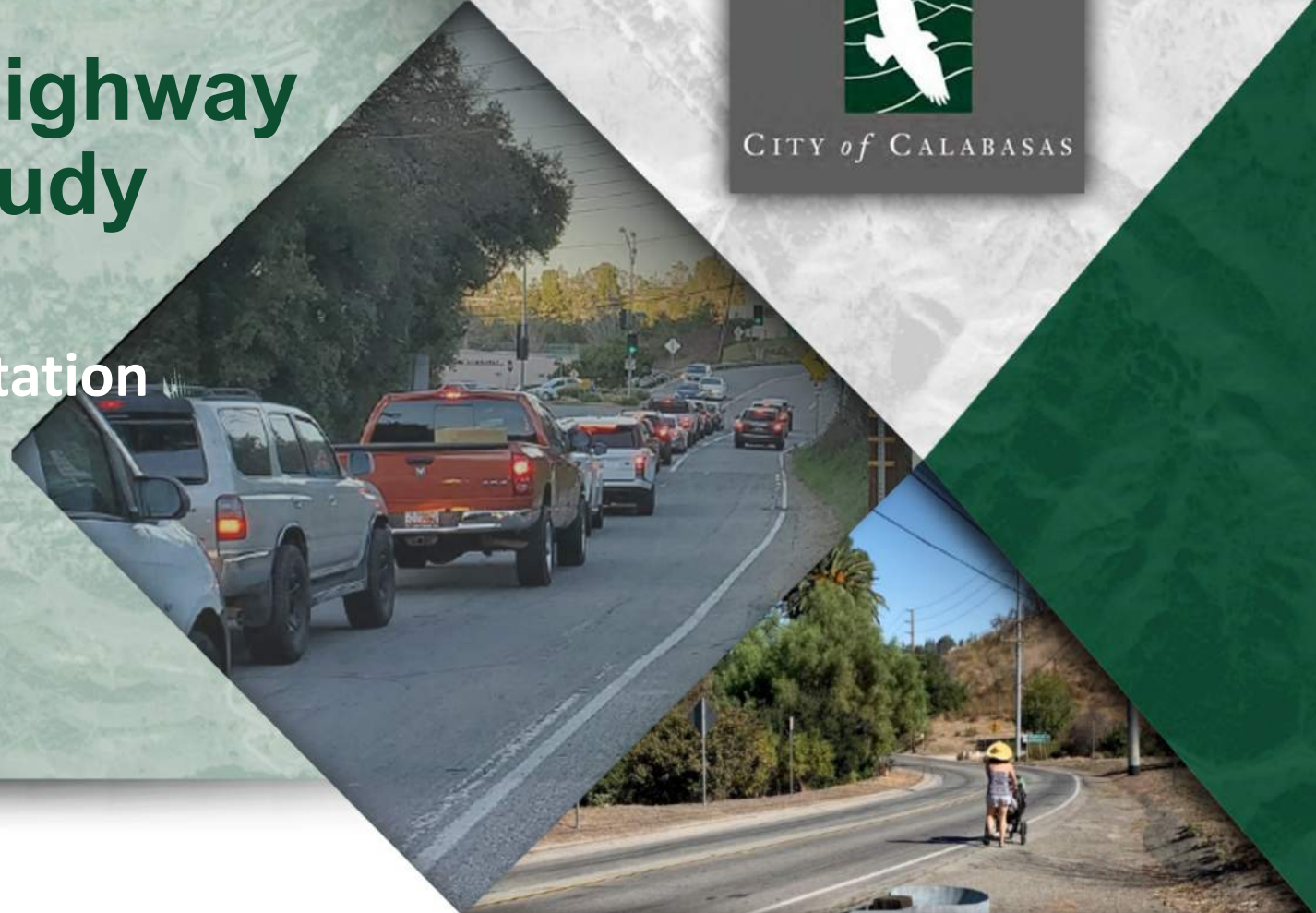
ID	Source	Date	Comment	Topic	Comment Response
46	Email Comment (Stakeholder Concept Plan Review)	10/15/2020	<p>I was forwarded your plan for the proposed widening and improvement to Mulholland Highway from Old Topanga Canyon Road southwest to the City Limit.</p> <p>As a homeowner in Calabasas Highlands, I would like to add one suggestion to this plan. While the proposed widening will help somewhat in optimizing ingress and egress in case of a wildfire, there is one more suggestion that would greatly add to the safety of the many families who reside in Calabasas Highlands.</p> <p>Many of us have seen our fire insurance rates either skyrocket or become cancelled. We face a double whammy living here. Not only are we in an area that has seen our share of devastating wildfires, but we have only one road (Canyon Road) in and out of the Highlands. The addition of a second way in and out would greatly aid all of our safety, benefitting the entire community and surrounding area.</p> <p>I urge you to add such a lifesaving road to your plan.</p>	Safety	<p>It is outside the scope of this project to provide a second road into and out of Calabasas Highlands. This project did study the Mulholland Highway and Canyon Drive intersection and found the intersection to operate sufficiently in the current year (operates at LOS B or better) and into the future 2045 design year (operates at LOS C or better). This indicates the intersection has available capacity and that capacity is projected to continue into the future.</p> <p>It is the intent of this project to improve the safety and dependability of Mulholland Highway by widening the existing paved shoulder, lengthening turn pockets, providing new turn lanes, improving the roadside area, mitigating erosion prone locations, providing a new paved road surface and installing a new signal at the Old Topanga Canyon Road (West) intersection with new a sidewalk and crosswalks.</p>

**APPENDIX D – City of Calabasas Traffic and Transportation Commission (TTC)
PowerPoint Presentation**

Mulholland Highway Feasibility Study

Presentation:
Traffic and Transportation
Commission (TTC)

Tuesday, September 22, 2020
ZOOM Conference Call



Meeting Purpose:

- Present Mulholland Highway Feasibility Study
 - Traffic Study
 - Proposed Improvements
- Obtain Traffic & Transportation Commission (TTC) Input
- Discuss next steps of project development



Presentation Topics:

- **Project Overview**
- **Traffic Study**
- **Proposed Improvements**
- **Environmental Assessment**
- **Public Outreach**
- **Next Steps**



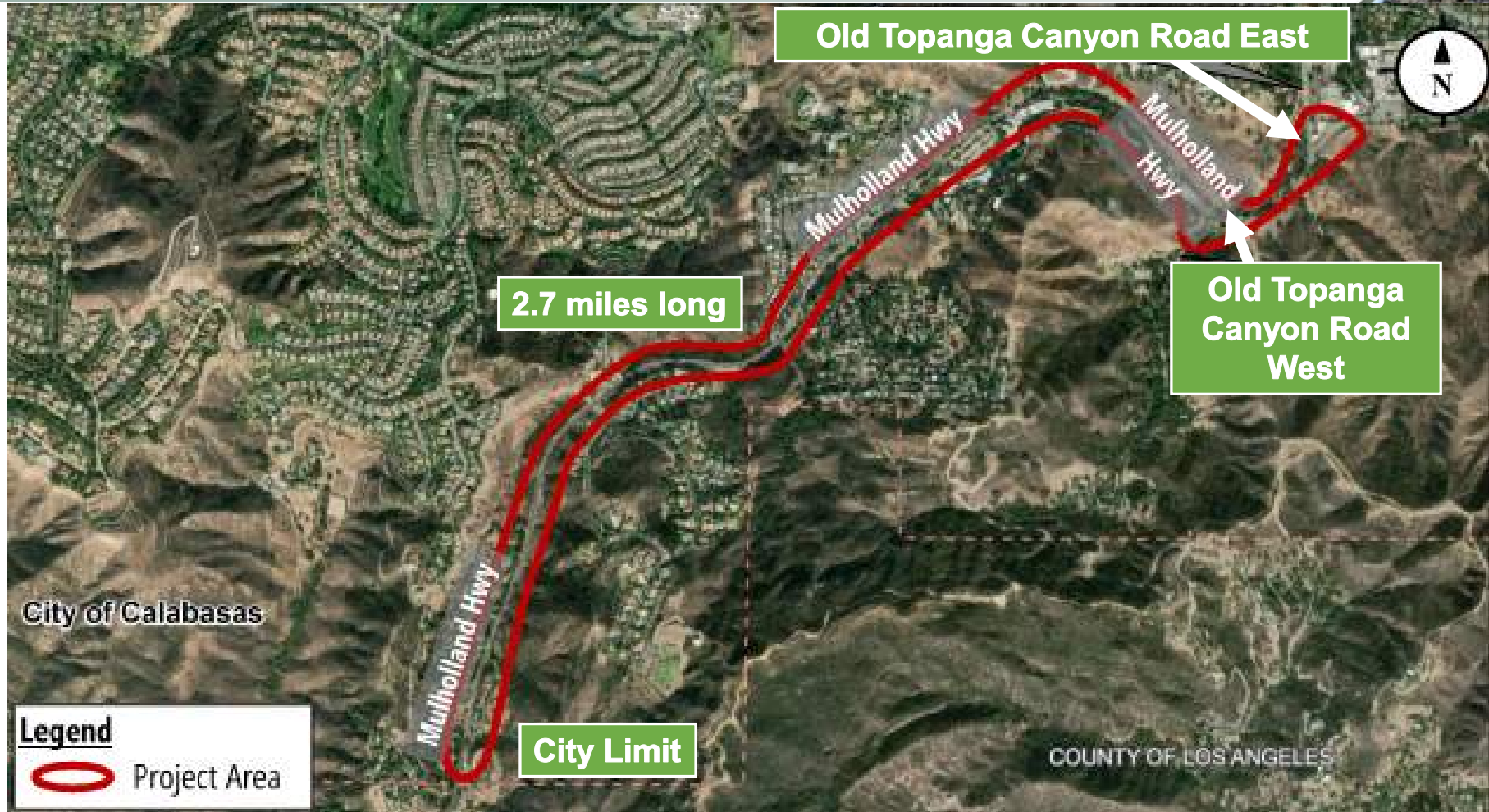


CITY of CALABASAS

Project Overview & Existing Issues



Project Overview



Project Overview

Project Purpose & Need

- Improve safety and dependability of Mulholland Highway
- Connect Wild Walnut Park & Calabasas High School
- Improve shoulders for bicyclists

Project Design Objectives

- Improve safety for all transportation modes
- Address slope stability/erosion prone areas
- Improve corridor traffic flow
- Preserve rustic/natural characteristics



Existing Issues

- **Narrow and Inconsistent Shoulder Widths**
 - Shoulder width varies from 0 to 9 feet



Existing Issues

- Damaged Guardrail



Existing Issues

- Erosion Prone Areas



Existing Issues

- Erosion Prone Areas



Existing Issues

- Erosion Prone Areas



Existing Issues

- Lacking Pedestrian Facilities and Shoulder Near Wild Walnut Park





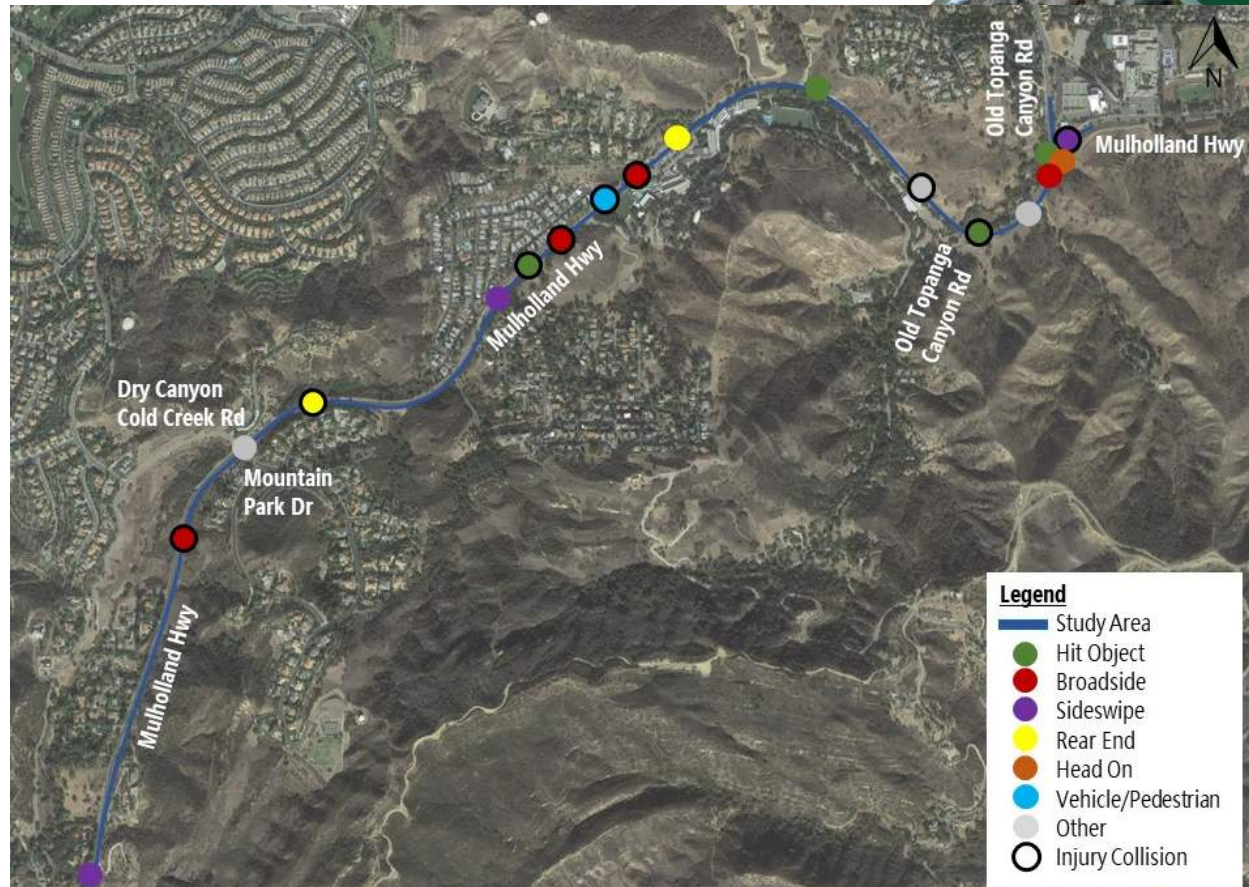
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Historic Collision Data



Historic Collision Data Summary

- **Crash Data Source:**
Los Angeles County Sheriff's Department and Statewide Integrated Traffic Records System (SWITRS)
- **Collision History Period:**
January 1, 2016 – December 31, 2018
(3 years)



Historic Collision Data Summary



Top 3 Collision Types

- Broadside (22%)
- Hit Object (22%)
- Sideswipe (17%)

Bicycle-/Pedestrian- Related Collisions

- Bicycle = 3
- Pedestrian = 1

Severity and Number of Collisions

Severity:	Fatal	Injury (Severe)	Injury (Other Visible)	Injury (Complaint of Pain)	Property Damage Only	Total
Number of Collisions:	0	3	4	2	9	18



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Traffic Analysis



Traffic Analysis

■ Traffic Data Collection

- Volumes - Intersection turning movement & roadway segment counts
- Collision data
- Field observations

■ Operations Analysis

- Existing Year 2019 & Future Year 2045
- AM Peak, School PM Peak & PM Peak
- Primary measure of effectiveness = Level of Service (LOS)

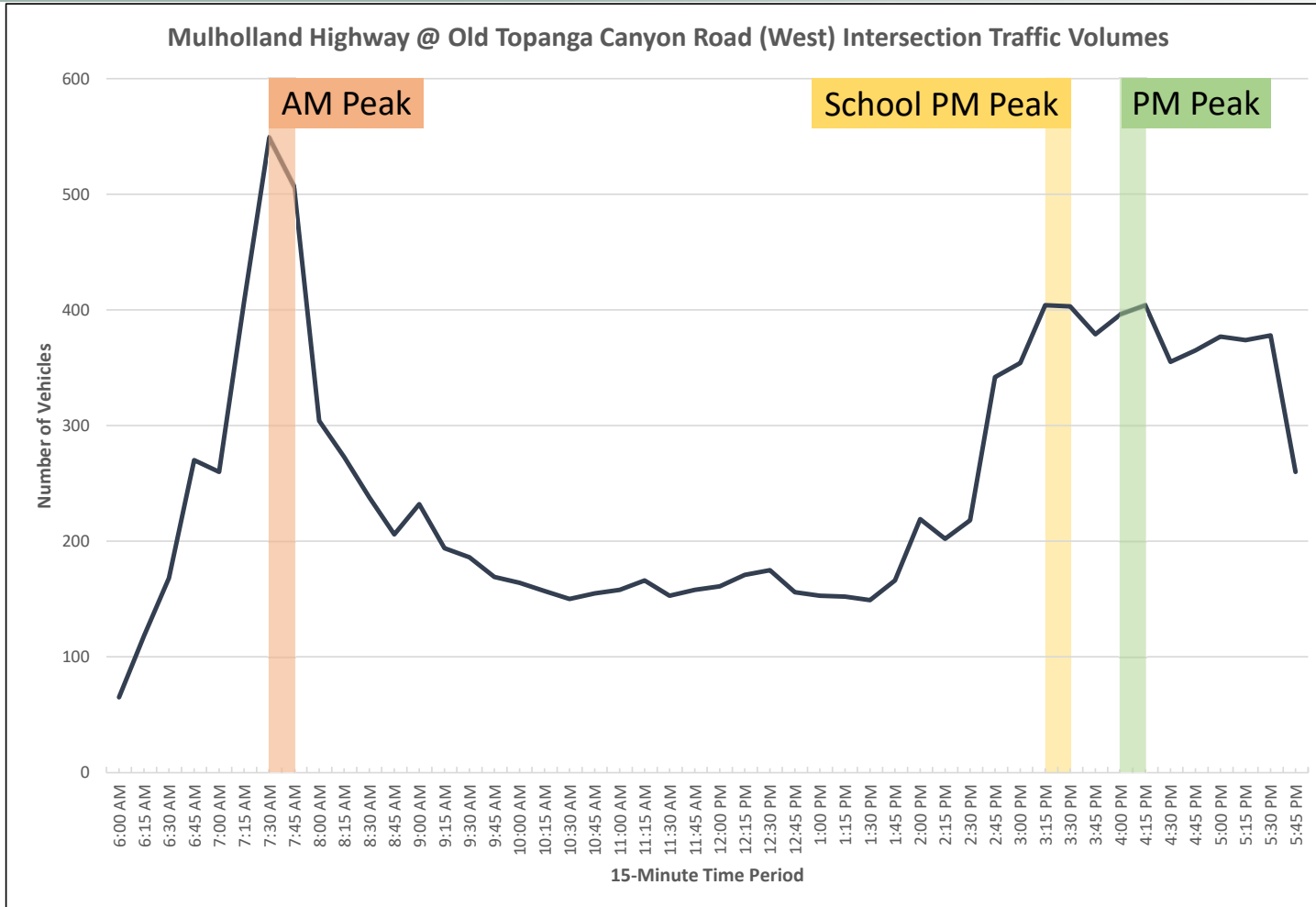
■ Bicycle and pedestrian activity

■ Traffic signal warrant analysis



Traffic demand exceeds available turn lane storage - Mulholland Hwy at Old Topanga Canyon Rd (East)

Traffic Volume Trends



Bicycle and Pedestrian Data

Existing Weekday Volumes

Mulholland Highway @ Old Topanga Canyon Rd (West)

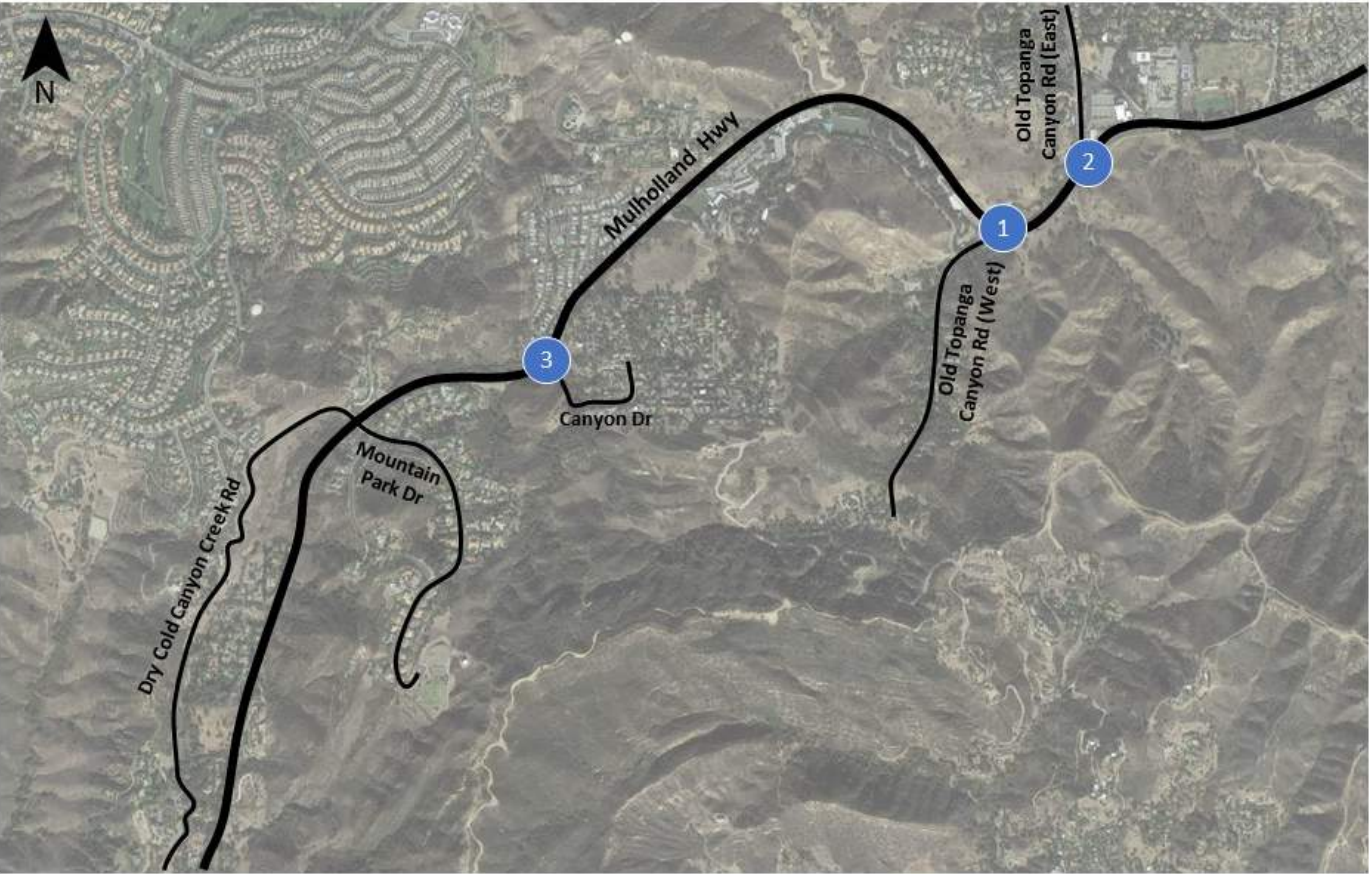
- Minimal activity observed



Travel Mode	Total Volume at Intersection		
	AM Peak Hour	School PM Peak Hour	PM Peak Hour
Bicyclists	0	5	2
Pedestrians	0	0	0



Traffic Study Intersections



Legend:

- # Study Intersection
- Road Network

Intersection Level of Service Defined

Level of Services (LOS)

- Performance measure representing quality of service
- Highway Capacity Manual (6th Edition) Methodologies

LOS	Description
A	Free Flow
B	Stable Flow (Slight Delays)
C	Stable Flow (Acceptable Delays)
D	Approaching Unstable Flow (Tolerable Delay)
E	Unstable Flow (Intolerable delay)
F	Forced Flow (Congested and queues fail to clear)



Intersection Analysis Findings



Mulholland Highway Intersection		Existing 2019 LOS			2045 No Build LOS			2045 Build LOS		
		AM	School PM	PM	AM	School PM	PM	AM	School PM	PM
1	Old Topanga Canyon Rd (West)	F	F	F	F	F	F	E	C	D
2	Old Topanga Canyon Rd (East)	D	C	C	E	D	C	E	D	C
3	Canyon Road	B	B	B	B	B	C	--	--	--

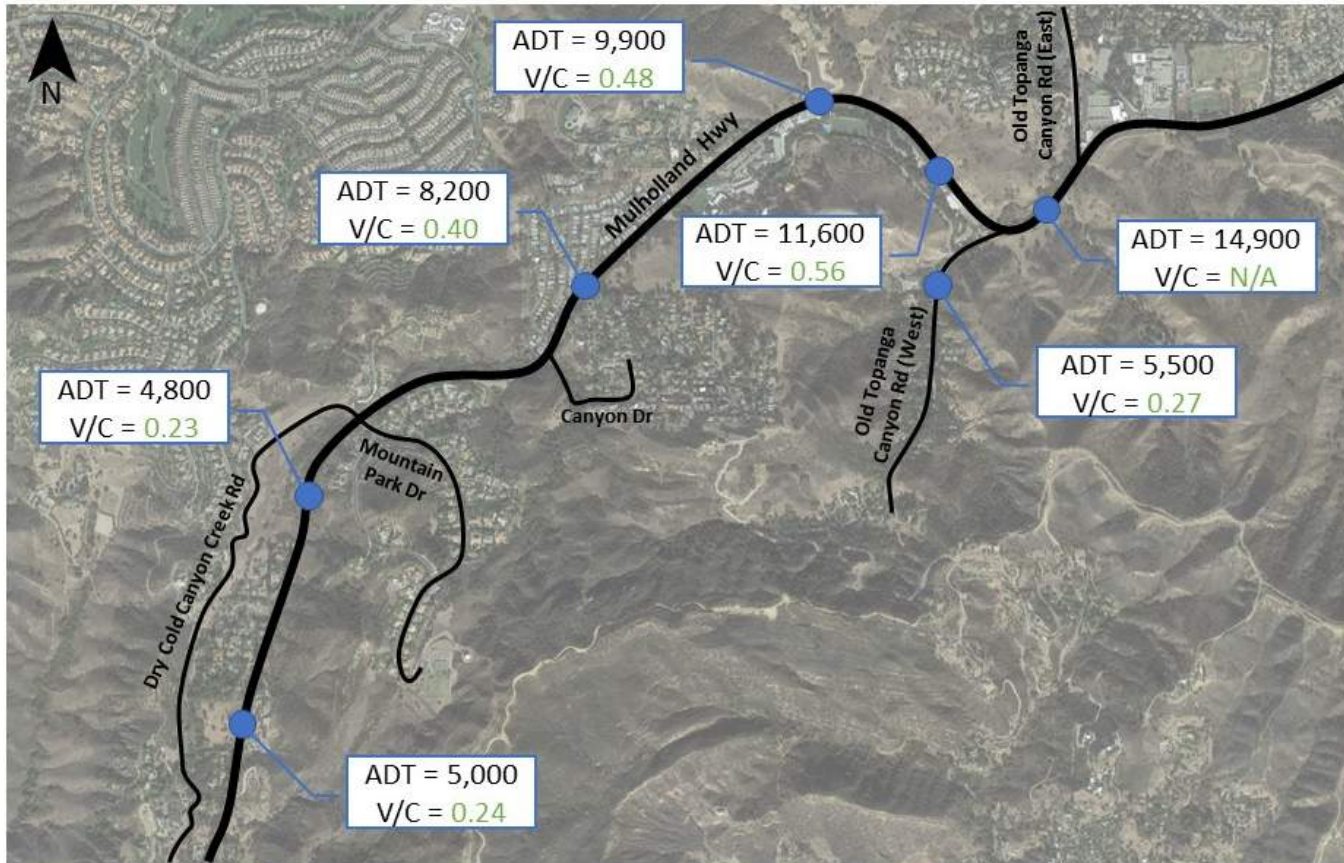
Traffic Signal Warrant Met



Notes:


1. LOS for stop-controlled intersections are for the worst movement.
2. LOS for signalized intersections are overall.
3. No improvements recommended at Canyon Road intersection under Build condition.

Corridor Daily Traffic Volumes



Notes:

1. Analysis based on LOS E capacity of 20,600 vehicles per day for a two-lane uninterrupted roadway segment.
2. N/A indicates that operations are governed by intersection capacity.
3. Year 2045 traffic volumes shown.

Legend:	 Data Location	ADT	Average Daily Traffic Volume	0.00	Under Capacity
	 Road Network	V/C	Volume-to-Capacity Ratio	0.00	Over Capacity



CITY of CALABASAS

Proposed Improvements



Proposed Improvements

The Project Proposes to:

- Signalize the Old Topanga Canyon Road (West)
- Add crosswalks near Wild Walnut Park
- Add a southbound sidewalk between the Old Topanga Canyon Road intersections
- Lengthen existing left-turn lanes
- Add dedicated right turn lanes
- Replace all wood post guardrail with steel post
- Install new steel post guardrail where appropriate
- Address erosion prone areas with: Slope Trimming, Debris Fences/Walls, and Wire Mesh Netting
- Remove and replace conflicting and undersized drainage facilities.



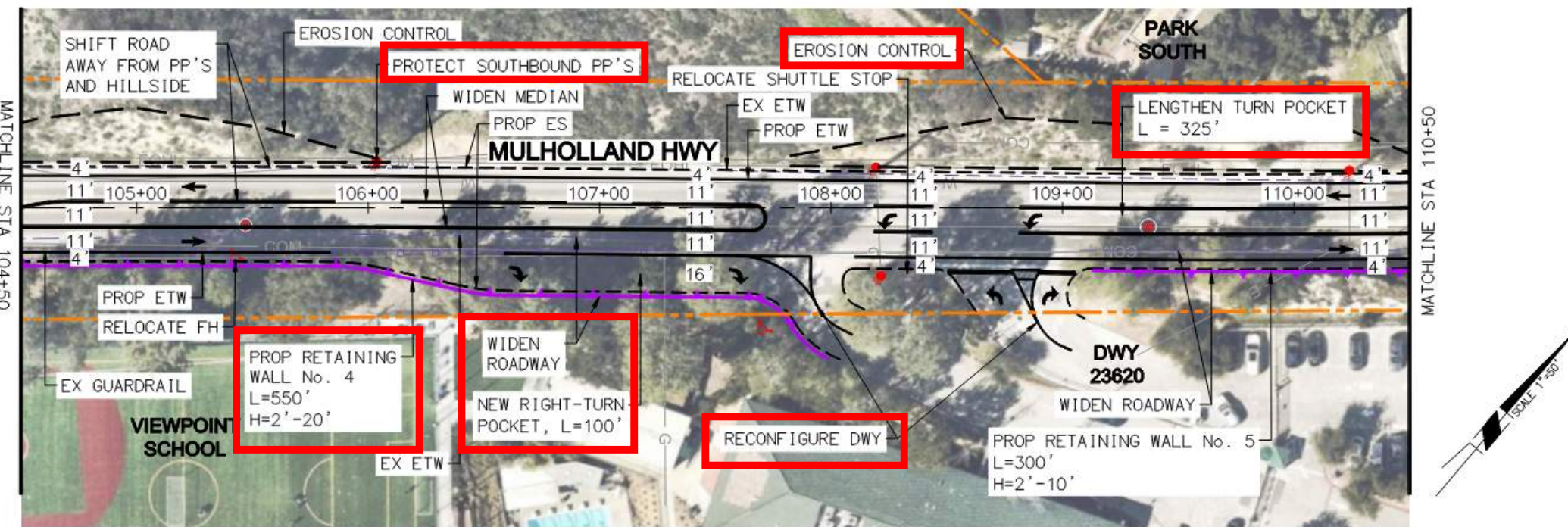
Proposed Improvements

The Project Propose to:

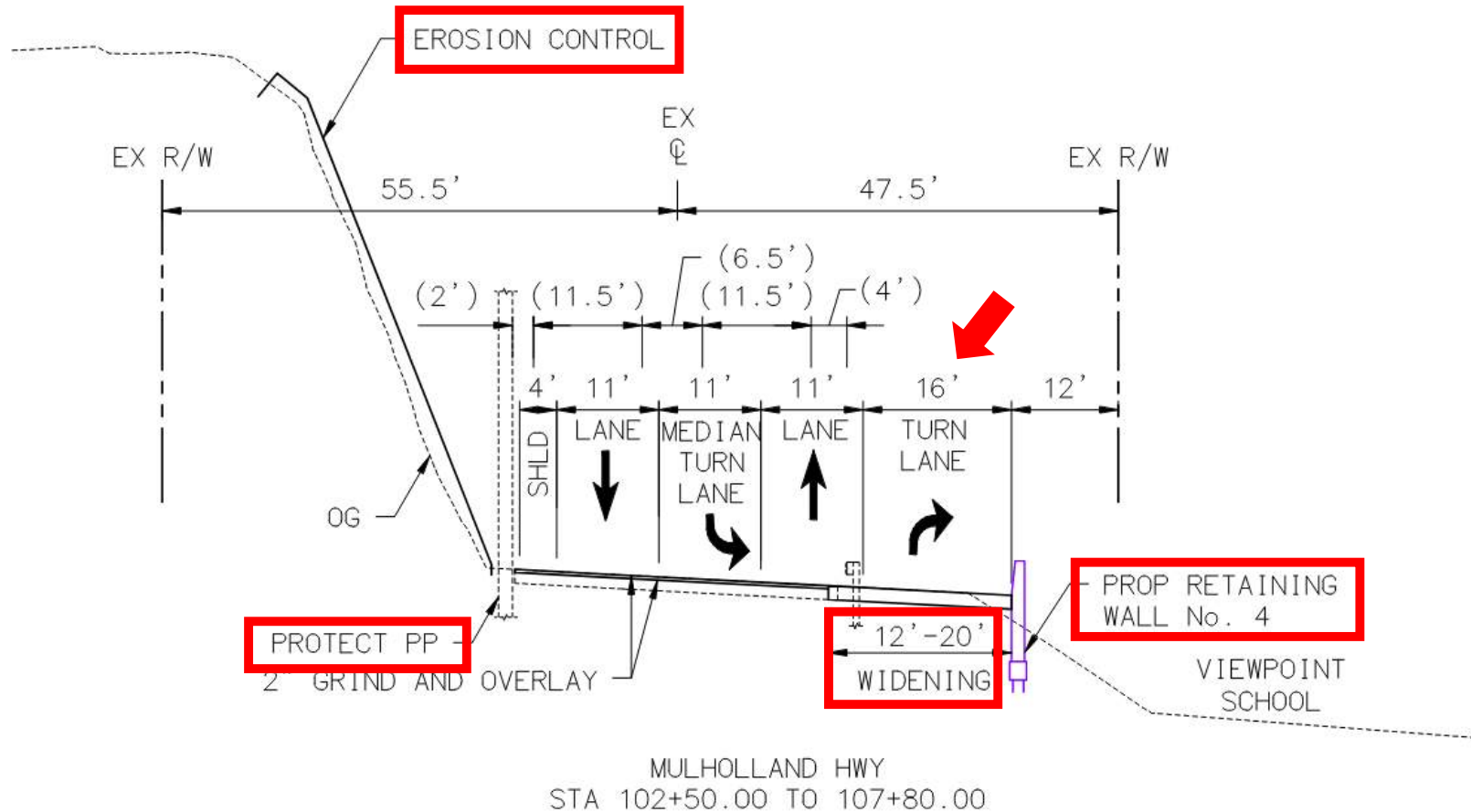
- Widen the existing shoulder to 4' to 6' where possible to improve rideability
- Protect existing utility poles in place except support poles where impacted
- Relocate conflicting utility appurtenances
- Keep improvements within the existing right-of-way
- Modify existing lane striping for improved traffic flow.
- Maintain a minimum 11' to 12' lane width
- Improve sight distance



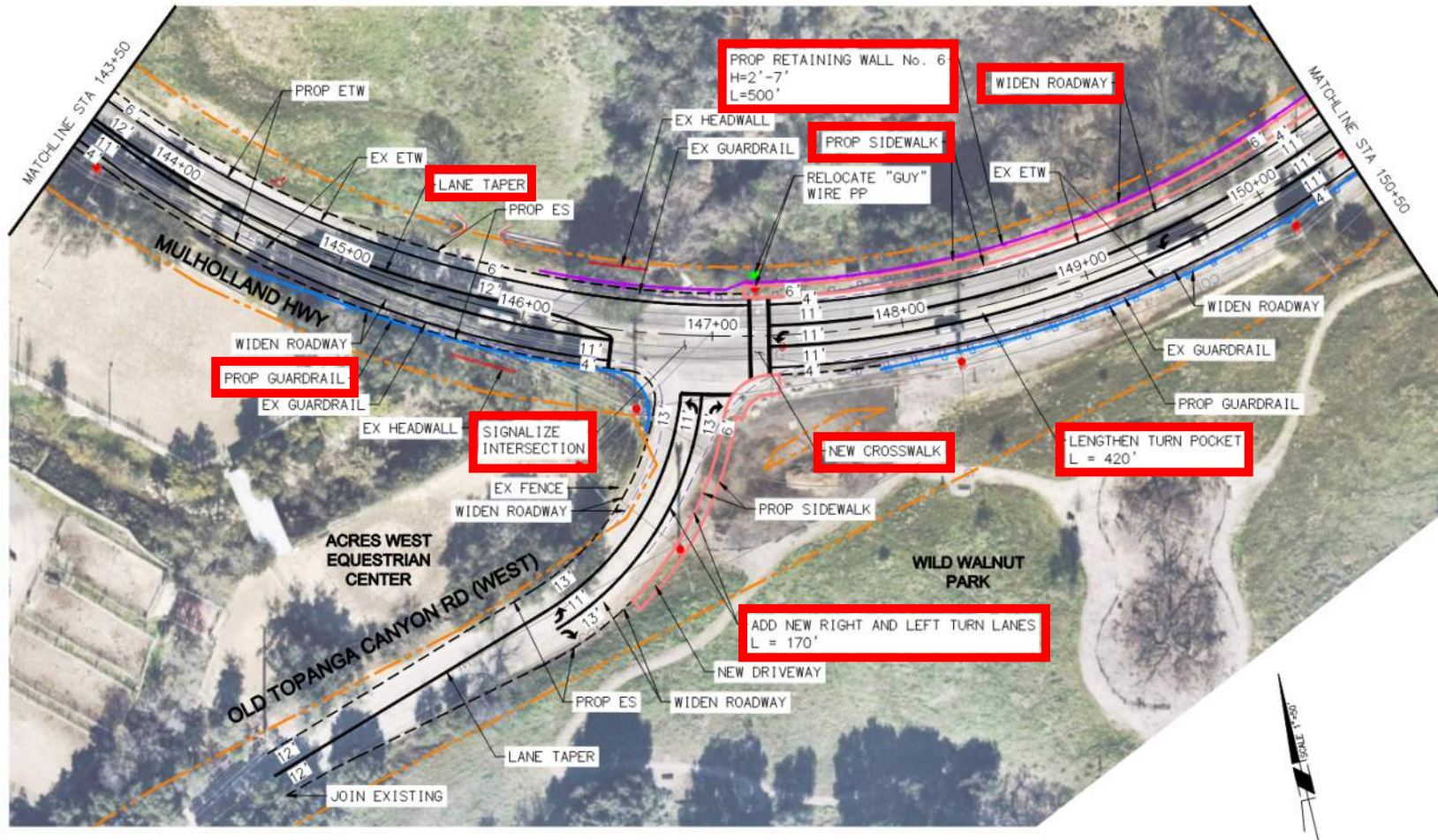
Proposed Improvements Key Locations



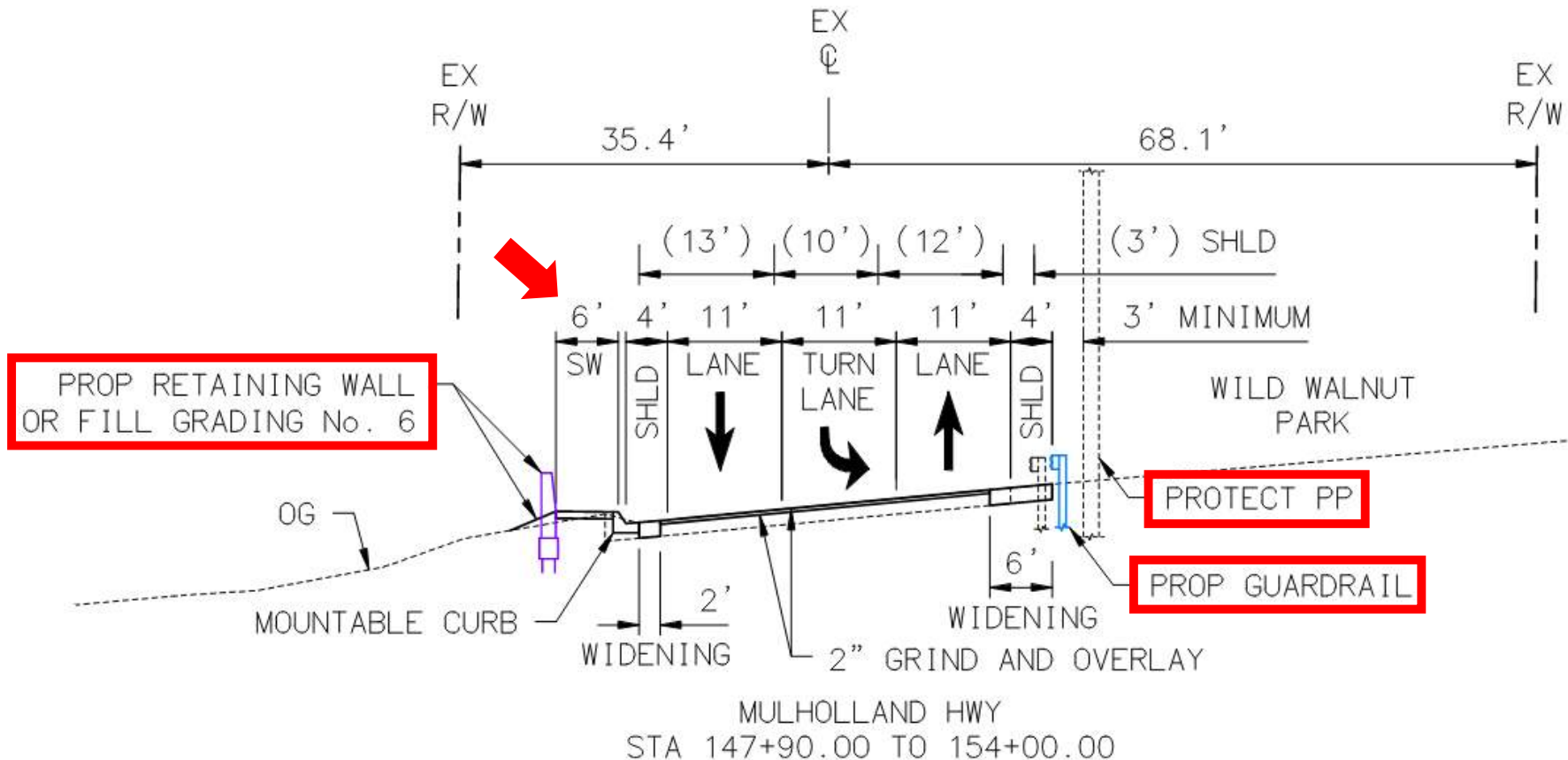
Proposed Improvements Key Locations



Proposed Improvements Key Locations



Proposed Improvements Key Locations



Improvement Visualizations

Example Shoulder Widening

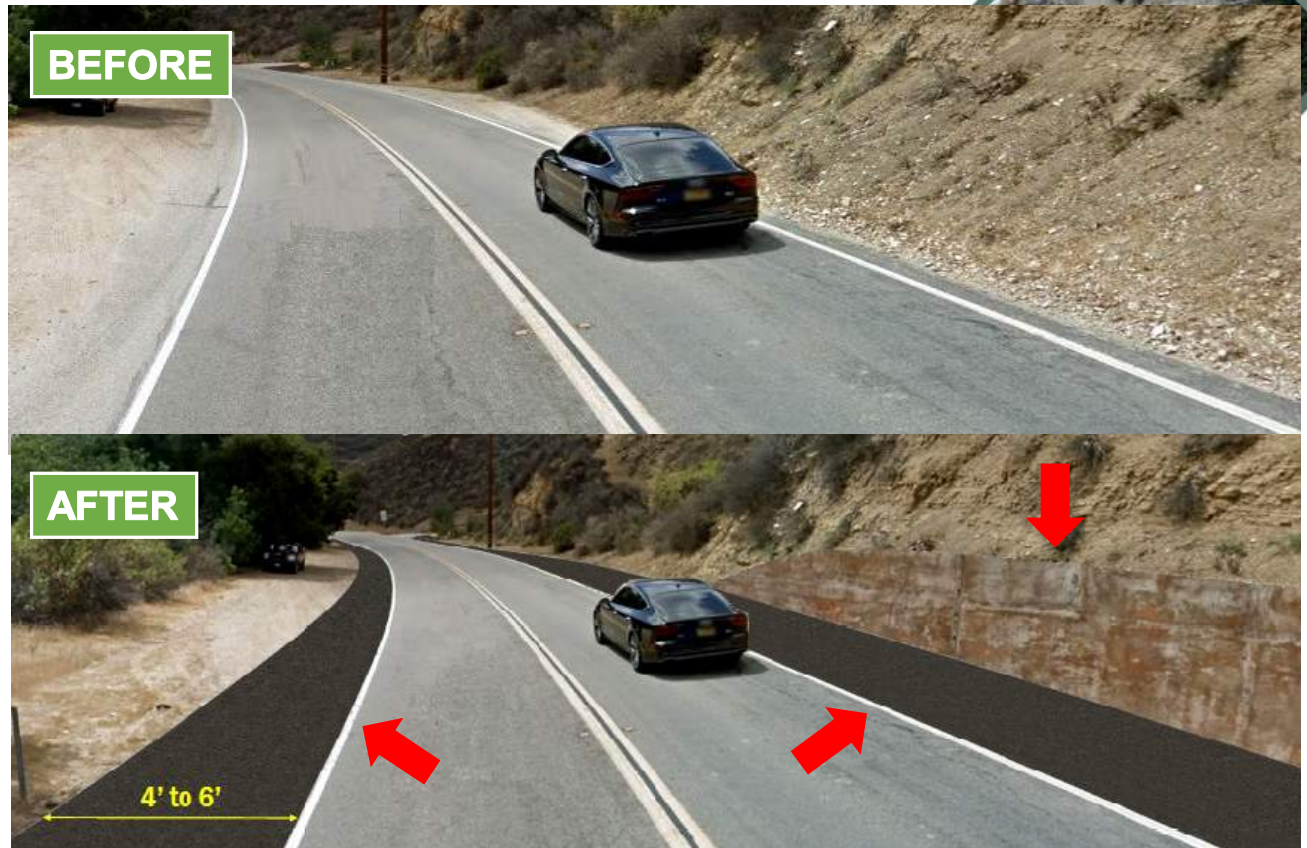
- 4-6 feet



Improvement Visualizations

Example Shoulder Widening

- 4-6 feet





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Environmental Assessment

Environmental Considerations

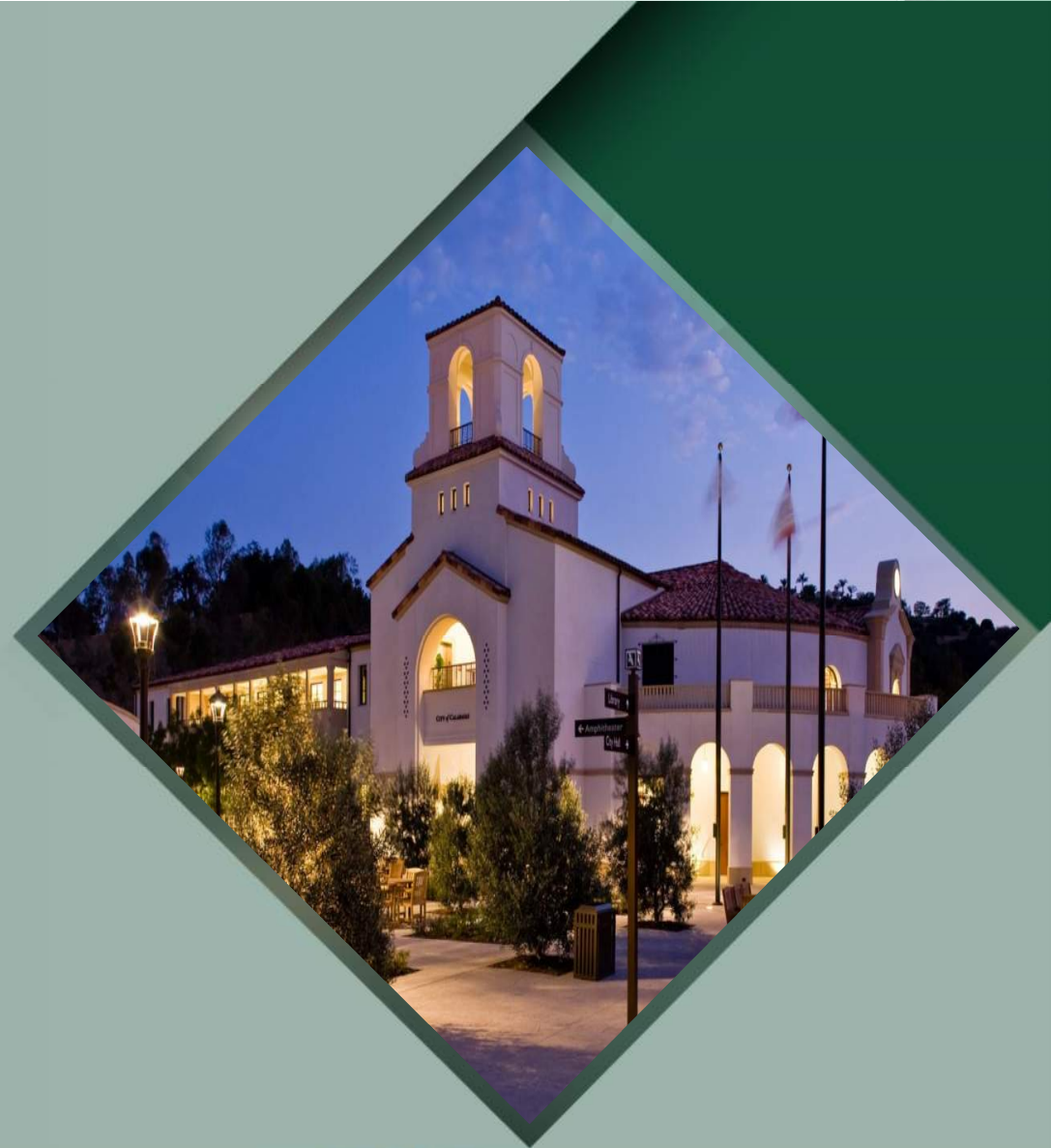
- Environmental Considerations for Next Phase:
 - Expected Environmental Document – **Categorical Exemption**
 - Supporting Documentation:
 - Biological / Natural Resources
 - Oak Tree Memorandum
 - Visual / Aesthetics Memorandum





CITY of CALABASAS

Public Outreach



Public Outreach

The City hosted a Public Workshop on March 04, 2020

- Approximately 26 Attendees
- Michael Baker Presented Initial Project Findings
- Residence Given Opportunity to Comment



COMMENT CARD

City of Calabasas
Department of Public Works
Mulholland Highway Scenic Corridor Study Workshop
Wednesday, March 4, 2020
6:00 p.m.—8:00 p.m.

Name: _____ Date: _____

Email Address: _____ Phone: _____

I would like to have the following statement for the record:

I would like to have the following inquiry addressed:

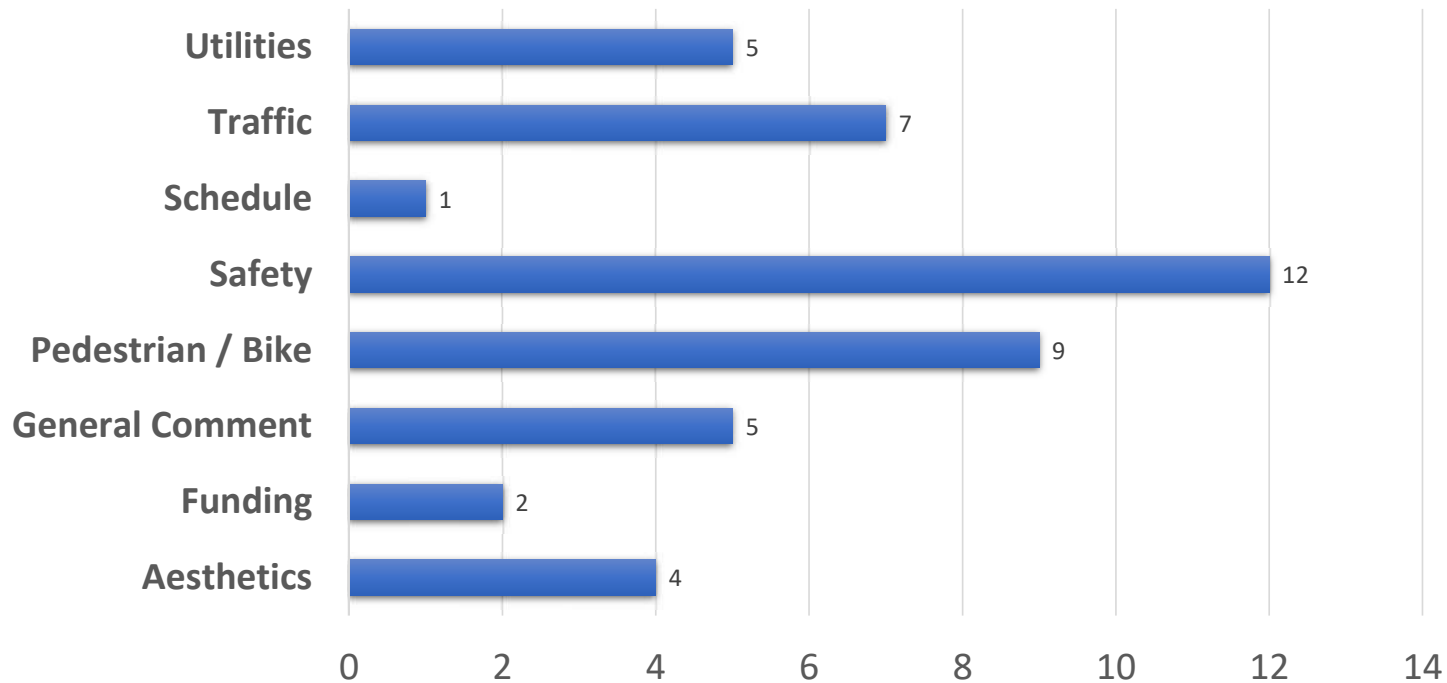
Comment:



Public Outreach

Public Workshop Comment Summary

45 Total Comments



Public Outreach

Top Items of Discussion:

- **Safety** – multiple items: minimize hazards related to fire, traffic, biking, and pedestrians
- **Evacuation Plan**
- **Narrow Shoulders and Bike Rideability**
- **Traffic Congestion**
- **Pedestrian Facilities (Sidewalk) – for and against**
- **Poor Pavement Condition**
- **No street lighting**
- **Preserve rural characteristics of roadway**
- **All these items were considered in refining the proposed improvements.**



MULHOLLAND HIGHWAY FEASIBILITY STUDY PUBLIC WORKSHOP NO. 1 - COMMENT AND RESPONSE SUMMARY Wednesday March 4, 2020 - 6:00 PM to 8:00 PM					
ID	Source	Date	Comment	Topic	Command Response
1	Comment Card	3/4/2020	Is this already approved by the City because it sounds that way. IE, when suggested a bike lane it was stated the city is planning/prefers shoulders. A response would be appreciated if possible. Thank you.	Pedestrian / Bike	The City has reviewed the possibility of installing continuous width bike lanes through this segment of Mulholland Highway. Because of existing constraints (power poles, lotlines and property lines), providing a continuous bikeway would be cost and environmentally prohibitive given the Project's Measure M budget and the continuous roadway width required for a bike lane. Alternatively, narrowing Mulholland Highway to provide additional bikeway width is not possible because the existing roadway is one lane in each direction. A widened shoulder with varying width, as proposed, would accommodate existing project constraints and improve cycling conditions by increasing the cycling area and providing a more level riding surface.
2	Comment Card	3/4/2020	Protect the poles!	Utilities	The Project will evaluate Traffic safety measures that include guardrail placement at powerpole locations. The powerpoles along the corridor are owned by Southern California Edison.
3	Comment Card	3/4/2020	Think about fire evacuation eventually!	Safety	The Sheriff's Office is in command during major evacuation incidents such as fire or earthquake. City emergency evacuation information is available on the City website at https://www.cityofcalabasas.com/emergency.html . In addition, Mulholland Highway is constrained and widening the roadway to provide additional lanes is cost and environmentally prohibitive. Also, note that the roads capacity bordering the City limits and within other jurisdictions, is also limited.
4	Comment Card	3/4/2020	Linkages amongst CHS, Headwaters Corner, Wild Walnut Park, MICA Parkland, Creekside Park/ Kamp Calabasas etc. -underpass between wild walnut pk & headwaters using old & new drainage culverts.	Pedestrian / Bike	A pedestrian underpass under Old Topanga Canyon Road (West) and/or Mulholland Highway using existing or new drainage culverts is not recommended because of its high cost, environmental impact, and safety concerns. Safety concerns include: the underpass may encourage homeless encampments, be unsafe or difficult to access during storm events, may encourage crime, and would require additional lighting.
5	Comment Card	3/4/2020	Undergrounding utilities where feasible should be on the wish list- we did it at Alice C. Stele (Middle) School	Utilities	Undergrounding overhead utilities is considered cost prohibitive on this project, given the Project's Measure M budget.
6	Comment Card	3/4/2020	Watershed management planning would help fund other budgeting resources to help with enhancing the corridor & its "utility" water storage & reclaimed water availability for firefighting & resiliency.	Funding	Notes: The City will work with the LA County Flood Control District for watershed planning in the area.
7	Comment Card	3/4/2020	Rounded curb & gutters on "sidewalks" for emergency lane making.	Safety	Notes: The Project will investigate curb and gutter alternatives.

Comment Response Matrix



CITY *of* CALABASAS

Next Steps

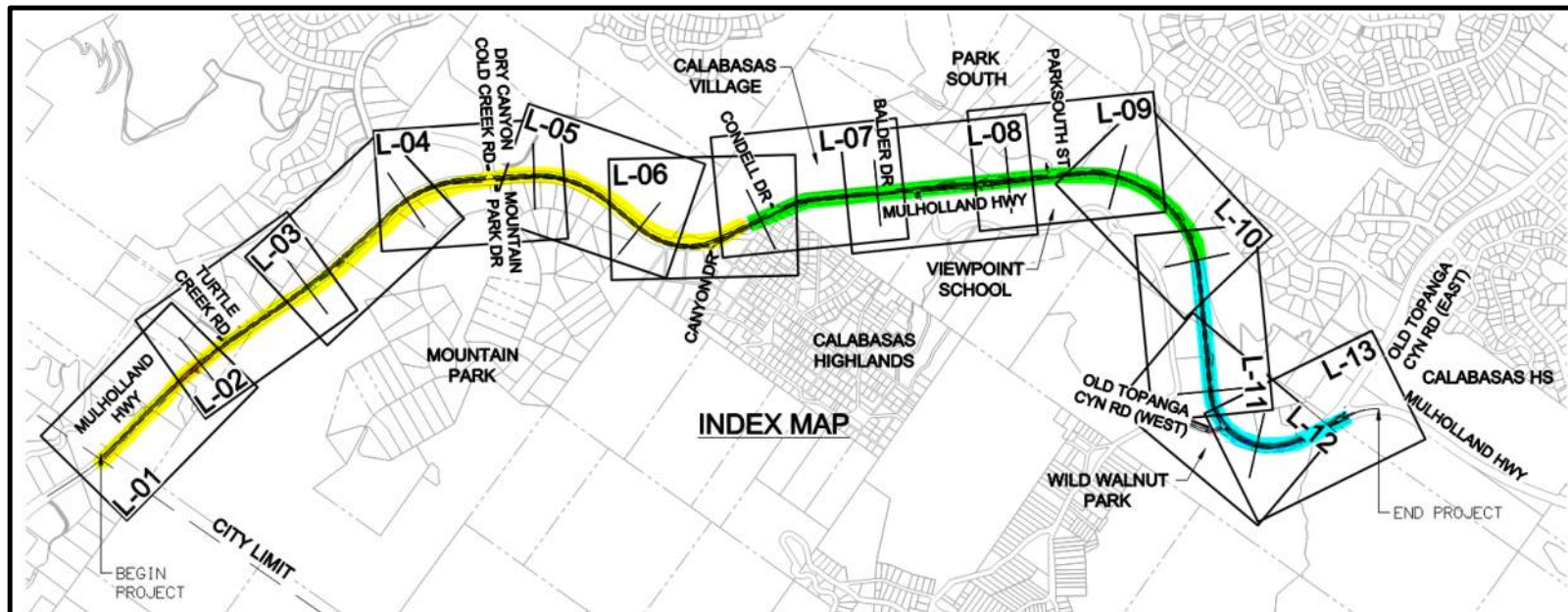
Potential Project Phasing

- The Project could be Constructed in Three Phases:

Segment 1: From Southern City Boundary to Canyon Drive

Segment 2: From Canyon Drive to Northeast of Park South Street

Segment 3: From Northeast of Park South Street to Old Topanga Canyon Road (East)



Estimated Schedule

Feasibility Study Schedule

- Summer 2020 – Develop Preliminary Concepts
- Fall 2020:
 - Traffic & Transportation Commission (TTC) Presentation
 - City Council Presentation TBD
 - Complete Feasibility Study Report (Nov. 2020)

Potential Project Schedule (contingent upon available Measure M funding)

- First Project Segment Environmental and Final Design (PS&E) – December 2020 – January 2022
- Start Construction of first Segment – Early 2022





CITY *of* CALABASAS

Questions & Comments?

APPENDIX E – Utility Coordination Log

Mulholland Highway Feasibility Study
Utility Notification Log

#	Company Name	Address	Phone	Contact Person	Secondary Contact/ Contact Notes	Notice		Facilities in the Project Area?	Mapped	Comments
						Date Mailed	Date of Response			
1	AT&T	600 E. Green St, Room 300	(626) 817-4273	Rosemary Burnett	N/A	1/14/2020	5/1/2020	YES	-	Called 07/27/2020 and left voice message to Rosemary.
2	AT&T Legacy (Local)	2250 Ward Ave.	(805) 583-6640	Mike Smith	N/A	1/14/2020	1/22/2020	YES	AT 4/22/2020	
3	AT&T Legacy (Long Distance)	22311 Brookhurst St. #203	(714) 963-7964	Joseph Forkert	N/A	1/14/2020	1/30/2020	NO FACILITIES	N/A	
4	Sprint PCS (NEXTEL)	6391 Sprint Parkway	(866) 805- 9890	To Whom It May Concern	N/A	1/14/2020	N/A	NO RESPONSE	N/A	Called 07/27/2020 - NO RESPONSE
5	Verizon	15505 Sand Canyon Ave	(949) 286- 8772	Malcolm Brown	N/A	1/14/2020	2/18/2020	YES	AT 4/22/2020	
6	Charter/ Time Warner	2525 Knoll Rd.	(805) 732-9355/(805) 732 8048/(314) 965-0555	Shawn Riggs	Paul Georgia/ Luis Corea	1/14/2020	1/27/2020	YES	AT 4/22/2020	
7	Los Angeles County Fire Department Station 68	24130 Calabasas Rd.	(818) 222-1107	On Duty Captain	N/A	1/14/2020	7/27/2020	NO FACILITIES	N/A	Called 07/27/2020 - department does not own or maintain any utilities
8	Los Angeles County Fire Department Station 125	5215 Las Virgenes Rd.	(818) 880-4411	On Duty Captain	N/A	1/14/2020	7/27/2020	NO FACILITIES	N/A	Called 07/27/2020 - department does not own or maintain any utilities
9	Los Angeles County Sheriffs Department Lost Hills	27050 Agoura Rd.	(818) 878 1808	Operations	N/A	1/14/2020	7/27/2020	NO FACILITIES	N/A	Called 07/27/2020 - department does not own or maintain any utilities
10	Las Virgenes Municipal Water District (LVMWD)	4232 Las Virgenes Road	(818) 251-2100	Joe Valente	N/A	1/14/2020	1/22/2020	YES	AT 02/15/2020	
11	Southern California Edison Co.	3589 Foothill Drive	(805) 494-7040	Miranda Conaway	N/A	1/14/2020	1/22/2020	YES	AT 4/22/2020	
12	Southern California Gas Co.	9400 Oakdale Avenue	(818) 701-3228	Jack Russo	N/A	1/14/2020	1/24/2020	YES	AT 4/23/2020	
13	Crown Disposal, Inc.	P.O. Box 1081	(818) 767-0675	Tim Fry	N/A	1/14/2020	N/A	NO RESPONSE	N/A	Called 07/27/2020 - NO RESPONSE
14	Waste Management, Inc.	195 W. Los Angeles Avenue	(805) 955 4339	Kathleen Sherman	N/A	1/14/2020	N/A	NO RESPONSE	N/A	Called 07/27/2020 and left voice message.
15	LA County Flood Maintenance Division	900 S. Fremont Avenue	(626) 458 4146	To Whom It May Concern	N/A	1/14/2020	N/A	COUNTY AS-BUILTS	MAPPED PER AVAILBLE AS-BUILTS	Spoke to Andrew Ross who directed to: https://dpw.lacounty.gov/DES/design/hwyMain.cfm for all County engineering plans / as-builts
16	LA County Construction Division	900 S. Fremont Avenue	(626) 458 3109	Daryll Chenoweth	N/A	1/14/2020	1/27/2020	NO FACILITIES	N/A	Link to county website for plan download. No construction plans just storm drain and sewer
17	LA County Sewer Maintenance Division	21190 Centre Point Parkway	(800) 675-4357/(661) 942-6042/(661)2222569	Tim	N/A	1/14/2020	1/27/2020	YES	AT 2/2020	Downloaded addition plans from county website.
18	LA County Road Maintenance	3637 Winter Canyon Road	(310) 456- 8014	Danny Knittle	N/A	1/14/2020	N/A	COUNTY AS-BUILTS	MAPPED PER AVAILBLE AS-BUILTS	Spoke to Andrew Ross who directed me to https://dpw.lacounty.gov/DES/design/hwyMain.cfm for all County engineering plans / as-builts
19	LA County Sanitation District	P.O. Box 4998 / 1525 Alcazar Street	(562) 908 4288	Martha Tremblay	N/A	1/14/2020	1/27/2020	NO FACILITIES	N/A	No facilities within project limits Called 1/14/2020. Confirmed PO Box correct mail address
20	NexG/Maxtel	NO ADDRESS	(213) 385-7000	Joseph Kim	N/A	N/A	N/A	NO RESPONSE	N/A	Called 1/14/2020 no answer. Left voicemail

APPENDIX F – Traffic Study Report (Michael Baker, 2020)

MULHOLLAND HIGHWAY CORRIDOR STUDY
CITY OF CALABASAS, CALIFORNIA



TRAFFIC STUDY
FINAL August 25, 2020

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Appendix G: Existing Year 2019 Analysis Worksheets – With Improvements

Appendix H: Mulholland Highway @ Canyon Drive Analysis

1.0 Introduction

Michael Baker International (Michael Baker) is under contract with the City of Calabasas (City) to provide professional engineering services related to the Mulholland Highway Corridor Study. The services contracted include data collection, existing conditions analysis, future conditions analysis, alternatives development, conceptual design, documentation of the Feasibility Study, and stakeholder engagement. The purpose of this report is to document the traffic operations and safety analysis conducted for the project.

1.1 Project Description

Within the project limits, Mulholland Highway is a two-lane, mountainous and winding rural highway that primarily serves residential and school traffic. During peak times, the route experiences heavy congestion and is reported to have one the highest collision rates within the City. In addition, the route is susceptible to rockfalls, landslides and is characterized as having narrow shoulders and tight curves with poor sight distance. This project focuses on the study of existing and future traffic operations and potential safety and operational improvements along the Mulholland Highway corridor. The study area extends from the existing signalized intersection at Old Topanga Canyon Road (East) to the City limits, approximately 2.7 miles. The project location within the region is shown in **Exhibit 1-1** while **Exhibit 1-2** shows the project area.

Exhibit 1-1: Regional Project Location

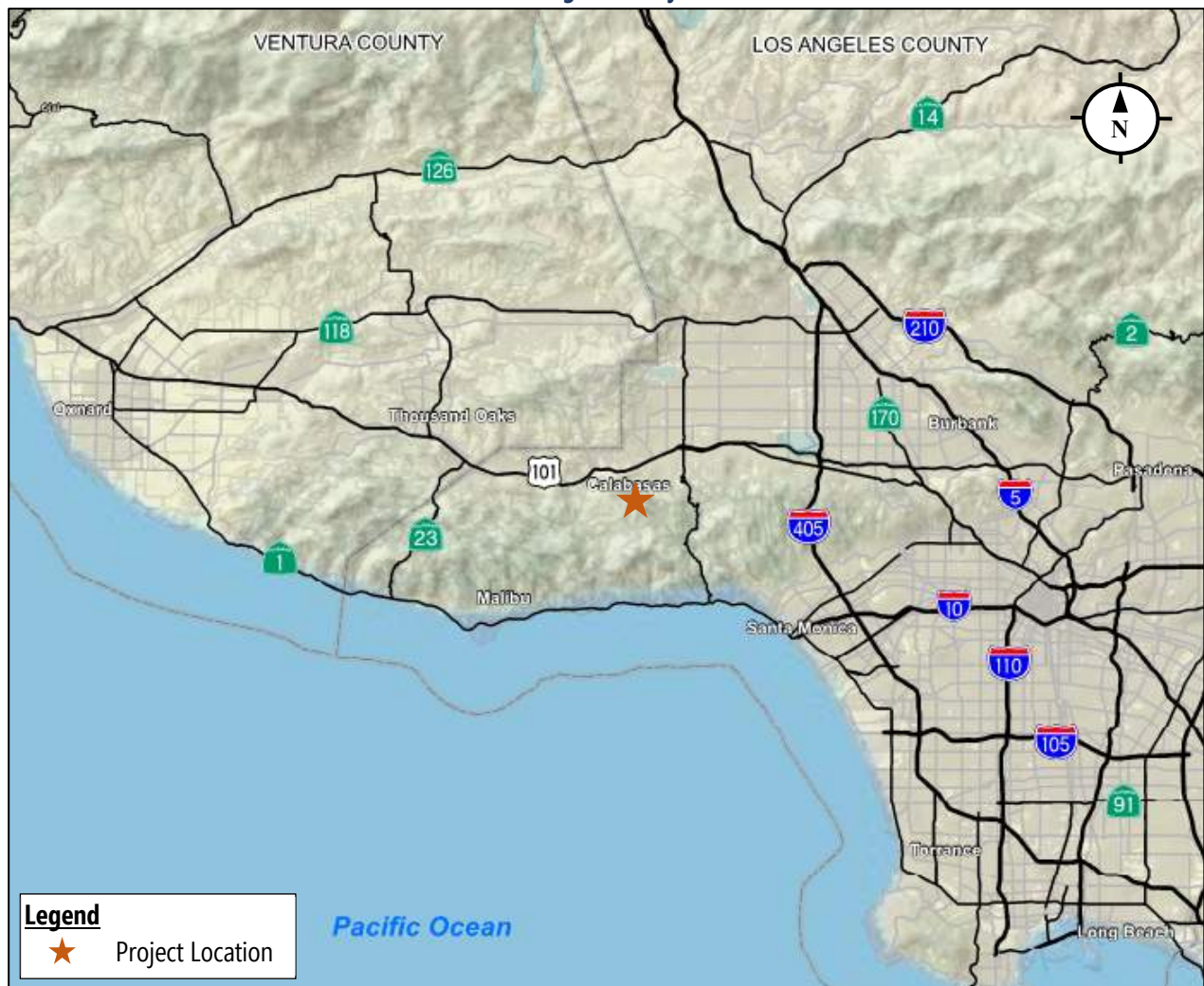
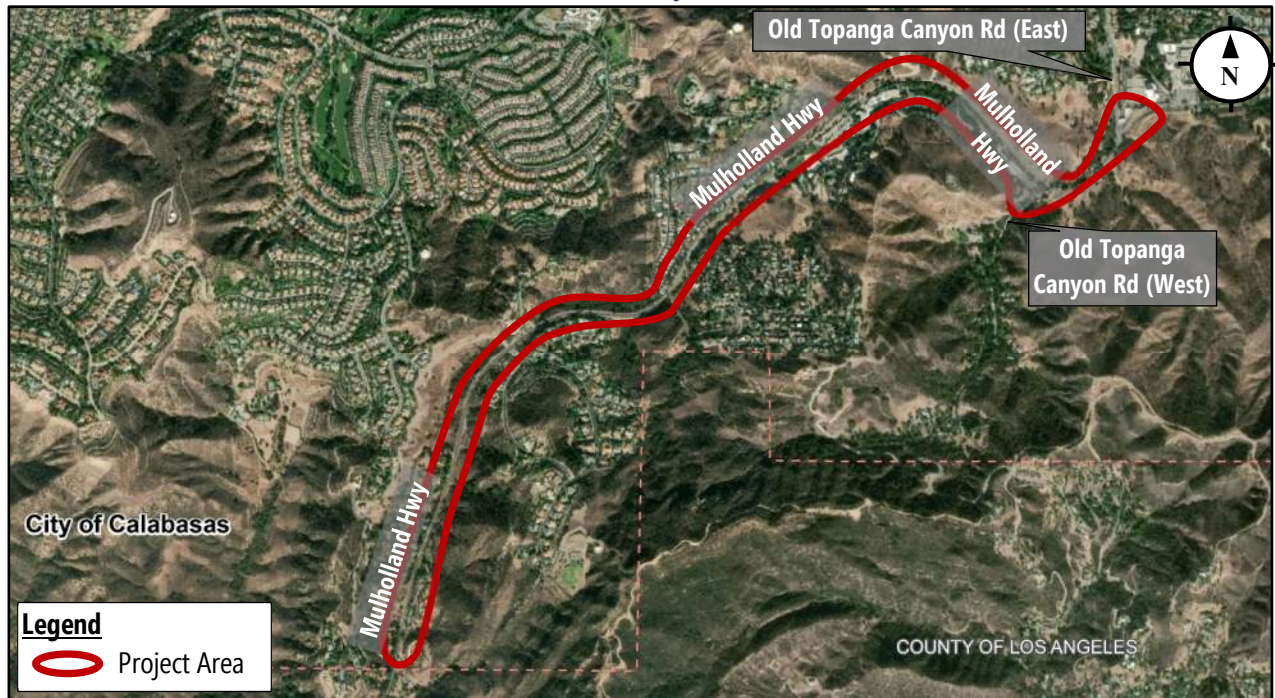


Exhibit 1-2: Project Area



1.2 Analysis Scenarios

The analysis documented in this report focuses on the following scenarios:

- 1) Existing Year 2019
- 2) Existing Year 2019 Build (With Improvements)
- 3) Design Year 2045 No Build
- 4) Design Year 2045 Build (With Improvements)

1.3 Analysis Time Periods

The analysis focused on the evaluation of the following time periods:

- 1) AM Peak Hour
- 2) School PM Peak Hour
- 3) PM Peak Hour

The School PM Peak Hour was examined given the proximity of the corridor to Calabasas High School and Viewpoint School and their impact on traffic operations along the corridor.

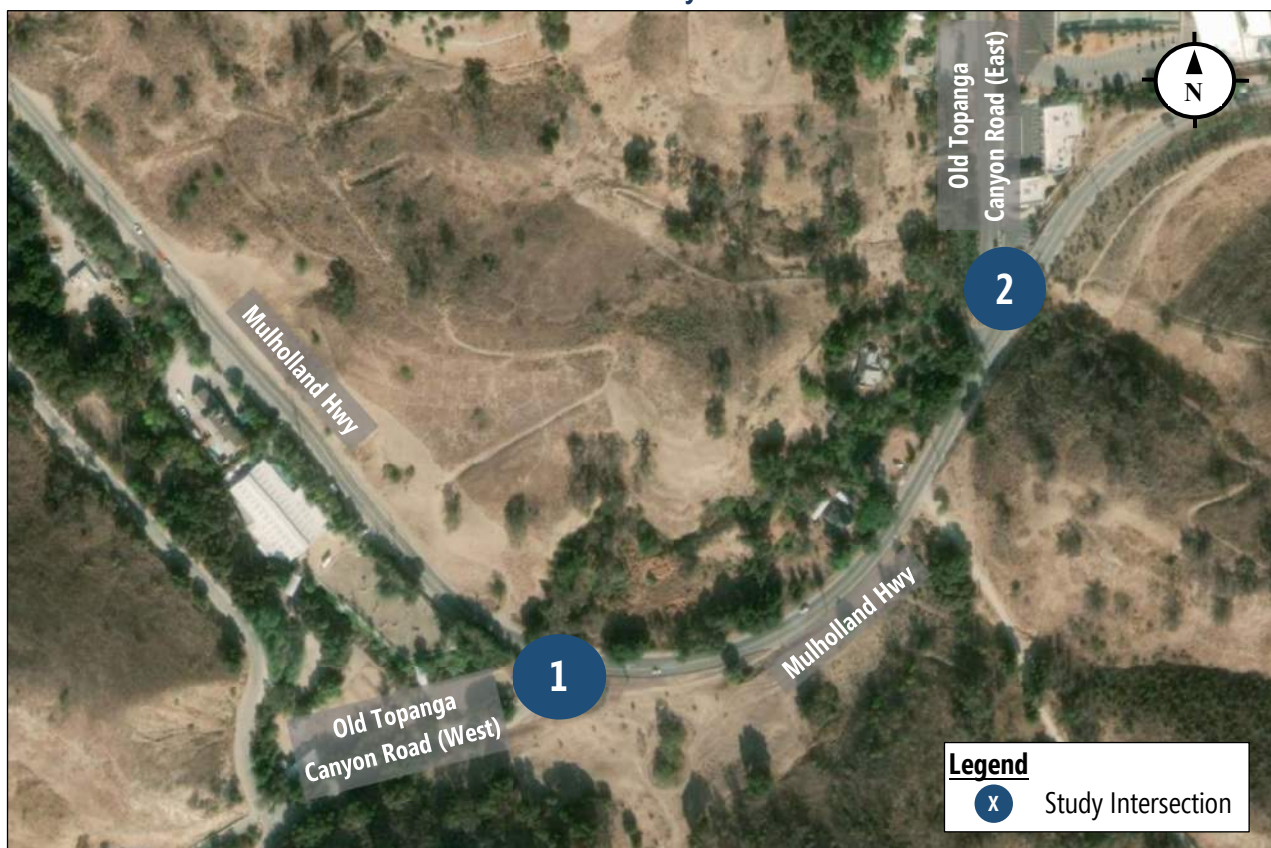
2.0 Traffic Analysis Study Area

Table 2-1 lists the study intersections while Exhibit 2-1 shows the analysis locations. The ID #s documented are carried forward as part of the analysis including the individual analysis worksheets located within the appendices.

Table 2-1: Analysis Intersections

ID #	Intersection	Control Type and Configuration
1	Mulholland Highway @ Old Topanga Canyon Rd (West)	One-way stop controlled "T" Intersection -- Old Topanga Canyon Road (West) is a controlled stop
2	Mulholland Highway @ Old Topanga Canyon Rd (East)	Signalized "T" Intersection

Exhibit 2-1: Traffic Study Intersections



2.1 Roadway Characteristics

The roadway network included within the traffic study project area was evaluated. The characteristics of each facility are discussed below.

Mulholland Highway

The California Road System classifies Mulholland Highway as a Major Collector and the City's 2030 General Plan (October 2015) classifies the roadway as a Collector. Mulholland Highway is generally an east-west roadway within the study area; however, it travels north-south at multiple locations given the winding nature of the roadway. From a regional perspective,

Mulholland Highway extends from Mulholland Drive in the City of Calabasas to an intersection with Pacific Coast Highway near Leo Carrillo State Beach just west of the Malibu city limits. The roadway operates as one travel lane per direction with turn lanes provided at major intersections. The roadway is posted at 45 miles per hour (mph), however a 35 mph warning sign exists near the Old Topanga Canyon Road (West) Intersection. On-street parking accommodations are generally not provided along the corridor, however parking spaces for the equestrian land use located just west of Topanga Canyon Road (West) are provided adjacent to Mulholland Highway and a small parking area exists along Mulholland Highway near the Santa Monica Mountains Conservancy Parkland trailhead located west of Mountain Park Drive.

Old Topanga Canyon Road (West)

Old Topanga Canyon Road (West), which is generally a north-south roadway, extends from Mulholland Highway to the south towards Malibu where it intersects with S. Topanga Canyon Boulevard. This roadway operates as one travel lane per direction and is posted at 35 mph. The California Road System classifies Old Topanga Canyon Road (West) as Major Collector and the City's General Plan classifies it as a Collector.

Old Topanga Canyon Road (East)

Old Topanga Canyon Road (East), which is a north-south roadway, extends from Mulholland Highway to the north where it is renamed Valmar Road just south of Mulholland Drive. This roadway operates as one travel lane per direction near the project study area and is posted at 40 mph. The California Road System classifies Old Topanga Canyon Road (East) as a Major Collector and the City's General Plan classifies it as an Arterial.

Mulholland Highway is a circuitous roadway which travels both east-west and north-south in the general area. For the purposes of this study, Mulholland Highway has been identified as the east-west roadway and Old Topanga Canyon Road has been identified as a north-south facility.

3.0 Existing Condition Traffic Data

3.1 Traffic Counts

Intersection turning movement counts were collected on Thursday, December 5, 2019 at each of the study intersections. Additionally, the City provided intersection count data and 24-hour roadway segment count data collected prior to the initiation of this study. **Table 3-1** identifies the intersection count time periods and type of data collected while **Table 3-2** lists the locations of the 24-hour traffic counts provided by the City. The detailed count data utilized in this analysis can be found in **Appendix A**.

Table 3-1: Intersection Traffic Count Locations

Location		Count Date	Day of Week	Time Period	Data Collected
1	Mulholland Highway @ Old Topanga Canyon Rd (West)	10/6/2016	Thursday	7:00 AM – 9:00 AM and 1:00 PM – 5:00PM	Vehicles, bicyclists, and pedestrians
		12/5/2019	Thursday	6:00 AM – 6:00 PM	Vehicles, bicyclists, and pedestrians
2	Mulholland Highway @ Old Topanga Canyon Rd (East)	10/17/2019	Thursday	7:00 AM – 9:00 AM and 4:00 PM – 6:00PM	Vehicles
		12/5/2019	Thursday	6:00 AM – 6:00 PM	Vehicles, bicyclists, and pedestrians

Table 3-2: Segment Count Locations

Location		Count Date	Day of Week
1	Mulholland Highway E/O Old Topanga Canyon Road (West)	10/6/2016	Thursday
2	Old Topanga Canyon Rd (West) S/O Mulholland Highway	10/6/2016	Thursday
3	Mulholland Highway W/O Old Topanga Canyon Road (West)	10/6/2016	Thursday
4	Mulholland Highway between Parksouth Street & Old Topanga Canyon Road	6/2/2015	Tuesday
5	Mulholland Highway between Balder Drive & Condell Drive	6/2/2015	Tuesday
6	Mulholland Highway S/O Dry Canyon Cold Creek Road (West)	6/2/2015	Tuesday
7	Mulholland Highway S/O Turtle Creek Road	6/2/2015	Tuesday

Note: E/O = east of; W/O = west of; S/O = south of

Additionally, the City provided count data for traffic entering/exiting the Viewpoint School for consideration of improvements beyond the study intersections.

3.2 Field Observations

Field views were conducted on Thursday, December 13, 2019 during the morning and afternoon school peak times and on Wednesday, February 5, 2020 during the afternoon school and evening peak times. Observations made during the field view are described below. **Table 3-3** provides additional detail regarding the traffic flow by time period.

Mulholland Highway Corridor

- The Mulholland Highway corridor is impacted by additional school-related traffic during the peak pick-up and drop-off time periods for the schools in the area. It was observed that generally traffic is congested for 20 to 30 minutes during these time periods and after the school traffic has dissipated, traffic flow and queuing generally returns to normal conditions. Thus, the schools appear to impact the corridor for approximately ½ hour around 7:30 AM and ½ hour around 3:00 PM, or a total of 1 hour during each weekday.
- The operations at each of the study intersections are impacted by one another in terms of queuing and platooning.
- The corridor is posted at 45 miles per hour (mph), however a 35 mph warning sign exists along Mulholland Highway eastbound near Old Topanga Canyon Road (West).
- One pedestrian was observed walking westbound on the north side of Mulholland Highway near Dry Canyon Cold Creek Road/Mountain Park Drive at dusk. No pedestrians were observed near Viewpoint School along Mulholland Highway.
- Multiple signs exist as certain locations along the corridor warning motorists and bicyclists of falling rock.
- Damaged guardrail was spotted at multiple locations along the corridor.
- Power poles and other appurtenances are within the shoulder area or just beyond the edge of pavement.
- The existing shoulder width varies from 0' to approximately 10'.
- Bicyclists were observed riding through narrow segments adjacent to vehicular traffic.

Mulholland Highway Corridor – Viewpoint School Area

- A Los Angeles County Sheriff officer directed traffic at the main entrance to the school located on Mulholland Highway during the morning drop-off period (approximately 7:30 AM – 8:00 AM). An officer was not observed during the PM pick-up period.
- The gate providing access to school property was open during drop-off time, and thus any backup on school property, which could spill onto Mulholland Highway, was avoided.
- Dry Canyon Cold Creek Road was very busy during the AM drop-off period since school drop-off is located along Dry Canyon Cold Creek Road and teacher parking is located along the roadway. However, the additional activity on Dry Canyon Cold Creek Road did not appear to negatively impact Mulholland Highway but for an increase in traffic volumes at the Mulholland Highway and Dry Canyon Cold Creek Road intersection.
- Motor vehicles and school buses often park along Mulholland Highway near Viewpoint School, particularly during the school drop-off and pick-up time periods. Multiple school buses were observed in the equestrian center parking area (just west of Old Topanga Canyon Road (West) during the AM Peak. Also, multiple vehicles were parked in an area designated as “No Parking Any Time” prior to the afternoon pick-up.
- During both the AM drop-off and PM pick-up time periods, operations along Mulholland Highway near Viewpoint School appear to be busy, but not heavily congested. The high activity levels near the school generally lasted 20 to 30 minutes.

Mulholland Highway @ Old Topanga Canyon Road (West)

- This intersection operates with a stop-controlled condition on Old Topanga Canyon Road (West) northbound.
- Westbound left turning vehicles often follow a travel path that encroaches upon the Old Topanga Canyon Road (West) northbound travel lane when a vehicle is not present at the stop bar.

- On the northbound approach, the lane widens out slightly such that two (2) stopped vehicles can be accommodated at the stop bar.
- On the northbound approach, the sight distance from Old Topanga Canyon Road (West) appears to be sufficient. However, the left turn movement was difficult at times during periods of higher traffic volumes.
- There were multiple observations during the afternoon/evening where vehicles on the Old Topanga Canyon Road (West) Northbound right turn movement proceeded to turn onto Mulholland Highway Eastbound during a point in time where insufficient gap existed, thus resulting in eastbound traffic having to slow down expectedly, and often resulted in the through movement driver honking their horn at the northbound right turn driver.

Mulholland Highway @ Old Topanga Canyon Road (East)

- A traffic signal exists at this intersection. The signal is designed such that the southbound right operates with an overlap, while the eastbound left is a protected movement.
- The westbound right turn movement is signed with a stop sign and “Right Lane Must Stop Ahead.”
- U-turns are prohibited at the intersection.
- Crosswalks do not exist at this intersection.
- Sidewalks are currently not provided at or near the intersection.
- A bicycle lane exists along Mulholland Highway Eastbound on the east leg of the intersection. Other approaches currently do not have bicycle lanes.

Table 3-3: Field View Traffic Flow Observations

Approximate Time Period	Traffic Operations Observations		
	Mulholland Highway @ Old Topanga Canyon Road (West)	Mulholland Highway @ Old Topanga Canyon Road (East)	Corridor
6:30 AM – 7:30 AM	Adequate operations		
7:30 AM – 8:00 AM (School Peak)	<ul style="list-style-type: none"> • WBL queue extended past available storage • EBT extended through intersection to the west due to inadequate storage on the EBL at the downstream signal • Completing the NBL movement was very difficult given the amount of opposing traffic 	<ul style="list-style-type: none"> • EBL queue extended past available storage • SB queue extended past shopping center driveways 	<ul style="list-style-type: none"> • Volumes were generally high due to school activity (HS and Viewpoint) • A Los Angeles County Sheriff officer directed traffic at the Viewpoint School driveway along Mulholland Highway
8:00 AM – 8:30 AM	<ul style="list-style-type: none"> • Queues mostly cleared 	<ul style="list-style-type: none"> • SB queue extended past shopping center driveways 	<ul style="list-style-type: none"> • Activity at Viewpoint School decreased while activity at the Calabasas High School remained moderately high
8:30 AM – 9:00 AM	Traffic flow generally returned to acceptable within this time period		
9:00 AM – 2:30 PM	Adequate operations		
2:30 PM – 3:00 PM	While traffic flow was adequate, volumes were increasing due to parents arriving to pick up students at both schools. Multiple vehicles were parked along Mulholland Highway. Illegal parking and prohibited u-turns at private residential driveways were consistently observed.		

Table 3-3: Field View Traffic Flow Observations (Continued)

Approximate Time Period	Traffic Operations Observations		
	Mulholland Highway @ Old Topanga Canyon Road (West)	Mulholland Highway @ Old Topanga Canyon Road (East)	Corridor
3:00 PM – 3:30 PM (School Peak)	<ul style="list-style-type: none"> EBT queue extended past intersection EBT vehicles generally avoided blocking intersection thus allowing WBL to process through intersection; however EBT vehicles ability to proceed through the intersections was sometimes interrupted by NBR vehicles taking their place in the EB queue 	<ul style="list-style-type: none"> EBL queue extended past available storage The EBL and WBR were impacted by congestion along Old Topanga Canyon Road (East) Northbound – turn movements were obstructed at the intersection due to the downstream queue WBT was obstructed by vehicles unable to clear intersection at times 	<ul style="list-style-type: none"> Traffic flow appeared to be impacted by higher volumes due to both the HS and Viewpoint School as evidenced by platooning
3:30 PM – 4:15 PM	Improved flow for a short period of time between the School PM Peak and the PM Peak		
4:15 PM – 5:15 PM	<ul style="list-style-type: none"> EBT queue extended past intersection at times NBR movement impacted by congestion along Mulholland Highway at times 	<ul style="list-style-type: none"> EBL queue extended past available storage Operations at this intersection were negatively impacted by capacity / operational issues downstream along Old Topanga Canyon Road (East) 	<ul style="list-style-type: none"> Flow generally greater in the eastbound direction; platoons existed along Mulholland Highway Eastbound
5:15 PM – 5:30 PM	<ul style="list-style-type: none"> Heavier EBT and NBR movements, however operations were generally good 	<ul style="list-style-type: none"> EBL queue extended the entire storage lane, however it often did not extend past the storage lane 	<ul style="list-style-type: none"> Some platooning still observed along Mulholland Highway Eastbound

4.0 Traffic Volumes

4.1 Traffic Count Peak Trends

The traffic count data was reviewed in order to develop the Existing Year 2019 traffic volumes. **Table 4-1** lists the intersection turning movement count locations, the collection date, and the peak time and volume trends by location.

Table 4-1: Peak Trends – Intersections

Location	Date (Day of Week)	Time Period / Entering Intersection Volume		
		AM Peak Hour	School PM Peak Hour	PM Peak Hour
1 Mulholland Highway @ Old Topanga Canyon Rd (West)	12/5/2019 (Thursday)	7:15 AM – 8:15 AM	3:00 PM – 4:00 PM	4:00 PM – 5:00 PM
2 Mulholland Highway @ Old Topanga Canyon Rd (East)	12/5/2019 (Thursday)	7:15 AM – 8:15 AM	3:00 PM – 4:00 PM	4:00 PM – 5:00 PM

4.2 Existing Year 2019 Traffic Volumes

The count data was utilized to develop the Existing Year 2019 traffic volumes for the AM Peak Hour, School PM Peak Hour, and PM Peak Hour conditions. The peak hour traffic volumes obtained from the December 2019 count data were utilized. Minor balancing adjustments were made between the intersections as appropriate. Traffic volume development worksheets are included in **Appendix B** which document the entire development process including the balancing. **Exhibit 4-1** shows the Existing Year 2019 traffic volumes.

Exhibit 4-1: Existing Year 2019 Traffic Volumes

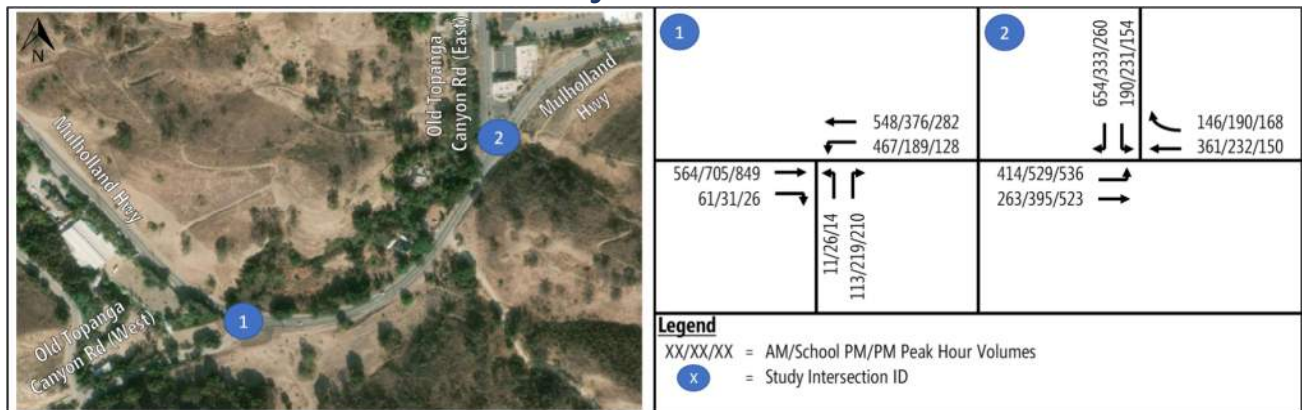


Table 4-2 summarizes the Existing Year 2019 average daily traffic (ADTs) volume. The Year 2015 and Year 2016 24-hour traffic counts provided by the City were grown 1% per year (compounded) to estimate the Year 2019 ADTs.

Table 4-2: Existing Year 2019 Average Daily Traffic Volumes

ID #	Location	ADT (Estimate)
		Existing Year 2019
1	Mulholland Highway E/O Old Topanga Canyon Road (West)	13,200
2	Old Topanga Canyon Rd (West) S/O Mulholland Highway	4,900
3	Mulholland Highway W/O Old Topanga Canyon Road (West)	10,300
4	Mulholland Highway between Parksouth St & Old Topanga Canyon Road	8,800
5	Mulholland Highway between Balder Dr & Condell Drive	7,300
6	Mulholland Highway S/O Dry Canyon Cold Creek Road (West)	4,300
7	Mulholland Highway S/O Turtle Creek Road	4,400

Note: E/O = east of; W/O = west of; S/O = south of

4.3 Traffic Volume Projections

4.3.1 Growth Rate

According to the City of Calabasas *2030 General Plan* (October 2015), the land use pattern within the City is well established and is not intended to change over time. Future growth is anticipated to consist of infill development and a small increase in rural residential development at the edge of the urban area. Some amount of traffic growth would result from this minor increase in development within the City, as well as a general increase due to growth in the surrounding area. The background traffic volume growth rate is intended to reflect the increase in traffic volumes as a result of these changes.

Multiple sources were examined to determine an appropriate background traffic volume growth rate for use in developing traffic volume projections for the Study Area including:

- 1) Southern California Association of Governments (SCAG) Regional Transportation Plan / Sustainable Communities Strategy (RTP/SCS) 2016-2040 Population, Households, & Employment Data,
- 2) Exhibit D-1, General Traffic Volume Growth Factors, Appendix D, *Guidelines for CMP Transportation Impact Analysis*, and
- 3) Input from City staff regarding growth utilized on other projects in the area.

The background growth for the study area volumes was determined by applying a 1% growth rate (compounded) to the year 2025, and then a 0.3% growth rate (compounded) to the year 2045. **Appendix B** contains a summary of the data examined as part of the growth rate determination.

4.3.2 Traffic Forecasts

The traffic volume growth rate was applied to the Existing Year 2019 traffic volumes to develop the Design Year 2045 traffic volumes (**Exhibit 4-2**). Additionally, traffic volumes for known planned developments in the area were also included. The following steps were utilized to develop the future traffic volume forecasts:

- 1) Applied the background traffic volume growth rate to the Existing Year 2019 traffic volumes. Utilized a 1% growth rate to project to the year 2025, and then applied a 0.3% growth rate to the year 2045. Both growth rates were compounded.
- 2) Added project traffic volumes for planned developments in the area including:

- a. Chabad of Calabasas – Traffic volumes obtained from the *Traffic and Parking Analysis for the Chabad of Calabasas Project – City of Calabasas* report (Associated Transportation Engineers, November 15, 2019).
 - b. Wild Walnut Park Improvement Project – Traffic volumes estimated using a combination of rates obtained from the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 10th Edition and the *Orange County Great Park Trip Generation and Parking Demand Analysis* (LSA, March 12, 2014). A combination of park/open space and dog park was utilized to estimate the park site trips (Weekday Daily Trips = 414; Weekday AM Peak Trips = 31; Weekday School PM Peak Trips = 35; and Weekday PM Peak Trips = 35).
- 3) Rounded to the nearest 5.
 4) Balanced between Intersections #1 and #2, as needed.

Traffic volume development worksheets are included in **Appendix B** which document the entire development process including the balancing.

Exhibit 4-2: Design Year 2045 Traffic Volumes

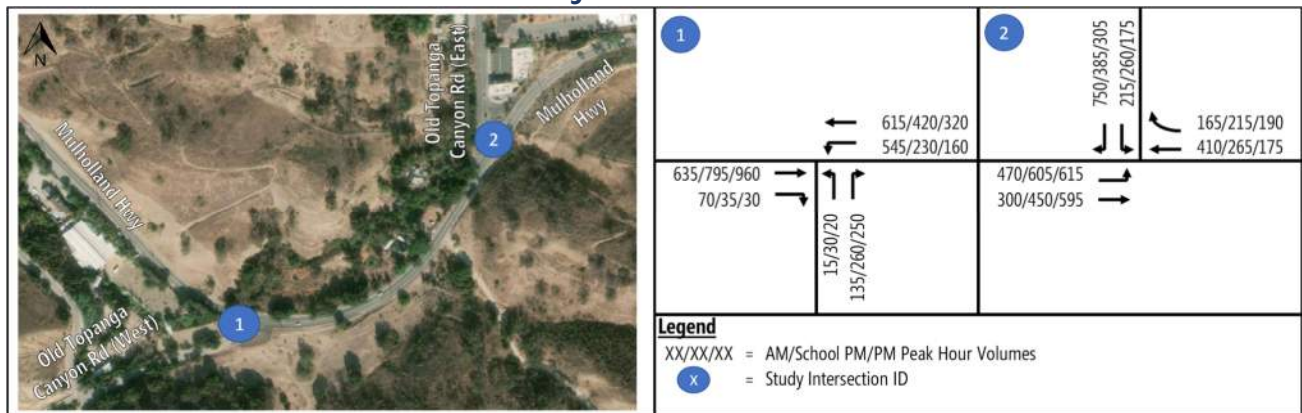


Table 4-3 provides the estimated Design Year 2045 No Build ADTs. The Existing Year 2019 ADTs are provided for comparison purposes.

Table 4-3: Average Daily Traffic Volume Comparison

ID #	Location	ADTs (Estimate)	
		Existing Year 2019	Design Year 2045
1	Mulholland Highway E/O Old Topanga Canyon Road (West)	13,200	14,900
2	Old Topanga Canyon Rd (West) S/O Mulholland Highway	4,900	5,500
3	Mulholland Highway W/O Old Topanga Canyon Road (West)	10,300	11,600
4	Mulholland Highway between Parksouth St & Old Topanga Canyon Road	8,800	9,900
5	Mulholland Highway between Balder Dr & Condell Drive	7,300	8,200
6	Mulholland Highway S/O Dry Canyon Cold Creek Road (West)	4,300	4,800
7	Mulholland Highway S/O Turtle Creek Road	4,400	5,000

Note: E/O = east of; W/O = west of; S/O = south of

5.0 Bicycle, Pedestrian, and Transit Activity

The Mulholland Highway corridor serves the community by accommodating various modes of travel – passenger cars, trucks, transit vehicles, bicycles, and pedestrians. The information presented in this section focuses on the bicycle and pedestrian activity observed in the study area.

5.1 Bicyclists and Pedestrians

Bicyclist and pedestrian data collected at each of the study intersections is summarized in **Table 5-1** and **Table 5-2**. The information shown are the bicycle and pedestrian counts collected during each of the peak hours. The data collection showed some bicycle activity and no pedestrian activity during the count time period. Observations indicate that the bicycle and pedestrian activity along the corridor is primarily recreational bicyclists. While pedestrians have been observed during other days and time periods, activity is minimal given the lack of pedestrian accommodations. **Table 5-3** summarizes the obstacles faced by bicyclists and pedestrians in the Study Area.

Table 5-1: Bicycle Peak Activity

Location		Date / Day of Week	Peak Time Period / Total Volume Entering Intersection		
			AM Peak Hour	School PM Peak Hour	PM Peak Hour
1	Mulholland Highway @ Old Topanga Canyon Rd (West)	12/5/2019 (Thursday)	7:15 AM – 8:15 AM	3:00 PM – 4:00 PM	4:00 PM – 5:00 PM
			0	5	2
2	Mulholland Highway @ Old Topanga Canyon Rd (East)	12/5/2019 (Thursday)	7:15 AM – 8:15 AM	3:00 PM – 4:00 PM	4:00 PM – 5:00 PM
			1	2	2

Table 5-2: Pedestrian Peak Activity

Location		Date / Day of Week	Peak Time Period / Total Volume Crossing All Approaches		
			AM Peak Hour	School PM Peak Hour	PM Peak Hour
1	Mulholland Highway @ Old Topanga Canyon Rd (West)	12/5/2019 (Thursday)	7:15 AM – 8:15 AM	3:00 PM – 4:00 PM	4:00 PM – 5:00 PM
			0	0	0
2	Mulholland Highway @ Old Topanga Canyon Rd (East)	12/5/2019 (Thursday)	7:15 AM – 8:15 AM	3:00 PM – 4:00 PM	4:00 PM – 5:00 PM
			0	0	0

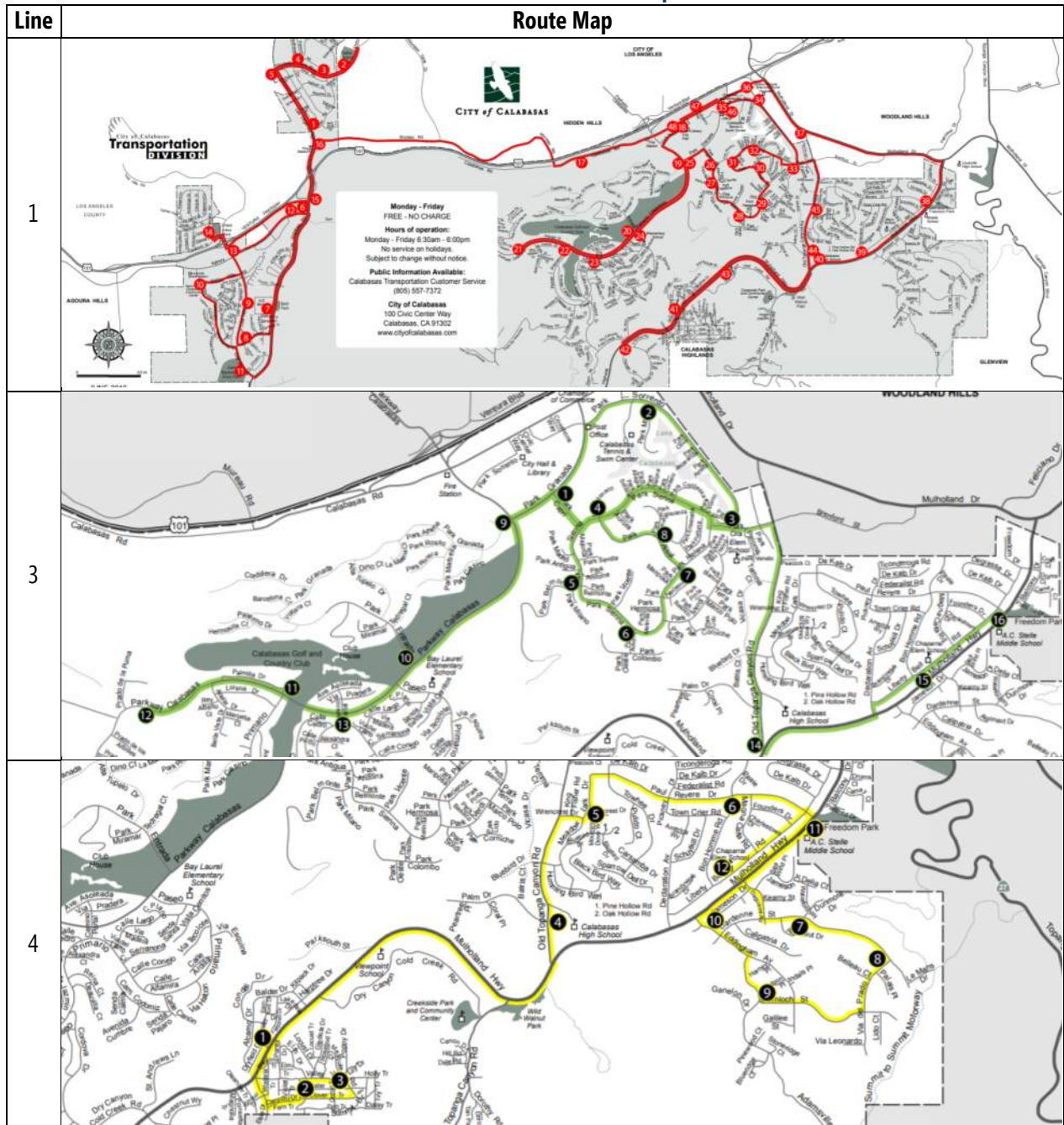
Table 5-3: Bicycle and Pedestrian Travel Obstacles

Location		Existing or Perceived Obstacle
1	Mulholland Highway @ Old Topanga Canyon Road (West)	<ul style="list-style-type: none"> • Crosswalks are not provided on any of the intersection approaches. • Existing condition does not support activity and connections to Wild Walnut Park, which is located southeast of the intersection.
2	Mulholland Highway @ Old Topanga Canyon Road (East)	<ul style="list-style-type: none"> • A dedicated bicycle lane currently exists on the east of the intersection in the eastbound direction and with completion of the Gap Closure project, dedicated bicycle lanes will exist along Mulholland Highway east of the intersection in both directions of travel. However, bicycle lanes do not exist to the west of this intersection into the study area. • Crosswalks do not currently exist and will not be provided at this intersection as part of the Gap Closure project. • It does not appear that bicycle detection exists based upon the signal plan set provided and observations in the field.
--	Mulholland Highway Corridor	<ul style="list-style-type: none"> • Sidewalks do not exist along Mulholland Highway within the project study area. • Crosswalks do not exist on Mulholland Highway within the project study area. • Bicycle and/or pedestrian accommodations do not connect the area land uses including Wild Walnut Park, Calabasas High School, Viewpoint School, and nearby residential developments within the study area. • Horizontal and vertical curves create challenges for bicyclist and pedestrian operations. While these challenges can be seen as positive aspects when the corridor is utilized for recreation and exercise, it can sometimes create friction with vehicle operations given the greater speed differentials. • The lack of a shoulder often requires motorists to encroach into the opposing lane in order to safely pass a bicyclist. This is sometimes made more difficult given the horizontal and vertical curvature of the roadway. • The land use along the portion of the corridor west of Old Topanga Canyon Road (West) is inconsistent with pedestrian activity since it is generally rural residential, with the exception of Viewpoint School.

5.2 Transit Services

The City of Calabasas Transportation Division operates shuttle services within the study area including five (5) fixed-route lines. Shuttle service, which provides connections with the City limits, is provided along or near the study area via Lines 1, 3, and 4. The current shuttle route maps showing the fixed routes which provide service within the study area are shown in **Exhibit 5-1**.

Exhibit 5-1: Shuttle Route Maps



Source: <https://www.cityofcalabasas.com/departments/traffic/shuttle.html>

6.0 Collision Analysis

A collision analysis was conducted in which historic collision data was reviewed. The primary purpose of this analysis was to determine any correlation between the collisions and geometric conditions and/or operational conditions. Crash data was provided by the City as obtained through the Los Angeles County Sheriff’s Department. Additionally, Statewide Integrated Traffic Records System (SWITRS) collision data was evaluated. The time period evaluated was from January 1, 2016 through December 31, 2018 (3 years). The collision data Study Area, shown in **Exhibit 6-1**, Mulholland Highway from Old Topanga Canyon Road (East) to the City Limits, a total distance of approximately 2.7 miles.

Exhibit 6-1: Collision Analysis Study Area



6.1 Collision Analysis Summaries

A total of 18 collisions were reported during the three-year analysis time period. **Table 6-1** summarizes the data by year and severity and **Table 6-2** summaries by collision type. As shown, the majority of collision types within the study area are classified as “Broadsides” (22%) and “Hit Object” (22%) followed closely by “Sideswipe” (17%). Of the 18 collisions which were reported, 3 collisions involved severe injuries with no fatalities reported.

Table 6-1: Collision Summary by Severity and Year

Year	Number of Collisions						Percent
	Fatal	Injury (Severe)	Injury (Other Visible)	Injury (Complaint of Pain)	Property Damage Only	Total	
2016	0	1	1	0	4	6	33%
2017	0	0	2	1	3	6	33%
2018	0	2	1	1	2	6	33%
Total	0	3	4	2	9	18	100%

Notes: (1) Percent values may not total exactly 100% due to rounding.

Table 6-2: Collision Type Summary

Collision Type	Total	
	Number of Collisions	Percent
Broadside	4	22%
Hit Object	4	22%
Sideswipe	3	17%
Rear End	2	11%
Head On	1	6%
Vehicle/Pedestrian	1	6%
Other	3	17%
Total	18	100%

Notes: (1) Percent values may not total exactly 100% due to rounding.

Table 6-3 summarizes the data by violation type. Ten (10) of the collisions involved a violation type of "Unsafe Speed" or "Improper Turning."

Table 6-3: Violation Type Summary

Violation Type	Total	
	Number of Collisions	Percent
Unsafe Speed	5	28%
Improper Turning	5	28%
Wrong Side of Road	2	11%
Following Too Closely	1	6%
Automobile Right of Way	1	6%
Pedestrian Violation	1	6%
Traffic Signals and Signs	1	6%
Other Than Driver (or Pedestrian)	1	6%
Unknown	1	6%
Total	18	100%

Note: Percent values may not total exactly 100% due to rounding.

Table 6-4 shows the lighting conditions which were present during each collision. The majority of collisions (72%) occurred during daylight conditions.

Table 6-4: Collision Summary by Light Conditions

Day	Total	
	Number of Collisions	Percent
Daylight	13	72%
Dark – Street Lights	3	17%
Dark – No Street Lights	1	6%
Not Stated	1	6%
Total	18	100%

Note: Percent values may not total exactly 100% due to rounding.

The collision data was also summarized by Month, Day of Week, and Time of Day as shown in **Tables 6-5, 6-6, and 6-7**. As shown in **Table 6-6**, Saturday had a slightly larger proportion of collisions (6 collision, or 33%). 7 of the 18 collisions (39%) occurred between 9 AM and Noon.

Table 6-5: Collision Summary by Month

Month	Total	
	Number of Collisions	Percent
January	2	11%
February	3	17%
March	0	0%
April	1	6%
May	0	0%
June	2	11%
July	3	17%
August	2	11%
September	2	11%
October	1	6%
November	1	6%
December	1	6%
Total	18	100%

Note: Percent values may not total exactly 100% due to rounding.

Table 6-6: Collision Summary by Day of Week

Day	Total	
	Number of Collisions	Percent
Monday	2	11%
Tuesday	0	0%
Wednesday	1	6%
Thursday	3	17%
Friday	3	17%
Saturday	6	33%
Sunday	3	17%
Total	18	100%

Note: Percent values may not total exactly 100% due to rounding.

Table 6-7: Collisions Summary by Time of Day

Time of Day	Total	
	Number of Collisions	Percent
0:00 – 2:59	2	11%
3:00 - 5:59	0	0%
6:00 - 8:59	1	6%
9:00 - 11:59	7	39%
12:00 - 14:59	2	11%
15:00 - 17:59	2	11%
18:00 - 20:59	2	11%
21:00 - 23:59	1	6%
Unknown	1	6%
Total	18	100%

Note: Percent values may not total exactly 100% due to rounding.

The occurrence of bicycle and pedestrian collisions by location is summarized in **Table 6-8**. Two of the four bicycle/pedestrian collisions occurred near the Viewpoint School.

Table 6-8: Bicycle/Pedestrian-Related Collision Summary

Type	Number of Collisions	Location	Day of Week	Time of Day
Pedestrian	1	Viewpoint School frontage	Saturday	unknown
Bicyclist	3	Viewpoint School frontage	Monday	6:19 PM
		Mulholland Highway @ Old Topanga Canyon Road East	Monday	8:45 AM
		Mulholland Highway @ Mountain Park Drive	Saturday	10:45 AM
Total	4	--	--	--

Table 6-9 shows the crash rates along the corridor for the study period of January 1, 2016 through December 31, 2018. The Mulholland Highway corridor was analyzed as two segments.

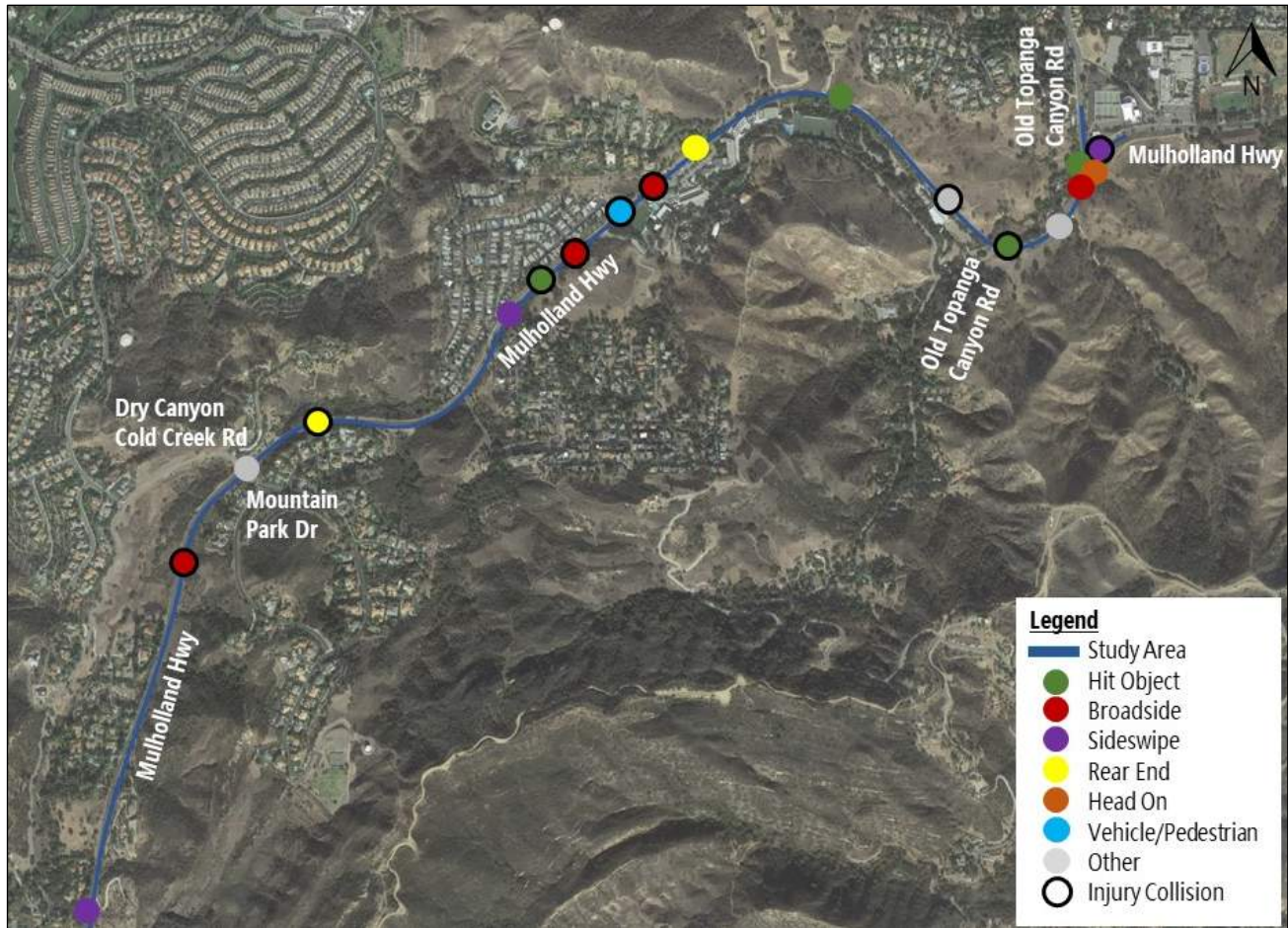
Table 6-9: Crash Rates

Roadway / Location		Number of Crashes	Average ADT	Segment Length (miles)	Crash Rate
Mulholland Highway	Old Topanga Canyon Rd (East) to Dry Canyon Cold Creek Road	11	11,600	1.07	80.9
	Dry Canyon Cold Creek Road to City Limits	7	6,100	1.64	63.9

Note: Roadway segment crash rates shown as crashes per 100 million vehicle-miles of travel.

Exhibit 6-2 is a crash cluster map showing the location of the reported collisions.

Exhibit 6-2: Collision Cluster Map



6.2 Historic Collision Data Review Findings

Key findings from the collision analysis are summarized below, by category.

Overall

- A total of 18 collisions were reported during the analysis time period along the study area roadways.
- The majority of collision types within the study area are classified as “Broadside” (22%) and “Hit Object” (22%) followed closely by “Sideswipe” (17%). “Hit Object” is often an indication of the lack of a roadside clear zone which results in motorists hitting objects near the roadway such as utility poles, this type of collision may also indicate that drivers are unfamiliar with the geometrics of the roadway and thus have difficulty navigating turns or curves. At several locations within the project study area, guardrail was observed to have been impacted and damaged. Also, the City has noted that several exposed catch basins at intersection corners had been struck by vehicles in the past.
- The data shows a consistent collision trend over the 3-year period.
- The majority of collisions occurred under daylight conditions (73%), and thus the lack of lighting likely did not contribute to collisions.
- A higher proportion of collisions occurred on a Saturday (6 of 18, or 33%).
- The highest number of collisions experienced a violation type of “Unsafe Speed” (5 of 18, or 28%) or “Improper Turning” (5 of 18, or 28%). The “Unsafe Speed” collisions indicate that drivers may have a tendency to operate at

speeds greater than the posted/design speed. The "Improper Turning" collisions indicates that drivers did not yield to another movement that had the right to proceed through the intersection.

- One collision was reported at the stop-controlled intersection of Mulholland Highway and Old Topanga Canyon Road (West).
- 4 collisions were reported at or in proximity to the signalized intersection of Mulholland Highway and Old Topanga Canyon Road (East).

Injuries and Fatalities

- The majority of reported collisions were "Property Damage Only" (9 of 18, or 50%) and thus did not involve injuries. The remaining 9 collisions (50%) resulted in some form of injury with no fatalities, 3 severe injuries, and 6 less severe injuries.

Pedestrian- and Bicycle-Related

- There was one pedestrian-related collision reported within the Study Area during the analysis time period. The collision occurred near the Viewpoint School area of Mulholland Highway on Saturday, June 23rd, 2018 resulting in a severe injury for the pedestrian.
- There were 3 bicycle-related collisions reported within the study area during the study time period, including two which resulted in injury. Two of the collisions occurred on a Monday, while one collision occurred on a Saturday. Location and time of day varied (8:45 AM, 10:45 AM, and 6:19 PM).

7.0 Operations Analysis Methodologies and Assumptions

7.1 Intersection Analysis Methodologies

Capacity analysis was conducted based on the *Highway Capacity Manual (HCM)*, 6th edition, published by the Transportation Research Board. The analysis measures of effectiveness for intersections include Level of Service (LOS) and delay. LOS, a qualitative measure describing traffic operational conditions, was the main criteria for the traffic evaluation. LOS is a standard index of the service provided by a transportation facility and can range from A through F. Delay measured in seconds per vehicle (sec/veh) passing through the intersection, is the primary measure of effectiveness for signalized and stop-controlled intersections. The specific delay thresholds for stop-controlled and signalized intersections are shown in **Table 7-1**.

Table 7-1: HCM Intersection LOS Thresholds

Level of Service	Signalized Intersection Average Delay (seconds/vehicle)	Two-Way Stop-Controlled, All-Way Stop-Controlled, and Roundabout Control Delay (seconds/vehicle)
LOS A	$x \leq 10$	$x \leq 10$
LOS B	$10 < x \leq 20$	$10 < x \leq 15$
LOS C	$20 < x \leq 35$	$15 < x \leq 25$
LOS D	$35 < x \leq 55$	$25 < x \leq 35$
LOS E	$55 < x \leq 80$	$35 < x \leq 50$
LOS F	$80 < x$	$50 < x$

Note: If the volume-to-capacity ratio (v/c) > 1.0, LOS = F.

Source: *Highway Capacity Manual, 6th Edition, specifically HCM Exhibit 18-4 (LOS Criteria: Automobile Mode – Signalized Intersections) and HCM Exhibit 19-1 (LOS Criteria: Automobile Mode – Two-Way Stop-Controlled Intersections).*

Since the operations analysis focuses on the two study intersections, capacity constraints beyond those intersections are not captured in this analysis. For example, the queuing that extends along Old Topanga Canyon Road (East) Northbound during the School PM peak near Calabasas High School and back to intersection #2 (Mulholland Highway and Old Topanga Canyon Road (East)) is not captured in the analysis results.

7.2 Roadway Segment Analysis Methodologies

The City of Calabasas *2030 General Plan* (October 2015) recognizes that Mulholland Highway west of Old Topanga Canyon Road is a “rural, twisting route with many driveways, and provides access to schools. As a result, the actual capacity of the roadway is less than its theoretical capacity.” For the purposes of this analysis, the LOS E ADT roadway capacity along Mulholland Highway west of Old Topanga Canyon Road (West) is anticipated to be 20,600 vehicles per day. This capacity is based upon the maximum LOS E volume for a two-lane facility using Highway Capacity Software (HCS). The Mulholland Highway operations between Old Topanga Canyon Road (West) and Old Topanga Canyon Road (East) are governed by the intersections.

7.3 Significance Criteria

The intersection LOS goal for this project has been defined as LOS D or better. Thus, LOS E and LOS F are noted in red bolded text in each of the intersection analysis summary tables. LOS E or better has been defined at the roadway segment LOS goal.

7.4 Analysis Software

Synchro version 10 was utilized to conduct the traffic operations analysis for this project and HCM 6th Edition LOS and delay results were reported. Synchro 95th percentile queue lengths were reported in order to capture the impact of the intersections on one another in a system.


Signal timings were optimized for this analysis. Modifying the signal timing can have a significant impact on the LOS, delay, and queue length results. The traffic signal timings utilized in the analysis were optimized to maximize intersection operations while prioritizing left turn storage in order to minimize queue spillback onto Mulholland Highway at the Old Topanga Canyon Road (West) and Old Topanga Canyon Road (East) intersections. Queue spillback was observed to occur during peak times under existing conditions at the left turn from Mulholland Highway to Old Topanga Canyon Road (East), which then impacted the Mulholland Highway Eastbound through movement. Signal timing should be examined further in the design stage of this project in order to balance and redistribute delays and queues amongst the approaches as appropriate. Other considerations in the design stage include signal coordination, left turn phase treatments (protected versus permitted), and right turn overlap phasing. This analysis assumes protected left turn phasing and the implementation of right turn overlap phasing.

8.0 Existing Year 2019 Conditions

Table 8-1 shows the intersection Synchro analysis results for the Existing Year 2019 condition including LOS and delay (in average seconds per vehicle). HCM 6th Edition results are provided. The Existing Condition analysis shows poor LOS and high delays at the Old Topanga Canyon Road (West) intersection stop-controlled approach at Mulholland Highway. The signalized intersection of Mulholland Highway @ Old Topanga Canyon Road (West) currently operates at overall LOS D or better during all analysis hours. **Appendix C** contains the Existing Year 2019 analysis worksheets.

Table 8-1: Existing Year 2019 Analysis Results: Intersection Level of Service and Delay

Intersection-Node [Traffic Control]		Direction / Movement		AM Peak Hour		School PM Peak Hour		PM Peak Hour	
				LOS / Delay (1) (3)		LOS / Delay (1) (3)		LOS / Delay (1) (3)	
Mulholland Hwy @ Old Topanga Canyon Rd (West)	1	Eastbound	Through	A	0.0	A	0.0	A	0.0
			Right						
		Westbound	Left	C	18.6	B	11.1	B	11.9
			Through	A	0.0	A	0.0	A	0.0
		Northbound	Left	F	> 300.0	F	114.0	F	63.5
			Right	C	21.6	D	34.7	E	48.3
Overall		--	--	--	--	--	--		
Mulholland Hwy @ Old Topanga Canyon Rd (East)	2	Eastbound	Left	E	69.5	D	43.2	F	69.2
			Through	A	8.9	A	7.6	A	8.5
		Westbound	Through	E	59.0	D	36.0	C	24.2
			Right	-- (2)	-- (2)	-- (2)	-- (2)	-- (2)	-- (2)
		Southbound	Left	D	44.7	C	34.7	C	24.7
			Right	D	49.1	A	9.4	B	10.1
		Overall		D	48.5	C	25.8	C	29.8




Notes:

- (1) Delay shown in seconds per vehicle.
- (2) Westbound right turn is not processed through signal.
- (3) LOS E and LOS F identified with bold, red text.

The additional measure of effectiveness queue length was also examined. **Table 8-2** provides the 95th percentile queue lengths per the Synchro analysis results. The results show substantial queuing at the eastbound left turn at the Mulholland Highway intersection with Old Topanga Canyon Road (East). Additionally, queue lengths beyond the available storage currently occur on both the westbound left turn at the Mulholland Highway @ Old Topanga Canyon Road (West) intersection and the southbound left at the Mulholland Highway @ Old Topanga Canyon Road (East) intersection.

Table 8-2: Existing Year 2019 Analysis Results: Intersection Queue Lengths

Intersection-Node [Traffic Control]		Direction / Movement	Available Storage (feet)	Distance to Adjacent Intersection (feet)	Queue Length (feet)			
					AM Peak Hour	School PM Peak Hour	PM Peak Hour	
Mulholland Hwy @ Old Topanga Canyon Rd (West)	1	Eastbound	Through	--	3,200	0	0	0
			Right	--	3,200	0	0	0
		Westbound	Left	125	--	152	29	26
			Through	--	1,090	0	0	0
		Northbound	Left	--	570	**	323	171
			Right	--	570	**	323	171
Mulholland Hwy @ Old Topanga Canyon Rd (East)	2	Eastbound	Left	185	--	#474	#640	#537
			Through	--	1,090	121	222	241
		Westbound	Through	--	790	#424	#300	127
			Right	150	--	-- (1)	-- (1)	-- (1)
		Southbound	Left	90	--	187	230	131
			Right	--	930	413	76	22



Notes:

(1) Westbound right turn lane not processed through signal thus Synchro does not generate a queue length.

- Queue lengths are Synchro 95th percentile queues.
- Red represents queue lengths greater than available storage.
- Yellow text/shaded gray cell represents storage that is blocked by adjacent lane queue.

= Volume for the 95th percentile cycle exceeds capacity.
 ** = Queue length not reported due to excessive delay.

Table 8-3 summarizes the roadway segment capacity based upon a volume-to-capacity ratio. V/C is not shown for the section of Mulholland Highway near the Old Topanga Canyon Road intersections since the capacity of this section is governed by the operations at the intersections. The results show that each roadway segment currently operates under capacity.

Table 8-3: Existing Year 2019 Analysis Results: Roadway Segments

ID #	Location	Average Daily Traffic Volume	Volume-to-Capacity Ratio (V/C)	Over or Under Capacity? (2)
1	Mulholland Highway E/O Old Topanga Canyon Road (West)	13,200	N/A (1)	N/A (1)
2	Old Topanga Canyon Rd (West) S/O Mulholland Highway	4,900	0.238	Under
3	Mulholland Highway W/O Old Topanga Canyon Road (West)	10,300	0.500	Under
4	Mulholland Highway between Parksouth Street & Old Topanga Canyon Road	8,800	0.427	Under
5	Mulholland Highway between Balder Drive & Condell Drive	7,300	0.354	Under
6	Mulholland Highway S/O Dry Canyon Cold Creek Road (West)	4,300	0.209	Under
7	Mulholland Highway S/O Turtle Creek Road	4,400	0.214	Under

Notes: (1) Capacity governed by intersection operations.
 (2) LOS E Capacity = 20,600 vehicles per day.
 (3) Note: E/O = east of; W/O = west of; S/O = south of

9.0 Future No Build Scenario

Table 9-1 shows the intersection Synchro analysis results for the Design Year 2045 No Build condition including LOS and delay (in average seconds per vehicle). HCM 6th Edition results are provided. The No Build Condition analysis results show conditions are projected to worsen over time at both analysis intersections without any improvements. **Appendix D** contains the Design Year 2045 No Build analysis worksheets.

Table 9-1: Design Year 2045 No Build Analysis Results: Intersection Level of Service and Delay

Intersection-Node [Traffic Control]		Direction / Movement		AM Peak Hour		School PM Peak Hour		PM Peak Hour	
				LOS / Delay (1) (3)		LOS / Delay (1) (3)		LOS / Delay (1) (3)	
Mulholland Hwy @ Old Topanga Canyon Rd (West)	1	Eastbound	Through	A	0.0	A	0.0	A	0.0
			Right						
		Westbound	Left	D	34.0	B	12.5	B	13.8
			Through	A	0.0	A	0.0	A	0.0
		Northbound	Left	F	> 300.0	F	> 300.0	F	143.7
			Right	D	31.1	F	77.2	F	127.3
Overall		--	--	--	--	--	--		
Mulholland Hwy @ Old Topanga Canyon Rd (East)	2	Eastbound	Left	F	82.1	D	50.8	F	72.6
			Through	A	8.6	A	7.6	A	9.0
		Westbound	Through	E	68.4	E	56.6	C	27.2
			Right	-- (2)	-- (2)	-- (2)	-- (2)	-- (2)	-- (2)
		Southbound	Left	F	93.9	E	70.7	C	27.9
			Right	F	98.0	A	9.3	B	10.1
		Overall		E	75.7	D	35.6	C	31.5

Notes:

- (1) Delay shown in seconds per vehicle.
- (2) Westbound right turn is not processed through signal.
- (3) LOS E and LOS F identified with bold, red text.

Table 9-2 provides the 95th percentile queue lengths per the Synchro analysis results. The results continue to show substantial queuing at the eastbound left turn at the Mulholland Highway intersection with Old Topanga Canyon Road (East) in the future.

Table 9-2: Design Year 2045 No Build Analysis Results: Intersection Queue Lengths

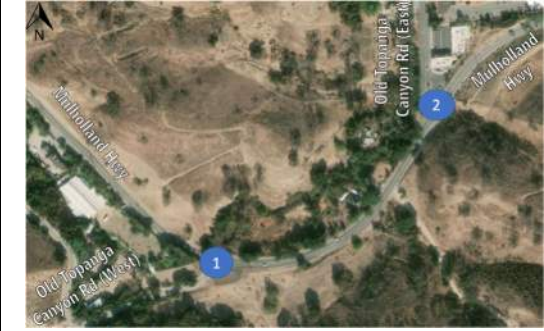
Intersection-Node [Traffic Control]		Direction / Movement	Available Storage (feet)	Distance to Adjacent Intersection (feet)	Queue Length (feet)			
					AM Peak Hour	School PM Peak Hour	PM Peak Hour	
Mulholland Hwy @ Old Topanga Canyon Rd (West)	1	Eastbound	Through	--	3,200	0	0	0
			Right					
		Westbound	Left	125	--	296	43	41
			Through	--	1,090	0	0	0
		Northbound	Left	--	570	**	790	439
			Right					
Mulholland Hwy @ Old Topanga Canyon Rd (East)	2	Eastbound	Left	185	--	#615	#627	#644
			Through	--	1,090	143	184	297
		Westbound	Through	--	790	#552	#337	157
			Right	150	--	-- (1)	-- (1)	-- (1)
		Southbound	Left	90	--	257	#307	158
			Right	--	930	678	109	38
			<p><i>Notes:</i></p> <p>(1) Westbound right turn lane not processed through signal thus Synchro does not generate a queue length.</p> <ul style="list-style-type: none"> • Queue lengths are Synchro 95th percentile queues. • Red represents queue lengths greater than available storage. • Yellow text/shaded gray cell represents storage that is blocked by adjacent lane queue. <p># = Volume for the 95th percentile cycle exceeds capacity. ** = Queue length not reported due to excessive delay.</p>					

Table 9-3 summarizes the projected roadway segment capacity based upon a volume-to-capacity ratio. The results show that each segment is projected to operate under capacity during the Design Year 2045, however the segment of Mulholland Highway just west of Old Topanga Canyon Road (West) is nearing capacity.

Table 9-3: Design Year 2045 No Build Analysis Results: Roadway Segments

ID #	Location	Average Daily Traffic Volume	Volume-to-Capacity Ratio (V/C)	Over or Under Capacity? (2)
1	Mulholland Highway E/O Old Topanga Canyon Road (West)	14,900	N/A*	N/A (1)
2	Old Topanga Canyon Rd (West) S/O Mulholland Highway	5,500	0.267	Under
3	Mulholland Highway W/O Old Topanga Canyon Road (West)	11,600	0.563	Under
4	Mulholland Highway between Parksouth Street & Old Topanga Canyon Road	9,900	0.481	Under
5	Mulholland Highway between Balder Drive & Condell Drive	8,200	0.398	Under
6	Mulholland Highway S/O Dry Canyon Cold Creek Road (West)	4,800	0.233	Under
7	Mulholland Highway S/O Turtle Creek Road	5,000	0.243	Under

Notes: (1) Capacity governed by intersection operations.
 (2) LOS E Capacity = 20,600 vehicles per day.

10.0 Build Alternative

10.1 Traffic Signal Warrant Analysis

The *California Manual on Uniform Traffic Control Devices* (CA MUTCD), 2014 Edition was utilized to conduct traffic signal warrant for the Mulholland Highway and Old Topanga Canyon Road (West) intersection for the existing conditions. The CA MUTCD includes nine (9) traffic signal warrant options. This study focused on the vehicular volume warrants, as follows:

- 1) Warrant 1, Eight-Hour Vehicular Volume
- 2) Warrant 2, Four-Hour Vehicular Volume
- 3) Warrant 3, Peak Hour

Per CA MUTCD guidance, an alternative method may be utilized for intersections with a high volume of left turn traffic from the major street. This method assumes that the minor street volume is a combination of the minor street approach volume and the major street left turn volume. The major street volume would be the total of both approaches minus the major street high left turn volume. Thus, two scenarios were examined:

- 1) Scenario 1 – Typical configuration
- 2) Scenario 2 – Major street left turn considered as part of minor street

Table 10-1 summarizes the warrant analysis results. A signal is warranted at the intersection of Mulholland Highway and Old Topanga Canyon Road (West) based upon the Peak Hour (Warrant 3) and Four-Hour (Warrant 2) volume warrants. The Eight-Hour (Warrant 1) warrant is not currently met. See **Appendix E** for the warrant analyses worksheets.

Table 10-1: Signal Warrant Analysis Summary – Mulholland Highway @ Old Topanga Canyon Road (West)

Warrant		Traffic Signal Warrant Met during Existing Year 2019 Conditions? / Number of Hours Met	
		Scenario 1	Scenario 2
1	Warrant 1, Eight-Hour Vehicular Volume	No	No
	<i>No. of Hours Met – Condition A</i>	3	6
	<i>No. of Hours Met – Condition B</i>	6	4
	<i>No. of Hours Met – Condition A & B</i>	5 & 7	8 & 6
2	Warrant 2, Four-Hour Vehicular Volume	Yes	Yes
	<i>No. of Hours Met</i>	4	4
3	Warrant 3, Peak Hour	Yes	Yes
	<i>No. of Hours Met</i>	1	1

10.2 Build Scenario Description

The Build Alternative includes the following primary components:

- Mulholland Highway @ Old Topanga Canyon Road (West) Intersection
 - Install a traffic signal.
 - Extend the Mulholland Highway westbound left turn lane storage bay to approximately 420 feet.
 - Reconfigure the northbound approach to include a dedicated left turn lane with a storage lane of approximately 170 feet. The through lane would extend directly into the right turn lane.
 - Coordinate the traffic signal with the existing signal at the Mulholland Highway and Old Topanga Canyon Road (East) Intersection.
 - Install pedestrian crossing across Mulholland Highway to connect Wild Walnut Park and the new westbound Mulholland Highway sidewalk.
- Mulholland Highway @ Old Topanga Canyon Road (East) Intersection
 - Extend the Mulholland Highway eastbound left turn lane storage bay to approximately 580 feet.
 - Coordinate and re-optimize traffic signal.
 - Install new sidewalk and crosswalk connection.
 - Potential re-striping of intersection.
- Mulholland Highway Corridor
 - Extend existing turn pocket lengths and add dedicated turn lanes where appropriate.
 - Incorporate geometric improvements including shoulder widening.
 - Install sidewalk along Mulholland Highway Westbound between Old Topanga Canyon Road (West) and Old Topanga Canyon Road (East).
 - Remove, replace, and install new guardrail where appropriate.
 - Construct slope stability measures, such as retaining walls, where appropriate.

As these improvements are refined in more detail under future studies and design, the storage lane lengths and signal timing can be refined. For example, the analysis assumes that the installation of a new traffic signal at the Mulholland Highway @ Old Topanga Canyon Road (West) intersection will include a protected left turn movement from Mulholland Highway Westbound to Old Topanga Canyon Road (West) Southbound in order to provide a safety improvement. The left turn phasing, as well as the coordination with the adjacent signal should be studied in more detail as plans progress beyond this initial feasibility stage.

10.3 Build Scenario Analysis Results

Table 10-2 shows the intersection Synchro analysis results for the Design Year 2045 Build condition including LOS and delay (in average seconds per vehicle). HCM 6th Edition results are provided. The Build Condition analysis results show that the AM Peak Hour is still projected to experience overall LOS E, however the School PM Peak and PM Peak are anticipated to operate at overall LOS D or better.

A comparison to the No Build condition shows improvements in LOS and delay. With the installation of a traffic signal at the intersection of Mulholland Highway @ Old Topanga Canyon Road (West), vehicle delays and queues are anticipated to improve greatly on the Old Topanga Road (West) approach to the intersection, however delays and queues would increase along the Mulholland Highway approaches since the previously uncontrolled movements would operate under signal control.

The Mulholland Highway and Old Topanga Road (East) intersection results vary slightly from the No Build condition given the extension of the Mulholland Highway left turn lane storage bay and the coordination of the traffic signals. Given the signal coordination, the cycle lengths would be the same at both intersections. Future studies should examine the

coordination in more detail to determine if leaving the signals independent of one another with different cycle lengths may be of more benefit. **Appendix F** contains the Design Year 2045 Build analysis worksheets.

Table 10-2: Design Year 2045 Build Analysis Results: Intersection Level of Service and Delay

Intersection-Node [Traffic Control]		Direction / Movement		AM Peak Hour		School PM Peak Hour		PM Peak Hour		
				LOS / Delay (1)		LOS / Delay (1)		LOS / Delay (1)		
Mulholland Hwy @ Old Topanga Canyon Rd (West)	1	[Signalized]	Eastbound	Through	F	179.2	C	32.3	F	49.2
				Right						
			Westbound	Left	C	33.3	E	58.6	E	59.6
				Through	A	0.1	A	0.6	A	0.4
			Northbound	Left	D	52.1	D	42.5	D	46.5
				Right	C	21.2	D	44.2	D	48.6
			Overall				E	74.1	C	29.0
Mulholland Hwy @ Old Topanga Canyon Rd (East)	2	[Signalized]	Eastbound	Left	F	68.9	D	40.9	D	41.8
				Through	B	13.8	A	7.6	A	7.4
			Westbound	Through	F	213.9	D	50.4	C	33.0
				Right	-- (2)	-- (2)	-- (2)	-- (2)	-- (2)	-- (2)
			Southbound	Left	D	40.8	F	93.5	D	51.7
				Right	D	45.9	B	10.8	B	15.3
			Overall				E	74.3	D	35.3

Notes:

- (1) Delay shown in seconds per vehicle.
- (2) Westbound right turn is not processed through signal.
- (3) LOS E and LOS F identified with bold, red text.

Table 10-3 provides the 95th percentile queue lengths per the Synchro analysis results. The results show that the queue lengths at both Mulholland Highway left turn lanes are anticipated to be adequate during all peaks based on the assume traffic signal timing and phasing. The queue results show queuing along the Old Topanga Canyon Road (East) approach to Mulholland Highway is anticipated to experience some queuing. Shifting green time to this approach could negatively impact the operations of the Mulholland Highway left turn lane thus potentially causing the queue to extend past the available storage (approximately 580').

Table 10-3: Design Year 2045 Build Analysis Results: Intersection Queue Lengths

Intersection-Node [Traffic Control]		Direction / Movement	Available Storage (feet)	Distance to Adjacent Intersection (feet)	Queue Length (feet)			
					AM Peak Hour	School PM Peak Hour	PM Peak Hour	
Mulholland Hwy @ Old Topanga Canyon Rd (West)	1	Eastbound	Through	--	3,200	#1,113	#895	#1,163
			Right					
		Westbound	Left	420	--	m413	m#295	#225
			Through	--	1,090	m155	44	44
		Northbound	Left	170	--	32	48	46
			Right	--	570	76	171	215
Mulholland Hwy @ Old Topanga Canyon Rd (East)	2	Eastbound	Left	580	--	m267	#575	m458
			Through	--	1,090	m30	106	173
		Westbound	Through	--	790	#693	#376	219
			Right	150	--	-- (1)	-- (1)	-- (1)
		Southbound	Left	90	--	225	#345	220
			Right	--	930	551	114	56

Notes:

(1) Westbound right turn lane not processed through signal thus Synchro does not generate a queue length.

- Queue lengths are Synchro 95th percentile queues.
- Red represents queue lengths greater than available storage.
- Yellow text/shaded gray cell represents storage that is blocked by adjacent lane queue.


= Volume for the 95th percentile cycle exceeds capacity.
 ** = Queue length not reported due to excessive delay.
 m = Volume for 95th percentile queue is metered by upstream signal.

10.4 Existing Condition With Improvements

An additional scenario was examined assuming the implementation of the proposed improvements under Existing conditions. As shown in **Tables 10-4**, the results of this scenario show LOS D or better overall at both intersections during all peak hours. **Appendix G** contains the analysis worksheets for this condition.

Table 10-4: Existing Year 2019 Build Analysis Results: Intersection Level of Service and Delay

Intersection-Node [Traffic Control]		Direction / Movement		AM Peak Hour		School PM Peak Hour		PM Peak Hour		
				LOS / Delay (1) (3)		LOS / Delay (1) (3)		LOS / Delay (1) (3)		
Mulholland Hwy @ Old Topanga Canyon Rd (West)	1	[Signalized]	Eastbound	Through	F	67.0	C	29.5	D	37.2
				Right						
			Westbound	Left	C	31.8	C	33.8	D	36.6
				Through	A	0.4	A	0.6	A	0.4
			Northbound	Left	D	51.6	D	37.0	D	41.1
				Right	C	24.9	C	30.6	D	35.2
			Overall				C	34.0	C	22.5
Mulholland Hwy @ Old Topanga Canyon Rd (East)	2	[Signalized]	Eastbound	Left	E	55.4	D	44.9	D	40.7
				Through	B	13.6	A	7.4	A	6.4
			Westbound	Through	F	127.6	D	36.4	C	26.1
				Right	-- (2)	-- (2)	-- (2)	-- (2)	-- (2)	-- (2)
			Southbound	Left	D	37.5	D	54.4	D	45.1
				Right	C	26.4	B	11.5	B	16.6
			Overall				D	49.6	C	29.6



Notes:

- (1) Delay shown in seconds per vehicle.
- (2) Westbound right turn is not processed through signal.
- (3) LOS E and LOS F identified with bold, red text.

Table 10-5 provides the 95th percentile queue lengths per the Synchro analysis results. The results show that the extension of the left turn lanes along Mulholland Highway are anticipated to adequately serve the Existing Year traffic volumes based on the signal phasing and timing assumed in the analysis.

Table 10-5: Existing Year 2019 Build Analysis Results: Intersection Queue Lengths

Intersection-Node [Traffic Control]		Direction / Movement	Available Storage (feet)	Distance to Adjacent Intersection (feet)	Queue Length (feet)			
					AM Peak Hour	School PM Peak Hour	PM Peak Hour	
Mulholland Hwy @ Old Topanga Canyon Rd (West)	1	Eastbound	Through	--	3,200	#939	#718	#929
			Right					
		Westbound	Left	420	--	m404	#218	125
			Through	--	1,090	138	54	40
		Northbound	Left	170	--	26	40	32
			Right	--	570	54	105	140
Mulholland Hwy @ Old Topanga Canyon Rd (East)	2	Eastbound	Left	580	--	286	#534	m307
			Through	--	1,090	28	76	78
		Westbound	Through	--	790	#588	243	176
			Right	150	--	-- (1)	-- (1)	-- (1)
		Southbound	Left	90	--	198	236	181
			Right	--	930	400	68	27

Notes:

(1) Westbound right turn lane not processed through signal thus Synchro does not generate a queue length.

- Queue lengths are Synchro 95th percentile queues.
- Red represents queue lengths greater than available storage.
- Yellow text/shaded gray cell represents storage that is blocked by adjacent lane queue.

= Volume for the 95th percentile cycle exceeds capacity.
 ** = Queue length not reported due to excessive delay.
 m = Volume for 95th percentile queue is metered by upstream signal.

11.0 Additional Intersection Analysis – Canyon Drive

While the primary focus of the study revolved around the Mulholland Highway intersections with Old Topanga Canyon Road and the Mulholland Highway corridor, additional analysis was conducted at the Mulholland Highway and Canyon Drive intersection. This section of the report focuses on the intersection analysis results for that location.

11.1 Traffic Volumes

A traffic count was collected at this intersection during the AM Peak, School PM Peak, and PM Peak periods on Thursday, February 27, 2020. The data collection worksheets are included in **Appendix H**. **Table 11-1** shows the Existing condition traffic volumes for this intersection. The same traffic volume projection method was utilized to determine the project Design Year turning movement volumes at this intersection. **Table 11-2** shows the Design Year traffic volumes for this location.

Exhibit 11-1: Existing Year Traffic Volumes (Mulholland Hwy at Canyon Drive)



Exhibit 11-2: Design Year Traffic Volumes (Mulholland Hwy at Canyon Drive)



11.2 Traffic Operations Analysis

Consistent traffic operations methodologies were applied to determine the current and projected LOS and delay at the Mulholland Highway and Canyon Drive intersection. **Table 11-1** shows the Existing condition LOS and delay while **Table 11-2** shows the Existing condition queue lengths. **Table 11-3** shows the Design Year No Build LOS and delay and **Table 11-4** shows the Design Year No Build queue analysis results. Synchro analysis worksheets are included in **Appendix H**. The analysis of the Mulholland Highway and Canyon Drive intersection show that the intersection currently operates at LOS B

or better and is projected to operate at LOS C or better into the Design Year. Thus, available capacity is projected to exist at the study intersection.

Table 11-1: Existing Year Analysis Results: Intersection Level of Service and Delay (Canyon Drive)

Intersection-Node [Traffic Control]			Direction / Movement		AM Peak Hour		School PM Peak Hour		PM Peak Hour	
					LOS / Delay (1) (2)		LOS / Delay (1) (2)		LOS / Delay (1) (2)	
Mulholland Hwy @ Canyon Drive	3	[Stop- Controlled]	Eastbound	Through	A	0.0	A	0.0	A	0.0
				Right						
			Westbound	Left	A	8.0	A	8.7	A	9.3
				Through	A	0.0	A	0.0	A	0.0
			Northbound	Left	B	11.4	B	13.2	B	14.6
				Right						

Notes:
 (1) Delay shown in seconds per vehicle.
 (2) Goal of LOS D or better achieved.

Table 11-2: Existing Year Analysis Results: Intersection Queue Lengths (Canyon Drive)

Intersection-Node [Traffic Control]			Direction / Movement		Available Storage (feet)	Distance to Adjacent Intersection (feet)	Queue Length (feet)		
							AM Peak Hour	School PM Peak Hour	PM Peak Hour
Mulholland Hwy @ Canyon Drive	3	[Stop- Controlled]	Eastbound	Through	--	2,200	0	0	0
				Right					
			Westbound	Left	100	--	2	5	7
				Through	--	590	0	0	0
			Northbound	Left	--	--	17	15	15
				Right					

Notes:
 • Queue lengths are Synchro 95th percentile queues.
 • All queue lengths shown are adequate.

Table 11-3: Design Year Analysis Results: Intersection Level of Service and Delay (Canyon Drive)

Intersection-Node [Traffic Control]			Direction / Movement		AM Peak Hour		School PM Peak Hour		PM Peak Hour	
					LOS / Delay (1) (2)		LOS / Delay (1) (2)		LOS / Delay (1) (2)	
Mulholland Hwy @ Canyon Drive	3	[Stop- Controlled]	Eastbound	Through	A	0.0	A	0.0	A	0.0
				Right						
			Westbound	Left	A	8.1	A	9.0	A	9.8
				Through	A	0.0	A	0.0	A	0.0
			Northbound	Left	B	12.0	B	14.2	C	17.1
				Right						

Notes:
 (1) Delay shown in seconds per vehicle.
 (2) Goal of LOS D or better achieved.

Table 11-4: Design Year Analysis Results: Intersection Queue Lengths (Canyon Drive)

Intersection-Node [Traffic Control]		Direction / Movement		Available Storage (feet)	Distance to Adjacent Intersection (feet)	Queue Length (feet)			
						AM Peak Hour	School PM Peak Hour	PM Peak Hour	
Mulholland Hwy @ Canyon Drive	3	[Stop- Controlled]	Eastbound	Through	--	2,200	0	0	0
				Right					
			Westbound	Left	100	--	2	6	9
				Through	--	590	0	0	0
			Northbound	Left	--	--	21	18	23
				Right					

Notes:

- Queue lengths are Synchro 95th percentile queues.
- All queue lengths shown are adequate.

12.0 Conclusions

Mulholland Highway corridor traffic operations and safety analyses were examined to establish the Existing and Future No Build Conditions. **Table 12-1** summarizes the Existing Year 2019, Design Year 2045 No Build, and Design Year 2045 Build LOS and vehicle delay analysis results. The results show minor improvements in LOS and delay when compared to the No Build condition, however the project is anticipated to improve overall corridor safety and operations through the implementation of intersection improvements; installation of guardrail, sidewalk, and crosswalks; shoulder widening; and sight distance enhancements. Additional improvements beyond those documented in this study would be required to obtain LOS D or better overall and on all individual movements such as providing additional through and/or turns lanes within the study area, thus impacting the rural character of the area.

Table 12-1: Analysis Results Comparison

Intersection / Direction / Movement			LOS / Delay (1)																	
			AM Peak Hour						School PM Peak Hour						PM Peak Hour					
			Existing		No Build		Build		Existing		No Build		Build		Existing		No Build		Build	
1 - Mulholland Hwy @ Old Topanga Canyon Rd (West) (3)	Eastbound	Through	A	0.0	A	0.0	F	179.2	A	0.0	A	0.0	C	32.3	A	0.0	A	0.0	F	49.2
		Right																		
	Westbound	Left	C	18.6	D	34.0	C	33.3	B	11.1	B	12.5	E	58.6	B	11.9	B	13.8	E	59.6
		Through	A	0.0	A	0.0	A	0.1	A	0.0	A	0.0	A	0.6	A	0.0	A	0.0	A	0.4
	Northbound	Left	F	>300.0	F	>300.0	D	52.1	F	114.0	F	>300.0	D	42.5	F	63.5	F	143.7	D	46.5
		Right	C	21.6	D	31.1	C	21.2	D	34.7	F	77.2	D	44.2	E	48.3	F	127.3	D	48.6
	Overall		-- (2)	-- (2)	-- (2)	-- (2)	E	74.1	-- (2)	-- (2)	-- (2)	-- (2)	C	29.0	-- (2)	-- (2)	-- (2)	-- (2)	D	40.4
2 - Mulholland Hwy @ Old Topanga Canyon Rd (East) (4)	Eastbound	Left	E	69.5	F	82.1	F	68.9	D	43.2	D	50.8	D	40.9	F	69.2	F	72.6	D	41.8
		Through	A	8.9	A	8.6	B	13.8	A	7.6	A	7.6	A	7.6	A	8.5	A	9.0	A	7.4
	Westbound	Through	E	59.0	E	68.4	F	213.9	D	36.0	E	56.6	D	50.4	C	24.2	C	27.2	C	33.0
		Right	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Southbound	Left	D	44.7	F	93.9	D	40.8	C	34.7	E	70.7	F	93.5	C	24.7	C	27.9	D	51.7
		Right	D	49.1	F	98.0	D	45.9	A	9.4	A	9.3	B	10.8	B	10.1	B	10.1	B	15.3
	Overall		D	48.5	E	75.7	E	74.3	C	25.8	D	35.6	D	35.3	C	29.8	C	31.5	C	25.9

- Note:
- (1) Delay reported in seconds per vehicle
 - (2) Overall delay not reported by HCM for two-way stop-controlled intersections
 - (3) Intersection is One-Way Stop-Controlled under the Existing and No Build conditions and Signalized under the Build condition
 - (4) Intersection is Signalized under all conditions

The additional analysis of the Mulholland Highway and Canyon Drive intersection indicates acceptable operations during both the Existing Year and Design Year No Build scenarios.

Appendix A: Traffic Count Data

National Data & Surveying Services

Intersection Turning Movement Count

Location: Mulholland Hwy & Old Topanga Canyon Rd East
 City: Calabasas
 Control: Signalized

Project ID: 19-05730-001
 Date: 12/5/2019

Total

NS/EW Streets:	Mulholland Hwy				Mulholland Hwy				Old Topanga Canyon Rd East				Old Topanga Canyon Rd East				TOTAL
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
AM	1	1	0	0	0	1	1	0	1	0	1	0	0	0	0	0	TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
6:00 AM	16	7	0	0	0	10	5	0	3	0	27	0	0	0	0	0	68
6:15 AM	19	10	0	0	0	20	5	0	7	0	67	0	0	0	0	0	128
6:30 AM	23	7	0	0	0	30	11	0	14	0	98	0	0	0	0	0	183
6:45 AM	33	15	0	0	0	72	8	0	34	0	142	0	0	0	0	0	304
7:00 AM	29	21	0	0	0	70	12	0	26	0	140	0	0	0	0	0	298
7:15 AM	63	31	0	0	0	97	22	0	15	0	210	0	0	0	0	0	438
7:30 AM	134	71	0	0	0	114	25	0	26	0	221	0	0	0	0	0	591
7:45 AM	129	97	0	0	0	85	38	0	61	0	146	0	0	0	0	0	556
8:00 AM	81	60	0	0	0	65	61	0	88	0	77	0	0	0	0	0	432
8:15 AM	64	39	0	0	0	63	92	0	78	0	114	0	0	0	0	0	450
8:30 AM	68	36	0	0	0	51	53	0	51	0	72	0	0	0	0	0	331
8:45 AM	62	36	0	0	0	41	19	0	22	0	68	0	0	0	0	0	248
9:00 AM	75	34	0	0	0	41	26	0	20	0	83	0	0	0	0	0	279
9:15 AM	57	32	0	0	0	34	19	0	12	0	65	0	0	0	0	0	219
9:30 AM	51	19	0	0	0	37	22	0	15	0	78	0	0	0	0	0	222
9:45 AM	55	24	0	0	0	22	19	0	9	0	64	0	0	0	0	0	193
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	64.02%	35.98%	0.00%	0.00%	0.00%	66.10%	33.90%	0.00%	22.34%	0.00%	77.66%	0.00%	0	0	0	0	4940
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	408	267	0	0	0	327	216	0	253	0	558	0	0	0	0	0	2029
PEAK HR FACTOR :	0.761	0.688	0.000	0.000	0.000	0.717	0.587	0.000	0.719	0.000	0.631	0.000	0.000	0.000	0.000	0.000	0.858
	0.747				0.876				0.821								

NS/EW Streets:	Mulholland Hwy				Mulholland Hwy				Old Topanga Canyon Rd East				Old Topanga Canyon Rd East				TOTAL
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
NOON	1	1	0	0	0	1	1	0	1	0	1	0	0	0	0	0	TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
10:00 AM	46	29	0	0	0	20	16	0	17	0	60	0	0	0	0	0	188
10:15 AM	42	25	0	0	0	27	29	0	25	0	58	0	0	0	0	0	206
10:30 AM	45	16	0	0	0	21	25	0	30	0	58	0	0	0	0	0	195
10:45 AM	54	23	0	0	0	25	18	0	24	0	45	0	0	0	0	0	189
11:00 AM	67	34	0	0	0	16	17	0	21	0	40	0	0	0	0	0	195
11:15 AM	53	44	0	0	0	22	13	0	23	0	50	0	0	0	0	0	205
11:30 AM	53	28	0	0	0	19	23	0	17	0	57	0	0	0	0	0	197
11:45 AM	50	41	0	0	0	21	25	0	27	0	41	0	0	0	0	0	205
12:00 PM	43	38	0	0	0	30	19	0	27	0	43	0	0	0	0	0	200
12:15 PM	38	46	0	0	0	31	26	0	40	0	57	0	0	0	0	0	238
12:30 PM	36	48	0	0	0	30	63	0	46	0	52	0	0	0	0	0	275
12:45 PM	33	38	0	0	0	27	34	0	31	0	55	0	0	0	0	0	218
1:00 PM	39	40	0	0	0	19	43	0	45	0	55	0	0	0	0	0	241
1:15 PM	25	41	0	0	0	26	31	0	29	0	42	0	0	0	0	0	194
1:30 PM	47	39	0	0	0	25	23	0	26	0	39	0	0	0	0	0	199
1:45 PM	46	32	0	0	0	22	22	0	27	0	59	0	0	0	0	0	208
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	56.06%	43.94%	0.00%	0.00%	0.00%	47.15%	52.85%	0.00%	35.94%	0.00%	64.06%	0.00%	0	0	0	0	3353
PEAK HR :	12:15 PM - 01:15 PM																TOTAL
PEAK HR VOL :	146	172	0	0	0	107	166	0	162	0	219	0	0	0	0	0	972
PEAK HR FACTOR :	0.936	0.896	0.000	0.000	0.000	0.863	0.659	0.000	0.880	0.000	0.961	0.000	0.000	0.000	0.000	0.000	0.884
	0.946				0.734				0.953								

NS/EW Streets:	Mulholland Hwy				Mulholland Hwy				Old Topanga Canyon Rd East				Old Topanga Canyon Rd East				TOTAL
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
PM	1	1	0	0	0	1	1	0	1	0	1	0	0	0	0	0	TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
2:00 PM	97	44	0	0	0	21	21	0	44	0	55	0	0	0	0	0	282
2:15 PM	63	48	0	0	0	27	17	0	47	0	52	0	0	0	0	0	254
2:30 PM	57	30	0	0	0	39	47	0	44	0	83	0	0	0	0	0	300
2:45 PM	122	57	0	0	0	52	53	0	37	0	102	0	0	0	0	0	423
3:00 PM	87	70	0	0	0	62	60	0	76	0	107	0	0	0	0	0	462
3:15 PM	159	83	0	0	0	56	42	0	58	0	92	0	0	0	0	0	490
3:30 PM	144	113	0	0	0	64	52	0	48	0	63	0	0	0	0	0	484
3:45 PM	136	127	0	0	0	50	36	0	49	0	71	0	0	0	0	0	469
4:00 PM	132	129	0	0	0	48	53	0	34	0	78	0	0	0	0	0	474
4:15 PM	131	159	0	0	0	34	40	0	35	0	58	0	0	0	0	0	457
4:30 PM	134	122	0	0	0	32	35	0	37	0	55	0	0	0	0	0	415
4:45 PM	137	112	0	0	0	36	40	0	48	0	69	0	0	0	0	0	442
5:00 PM	128	133	0	0	0	42	52	0	35	0	64	0	0	0	0	0	454
5:15 PM	137	112	0	0	0	33	39	0	40	0	75	0	0	0	0	0	436
5:30 PM	159	125	0	0	0	31	19	0	35	0	53	0	0	0	0	0	422
5:45 PM	95	82	0	0	0	21	18	0	39	0	59	0	0	0	0	0	314
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	55.37%	44.63%	0.00%	0.00%	0.00%	50.94%	49.06%	0.00%	38.33%	0.00%	61.67%	0.00%	0	0	0	0	6578
PEAK HR :	03:15 PM - 04:15 PM																TOTAL
PEAK HR VOL :	571	452	0	0	0	218	183	0	189	0	304	0	0	0	0	0	1917
PEAK HR FACTOR :	0.898	0.876	0.000	0.000	0.000	0.852	0.863	0.000	0.815	0.000	0.826	0.000	0.000	0.000	0.000	0.000	0.978
	0.972				0.864				0.822								

National Data & Surveying Services

Intersection Turning Movement Count

Location: Mulholland Hwy & Old Topanga Canyon Rd East
City: Calabasas
Control: Signalized

Project ID: 19-05730-001
Date: 12/5/2019

Cars

NS/EW Streets:	Mulholland Hwy				Mulholland Hwy				Old Topanga Canyon Rd East				Old Topanga Canyon Rd East				TOTAL
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	0	0	0	1	1	0	1	0	1	0	0	0	0	0	
AM	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	15	6	0	0	0	10	5	0	3	0	26	0	0	0	0	65	
6:15 AM	17	10	0	0	0	19	5	0	7	0	67	0	0	0	0	125	
6:30 AM	22	7	0	0	0	29	11	0	14	0	98	0	0	0	0	181	
6:45 AM	31	15	0	0	0	71	8	0	34	0	142	0	0	0	0	301	
7:00 AM	29	20	0	0	0	70	12	0	26	0	140	0	0	0	0	297	
7:15 AM	61	31	0	0	0	94	22	0	15	0	208	0	0	0	0	431	
7:30 AM	132	71	0	0	0	112	25	0	26	0	219	0	0	0	0	585	
7:45 AM	127	95	0	0	0	84	36	0	56	0	144	0	0	0	0	542	
8:00 AM	80	60	0	0	0	65	61	0	88	0	74	0	0	0	0	428	
8:15 AM	61	39	0	0	0	62	91	0	78	0	112	0	0	0	0	443	
8:30 AM	65	35	0	0	0	49	53	0	51	0	70	0	0	0	0	323	
8:45 AM	59	36	0	0	0	41	19	0	22	0	67	0	0	0	0	244	
9:00 AM	73	34	0	0	0	40	25	0	20	0	83	0	0	0	0	275	
9:15 AM	57	31	0	0	0	33	19	0	12	0	64	0	0	0	0	216	
9:30 AM	50	19	0	0	0	34	21	0	14	0	74	0	0	0	0	212	
9:45 AM	52	24	0	0	0	22	19	0	9	0	60	0	0	0	0	186	
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	931	533	0	0	0	835	432	0	475	0	1648	0	0	0	0	0	4854
	63.59%	36.41%	0.00%	0.00%	0.00%	65.90%	34.10%	0.00%	22.37%	0.00%	77.63%	0.00%					
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	400	265	0	0	0	323	213	0	248	0	549	0	0	0	0	0	1998
PEAK HR FACTOR :	0.76	0.697	0.000	0.000	0.000	0.721	0.585	0.000	0.705	0.000	0.627	0.000	0.000	0.000	0.000	0.000	0.854
	0.749				0.876				0.813								

NS/EW Streets:	Mulholland Hwy				Mulholland Hwy				Old Topanga Canyon Rd East				Old Topanga Canyon Rd East				TOTAL
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	0	0	0	1	1	0	1	0	1	0	0	0	0	0	
NOON	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
10:00 AM	43	26	0	0	0	20	16	0	17	0	59	0	0	0	0	181	
10:15 AM	42	25	0	0	0	27	29	0	25	0	55	0	0	0	0	203	
10:30 AM	43	16	0	0	0	21	25	0	28	0	54	0	0	0	0	187	
10:45 AM	50	23	0	0	0	24	18	0	24	0	43	0	0	0	0	182	
11:00 AM	63	34	0	0	0	15	17	0	21	0	39	0	0	0	0	189	
11:15 AM	52	44	0	0	0	22	13	0	20	0	46	0	0	0	0	197	
11:30 AM	50	28	0	0	0	17	23	0	17	0	55	0	0	0	0	190	
11:45 AM	50	39	0	0	0	21	25	0	27	0	39	0	0	0	0	201	
12:00 PM	38	37	0	0	0	29	19	0	27	0	38	0	0	0	0	188	
12:15 PM	34	46	0	0	0	31	25	0	38	0	54	0	0	0	0	228	
12:30 PM	35	47	0	0	0	30	62	0	46	0	50	0	0	0	0	270	
12:45 PM	32	38	0	0	0	26	34	0	29	0	53	0	0	0	0	212	
1:00 PM	37	38	0	0	0	19	43	0	45	0	52	0	0	0	0	234	
1:15 PM	25	40	0	0	0	25	31	0	29	0	41	0	0	0	0	191	
1:30 PM	46	38	0	0	0	23	23	0	25	0	39	0	0	0	0	194	
1:45 PM	44	31	0	0	0	21	21	0	26	0	57	0	0	0	0	200	
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	684	550	0	0	0	371	424	0	444	0	774	0	0	0	0	0	3247
	55.43%	44.57%	0.00%	0.00%	0.00%	46.67%	53.33%	0.00%	36.45%	0.00%	63.55%	0.00%					
PEAK HR :	12:15 PM - 01:15 PM																TOTAL
PEAK HR VOL :	138	169	0	0	0	106	164	0	158	0	209	0	0	0	0	0	944
PEAK HR FACTOR :	0.93	0.899	0.000	0.000	0.000	0.855	0.661	0.000	0.859	0.000	0.968	0.000	0.000	0.000	0.000	0.000	0.874
	0.936				0.734				0.946								

NS/EW Streets:	Mulholland Hwy				Mulholland Hwy				Old Topanga Canyon Rd East				Old Topanga Canyon Rd East				TOTAL
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	1	1	0	0	0	1	1	0	1	0	1	0	0	0	0	0	
PM	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	93	44	0	0	0	21	20	0	43	0	53	0	0	0	0	274	
2:15 PM	63	48	0	0	0	26	17	0	42	0	51	0	0	0	0	247	
2:30 PM	57	30	0	0	0	38	46	0	44	0	81	0	0	0	0	296	
2:45 PM	120	55	0	0	0	51	53	0	36	0	100	0	0	0	0	415	
3:00 PM	84	70	0	0	0	62	59	0	75	0	107	0	0	0	0	457	
3:15 PM	157	79	0	0	0	55	39	0	57	0	92	0	0	0	0	479	
3:30 PM	140	113	0	0	0	64	52	0	48	0	61	0	0	0	0	478	
3:45 PM	136	126	0	0	0	50	36	0	49	0	71	0	0	0	0	468	
4:00 PM	132	128	0	0	0	48	52	0	34	0	77	0	0	0	0	471	
4:15 PM	131	158	0	0	0	33	40	0	35	0	57	0	0	0	0	454	
4:30 PM	133	122	0	0	0	32	35	0	37	0	55	0	0	0	0	414	
4:45 PM	135	112	0	0	0	35	40	0	47	0	69	0	0	0	0	438	
5:00 PM	124	133	0	0	0	42	52	0	34	0	63	0	0	0	0	448	
5:15 PM	136	112	0	0	0	32	39	0	40	0	74	0	0	0	0	433	
5:30 PM	158	125	0	0	0	30	19	0	35	0	52	0	0	0	0	419	
5:45 PM	95	82	0	0	0	21	17	0	38	0	59	0	0	0	0	312	
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	1894	1537	0	0	0	640	616	0	694	0	1122	0	0	0	0	0	6503
	55.20%	44.80%	0.00%	0.00%	0.00%	50.96%	49.04%	0.00%	38.22%	0.00%	61.78%	0.00%					
PEAK HR :	03:15 PM - 04:15 PM																TOTAL
PEAK HR VOL :	565	446	0	0	0	217	179	0	188	0	301	0	0	0	0	0	1896
PEAK HR FACTOR :	0.90	0.871	0.000	0.000	0.000	0.848	0.861	0.000	0.825	0.000	0.818	0.000	0.000	0.000	0.000	0.000	0.990
	0.965				0.853				0.820								

National Data & Surveying Services

Intersection Turning Movement Count

Location: Mulholland Hwy & Old Topanga Canyon Rd East
City: Calabasas
Control: Signalized

Project ID: 19-05730-001
Date: 12/5/2019

Buses

NS/EW Streets:	Mulholland Hwy				Mulholland Hwy				Old Topanga Canyon Rd East				Old Topanga Canyon Rd East				TOTAL
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
AM	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
6:15 AM	0	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	0
6:45 AM	0	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	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
7:30 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:45 AM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	2
8:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:15 AM	0	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	0
8:45 AM	0	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	0
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
9:45 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
TOTAL VOLUMES :	4	0	0	0	0	2	0	0	1	0	1	0	0	0	0	0	8
APPROACH %'s :	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	50.00%	0.00%	50.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	2	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	4
PEAK HR FACTOR :	0.500	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500

NOON	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
10:00 AM	0	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	0
10:30 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
10:45 AM	0	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	0	0	0	0	0	0
11:15 AM	0	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	0
11:45 AM	0	0	0	0	0	0	0	0	1	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	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	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	0
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
1:45 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
TOTAL VOLUMES :	1	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	3
APPROACH %'s :	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
PEAK HR :	12:15 PM - 01:15 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
2:30 PM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	2
2:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
3:00 PM	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2
3:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
3:30 PM	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	3
3:45 PM	0	0	0	0	0	0	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	0
4:15 PM	0	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	0
4:45 PM	0	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	1	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES :	4	0	0	0	0	4	2	0	2	0	1	0	0	0	0	0	13
APPROACH %'s :	100.00%	0.00%	0.00%	0.00%	0.00%	66.67%	33.33%	0.00%	66.67%	0.00%	33.33%	0.00%	0.00%	0.00%	0.00%	0.00%	
PEAK HR :	03:15 PM - 04:15 PM																TOTAL
PEAK HR VOL :	2	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	4
PEAK HR FACTOR :	0.25	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.333

National Data & Surveying Services

Intersection Turning Movement Count

Location: Mulholland Hwy & Old Topanga Canyon Rd East
City: Calabasas
Control: Signalized

Project ID: 19-05730-001
Date: 12/5/2019

School Buses

NS/EW Streets:	Mulholland Hwy				Mulholland Hwy				Old Topanga Canyon Rd East				Old Topanga Canyon Rd East				TOTAL
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
AM	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
6:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
6:45 AM	0	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	0
7:15 AM	1	0	0	0	0	3	0	0	0	0	0	1	0	0	0	0	5
7:30 AM	1	0	0	0	0	2	0	0	0	0	0	1	0	0	0	0	4
7:45 AM	2	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	6
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3
8:30 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:45 AM	0	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	0
9:15 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
9:30 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES :	8	2	0	0	0	7	0	0	4	0	2	0	0	0	0	0	23
APPROACH %'s :	80.00%	20.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	66.67%	0.00%	33.33%	0.00%					
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	5	0	0	0	0	3	0	0	4	0	1	0	0	0	0	0	13
PEAK HR FACTOR :	0.625	0.000	0.000	0.000	0.000	0.000	0.375	0.000	0.250	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.542
							0.375				0.313						
NOON	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
10:00 AM	0	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	0
10:30 AM	0	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	0
11:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
11:15 AM	0	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	0
11:45 AM	0	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	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	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	0
1:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:30 PM	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	3
1:45 PM	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	2
TOTAL VOLUMES :	1	1	0	0	0	1	1	0	1	0	2	0	0	0	0	0	7
APPROACH %'s :	50.00%	50.00%	0.00%	0.00%	0.00%	50.00%	50.00%	0.00%	33.33%	0.00%	66.67%	0.00%					
PEAK HR :	12:15 PM - 01:15 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.250
											0.250						
PM	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	1	0	0	0	0	0	0	0	1	0	2	0	0	0	0	0	4
2:15 PM	0	0	0	0	0	1	0	0	4	0	1	0	0	0	0	0	6
2:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
2:45 PM	0	1	0	0	0	0	0	0	1	0	2	0	0	0	0	0	4
3:00 PM	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2
3:15 PM	2	4	0	0	0	0	1	0	1	0	0	0	0	0	0	0	8
3:30 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	2
4:15 PM	0	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	0
4:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
5:00 PM	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2
5:15 PM	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	2
5:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES :	6	5	0	0	0	3	2	0	8	0	10	0	0	0	0	0	34
APPROACH %'s :	54.55%	45.45%	0.00%	0.00%	0.00%	60.00%	40.00%	0.00%	44.44%	0.00%	55.56%	0.00%					
PEAK HR :	03:15 PM - 04:15 PM																TOTAL
PEAK HR VOL :	3	4	0	0	0	0	2	0	1	0	1	0	0	0	0	0	11
PEAK HR FACTOR :	0.38	0.250	0.000	0.000	0.000	0.000	0.500	0.000	0.250	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.344
							0.500				0.500						

National Data & Surveying Services

Intersection Turning Movement Count

Location: Mulholland Hwy & Old Topanga Canyon Rd East
City: Calabasas
Control: Signalized

Project ID: 19-05730-001
Date: 12/5/2019

HT

NS/EW Streets:	Mulholland Hwy				Mulholland Hwy				Old Topanga Canyon Rd East				Old Topanga Canyon Rd East				TOTAL
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
AM	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
6:15 AM	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3
6:30 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
6:45 AM	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3
7:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:15 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
7:45 AM	0	2	0	0	0	0	2	0	0	0	2	0	0	0	0	0	6
8:00 AM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3
8:15 AM	1	0	0	0	0	0	1	0	0	0	2	0	0	0	0	0	4
8:30 AM	2	1	0	0	0	2	0	0	0	0	2	0	0	0	0	0	7
8:45 AM	3	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	4
9:00 AM	2	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	4
9:15 AM	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	2
9:30 AM	1	0	0	0	0	1	1	0	0	1	0	4	0	0	0	0	8
9:45 AM	2	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	6
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	16	4	0	0	0	8	5	0	1	0	21	0	0	0	0	0	55
	80.00%	20.00%	0.00%	0.00%	0.00%	61.54%	38.46%	0.00%	4.55%	0.00%	95.45%	0.00%					
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	1	2	0	0	0	0	3	0	0	0	8	0	0	0	0	0	14
PEAK HR FACTOR :	0.250	0.250	0.000	0.000	0.000	0.000	0.375	0.000	0.000	0.000	0.667	0.000	0.000	0.000	0.000	0.000	0.583
							0.375				0.667						

NS/EW Streets:	Mulholland Hwy				Mulholland Hwy				Old Topanga Canyon Rd East				Old Topanga Canyon Rd East				TOTAL
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
NOON	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
10:00 AM	3	3	0	0	0	0	0	0	0	0	1	0	0	0	0	0	7
10:15 AM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3
10:30 AM	2	0	0	0	0	0	0	0	0	1	4	0	0	0	0	0	7
10:45 AM	4	0	0	0	0	1	0	0	0	0	2	0	0	0	0	0	7
11:00 AM	3	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	5
11:15 AM	1	0	0	0	0	0	0	0	0	3	4	0	0	0	0	0	8
11:30 AM	3	0	0	0	0	2	0	0	0	0	2	0	0	0	0	0	7
11:45 AM	0	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	4
12:00 PM	5	1	0	0	0	1	0	0	0	0	5	0	0	0	0	0	12
12:15 PM	4	0	0	0	0	0	1	0	0	2	3	0	0	0	0	0	10
12:30 PM	1	1	0	0	0	0	1	0	0	0	2	0	0	0	0	0	5
12:45 PM	1	0	0	0	0	1	0	0	0	2	2	0	0	0	0	0	6
1:00 PM	2	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	6
1:15 PM	0	1	0	0	0	0	1	0	0	0	1	0	0	0	0	0	3
1:30 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1:45 PM	1	1	0	0	0	0	1	0	0	1	0	1	0	0	0	0	5
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	31	11	0	0	0	8	2	0	9	0	35	0	0	0	0	0	96
	73.81%	26.19%	0.00%	0.00%	0.00%	80.00%	20.00%	0.00%	20.45%	0.00%	79.55%	0.00%					
PEAK HR :	12:15 PM - 01:15 PM																TOTAL
PEAK HR VOL :	8	3	0	0	0	1	2	0	4	0	9	0	0	0	0	0	27
PEAK HR FACTOR :	0.50	0.375	0.000	0.000	0.000	0.250	0.500	0.000	0.500	0.000	0.750	0.000	0.000	0.000	0.000	0.000	0.675
							0.750				0.650						

NS/EW Streets:	Mulholland Hwy				Mulholland Hwy				Old Topanga Canyon Rd East				Old Topanga Canyon Rd East				TOTAL
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
PM	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	3	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	4
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
2:45 PM	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
3:00 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
3:15 PM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2
3:30 PM	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2
3:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	1	0	0	0	0	1	0	0	0	1	0	0	0	0	0	3
4:30 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:45 PM	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	3
5:00 PM	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
5:15 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	14	4	0	0	0	1	4	0	2	0	3	0	0	0	0	0	28
	77.78%	22.22%	0.00%	0.00%	0.00%	20.00%	80.00%	0.00%	40.00%	0.00%	60.00%	0.00%					
PEAK HR :	03:15 PM - 04:15 PM																TOTAL
PEAK HR VOL :	1	2	0	0	0	0	2	0	0	0	1	0	0	0	0	0	6
PEAK HR FACTOR :	0.25	0.500	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.750
							0.250				0.250						

National Data & Surveying Services

Intersection Turning Movement Count

Location: Mulholland Hwy & Old Topanga Canyon Rd East
City: Calabasas
Control: Signalized

Project ID: 19-05730-001
Date: 12/5/2019

Bikes

NS/EW Streets:	Mulholland Hwy				Mulholland Hwy				Old Topanga Canyon Rd East				Old Topanga Canyon Rd East				TOTAL
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
AM	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	0	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	0
6:30 AM	0	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	0
7:00 AM	0	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	0
7:30 AM	0	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	0
8:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
8:45 AM	0	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	2	0	0	0	0	0	2
9:15 AM	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
9:30 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
9:45 AM	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	2
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	100.00%	0.00%	0.00%	0.00%	0.00%	80.00%	20.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0	0	0	0	9
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250

NS/EW Streets:	Mulholland Hwy				Mulholland Hwy				Old Topanga Canyon Rd East				Old Topanga Canyon Rd East				TOTAL
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
NOON	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
10:00 AM	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	3
10:15 AM	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
10:30 AM	3	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	5
10:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
11:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
11:15 AM	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	3
11:30 AM	3	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	5
11:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
12:00 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
12:15 PM	0	1	0	0	0	0	1	0	0	0	2	0	0	0	0	0	4
12:30 PM	0	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	3
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
1:15 PM	0	0	0	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	0
1:45 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	80.00%	20.00%	0.00%	0.00%	0.00%	50.00%	50.00%	0.00%	25.00%	0.00%	75.00%	0.00%	0	0	0	0	31
PEAK HR :	12:15 PM - 01:15 PM																TOTAL
PEAK HR VOL :	0	2	0	0	0	1	3	0	0	0	2	0	0	0	0	0	8
PEAK HR FACTOR :	0.00	0.500	0.000	0.000	0.000	0.250	0.375	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.500

NS/EW Streets:	Mulholland Hwy				Mulholland Hwy				Old Topanga Canyon Rd East				Old Topanga Canyon Rd East				TOTAL
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
PM	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	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	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
3:15 PM	0	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	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
4:15 PM	0	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	0
4:45 PM	0	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	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	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	0
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	33.33%	66.67%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0	0	0	0	0	0	0	0	4
PEAK HR :	03:15 PM - 04:15 PM																TOTAL
PEAK HR VOL :	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
PEAK HR FACTOR :	0.25	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250

National Data & Surveying Services

Intersection Turning Movement Count

Location: Mulholland Hwy & Old Topanga Canyon Rd East
City: Calabasas

Project ID: 19-05730-001
Date: 12/5/2019

Pedestrians (Crosswalks)

NS/EW Streets:	Mulholland Hwy		Mulholland Hwy		Old Topanga Canyon Rd East		Old Topanga Canyon Rd East		TOTAL
	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
AM	EB	WB	EB	WB	NB	SB	NB	SB	
6:00 AM	0	0	0	0	0	0	0	0	0
6:15 AM	0	1	0	0	0	0	0	0	1
6:30 AM	0	0	0	0	0	0	0	0	0
6:45 AM	0	0	0	0	0	0	0	0	0
7:00 AM	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0
9:00 AM	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0	0
9:45 AM	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES :	0	1	0	0	0	0	0	0	1
APPROACH %'s :	0.00% 100.00%								
PEAK HR :	07:30 AM - 08:30 AM								
PEAK HR VOL :	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :									

NOON	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		TOTAL
	EB	WB	EB	WB	NB	SB	NB	SB	
10:00 AM	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0
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	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	1	0	1
1:15 PM	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES :	0	0	0	0	0	0	1	0	1
APPROACH %'s :							100.00%	0.00%	
PEAK HR :	12:15 PM - 01:15 PM								
PEAK HR VOL :	0	0	0	0	0	0	1	0	1
PEAK HR FACTOR :							0.250	0.250	0.250

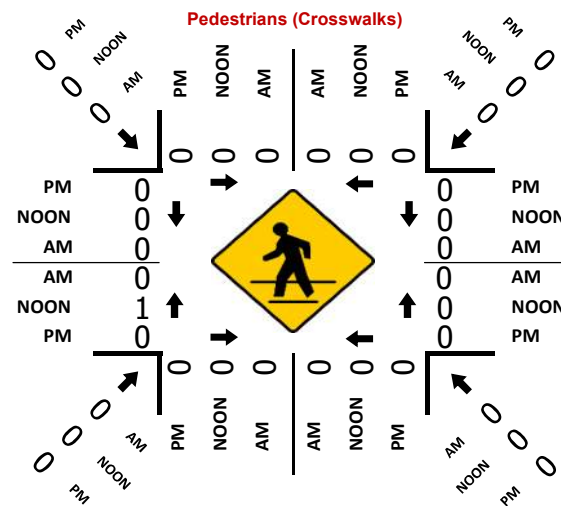
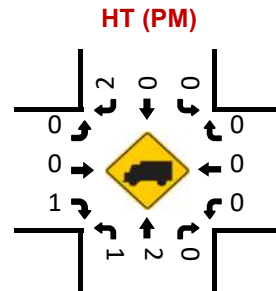
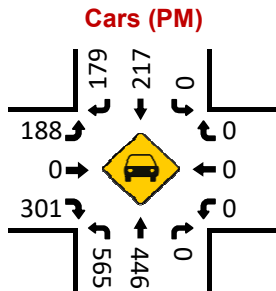
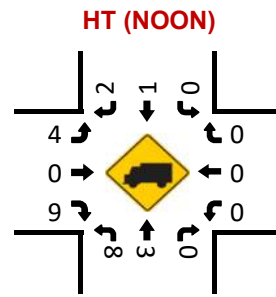
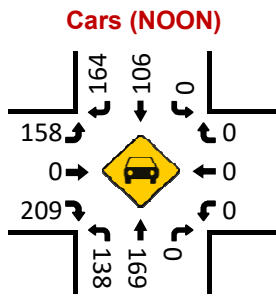
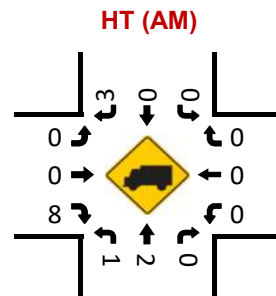
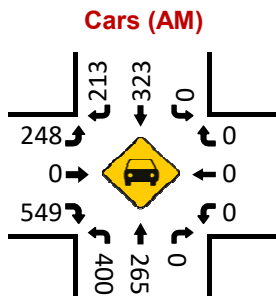
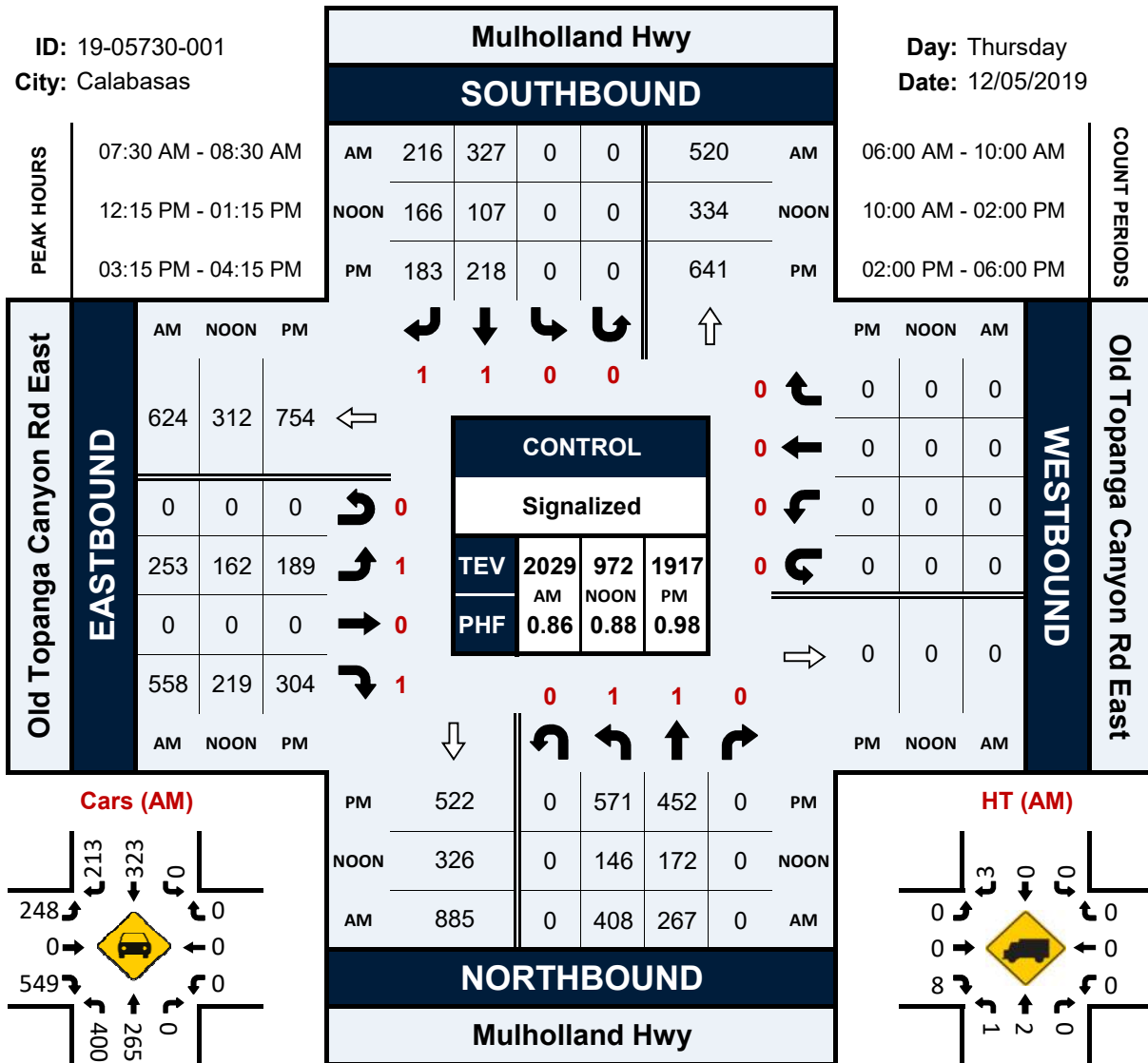
PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		TOTAL
	EB	WB	EB	WB	NB	SB	NB	SB	
2:00 PM	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0
APPROACH %'s :									
PEAK HR :	03:15 PM - 04:15 PM								
PEAK HR VOL :	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :									

Mulholland Hwy & Old Topanga Canyon Rd East

Peak Hour Turning Movement Count

ID: 19-05730-001
City: Calabasas

Day: Thursday
Date: 12/05/2019



National Data & Surveying Services

Intersection Turning Movement Count

Location: Old Topanga Canyon Rd West & Mulholland Hwy
 City: Calabasas
 Control: 1-Way Stop (NB)

Project ID: 19-05730-002
 Date: 12/5/2019

Total

NS/EW Streets:	Old Topanga Canyon Rd West				Old Topanga Canyon Rd West				Mulholland Hwy				Mulholland Hwy				TOTAL
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
AM	0	1	0	0	0	0	0	0	0	1	0	0	1	1	0	0	TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
6:00 AM	0	0	0	0	0	0	0	0	0	24	2	0	23	16	0	0	65
6:15 AM	0	0	7	0	0	0	0	0	0	22	4	0	49	36	0	0	118
6:30 AM	0	0	5	0	0	0	0	0	0	26	6	0	67	64	0	0	168
6:45 AM	0	0	8	0	0	0	0	0	0	41	11	0	128	82	0	0	270
7:00 AM	1	0	10	0	0	0	0	0	0	37	4	0	116	92	0	0	260
7:15 AM	0	0	10	0	0	0	0	0	0	86	9	0	134	168	0	0	407
7:30 AM	1	0	34	0	0	0	0	0	0	180	12	0	130	192	0	0	549
7:45 AM	6	0	43	0	0	0	0	0	0	188	25	0	122	121	0	0	505
8:00 AM	4	0	26	0	0	0	0	0	0	110	15	0	81	68	0	0	304
8:15 AM	2	0	33	0	0	0	0	0	0	63	3	0	87	85	0	0	273
8:30 AM	2	0	40	0	0	0	0	0	0	69	3	0	55	69	0	0	238
8:45 AM	2	0	32	0	0	0	0	0	0	58	4	0	51	59	0	0	206
9:00 AM	3	0	31	0	0	0	0	0	0	81	3	0	65	49	0	0	232
9:15 AM	0	0	30	0	0	0	0	0	0	56	5	0	48	55	0	0	194
9:30 AM	1	0	17	0	0	0	0	0	0	52	3	0	47	66	0	0	186
9:45 AM	3	0	19	0	0	0	0	0	0	59	5	0	28	55	0	0	169
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	25	0	345	0	0	0	0	0	0	1152	114	0	1231	1277	0	0	4144
	6.76%	0.00%	93.24%	0.00%					0.00%	91.00%	9.00%	0.00%	49.08%	50.92%	0.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	11	0	113	0	0	0	0	0	0	564	61	0	467	549	0	0	1765
PEAK HR FACTOR :	0.458	0.000	0.657	0.000	0.000	0.000	0.000	0.000	0.000	0.750	0.610	0.000	0.871	0.715	0.000	0.000	0.804
	0.633								0.734				0.789				
NOON	0	1	0	0	0	0	0	0	0	1	0	0	1	1	0	0	TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
10:00 AM	4	0	14	0	0	0	0	0	0	63	7	0	22	54	0	0	164
10:15 AM	2	0	18	0	0	0	0	0	0	49	3	0	40	45	0	0	157
10:30 AM	6	0	17	0	0	0	0	0	0	46	5	0	27	48	0	1	150
10:45 AM	1	0	20	0	0	0	0	0	0	55	7	0	22	50	0	0	155
11:00 AM	2	0	16	0	0	0	0	0	0	80	4	0	16	40	0	0	158
11:15 AM	0	0	17	0	0	0	0	0	0	74	2	0	18	55	0	0	166
11:30 AM	1	0	16	0	0	0	0	0	0	60	3	0	23	50	0	0	153
11:45 AM	1	0	30	0	0	0	0	0	0	65	2	0	18	42	0	0	158
12:00 PM	2	0	17	0	0	0	0	0	0	64	1	0	17	60	0	0	161
12:15 PM	1	0	20	0	0	0	0	0	0	62	5	0	30	53	0	0	171
12:30 PM	3	0	21	0	0	0	0	0	0	64	4	0	29	54	0	0	175
12:45 PM	2	0	20	0	0	0	0	0	0	49	1	0	31	53	0	0	156
1:00 PM	4	0	25	0	0	0	0	0	0	54	2	0	20	48	0	0	153
1:15 PM	5	0	20	0	0	0	0	0	0	48	2	0	26	51	0	0	152
1:30 PM	2	0	17	0	0	0	0	0	0	62	2	0	17	49	0	0	149
1:45 PM	2	0	15	0	0	0	0	0	0	68	1	0	25	55	0	0	166
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	38	0	303	0	0	0	0	0	0	963	51	0	381	807	0	1	2544
	11.14%	0.00%	88.86%	0.00%					0.00%	94.97%	5.03%	0.00%	32.04%	67.87%	0.00%	0.08%	
PEAK HR :	11:45 AM - 12:45 PM																TOTAL
PEAK HR VOL :	7	0	88	0	0	0	0	0	0	255	12	0	94	209	0	0	665
PEAK HR FACTOR :	0.583	0.000	0.733	0.000	0.000	0.000	0.000	0.000	0.000	0.981	0.600	0.000	0.783	0.871	0.000	0.000	0.950
	0.766								0.982				0.913				
PM	0	1	0	0	0	0	0	0	0	1	0	0	1	1	0	0	TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
2:00 PM	1	0	29	0	0	0	0	0	0	112	2	0	20	55	0	0	219
2:15 PM	4	0	29	0	0	0	0	0	0	85	2	0	27	55	0	0	202
2:30 PM	2	0	24	1	0	0	0	0	0	68	5	0	40	78	0	0	218
2:45 PM	1	0	33	0	0	0	0	0	0	145	9	0	43	111	0	0	342
3:00 PM	5	0	29	0	0	0	0	0	0	137	13	0	45	125	0	0	354
3:15 PM	6	0	64	0	0	0	0	0	0	182	8	0	51	93	0	0	404
3:30 PM	11	0	67	0	0	0	0	0	0	189	7	0	46	83	0	0	403
3:45 PM	4	0	59	0	0	0	0	0	0	197	3	0	45	71	0	0	379
4:00 PM	3	0	50	0	0	0	0	0	0	210	5	0	35	93	0	0	396
4:15 PM	4	0	52	0	0	0	0	0	0	244	8	0	32	64	0	0	404
4:30 PM	3	0	58	0	0	0	0	0	0	195	9	0	22	68	0	0	355
4:45 PM	4	0	50	0	0	0	0	0	0	200	4	0	42	65	0	0	365
5:00 PM	3	0	58	0	0	0	0	0	0	205	10	0	32	69	0	0	377
5:15 PM	1	0	44	0	0	0	0	0	0	214	7	0	33	75	0	0	374
5:30 PM	3	0	61	0	0	0	0	0	0	220	4	0	25	65	0	0	378
5:45 PM	0	0	42	0	0	0	0	0	0	135	4	0	21	58	0	0	260
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	55	0	749	1	0	0	0	0	0	2738	100	0	559	1228	0	0	5430
	6.83%	0.00%	93.04%	0.12%					0.00%	96.48%	3.52%	0.00%	31.28%	68.72%	0.00%	0.00%	
PEAK HR :	03:15 PM - 04:15 PM																TOTAL
PEAK HR VOL :	24	0	240	0	0	0	0	0	0	778	23	0	177	340	0	0	1582
PEAK HR FACTOR :	0.545	0.000	0.896	0.000	0.000	0.000	0.000	0.000	0.000	0.926	0.719	0.000	0.868	0.914	0.000	0.000	0.979
	0.846								0.931				0.898				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Old Topanga Canyon Rd West & Mulholland Hwy
City: Calabasas
Control: 1-Way Stop (NB)

Project ID: 19-05730-002
Date: 12/5/2019

Cars

NS/EW Streets:	Old Topanga Canyon Rd West				Old Topanga Canyon Rd West				Mulholland Hwy				Mulholland Hwy				TOTAL
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
AM	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	0	0	0	0	0	0	0	0	0	22	2	0	23	15	0	0	62
6:15 AM	0	0	7	0	0	0	0	0	0	20	4	0	48	36	0	0	115
6:30 AM	0	0	5	0	0	0	0	0	0	25	6	0	67	63	0	0	166
6:45 AM	0	0	8	0	0	0	0	0	0	39	11	0	127	82	0	0	267
7:00 AM	1	0	10	0	0	0	0	0	0	36	4	0	116	92	0	0	259
7:15 AM	0	0	10	0	0	0	0	0	0	84	9	0	132	166	0	0	401
7:30 AM	1	0	34	0	0	0	0	0	0	177	11	0	127	190	0	0	540
7:45 AM	6	0	42	0	0	0	0	0	0	186	24	0	121	119	0	0	498
8:00 AM	4	0	26	0	0	0	0	0	0	109	15	0	81	65	0	0	300
8:15 AM	2	0	33	0	0	0	0	0	0	60	3	0	87	82	0	0	267
8:30 AM	2	0	39	0	0	0	0	0	0	66	3	0	53	67	0	0	230
8:45 AM	2	0	32	0	0	0	0	0	0	55	4	0	51	58	0	0	202
9:00 AM	3	0	31	0	0	0	0	0	0	79	3	0	65	48	0	0	229
9:15 AM	0	0	30	0	0	0	0	0	0	55	5	0	48	53	0	0	191
9:30 AM	1	0	17	0	0	0	0	0	0	51	3	0	46	60	0	0	178
9:45 AM	3	0	19	0	0	0	0	0	0	56	4	0	26	52	0	0	160
TOTAL VOLUMES :	25	0	343	0	0	0	0	0	0	1120	111	0	1218	1248	0	0	4065
APPROACH %'s :	6.79%	0.00%	93.21%	0.00%					0.00%	90.98%	9.02%	0.00%	49.39%	50.61%	0.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																
PEAK HR VOL :	11	0	112	0	0	0	0	0	0	556	59	0	461	540	0	0	1739
PEAK HR FACTOR :	0.46	0.000	0.667	0.000	0.000	0.000	0.000	0.000	0.000	0.747	0.615	0.000	0.873	0.711	0.000	0.000	0.805
									0.732				0.789				

NS/EW Streets:	Old Topanga Canyon Rd West				Old Topanga Canyon Rd West				Mulholland Hwy				Mulholland Hwy				TOTAL
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
NOON	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
10:00 AM	4	0	14	0	0	0	0	0	0	57	7	0	22	54	0	0	158
10:15 AM	1	0	18	0	0	0	0	0	0	49	3	0	39	42	0	0	152
10:30 AM	6	0	17	0	0	0	0	0	0	43	4	0	26	46	0	1	143
10:45 AM	1	0	19	0	0	0	0	0	0	53	6	0	21	48	0	0	148
11:00 AM	2	0	15	0	0	0	0	0	0	77	4	0	16	38	0	0	152
11:15 AM	0	0	17	0	0	0	0	0	0	73	2	0	18	51	0	0	161
11:30 AM	1	0	16	0	0	0	0	0	0	57	3	0	22	47	0	0	146
11:45 AM	1	0	30	0	0	0	0	0	0	63	2	0	18	40	0	0	154
12:00 PM	2	0	17	0	0	0	0	0	0	58	1	0	17	54	0	0	149
12:15 PM	1	0	20	0	0	0	0	0	0	57	5	0	30	50	0	0	163
12:30 PM	3	0	21	0	0	0	0	0	0	63	4	0	28	53	0	0	172
12:45 PM	2	0	20	0	0	0	0	0	0	46	1	0	30	51	0	0	150
1:00 PM	4	0	25	0	0	0	0	0	0	52	2	0	20	46	0	0	149
1:15 PM	5	0	19	0	0	0	0	0	0	48	2	0	25	49	0	0	148
1:30 PM	2	0	17	0	0	0	0	0	0	60	2	0	17	47	0	0	145
1:45 PM	2	0	15	0	0	0	0	0	0	65	1	0	25	52	0	0	160
TOTAL VOLUMES :	37	0	300	0	0	0	0	0	0	921	49	0	374	768	0	1	2450
APPROACH %'s :	10.98%	0.00%	89.02%	0.00%					0.00%	94.95%	5.05%	0.00%	32.72%	67.19%	0.00%	0.09%	
PEAK HR :	11:45 AM - 12:45 PM																
PEAK HR VOL :	7	0	88	0	0	0	0	0	0	241	12	0	93	197	0	0	638
PEAK HR FACTOR :	0.58	0.000	0.733	0.000	0.000	0.000	0.000	0.000	0.000	0.956	0.600	0.000	0.775	0.912	0.000	0.000	0.927
									0.944				0.895				

NS/EW Streets:	Old Topanga Canyon Rd West				Old Topanga Canyon Rd West				Mulholland Hwy				Mulholland Hwy				TOTAL
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
PM	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	1	0	29	0	0	0	0	0	0	108	2	0	20	53	0	0	213
2:15 PM	4	0	29	0	0	0	0	0	0	85	2	0	25	55	0	0	200
2:30 PM	2	0	24	1	0	0	0	0	0	68	4	0	40	75	0	0	214
2:45 PM	1	0	30	0	0	0	0	0	0	144	9	0	42	109	0	0	335
3:00 PM	5	0	28	0	0	0	0	0	0	135	13	0	45	125	0	0	351
3:15 PM	6	0	64	0	0	0	0	0	0	175	8	0	51	92	0	0	396
3:30 PM	11	0	67	0	0	0	0	0	0	186	6	0	46	81	0	0	397
3:45 PM	4	0	59	0	0	0	0	0	0	196	3	0	45	71	0	0	378
4:00 PM	3	0	50	0	0	0	0	0	0	209	5	0	35	92	0	0	394
4:15 PM	3	0	51	0	0	0	0	0	0	244	8	0	32	62	0	0	400
4:30 PM	3	0	58	0	0	0	0	0	0	194	9	0	22	68	0	0	354
4:45 PM	4	0	50	0	0	0	0	0	0	198	4	0	42	64	0	0	362
5:00 PM	3	0	57	0	0	0	0	0	0	202	10	0	31	69	0	0	372
5:15 PM	1	0	44	0	0	0	0	0	0	213	7	0	32	74	0	0	371
5:30 PM	3	0	61	0	0	0	0	0	0	219	4	0	24	64	0	0	375
5:45 PM	0	0	42	0	0	0	0	0	0	135	4	0	21	58	0	0	260
TOTAL VOLUMES :	54	0	743	1	0	0	0	0	0	2711	98	0	553	1212	0	0	5372
APPROACH %'s :	6.77%	0.00%	93.11%	0.13%					0.00%	96.51%	3.49%	0.00%	31.33%	68.67%	0.00%	0.00%	
PEAK HR :	03:15 PM - 04:15 PM																
PEAK HR VOL :	24	0	240	0	0	0	0	0	0	766	22	0	177	336	0	0	1565
PEAK HR FACTOR :	0.55	0.000	0.896	0.000	0.000	0.000	0.000	0.000	0.000	0.916	0.688	0.000	0.868	0.913	0.000	0.000	0.986
									0.921				0.897				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Old Topanga Canyon Rd West & Mulholland Hwy
City: Calabasas
Control: 1-Way Stop (NB)

Project ID: 19-05730-002
Date: 12/5/2019

Buses

NS/EW Streets:	Old Topanga Canyon Rd West				Old Topanga Canyon Rd West				Mulholland Hwy				Mulholland Hwy				TOTAL
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
AM	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
6:15 AM	0	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	0
6:45 AM	0	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	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
7:30 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
8:00 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
8:15 AM	0	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	0
8:45 AM	0	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	0
9:15 AM	0	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	1	0	0	0	1
9:45 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	4	0	0	0	3	0	0	7
APPROACH %'s :									0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	4
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.500	0.000	0.000	1.000

NS/EW Streets:	Old Topanga Canyon Rd West				Old Topanga Canyon Rd West				Mulholland Hwy				Mulholland Hwy				TOTAL
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
NOON	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
10:00 AM	0	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	0
10:30 AM	0	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	0
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	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	0
11:45 AM	0	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	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	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	0
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	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	1	0	0	0	1
1:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
APPROACH %'s :									0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	11:45 AM - 12:45 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

NS/EW Streets:	Old Topanga Canyon Rd West				Old Topanga Canyon Rd West				Mulholland Hwy				Mulholland Hwy				TOTAL
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
PM	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	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	1	0	0	0	1
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
3:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
3:30 PM	0	0	0	0	0	0	0	0	0	2	1	0	0	1	0	0	4
3:45 PM	0	0	0	0	0	0	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	0
4:15 PM	0	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	0
4:45 PM	0	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	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	4	1	0	0	5	0	0	10
APPROACH %'s :									0.00%	80.00%	20.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	03:15 PM - 04:15 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	2	1	0	0	2	0	0	5
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.000	0.000	0.500	0.000	0.000	0.313

National Data & Surveying Services

Intersection Turning Movement Count

Location: Old Topanga Canyon Rd West & Mulholland Hwy
City: Calabasas
Control: 1-Way Stop (NB)

Project ID: 19-05730-002
Date: 12/5/2019

School Buses

NS/EW Streets:	Old Topanga Canyon Rd West				Old Topanga Canyon Rd West				Mulholland Hwy				Mulholland Hwy				TOTAL	
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND					
AM	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU		
6:00 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	
6:15 AM	0	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	1	0	0	0	0	0	1	
6:45 AM	0	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	0	
7:15 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	2	1	0	4	
7:30 AM	0	0	0	0	0	0	0	0	0	0	2	1	0	3	1	0	7	
7:45 AM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	2	
8:00 AM	0	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	2	0	0	0	1	0	3	
8:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	
8:45 AM	0	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	0	
9:15 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	10	2	0	5	4	0	0	TOTAL	21
APPROACH %'s :									0.00%	83.33%	16.67%	0.00%	55.56%	44.44%	0.00%	0.00%		
PEAK HR :	07:15 AM - 08:15 AM																TOTAL	13
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	4	2	0	5	2	0	0	TOTAL	13
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.500	0.000	0.417	0.500	0.000	0.000	TOTAL	0.464
										0.500				0.438				

NS/EW Streets:	Old Topanga Canyon Rd West				Old Topanga Canyon Rd West				Mulholland Hwy				Mulholland Hwy				TOTAL	
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND					
NOON	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU		
10:00 AM	0	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	0	
10:30 AM	0	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	0	
11:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	
11:15 AM	0	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	0	
11:45 AM	0	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	0	
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
12:30 PM	0	0	0	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	0	
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	
1:15 PM	0	0	0	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	1	0	0	1	0	0	2	
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	2	0	0	0	3	0	0	TOTAL	5
APPROACH %'s :									0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%		
PEAK HR :	11:45 AM - 12:45 PM																TOTAL	0
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	TOTAL	0
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	TOTAL	0

NS/EW Streets:	Old Topanga Canyon Rd West				Old Topanga Canyon Rd West				Mulholland Hwy				Mulholland Hwy				TOTAL	
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND					
PM	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU		
2:00 PM	0	1	0	0	0	0	0	0	0	1	0	0	0	2	0	0	3	
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	
2:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	2	
2:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	3	
3:00 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
3:15 PM	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0	6	
3:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	
3:45 PM	0	0	0	0	0	0	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	1	0	0	1	
4:15 PM	0	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	0	
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	
5:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	2	
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
TOTAL VOLUMES :	0	0	1	0	0	0	0	0	0	10	1	0	6	7	0	0	TOTAL	25
APPROACH %'s :	0.00%	0.00%	100.00%	0.00%					0.00%	90.91%	9.09%	0.00%	46.15%	53.85%	0.00%	0.00%		
PEAK HR :	03:15 PM - 04:15 PM																TOTAL	8
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	7	0	0	0	1	0	0	TOTAL	8
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.292	0.000	0.000	0.000	0.250	0.000	0.000	TOTAL	0.333
										0.292				0.250				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Old Topanga Canyon Rd West & Mulholland Hwy
City: Calabasas
Control: 1-Way Stop (NB)

Project ID: 19-05730-002
Date: 12/5/2019

HT

NS/EW Streets:	Old Topanga Canyon Rd West				Old Topanga Canyon Rd West				Mulholland Hwy				Mulholland Hwy				TOTAL	
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND					
AM	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU		
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
6:15 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0	3
6:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
6:45 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0	3
7:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
7:15 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
7:45 AM	0	0	1	0	0	0	0	0	0	0	1	0	0	1	1	0	0	4
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3
8:15 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0	3
8:30 AM	0	0	1	0	0	0	0	0	0	0	2	0	0	2	2	0	0	7
8:45 AM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	1	0	0	4
9:00 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	3
9:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
9:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	1	4	0	0	6
9:45 AM	0	0	0	0	0	0	0	0	0	0	2	1	0	2	3	0	0	8
TOTAL VOLUMES :	0	0	2	0	0	0	0	0	0	18	1	0	8	22	0	0	TOTAL	51
APPROACH %'s :	0.00%	0.00%	100.00%	0.00%					0.00%	94.74%	5.26%	0.00%	26.67%	73.33%	0.00%	0.00%		
PEAK HR :	07:15 AM - 08:15 AM																TOTAL	
PEAK HR VOL :	0	0	1	0	0	0	0	0	0	2	0	0	1	5	0	0	9	
PEAK HR FACTOR :	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.250	0.417	0.000	0.000	0.563	

NS/EW Streets:	Old Topanga Canyon Rd West				Old Topanga Canyon Rd West				Mulholland Hwy				Mulholland Hwy				TOTAL	
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND					
NOON	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU		
10:00 AM	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0	6	
10:15 AM	1	0	0	0	0	0	0	0	0	0	0	0	1	3	0	0	5	
10:30 AM	0	0	0	0	0	0	0	0	0	0	3	1	0	1	2	0	7	
10:45 AM	0	0	1	0	0	0	0	0	0	0	2	1	0	1	2	0	7	
11:00 AM	0	0	1	0	0	0	0	0	0	0	2	0	0	0	2	0	5	
11:15 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	4	0	5	
11:30 AM	0	0	0	0	0	0	0	0	0	0	3	0	0	1	3	0	7	
11:45 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	4	
12:00 PM	0	0	0	0	0	0	0	0	0	0	6	0	0	0	6	0	12	
12:15 PM	0	0	0	0	0	0	0	0	0	0	5	0	0	0	3	0	8	
12:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	3	
12:45 PM	0	0	0	0	0	0	0	0	0	0	3	0	0	1	2	0	6	
1:00 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	3	
1:15 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	1	2	0	4	
1:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	
1:45 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	4	
TOTAL VOLUMES :	1	0	3	0	0	0	0	0	0	39	2	0	7	35	0	0	TOTAL	87
APPROACH %'s :	25.00%	0.00%	75.00%	0.00%					0.00%	95.12%	4.88%	0.00%	16.67%	83.33%	0.00%	0.00%		
PEAK HR :	11:45 AM - 12:45 PM																TOTAL	
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	14	0	0	1	12	0	0	27	
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.583	0.000	0.000	0.250	0.500	0.000	0.000	0.563	

NS/EW Streets:	Old Topanga Canyon Rd West				Old Topanga Canyon Rd West				Mulholland Hwy				Mulholland Hwy				TOTAL	
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND					
PM	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU		
2:00 PM	0	1	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3	
2:15 PM	0	0	0	0	0	0	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	1	0	0	1	
2:45 PM	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	
3:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	
3:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	
4:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	
4:15 PM	1	0	1	0	0	0	0	0	0	0	0	0	0	2	0	0	4	
4:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	
4:45 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	
5:00 PM	0	0	1	0	0	0	0	0	0	0	2	0	0	0	0	0	3	
5:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	
5:30 PM	0	0	0	0	0	0	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	0	
TOTAL VOLUMES :	1	0	5	0	0	0	0	0	0	13	0	0	0	4	0	0	TOTAL	23
APPROACH %'s :	16.67%	0.00%	83.33%	0.00%					0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%		
PEAK HR :	03:15 PM - 04:15 PM																TOTAL	
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	3	0	0	0	1	0	0	4	
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.750	0.000	0.000	0.000	0.250	0.000	0.000	1.000	

National Data & Surveying Services

Intersection Turning Movement Count

Location: Old Topanga Canyon Rd West & Mulholland Hwy
City: Calabasas
Control: 1-Way Stop (NB)

Project ID: 19-05730-002
Date: 12/5/2019

Bikes

NS/EW Streets:	Old Topanga Canyon Rd West				Old Topanga Canyon Rd West				Mulholland Hwy				Mulholland Hwy				TOTAL
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
AM	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
6:00 AM	0	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	0
6:30 AM	0	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	0
7:00 AM	0	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	0
7:30 AM	0	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	0
8:00 AM	0	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	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
8:45 AM	0	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	2	0	0	2
9:15 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	2
9:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
9:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	1	0	0	2	4	0	0	7
APPROACH %'s :									0.00%	100.00%	0.00%	0.00%	33.33%	66.67%	0.00%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0

NS/EW Streets:	Old Topanga Canyon Rd West				Old Topanga Canyon Rd West				Mulholland Hwy				Mulholland Hwy				TOTAL
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
NOON	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
10:00 AM	0	0	0	0	0	0	0	0	0	2	0	0	1	1	0	0	4
10:15 AM	0	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0	2
10:30 AM	0	0	1	0	0	0	0	0	0	2	0	0	0	0	0	0	3
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
11:00 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
11:15 AM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
11:30 AM	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	3
11:45 AM	0	0	0	0	0	0	0	0	0	0	4	0	1	0	0	0	5
12:00 PM	0	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	1	0	0	0	0	0	0	1
12:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	2	0	0	0	3
12:45 PM	0	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	0	1	1	0	0	2
1:15 PM	0	0	0	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	0
1:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
TOTAL VOLUMES :	0	0	4	0	0	0	0	0	0	11	4	0	6	3	0	0	28
APPROACH %'s :	0.00%	0.00%	100.00%	0.00%					0.00%	73.33%	26.67%	0.00%	66.67%	33.33%	0.00%	0.00%	
PEAK HR :	11:45 AM - 12:45 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	2	4	0	3	0	0	0	9
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.250	0.000	0.375	0.000	0.000	0.000	0.450

NS/EW Streets:	Old Topanga Canyon Rd West				Old Topanga Canyon Rd West				Mulholland Hwy				Mulholland Hwy				TOTAL
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
PM	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	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	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	2	0	0	0	0	0	0	0	0	0	1	0	0	0	3
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
4:00 PM	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	2
4:15 PM	0	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	0
4:45 PM	0	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	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	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	0
TOTAL VOLUMES :	0	0	3	0	0	0	0	0	0	1	0	0	3	0	0	0	7
APPROACH %'s :	0.00%	0.00%	100.00%	0.00%					0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	
PEAK HR :	03:15 PM - 04:15 PM																TOTAL
PEAK HR VOL :	0	0	1	0	0	0	0	0	0	1	0	0	2	0	0	0	4
PEAK HR FACTOR :	0.00	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.500	0.000	0.000	0.000	0.500

National Data & Surveying Services

Intersection Turning Movement Count

Location: Old Topanga Canyon Rd West & Mulholland Hwy
City: Calabasas

Project ID: 19-05730-002
Date: 12/5/2019

Pedestrians (Crosswalks)

NS/EW Streets:	Old Topanga Canyon Rd West		Old Topanga Canyon Rd West		Mulholland Hwy		Mulholland Hwy		TOTAL
	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
AM	EB	WB	EB	WB	NB	SB	NB	SB	
6:00 AM	0	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	1	0	0	0	0	1
6:30 AM	0	0	0	0	0	0	0	0	0
6:45 AM	0	0	0	0	0	0	0	0	0
7:00 AM	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0
9:00 AM	0	0	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0	0	0
9:45 AM	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES :	0	0	0	1	0	0	0	0	1
APPROACH %'s :			0.00%	100.00%					
PEAK HR :	07:15 AM - 08:15 AM								TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :									

NOON	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		TOTAL
	EB	WB	EB	WB	NB	SB	NB	SB	
10:00 AM	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0
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	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0
APPROACH %'s :									
PEAK HR :	11:45 AM - 12:45 PM								TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :									

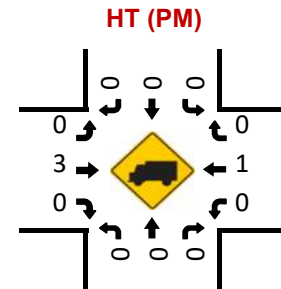
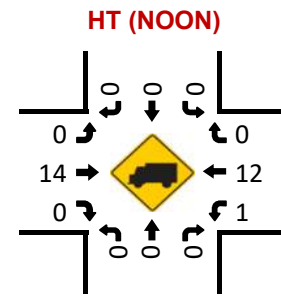
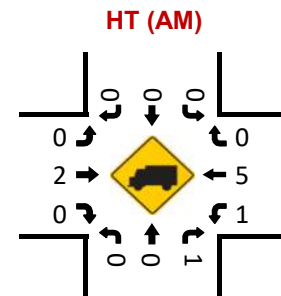
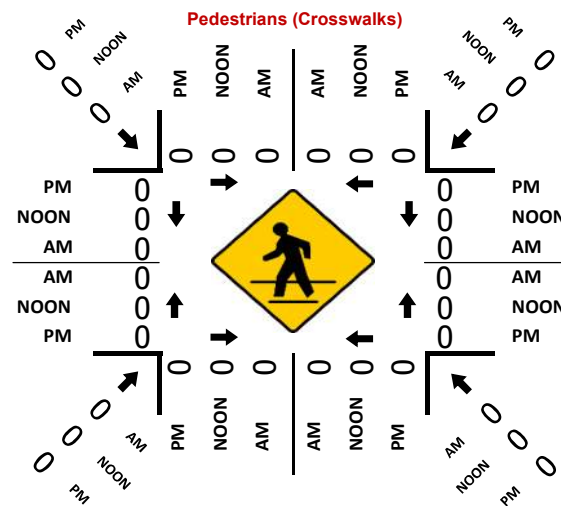
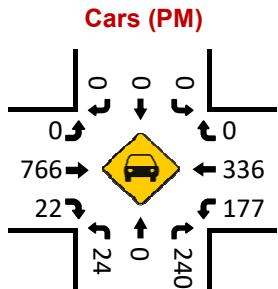
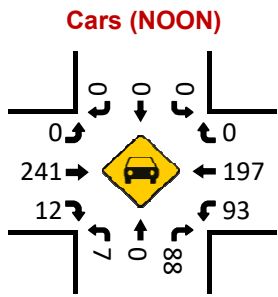
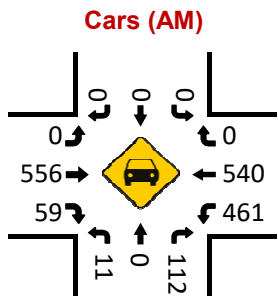
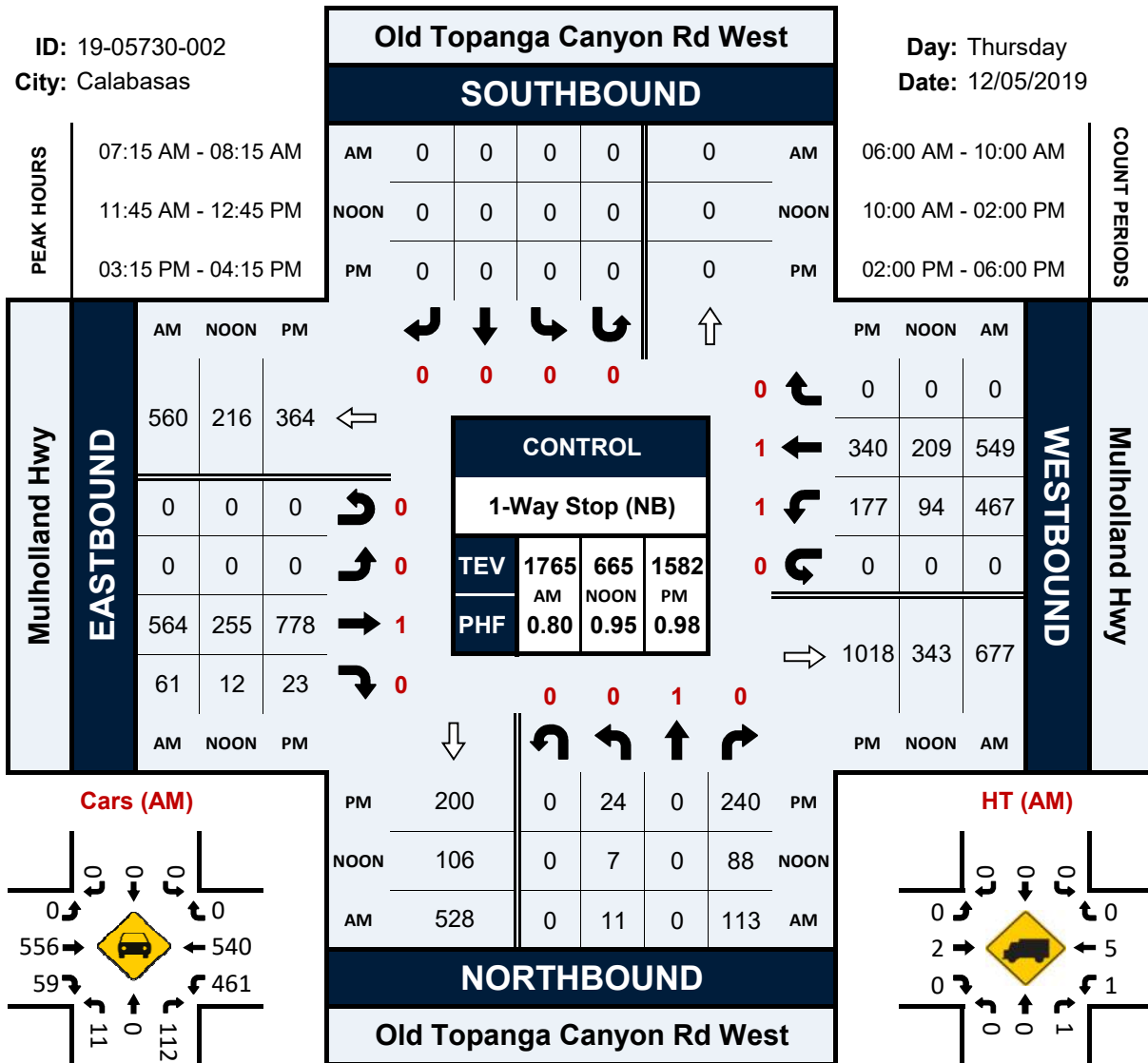
PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		TOTAL
	EB	WB	EB	WB	NB	SB	NB	SB	
2:00 PM	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0
APPROACH %'s :									
PEAK HR :	03:15 PM - 04:15 PM								TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :									

Old Topanga Canyon Rd West & Mulholland Hwy

Peak Hour Turning Movement Count

ID: 19-05730-002
City: Calabasas

Day: Thursday
Date: 12/05/2019



VOLUME

Old Topanga Canyon Rd (West) S/O Mulholland Hwy

Day: Thursday
Date: 10/6/2016

City: Calabasas
Project #: CA16_5608_002

DAILY TOTALS					NB	SB	EB	WB	Total		
					1,831	2,879	0	0	4,710		
AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL
00:00	0	1			1	12:00	17	19			36
00:15	0	3			3	12:15	18	20			38
00:30	1	3			4	12:30	20	16			36
00:45	1	2	1	8	2	12:45	23	78	26	81	49
01:00	0	2			2	13:00	26	18			44
01:15	0	3			3	13:15	24	16			40
01:30	1	0			1	13:30	22	15			37
01:45	0	1	0	5	0	13:45	20	92	21	70	41
02:00	0	0			0	14:00	15	24			39
02:15	0	0			0	14:15	22	25			47
02:30	0	0			0	14:30	25	35			60
02:45	0	0			0	14:45	27	89	62	146	89
03:00	0	0			0	15:00	19	52			71
03:15	0	0			0	15:15	48	64			112
03:30	0	0			0	15:30	44	45			89
03:45	0	0			0	15:45	50	161	41	202	91
04:00	1	0			1	16:00	54	38			92
04:15	1	1			2	16:15	53	46			99
04:30	0	1			1	16:30	61	36			97
04:45	2	4	0	2	2	16:45	51	219	44	164	95
05:00	0	1			1	17:00	46	43			89
05:15	0	3			3	17:15	45	53			98
05:30	2	6			8	17:30	57	57			114
05:45	6	8	13	23	19	17:45	58	206	47	200	105
06:00	7	18			25	18:00	53	31			84
06:15	10	23			33	18:15	42	28			70
06:30	7	58			65	18:30	46	42			88
06:45	9	33	102	201	111	18:45	43	184	23	124	66
07:00	7	157			164	19:00	35	15			50
07:15	18	187			205	19:15	48	14			62
07:30	26	150			176	19:30	41	19			60
07:45	32	83	171	665	203	19:45	30	154	16	64	46
08:00	32	128			160	20:00	30	16			46
08:15	30	107			137	20:15	28	11			39
08:30	45	98			143	20:30	18	16			34
08:45	42	149	79	412	121	20:45	18	94	11	54	29
09:00	25	51			76	21:00	7	8			15
09:15	26	52			78	21:15	8	7			15
09:30	22	62			84	21:30	6	12			18
09:45	21	94	49	214	70	21:45	7	28	5	32	12
10:00	18	34			52	22:00	9	4			13
10:15	18	21			39	22:15	11	8			19
10:30	15	26			41	22:30	1	5			6
10:45	11	62	27	108	38	22:45	0	21	4	21	4
11:00	14	22			36	23:00	3	7			10
11:15	15	15			30	23:15	2	3			5
11:30	13	20			33	23:30	2	1			3
11:45	20	62	13	70	33	23:45	0	7	2	13	2
TOTALS	498	1708			2206	TOTALS	1333	1171			2504
SPLIT %	22.6%	77.4%			46.8%	SPLIT %	53.2%	46.8%			53.2%

DAILY TOTALS					NB	SB	EB	WB	Total
					1,831	2,879	0	0	4,710
AM Peak Hour	08:00	07:00			07:00	PM Peak Hour	16:00	14:45	17:00
AM Pk Volume	149	665			748	PM Pk Volume	219	223	406
Pk Hr Factor	0.828	0.889			0.912	Pk Hr Factor	0.898	0.871	0.890
7 - 9 Volume	232	1077	0	0	1309	4 - 6 Volume	425	364	789
7 - 9 Peak Hour	08:00	07:00			07:00	4 - 6 Peak Hour	16:00	17:00	17:00
7 - 9 Pk Volume	149	665	0	0	748	4 - 6 Pk Volume	219	200	406
Pk Hr Factor	0.828	0.889	0.000	0.000	0.912	Pk Hr Factor	0.898	0.877	0.000

VOLUME

Mulholland Hwy W/O Old Topanga Canyon Rd (West)

Day: Thursday
Date: 10/6/2016

City: Calabasas
Project #: CA16_5608_001

DAILY TOTALS					NB	SB	EB		WB	Total				
					0	0	5,498	4,534	10,032					
AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL			
0:00			4	5	9	12:00			59	63	122			
0:15			7	3	10	12:15			52	53	105			
0:30			1	3	4	12:30			74	66	140			
0:45			8	20	7	18	12:45		65	250	53	235	118	485
1:00			4	3	7	13:00			64	61	125			
1:15			4	4	8	13:15			58	52	110			
1:30			4	2	6	13:30			55	53	108			
1:45			2	14	1	10	13:45		50	227	53	219	103	446
2:00			2	1	3	14:00			102	40	142			
2:15			1	5	6	14:15			73	66	139			
2:30			1	1	2	14:30			60	61	121			
2:45			4	8	2	9	14:45		121	356	121	288	242	644
3:00			2	2	4	15:00			146	129	275			
3:15			1	1	2	15:15			134	126	260			
3:30			1	1	2	15:30			218	74	292			
3:45			3	7	1	5	15:45		166	664	62	391	228	1055
4:00			2	0	2	16:00			171	68	239			
4:15			2	2	4	16:15			176	82	258			
4:30			7	2	9	16:30			173	50	223			
4:45			10	21	4	8	16:45		165	685	65	265	230	950
5:00			6	2	8	17:00			117	64	181			
5:15			22	4	26	17:15			133	53	186			
5:30			12	10	22	17:30			129	65	194			
5:45			19	59	9	25	17:45		168	547	71	253	239	800
6:00			29	19	48	18:00			120	67	187			
6:15			30	29	59	18:15			79	69	148			
6:30			23	46	69	18:30			78	75	153			
6:45			38	120	62	156	18:45		77	354	96	307	173	661
7:00			50	119	169	19:00			58	88	146			
7:15			116	180	296	19:15			49	61	110			
7:30			218	135	353	19:30			42	57	99			
7:45			227	611	149	583	19:45		52	201	61	267	113	468
8:00			90	116	206	20:00			36	60	96			
8:15			64	116	180	20:15			44	49	93			
8:30			67	82	149	20:30			29	30	59			
8:45			84	305	80	394	20:45		27	136	42	181	69	317
9:00			80	54	134	21:00			26	36	62			
9:15			64	54	118	21:15			22	53	75			
9:30			76	51	127	21:30			20	37	57			
9:45			62	282	45	204	21:45		22	90	26	152	48	242
10:00			55	43	98	22:00			12	29	41			
10:15			50	53	103	22:15			15	27	42			
10:30			53	48	101	22:30			11	21	32			
10:45			53	211	44	188	22:45		4	42	23	100	27	142
11:00			64	55	119	23:00			8	19	27			
11:15			57	44	101	23:15			14	22	36			
11:30			61	51	112	23:30			11	16	27			
11:45			61	243	59	209	23:45		12	45	10	67	22	112
TOTALS			1901	1809	3710	TOTALS			3597	2725	6322			
SPLIT %			51.2%	48.8%	37.0%	SPLIT %			56.9%	43.1%	63.0%			

DAILY TOTALS					NB	SB	EB		WB	Total	
					0	0	5,498	4,534	10,032		
AM Peak Hour			7:15	7:00	7:15	PM Peak Hour			15:30	14:45	14:45
AM Pk Volume			651	583	1231	PM Pk Volume			731	450	1069
Pk Hr Factor			0.717	0.810	0.818	Pk Hr Factor			0.838	0.872	0.915
7 - 9 Volume	0	0	916	977	1893	4 - 6 Volume	0	0	1232	518	1750
7 - 9 Peak Hour			7:15	7:00	7:15	4 - 6 Peak Hour			16:00	16:00	16:00
7 - 9 Pk Volume	0	0	651	583	1231	4 - 6 Pk Volume	0	0	685	265	950
Pk Hr Factor	0.000	0.000	0.717	0.810	0.818	Pk Hr Factor	0.000	0.000	0.973	0.808	0.921

VOLUME

Mulholland Hwy E/O Old Topanga Canyon Rd (West)

Day: Thursday
Date: 10/6/2016

City: Calabasas
Project #: CA16_5608_003

DAILY TOTALS						NB	SB	EB	WB	Total		
						0	0	6,389	6,454	12,843		
AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL	
00:00			0	1	1	12:00			56	66	122	
00:15			0	0	0	12:15			57	59	116	
00:30			0	4	4	12:30			66	55	121	
00:45			9	9	11	12:45			61	240	58	238
01:00			7	5	12	13:00			84	72	156	
01:15			3	2	5	13:15			77	63	140	
01:30			4	5	9	13:30			78	65	143	
01:45			2	16	2	13:45			66	305	71	271
02:00			1	0	1	14:00			107	55	162	
02:15			0	5	5	14:15			88	87	175	
02:30			1	0	1	14:30			84	93	177	
02:45			4	6	1	14:45			134	413	164	399
03:00			1	1	2	15:00			153	162	315	
03:15			1	1	2	15:15			171	168	339	
03:30			2	1	3	15:30			252	104	356	
03:45			1	5	0	15:45			206	782	95	529
04:00			3	1	4	16:00			215	96	311	
04:15			3	2	5	16:15			217	114	331	
04:30			10	4	14	16:30			226	73	299	
04:45			8	24	0	16:45			203	861	94	377
05:00			2	0	2	17:00			122	68	190	
05:15			17	1	18	17:15			155	96	251	
05:30			12	12	24	17:30			184	108	292	
05:45			20	51	17	17:45			186	647	74	346
06:00			25	24	49	18:00			162	90	252	
06:15			31	45	76	18:15			109	82	191	
06:30			33	110	143	18:30			91	79	170	
06:45			48	137	162	18:45			88	450	94	345
07:00			48	270	318	19:00			83	89	172	
07:15			120	355	475	19:15			86	68	154	
07:30			223	266	489	19:30			68	64	132	
07:45			231	622	295	19:45			58	295	56	277
08:00			112	237	349	20:00			45	60	105	
08:15			81	212	293	20:15			65	44	109	
08:30			105	169	274	20:30			47	48	95	
08:45			114	412	151	20:45			23	180	28	180
09:00			73	71	144	21:00			19	32	51	
09:15			68	80	148	21:15			12	41	53	
09:30			76	87	163	21:30			17	37	54	
09:45			64	281	81	21:45			23	71	26	136
10:00			53	61	114	22:00			15	29	44	
10:15			47	58	105	22:15			15	19	34	
10:30			72	73	145	22:30			9	28	37	
10:45			63	235	64	22:45			7	46	28	104
11:00			56	55	111	23:00			10	21	31	
11:15			66	56	122	23:15			8	24	32	
11:30			65	61	126	23:30			13	11	24	
11:45			74	261	64	23:45			9	40	13	69
TOTALS			2059	3183	5242	TOTALS			4330	3271	7601	
SPLIT %			39.3%	60.7%	40.8%	SPLIT %			57.0%	43.0%	59.2%	

DAILY TOTALS						NB	SB	EB	WB	Total	
						0	0	6,389	6,454	12,843	
AM Peak Hour			07:15	07:00	07:15	PM Peak Hour			15:30	14:45	15:00
AM Pk Volume			686	1186	1839	PM Pk Volume			890	598	1311
Pk Hr Factor			0.742	0.835	0.874	Pk Hr Factor			0.883	0.890	0.921
7 - 9 Volume	0	0	1034	1955	2989	4 - 6 Volume	0	0	1508	723	2231
7 - 9 Peak Hour			07:15	07:00	07:15	4 - 6 Peak Hour			16:00	16:00	16:00
7 - 9 Pk Volume	0	0	686	1186	1839	4 - 6 Pk Volume	0	0	861	377	1238
Pk Hr Factor	0.000	0.000	0.742	0.835	0.874	Pk Hr Factor	0.000	0.000	0.952	0.827	0.935

ITM Peak Hour Summary

Prepared by:

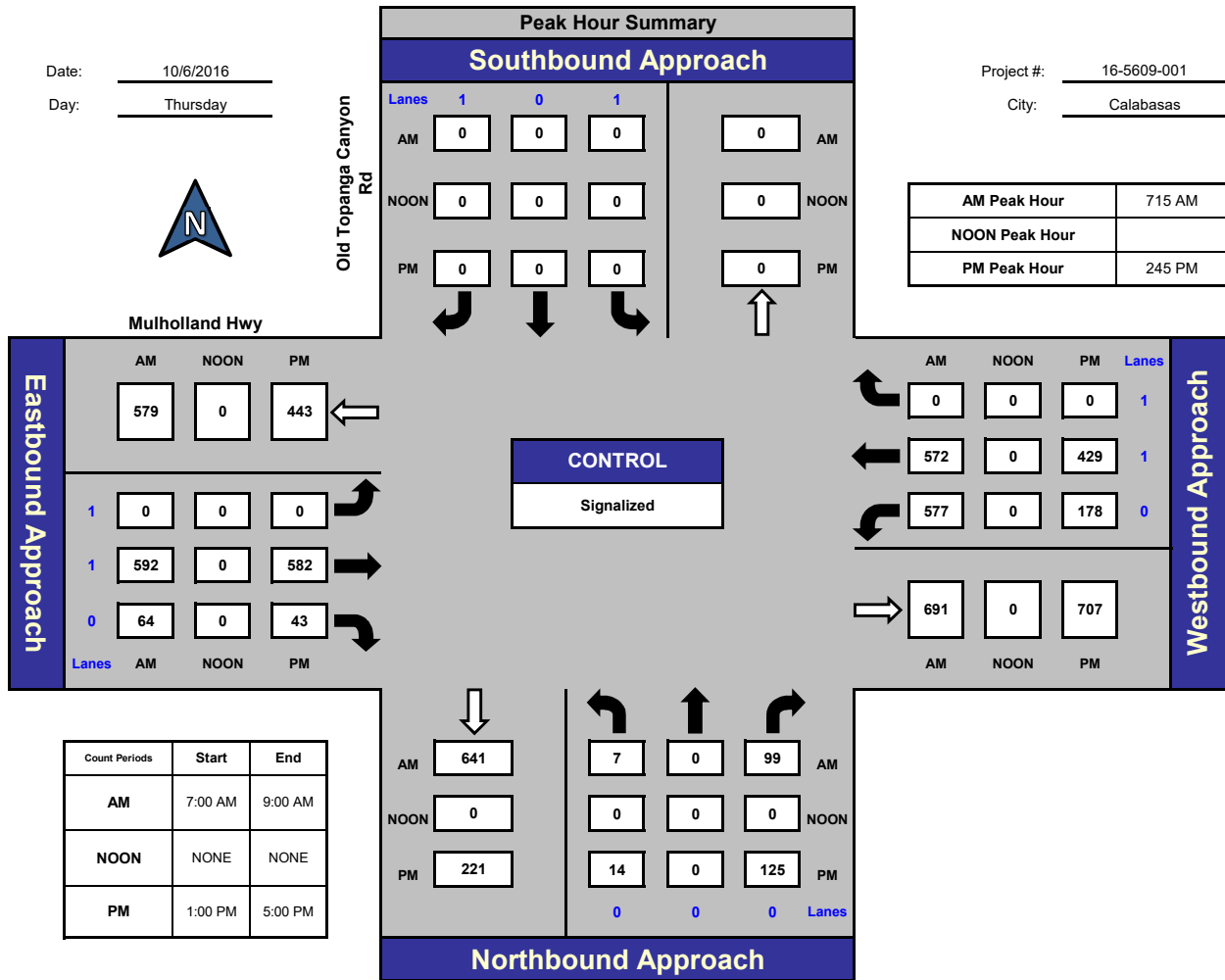


National Data & Surveying Services

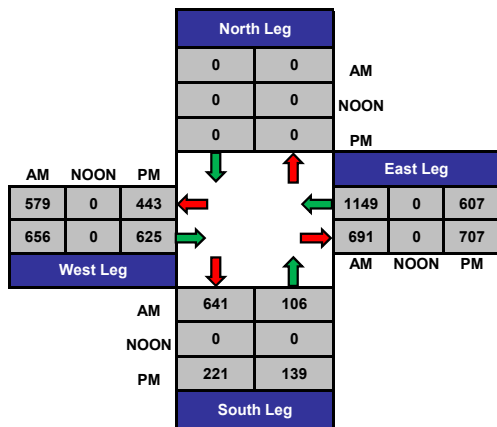
Old Topanga Canyon Rd and Mulholland Hwy, Calabasas

Date: 10/6/2016
Day: Thursday

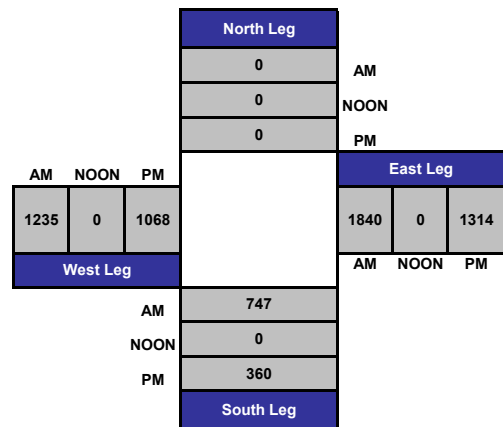
Project #: 16-5609-001
City: Calabasas



Total Ins & Outs



Total Volume Per Leg



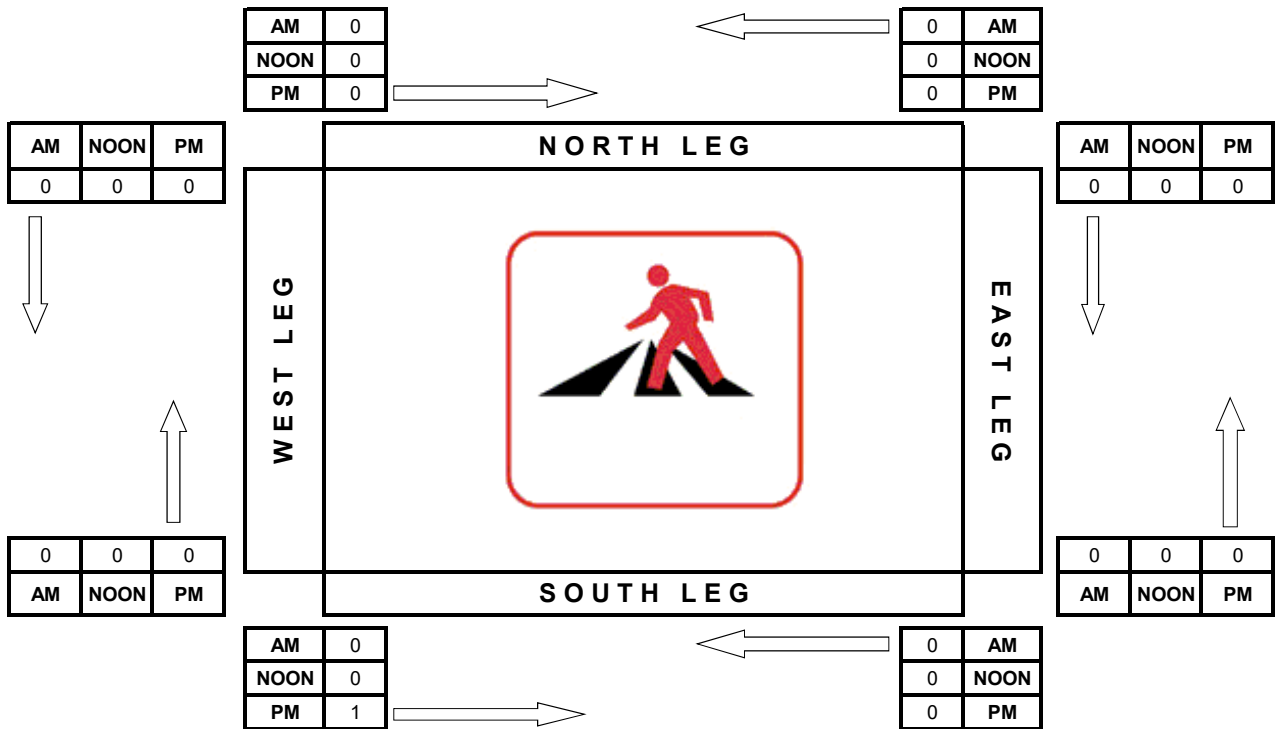
PREPARED BY NATIONAL DATA & SURVEYING SERVICES

Pedestrian Count Peak Hour

PROJECT#: 16-5609-001
 N/S Street: Old Topanga Canyon Rd
 E/W Street: Mulholland Hwy
 DATE: 10/6/2016
 CITY: Calabasas

DAY: Thursday

	Start:	End:
AM	7:00	9:00
NOON		
PM	13:00	17:00



PREPARED BY NATIONAL DATA & SURVEYING SERVICES

Bicycle Count Peak Hour

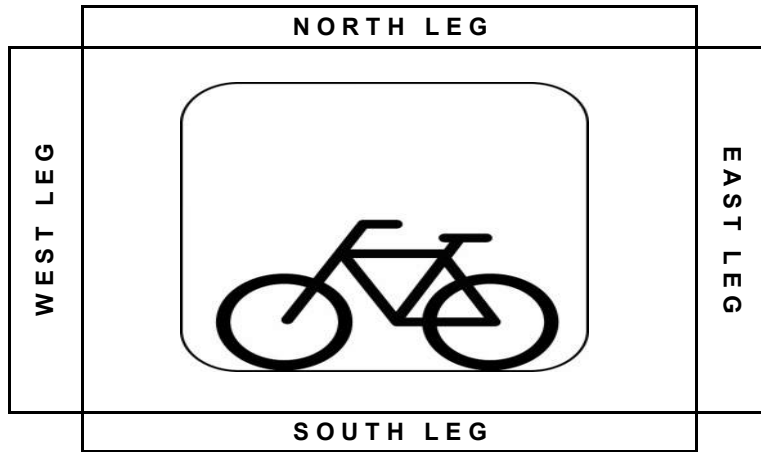
PROJECT#: 16-5609-001
 N/S Street: Old Topanga Canyon Rd
 E/W Street: Mulholland Hwy
 DATE: 10/6/2016
 CITY: Calabasas

DAY: Thursday

	Start:	End:
AM	7:00	9:00
NOON		
PM	13:00	17:00

AM	0	0	0
NOON	0	0	0
PM	0	0	0

AM	NOON	PM
0	0	0
1	0	2
0	0	0



AM	NOON	PM
0	0	0
2	0	2
0	0	4

AM	0	0	0
NOON	0	0	0
PM	0	0	1

PREPARED BY NATIONAL DATA & SURVEYING SERVICES

PROJECT#: 16-5609-001
 N/S Street: Old Topanga Canyon Rd
 E/W Street: Mulholland Hwy
 DATE: 10/6/2016
 CITY: Calabasas

DAY: Thursday

A M

PEDESTRIANS

T I M E	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
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	0
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
TOTALS	0	0	0	0	0	0	0	0

BIKES

T I M E	NB			SB			EB			WB		
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
7:00 AM	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	2	0
7:30 AM	0	0	0	0	0	0	0	1	0	0	0	0
7:45 AM	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
8:15 AM	0	0	0	0	0	0	0	1	0	0	0	0
8:30 AM	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
TOTALS	0	0	0	0	0	0	0	2	0	0	2	0

P M

PEDESTRIANS

T I M E	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG	
	EB	WB	EB	WB	NB	SB	NB	SB
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	1	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	1	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0
TOTALS	0	0	2	0	0	0	0	0

BIKES

T I M E	NB			SB			EB			WB		
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR
1:00 PM	0	0	1	0	0	0	0	1	1	0	0	0
1:15 PM	0	0	0	0	0	0	0	2	0	0	0	0
1:30 PM	0	0	1	0	0	0	0	1	0	0	0	0
1:45 PM	0	0	1	0	0	0	0	0	0	0	0	0
2:00 PM	0	0	0	0	0	0	0	3	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	1	0
2:30 PM	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
3:00 PM	0	0	0	0	0	0	0	0	0	0	1	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	1	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	1	0
4:00 PM	0	0	0	0	0	0	0	0	0	3	0	0
4:15 PM	0	0	0	0	0	0	0	2	0	1	0	0
4:30 PM	0	0	1	0	0	0	0	0	0	0	1	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	1	0
TOTALS	1	0	4	0	0	0	0	9	1	4	5	0

VOLUME

Mulholland Hwy Bet. Calabasas Village Dr(North Dwy) & Calabasas Village Dr(South Dwy)

Day: Tuesday
Date: 6/2/2015

City: Calabasas
Project #: CA15_5326_018

DAILY TOTALS					NB	SB	EB	WB	Total		
					3,473	3,564	0	0	7,037		
AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL
00:00	6	10			16	12:00	48	74			122
00:15	2	8			10	12:15	56	46			102
00:30	2	4			6	12:30	51	72			123
00:45	2	12	5	27	7	12:45	47	202	84	276	131
01:00	1	4			5	13:00	45	47			92
01:15	4	4			8	13:15	47	50			97
01:30	1	5			6	13:30	52	57			109
01:45	0	6	3	16	3	13:45	55	199	57	211	112
02:00	0	0			0	14:00	57	60			117
02:15	2	4			6	14:15	58	59			117
02:30	2	4			6	14:30	42	57			99
02:45	0	4	6	14	6	14:45	45	202	50	226	95
03:00	0	1			1	15:00	48	49			97
03:15	5	0			5	15:15	59	60			119
03:30	4	1			5	15:30	69	67			136
03:45	1	10	0	2	1	15:45	80	256	60	236	140
04:00	0	3			3	16:00	83	59			142
04:15	3	0			3	16:15	76	64			140
04:30	2	0			2	16:30	98	53			151
04:45	7	12	0	3	7	16:45	94	351	62	238	156
05:00	3	2			5	17:00	113	48			161
05:15	10	3			13	17:15	110	65			175
05:30	10	5			15	17:30	98	63			161
05:45	12	35	9	19	21	17:45	81	402	63	239	144
06:00	14	10			24	18:00	69	74			143
06:15	18	17			35	18:15	75	57			132
06:30	23	28			51	18:30	58	55			113
06:45	27	82	40	95	67	18:45	55	257	55	241	110
07:00	38	31			69	19:00	39	53			92
07:15	48	60			108	19:15	35	48			83
07:30	71	48			119	19:30	34	42			76
07:45	67	224	53	192	120	19:45	28	136	53	196	81
08:00	58	73			131	20:00	41	57			98
08:15	41	67			108	20:15	32	46			78
08:30	53	58			111	20:30	26	42			68
08:45	72	224	62	260	134	20:45	31	130	27	172	58
09:00	37	49			86	21:00	22	38			60
09:15	40	29			69	21:15	14	41			55
09:30	40	45			85	21:30	13	36			49
09:45	42	159	43	166	85	21:45	12	61	33	148	45
10:00	38	48			86	22:00	26	25			51
10:15	46	54			100	22:15	18	33			51
10:30	41	47			88	22:30	21	25			46
10:45	64	189	47	196	111	22:45	11	76	25	108	36
11:00	44	52			96	23:00	12	24			36
11:15	44	40			84	23:15	14	40			54
11:30	49	44			93	23:30	12	19			31
11:45	56	193	54	190	110	23:45	13	51	10	93	23
TOTALS	1150	1180			2330	TOTALS	2323	2384			4707
SPLIT %	49.4%	50.6%			33.1%	SPLIT %	49.4%	50.6%			66.9%

DAILY TOTALS					NB	SB	EB	WB	Total
					3,473	3,564	0	0	7,037
AM Peak Hour	07:15	08:00		08:00	PM Peak Hour	16:30	12:00		16:45
AM Pk Volume	244	260		484	PM Pk Volume	415	276		653
Pk Hr Factor	0.859	0.890		0.903	Pk Hr Factor	0.918	0.821		0.933
7 - 9 Volume	448	452	0	900	4 - 6 Volume	753	477	0	1230
7 - 9 Peak Hour	07:15	08:00		08:00	4 - 6 Peak Hour	16:30	17:00		16:45
7 - 9 Pk Volume	244	260	0	484	4 - 6 Pk Volume	415	239	0	653
Pk Hr Factor	0.859	0.890	0.000	0.903	Pk Hr Factor	0.918	0.919	0.000	0.933

VOLUME

Mulholland Hwy Bet. Parksouth St & Old Topanga Cyn Rd(West)

Day: Tuesday
Date: 6/2/2015

City: Calabasas
Project #: CA15_5326_019

DAILY TOTALS					NB	SB	EB	WB	Total		
					4,757	3,738	0	0	8,495		
AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL
00:00	4	10			14	12:00	69	33			102
00:15	7	8			15	12:15	52	47			99
00:30	1	10			11	12:30	74	46			120
00:45	8	20	7	35	15	12:45	65	260	43	169	108
01:00	4	3			7	13:00	39	56			95
01:15	4	4			8	13:15	54	57			111
01:30	4	2			6	13:30	68	53			121
01:45	4	16	1	10	5	13:45	56	217	57	223	113
02:00	3	1			4	14:00	50	51			101
02:15	1	1			2	14:15	61	50			111
02:30	1	2			3	14:30	65	62			127
02:45	0	5	2	6	2	14:45	73	249	73	236	146
03:00	2	2			4	15:00	138	62			200
03:15	1	2			3	15:15	152	56			208
03:30	1	1			2	15:30	118	40			158
03:45	3	7	1	6	4	15:45	106	514	59	217	165
04:00	2	0			2	16:00	144	67			211
04:15	2	2			4	16:15	114	58			172
04:30	3	2			5	16:30	137	69			206
04:45	7	14	4	8	11	16:45	110	505	75	269	185
05:00	6	2			8	17:00	127	64			191
05:15	8	4			12	17:15	133	53			186
05:30	12	10			22	17:30	129	65			194
05:45	19	45	9	25	28	17:45	168	557	71	253	239
06:00	29	19			48	18:00	120	67			187
06:15	30	29			59	18:15	79	69			148
06:30	23	46			69	18:30	78	59			137
06:45	38	120	62	156	100	18:45	77	354	66	261	143
07:00	44	58			102	19:00	58	51			109
07:15	40	54			94	19:15	49	61			110
07:30	36	63			99	19:30	42	57			99
07:45	57	177	55	230	112	19:45	57	206	49	218	106
08:00	65	76			141	20:00	36	60			96
08:15	96	98			194	20:15	44	49			93
08:30	105	82			187	20:30	29	30			59
08:45	134	400	71	327	205	20:45	27	136	50	189	77
09:00	80	54			134	21:00	63	36			99
09:15	54	54			108	21:15	22	53			75
09:30	46	55			101	21:30	20	47			67
09:45	62	242	45	208	107	21:45	30	135	26	162	56
10:00	69	43			112	22:00	34	29			63
10:15	50	43			93	22:15	20	27			47
10:30	53	48			101	22:30	11	21			32
10:45	53	225	44	178	97	22:45	4	69	15	92	19
11:00	64	45			109	23:00	4	19			23
11:15	57	38			95	23:15	14	22			36
11:30	61	51			112	23:30	11	16			27
11:45	61	243	59	193	120	23:45	12	41	10	67	22
TOTALS	1514	1382			2896	TOTALS	3243	2356			5599
SPLIT %	52.3%	47.7%			34.1%	SPLIT %	57.9%	42.1%			65.9%

DAILY TOTALS					NB	SB	EB	WB	Total
					4,757	3,738	0	0	8,495
AM Peak Hour	08:15	08:00		08:00	PM Peak Hour	17:00	17:30		17:00
AM Pk Volume	415	327		727	PM Pk Volume	557	272		810
Pk Hr Factor	0.774	0.834		0.887	Pk Hr Factor	0.829	0.958		0.847
7 - 9 Volume	577	557	0	1134	4 - 6 Volume	1062	522	0	1584
7 - 9 Peak Hour	08:00	08:00		08:00	4 - 6 Peak Hour	17:00	16:00		17:00
7 - 9 Pk Volume	400	327	0	727	4 - 6 Pk Volume	557	269	0	810
Pk Hr Factor	0.746	0.834	0.000	0.887	Pk Hr Factor	0.829	0.897	0.000	0.847

VOLUME

Mulholland Hwy S/O Dry Cyn Cold Creek Rd

Day: Tuesday
Date: 6/2/2015

City: Calabasas
Project #: CA15_5326_017

DAILY TOTALS					NB	SB	EB	WB	Total		
					2,221	1,946	0	0	4,167		
AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL
00:00	1	3			4	12:00	26	46			72
00:15	3	3			6	12:15	34	24			58
00:30	2	1			3	12:30	27	37			64
00:45	2	8	3	10	5	12:45	33	120	48	155	81
01:00	2	1			3	13:00	27	22			49
01:15	2	2			4	13:15	29	27			56
01:30	1	2			3	13:30	34	29			63
01:45	0	5	3	8	3	13:45	33	123	30	108	63
02:00	0	0			0	14:00	38	34			72
02:15	2	1			3	14:15	34	24			58
02:30	2	0			2	14:30	32	33			65
02:45	0	4	0	1	0	14:45	31	135	25	116	56
03:00	0	1			1	15:00	34	26			60
03:15	4	0			4	15:15	44	34			78
03:30	1	0			1	15:30	55	27			82
03:45	1	6	0	1	1	15:45	57	190	26	113	83
04:00	0	0			0	16:00	61	40			101
04:15	1	0			1	16:15	60	34			94
04:30	0	0			0	16:30	76	21			97
04:45	0	1	0		0	16:45	84	281	22	117	106
05:00	4	1			5	17:00	92	27			119
05:15	2	3			5	17:15	88	30			118
05:30	4	3			7	17:30	80	33			113
05:45	7	17	7	14	14	17:45	69	329	29	119	98
06:00	3	8			11	18:00	52	37			89
06:15	9	15			24	18:15	54	23			77
06:30	10	21			31	18:30	47	24			71
06:45	15	37	25	69	40	18:45	32	185	27	111	59
07:00	17	25			42	19:00	25	18			43
07:15	26	40			66	19:15	26	20			46
07:30	36	36			72	19:30	16	25			41
07:45	25	104	42	143	67	19:45	18	85	29	92	47
08:00	26	58			84	20:00	16	17			33
08:15	21	52			73	20:15	26	16			42
08:30	26	45			71	20:30	17	13			30
08:45	43	116	44	199	87	20:45	23	82	15	61	38
09:00	24	31			55	21:00	17	12			29
09:15	17	21			38	21:15	6	16			22
09:30	23	31			54	21:30	5	12			17
09:45	21	85	28	111	49	21:45	6	34	10	50	16
10:00	20	38			58	22:00	13	6			19
10:15	24	41			65	22:15	6	12			18
10:30	18	28			46	22:30	7	12			19
10:45	37	99	30	137	67	22:45	7	33	10	40	17
11:00	25	33			58	23:00	11	14			25
11:15	23	28			51	23:15	10	20			30
11:30	24	31			55	23:30	8	8			16
11:45	37	109	32	124	69	23:45	4	33	5	47	9
TOTALS	591	817			1408	TOTALS	1630	1129			2759
SPLIT %	42.0%	58.0%			33.8%	SPLIT %	59.1%	40.9%			66.2%

DAILY TOTALS					NB	SB	EB	WB	Total
					2,221	1,946	0	0	4,167
AM Peak Hour	11:45	08:00			08:00	PM Peak Hour	16:45	12:00	16:45
AM Pk Volume	124	199			315	PM Pk Volume	344	155	456
Pk Hr Factor	0.838	0.858			0.905	Pk Hr Factor	0.935	0.807	0.958
7 - 9 Volume	220	342	0	0	562	4 - 6 Volume	610	236	846
7 - 9 Peak Hour	08:00	08:00			08:00	4 - 6 Peak Hour	16:45	17:00	16:45
7 - 9 Pk Volume	116	199	0	0	315	4 - 6 Pk Volume	344	119	456
Pk Hr Factor	0.674	0.858	0.000	0.000	0.905	Pk Hr Factor	0.935	0.902	0.958

VOLUME

Mulholland Hwy S/O Turtle Creek Rd

Day: Tuesday
Date: 6/2/2015

City: Calabasas
Project #: CA15_5326_015

DAILY TOTALS						NB	SB	EB	WB	Total	
						2,327	1,907	0	0	4,234	
AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL
00:00	3	3			6	12:00	21	46			67
00:15	3	4			7	12:15	23	25			48
00:30	1	0			1	12:30	22	39			61
00:45	3	10	4	11	7	12:45	27	93	42	152	69
01:00	4	1			5	13:00	23	29			52
01:15	1	2			3	13:15	30	26			56
01:30	2	1			3	13:30	31	26			57
01:45	1	8	3	7	4	13:45	26	110	25	106	51
02:00	1	0			1	14:00	23	30			53
02:15	1	1			2	14:15	32	25			57
02:30	1	0			1	14:30	29	28			57
02:45	0	3	0	1	0	14:45	44	128	30	113	74
03:00	0	1			1	15:00	32	25			57
03:15	0	0			0	15:15	63	32			95
03:30	0	0			0	15:30	50	25			75
03:45	2	2	0	1	2	15:45	58	203	29	111	87
04:00	2	0			2	16:00	75	35			110
04:15	0	0			0	16:15	68	29			97
04:30	1	0			1	16:30	102	27			129
04:45	2	5	0		2	16:45	85	330	20	111	105
05:00	1	1			2	17:00	96	27			123
05:15	1	3			4	17:15	104	26			130
05:30	2	2			4	17:30	92	32			124
05:45	7	11	8	14	15	17:45	129	421	28	113	157
06:00	9	8			17	18:00	73	39			112
06:15	7	13			20	18:15	62	23			85
06:30	8	23			31	18:30	41	24			65
06:45	15	39	25	69	40	18:45	43	219	21	107	64
07:00	9	25			34	19:00	30	21			51
07:15	12	40			52	19:15	23	21			44
07:30	16	32			48	19:30	19	25			44
07:45	24	61	40	137	64	19:45	15	87	24	91	39
08:00	19	46			65	20:00	16	22			38
08:15	36	64			100	20:15	26	11			37
08:30	38	42			80	20:30	16	15			31
08:45	40	133	40	192	80	20:45	19	77	17	65	36
09:00	21	37			58	21:00	17	11			28
09:15	19	21			40	21:15	10	15			25
09:30	24	32			56	21:30	9	11			20
09:45	21	85	29	119	50	21:45	6	42	12	49	18
10:00	24	28			52	22:00	12	7			19
10:15	23	45			68	22:15	4	10			14
10:30	23	31			54	22:30	5	12			17
10:45	19	89	25	129	44	22:45	4	25	8	37	12
11:00	29	37			66	23:00	9	11			20
11:15	30	27			57	23:15	4	22			26
11:30	28	29			57	23:30	6	8			14
11:45	31	118	34	127	65	23:45	9	28	4	45	13
TOTALS	564	807			1371	TOTALS	1763	1100			2863
SPLIT %	41.1%	58.9%			32.4%	SPLIT %	61.6%	38.4%			67.6%

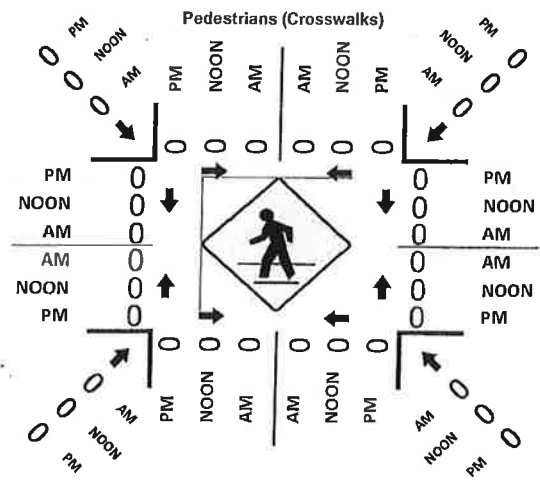
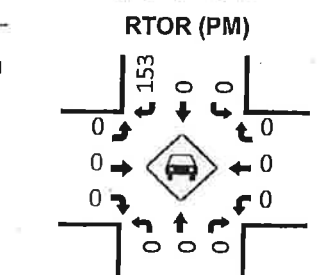
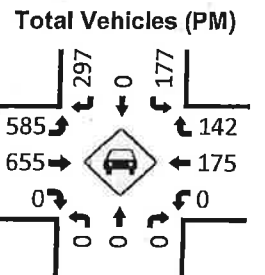
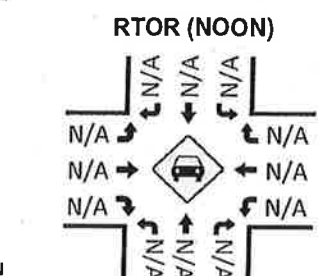
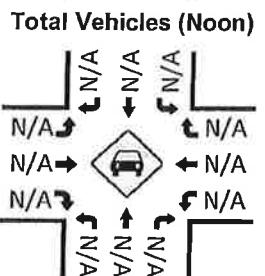
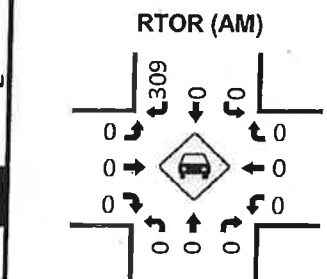
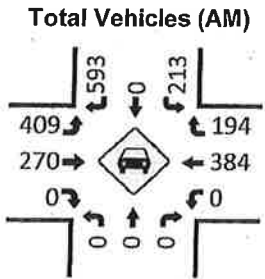
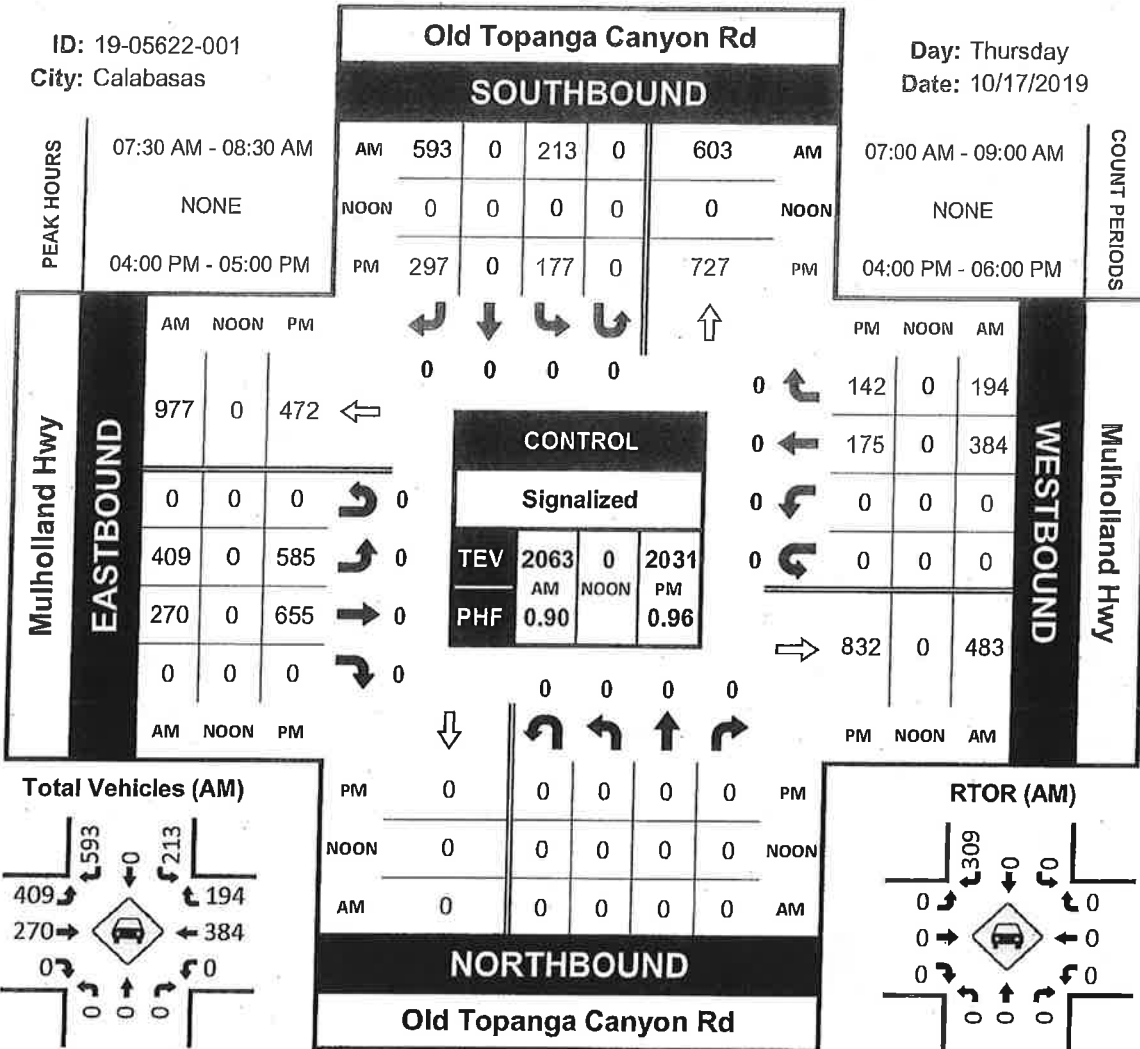
DAILY TOTALS						NB	SB	EB	WB	Total
						2,327	1,907	0	0	4,234
AM Peak Hour	08:15	07:45			08:00	PM Peak Hour	17:00	12:00		17:00
AM Pk Volume	135	192			325	PM Pk Volume	421	152		534
Pk Hr Factor	0.844	0.750			0.813	Pk Hr Factor	0.816	0.826		0.850
7 - 9 Volume	194	329	0	0	523	4 - 6 Volume	751	224	0	975
7 - 9 Peak Hour	08:00	07:45			08:00	4 - 6 Peak Hour	17:00	17:00		17:00
7 - 9 Pk Volume	133	192	0	0	325	4 - 6 Pk Volume	421	113	0	534
Pk Hr Factor	0.831	0.750	0.000	0.000	0.813	Pk Hr Factor	0.816	0.883	0.000	0.850

Old Topanga Canyon Rd & Mulholland Hwy

Peak Hour Turning Movement Count

ID: 19-05622-001
City: Calabasas

Day: Thursday
Date: 10/17/2019



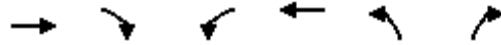
Appendix B: Traffic Volume Development Worksheets

Intersection / Approach / Movement			DATA									EXISTING									
												2019									
			10/6/2016			10/17/2019			12/5/2019			Existing Year 2019 Without Adjustments			Balance Adjustment			Existing Year 2019			
			AM	School PM	PM	AM	School PM	PM	AM	School PM	PM	AM	School PM	PM	AM	School PM	PM	AM	School PM	PM	
1	Mulholland Hwy @ Old Topanga Canyon Rd (West)	Eastbound	Through	592	582	659				564	705	849	564	705	849				564	705	849
		Right	64	43	27				61	31	26	61	31	26				61	31	26	
	Westbound	Left	577	178	136				467	187	131	467	187	131	0	2	-3	467	189	128	
		Through	572	429	243				549	372	290	549	372	290	-1	4	-8	548	376	282	
	Northbound	Left	7	14	22				11	26	14	11	26	14				11	26	14	
		Right	99	125	199				113	219	210	113	219	210				113	219	210	
	Total		1911	1371	1286				1765	1540	1520	1765	1540	1520	-1	6	-11	1764	1546	1509	
Time Period		7:15-8:15	2:45-3:45	4:00-5:00				7:15-8:15	3:00-4:00	4:00-5:00	--	--	--	--	--	--	--	--	--		
2	Mulholland Hwy @ Old Topanga Canyon Rd (East)	Eastbound	Left				409		585	407	526	534	407	526	534	7	3	2	414	529	536
		Through				270		655	259	393	522	259	393	522	4	2	1	263	395	523	
	Westbound	Through				384		175	361	232	150	361	232	150				361	232	150	
		Right				194		142	146	190	168	146	190	168				146	190	168	
	Southbound	Left				213		177	190	231	154	190	231	154				190	231	154	
		Right				593		297	654	333	260	654	333	260				654	333	260	
	Total					2063		2031	2017	1905	1788	2017	1905	1788	11	5	3	2028	1910	1791	
Time Period					7:30-8:30		4:00-5:00	7:15-8:15	3:00-4:00	4:00-5:00	--	--	--	--	--	--	--	--	--		
Intersection / Approach / Movement			DESIGN YEAR																		
			2045																		
			Growth			Other Planned Projects			Other Planned Projects			Design Year 2040 Base (Rounded)			Balance Adjustment			Design Year 2045 No Build			
			1.00%	--	6	Chabad			Park												
	AM	School PM	PM	AM	School PM	PM	AM	School PM	PM	AM	School PM	PM	AM	School PM	PM	AM	School PM	PM			
1	Mulholland Hwy @ Old Topanga Canyon Rd (West)	Eastbound	Through	72	90	108	1		1	7	10	10	475	605	615	-5			470	605	615
		Right	8	4	3				2	2	2	70	35	30				70	35	30	
	Westbound	Left	59	24	16				17	15	15	545	230	160				545	230	160	
		Through	70	48	36	1		1				620	425	320	-5	-5		615	420	320	
	Northbound	Left	1	3	2				1	2	2	15	30	20				15	30	20	
		Right	14	28	27				9	14	14	135	260	250				135	260	250	
	Total		224	197	192	2	0	2	29	33	33	2020	1775	1740	-5	-5	0	2015	1770	1740	
Time Period		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
2	Mulholland Hwy @ Old Topanga Canyon Rd (East)	Eastbound	Left	53	67	68	1		1	7	10	10	475	605	615	-5			470	605	615
		Through	33	50	66				2	4	4	300	450	595				300	450	595	
	Westbound	Through	46	29	19				5	4	4	410	265	175				410	265	175	
		Right	19	24	21	2		2				165	215	190				165	215	190	
	Southbound	Left	24	29	20	3		1				215	260	175				215	260	175	
		Right	83	42	33	1		1	12	11	11	750	385	305				750	385	305	
	Total		258	241	227	7	0	5	26	29	29	2315	2180	2055	-5	0	0	2310	2180	2055	
Time Period		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
Note:																					
Eastbound & Westbound = Mulholland Highway																					
Northbound & Southbound = Old Topanga Canyon Road																					

Appendix C: Existing Year 2019 Analysis Worksheets

Mulholland Highway Corridor Study
 1: Old Topanga Canyon Rd West & Mulholland Hwy

2019 Existing AM Peak



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	564	61	467	548	11	113
Future Volume (vph)	564	61	467	548	11	113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	10
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	125		0	30
Storage Lanes		0	1		1	1
Taper Length (ft)			50		50	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Fr _t	0.984					0.850
Fl _t Protected			0.950		0.950	
Satd. Flow (prot)	1847	0	1787	1863	1787	1492
Fl _t Permitted			0.950		0.950	
Satd. Flow (perm)	1847	0	1787	1863	1787	1492
Link Speed (mph)	40			40	25	
Link Distance (ft)	374			839	582	
Travel Time (s)	6.4			14.3	15.9	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.75	0.61	0.87	0.71	0.46	0.66
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	3%	1%	2%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	752	100	537	772	24	171
Shared Lane Traffic (%)						
Lane Group Flow (vph)	852	0	537	772	24	171
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	6			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.09
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	72.6%
ICU Level of Service	C
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	24.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	564	61	467	548	11	113
Future Vol, veh/h	564	61	467	548	11	113
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	125	-	0	30
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	61	87	71	46	66
Heavy Vehicles, %	1	3	1	2	1	1
Mvmt Flow	752	100	537	772	24	171

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	852	0	2648 802
Stage 1	-	-	-	-	802 -
Stage 2	-	-	-	-	1846 -
Critical Hdwy	-	-	4.11	-	6.41 6.21
Critical Hdwy Stg 1	-	-	-	-	5.41 -
Critical Hdwy Stg 2	-	-	-	-	5.41 -
Follow-up Hdwy	-	-	2.209	-	3.509 3.309
Pot Cap-1 Maneuver	-	-	791	-	26 386
Stage 1	-	-	-	-	443 -
Stage 2	-	-	-	-	138 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	791	-	~ 8 386
Mov Cap-2 Maneuver	-	-	-	-	~ 8 -
Stage 1	-	-	-	-	443 -
Stage 2	-	-	-	-	44 -

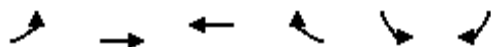
Approach	EB	WB	NB
HCM Control Delay, s	0	7.6	239.6
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	8	386	-	-	791	-
HCM Lane V/C Ratio	2.989	0.444	-	-	0.679	-
HCM Control Delay (s)	\$ 1800.1	21.6	-	-	18.6	-
HCM Lane LOS	F	C	-	-	C	-
HCM 95th %tile Q(veh)	4.2	2.2	-	-	5.4	-

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Mulholland Highway Corridor Study
 2: Mulholland Hwy & Old Topanga Canyon Rd East

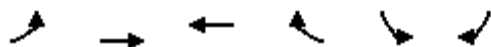
2019 Existing AM Peak



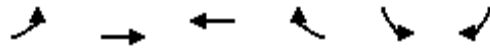
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	414	263	361	146	190	654
Future Volume (vph)	414	263	361	146	190	654
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		2%	-2%		2%	
Storage Length (ft)	185			150	0	90
Storage Lanes	1			1	1	1
Taper Length (ft)	50				50	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Fr _t				0.850		0.850
Fl _t Protected	0.950				0.950	
Satd. Flow (prot)	1752	1862	1881	1615	1735	1583
Fl _t Permitted	0.950				0.950	
Satd. Flow (perm)	1752	1862	1881	1615	1735	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				122		106
Link Speed (mph)		45	45		40	
Link Distance (ft)		308	810		1008	
Travel Time (s)		4.7	12.3		17.2	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.76	0.67	0.79	0.60	0.54	0.74
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	1%	2%	1%	3%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	545	393	457	243	352	884
Shared Lane Traffic (%)						
Lane Group Flow (vph)	545	393	457	243	352	884
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	0.99	0.99	1.01	1.01
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2	1	1	1
Detector Template	Left	Thru	Thru	Right	Left	Right
Leading Detector (ft)	20	100	100	20	20	20
Trailing Detector (ft)	0	0	0	0	0	0
Turn Type	Prot	NA	NA	Free	Prot	pm+ov
Protected Phases	5	2	6		4	5
Permitted Phases				Free		4
Detector Phase	5	2	6		4	5
Switch Phase						

Mulholland Highway Corridor Study
 2: Mulholland Hwy & Old Topanga Canyon Rd East

2019 Existing AM Peak



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Minimum Initial (s)	10.0	15.0	15.0		15.0	10.0
Minimum Split (s)	21.0	21.0	21.0		21.0	21.0
Total Split (s)	37.0	69.0	32.0		31.0	37.0
Total Split (%)	37.0%	69.0%	32.0%		31.0%	37.0%
Maximum Green (s)	31.0	63.0	26.0		25.0	31.0
Yellow Time (s)	4.0	4.0	4.0		4.0	4.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0		6.0	6.0
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0		3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0		0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0		0.0	0.0
Recall Mode	None	Min	Min		None	None
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)	31.1	62.4	25.3	97.1	22.7	59.8
Actuated g/C Ratio	0.32	0.64	0.26	1.00	0.23	0.62
v/c Ratio	0.97	0.33	0.93	0.15	0.87	0.87
Control Delay	66.5	9.2	64.1	0.2	58.3	24.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.5	9.2	64.1	0.2	58.3	24.9
LOS	E	A	E	A	E	C
Approach Delay		42.5	41.9		34.4	
Approach LOS		D	D		C	
90th %ile Green (s)	31.0	63.0	26.0		25.0	31.0
90th %ile Term Code	Max	Hold	Max		Max	Max
70th %ile Green (s)	31.0	63.0	26.0		25.0	31.0
70th %ile Term Code	Max	Hold	Max		Max	Max
50th %ile Green (s)	31.0	63.0	26.0		25.0	31.0
50th %ile Term Code	Max	Hold	Max		Max	Max
30th %ile Green (s)	31.0	63.0	26.0		22.3	31.0
30th %ile Term Code	Max	Hold	Max		Gap	Max
10th %ile Green (s)	31.0	59.3	22.3		16.7	31.0
10th %ile Term Code	Max	Hold	Gap		Gap	Max
Stops (vph)	349	113	313	0	171	461
Fuel Used(gal)	11	3	10	1	5	12
CO Emissions (g/hr)	801	244	734	54	366	861
NOx Emissions (g/hr)	156	47	143	11	71	168
VOC Emissions (g/hr)	186	57	170	13	85	200
Dilemma Vehicles (#)	0	11	17	0	0	0
Queue Length 50th (ft)	~390	120	319	0	237	428
Queue Length 95th (ft)	#474	121	#424	0	187	413
Internal Link Dist (ft)		228	730		928	
Turn Bay Length (ft)	185			150		90
Base Capacity (vph)	561	1211	505	1615	447	1015

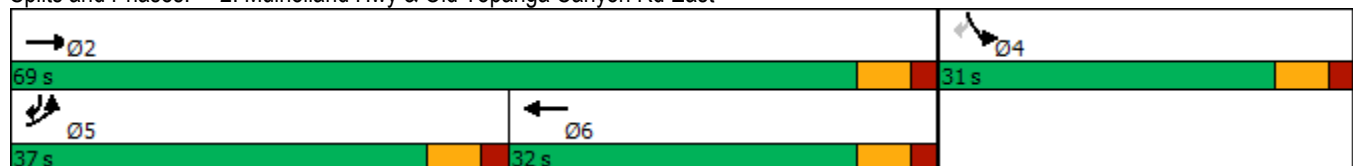


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.97	0.32	0.90	0.15	0.79	0.87

Intersection Summary

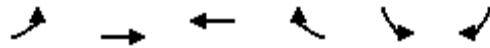
Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	97.1
Natural Cycle:	90
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.97
Intersection Signal Delay:	38.9
Intersection LOS:	D
Intersection Capacity Utilization	69.5%
ICU Level of Service	C
Analysis Period (min)	15
90th %ile Actuated Cycle:	100
70th %ile Actuated Cycle:	100
50th %ile Actuated Cycle:	100
30th %ile Actuated Cycle:	97.3
10th %ile Actuated Cycle:	88
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 2: Mulholland Hwy & Old Topanga Canyon Rd East



Mulholland Highway Corridor Study
 2: Mulholland Hwy & Old Topanga Canyon Rd East

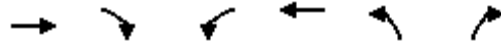
2019 Existing AM Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	414	263	361	146	190	654
Future Volume (veh/h)	414	263	361	146	190	654
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1847	1862	1949	1964	1832	1862
Adj Flow Rate, veh/h	545	393	457	0	352	884
Peak Hour Factor	0.76	0.67	0.79	0.60	0.54	0.74
Percent Heavy Veh, %	2	1	2	1	3	1
Cap, veh/h	551	1166	493		440	892
Arrive On Green	0.31	0.63	0.25	0.00	0.25	0.25
Sat Flow, veh/h	1759	1862	1949	1664	1745	1578
Grp Volume(v), veh/h	545	393	457	0	352	884
Grp Sat Flow(s),veh/h/ln	1759	1862	1949	1664	1745	1578
Q Serve(g_s), s	30.5	9.9	22.7	0.0	18.7	25.0
Cycle Q Clear(g_c), s	30.5	9.9	22.7	0.0	18.7	25.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	551	1166	493		440	892
V/C Ratio(X)	0.99	0.34	0.93		0.80	0.99
Avail Cap(c_a), veh/h	551	1184	512		440	892
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	33.9	8.8	36.1	0.0	34.7	21.3
Incr Delay (d2), s/veh	35.7	0.2	22.9	0.0	10.0	27.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	17.6	3.4	13.3	0.0	8.8	6.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	69.5	8.9	59.0	0.0	44.7	49.1
LnGrp LOS	E	A	E		D	D
Approach Vol, veh/h		938	457	A	1236	
Approach Delay, s/veh		44.1	59.0		47.8	
Approach LOS		D	E		D	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		68.0		31.0	37.0	31.0
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s		63.0		25.0	31.0	26.0
Max Q Clear Time (g_c+I1), s		11.9		27.0	32.5	24.7
Green Ext Time (p_c), s		2.4		0.0	0.0	0.4
Intersection Summary						
HCM 6th Ctrl Delay			48.5			
HCM 6th LOS			D			
Notes						
Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.						

Mulholland Highway Corridor Study
 1: Old Topanga Canyon Rd West & Mulholland Hwy

2019 Existing School PM Peak



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	705	31	189	376	26	219
Future Volume (vph)	705	31	189	376	26	219
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	10
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	125		0	30
Storage Lanes		0	1		1	1
Taper Length (ft)			50		50	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.992					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1847	0	1787	1881	1787	1492
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1847	0	1787	1881	1787	1492
Link Speed (mph)	40			40	25	
Link Distance (ft)	374			839	582	
Travel Time (s)	6.4			14.3	15.9	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.89	0.60	0.92	0.74	0.59	0.82
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	3%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	792	52	205	508	44	267
Shared Lane Traffic (%)						
Lane Group Flow (vph)	844	0	205	508	44	267
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	6			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.09
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	62.8%
ICU Level of Service	B
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	8.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔	↑	↔	↔
Traffic Vol, veh/h	705	31	189	376	26	219
Future Vol, veh/h	705	31	189	376	26	219
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	125	-	0	30
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	60	92	74	59	82
Heavy Vehicles, %	2	3	1	1	1	1
Mvmt Flow	792	52	205	508	44	267

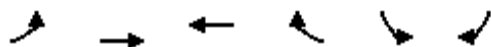
Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	844	0	1736 818
Stage 1	-	-	-	-	818 -
Stage 2	-	-	-	-	918 -
Critical Hdwy	-	-	4.11	-	6.41 6.21
Critical Hdwy Stg 1	-	-	-	-	5.41 -
Critical Hdwy Stg 2	-	-	-	-	5.41 -
Follow-up Hdwy	-	-	2.209	-	3.509 3.309
Pot Cap-1 Maneuver	-	-	797	-	97 377
Stage 1	-	-	-	-	435 -
Stage 2	-	-	-	-	391 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	797	-	72 377
Mov Cap-2 Maneuver	-	-	-	-	72 -
Stage 1	-	-	-	-	435 -
Stage 2	-	-	-	-	291 -

Approach	EB	WB	NB
HCM Control Delay, s	0	3.2	45.9
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	72	377	-	-	797	-
HCM Lane V/C Ratio	0.612	0.708	-	-	0.258	-
HCM Control Delay (s)	114	34.7	-	-	11.1	-
HCM Lane LOS	F	D	-	-	B	-
HCM 95th %tile Q(veh)	2.7	5.3	-	-	1	-

Mulholland Highway Corridor Study
 2: Mulholland Hwy & Old Topanga Canyon Rd East

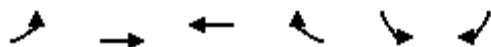
2019 Existing School PM Peak



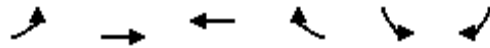
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	529	395	232	190	231	333
Future Volume (vph)	529	395	232	190	231	333
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		2%	-2%		2%	
Storage Length (ft)	185			150	0	90
Storage Lanes	1			1	1	1
Taper Length (ft)	50				50	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Fr _t				0.850		0.850
Fl _t Protected	0.950				0.950	
Satd. Flow (prot)	1752	1862	1900	1599	1769	1583
Fl _t Permitted	0.950				0.950	
Satd. Flow (perm)	1752	1862	1900	1599	1769	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				216		170
Link Speed (mph)		45	45		40	
Link Distance (ft)		308	810		1008	
Travel Time (s)		4.7	12.3		17.2	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.83	0.77	0.91	0.79	0.76	0.78
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	1%	1%	2%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	637	513	255	241	304	427
Shared Lane Traffic (%)						
Lane Group Flow (vph)	637	513	255	241	304	427
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	0.99	0.99	1.01	1.01
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2	1	1	1
Detector Template	Left	Thru	Thru	Right	Left	Right
Leading Detector (ft)	20	100	100	20	20	20
Trailing Detector (ft)	0	0	0	0	0	0
Turn Type	Prot	NA	NA	Free	Prot	pm+ov
Protected Phases	5	2	6		4	5
Permitted Phases				Free		4
Detector Phase	5	2	6		4	5
Switch Phase						

Mulholland Highway Corridor Study
 2: Mulholland Hwy & Old Topanga Canyon Rd East

2019 Existing School PM Peak



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Minimum Initial (s)	10.0	15.0	15.0		15.0	10.0
Minimum Split (s)	21.0	21.0	21.0		21.0	21.0
Total Split (s)	41.0	65.0	24.0		35.0	41.0
Total Split (%)	41.0%	65.0%	24.0%		35.0%	41.0%
Maximum Green (s)	35.0	59.0	18.0		29.0	35.0
Yellow Time (s)	4.0	4.0	4.0		4.0	4.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0		6.0	6.0
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0		3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0		0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0		0.0	0.0
Recall Mode	None	Min	Min		None	None
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)	35.2	58.0	16.8	91.0	21.0	62.2
Actuated g/C Ratio	0.39	0.64	0.18	1.00	0.23	0.68
v/c Ratio	0.94	0.43	0.73	0.15	0.75	0.38
Control Delay	52.5	10.5	49.4	0.2	44.4	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.5	10.5	49.4	0.2	44.4	4.5
LOS	D	B	D	A	D	A
Approach Delay		33.8	25.5		21.1	
Approach LOS		C	C		C	
90th %ile Green (s)	35.0	59.0	18.0		29.0	35.0
90th %ile Term Code	Max	Hold	Max		Max	Max
70th %ile Green (s)	35.0	59.0	18.0		24.2	35.0
70th %ile Term Code	Max	Hold	Max		Gap	Max
50th %ile Green (s)	35.0	58.8	17.8		20.7	35.0
50th %ile Term Code	Max	Hold	Gap		Gap	Max
30th %ile Green (s)	35.0	56.0	15.0		17.2	35.0
30th %ile Term Code	Max	Hold	Min		Gap	Max
10th %ile Green (s)	35.0	56.0	15.0		15.0	35.0
10th %ile Term Code	Max	Hold	Min		Min	Max
Stops (vph)	427	190	207	0	205	74
Fuel Used(gal)	13	5	6	1	6	3
CO Emissions (g/hr)	910	383	428	70	397	231
NOx Emissions (g/hr)	177	75	83	14	77	45
VOC Emissions (g/hr)	211	89	99	16	92	54
Dilemma Vehicles (#)	0	17	11	0	0	0
Queue Length 50th (ft)	393	147	155	0	185	57
Queue Length 95th (ft)	#640	222	#300	0	230	76
Internal Link Dist (ft)		228	730		928	
Turn Bay Length (ft)	185			150		90
Base Capacity (vph)	677	1213	377	1599	566	1135

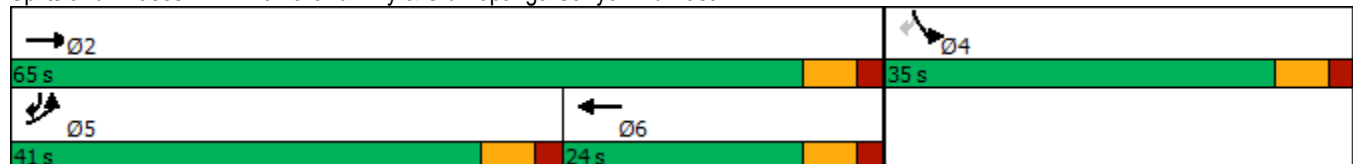


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.94	0.42	0.68	0.15	0.54	0.38

Intersection Summary

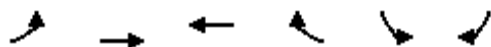
Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	91
Natural Cycle:	80
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.94
Intersection Signal Delay:	28.2
Intersection LOS:	C
Intersection Capacity Utilization:	69.6%
ICU Level of Service:	C
Analysis Period (min):	15
90th %ile Actuated Cycle:	100
70th %ile Actuated Cycle:	95.2
50th %ile Actuated Cycle:	91.5
30th %ile Actuated Cycle:	85.2
10th %ile Actuated Cycle:	83
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 2: Mulholland Hwy & Old Topanga Canyon Rd East



Mulholland Highway Corridor Study
 2: Mulholland Hwy & Old Topanga Canyon Rd East

2019 Existing School PM Peak



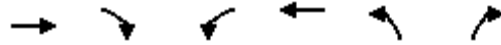
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↑	↗	↘	↙	↘
Traffic Volume (veh/h)	529	395	232	190	231	333
Future Volume (veh/h)	529	395	232	190	231	333
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1847	1862	1964	1949	1862	1862
Adj Flow Rate, veh/h	637	513	255	0	304	427
Peak Hour Factor	0.83	0.77	0.91	0.79	0.76	0.78
Percent Heavy Veh, %	2	1	1	2	1	1
Cap, veh/h	678	1192	358		379	945
Arrive On Green	0.39	0.64	0.18	0.00	0.21	0.21
Sat Flow, veh/h	1759	1862	1964	1651	1773	1578
Grp Volume(v), veh/h	637	513	255	0	304	427
Grp Sat Flow(s),veh/h/ln	1759	1862	1964	1651	1773	1578
Q Serve(g_s), s	28.7	11.3	10.0	0.0	13.4	12.2
Cycle Q Clear(g_c), s	28.7	11.3	10.0	0.0	13.4	12.2
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	678	1192	358		379	945
V/C Ratio(X)	0.94	0.43	0.71		0.80	0.45
Avail Cap(c_a), veh/h	748	1334	429		624	1164
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	24.4	7.3	31.6	0.0	30.7	9.1
Incr Delay (d2), s/veh	18.8	0.2	4.4	0.0	4.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.0	3.4	4.9	0.0	5.8	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	43.2	7.6	36.0	0.0	34.7	9.4
LnGrp LOS	D	A	D		C	A
Approach Vol, veh/h		1150	255	A	731	
Approach Delay, s/veh		27.3	36.0		19.9	
Approach LOS		C	D		B	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		58.7		23.6	37.7	21.0
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s		59.0		29.0	35.0	18.0
Max Q Clear Time (g_c+I1), s		13.3		15.4	30.7	12.0
Green Ext Time (p_c), s		3.3		2.2	1.0	0.6
Intersection Summary						
HCM 6th Ctrl Delay			25.8			
HCM 6th LOS			C			

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Mulholland Highway Corridor Study
 1: Old Topanga Canyon Rd West & Mulholland Hwy

2019 Existing PM Peak



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔	↔	↔	↔
Traffic Volume (vph)	849	26	128	282	14	210
Future Volume (vph)	849	26	128	282	14	210
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	10
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	125		0	30
Storage Lanes		0	1		1	1
Taper Length (ft)			50		50	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.995					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1872	0	1787	1881	1687	1492
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1872	0	1787	1881	1687	1492
Link Speed (mph)	40			40	25	
Link Distance (ft)	374			839	582	
Travel Time (s)	6.4			14.3	15.9	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)		1				
Peak Hour Factor	0.87	0.72	0.78	0.78	0.88	0.91
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	1%	1%	7%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	976	36	164	362	16	231
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1012	0	164	362	16	231
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	6			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.09
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

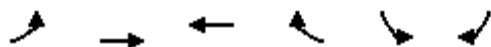
Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	66.7%
ICU Level of Service	C
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	7.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	849	26	128	282	14	210
Future Vol, veh/h	849	26	128	282	14	210
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	125	-	0	30
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	72	78	78	88	91
Heavy Vehicles, %	1	1	1	1	7	1
Mvmt Flow	976	36	164	362	16	231
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	1012	0	1684	994
Stage 1	-	-	-	-	994	-
Stage 2	-	-	-	-	690	-
Critical Hdwy	-	-	4.11	-	6.47	6.21
Critical Hdwy Stg 1	-	-	-	-	5.47	-
Critical Hdwy Stg 2	-	-	-	-	5.47	-
Follow-up Hdwy	-	-	2.209	-	3.563	3.309
Pot Cap-1 Maneuver	-	-	689	-	101	299
Stage 1	-	-	-	-	351	-
Stage 2	-	-	-	-	489	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	689	-	77	299
Mov Cap-2 Maneuver	-	-	-	-	77	-
Stage 1	-	-	-	-	351	-
Stage 2	-	-	-	-	373	-
Approach	EB	WB	NB			
HCM Control Delay, s	0	3.7	49.3			
HCM LOS			E			
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	77	299	-	-	689	-
HCM Lane V/C Ratio	0.207	0.772	-	-	0.238	-
HCM Control Delay (s)	63.5	48.3	-	-	11.9	-
HCM Lane LOS	F	E	-	-	B	-
HCM 95th %tile Q(veh)	0.7	6	-	-	0.9	-

Mulholland Highway Corridor Study
 2: Mulholland Hwy & Old Topanga Canyon Rd East

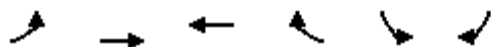
2019 Existing PM Peak



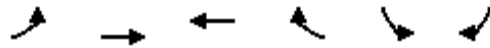
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	536	523	150	168	154	260
Future Volume (vph)	536	523	150	168	154	260
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		2%	-2%		2%	
Storage Length (ft)	185			150	0	90
Storage Lanes	1			1	1	1
Taper Length (ft)	50				50	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Fr _t				0.850		0.850
Fl _t Protected	0.950				0.950	
Satd. Flow (prot)	1769	1862	1900	1615	1769	1583
Fl _t Permitted	0.950				0.950	
Satd. Flow (perm)	1769	1862	1900	1615	1769	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				213		313
Link Speed (mph)		45	45		40	
Link Distance (ft)		308	810		1008	
Travel Time (s)		4.7	12.3		17.2	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.97	0.82	0.78	0.79	0.80	0.83
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	553	638	192	213	193	313
Shared Lane Traffic (%)						
Lane Group Flow (vph)	553	638	192	213	193	313
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	0.99	0.99	1.01	1.01
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2	1	1	1
Detector Template	Left	Thru	Thru	Right	Left	Right
Leading Detector (ft)	20	100	100	20	20	20
Trailing Detector (ft)	0	0	0	0	0	0
Turn Type	Prot	NA	NA	Free	Prot	pm+ov
Protected Phases	5	2	6		4	5
Permitted Phases				Free		4
Detector Phase	5	2	6		4	5
Switch Phase						

Mulholland Highway Corridor Study
 2: Mulholland Hwy & Old Topanga Canyon Rd East

2019 Existing PM Peak



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Minimum Initial (s)	10.0	15.0	15.0		15.0	10.0
Minimum Split (s)	21.0	21.0	21.0		21.0	21.0
Total Split (s)	27.0	54.0	27.0		26.0	27.0
Total Split (%)	33.8%	67.5%	33.8%		32.5%	33.8%
Maximum Green (s)	21.0	48.0	21.0		20.0	21.0
Yellow Time (s)	4.0	4.0	4.0		4.0	4.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0		6.0	6.0
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0		3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0		0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0		0.0	0.0
Recall Mode	None	Min	Min		None	None
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)	21.0	42.5	15.5	70.1	15.6	42.6
Actuated g/C Ratio	0.30	0.61	0.22	1.00	0.22	0.61
v/c Ratio	1.04	0.57	0.46	0.13	0.49	0.29
Control Delay	78.4	10.9	28.0	0.2	28.7	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	78.4	10.9	28.0	0.2	28.7	1.6
LOS	E	B	C	A	C	A
Approach Delay		42.2	13.3		11.9	
Approach LOS		D	B		B	
90th %ile Green (s)	21.0	44.3	17.3		18.1	21.0
90th %ile Term Code	Max	Hold	Gap		Gap	Max
70th %ile Green (s)	21.0	42.0	15.0		15.0	21.0
70th %ile Term Code	Max	Hold	Min		Min	Max
50th %ile Green (s)	21.0	42.0	15.0		15.0	21.0
50th %ile Term Code	Max	Hold	Min		Min	Max
30th %ile Green (s)	21.0	42.0	15.0		15.0	21.0
30th %ile Term Code	Max	Hold	Min		Min	Max
10th %ile Green (s)	21.0	42.0	15.0		15.0	21.0
10th %ile Term Code	Max	Hold	Min		Min	Max
Stops (vph)	437	296	126	0	130	16
Fuel Used(gal)	16	8	3	1	3	2
CO Emissions (g/hr)	1122	531	224	62	226	141
NOx Emissions (g/hr)	218	103	44	12	44	27
VOC Emissions (g/hr)	260	123	52	14	52	33
Dilemma Vehicles (#)	0	30	8	0	0	0
Queue Length 50th (ft)	~274	159	80	0	81	0
Queue Length 95th (ft)	#537	241	127	0	131	22
Internal Link Dist (ft)		228	730		928	
Turn Bay Length (ft)	185			150		90
Base Capacity (vph)	530	1276	570	1615	505	1085

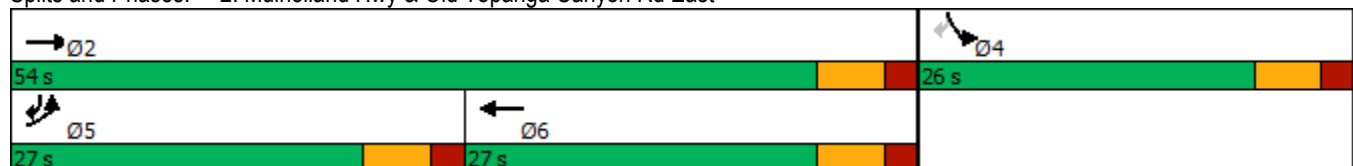


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.04	0.50	0.34	0.13	0.38	0.29

Intersection Summary

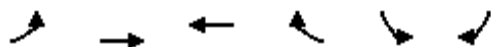
Area Type:	Other
Cycle Length:	80
Actuated Cycle Length:	70.1
Natural Cycle:	70
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	1.04
Intersection Signal Delay:	29.4
Intersection LOS:	C
Intersection Capacity Utilization	69.7%
ICU Level of Service	C
Analysis Period (min)	15
90th %ile Actuated Cycle:	74.4
70th %ile Actuated Cycle:	69
50th %ile Actuated Cycle:	69
30th %ile Actuated Cycle:	69
10th %ile Actuated Cycle:	69
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 2: Mulholland Hwy & Old Topanga Canyon Rd East



Mulholland Highway Corridor Study
 2: Mulholland Hwy & Old Topanga Canyon Rd East

2019 Existing PM Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	536	523	150	168	154	260
Future Volume (veh/h)	536	523	150	168	154	260
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1862	1862	1964	1964	1862	1862
Adj Flow Rate, veh/h	553	638	192	0	192	313
Peak Hour Factor	0.97	0.82	0.78	0.79	0.80	0.83
Percent Heavy Veh, %	1	1	1	1	1	1
Cap, veh/h	540	1133	427		385	823
Arrive On Green	0.30	0.61	0.22	0.00	0.22	0.22
Sat Flow, veh/h	1773	1862	1964	1664	1773	1578
Grp Volume(v), veh/h	553	638	192	0	192	313
Grp Sat Flow(s),veh/h/ln	1773	1862	1964	1664	1773	1578
Q Serve(g_s), s	21.0	14.1	5.9	0.0	6.6	8.2
Cycle Q Clear(g_c), s	21.0	14.1	5.9	0.0	6.6	8.2
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	540	1133	427		385	823
V/C Ratio(X)	1.02	0.56	0.45		0.50	0.38
Avail Cap(c_a), veh/h	540	1295	598		514	937
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	24.0	8.0	23.4	0.0	23.7	9.8
Incr Delay (d2), s/veh	45.2	0.4	0.7	0.0	1.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.4	4.0	2.5	0.0	2.6	8.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	69.2	8.5	24.2	0.0	24.7	10.1
LnGrp LOS	F	A	C		C	B
Approach Vol, veh/h		1191	192	A	505	
Approach Delay, s/veh		36.7	24.2		15.7	
Approach LOS		D	C		B	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		48.0		21.0	27.0	21.0
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s		48.0		20.0	21.0	21.0
Max Q Clear Time (g_c+I1), s		16.1		10.2	23.0	7.9
Green Ext Time (p_c), s		4.3		1.3	0.0	0.7
Intersection Summary						
HCM 6th Ctrl Delay			29.8			
HCM 6th LOS			C			

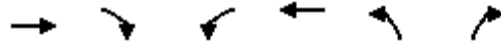
Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Appendix D: Design Year 2045 No Build Analysis Worksheets

Mulholland Highway Corridor Study
 1: Old Topanga Canyon Rd West & Mulholland Hwy

2045 No Build AM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔	↔	↔	↔
Traffic Volume (vph)	635	70	545	615	15	135
Future Volume (vph)	635	70	545	615	15	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	10
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	125		0	30
Storage Lanes		0	1		1	1
Taper Length (ft)			50		50	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Fr _t	0.984					0.850
Fl _t Protected			0.950		0.950	
Satd. Flow (prot)	1847	0	1787	1863	1787	1492
Fl _t Permitted			0.950		0.950	
Satd. Flow (perm)	1847	0	1787	1863	1787	1492
Link Speed (mph)	40			40	25	
Link Distance (ft)	374			839	582	
Travel Time (s)	6.4			14.3	15.9	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.75	0.61	0.87	0.71	0.46	0.66
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	3%	1%	2%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	847	115	626	866	33	205
Shared Lane Traffic (%)						
Lane Group Flow (vph)	962	0	626	866	33	205
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	6			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.09
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	81.2%
ICU Level of Service	D
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	134.6					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔	↑	↔	↔
Traffic Vol, veh/h	635	70	545	615	15	135
Future Vol, veh/h	635	70	545	615	15	135
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	125	-	0	30
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	61	87	71	46	66
Heavy Vehicles, %	1	3	1	2	1	1
Mvmt Flow	847	115	626	866	33	205

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	962	0	3023 905
Stage 1	-	-	-	-	905 -
Stage 2	-	-	-	-	2118 -
Critical Hdwy	-	-	4.11	-	6.41 6.21
Critical Hdwy Stg 1	-	-	-	-	5.41 -
Critical Hdwy Stg 2	-	-	-	-	5.41 -
Follow-up Hdwy	-	-	2.209	-	3.509 3.309
Pot Cap-1 Maneuver	-	-	719	-	~ 15 336
Stage 1	-	-	-	-	396 -
Stage 2	-	-	-	-	101 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	719	-	~ 2 336
Mov Cap-2 Maneuver	-	-	-	-	~ 2 -
Stage 1	-	-	-	-	396 -
Stage 2	-	-	-	-	~ 13 -

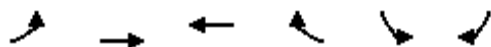
Approach	EB	WB	NB
HCM Control Delay, s	0	14.3	\$ 1436.9
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	2	336	-	-	719	-
HCM Lane V/C Ratio	16.304	0.609	-	-	0.871	-
HCM Control Delay (s)	\$ 10254.9	31.1	-	-	34	-
HCM Lane LOS	F	D	-	-	D	-
HCM 95th %tile Q(veh)	5.9	3.8	-	-	10.6	-

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Mulholland Highway Corridor Study
 2: Mulholland Hwy & Old Topanga Canyon Rd East

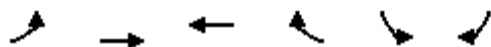
2045 No Build AM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	470	300	410	165	215	750
Future Volume (vph)	470	300	410	165	215	750
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		2%	-2%		2%	
Storage Length (ft)	185			150	0	90
Storage Lanes	1			1	1	1
Taper Length (ft)	50				50	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Flt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1752	1862	1881	1615	1735	1583
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1752	1862	1881	1615	1735	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				101		96
Link Speed (mph)		45	45		40	
Link Distance (ft)		308	810		1008	
Travel Time (s)		4.7	12.3		17.2	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.76	0.67	0.79	0.60	0.54	0.74
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	1%	2%	1%	3%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	618	448	519	275	398	1014
Shared Lane Traffic (%)						
Lane Group Flow (vph)	618	448	519	275	398	1014
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	0.99	0.99	1.01	1.01
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2	1	1	1
Detector Template	Left	Thru	Thru	Right	Left	Right
Leading Detector (ft)	20	100	100	20	20	20
Trailing Detector (ft)	0	0	0	0	0	0
Turn Type	Prot	NA	NA	Free	Prot	pm+ov
Protected Phases	5	2	6		4	5
Permitted Phases				Free		4
Detector Phase	5	2	6		4	5
Switch Phase						

Mulholland Highway Corridor Study
 2: Mulholland Hwy & Old Topanga Canyon Rd East

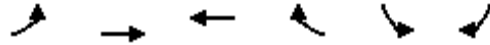
2045 No Build AM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Minimum Initial (s)	10.0	15.0	15.0		15.0	10.0
Minimum Split (s)	21.0	21.0	21.0		21.0	21.0
Total Split (s)	47.0	87.0	40.0		33.0	47.0
Total Split (%)	39.2%	72.5%	33.3%		27.5%	39.2%
Maximum Green (s)	41.0	81.0	34.0		27.0	41.0
Yellow Time (s)	4.0	4.0	4.0		4.0	4.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0		6.0	6.0
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0		3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0		0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0		0.0	0.0
Recall Mode	None	Min	Min		None	None
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)	41.0	81.0	34.0	120.0	27.0	74.0
Actuated g/C Ratio	0.34	0.68	0.28	1.00	0.22	0.62
v/c Ratio	1.03	0.36	0.98	0.17	1.02	1.00
Control Delay	84.9	9.3	76.5	0.2	97.1	50.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	84.9	9.3	76.5	0.2	97.1	50.5
LOS	F	A	E	A	F	D
Approach Delay		53.1	50.1		63.6	
Approach LOS		D	D		E	
90th %ile Green (s)	41.0	81.0	34.0		27.0	41.0
90th %ile Term Code	Max	Hold	Max		Max	Max
70th %ile Green (s)	41.0	81.0	34.0		27.0	41.0
70th %ile Term Code	Max	Hold	Max		Max	Max
50th %ile Green (s)	41.0	81.0	34.0		27.0	41.0
50th %ile Term Code	Max	Hold	Max		Max	Max
30th %ile Green (s)	41.0	81.0	34.0		27.0	41.0
30th %ile Term Code	Max	Hold	Max		Max	Max
10th %ile Green (s)	41.0	81.0	34.0		27.0	41.0
10th %ile Term Code	Max	Hold	Max		Max	Max
Stops (vph)	405	121	360	0	186	587
Fuel Used(gal)	15	4	13	1	8	19
CO Emissions (g/hr)	1037	275	910	61	528	1300
NOx Emissions (g/hr)	202	54	177	12	103	253
VOC Emissions (g/hr)	240	64	211	14	122	301
Dilemma Vehicles (#)	0	10	16	0	0	0
Queue Length 50th (ft)	~575	151	446	0	~366	~786
Queue Length 95th (ft)	#615	143	#552	0	257	678
Internal Link Dist (ft)		228	730		928	
Turn Bay Length (ft)	185			150		90
Base Capacity (vph)	598	1256	532	1615	390	1012

Mulholland Highway Corridor Study
 2: Mulholland Hwy & Old Topanga Canyon Rd East

2045 No Build AM Peak Hour

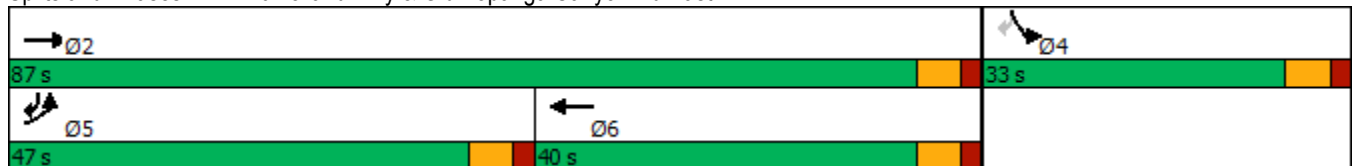


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.03	0.36	0.98	0.17	1.02	1.00

Intersection Summary

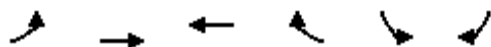
Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Natural Cycle:	120
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	1.03
Intersection Signal Delay:	56.9
Intersection LOS:	E
Intersection Capacity Utilization	78.0%
ICU Level of Service	D
Analysis Period (min)	15
90th %ile Actuated Cycle:	120
70th %ile Actuated Cycle:	120
50th %ile Actuated Cycle:	120
30th %ile Actuated Cycle:	120
10th %ile Actuated Cycle:	120
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 2: Mulholland Hwy & Old Topanga Canyon Rd East



Mulholland Highway Corridor Study
 2: Mulholland Hwy & Old Topanga Canyon Rd East

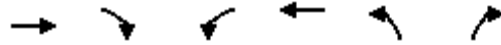
2045 No Build AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	470	300	410	165	215	750
Future Volume (veh/h)	470	300	410	165	215	750
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1847	1862	1949	1964	1832	1862
Adj Flow Rate, veh/h	618	448	519	0	398	1014
Peak Hour Factor	0.76	0.67	0.79	0.60	0.54	0.74
Percent Heavy Veh, %	2	1	2	1	3	1
Cap, veh/h	604	1254	546		394	898
Arrive On Green	0.34	0.67	0.28	0.00	0.23	0.23
Sat Flow, veh/h	1759	1862	1949	1664	1745	1578
Grp Volume(v), veh/h	618	448	519	0	398	1014
Grp Sat Flow(s),veh/h/ln	1759	1862	1949	1664	1745	1578
Q Serve(g_s), s	41.0	12.4	31.2	0.0	27.0	27.0
Cycle Q Clear(g_c), s	41.0	12.4	31.2	0.0	27.0	27.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	604	1254	546		394	898
V/C Ratio(X)	1.02	0.36	0.95		1.01	1.13
Avail Cap(c_a), veh/h	604	1262	555		394	898
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	39.2	8.4	42.2	0.0	46.2	25.7
Incr Delay (d2), s/veh	42.8	0.2	26.2	0.0	47.7	72.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	23.9	4.4	18.3	0.0	16.6	60.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	82.1	8.6	68.4	0.0	93.9	98.0
LnGrp LOS	F	A	E		F	F
Approach Vol, veh/h		1066	519	A	1412	
Approach Delay, s/veh		51.2	68.4		96.9	
Approach LOS		D	E		F	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		86.5		33.0	47.0	39.5
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s		81.0		27.0	41.0	34.0
Max Q Clear Time (g_c+I1), s		14.4		29.0	43.0	33.2
Green Ext Time (p_c), s		2.8		0.0	0.0	0.3
Intersection Summary						
HCM 6th Ctrl Delay			75.7			
HCM 6th LOS			E			
Notes						
Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.						

Mulholland Highway Corridor Study
 1: Old Topanga Canyon Rd West & Mulholland Hwy

2045 No Build School PM Peak



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	795	35	230	420	30	260
Future Volume (vph)	795	35	230	420	30	260
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	10
Grade (%)	0%			0%		0%
Storage Length (ft)		0	125		0	30
Storage Lanes		0	1		1	1
Taper Length (ft)			50		50	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.992					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1847	0	1787	1881	1787	1492
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1847	0	1787	1881	1787	1492
Link Speed (mph)	40			40	25	
Link Distance (ft)	374			839	582	
Travel Time (s)	6.4			14.3	15.9	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.89	0.60	0.92	0.74	0.59	0.82
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	3%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	893	58	250	568	51	317
Shared Lane Traffic (%)						
Lane Group Flow (vph)	951	0	250	568	51	317
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	6			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.09
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	70.0%
Analysis Period (min)	15
	ICU Level of Service C

Intersection						
Int Delay, s/veh	20.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔	↑	↔	↔
Traffic Vol, veh/h	795	35	230	420	30	260
Future Vol, veh/h	795	35	230	420	30	260
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	125	-	0	30
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	89	60	92	74	59	82
Heavy Vehicles, %	2	3	1	1	1	1
Mvmt Flow	893	58	250	568	51	317

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	951	0	1990 922
Stage 1	-	-	-	-	922 -
Stage 2	-	-	-	-	1068 -
Critical Hdwy	-	-	4.11	-	6.41 6.21
Critical Hdwy Stg 1	-	-	-	-	5.41 -
Critical Hdwy Stg 2	-	-	-	-	5.41 -
Follow-up Hdwy	-	-	2.209	-	3.509 3.309
Pot Cap-1 Maneuver	-	-	726	-	67 329
Stage 1	-	-	-	-	389 -
Stage 2	-	-	-	-	332 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	726	-	~ 44 329
Mov Cap-2 Maneuver	-	-	-	-	~ 44 -
Stage 1	-	-	-	-	389 -
Stage 2	-	-	-	-	218 -

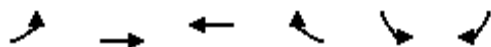
Approach	EB	WB	NB
HCM Control Delay, s	0	3.8	112.3
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	44	329	-	-	726	-
HCM Lane V/C Ratio	1.156	0.964	-	-	0.344	-
HCM Control Delay (s)	\$ 331.1	77.2	-	-	12.5	-
HCM Lane LOS	F	F	-	-	B	-
HCM 95th %tile Q(veh)	4.8	10.2	-	-	1.5	-

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Mulholland Highway Corridor Study
 2: Mulholland Hwy & Old Topanga Canyon Rd East

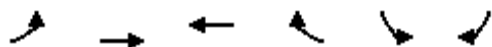
2045 No Build School PM Peak



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	605	450	265	215	260	385
Future Volume (vph)	605	450	265	215	260	385
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		2%	-2%		2%	
Storage Length (ft)	185			150	0	90
Storage Lanes	1			1	1	1
Taper Length (ft)	50				50	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Fr _t				0.850		0.850
Fl _t Protected	0.950				0.950	
Satd. Flow (prot)	1752	1862	1900	1599	1769	1583
Fl _t Permitted	0.950				0.950	
Satd. Flow (perm)	1752	1862	1900	1599	1769	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				238		125
Link Speed (mph)		45	45		40	
Link Distance (ft)		308	810		1008	
Travel Time (s)		4.7	12.3		17.2	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.83	0.77	0.91	0.79	0.76	0.78
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	1%	1%	2%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	729	584	291	272	342	494
Shared Lane Traffic (%)						
Lane Group Flow (vph)	729	584	291	272	342	494
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	0.99	0.99	1.01	1.01
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2	1	1	1
Detector Template	Left	Thru	Thru	Right	Left	Right
Leading Detector (ft)	20	100	100	20	20	20
Trailing Detector (ft)	0	0	0	0	0	0
Turn Type	Prot	NA	NA	Free	Prot	pm+ov
Protected Phases	5	2	6		4	5
Permitted Phases				Free		4
Detector Phase	5	2	6		4	5
Switch Phase						

Mulholland Highway Corridor Study
 2: Mulholland Hwy & Old Topanga Canyon Rd East

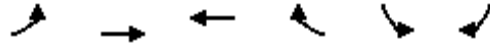
2045 No Build School PM Peak



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Minimum Initial (s)	10.0	15.0	15.0		15.0	10.0
Minimum Split (s)	21.0	21.0	21.0		21.0	21.0
Total Split (s)	44.0	66.0	22.0		24.0	44.0
Total Split (%)	48.9%	73.3%	24.4%		26.7%	48.9%
Maximum Green (s)	38.0	60.0	16.0		18.0	38.0
Yellow Time (s)	4.0	4.0	4.0		4.0	4.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0		6.0	6.0
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0		3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0		0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0		0.0	0.0
Recall Mode	None	Min	Min		None	None
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)	38.0	59.8	15.8	89.8	18.0	62.0
Actuated g/C Ratio	0.42	0.67	0.18	1.00	0.20	0.69
v/c Ratio	0.98	0.47	0.87	0.17	0.97	0.44
Control Delay	56.9	8.8	63.2	0.2	77.9	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.9	8.8	63.2	0.2	77.9	5.8
LOS	E	A	E	A	E	A
Approach Delay		35.5	32.8		35.3	
Approach LOS		D	C		D	
90th %ile Green (s)	38.0	60.0	16.0		18.0	38.0
90th %ile Term Code	Max	Hold	Max		Max	Max
70th %ile Green (s)	38.0	60.0	16.0		18.0	38.0
70th %ile Term Code	Max	Hold	Max		Max	Max
50th %ile Green (s)	38.0	60.0	16.0		18.0	38.0
50th %ile Term Code	Max	Hold	Max		Max	Max
30th %ile Green (s)	38.0	60.0	16.0		18.0	38.0
30th %ile Term Code	Max	Hold	Max		Max	Max
10th %ile Green (s)	38.0	59.0	15.0		18.0	38.0
10th %ile Term Code	Max	Hold	Min		Max	Max
Stops (vph)	510	205	233	0	222	118
Fuel Used(gal)	16	6	8	1	8	4
CO Emissions (g/hr)	1089	421	538	80	565	297
NOx Emissions (g/hr)	212	82	105	16	110	58
VOC Emissions (g/hr)	252	97	125	18	131	69
Dilemma Vehicles (#)	0	20	13	0	0	0
Queue Length 50th (ft)	447	159	182	0	218	83
Queue Length 95th (ft)	#627	184	#337	0	#307	109
Internal Link Dist (ft)		228	730		928	
Turn Bay Length (ft)	185			150		90
Base Capacity (vph)	741	1244	338	1599	354	1131

Mulholland Highway Corridor Study
 2: Mulholland Hwy & Old Topanga Canyon Rd East

2045 No Build School PM Peak

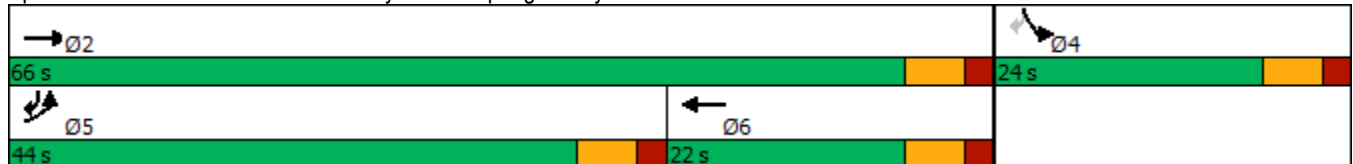


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.98	0.47	0.86	0.17	0.97	0.44

Intersection Summary

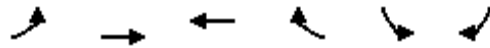
Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	89.8
Natural Cycle:	90
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.98
Intersection Signal Delay:	34.9
Intersection LOS:	C
Intersection Capacity Utilization	76.9%
ICU Level of Service	D
Analysis Period (min)	15
90th %ile Actuated Cycle:	90
70th %ile Actuated Cycle:	90
50th %ile Actuated Cycle:	90
30th %ile Actuated Cycle:	90
10th %ile Actuated Cycle:	89
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 2: Mulholland Hwy & Old Topanga Canyon Rd East



Mulholland Highway Corridor Study
 2: Mulholland Hwy & Old Topanga Canyon Rd East

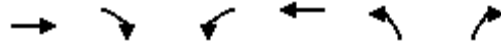
2045 No Build School PM Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	605	450	265	215	260	385
Future Volume (veh/h)	605	450	265	215	260	385
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1847	1862	1964	1949	1862	1862
Adj Flow Rate, veh/h	729	584	291	0	342	494
Peak Hour Factor	0.83	0.77	0.91	0.79	0.76	0.78
Percent Heavy Veh, %	2	1	1	2	1	1
Cap, veh/h	751	1234	332		358	992
Arrive On Green	0.43	0.66	0.17	0.00	0.20	0.20
Sat Flow, veh/h	1759	1862	1964	1651	1773	1578
Grp Volume(v), veh/h	729	584	291	0	342	494
Grp Sat Flow(s),veh/h/ln	1759	1862	1964	1651	1773	1578
Q Serve(g_s), s	36.1	13.7	12.9	0.0	17.0	15.1
Cycle Q Clear(g_c), s	36.1	13.7	12.9	0.0	17.0	15.1
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	751	1234	332		358	992
V/C Ratio(X)	0.97	0.47	0.88		0.95	0.50
Avail Cap(c_a), veh/h	751	1254	353		358	992
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	25.0	7.4	36.1	0.0	35.1	8.9
Incr Delay (d2), s/veh	25.8	0.3	20.5	0.0	35.6	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	18.6	4.1	7.7	0.0	10.5	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	50.8	7.6	56.6	0.0	70.7	9.3
LnGrp LOS	D	A	E		E	A
Approach Vol, veh/h		1313	291	A	836	
Approach Delay, s/veh		31.6	56.6		34.4	
Approach LOS		C	E		C	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		65.0		24.0	44.0	21.0
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s		60.0		18.0	38.0	16.0
Max Q Clear Time (g_c+I1), s		15.7		19.0	38.1	14.9
Green Ext Time (p_c), s		3.9		0.0	0.0	0.2
Intersection Summary						
HCM 6th Ctrl Delay			35.6			
HCM 6th LOS			D			
Notes						
Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.						

Mulholland Highway Corridor Study
 1: Old Topanga Canyon Rd West & Mulholland Hwy

2045 No Build PM Peak



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	960	30	160	320	20	250
Future Volume (vph)	960	30	160	320	20	250
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	10
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	125		0	30
Storage Lanes		0	1		1	1
Taper Length (ft)			50		50	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.995					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1872	0	1787	1881	1687	1492
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1872	0	1787	1881	1687	1492
Link Speed (mph)	40			40	25	
Link Distance (ft)	374			839	582	
Travel Time (s)	6.4			14.3	15.9	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)		1				
Peak Hour Factor	0.87	0.72	0.78	0.78	0.88	0.91
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	1%	1%	7%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	1103	42	205	410	23	275
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1145	0	205	410	23	275
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	6			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.09
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	74.5%
ICU Level of Service	D
Analysis Period (min)	15

Intersection						
Int Delay, s/veh	20					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔	↑	↔	↔
Traffic Vol, veh/h	960	30	160	320	20	250
Future Vol, veh/h	960	30	160	320	20	250
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	125	-	0	30
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	72	78	78	88	91
Heavy Vehicles, %	1	1	1	1	7	1
Mvmt Flow	1103	42	205	410	23	275

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	1145	0	1944 1124
Stage 1	-	-	-	-	1124 -
Stage 2	-	-	-	-	820 -
Critical Hdwy	-	-	4.11	-	6.47 6.21
Critical Hdwy Stg 1	-	-	-	-	5.47 -
Critical Hdwy Stg 2	-	-	-	-	5.47 -
Follow-up Hdwy	-	-	2.209	-	3.563 3.309
Pot Cap-1 Maneuver	-	-	614	-	69 ~ 251
Stage 1	-	-	-	-	304 -
Stage 2	-	-	-	-	424 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	614	-	46 ~ 251
Mov Cap-2 Maneuver	-	-	-	-	46 -
Stage 1	-	-	-	-	304 -
Stage 2	-	-	-	-	282 -

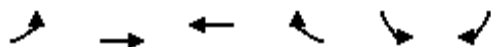
Approach	EB	WB	NB
HCM Control Delay, s	0	4.6	128.6
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	46	251	-	-	614	-
HCM Lane V/C Ratio	0.494	1.095	-	-	0.334	-
HCM Control Delay (s)	143.7	127.3	-	-	13.8	-
HCM Lane LOS	F	F	-	-	B	-
HCM 95th %tile Q(veh)	1.8	11.7	-	-	1.5	-

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Mulholland Highway Corridor Study
 2: Mulholland Hwy & Old Topanga Canyon Rd East

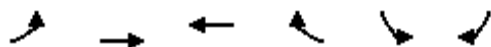
2045 No Build PM Peak



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	615	595	175	190	175	305
Future Volume (vph)	615	595	175	190	175	305
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		2%	-2%		2%	
Storage Length (ft)	185			150	0	90
Storage Lanes	1			1	1	1
Taper Length (ft)	50				50	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Fr _t				0.850		0.850
Fl _t Protected	0.950				0.950	
Satd. Flow (prot)	1769	1862	1900	1615	1769	1583
Fl _t Permitted	0.950				0.950	
Satd. Flow (perm)	1769	1862	1900	1615	1769	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				241		299
Link Speed (mph)		45	45		40	
Link Distance (ft)		308	810		1008	
Travel Time (s)		4.7	12.3		17.2	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.97	0.82	0.78	0.79	0.80	0.83
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	634	726	224	241	219	367
Shared Lane Traffic (%)						
Lane Group Flow (vph)	634	726	224	241	219	367
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	0.99	0.99	1.01	1.01
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2	1	1	1
Detector Template	Left	Thru	Thru	Right	Left	Right
Leading Detector (ft)	20	100	100	20	20	20
Trailing Detector (ft)	0	0	0	0	0	0
Turn Type	Prot	NA	NA	Free	Prot	pm+ov
Protected Phases	5	2	6		4	5
Permitted Phases				Free		4
Detector Phase	5	2	6		4	5
Switch Phase						

Mulholland Highway Corridor Study
 2: Mulholland Hwy & Old Topanga Canyon Rd East

2045 No Build PM Peak



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Minimum Initial (s)	10.0	15.0	15.0		15.0	10.0
Minimum Split (s)	21.0	21.0	21.0		21.0	21.0
Total Split (s)	31.0	55.0	24.0		25.0	31.0
Total Split (%)	38.8%	68.8%	30.0%		31.3%	38.8%
Maximum Green (s)	25.0	49.0	18.0		19.0	25.0
Yellow Time (s)	4.0	4.0	4.0		4.0	4.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0		6.0	6.0
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0		3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0		0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0		0.0	0.0
Recall Mode	None	Min	Min		None	None
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)	25.0	46.9	15.8	75.0	16.1	47.2
Actuated g/C Ratio	0.33	0.63	0.21	1.00	0.21	0.63
v/c Ratio	1.07	0.62	0.56	0.15	0.58	0.33
Control Delay	86.2	11.9	32.8	0.2	33.3	2.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	86.2	11.9	32.8	0.2	33.3	2.3
LOS	F	B	C	A	C	A
Approach Delay		46.5	15.9		13.9	
Approach LOS		D	B		B	
90th %ile Green (s)	25.0	49.0	18.0		19.0	25.0
90th %ile Term Code	Max	Hold	Max		Max	Max
70th %ile Green (s)	25.0	47.1	16.1		16.7	25.0
70th %ile Term Code	Max	Hold	Gap		Gap	Max
50th %ile Green (s)	25.0	46.0	15.0		15.0	25.0
50th %ile Term Code	Max	Hold	Min		Min	Max
30th %ile Green (s)	25.0	46.0	15.0		15.0	25.0
30th %ile Term Code	Max	Hold	Min		Min	Max
10th %ile Green (s)	25.0	46.0	15.0		15.0	25.0
10th %ile Term Code	Max	Hold	Min		Min	Max
Stops (vph)	497	347	152	0	152	31
Fuel Used(gal)	19	9	4	1	4	3
CO Emissions (g/hr)	1353	617	278	70	271	177
NOx Emissions (g/hr)	263	120	54	14	53	34
VOC Emissions (g/hr)	314	143	64	16	63	41
Dilemma Vehicles (#)	0	31	10	0	0	0
Queue Length 50th (ft)	~356	195	103	0	101	12
Queue Length 95th (ft)	#644	297	157	0	158	38
Internal Link Dist (ft)		228	730		928	
Turn Bay Length (ft)	185			150		90
Base Capacity (vph)	590	1218	456	1615	449	1106

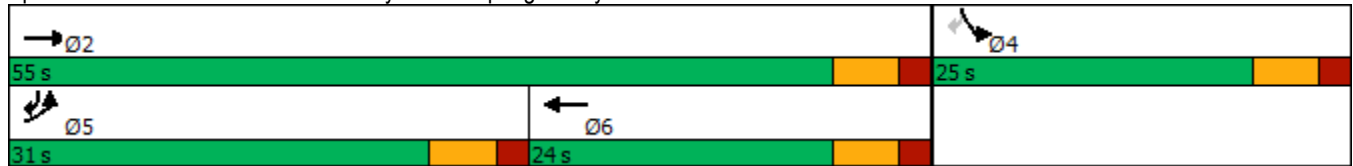


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.07	0.60	0.49	0.15	0.49	0.33

Intersection Summary

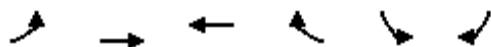
Area Type:	Other
Cycle Length:	80
Actuated Cycle Length:	75
Natural Cycle:	80
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	1.07
Intersection Signal Delay:	32.7
Intersection LOS:	C
Intersection Capacity Utilization	74.1%
ICU Level of Service	D
Analysis Period (min)	15
90th %ile Actuated Cycle:	80
70th %ile Actuated Cycle:	75.8
50th %ile Actuated Cycle:	73
30th %ile Actuated Cycle:	73
10th %ile Actuated Cycle:	73
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.	
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 2: Mulholland Hwy & Old Topanga Canyon Rd East



Mulholland Highway Corridor Study
 2: Mulholland Hwy & Old Topanga Canyon Rd East

2045 No Build PM Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	615	595	175	190	175	305
Future Volume (veh/h)	615	595	175	190	175	305
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1862	1862	1964	1964	1862	1862
Adj Flow Rate, veh/h	634	726	224	0	219	367
Peak Hour Factor	0.97	0.82	0.78	0.79	0.80	0.83
Percent Heavy Veh, %	1	1	1	1	1	1
Cap, veh/h	607	1173	403		364	864
Arrive On Green	0.34	0.63	0.21	0.00	0.21	0.21
Sat Flow, veh/h	1773	1862	1964	1664	1773	1578
Grp Volume(v), veh/h	634	726	224	0	219	367
Grp Sat Flow(s),veh/h/ln	1773	1862	1964	1664	1773	1578
Q Serve(g_s), s	25.0	17.3	7.5	0.0	8.2	10.0
Cycle Q Clear(g_c), s	25.0	17.3	7.5	0.0	8.2	10.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	607	1173	403		364	864
V/C Ratio(X)	1.04	0.62	0.56		0.60	0.42
Avail Cap(c_a), veh/h	607	1250	484		461	951
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	24.0	8.2	26.0	0.0	26.3	9.7
Incr Delay (d2), s/veh	48.6	0.9	1.2	0.0	1.6	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	17.2	4.9	3.3	0.0	3.3	10.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	72.6	9.0	27.2	0.0	27.9	10.1
LnGrp LOS	F	A	C		C	B
Approach Vol, veh/h		1360	224	A	586	
Approach Delay, s/veh		38.6	27.2		16.7	
Approach LOS		D	C		B	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		52.0		21.0	31.0	21.0
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s		49.0		19.0	25.0	18.0
Max Q Clear Time (g_c+I1), s		19.3		12.0	27.0	9.5
Green Ext Time (p_c), s		5.2		1.3	0.0	0.7
Intersection Summary						
HCM 6th Ctrl Delay			31.5			
HCM 6th LOS			C			

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Appendix E: Signal Warrant Worksheets

SIGNAL WARRANT WORKSHEET
Warrant 3, Peak Hour
CA MUTCD

Project Name: Mulholland Highway Corridor Study **Year/Condition:** 2019 Existing
Intersection: Mulholland Highway @ Old Topanga Canyon Road West [1] **Computed By:** AT
Client: City of Calabasas **Checked By:** _____

Section 4C.04 Warrant 3, Peak Hour

The Peak Hour signal warrant is intended for use at a location where traffic conditions are such that for a minimum of 1 hour of an average day, the minor-street traffic suffers undue delay when entering or crossing the major street.

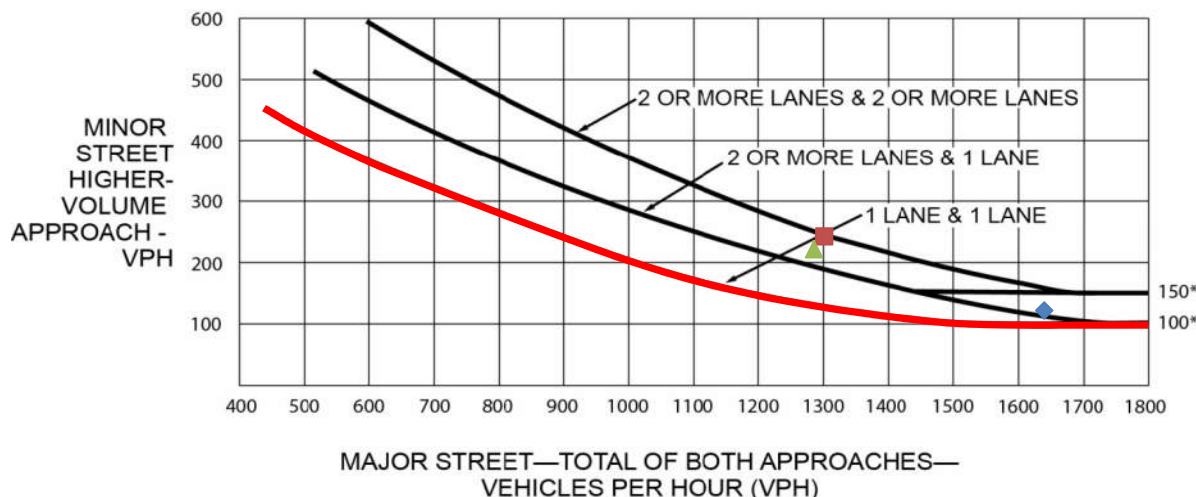
This signal warrant shall be applied only in unusual cases, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time.

The need for a traffic control signal shall be considered if the plotted point 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) for 1 hour (any four consecutive 15-minute periods) of an average day falls above the applicable curve in Figure 4C-3 for the existing combination of approach lanes.

	Major Street	Minor Street	
Street Name	Mulholland Hwy	OTC West	
No. of Lanes	1	1	
Hour	Volume* (vph)		Warrant 3 Met?
AM	1640	124	YES ◆
School PM	1301	245	YES ■
PM	1285	224	YES ▲

*Total of both approaches for major street, higher volume approach only for minor street

Figure 4C - 3. Warrant 3, Peak Hour (100%)



*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: 2014 CA MUTCD

Traffic Count Data

Intersection Major Direction: Mulholland Hwy Speed (mph)
 Direction: E/W E/W 30
 Minor Direction: Old Topanga Canyon Rd West
 Direction: N/S N/S 25
Days Counted: 1

Existing Average Daily Approach Volumes

Time	Average Hourly Approach Volume (vph)				Total	Major Approach		Minor Approach		Top 8 Hours			Top 4 Hours				
	EB	WB	NB	SB		E/W	N/S	Time	Volumes	Major	Minor	Time	Volumes	Major	Minor		
12:00 AM					0	12:00 AM	0	NO	0	7:00 AM	1721	1616	105	7:00 AM	1721	1616	105
1:00 AM					0	1:00 AM	0	NO	0	3:00 PM	1540	1295	245	3:00 PM	1540	1295	245
2:00 AM					0	2:00 AM	0	NO	0	4:00 PM	1520	1296	224	4:00 PM	1520	1296	224
3:00 AM					0	3:00 AM	0	NO	0	5:00 PM	1389	1177	212	5:00 PM	1389	1177	212
4:00 AM					0	4:00 AM	0	NO	0	8:00 AM	1021	880	141				
5:00 AM					0	5:00 AM	0	NO	0	2:00 PM	981	857	124				
6:00 AM	136	465	20	0	621	6:00 AM	601	NO	20	9:00 AM	781	677	104				
7:00 AM	541	1075	105	0	1721	7:00 AM	1616	NO	105	12:00 PM	663	577	86				
8:00 AM	325	555	141	0	1021	8:00 AM	880	NO	141								
9:00 AM	264	413	104	0	781	9:00 AM	677	NO	104								
10:00 AM	235	309	82	0	626	10:00 AM	544	NO	82								
11:00 AM	290	262	83	0	635	11:00 AM	552	NO	83								
12:00 PM	250	327	86	0	663	12:00 PM	577	NO	86								
1:00 PM	239	291	90	0	620	1:00 PM	530	NO	90								
2:00 PM	428	429	124	0	981	2:00 PM	857	NO	124								
3:00 PM	736	559	245	0	1540	3:00 PM	1295	NO	245								
4:00 PM	875	421	224	0	1520	4:00 PM	1296	NO	224								
5:00 PM	799	378	212	0	1389	5:00 PM	1177	NO	212								
6:00 PM						6:00 PM	0	NO	0								
7:00 PM						7:00 PM	0	NO	0								
8:00 PM						8:00 PM	0	NO	0								
9:00 PM						9:00 PM	0	NO	0								
10:00 PM						10:00 PM	0	NO	0								
11:00 PM						11:00 PM	0	NO	0								
	5118	5484	1516	0	12118												

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

Existing 2019

7 DIST	LA CO	N/A RTE	PM	
				COUNT DATE <u>12/5/19</u>
				CALC AT DATE <u>1/2/20</u>
				CHK _____ DATE _____

		Lanes		
		1	2 or more	
Major St:	<u>Mulholland Hwy</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Critical Approach Speed <u>40</u> mph
Minor St:	<u>Old Topanga Canyon Rd West</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Critical Approach Speed <u>25</u> mph

Speed Limit or critical speed on major street > 64 km/h (40 mph).....

or } **RURAL (R)**

In built area of isolated community of < 10,000 population.....

URBAN (U)

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

APPROACH LANES	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)				HOUR							
	U		R		7:00 AM	3:00 PM	4:00 PM	5:00 PM	8:00 AM	2:00 PM	9:00 AM	12:00 PM
	1		2 or More									
Both Approches Major Street	500 (400)	350 (280)	600 (480)	420 (336)	1616	1295	1296	1177	880	857	677	577
Highest Approches Minor Street	150 (120)	105 (84)	200 (160)	140 (112)	105	245	224	212	141	124	104	86

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

APPROACH LANES	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)				HOUR							
	U		R		7:00 AM	3:00 PM	4:00 PM	5:00 PM	8:00 AM	2:00 PM	9:00 AM	12:00 PM
	1		2 or More									
Both Approches Major Street	750 (600)	525 (420)	900 (720)	630 (504)	1616	1295	1296	1177	880	857	677	577
Highest Approches Minor Street	75 (60)	53 (42)	100 (80)	70 (56)	105	245	224	212	141	124	104	86

Combination of Conditions A & B **SATISFIED** YES NO

REQUIREMENT	CONDITION	<input checked="" type="checkbox"/>	FULFILLED	
TWO CONDITIONS SATISFIED 80% AND, AN ADEQUATE TRIAL OF OTHER ALTERNATIVES THAT COULD CAUSE LESS DELAY AND INCONVENIENCE TO TRAFFIC HAS FAILED TO SOLVE THE TRAFFIC PROBLEMS	A. MINIMUM VEHICULAR VOLUME AND B. MINIMUM VEHICULAR VOLUME		YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
			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)

Existing 2019

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			
			7:00 AM	3:00 PM	4:00 PM	5:00 PM
Both Approaches - Major Street	X		1616	1295	1296	1177
Higher Approach - Minor Street	X		105	245	224	212
*All plotted points fall above the curves in Figure 4C-1. (URBAN AREAS)						YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>
<u>OR</u> , All plotted points fall above the curves in Figure 4C-2. (RURAL AREAS)						YES <input type="checkbox"/> NO <input type="checkbox"/>

WARRANT 3 - Peak Hour

100% 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 for traffic on one minor street approach (one direction only) controlled by a STOP signs equals or exceeds four vehicle-hours for a one-lane approach, or five vehicle-hours for a two-lane approach; <u>AND</u>	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>
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; <u>AND</u>	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>
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 <input checked="" type="checkbox"/> NO <input type="checkbox"/>

PART B

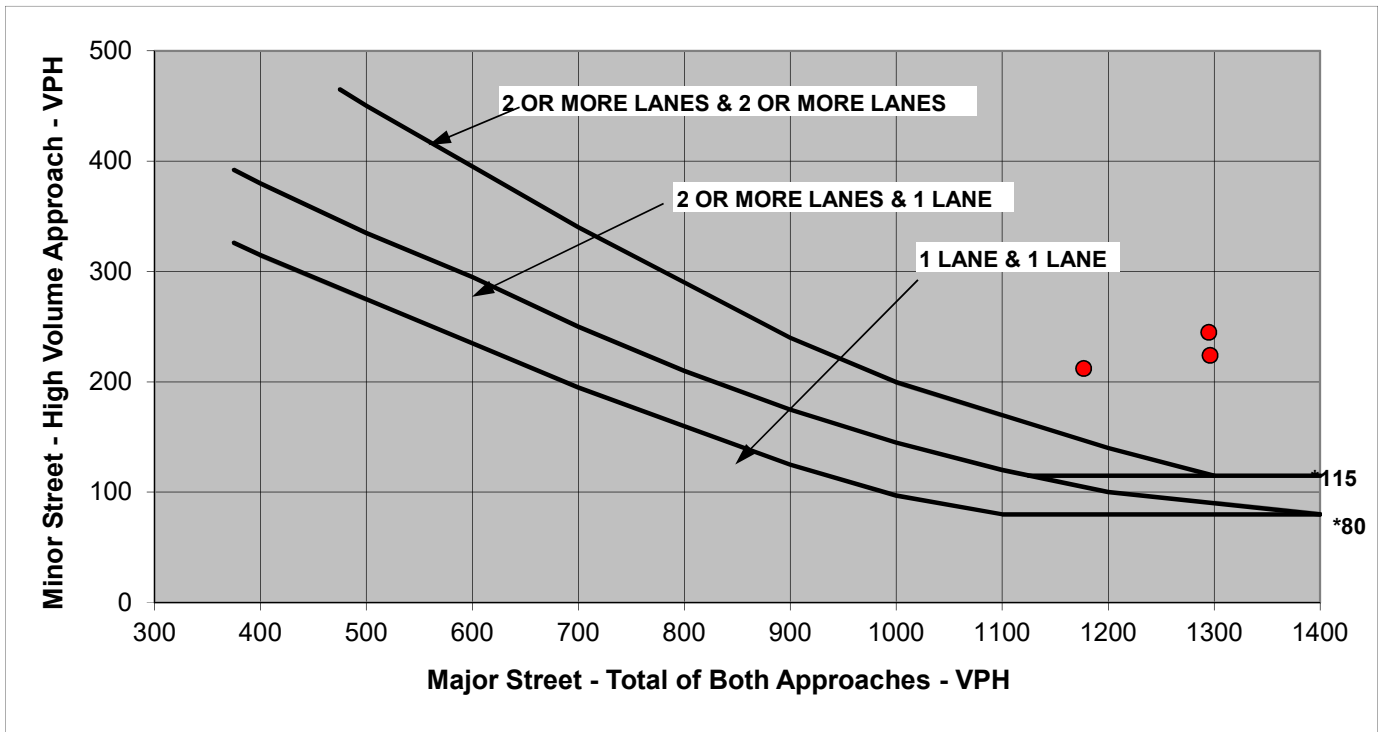
SATISFIED **YES** **NO**

APPROACH LANES	One	2 or More	Hour	
			7:15-8:15 AM	
Both Approaches - Major Street	X		1641	
Higher Approach - Minor Street	X		124	

The plotted point falls above the curve in Figure 4C-3	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>
<u>OR</u> , The plotted points fall above the curves in Figure 4C-4.	YES <input type="checkbox"/> NO <input type="checkbox"/>

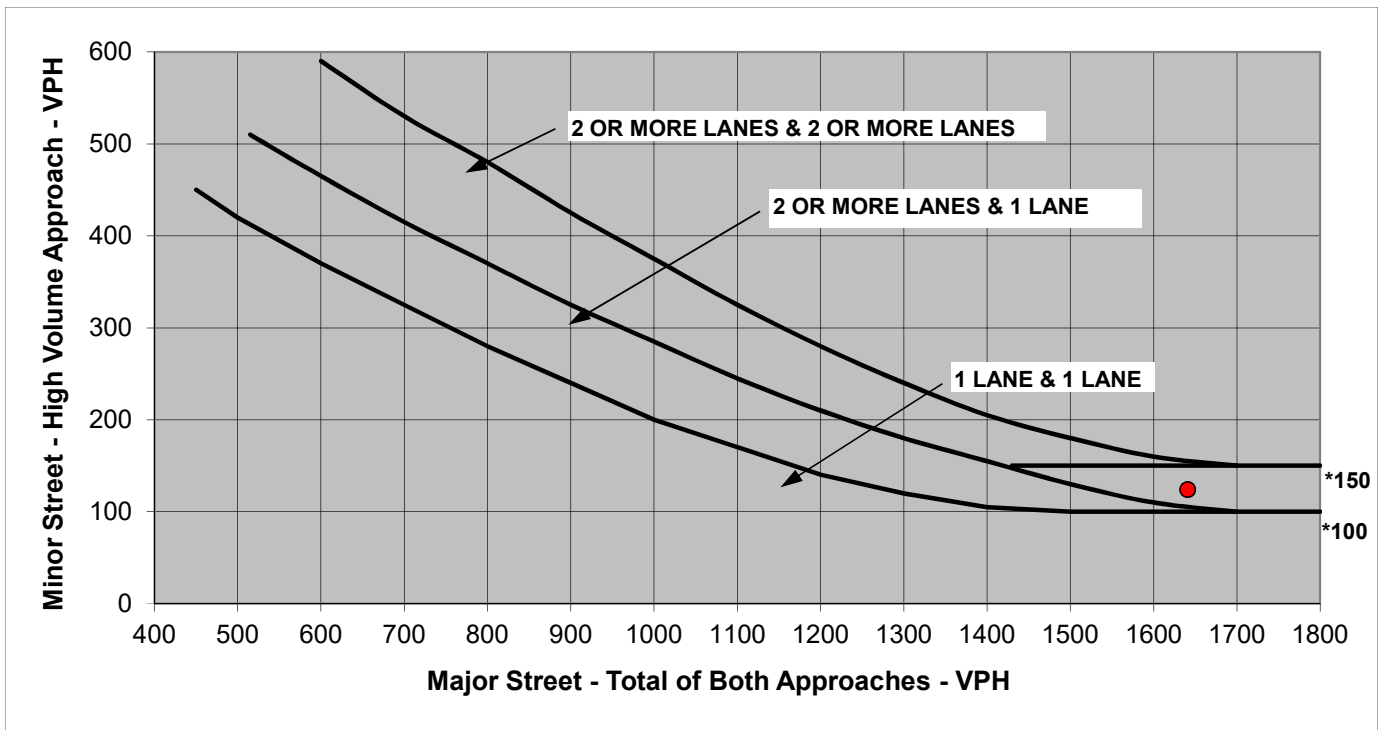
The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume



Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-3. Warrant 3, Peak Hour



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.

Traffic Count Data

Intersection Major Direction: Mulholland Hwy Speed (mph)
 Direction: E/W E/W 30
 Minor Direction: Old Topanga Canyon Rd West
 Direction: N/S N/S 25
Days Counted: 1

Existing Average Daily Approach Volumes

Time	Average Hourly Approach Volume (vph)				Total	Major Approach		Minor Approach		Top 8 Hours			Top 4 Hours				
	EB	WB	NB	SB		E/W	N/S	Time	Volumes	Major	Minor	Time	Volumes	Major	Minor		
12:00 AM					0	12:00 AM	0	NO	0	7:00 AM	1721	1114	607	7:00 AM	1721	1114	607
1:00 AM					0	1:00 AM	0	NO	0	3:00 PM	1540	1108	432	3:00 PM	1540	1108	432
2:00 AM					0	2:00 AM	0	NO	0	4:00 PM	1520	1165	355	4:00 PM	1520	1165	355
3:00 AM					0	3:00 AM	0	NO	0	5:00 PM	1389	1066	323	5:00 PM	1389	1066	323
4:00 AM					0	4:00 AM	0	NO	0	8:00 AM	1021	606	415				
5:00 AM					0	5:00 AM	0	NO	0	2:00 PM	981	727	254				
6:00 AM	136	198	287	0	621	6:00 AM	334	NO	287	9:00 AM	781	489	292				
7:00 AM	541	573	607	0	1721	7:00 AM	1114	NO	607	12:00 PM	663	470	193				
8:00 AM	325	281	415	0	1021	8:00 AM	606	NO	415								
9:00 AM	264	225	292	0	781	9:00 AM	489	NO	292								
10:00 AM	235	198	193	0	626	10:00 AM	433	NO	193								
11:00 AM	290	187	158	0	635	11:00 AM	477	NO	158								
12:00 PM	250	220	193	0	663	12:00 PM	470	NO	193								
1:00 PM	239	203	178	0	620	1:00 PM	442	NO	178								
2:00 PM	428	299	254	0	981	2:00 PM	727	NO	254								
3:00 PM	736	372	432	0	1540	3:00 PM	1108	NO	432								
4:00 PM	875	290	355	0	1520	4:00 PM	1165	NO	355								
5:00 PM	799	267	323	0	1389	5:00 PM	1066	NO	323								
6:00 PM						6:00 PM	0	NO	0								
7:00 PM						7:00 PM	0	NO	0								
8:00 PM						8:00 PM	0	NO	0								
9:00 PM						9:00 PM	0	NO	0								
10:00 PM						10:00 PM	0	NO	0								
11:00 PM						11:00 PM	0	NO	0								
	5118	3313	3687	0	12118												

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

Existing 2019 Left Turn

7 DIST	LA CO	N/A RTE	PM	
				COUNT DATE <u>12/5/19</u>
				CALC AT DATE <u>1/2/20</u>
				CHK _____ DATE _____

	Lanes				
	1	2 or more			
Major St: <u>Mulholland Hwy</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Critical Approach Speed	<u>40</u>	mph
Minor St: <u>Old Topanga Canyon Rd West</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Critical Approach Speed	<u>25</u>	mph

Speed Limit or critical speed on major street > 64 km/h (40 mph).....

or } **RURAL (R)**

In built area of isolated community of < 10,000 population.....

URBAN (U)

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

APPROACH LANES	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)				HOUR							
	U		R		7:00 AM	3:00 PM	4:00 PM	5:00 PM	8:00 AM	2:00 PM	9:00 AM	12:00 PM
	1		2 or More									
Both Approches Major Street	500 (400)	350 (280)	600 (480)	420 (336)	1114	1108	1165	1066	606	727	489	470
Highest Approches Minor Street	150 (120)	105 (84)	200 (160)	140 (112)	607	432	355	323	415	254	292	193

Condition B - Interruption of Continuous Traffic **100% SATISFIED** YES NO

80% SATISFIED YES NO

APPROACH LANES	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)				HOUR							
	U		R		7:00 AM	3:00 PM	4:00 PM	5:00 PM	8:00 AM	2:00 PM	9:00 AM	12:00 PM
	1		2 or More									
Both Approches Major Street	750 (600)	525 (420)	900 (720)	630 (504)	1114	1108	1165	1066	606	727	489	470
Highest Approches Minor Street	75 (60)	53 (42)	100 (80)	70 (56)	607	432	355	323	415	254	292	193

Combination of Conditions A & B **SATISFIED** YES NO

REQUIREMENT	CONDITION	<input checked="" type="checkbox"/>	FULFILLED	
TWO CONDITIONS SATISFIED 80% AND, AN ADEQUATE TRIAL OF OTHER ALTERNATIVES THAT COULD CAUSE LESS DELAY AND INCONVENIENCE TO TRAFFIC HAS FAILED TO SOLVE THE TRAFFIC PROBLEMS	A. MINIMUM VEHICULAR VOLUME AND B. MINIMUM VEHICULAR VOLUME		YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
			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)

Existing 2019 Left Turn

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			
			7:00 AM	3:00 PM	4:00 PM	5:00 PM
Both Approaches - Major Street	X		1114	1108	1165	1066
Higher Approach - Minor Street	X		607	432	355	323
*All plotted points fall above the curves in Figure 4C-1. (URBAN AREAS)						YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>
<u>OR</u> , All plotted points fall above the curves in Figure 4C-2. (RURAL AREAS)						YES <input type="checkbox"/> NO <input type="checkbox"/>

WARRANT 3 - Peak Hour

100% 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 for traffic on one minor street approach (one direction only) controlled by a STOP signs equals or exceeds four vehicle-hours for a one-lane approach, or five vehicle-hours for a two-lane approach; <u>AND</u>	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>
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; <u>AND</u>	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>
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 <input checked="" type="checkbox"/>	NO <input type="checkbox"/>

PART B

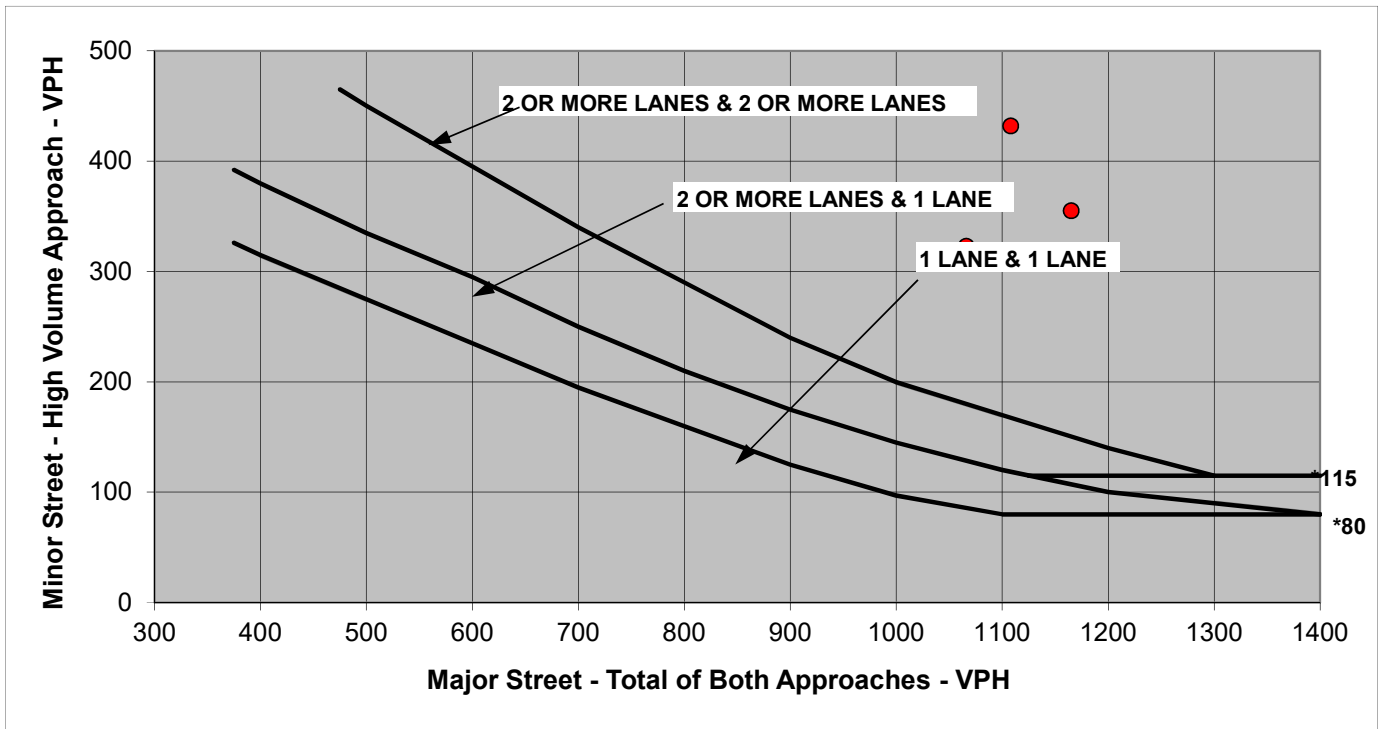
SATISFIED **YES** **NO**

APPROACH LANES	One	2 or More	Hour	
			7:15-8:15 AM	
Both Approaches - Major Street	X		1174	
Higher Approach - Minor Street	X		591	

The plotted point falls above the curve in Figure 4C-3	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>
<u>OR</u> , The plotted points fall above the curves in Figure 4C-4.	YES <input type="checkbox"/>	NO <input type="checkbox"/>

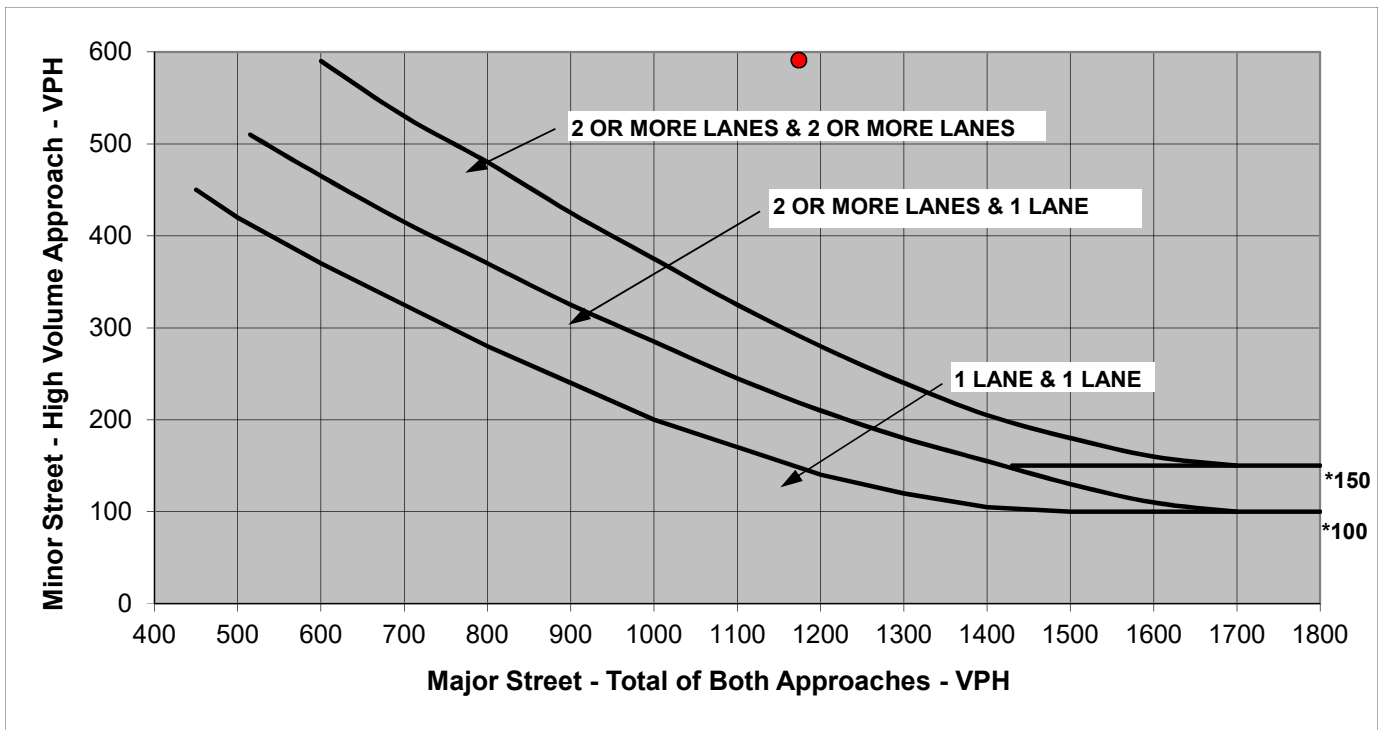
The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-1. Warrant 2, Four-Hour Vehicular Volume



Note: 115 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 80 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-3. Warrant 3, Peak Hour

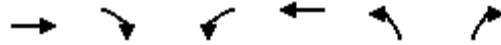


Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Appendix F: Design Year 2045 Analysis Worksheets – With Improvements

Mulholland Highway Corridor Study
 1: Old Topanga Canyon Rd West & Mulholland Hwy












2045 Build AM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔	↔	↔	↔
Traffic Volume (veh/h)	635	70	545	615	15	135
Future Volume (veh/h)	635	70	545	615	15	135
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1885	1856	1885	1870	1885	1885
Adj Flow Rate, veh/h	847	115	626	866	33	205
Peak Hour Factor	0.75	0.61	0.87	0.71	0.46	0.66
Percent Heavy Veh, %	1	3	1	2	1	1
Cap, veh/h	653	89	655	1527	150	716
Arrive On Green	0.40	0.40	0.48	1.00	0.08	0.08
Sat Flow, veh/h	1625	221	1795	1870	1795	1598
Grp Volume(v), veh/h	0	962	626	866	33	205
Grp Sat Flow(s),veh/h/ln	0	1845	1795	1870	1795	1598
Q Serve(g_s), s	0.0	48.2	40.2	0.0	2.1	9.8
Cycle Q Clear(g_c), s	0.0	48.2	40.2	0.0	2.1	9.8
Prop In Lane		0.12	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	0	742	655	1527	150	716
V/C Ratio(X)	0.00	1.30	0.96	0.57	0.22	0.29
Avail Cap(c_a), veh/h	0	742	763	1527	150	716
HCM Platoon Ratio	1.00	1.00	1.33	1.33	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.09	0.09	1.00	1.00
Uniform Delay (d), s/veh	0.0	35.9	30.0	0.0	51.4	21.0
Incr Delay (d2), s/veh	0.0	143.3	3.3	0.1	0.7	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	50.1	15.5	0.1	1.0	3.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	179.2	33.3	0.1	52.1	21.2
LnGrp LOS	A	F	C	A	D	C
Approach Vol, veh/h	962			1492	238	
Approach Delay, s/veh	179.2			14.1	25.5	
Approach LOS	F			B	C	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	49.8	54.2			104.0	16.0
Change Period (Y+Rc), s	6.0	6.0			6.0	6.0
Max Green Setting (Gmax), s	51.0	41.0			98.0	10.0
Max Q Clear Time (g_c+I1), s	42.2	50.2			2.0	11.8
Green Ext Time (p_c), s	1.6	0.0			8.0	0.0
Intersection Summary						
HCM 6th Ctrl Delay			74.1			
HCM 6th LOS			E			

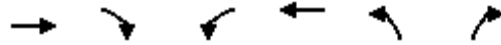
Mulholland Highway Corridor Study
 1: Old Topanga Canyon Rd West & Mulholland Hwy

2045 Build AM Peak Hour

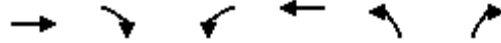
						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	635	70	545	615	15	135
Future Volume (vph)	635	70	545	615	15	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	10
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	420		170	0
Storage Lanes		0	1		1	1
Taper Length (ft)			50		50	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.984					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1847	0	1787	1863	1787	1492
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1847	0	1787	1863	1787	1492
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	6					39
Link Speed (mph)	40			40	25	
Link Distance (ft)	374			1159	582	
Travel Time (s)	6.4			19.8	15.9	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.75	0.61	0.87	0.71	0.46	0.66
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	3%	1%	2%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	847	115	626	866	33	205
Shared Lane Traffic (%)						
Lane Group Flow (vph)	962	0	626	866	33	205
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	6			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.09
Turning Speed (mph)		9	15		15	9
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (ft)	100		20	100	20	20
Trailing Detector (ft)	0		0	0	0	0
Turn Type	NA		Prot	NA	Prot	pm+ov
Protected Phases	2		1	6	8	1
Permitted Phases						8
Detector Phase	2		1	6	8	1
Switch Phase						

Mulholland Highway Corridor Study
 1: Old Topanga Canyon Rd West & Mulholland Hwy

2045 Build AM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Minimum Initial (s)	15.0		15.0	15.0	10.0	15.0
Minimum Split (s)	21.0		21.0	21.0	16.0	21.0
Total Split (s)	47.0		57.0	104.0	16.0	57.0
Total Split (%)	39.2%		47.5%	86.7%	13.3%	47.5%
Maximum Green (s)	41.0		51.0	98.0	10.0	51.0
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0		3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0		0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0		0.0	0.0	0.0	0.0
Recall Mode	C-Min		None	C-Min	None	None
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)	51.8		46.6	106.8	10.0	56.2
Actuated g/C Ratio	0.43		0.39	0.89	0.08	0.47
v/c Ratio	1.20		0.90	0.52	0.22	0.29
Control Delay	134.4		35.9	2.5	55.4	14.8
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	134.4		35.9	2.5	55.4	14.8
LOS	F		D	A	E	B
Approach Delay	134.4			16.5	20.5	
Approach LOS	F			B	C	
90th %ile Green (s)	41.0		51.0	98.0	10.0	51.0
90th %ile Term Code	Coord		Max	Coord	Max	Max
70th %ile Green (s)	41.0		51.0	98.0	10.0	51.0
70th %ile Term Code	Coord		Max	Coord	Max	Max
50th %ile Green (s)	43.2		48.8	98.0	10.0	48.8
50th %ile Term Code	Coord		Gap	Coord	Max	Gap
30th %ile Green (s)	63.3		44.7	114.0	0.0	44.7
30th %ile Term Code	Coord		Gap	Coord	Skip	Gap
10th %ile Green (s)	70.6		37.4	114.0	0.0	37.4
10th %ile Term Code	Coord		Gap	Coord	Skip	Gap
Stops (vph)	478		510	107	15	60
Fuel Used(gal)	57		13	6	0	1
CO Emissions (g/hr)	4007		928	433	21	91
NOx Emissions (g/hr)	780		181	84	4	18
VOC Emissions (g/hr)	929		215	100	5	21
Dilemma Vehicles (#)	22		0	17	0	0
Queue Length 50th (ft)	~1138		496	178	27	72
Queue Length 95th (ft)	#1113		m413	m155	32	76
Internal Link Dist (ft)	294			1079	502	
Turn Bay Length (ft)			420		170	
Base Capacity (vph)	801		759	1658	148	772



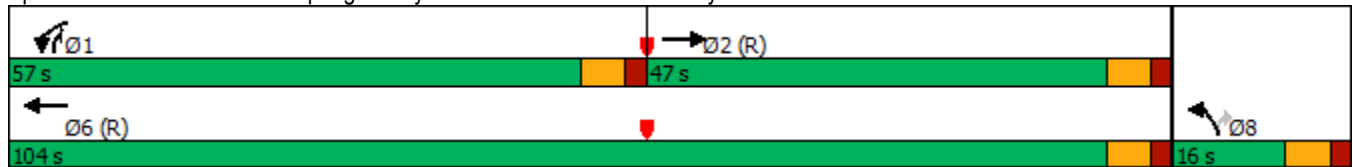
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	1.20		0.82	0.52	0.22	0.27

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 59 (49%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.20
 Intersection Signal Delay: 59.0
 Intersection LOS: E
 Intersection Capacity Utilization 91.2%
 ICU Level of Service F
 Analysis Period (min) 15

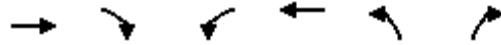
- ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Old Topanga Canyon Rd West & Mulholland Hwy



Mulholland Highway Corridor Study
 1: Old Topanga Canyon Rd West & Mulholland Hwy

2045 Build School PM Peak

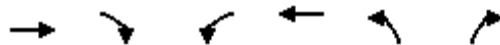


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	795	35	230	420	30	260
Future Volume (veh/h)	795	35	230	420	30	260
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1856	1885	1885	1885	1885
Adj Flow Rate, veh/h	893	58	250	568	51	317
Peak Hour Factor	0.89	0.60	0.92	0.74	0.59	0.82
Percent Heavy Veh, %	2	3	1	1	1	1
Cap, veh/h	983	64	276	1470	180	406
Arrive On Green	0.57	0.57	0.31	1.00	0.10	0.10
Sat Flow, veh/h	1737	113	1795	1885	1795	1598
Grp Volume(v), veh/h	0	951	250	568	51	317
Grp Sat Flow(s),veh/h/ln	0	1850	1795	1885	1795	1598
Q Serve(g_s), s	0.0	45.9	13.4	0.0	2.6	10.0
Cycle Q Clear(g_c), s	0.0	45.9	13.4	0.0	2.6	10.0
Prop In Lane		0.06	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	0	1047	276	1470	180	406
V/C Ratio(X)	0.00	0.91	0.90	0.39	0.28	0.78
Avail Cap(c_a), veh/h	0	1047	287	1470	180	406
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.79	0.79	1.00	1.00
Uniform Delay (d), s/veh	0.0	19.4	33.9	0.0	41.7	34.7
Incr Delay (d2), s/veh	0.0	12.9	24.7	0.6	0.9	9.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	20.8	6.5	0.2	1.2	8.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	32.3	58.6	0.6	42.5	44.2
LnGrp LOS	A	C	E	A	D	D
Approach Vol, veh/h	951			818	368	
Approach Delay, s/veh	32.3			18.3	44.0	
Approach LOS	C			B	D	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	21.4	62.6			84.0	16.0
Change Period (Y+Rc), s	6.0	6.0			6.0	6.0
Max Green Setting (Gmax), s	16.0	56.0			78.0	10.0
Max Q Clear Time (g_c+I1), s	15.4	47.9			2.0	12.0
Green Ext Time (p_c), s	0.1	4.2			4.0	0.0
Intersection Summary						
HCM 6th Ctrl Delay			29.0			
HCM 6th LOS			C			

Mulholland Highway Corridor Study
 1: Old Topanga Canyon Rd West & Mulholland Hwy

2045 Build School PM Peak

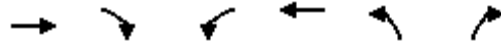
	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗		↖	↗	↖	↗
Traffic Volume (vph)	795	35	230	420	30	260
Future Volume (vph)	795	35	230	420	30	260
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	10
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	420		170	0
Storage Lanes		0	1		1	1
Taper Length (ft)			50		50	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.992					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1847	0	1787	1881	1787	1492
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1847	0	1787	1881	1787	1492
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	5					133
Link Speed (mph)	40			40	25	
Link Distance (ft)	374			1149	582	
Travel Time (s)	6.4			19.6	15.9	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.89	0.60	0.92	0.74	0.59	0.82
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	3%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	893	58	250	568	51	317
Shared Lane Traffic (%)						
Lane Group Flow (vph)	951	0	250	568	51	317
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	6			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.09
Turning Speed (mph)		9	15		15	9
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (ft)	100		20	100	20	20
Trailing Detector (ft)	0		0	0	0	0
Turn Type	NA		Prot	NA	Prot	pm+ov
Protected Phases	2		1	6	8	1
Permitted Phases						8
Detector Phase	2		1	6	8	1
Switch Phase						



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Minimum Initial (s)	15.0		15.0	15.0	10.0	15.0
Minimum Split (s)	21.0		21.0	21.0	16.0	21.0
Total Split (s)	62.0		22.0	84.0	16.0	22.0
Total Split (%)	62.0%		22.0%	84.0%	16.0%	22.0%
Maximum Green (s)	56.0		16.0	78.0	10.0	16.0
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0		3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0		0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0		0.0	0.0	0.0	0.0
Recall Mode	C-Min		None	C-Min	None	None
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)	59.4		15.8	82.4	10.0	28.6
Actuated g/C Ratio	0.59		0.16	0.82	0.10	0.29
v/c Ratio	0.87		0.89	0.37	0.29	0.61
Control Delay	28.8		65.6	3.3	46.3	21.9
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	28.8		65.6	3.3	46.3	21.9
LOS	C		E	A	D	C
Approach Delay	28.8			22.4	25.3	
Approach LOS	C			C	C	
90th %ile Green (s)	56.0		16.0	78.0	10.0	16.0
90th %ile Term Code	Coord		Max	Coord	Max	Max
70th %ile Green (s)	56.0		16.0	78.0	10.0	16.0
70th %ile Term Code	Coord		Max	Coord	Max	Max
50th %ile Green (s)	56.0		16.0	78.0	10.0	16.0
50th %ile Term Code	Coord		Max	Coord	Max	Max
30th %ile Green (s)	56.0		16.0	78.0	10.0	16.0
30th %ile Term Code	Coord		Max	Coord	Max	Max
10th %ile Green (s)	73.0		15.0	94.0	0.0	15.0
10th %ile Term Code	Coord		Min	Coord	Skip	Min
Stops (vph)	642		200	140	28	129
Fuel Used(gal)	50		7	5	1	3
CO Emissions (g/hr)	3499		477	345	38	206
NOx Emissions (g/hr)	681		93	67	7	40
VOC Emissions (g/hr)	811		111	80	9	48
Dilemma Vehicles (#)	40		0	12	0	0
Queue Length 50th (ft)	576		156	43	34	105
Queue Length 95th (ft)	#895		m#295	44	48	171
Internal Link Dist (ft)	294			1069	502	
Turn Bay Length (ft)			420		170	
Base Capacity (vph)	1099		285	1550	178	524

Mulholland Highway Corridor Study
 1: Old Topanga Canyon Rd West & Mulholland Hwy

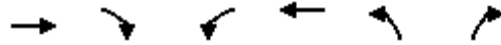
2045 Build PM Peak



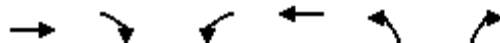
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	960	30	160	320	20	250
Future Volume (veh/h)	960	30	160	320	20	250
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.98	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1796	1885
Adj Flow Rate, veh/h	1103	42	205	410	23	275
Peak Hour Factor	0.87	0.72	0.78	0.78	0.88	0.91
Percent Heavy Veh, %	1	1	1	1	7	1
Cap, veh/h	1098	42	244	1508	156	363
Arrive On Green	0.61	0.61	0.27	1.00	0.09	0.09
Sat Flow, veh/h	1802	69	1795	1885	1711	1598
Grp Volume(v), veh/h	0	1145	205	410	23	275
Grp Sat Flow(s),veh/h/ln	0	1871	1795	1885	1711	1598
Q Serve(g_s), s	0.0	67.0	11.8	0.0	1.4	10.0
Cycle Q Clear(g_c), s	0.0	67.0	11.8	0.0	1.4	10.0
Prop In Lane		0.04	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	0	1140	244	1508	156	363
V/C Ratio(X)	0.00	1.00	0.84	0.27	0.15	0.76
Avail Cap(c_a), veh/h	0	1140	245	1508	156	363
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.93	0.93	1.00	1.00
Uniform Delay (d), s/veh	0.0	21.5	38.9	0.0	46.1	39.7
Incr Delay (d2), s/veh	0.0	27.7	20.7	0.4	0.4	8.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	33.9	5.8	0.2	0.6	7.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	49.2	59.6	0.4	46.5	48.6
LnGrp LOS	A	F	E	A	D	D
Approach Vol, veh/h	1145			615	298	
Approach Delay, s/veh	49.2			20.1	48.5	
Approach LOS	D			C	D	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	21.0	73.0			94.0	16.0
Change Period (Y+Rc), s	6.0	6.0			6.0	6.0
Max Green Setting (Gmax), s	15.0	67.0			88.0	10.0
Max Q Clear Time (g_c+I1), s	13.8	69.0			2.0	12.0
Green Ext Time (p_c), s	0.1	0.0			2.6	0.0
Intersection Summary						
HCM 6th Ctrl Delay			40.4			
HCM 6th LOS			D			

Mulholland Highway Corridor Study
 1: Old Topanga Canyon Rd West & Mulholland Hwy

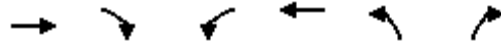
2045 Build PM Peak



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	960	30	160	320	20	250
Future Volume (vph)	960	30	160	320	20	250
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	10
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	420		170	0
Storage Lanes		0	1		1	1
Taper Length (ft)			50		50	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00					
Frt	0.995					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1870	0	1787	1881	1687	1492
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1870	0	1787	1881	1687	1492
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	3					99
Link Speed (mph)	40			40	25	
Link Distance (ft)	374			1157	582	
Travel Time (s)	6.4			19.7	15.9	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)		1				
Peak Hour Factor	0.87	0.72	0.78	0.78	0.88	0.91
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	1%	1%	7%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	1103	42	205	410	23	275
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1145	0	205	410	23	275
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	6			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.09
Turning Speed (mph)		9	15		15	9
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (ft)	100		20	100	20	20
Trailing Detector (ft)	0		0	0	0	0
Turn Type	NA		Prot	NA	Prot	pm+ov
Protected Phases	2		1	6	8	1
Permitted Phases						8
Detector Phase	2		1	6	8	1
Switch Phase						



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Minimum Initial (s)	15.0		15.0	15.0	10.0	15.0
Minimum Split (s)	21.0		21.0	21.0	16.0	21.0
Total Split (s)	73.0		21.0	94.0	16.0	21.0
Total Split (%)	66.4%		19.1%	85.5%	14.5%	19.1%
Maximum Green (s)	67.0		15.0	88.0	10.0	15.0
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0		3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0		0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0		0.0	0.0	0.0	0.0
Recall Mode	C-Min		None	C-Min	None	None
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)	76.6		15.0	101.2	10.0	21.4
Actuated g/C Ratio	0.70		0.14	0.92	0.09	0.19
v/c Ratio	0.88		0.84	0.24	0.15	0.75
Control Delay	25.0		74.9	1.2	48.6	38.0
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	25.0		74.9	1.2	48.6	38.0
LOS	C		E	A	D	D
Approach Delay	25.0			25.7	38.8	
Approach LOS	C			C	D	
90th %ile Green (s)	67.0		15.0	88.0	10.0	15.0
90th %ile Term Code	Coord		Max	Coord	Max	Max
70th %ile Green (s)	67.0		15.0	88.0	10.0	15.0
70th %ile Term Code	Coord		Max	Coord	Max	Max
50th %ile Green (s)	83.0		15.0	104.0	0.0	15.0
50th %ile Term Code	Coord		Max	Coord	Skip	Max
30th %ile Green (s)	83.0		15.0	104.0	0.0	15.0
30th %ile Term Code	Coord		Max	Coord	Skip	Max
10th %ile Green (s)	83.0		15.0	104.0	0.0	15.0
10th %ile Term Code	Coord		Max	Coord	Skip	Max
Stops (vph)	636		132	21	21	149
Fuel Used(gal)	58		5	3	0	4
CO Emissions (g/hr)	4073		349	195	26	262
NOx Emissions (g/hr)	793		68	38	5	51
VOC Emissions (g/hr)	944		81	45	6	61
Dilemma Vehicles (#)	42		0	5	0	0
Queue Length 50th (ft)	482		113	0	17	144
Queue Length 95th (ft)	#1163		#225	44	46	215
Internal Link Dist (ft)	294			1077	502	
Turn Bay Length (ft)			420		170	
Base Capacity (vph)	1303		243	1730	153	369



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.88		0.84	0.24	0.15	0.75

Intersection Summary

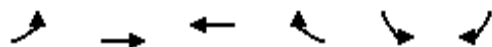
Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 30 (27%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 100
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.88
 Intersection Signal Delay: 27.2
 Intersection LOS: C
 Intersection Capacity Utilization 88.2%
 ICU Level of Service E
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Old Topanga Canyon Rd West & Mulholland Hwy



Mulholland Highway Corridor Study
 2: Mulholland Hwy & Old Topanga Canyon Rd East

2045 Build AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	470	300	410	165	215	750
Future Volume (veh/h)	470	300	410	165	215	750
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1847	1862	1949	1964	1832	1862
Adj Flow Rate, veh/h	618	448	519	0	398	1014
Peak Hour Factor	0.76	0.67	0.79	0.60	0.54	0.74
Percent Heavy Veh, %	2	1	2	1	3	1
Cap, veh/h	586	1086	390		553	1025
Arrive On Green	0.33	0.58	0.20	0.00	0.32	0.32
Sat Flow, veh/h	1759	1862	1949	1664	1745	1578
Grp Volume(v), veh/h	618	448	519	0	398	1014
Grp Sat Flow(s),veh/h/ln	1759	1862	1949	1664	1745	1578
Q Serve(g_s), s	40.0	15.8	24.0	0.0	24.2	38.0
Cycle Q Clear(g_c), s	40.0	15.8	24.0	0.0	24.2	38.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	586	1086	390		553	1025
V/C Ratio(X)	1.05	0.41	1.33		0.72	0.99
Avail Cap(c_a), veh/h	586	1086	390		553	1025
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	40.0	13.7	48.0	0.0	36.3	20.6
Incr Delay (d2), s/veh	28.9	0.1	165.9	0.0	4.5	25.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	21.1	6.1	29.2	0.0	10.7	52.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	68.9	13.8	213.9	0.0	40.8	45.9
LnGrp LOS	F	B	F		D	D
Approach Vol, veh/h		1066	519	A	1412	
Approach Delay, s/veh		45.7	213.9		44.5	
Approach LOS		D	F		D	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		76.0		44.0	46.0	30.0
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s		70.0		38.0	40.0	24.0
Max Q Clear Time (g_c+I1), s		17.8		40.0	42.0	26.0
Green Ext Time (p_c), s		2.8		0.0	0.0	0.0

Intersection Summary

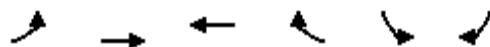
HCM 6th Ctrl Delay	74.3
HCM 6th LOS	E

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Mulholland Highway Corridor Study
 2: Mulholland Hwy & Old Topanga Canyon Rd East

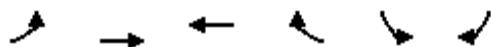
2045 Build AM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	470	300	410	165	215	750
Future Volume (vph)	470	300	410	165	215	750
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		2%	-2%		2%	
Storage Length (ft)	580			150	0	90
Storage Lanes	1			1	1	1
Taper Length (ft)	50				50	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Fr _t				0.850		0.850
Fl _t Protected	0.950				0.950	
Satd. Flow (prot)	1752	1862	1881	1615	1735	1583
Fl _t Permitted	0.950				0.950	
Satd. Flow (perm)	1752	1862	1881	1615	1735	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				101		33
Link Speed (mph)		45	45		40	
Link Distance (ft)		1159	810		1008	
Travel Time (s)		17.6	12.3		17.2	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.76	0.67	0.79	0.60	0.54	0.74
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	1%	2%	1%	3%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	618	448	519	275	398	1014
Shared Lane Traffic (%)						
Lane Group Flow (vph)	618	448	519	275	398	1014
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	0.99	0.99	1.01	1.01
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2	1	1	1
Detector Template	Left	Thru	Thru	Right	Left	Right
Leading Detector (ft)	20	100	100	20	20	20
Trailing Detector (ft)	0	0	0	0	0	0
Turn Type	Prot	NA	NA	Free	Prot	pm+ov
Protected Phases	5	2	6		4	5
Permitted Phases				Free		4
Detector Phase	5	2	6		4	5
Switch Phase						

Mulholland Highway Corridor Study
 2: Mulholland Hwy & Old Topanga Canyon Rd East

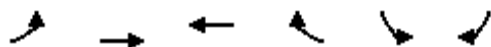
2045 Build AM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Minimum Initial (s)	10.0	15.0	15.0		15.0	10.0
Minimum Split (s)	21.0	21.0	21.0		21.0	21.0
Total Split (s)	46.0	76.0	30.0		44.0	46.0
Total Split (%)	38.3%	63.3%	25.0%		36.7%	38.3%
Maximum Green (s)	40.0	70.0	24.0		38.0	40.0
Yellow Time (s)	4.0	4.0	4.0		4.0	4.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0		6.0	6.0
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0		3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0		0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0		0.0	0.0
Recall Mode	None	C-Min	C-Min		None	None
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)	40.0	76.1	30.1	120.0	31.9	77.9
Actuated g/C Ratio	0.33	0.63	0.25	1.00	0.27	0.65
v/c Ratio	1.06	0.38	1.10	0.17	0.86	0.98
Control Delay	66.6	2.4	114.4	0.2	60.4	42.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.6	2.4	114.4	0.2	60.4	42.4
LOS	E	A	F	A	E	D
Approach Delay		39.6	74.8		47.5	
Approach LOS		D	E		D	
90th %ile Green (s)	40.0	70.0	24.0		38.0	40.0
90th %ile Term Code	Max	Coord	Coord		Max	Max
70th %ile Green (s)	40.0	71.6	25.6		36.4	40.0
70th %ile Term Code	Max	Coord	Coord		Gap	Max
50th %ile Green (s)	40.0	75.2	29.2		32.8	40.0
50th %ile Term Code	Max	Coord	Coord		Gap	Max
30th %ile Green (s)	40.0	79.0	33.0		29.0	40.0
30th %ile Term Code	Max	Coord	Coord		Gap	Max
10th %ile Green (s)	40.0	84.7	38.7		23.3	40.0
10th %ile Term Code	Max	Coord	Coord		Gap	Max
Stops (vph)	334	25	313	0	200	633
Fuel Used(gal)	14	3	16	1	6	18
CO Emissions (g/hr)	983	190	1090	61	425	1246
NOx Emissions (g/hr)	191	37	212	12	83	242
VOC Emissions (g/hr)	228	44	253	14	98	289
Dilemma Vehicles (#)	0	6	14	0	0	0
Queue Length 50th (ft)	~569	31	~524	0	326	745
Queue Length 95th (ft)	m267	m30	#693	0	225	551
Internal Link Dist (ft)		1079	730		928	
Turn Bay Length (ft)	580			150		90
Base Capacity (vph)	584	1180	471	1615	549	1039

Mulholland Highway Corridor Study
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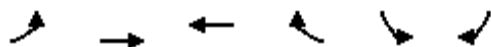
2045 Build School PM Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	605	450	265	215	260	385
Future Volume (veh/h)	605	450	265	215	260	385
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1847	1862	1964	1949	1862	1862
Adj Flow Rate, veh/h	729	584	291	0	342	494
Peak Hour Factor	0.83	0.77	0.91	0.79	0.76	0.78
Percent Heavy Veh, %	2	1	1	2	1	1
Cap, veh/h	761	1285	388		337	982
Arrive On Green	0.43	0.69	0.20	0.00	0.19	0.19
Sat Flow, veh/h	1759	1862	1964	1651	1773	1578
Grp Volume(v), veh/h	729	584	291	0	342	494
Grp Sat Flow(s),veh/h/ln	1759	1862	1964	1651	1773	1578
Q Serve(g_s), s	40.2	14.2	14.0	0.0	19.0	17.2
Cycle Q Clear(g_c), s	40.2	14.2	14.0	0.0	19.0	17.2
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	761	1285	388		337	982
V/C Ratio(X)	0.96	0.45	0.75		1.02	0.50
Avail Cap(c_a), veh/h	809	1285	388		337	982
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.50	0.50	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	27.5	7.0	37.8	0.0	40.5	10.4
Incr Delay (d2), s/veh	13.4	0.6	12.6	0.0	53.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	18.0	4.5	7.8	0.0	12.9	19.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	40.9	7.6	50.4	0.0	93.5	10.8
LnGrp LOS	D	A	D		F	B
Approach Vol, veh/h		1313	291	A	836	
Approach Delay, s/veh		26.1	50.4		44.6	
Approach LOS		C	D		D	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		75.0		25.0	49.3	25.7
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s		69.0		19.0	46.0	17.0
Max Q Clear Time (g_c+I1), s		16.2		21.0	42.2	16.0
Green Ext Time (p_c), s		4.0		0.0	1.1	0.2
Intersection Summary						
HCM 6th Ctrl Delay			35.3			
HCM 6th LOS			D			
Notes						
Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.						

Mulholland Highway Corridor Study
 2: Mulholland Hwy & Old Topanga Canyon Rd East

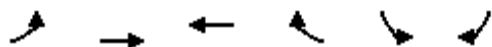
2045 Build School PM Peak



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	605	450	265	215	260	385
Future Volume (vph)	605	450	265	215	260	385
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		2%	-2%		2%	
Storage Length (ft)	580			150	0	90
Storage Lanes	1			1	1	1
Taper Length (ft)	50				50	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Fr _t				0.850		0.850
Fl _t Protected	0.950				0.950	
Satd. Flow (prot)	1752	1862	1900	1599	1769	1583
Fl _t Permitted	0.950				0.950	
Satd. Flow (perm)	1752	1862	1900	1599	1769	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				214		113
Link Speed (mph)		45	45		40	
Link Distance (ft)		1149	810		1008	
Travel Time (s)		17.4	12.3		17.2	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.83	0.77	0.91	0.79	0.76	0.78
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	1%	1%	2%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	729	584	291	272	342	494
Shared Lane Traffic (%)						
Lane Group Flow (vph)	729	584	291	272	342	494
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	0.99	0.99	1.01	1.01
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2	1	1	1
Detector Template	Left	Thru	Thru	Right	Left	Right
Leading Detector (ft)	20	100	100	20	20	20
Trailing Detector (ft)	0	0	0	0	0	0
Turn Type	Prot	NA	NA	Free	Prot	pm+ov
Protected Phases	5	2	6		4	5
Permitted Phases				Free		4
Detector Phase	5	2	6		4	5
Switch Phase						

Mulholland Highway Corridor Study
 2: Mulholland Hwy & Old Topanga Canyon Rd East

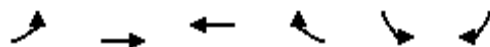
2045 Build School PM Peak



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Minimum Initial (s)	10.0	15.0	15.0		15.0	10.0
Minimum Split (s)	21.0	21.0	21.0		21.0	21.0
Total Split (s)	52.0	75.0	23.0		25.0	52.0
Total Split (%)	52.0%	75.0%	23.0%		25.0%	52.0%
Maximum Green (s)	46.0	69.0	17.0		19.0	46.0
Yellow Time (s)	4.0	4.0	4.0		4.0	4.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0		6.0	6.0
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0		3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0		0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0		0.0	0.0
Recall Mode	None	C-Min	C-Min		None	None
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)	44.5	69.0	18.5	100.0	19.0	69.5
Actuated g/C Ratio	0.44	0.69	0.18	1.00	0.19	0.70
v/c Ratio	0.94	0.45	0.83	0.17	1.02	0.44
Control Delay	39.5	4.8	61.1	0.2	95.3	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.5	4.8	61.1	0.2	95.3	6.0
LOS	D	A	E	A	F	A
Approach Delay		24.1	31.7		42.5	
Approach LOS		C	C		D	
90th %ile Green (s)	46.0	69.0	17.0		19.0	46.0
90th %ile Term Code	Max	Coord	Coord		Max	Max
70th %ile Green (s)	46.0	69.0	17.0		19.0	46.0
70th %ile Term Code	Max	Coord	Coord		Max	Max
50th %ile Green (s)	46.0	69.0	17.0		19.0	46.0
50th %ile Term Code	Max	Coord	Coord		Max	Max
30th %ile Green (s)	45.4	69.0	17.6		19.0	45.4
30th %ile Term Code	Gap	Coord	Coord		Max	Gap
10th %ile Green (s)	39.2	69.0	23.8		19.0	39.2
10th %ile Term Code	Gap	Coord	Coord		Max	Gap
Stops (vph)	446	98	229	0	221	118
Fuel Used(gal)	15	5	8	1	9	4
CO Emissions (g/hr)	1043	351	527	80	629	298
NOx Emissions (g/hr)	203	68	103	16	122	58
VOC Emissions (g/hr)	242	81	122	18	146	69
Dilemma Vehicles (#)	0	16	12	0	0	0
Queue Length 50th (ft)	334	86	206	0	~253	92
Queue Length 95th (ft)	#575	106	#376	0	#345	114
Internal Link Dist (ft)		1069	730		928	
Turn Bay Length (ft)	580			150		90
Base Capacity (vph)	805	1284	351	1599	336	1156

Mulholland Highway Corridor Study
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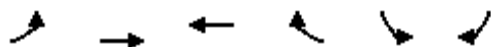
2045 Build PM Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	615	595	175	190	175	305
Future Volume (veh/h)	615	595	175	190	175	305
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1862	1862	1964	1964	1862	1862
Adj Flow Rate, veh/h	634	726	224	0	219	367
Peak Hour Factor	0.97	0.82	0.78	0.79	0.80	0.83
Percent Heavy Veh, %	1	1	1	1	1	1
Cap, veh/h	673	1353	575		291	857
Arrive On Green	0.38	0.73	0.29	0.00	0.16	0.16
Sat Flow, veh/h	1773	1862	1964	1664	1773	1578
Grp Volume(v), veh/h	634	726	224	0	219	367
Grp Sat Flow(s),veh/h/ln	1773	1862	1964	1664	1773	1578
Q Serve(g_s), s	38.0	19.2	10.0	0.0	13.0	15.2
Cycle Q Clear(g_c), s	38.0	19.2	10.0	0.0	13.0	15.2
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	673	1353	575		291	857
V/C Ratio(X)	0.94	0.54	0.39		0.75	0.43
Avail Cap(c_a), veh/h	822	1353	575		338	900
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.42	0.42	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	33.0	6.7	31.0	0.0	43.9	14.9
Incr Delay (d2), s/veh	8.8	0.6	2.0	0.0	7.9	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	16.8	5.9	4.9	0.0	6.2	16.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	41.8	7.4	33.0	0.0	51.7	15.3
LnGrp LOS	D	A	C		D	B
Approach Vol, veh/h		1360	224	A	586	
Approach Delay, s/veh		23.4	33.0		28.9	
Approach LOS		C	C		C	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		86.0		24.0	47.7	38.2
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s		77.0		21.0	51.0	20.0
Max Q Clear Time (g_c+I1), s		21.2		17.2	40.0	12.0
Green Ext Time (p_c), s		5.5		0.8	1.7	0.6
Intersection Summary						
HCM 6th Ctrl Delay			25.9			
HCM 6th LOS			C			
Notes						
Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.						

Mulholland Highway Corridor Study
 2: Mulholland Hwy & Old Topanga Canyon Rd East

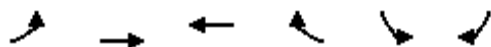
2045 Build PM Peak



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	615	595	175	190	175	305
Future Volume (vph)	615	595	175	190	175	305
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		2%	-2%		2%	
Storage Length (ft)	580			150	0	90
Storage Lanes	1			1	1	1
Taper Length (ft)	50				50	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Fr _t				0.850		0.850
Fl _t Protected	0.950				0.950	
Satd. Flow (prot)	1769	1862	1900	1615	1769	1583
Fl _t Permitted	0.950				0.950	
Satd. Flow (perm)	1769	1862	1900	1615	1769	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				224		218
Link Speed (mph)		45	45		40	
Link Distance (ft)		1157	810		1008	
Travel Time (s)		17.5	12.3		17.2	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.97	0.82	0.78	0.79	0.80	0.83
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	634	726	224	241	219	367
Shared Lane Traffic (%)						
Lane Group Flow (vph)	634	726	224	241	219	367
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	0.99	0.99	1.01	1.01
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2	1	1	1
Detector Template	Left	Thru	Thru	Right	Left	Right
Leading Detector (ft)	20	100	100	20	20	20
Trailing Detector (ft)	0	0	0	0	0	0
Turn Type	Prot	NA	NA	Free	Prot	pm+ov
Protected Phases	5	2	6		4	5
Permitted Phases				Free		4
Detector Phase	5	2	6		4	5
Switch Phase						

Mulholland Highway Corridor Study
 2: Mulholland Hwy & Old Topanga Canyon Rd East

2045 Build PM Peak

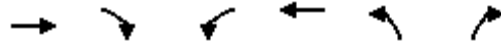


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Minimum Initial (s)	10.0	15.0	15.0		15.0	10.0
Minimum Split (s)	21.0	21.0	21.0		21.0	21.0
Total Split (s)	57.0	83.0	26.0		27.0	57.0
Total Split (%)	51.8%	75.5%	23.6%		24.5%	51.8%
Maximum Green (s)	51.0	77.0	20.0		21.0	51.0
Yellow Time (s)	4.0	4.0	4.0		4.0	4.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0		6.0	6.0
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0		3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0		0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0		0.0	0.0
Recall Mode	None	C-Min	C-Min		None	None
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)	44.9	79.6	28.7	110.0	18.4	69.3
Actuated g/C Ratio	0.41	0.72	0.26	1.00	0.17	0.63
v/c Ratio	0.88	0.54	0.45	0.15	0.74	0.34
Control Delay	31.9	5.0	40.5	0.2	59.1	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.9	5.0	40.5	0.2	59.1	3.6
LOS	C	A	D	A	E	A
Approach Delay		17.5	19.6		24.4	
Approach LOS		B	B		C	
90th %ile Green (s)	51.0	77.0	20.0		21.0	51.0
90th %ile Term Code	Max	Coord	Coord		Max	Max
70th %ile Green (s)	50.2	77.0	20.8		21.0	50.2
70th %ile Term Code	Gap	Coord	Coord		Max	Gap
50th %ile Green (s)	46.5	79.3	26.8		18.7	46.5
50th %ile Term Code	Gap	Coord	Coord		Gap	Gap
30th %ile Green (s)	42.3	81.9	33.6		16.1	42.3
30th %ile Term Code	Gap	Coord	Coord		Gap	Gap
10th %ile Green (s)	34.7	83.0	42.3		15.0	34.7
10th %ile Term Code	Gap	Coord	Coord		Min	Gap
Stops (vph)	523	184	148	0	163	46
Fuel Used(gal)	15	7	4	1	5	3
CO Emissions (g/hr)	1057	514	294	70	343	193
NOx Emissions (g/hr)	206	100	57	14	67	38
VOC Emissions (g/hr)	245	119	68	16	79	45
Dilemma Vehicles (#)	0	22	8	0	0	0
Queue Length 50th (ft)	418	170	153	0	166	42
Queue Length 95th (ft)	m458	173	219	0	220	56
Internal Link Dist (ft)		1077	730		928	
Turn Bay Length (ft)	580			150		90
Base Capacity (vph)	820	1348	495	1615	337	1153

Appendix G: Existing Year 2019 Analysis Worksheets – With Improvements

Mulholland Highway Corridor Study
 1: Old Topanga Canyon Rd West & Mulholland Hwy

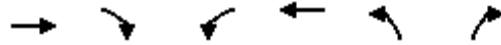
2019 Improvements AM Peak Hour



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔	↔	↔	↔
Traffic Volume (veh/h)	564	61	467	548	11	113
Future Volume (veh/h)	564	61	467	548	11	113
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1885	1856	1885	1870	1885	1885
Adj Flow Rate, veh/h	752	100	537	772	24	171
Peak Hour Factor	0.75	0.61	0.87	0.71	0.46	0.66
Percent Heavy Veh, %	1	3	1	2	1	1
Cap, veh/h	742	99	559	1527	150	630
Arrive On Green	0.46	0.46	0.62	1.00	0.08	0.08
Sat Flow, veh/h	1629	217	1795	1870	1795	1598
Grp Volume(v), veh/h	0	852	537	772	24	171
Grp Sat Flow(s),veh/h/ln	0	1846	1795	1870	1795	1598
Q Serve(g_s), s	0.0	54.7	33.7	0.0	1.5	8.7
Cycle Q Clear(g_c), s	0.0	54.7	33.7	0.0	1.5	8.7
Prop In Lane		0.12	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	0	841	559	1527	150	630
V/C Ratio(X)	0.00	1.01	0.96	0.51	0.16	0.27
Avail Cap(c_a), veh/h	0	841	763	1527	150	630
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.36	0.36	1.00	1.00
Uniform Delay (d), s/veh	0.0	32.7	22.0	0.0	51.1	24.6
Incr Delay (d2), s/veh	0.0	34.3	9.8	0.4	0.5	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	30.9	9.4	0.2	0.7	3.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	67.0	31.8	0.4	51.6	24.9
LnGrp LOS	A	F	C	A	D	C
Approach Vol, veh/h	852			1309	195	
Approach Delay, s/veh	67.0			13.3	28.2	
Approach LOS	E			B	C	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	43.3	60.7			104.0	16.0
Change Period (Y+Rc), s	6.0	6.0			6.0	6.0
Max Green Setting (Gmax), s	51.0	41.0			98.0	10.0
Max Q Clear Time (g_c+I1), s	35.7	56.7			2.0	10.7
Green Ext Time (p_c), s	1.6	0.0			6.5	0.0
Intersection Summary						
HCM 6th Ctrl Delay			34.0			
HCM 6th LOS			C			

Mulholland Highway Corridor Study
 1: Old Topanga Canyon Rd West & Mulholland Hwy

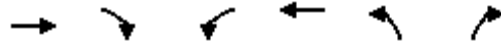
2019 Improvements AM Peak Hour



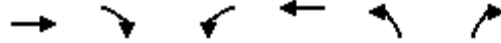
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	564	61	467	548	11	113
Future Volume (vph)	564	61	467	548	11	113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	10
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	420		170	0
Storage Lanes		0	1		1	1
Taper Length (ft)			50		50	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.984					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1847	0	1787	1863	1787	1492
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1847	0	1787	1863	1787	1492
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	6					57
Link Speed (mph)	40			40	25	
Link Distance (ft)	374			1159	582	
Travel Time (s)	6.4			19.8	15.9	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.75	0.61	0.87	0.71	0.46	0.66
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	3%	1%	2%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	752	100	537	772	24	171
Shared Lane Traffic (%)						
Lane Group Flow (vph)	852	0	537	772	24	171
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	6			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.09
Turning Speed (mph)		9	15		15	9
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (ft)	100		20	100	20	20
Trailing Detector (ft)	0		0	0	0	0
Turn Type	NA		Prot	NA	Prot	pm+ov
Protected Phases	2		1	6	8	1
Permitted Phases						8
Detector Phase	2		1	6	8	1
Switch Phase						

Mulholland Highway Corridor Study
 1: Old Topanga Canyon Rd West & Mulholland Hwy

2019 Improvements AM Peak Hour



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Minimum Initial (s)	15.0		15.0	15.0	10.0	15.0
Minimum Split (s)	21.0		21.0	21.0	16.0	21.0
Total Split (s)	47.0		57.0	104.0	16.0	57.0
Total Split (%)	39.2%		47.5%	86.7%	13.3%	47.5%
Maximum Green (s)	41.0		51.0	98.0	10.0	51.0
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0		3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0		0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0		0.0	0.0	0.0	0.0
Recall Mode	C-Min		None	C-Min	None	None
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)	56.4		42.0	106.8	10.0	51.6
Actuated g/C Ratio	0.47		0.35	0.89	0.08	0.43
v/c Ratio	0.98		0.86	0.47	0.16	0.25
Control Delay	59.4		42.1	2.4	53.9	12.6
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	59.4		42.1	2.4	53.9	12.6
LOS	E		D	A	D	B
Approach Delay	59.4			18.7	17.7	
Approach LOS	E			B	B	
90th %ile Green (s)	41.0		51.0	98.0	10.0	51.0
90th %ile Term Code	Coord		Max	Coord	Max	Max
70th %ile Green (s)	45.0		47.0	98.0	10.0	47.0
70th %ile Term Code	Coord		Gap	Coord	Max	Gap
50th %ile Green (s)	49.5		42.5	98.0	10.0	42.5
50th %ile Term Code	Coord		Gap	Coord	Max	Gap
30th %ile Green (s)	69.9		38.1	114.0	0.0	38.1
30th %ile Term Code	Coord		Gap	Coord	Skip	Gap
10th %ile Green (s)	76.6		31.4	114.0	0.0	31.4
10th %ile Term Code	Coord		Gap	Coord	Skip	Gap
Stops (vph)	423		434	74	11	42
Fuel Used(gal)	41		12	5	0	1
CO Emissions (g/hr)	2879		835	370	15	71
NOx Emissions (g/hr)	560		162	72	3	14
VOC Emissions (g/hr)	667		193	86	4	16
Dilemma Vehicles (#)	21		0	16	0	0
Queue Length 50th (ft)	~847		409	97	20	53
Queue Length 95th (ft)	#939		m404	138	26	54
Internal Link Dist (ft)	294			1079	502	
Turn Bay Length (ft)			420		170	
Base Capacity (vph)	871		759	1658	148	781

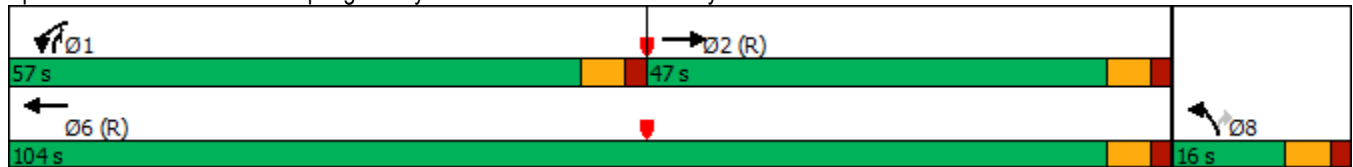


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.98		0.71	0.47	0.16	0.22

Intersection Summary

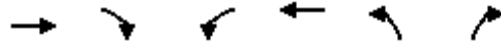
Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 59 (49%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.98
 Intersection Signal Delay: 33.3
 Intersection LOS: C
 Intersection Capacity Utilization 82.6%
 ICU Level of Service E
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Old Topanga Canyon Rd West & Mulholland Hwy



Mulholland Highway Corridor Study
 1: Old Topanga Canyon Rd West & Mulholland Hwy

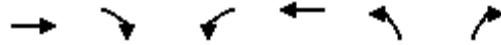
2019 Improvements School PM Peak



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔	↔	↔	↔
Traffic Volume (veh/h)	705	31	189	376	26	219
Future Volume (veh/h)	705	31	189	376	26	219
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1856	1885	1885	1885	1885
Adj Flow Rate, veh/h	792	52	205	508	44	267
Peak Hour Factor	0.89	0.60	0.92	0.74	0.59	0.82
Percent Heavy Veh, %	2	3	1	1	1	1
Cap, veh/h	908	60	297	1424	199	442
Arrive On Green	0.52	0.52	0.33	1.00	0.11	0.11
Sat Flow, veh/h	1736	114	1795	1885	1795	1598
Grp Volume(v), veh/h	0	844	205	508	44	267
Grp Sat Flow(s),veh/h/ln	0	1850	1795	1885	1795	1598
Q Serve(g_s), s	0.0	36.0	8.9	0.0	2.0	10.0
Cycle Q Clear(g_c), s	0.0	36.0	8.9	0.0	2.0	10.0
Prop In Lane		0.06	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	0	968	297	1424	199	442
V/C Ratio(X)	0.00	0.87	0.69	0.36	0.22	0.60
Avail Cap(c_a), veh/h	0	968	299	1424	199	442
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.88	0.88	1.00	1.00
Uniform Delay (d), s/veh	0.0	18.8	28.1	0.0	36.4	28.3
Incr Delay (d2), s/veh	0.0	10.7	5.7	0.6	0.6	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	16.2	3.6	0.2	0.9	5.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	29.5	33.8	0.6	37.0	30.6
LnGrp LOS	A	C	C	A	D	C
Approach Vol, veh/h	844			713	311	
Approach Delay, s/veh	29.5			10.2	31.5	
Approach LOS	C			B	C	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	20.9	53.1			74.0	16.0
Change Period (Y+Rc), s	6.0	6.0			6.0	6.0
Max Green Setting (Gmax), s	15.0	47.0			68.0	10.0
Max Q Clear Time (g_c+I1), s	10.9	38.0			2.0	12.0
Green Ext Time (p_c), s	0.2	3.9			3.5	0.0
Intersection Summary						
HCM 6th Ctrl Delay			22.5			
HCM 6th LOS			C			

Mulholland Highway Corridor Study
 1: Old Topanga Canyon Rd West & Mulholland Hwy

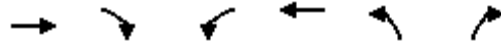
2019 Improvements School PM Peak



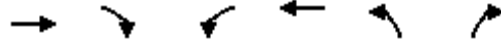
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	705	31	189	376	26	219
Future Volume (vph)	705	31	189	376	26	219
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	10
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	420		170	0
Storage Lanes		0	1		1	1
Taper Length (ft)			50		50	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.992					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1847	0	1787	1881	1787	1492
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1847	0	1787	1881	1787	1492
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	5					148
Link Speed (mph)	40			40	25	
Link Distance (ft)	374			1149	582	
Travel Time (s)	6.4			19.6	15.9	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.89	0.60	0.92	0.74	0.59	0.82
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	3%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	792	52	205	508	44	267
Shared Lane Traffic (%)						
Lane Group Flow (vph)	844	0	205	508	44	267
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	6			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.09
Turning Speed (mph)		9	15		15	9
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (ft)	100		20	100	20	20
Trailing Detector (ft)	0		0	0	0	0
Turn Type	NA		Prot	NA	Prot	pm+ov
Protected Phases	2		1	6	8	1
Permitted Phases						8
Detector Phase	2		1	6	8	1
Switch Phase						

Mulholland Highway Corridor Study
 1: Old Topanga Canyon Rd West & Mulholland Hwy

2019 Improvements School PM Peak



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Minimum Initial (s)	15.0		15.0	15.0	10.0	15.0
Minimum Split (s)	21.0		21.0	21.0	16.0	21.0
Total Split (s)	53.0		21.0	74.0	16.0	21.0
Total Split (%)	58.9%		23.3%	82.2%	17.8%	23.3%
Maximum Green (s)	47.0		15.0	68.0	10.0	15.0
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0		3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0		0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0		0.0	0.0	0.0	0.0
Recall Mode	C-Min		None	C-Min	None	None
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)	53.4		15.0	76.8	10.0	24.6
Actuated g/C Ratio	0.59		0.17	0.85	0.11	0.27
v/c Ratio	0.77		0.69	0.32	0.22	0.52
Control Delay	22.1		44.6	1.9	39.6	14.5
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	22.1		44.6	1.9	39.6	14.5
LOS	C		D	A	D	B
Approach Delay	22.1			14.2	18.1	
Approach LOS	C			B	B	
90th %ile Green (s)	47.0		15.0	68.0	10.0	15.0
90th %ile Term Code	Coord		Max	Coord	Max	Max
70th %ile Green (s)	47.0		15.0	68.0	10.0	15.0
70th %ile Term Code	Coord		Max	Coord	Max	Max
50th %ile Green (s)	47.0		15.0	68.0	10.0	15.0
50th %ile Term Code	Coord		Max	Coord	Max	Max
30th %ile Green (s)	63.0		15.0	84.0	0.0	15.0
30th %ile Term Code	Coord		Max	Coord	Skip	Max
10th %ile Green (s)	63.0		15.0	84.0	0.0	15.0
10th %ile Term Code	Coord		Max	Coord	Skip	Max
Stops (vph)	528		143	42	25	78
Fuel Used(gal)	43		5	3	0	2
CO Emissions (g/hr)	3018		321	244	30	142
NOx Emissions (g/hr)	587		62	48	6	28
VOC Emissions (g/hr)	700		74	57	7	33
Dilemma Vehicles (#)	40		0	9	0	0
Queue Length 50th (ft)	444		92	49	26	53
Queue Length 95th (ft)	#718		#218	54	40	105
Internal Link Dist (ft)	294			1069	502	
Turn Bay Length (ft)			420		170	
Base Capacity (vph)	1097		297	1605	198	515

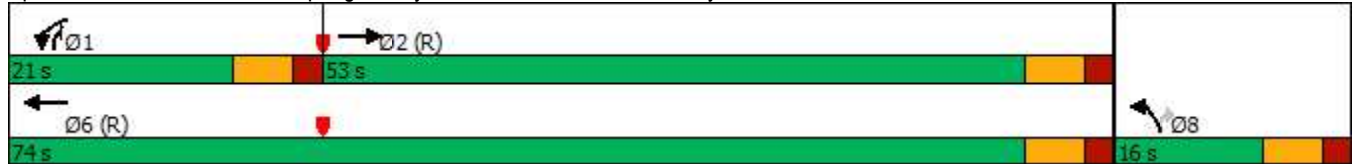


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.77		0.69	0.32	0.22	0.52

Intersection Summary

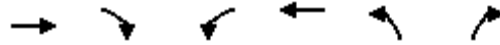
Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 36 (40%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.77
 Intersection Signal Delay: 18.4
 Intersection LOS: B
 Intersection Capacity Utilization 74.8%
 ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 1: Old Topanga Canyon Rd West & Mulholland Hwy



Mulholland Highway Corridor Study
 1: Old Topanga Canyon Rd West & Mulholland Hwy

2019 Improvements PM Peak



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔	↔	↔	↔
Traffic Volume (veh/h)	849	26	128	282	14	210
Future Volume (veh/h)	849	26	128	282	14	210
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.98	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1796	1885
Adj Flow Rate, veh/h	976	36	164	362	16	231
Peak Hour Factor	0.87	0.72	0.78	0.78	0.88	0.91
Percent Heavy Veh, %	1	1	1	1	7	1
Cap, veh/h	1032	38	266	1470	171	397
Arrive On Green	0.57	0.57	0.30	1.00	0.10	0.10
Sat Flow, veh/h	1805	67	1795	1885	1711	1598
Grp Volume(v), veh/h	0	1012	164	362	16	231
Grp Sat Flow(s),veh/h/ln	0	1872	1795	1885	1711	1598
Q Serve(g_s), s	0.0	50.4	7.9	0.0	0.8	10.0
Cycle Q Clear(g_c), s	0.0	50.4	7.9	0.0	0.8	10.0
Prop In Lane		0.04	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	0	1070	266	1470	171	397
V/C Ratio(X)	0.00	0.95	0.62	0.25	0.09	0.58
Avail Cap(c_a), veh/h	0	1070	269	1470	171	397
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.96	0.96	1.00	1.00
Uniform Delay (d), s/veh	0.0	20.0	32.7	0.0	40.9	33.0
Incr Delay (d2), s/veh	0.0	17.2	3.9	0.4	0.2	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	24.0	3.3	0.2	0.4	5.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	0.0	37.2	36.6	0.4	41.1	35.2
LnGrp LOS	A	D	D	A	D	D
Approach Vol, veh/h	1012			526	247	
Approach Delay, s/veh	37.2			11.7	35.6	
Approach LOS	D			B	D	
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	20.8	63.2			84.0	16.0
Change Period (Y+Rc), s	6.0	6.0			6.0	6.0
Max Green Setting (Gmax), s	15.0	57.0			78.0	10.0
Max Q Clear Time (g_c+I1), s	9.9	52.4			2.0	12.0
Green Ext Time (p_c), s	0.2	2.8			2.3	0.0
Intersection Summary						
HCM 6th Ctrl Delay			29.5			
HCM 6th LOS			C			

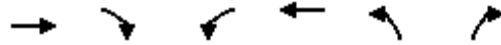
Mulholland Highway Corridor Study
 1: Old Topanga Canyon Rd West & Mulholland Hwy

2019 Improvements PM Peak

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗		↖	↗	↖	↗
Traffic Volume (vph)	849	26	128	282	14	210
Future Volume (vph)	849	26	128	282	14	210
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	10
Grade (%)	0%			0%	0%	
Storage Length (ft)		0	420		170	0
Storage Lanes		0	1		1	1
Taper Length (ft)			50		50	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00					
Frt	0.995					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1870	0	1787	1881	1687	1492
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	1870	0	1787	1881	1687	1492
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	3					113
Link Speed (mph)	40			40	25	
Link Distance (ft)	374			1157	582	
Travel Time (s)	6.4			19.7	15.9	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)		1				
Peak Hour Factor	0.87	0.72	0.78	0.78	0.88	0.91
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	1%	1%	7%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Adj. Flow (vph)	976	36	164	362	16	231
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1012	0	164	362	16	231
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	6			12	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.09
Turning Speed (mph)		9	15		15	9
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (ft)	100		20	100	20	20
Trailing Detector (ft)	0		0	0	0	0
Turn Type	NA		Prot	NA	Prot	pm+ov
Protected Phases	2		1	6	8	1
Permitted Phases						8
Detector Phase	2		1	6	8	1
Switch Phase						

Mulholland Highway Corridor Study
 1: Old Topanga Canyon Rd West & Mulholland Hwy

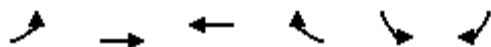
2019 Improvements PM Peak



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Minimum Initial (s)	15.0		15.0	15.0	10.0	15.0
Minimum Split (s)	21.0		21.0	21.0	16.0	21.0
Total Split (s)	63.0		21.0	84.0	16.0	21.0
Total Split (%)	63.0%		21.0%	84.0%	16.0%	21.0%
Maximum Green (s)	57.0		15.0	78.0	10.0	15.0
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0		6.0	6.0	6.0	6.0
Lead/Lag	Lag		Lead			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Minimum Gap (s)	3.0		3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0		0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0		0.0	0.0	0.0	0.0
Recall Mode	C-Min		None	C-Min	None	None
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)	66.6		15.0	91.2	10.0	21.4
Actuated g/C Ratio	0.67		0.15	0.91	0.10	0.21
v/c Ratio	0.81		0.61	0.21	0.10	0.57
Control Delay	21.5		43.3	1.3	42.4	21.7
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	21.5		43.3	1.3	42.4	21.7
LOS	C		D	A	D	C
Approach Delay	21.5			14.4	23.1	
Approach LOS	C			B	C	
90th %ile Green (s)	57.0		15.0	78.0	10.0	15.0
90th %ile Term Code	Coord		Max	Coord	Max	Max
70th %ile Green (s)	57.0		15.0	78.0	10.0	15.0
70th %ile Term Code	Coord		Max	Coord	Max	Max
50th %ile Green (s)	73.0		15.0	94.0	0.0	15.0
50th %ile Term Code	Coord		Max	Coord	Skip	Max
30th %ile Green (s)	73.0		15.0	94.0	0.0	15.0
30th %ile Term Code	Coord		Max	Coord	Skip	Max
10th %ile Green (s)	73.0		15.0	94.0	0.0	15.0
10th %ile Term Code	Coord		Max	Coord	Skip	Max
Stops (vph)	565		108	23	15	92
Fuel Used(gal)	51		3	3	0	2
CO Emissions (g/hr)	3551		223	176	17	162
NOx Emissions (g/hr)	691		43	34	3	32
VOC Emissions (g/hr)	823		52	41	4	38
Dilemma Vehicles (#)	42		0	5	0	0
Queue Length 50th (ft)	359		106	0	11	80
Queue Length 95th (ft)	#929		125	40	32	140
Internal Link Dist (ft)	294			1077	502	
Turn Bay Length (ft)			420		170	
Base Capacity (vph)	1246		268	1715	168	407

Mulholland Highway Corridor Study
 2: Mulholland Hwy & Old Topanga Canyon Rd East

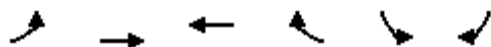
2019 Improvements AM Peak Hour



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	414	263	361	146	190	654
Future Volume (veh/h)	414	263	361	146	190	654
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1847	1862	1949	1964	1832	1862
Adj Flow Rate, veh/h	545	393	457	0	352	884
Peak Hour Factor	0.76	0.67	0.79	0.60	0.54	0.74
Percent Heavy Veh, %	2	1	2	1	3	1
Cap, veh/h	569	1086	409		553	1010
Arrive On Green	0.32	0.58	0.21	0.00	0.32	0.32
Sat Flow, veh/h	1759	1862	1949	1664	1745	1578
Grp Volume(v), veh/h	545	393	457	0	352	884
Grp Sat Flow(s),veh/h/ln	1759	1862	1949	1664	1745	1578
Q Serve(g_s), s	36.5	13.4	25.2	0.0	20.7	38.0
Cycle Q Clear(g_c), s	36.5	13.4	25.2	0.0	20.7	38.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	569	1086	409		553	1010
V/C Ratio(X)	0.96	0.36	1.12		0.64	0.88
Avail Cap(c_a), veh/h	586	1086	409		553	1010
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.44	0.44	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	39.8	13.2	47.4	0.0	35.1	17.7
Incr Delay (d2), s/veh	15.6	0.4	80.2	0.0	2.4	8.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	17.4	5.3	20.9	0.0	8.9	42.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	55.4	13.6	127.6	0.0	37.5	26.4
LnGrp LOS	E	B	F		D	C
Approach Vol, veh/h		938	457	A	1236	
Approach Delay, s/veh		37.9	127.6		29.6	
Approach LOS		D	F		C	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		76.0		44.0	44.8	31.2
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s		70.0		38.0	40.0	24.0
Max Q Clear Time (g_c+I1), s		15.4		40.0	38.5	27.2
Green Ext Time (p_c), s		2.4		0.0	0.3	0.0
Intersection Summary						
HCM 6th Ctrl Delay			49.6			
HCM 6th LOS			D			
Notes						
Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.						

Mulholland Highway Corridor Study
 2: Mulholland Hwy & Old Topanga Canyon Rd East

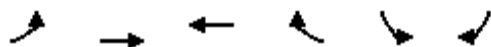
2019 Improvements AM Peak Hour



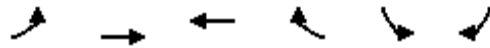
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	414	263	361	146	190	654
Future Volume (vph)	414	263	361	146	190	654
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		2%	-2%		2%	
Storage Length (ft)	580			150	0	90
Storage Lanes	1			1	1	1
Taper Length (ft)	50				50	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Fr _t				0.850		0.850
Fl _t Protected	0.950				0.950	
Satd. Flow (prot)	1752	1862	1881	1615	1735	1583
Fl _t Permitted	0.950				0.950	
Satd. Flow (perm)	1752	1862	1881	1615	1735	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				101		51
Link Speed (mph)		45	45		40	
Link Distance (ft)		1159	810		1008	
Travel Time (s)		17.6	12.3		17.2	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.76	0.67	0.79	0.60	0.54	0.74
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	1%	2%	1%	3%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	545	393	457	243	352	884
Shared Lane Traffic (%)						
Lane Group Flow (vph)	545	393	457	243	352	884
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	0.99	0.99	1.01	1.01
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2	1	1	1
Detector Template	Left	Thru	Thru	Right	Left	Right
Leading Detector (ft)	20	100	100	20	20	20
Trailing Detector (ft)	0	0	0	0	0	0
Turn Type	Prot	NA	NA	Free	Prot	pm+ov
Protected Phases	5	2	6		4	5
Permitted Phases				Free		4
Detector Phase	5	2	6		4	5
Switch Phase						

Mulholland Highway Corridor Study
 2: Mulholland Hwy & Old Topanga Canyon Rd East

2019 Improvements AM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Minimum Initial (s)	10.0	15.0	15.0		15.0	10.0
Minimum Split (s)	21.0	21.0	21.0		21.0	21.0
Total Split (s)	46.0	76.0	30.0		44.0	46.0
Total Split (%)	38.3%	63.3%	25.0%		36.7%	38.3%
Maximum Green (s)	40.0	70.0	24.0		38.0	40.0
Yellow Time (s)	4.0	4.0	4.0		4.0	4.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0		6.0	6.0
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0		3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0		0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0		0.0	0.0
Recall Mode	None	C-Min	C-Min		None	None
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)	39.3	78.4	33.1	120.0	29.6	74.9
Actuated g/C Ratio	0.33	0.65	0.28	1.00	0.25	0.62
v/c Ratio	0.95	0.32	0.88	0.15	0.82	0.88
Control Delay	46.8	2.1	62.6	0.2	58.3	28.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.8	2.1	62.6	0.2	58.3	28.0
LOS	D	A	E	A	E	C
Approach Delay		28.1	40.9		36.7	
Approach LOS		C	D		D	
90th %ile Green (s)	40.0	70.0	24.0		38.0	40.0
90th %ile Term Code	Max	Coord	Coord		Max	Max
70th %ile Green (s)	40.0	74.7	28.7		33.3	40.0
70th %ile Term Code	Max	Coord	Coord		Gap	Max
50th %ile Green (s)	40.0	78.2	32.2		29.8	40.0
50th %ile Term Code	Max	Coord	Coord		Gap	Max
30th %ile Green (s)	40.0	81.9	35.9		26.1	40.0
30th %ile Term Code	Max	Coord	Coord		Gap	Max
10th %ile Green (s)	36.6	87.3	44.7		20.7	36.6
10th %ile Term Code	Gap	Coord	Coord		Gap	Gap
Stops (vph)	305	19	284	0	174	500
Fuel Used(gal)	11	2	10	1	5	13
CO Emissions (g/hr)	759	163	701	54	368	917
NOx Emissions (g/hr)	148	32	136	11	72	178
VOC Emissions (g/hr)	176	38	162	13	85	212
Dilemma Vehicles (#)	0	3	13	0	0	0
Queue Length 50th (ft)	334	23	384	0	289	556
Queue Length 95th (ft)	286	28	#588	0	198	400
Internal Link Dist (ft)		1079	730		928	
Turn Bay Length (ft)	580			150		90
Base Capacity (vph)	584	1216	518	1615	549	1015

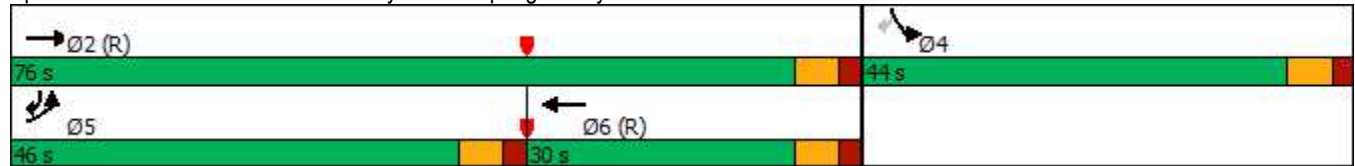


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.32	0.88	0.15	0.64	0.87

Intersection Summary

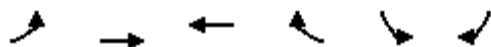
Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green, Master Intersection
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.95
 Intersection Signal Delay: 34.9
 Intersection LOS: C
 Intersection Capacity Utilization 69.5%
 ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 2: Mulholland Hwy & Old Topanga Canyon Rd East



Mulholland Highway Corridor Study
 2: Mulholland Hwy & Old Topanga Canyon Rd East

2019 Improvements School PM Peak



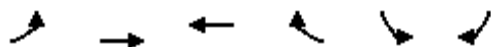
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	529	395	232	190	231	333
Future Volume (veh/h)	529	395	232	190	231	333
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1847	1862	1964	1949	1862	1862
Adj Flow Rate, veh/h	637	513	255	0	304	427
Peak Hour Factor	0.83	0.77	0.91	0.79	0.76	0.78
Percent Heavy Veh, %	2	1	1	2	1	1
Cap, veh/h	666	1249	443		347	906
Arrive On Green	0.38	0.67	0.23	0.00	0.20	0.20
Sat Flow, veh/h	1759	1862	1964	1651	1773	1578
Grp Volume(v), veh/h	637	513	255	0	304	427
Grp Sat Flow(s),veh/h/ln	1759	1862	1964	1651	1773	1578
Q Serve(g_s), s	31.7	11.3	10.4	0.0	15.0	14.2
Cycle Q Clear(g_c), s	31.7	11.3	10.4	0.0	15.0	14.2
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	666	1249	443		347	906
V/C Ratio(X)	0.96	0.41	0.58		0.88	0.47
Avail Cap(c_a), veh/h	684	1249	443		374	931
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.64	0.64	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	27.2	6.7	31.0	0.0	35.1	11.2
Incr Delay (d2), s/veh	17.7	0.6	5.4	0.0	19.2	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	15.3	3.5	5.3	0.0	8.0	15.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	44.9	7.4	36.4	0.0	54.4	11.5
LnGrp LOS	D	A	D		D	B
Approach Vol, veh/h		1150	255	A	731	
Approach Delay, s/veh		28.2	36.4		29.4	
Approach LOS		C	D		C	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		66.4		23.6	40.1	26.3
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s		59.0		19.0	35.0	18.0
Max Q Clear Time (g_c+I1), s		13.3		17.0	33.7	12.4
Green Ext Time (p_c), s		3.3		0.6	0.4	0.6
Intersection Summary						
HCM 6th Ctrl Delay			29.6			
HCM 6th LOS			C			

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.

Mulholland Highway Corridor Study
 2: Mulholland Hwy & Old Topanga Canyon Rd East

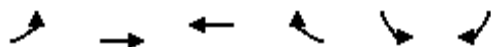
2019 Improvements School PM Peak



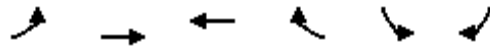
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	529	395	232	190	231	333
Future Volume (vph)	529	395	232	190	231	333
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		2%	-2%		2%	
Storage Length (ft)	580			150	0	90
Storage Lanes	1			1	1	1
Taper Length (ft)	50				50	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Fr _t				0.850		0.850
Fl _t Protected	0.950				0.950	
Satd. Flow (prot)	1752	1862	1900	1599	1769	1583
Fl _t Permitted	0.950				0.950	
Satd. Flow (perm)	1752	1862	1900	1599	1769	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				240		206
Link Speed (mph)		45	45		40	
Link Distance (ft)		1149	810		1008	
Travel Time (s)		17.4	12.3		17.2	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.83	0.77	0.91	0.79	0.76	0.78
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	1%	1%	2%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	637	513	255	241	304	427
Shared Lane Traffic (%)						
Lane Group Flow (vph)	637	513	255	241	304	427
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	0.99	0.99	1.01	1.01
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2	1	1	1
Detector Template	Left	Thru	Thru	Right	Left	Right
Leading Detector (ft)	20	100	100	20	20	20
Trailing Detector (ft)	0	0	0	0	0	0
Turn Type	Prot	NA	NA	Free	Prot	pm+ov
Protected Phases	5	2	6		4	5
Permitted Phases				Free		4
Detector Phase	5	2	6		4	5
Switch Phase						

Mulholland Highway Corridor Study
 2: Mulholland Hwy & Old Topanga Canyon Rd East

2019 Improvements School PM Peak



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Minimum Initial (s)	10.0	15.0	15.0		15.0	10.0
Minimum Split (s)	21.0	21.0	21.0		21.0	21.0
Total Split (s)	41.0	65.0	24.0		25.0	41.0
Total Split (%)	45.6%	72.2%	26.7%		27.8%	45.6%
Maximum Green (s)	35.0	59.0	18.0		19.0	35.0
Yellow Time (s)	4.0	4.0	4.0		4.0	4.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0		6.0	6.0
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0		3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0		0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0		0.0	0.0
Recall Mode	None	C-Min	C-Min		None	None
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)	34.3	59.9	19.6	90.0	18.1	58.4
Actuated g/C Ratio	0.38	0.67	0.22	1.00	0.20	0.65
v/c Ratio	0.96	0.41	0.62	0.15	0.85	0.39
Control Delay	45.8	4.7	40.1	0.2	57.9	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.8	4.7	40.1	0.2	57.9	4.4
LOS	D	A	D	A	E	A
Approach Delay		27.5	20.7		26.7	
Approach LOS		C	C		C	
90th %ile Green (s)	35.0	59.0	18.0		19.0	35.0
90th %ile Term Code	Max	Coord	Coord		Max	Max
70th %ile Green (s)	35.0	59.0	18.0		19.0	35.0
70th %ile Term Code	Max	Coord	Coord		Max	Max
50th %ile Green (s)	35.0	59.0	18.0		19.0	35.0
50th %ile Term Code	Max	Coord	Coord		Max	Max
30th %ile Green (s)	35.0	59.4	18.4		18.6	35.0
30th %ile Term Code	Max	Coord	Coord		Gap	Max
10th %ile Green (s)	31.4	63.0	25.6		15.0	31.4
10th %ile Term Code	Gap	Coord	Coord		Min	Gap
Stops (vph)	404	75	207	0	207	72
Fuel Used(gal)	14	4	6	1	6	3
CO Emissions (g/hr)	971	298	398	70	443	229
NOx Emissions (g/hr)	189	58	77	14	86	45
VOC Emissions (g/hr)	225	69	92	16	103	53
Dilemma Vehicles (#)	0	23	13	0	0	0
Queue Length 50th (ft)	260	54	151	0	186	48
Queue Length 95th (ft)	#534	76	243	0	236	68
Internal Link Dist (ft)		1069	730		928	
Turn Bay Length (ft)	580			150		90
Base Capacity (vph)	681	1238	414	1599	373	1110

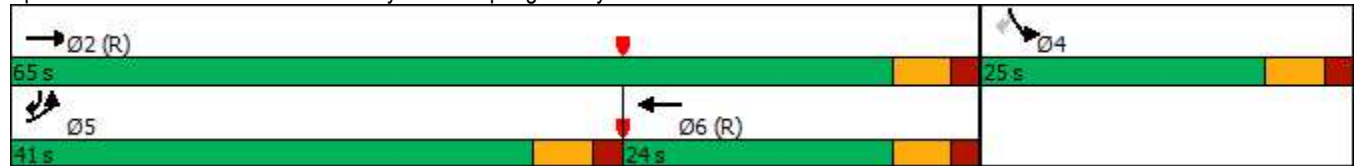


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.94	0.41	0.62	0.15	0.82	0.38

Intersection Summary

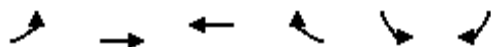
Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green, Master Intersection
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.96
 Intersection Signal Delay: 25.8
 Intersection LOS: C
 Intersection Capacity Utilization 69.6%
 ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 2: Mulholland Hwy & Old Topanga Canyon Rd East



Mulholland Highway Corridor Study
2: Mulholland Hwy & Old Topanga Canyon Rd East

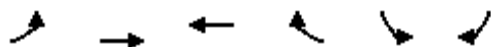
2019 Improvements PM Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	536	523	150	168	154	260
Future Volume (veh/h)	536	523	150	168	154	260
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1862	1862	1964	1964	1862	1862
Adj Flow Rate, veh/h	553	638	192	0	192	313
Peak Hour Factor	0.97	0.82	0.78	0.79	0.80	0.83
Percent Heavy Veh, %	1	1	1	1	1	1
Cap, veh/h	596	1352	648		273	773
Arrive On Green	0.34	0.73	0.33	0.00	0.15	0.15
Sat Flow, veh/h	1773	1862	1964	1664	1773	1578
Grp Volume(v), veh/h	553	638	192	0	192	313
Grp Sat Flow(s),veh/h/ln	1773	1862	1964	1664	1773	1578
Q Serve(g_s), s	30.1	14.3	7.3	0.0	10.3	12.6
Cycle Q Clear(g_c), s	30.1	14.3	7.3	0.0	10.3	12.6
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	596	1352	648		273	773
V/C Ratio(X)	0.93	0.47	0.30		0.70	0.40
Avail Cap(c_a), veh/h	798	1352	648		337	830
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.55	0.55	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	32.0	5.7	24.9	0.0	40.1	16.2
Incr Delay (d2), s/veh	8.7	0.7	1.2	0.0	4.9	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.4	4.2	3.4	0.0	4.7	13.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	40.7	6.4	26.1	0.0	45.1	16.6
LnGrp LOS	D	A	C		D	B
Approach Vol, veh/h		1191	192	A	505	
Approach Delay, s/veh		22.3	26.1		27.4	
Approach LOS		C	C		C	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		78.6		21.4	39.6	39.0
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s		69.0		19.0	45.0	18.0
Max Q Clear Time (g_c+I1), s		16.3		14.6	32.1	9.3
Green Ext Time (p_c), s		4.5		0.8	1.5	0.6
Intersection Summary						
HCM 6th Ctrl Delay			24.1			
HCM 6th LOS			C			
Notes						
Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.						

Mulholland Highway Corridor Study
 2: Mulholland Hwy & Old Topanga Canyon Rd East

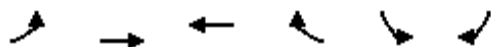
2019 Improvements PM Peak



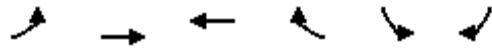
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	536	523	150	168	154	260
Future Volume (vph)	536	523	150	168	154	260
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		2%	-2%		2%	
Storage Length (ft)	580			150	0	90
Storage Lanes	1			1	1	1
Taper Length (ft)	50				50	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Fr _t				0.850		0.850
Fl _t Protected	0.950				0.950	
Satd. Flow (prot)	1769	1862	1900	1615	1769	1583
Fl _t Permitted	0.950				0.950	
Satd. Flow (perm)	1769	1862	1900	1615	1769	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				213		272
Link Speed (mph)		45	45		40	
Link Distance (ft)		1157	810		1008	
Travel Time (s)		17.5	12.3		17.2	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.97	0.82	0.78	0.79	0.80	0.83
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	553	638	192	213	193	313
Shared Lane Traffic (%)						
Lane Group Flow (vph)	553	638	192	213	193	313
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		12	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.01	1.01	0.99	0.99	1.01	1.01
Turning Speed (mph)	15			9	15	9
Number of Detectors	1	2	2	1	1	1
Detector Template	Left	Thru	Thru	Right	Left	Right
Leading Detector (ft)	20	100	100	20	20	20
Trailing Detector (ft)	0	0	0	0	0	0
Turn Type	Prot	NA	NA	Free	Prot	pm+ov
Protected Phases	5	2	6		4	5
Permitted Phases				Free		4
Detector Phase	5	2	6		4	5
Switch Phase						

Mulholland Highway Corridor Study
 2: Mulholland Hwy & Old Topanga Canyon Rd East

2019 Improvements PM Peak



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Minimum Initial (s)	10.0	15.0	15.0		15.0	10.0
Minimum Split (s)	21.0	21.0	21.0		21.0	21.0
Total Split (s)	51.0	75.0	24.0		25.0	51.0
Total Split (%)	51.0%	75.0%	24.0%		25.0%	51.0%
Maximum Green (s)	45.0	69.0	18.0		19.0	45.0
Yellow Time (s)	4.0	4.0	4.0		4.0	4.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0		6.0	6.0
Lead/Lag	Lead		Lag			Lead
Lead-Lag Optimize?	Yes		Yes			Yes
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0		3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0		0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0		0.0	0.0
Recall Mode	None	C-Min	C-Min		None	None
Walk Time (s)						
Flash Dont Walk (s)						
Pedestrian Calls (#/hr)						
Act Effct Green (s)	37.2	71.3	28.1	100.0	16.7	59.9
Actuated g/C Ratio	0.37	0.71	0.28	1.00	0.17	0.60
v/c Ratio	0.84	0.48	0.36	0.13	0.65	0.30
Control Delay	31.6	3.9	34.1	0.2	49.8	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.6	3.9	34.1	0.2	49.8	1.9
LOS	C	A	C	A	D	A
Approach Delay		16.8	16.3		20.2	
Approach LOS		B	B		C	
90th %ile Green (s)	45.0	69.0	18.0		19.0	45.0
90th %ile Term Code	Max	Coord	Coord		Max	Max
70th %ile Green (s)	41.9	69.5	21.6		18.5	41.9
70th %ile Term Code	Gap	Coord	Coord		Gap	Gap
50th %ile Green (s)	38.2	71.9	27.7		16.1	38.2
50th %ile Term Code	Gap	Coord	Coord		Gap	Gap
30th %ile Green (s)	33.6	73.0	33.4		15.0	33.6
30th %ile Term Code	Gap	Coord	Coord		Min	Gap
10th %ile Green (s)	27.2	73.0	39.8		15.0	27.2
10th %ile Term Code	Gap	Coord	Coord		Min	Gap
Stops (vph)	380	81	123	0	141	18
Fuel Used(gal)	12	5	3	1	4	2
CO Emissions (g/hr)	853	374	235	62	280	144
NOx Emissions (g/hr)	166	73	46	12	54	28
VOC Emissions (g/hr)	198	87	54	14	65	33
Dilemma Vehicles (#)	0	23	8	0	0	0
Queue Length 50th (ft)	255	96	110	0	131	11
Queue Length 95th (ft)	m307	78	176	0	181	27
Internal Link Dist (ft)		1077	730		928	
Turn Bay Length (ft)	580			150		90
Base Capacity (vph)	796	1327	534	1615	336	1159

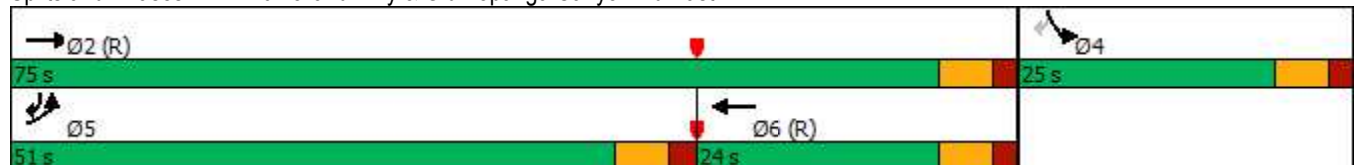


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.48	0.36	0.13	0.57	0.27

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green, Master Intersection
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.84
 Intersection Signal Delay: 17.5
 Intersection LOS: B
 Intersection Capacity Utilization 69.7%
 ICU Level of Service C
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Mulholland Hwy & Old Topanga Canyon Rd East



Appendix H: Mulholland Highway @ Canyon Drive Analysis

National Data & Surveying Services

Intersection Turning Movement Count

Location: Canyon Dr & Mulholland Hwy
 City: Calabasas
 Control: 1-Way Stop (NB)

Project ID: 20-05088-001
 Date: 2/25/2020

Total

NS/EW Streets:	Canyon Dr				Canyon Dr				Mulholland Hwy				Mulholland Hwy				TOTAL
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
AM	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
6:30 AM	0	1	0	0	0	0	0	0	0	11	0	0	1	35	0	0	52
6:45 AM	0	0	15	0	0	0	0	0	0	14	1	0	1	53	0	0	84
7:00 AM	2	0	11	0	0	0	0	0	0	18	0	0	5	36	0	0	72
7:15 AM	0	0	12	0	0	0	0	0	0	28	1	0	3	40	0	0	84
7:30 AM	2	0	17	0	0	0	0	0	0	66	0	0	4	53	0	0	142
7:45 AM	2	0	23	0	0	0	0	0	0	80	0	0	7	81	0	0	193
8:00 AM	2	0	17	0	0	0	0	0	0	50	0	0	7	71	0	0	147
8:15 AM	4	0	12	0	0	0	0	0	0	39	0	0	4	59	0	0	118
TOTAL VOLUMES :	13	0	112	0	0	0	0	0	0	306	2	0	31	428	0	0	892
APPROACH %'s :	10.40%	0.00%	89.60%	0.00%					0.00%	99.35%	0.65%	0.00%	6.75%	93.25%	0.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																
PEAK HR VOL :	10	0	69	0	0	0	0	0	0	235	0	0	22	264	0	0	600
PEAK HR FACTOR :	0.625	0.000	0.750	0.000	0.000	0.000	0.000	0.000	0.000	0.734	0.000	0.000	0.786	0.815	0.000	0.000	0.777
	0.790								0.734				0.813				

NS/EW Streets:	Canyon Dr				Canyon Dr				Mulholland Hwy				Mulholland Hwy				TOTAL
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
PM	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
2:00 PM	0	1	0	0	0	0	0	0	0	42	2	0	12	40	0	0	102
2:15 PM	1	0	7	0	0	0	0	0	0	39	0	0	8	28	0	0	83
2:30 PM	1	0	8	0	0	0	0	0	0	39	1	0	6	39	0	0	94
2:45 PM	0	0	6	0	0	0	0	0	0	64	1	0	9	41	0	1	122
3:00 PM	2	0	16	0	0	0	0	0	0	77	0	0	12	51	0	0	158
3:15 PM	2	0	1	0	0	0	0	0	0	64	3	0	12	99	0	0	181
3:30 PM	0	0	6	0	0	0	0	0	0	68	2	0	14	43	0	0	133
3:45 PM	2	0	5	0	0	0	0	0	0	134	2	0	6	48	0	0	197
4:00 PM	0	0	10	0	0	0	0	0	0	137	1	0	4	37	0	0	189
4:15 PM	1	0	9	0	0	0	0	0	0	128	2	0	8	39	0	0	187
4:30 PM	0	0	7	0	0	0	0	0	0	141	1	0	3	44	0	0	196
4:45 PM	1	0	10	0	0	0	0	0	0	162	2	0	7	40	0	0	222
5:00 PM	1	0	12	0	0	0	0	0	0	145	2	0	15	40	0	0	215
5:15 PM	0	0	9	0	0	0	0	0	0	156	1	0	9	37	0	0	212
5:30 PM	0	0	13	0	0	0	0	0	0	169	0	0	18	49	0	0	249
5:45 PM	2	0	9	0	0	0	0	0	0	154	5	0	17	39	0	0	226
TOTAL VOLUMES :	13	0	134	0	0	0	0	0	0	1719	25	0	160	714	0	1	2766
APPROACH %'s :	8.84%	0.00%	91.16%	0.00%					0.00%	98.57%	1.43%	0.00%	18.29%	81.60%	0.00%	0.11%	
PEAK HR :	05:00 PM - 06:00 PM																
PEAK HR VOL :	3	0	43	0	0	0	0	0	0	624	8	0	59	165	0	0	902
PEAK HR FACTOR :	0.375	0.000	0.827	0.000	0.000	0.000	0.000	0.000	0.000	0.923	0.400	0.000	0.819	0.842	0.000	0.000	0.906
	0.885								0.935				0.836				

Intersection						
Int Delay, s/veh	1.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔	↑	↔	
Traffic Vol, veh/h	235	1	22	264	10	69
Future Vol, veh/h	235	1	22	264	10	69
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	75	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-3	-	-	2	-3	-
Peak Hour Factor	73	78	79	81	63	75
Heavy Vehicles, %	1	1	1	2	1	1
Mvmt Flow	322	1	28	326	16	92
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	323	0	705	323
Stage 1	-	-	-	-	323	-
Stage 2	-	-	-	-	382	-
Critical Hdwy	-	-	4.11	-	5.81	5.91
Critical Hdwy Stg 1	-	-	-	-	4.81	-
Critical Hdwy Stg 2	-	-	-	-	4.81	-
Follow-up Hdwy	-	-	2.209	-	3.509	3.309
Pot Cap-1 Maneuver	-	-	1242	-	455	740
Stage 1	-	-	-	-	777	-
Stage 2	-	-	-	-	738	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1242	-	445	740
Mov Cap-2 Maneuver	-	-	-	-	445	-
Stage 1	-	-	-	-	777	-
Stage 2	-	-	-	-	721	-
Approach	EB	WB	NB			
HCM Control Delay, s	0	0.6	11.4			
HCM LOS			B			
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	674	-	-	1242	-	
HCM Lane V/C Ratio	0.16	-	-	0.022	-	
HCM Control Delay (s)	11.4	-	-	8	-	
HCM Lane LOS	B	-	-	A	-	
HCM 95th %tile Q(veh)	0.6	-	-	0.1	-	

Intersection						
Int Delay, s/veh	1.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔	↑	↔	
Traffic Vol, veh/h	343	7	44	241	6	28
Future Vol, veh/h	343	7	44	241	6	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	75	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-3	-	-	2	-3	-
Peak Hour Factor	64	58	79	61	75	44
Heavy Vehicles, %	2	1	1	1	1	1
Mvmt Flow	536	12	56	395	8	64
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	548	0	1049	542
Stage 1	-	-	-	-	542	-
Stage 2	-	-	-	-	507	-
Critical Hdwy	-	-	4.11	-	5.81	5.91
Critical Hdwy Stg 1	-	-	-	-	4.81	-
Critical Hdwy Stg 2	-	-	-	-	4.81	-
Follow-up Hdwy	-	-	2.209	-	3.509	3.309
Pot Cap-1 Maneuver	-	-	1027	-	301	567
Stage 1	-	-	-	-	640	-
Stage 2	-	-	-	-	660	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1027	-	284	567
Mov Cap-2 Maneuver	-	-	-	-	284	-
Stage 1	-	-	-	-	640	-
Stage 2	-	-	-	-	624	-
Approach	EB	WB	NB			
HCM Control Delay, s	0	1.1	13.2			
HCM LOS			B			
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	510	-	-	1027	-	
HCM Lane V/C Ratio	0.14	-	-	0.054	-	
HCM Control Delay (s)	13.2	-	-	8.7	-	
HCM Lane LOS	B	-	-	A	-	
HCM 95th %tile Q(veh)	0.5	-	-	0.2	-	

Intersection						
Int Delay, s/veh	1.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔	↑	↔	
Traffic Vol, veh/h	624	8	59	165	3	43
Future Vol, veh/h	624	8	59	165	3	43
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	75	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-3	-	-	2	-3	-
Peak Hour Factor	92	40	82	84	38	83
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	678	20	72	196	8	52

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	698	0	1028 688
Stage 1	-	-	-	-	688 -
Stage 2	-	-	-	-	340 -
Critical Hdwy	-	-	4.11	-	5.81 5.91
Critical Hdwy Stg 1	-	-	-	-	4.81 -
Critical Hdwy Stg 2	-	-	-	-	4.81 -
Follow-up Hdwy	-	-	2.209	-	3.509 3.309
Pot Cap-1 Maneuver	-	-	903	-	309 474
Stage 1	-	-	-	-	562 -
Stage 2	-	-	-	-	765 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	903	-	284 474
Mov Cap-2 Maneuver	-	-	-	-	284 -
Stage 1	-	-	-	-	562 -
Stage 2	-	-	-	-	704 -

Approach	EB	WB	NB
HCM Control Delay, s	0	2.5	14.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	435	-	-	903	-
HCM Lane V/C Ratio	0.137	-	-	0.08	-
HCM Control Delay (s)	14.6	-	-	9.3	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.5	-	-	0.3	-

Intersection						
Int Delay, s/veh	1.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔	↑	↔	
Traffic Vol, veh/h	270	5	25	300	10	80
Future Vol, veh/h	270	5	25	300	10	80
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	75	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-3	-	-	2	-3	-
Peak Hour Factor	73	78	79	81	63	75
Heavy Vehicles, %	1	1	1	2	1	1
Mvmt Flow	370	6	32	370	16	107
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	376	0	807	373
Stage 1	-	-	-	-	373	-
Stage 2	-	-	-	-	434	-
Critical Hdwy	-	-	4.11	-	5.81	5.91
Critical Hdwy Stg 1	-	-	-	-	4.81	-
Critical Hdwy Stg 2	-	-	-	-	4.81	-
Follow-up Hdwy	-	-	2.209	-	3.509	3.309
Pot Cap-1 Maneuver	-	-	1188	-	403	697
Stage 1	-	-	-	-	743	-
Stage 2	-	-	-	-	705	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1188	-	392	697
Mov Cap-2 Maneuver	-	-	-	-	392	-
Stage 1	-	-	-	-	743	-
Stage 2	-	-	-	-	686	-
Approach	EB	WB	NB			
HCM Control Delay, s	0	0.6	12			
HCM LOS			B			
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	633	-	-	1188	-	
HCM Lane V/C Ratio	0.194	-	-	0.027	-	
HCM Control Delay (s)	12	-	-	8.1	-	
HCM Lane LOS	B	-	-	A	-	
HCM 95th %tile Q(veh)	0.7	-	-	0.1	-	

Intersection						
Int Delay, s/veh	1.3					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔	↑	↔	
Traffic Vol, veh/h	390	10	50	275	5	30
Future Vol, veh/h	390	10	50	275	5	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	75	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-3	-	-	2	-3	-
Peak Hour Factor	64	58	79	61	75	44
Heavy Vehicles, %	2	1	1	1	1	1
Mvmt Flow	609	17	63	451	7	68

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	626	0	1195 618
Stage 1	-	-	-	-	618 -
Stage 2	-	-	-	-	577 -
Critical Hdwy	-	-	4.11	-	5.81 5.91
Critical Hdwy Stg 1	-	-	-	-	4.81 -
Critical Hdwy Stg 2	-	-	-	-	4.81 -
Follow-up Hdwy	-	-	2.209	-	3.509 3.309
Pot Cap-1 Maneuver	-	-	960	-	252 517
Stage 1	-	-	-	-	598 -
Stage 2	-	-	-	-	620 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	960	-	235 517
Mov Cap-2 Maneuver	-	-	-	-	235 -
Stage 1	-	-	-	-	598 -
Stage 2	-	-	-	-	579 -

Approach	EB	WB	NB
HCM Control Delay, s	0	1.1	14.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	467	-	-	960	-
HCM Lane V/C Ratio	0.16	-	-	0.066	-
HCM Control Delay (s)	14.2	-	-	9	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.6	-	-	0.2	-

Intersection						
Int Delay, s/veh	1.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔	↑	↔	
Traffic Vol, veh/h	705	10	65	190	5	50
Future Vol, veh/h	705	10	65	190	5	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	75	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-3	-	-	2	-3	-
Peak Hour Factor	92	40	82	84	38	83
Heavy Vehicles, %	1	1	1	1	1	1
Mvmt Flow	766	25	79	226	13	60
Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	791	0	1163	779
Stage 1	-	-	-	-	779	-
Stage 2	-	-	-	-	384	-
Critical Hdwy	-	-	4.11	-	5.81	5.91
Critical Hdwy Stg 1	-	-	-	-	4.81	-
Critical Hdwy Stg 2	-	-	-	-	4.81	-
Follow-up Hdwy	-	-	2.209	-	3.509	3.309
Pot Cap-1 Maneuver	-	-	834	-	262	424
Stage 1	-	-	-	-	517	-
Stage 2	-	-	-	-	736	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	834	-	237	424
Mov Cap-2 Maneuver	-	-	-	-	237	-
Stage 1	-	-	-	-	517	-
Stage 2	-	-	-	-	666	-
Approach	EB	WB	NB			
HCM Control Delay, s	0	2.5	17.1			
HCM LOS			C			
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	371	-	-	834	-	
HCM Lane V/C Ratio	0.198	-	-	0.095	-	
HCM Control Delay (s)	17.1	-	-	9.8	-	
HCM Lane LOS	C	-	-	A	-	
HCM 95th %tile Q(veh)	0.7	-	-	0.3	-	

APPENDIX G – Preliminary Geotechnical Engineering Review (Geosoils, 2020)

**PRELIMINARY GEOTECHNICAL ENGINEERING REVIEW,
PROPOSED MULHOLLAND HIGHWAY IMPROVEMENTS,
City of Calabasas, California**

for

Michael Baker International

September 28, 2020

W.O. 7416

(Revised November 3, 2020)

MDN 21651A

September 28, 2020
W.O. 7416
(Revised November 3, 2020)

MICHAEL BAKER INTERNATIONAL
801 s. Grand Avenue, Suite 250
Los Angeles, California 90017

Attention: Eric Spangler, Jerusalem V. Verano

**Subject: Preliminary Geotechnical Engineering Review, Proposed
Mulholland Highway Improvements, City of Calabasas,
California**

As requested, GeoSoils Consultants, Inc. (GSC) has prepared this report for the subject project. The report was prepared in accordance with our proposal dated May 21, 2019. The purpose of this report to provide preliminary geologic and geotechnical engineering recommendations for improvements along the portion of Mulholland Highway within the City of Calabasas. No subsurface exploration and laboratory testing was conducted of this phase. Improvements of the highway are considered feasible from a geologic and geotechnical engineering prospective, provided the recommendations presented herein are incorporated into the design and implemented during construction.

We appreciate this opportunity to be of service to you. If you have any questions regarding this report, or if we may be of further assistance to you, please do not hesitate to contact us.

Very truly yours,

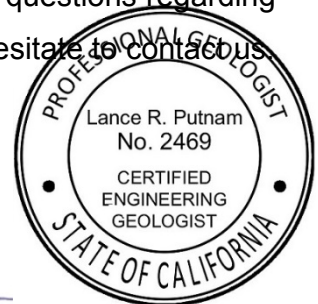
GEOSOILS CONSULTANTS, INC.



MASOOD S. RANA
RCE 70659



LANCE R. PUTNAM
CEG 2469



Encl: Sheets 1 through 15

cc: (3) Addressee

MDN 21651A

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1.0 INTRODUCTION

As requested, GeoSoils Consultants, Inc. (GSC) has conducted a preliminary geotechnical engineering review of the feasibility study plans for the improvement of Mulholland Highway in the City of Calabasas California. The improvement area extends along Mulholland Highway from the southern city limit traversing to the north and northeast to old Topanga Canyon Road East. The scope of work consists of widening the road and adding turn lanes utilizing grading and retaining walls to facilitate the proposed improvements.

The stretch of the Mulholland Highway covered in this review is shown on the enclosed draft Mulholland Highway Feasibility Study Concept Plans (dated May 2020), Sheet Nos. 1 to 15, prepared by Michael Baker International. The final feasibility study concept plans will be updated to reflect the recommendations of this geotechnical review. The existing alignment of the highway is presented on the enclosed draft feasibility plans with the improvement area beginning at Station 16+00 shown on Sheet 3 and traversing to the north, northeast to Station 160+00 near the intersection of Old Topanga Canyon Road as shown on Sheet 15. Four typical Cross-Sections depicting the road widening, shoulders, proposed retaining walls, erosion control areas, temporary cuts, existing right of ways and other improvements are presented on Sheet 2 of 15. These Sheets 3 through 15 depict the existing conditions such as K-Rails, guardrails, etc. These sheets also show the proposed retaining walls with their heights. Proposed guardrails, sidewalks, shoulders and edge of travel way are also shown. Power pole and fire hydrants are also located on these Sheets.

A legend of various Symbols and abbreviations is included on Sheet 1 of 15.

2.0 GEOLOGIC CONDITIONS

In order to preliminarily evaluate the geologic conditions along the highway improvement alignment, a geologist from our company transversed the portion of Mulholland Highway intended to be improved. The Geologic Map of the Calabasas Quadrangle by Thomas W. Dibblee Jr., 1992 (Dibblee Geological Foundation Map # DF-37) and Geologic Map of the

Malibu Beach Quadrangle also by Thomas W. Dibblee Jr., 1993 (Dibblee Geological Foundation Map # DF-47) were reviewed and utilized to aid in the identification of geologic conditions within the study area. A geologic map of the area is included herein as Figure 1. Descriptions of the geologic materials encountered within the study area are as follows.

2.1 Alluvium (Qal)

Alluvium (Qal) consisting of sands, silts, clays, and gravel is anticipated to partially underly Mulholland Highway in the northern portion of the improvement area. This material is generally loose to moderately dense and can be excavated easily.

2.2 Older Alluvium (Qoa)

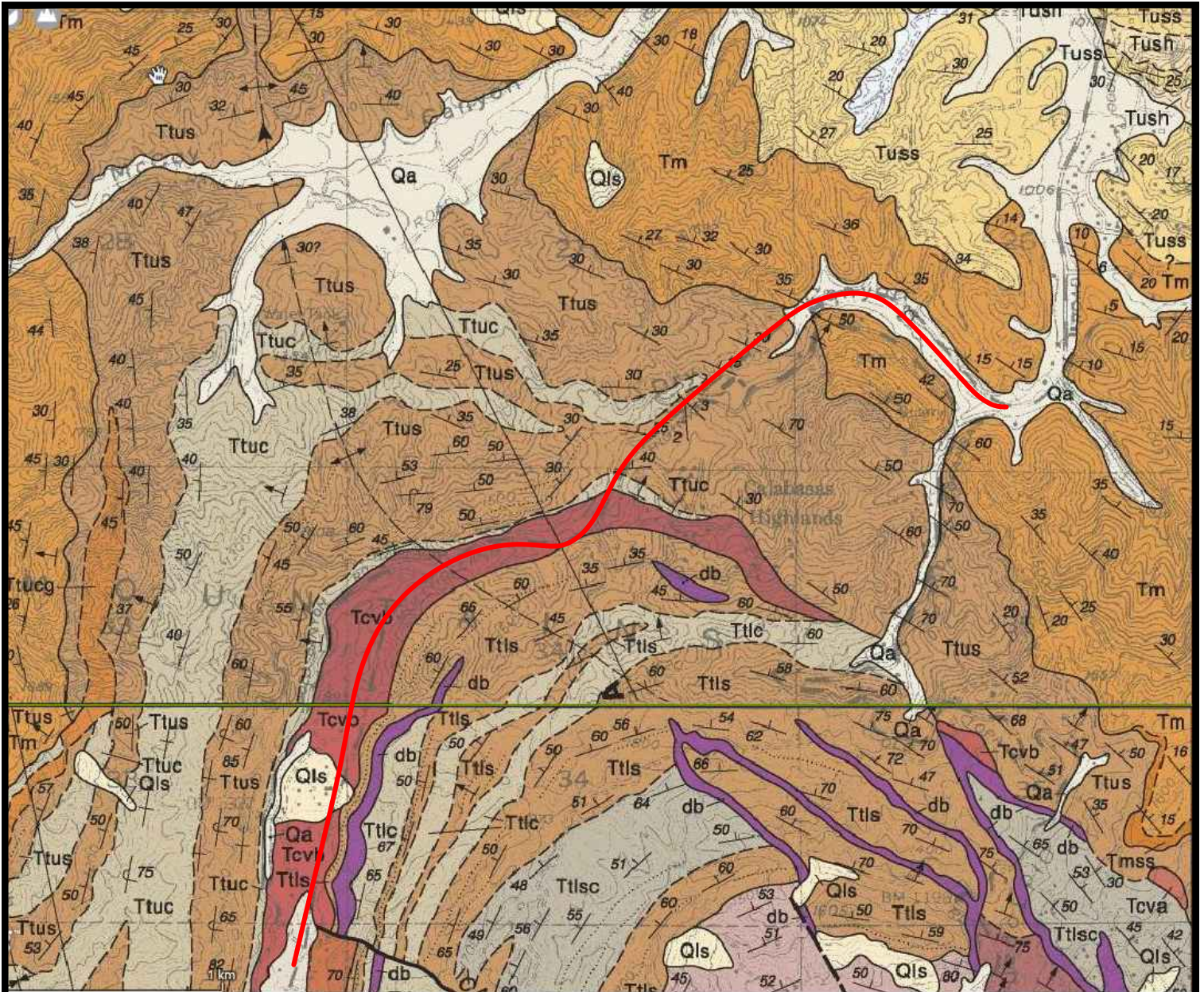
The highway alignment near the southern Calabasas city limit is located in Older Alluvial Sediments (Qoa) of late Pleistocene Age. The older alluvium consists of weakly consolidated sands and silts with gravel. Minor amounts of this easily excavated material is present within the improvement area.

2.3 Conejo Volcanics (Tcvbp)

The southern to middle portion of the Mulholland Highway improvement area primarily traverses through the Conejo Volcanics Formation (Tcvbp). Generally hard to very hard, consisting of basaltic flows and breccias, this material can be locally highly weathered and friable (easily erodible). Three pictures of this formation are included as Figures 2A to 2C.

2.4 Upper Topanga Formation (Ttus)

In the northern portion of the highway improvement area, Miocene Age bedrock of the Upper Topanga Formation (Ttus) is exposed in the existing road cuts. This formation is generally hard to very hard with moderate fracturing and weathering.



LEGEND

- MULHOLLAND HIGHWAY IMPROVEMENT AREA
- Qls LANDSLIDE DEBRIS
- Qoa OLDER SURFICIAL SEDIMENTS
- Tm MONTEREY FORMATION
- Ttus UPPER TOPANGA FORMATION
- Tcvb CONEJO VOLCANICS
- 50 BEDDING ATTITUDE



MDN 21651



REGIONAL GEOLOGIC MAP CALABASAS AND MALIBU BEACH QUADRANGLES DIBBLEE 1992, 1993	
W.O. NO.:	7416
DATE:	9/2020
FIGURE 1	



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CONEJO VOLCANICS
WEST ROAD CUT
FROM STATION 26 THROUGH STATION 29

W.O. NO.: 7416
DATE: 10/2020

FIGURE 2A



MDN 21651



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CONEJO VOLCANICS
EAST ROAD CUT
FROM STATION 23 THROUGH STATION 26

W.O. NO.: 7416

DATE: 10/2020

FIGURE 2B



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CONEJO VOLCANICS
EAST ROAD CUT
FROM STATION 26 THROUGH STATION 29

W.O. NO.: 7416
DATE: 10/2020

FIGURE 2C



MDN 21651

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UPPER TOPANGA FORMATION
SOUTH EAST ROAD CUT
FROM STATION 98 THROUGH STATION 99

W.O. NO.: 7416
DATE: 10/2020

FIGURE 3A

Bedding generally strikes north-west with moderate dips to the north-east. Three pictures of this formation are included as Figures 3A to 3C.

2.5 Monterey Formation (Tm)

The bedrock exposed in the road cuts north and east of the intersection of Park South Street and Mulholland Highway is Miocene age Monterey Formation (Tm). This bedrock is a light brown to buff diatomaceous shale. The bedrock is thinly bedded, very weathered and fractured. Generally bedding strikes north-west with moderate dips to the north-east.

2.6 Landslide (Qls)

Three landslide areas noted during our field work and research of the subject area are discussed below.

A landslide is depicted on the Dibblee geologic map approximately 300 feet to 900 feet north of the intersection of Turtle Creek Road along Mulholland Highway. Mulholland Highway appears to be constructed on a portion of the landslide in this area. This landslide appears to have buttressed itself; however, it has not been evaluated from a slope stability standpoint. Minor cracking within the asphalt within this area was observed on google earth aerial images.

A small landslide was observed on the east side of Mulholland Highway just south of Canyon Drive. This landslide appears to have failed, and the failed material has been removed. A debris fence was installed at approximately the toe of the landslide scarp presumably to protect Mulholland Highway from potential debris generated from this area.

A large landslide complex has been postulated by Weber (1984) that encompasses the Calabasas Highlands area. It is our understanding that none of the subsurface work performed in the Calabasas Highlands, to date, has encountered a deep-

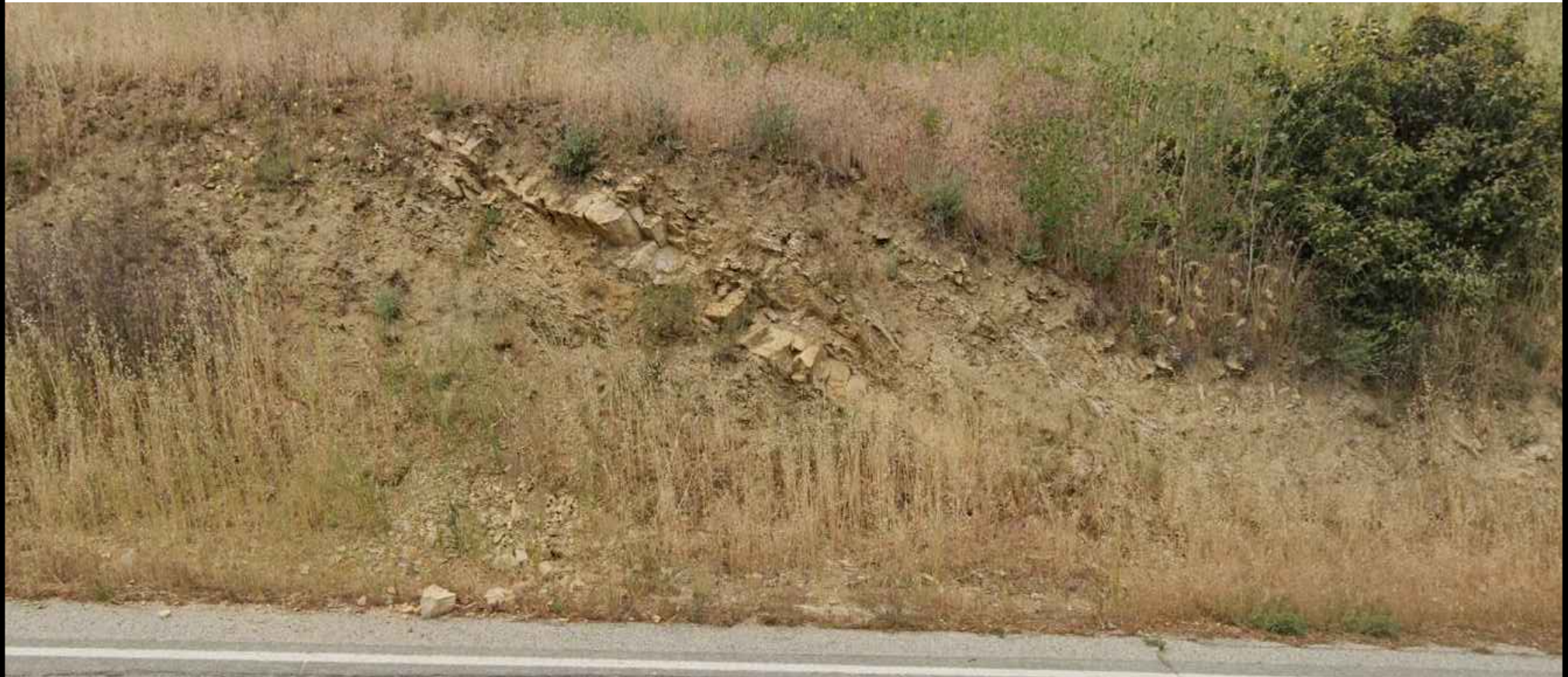


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UPPER TOPANGA FORMATION
SOUTH EAST ROAD CUT
FROM STATION 99 THROUGH STATION 100

W.O. NO.: 7416
DATE: 10/2020

FIGURE 3B



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UPPER TOPANGA FORMATION
SOUTH EAST ROAD CUT
NEAR STATION 118

W.O. NO.: 7416
DATE: 10/2020

FIGURE 3C

seated landslide plane indicative of an ancient landslide. This postulated landslide has not been projected to extend under Mulholland Highway within the improvement area.

3.0 HIGHWAY ALIGNMENT WITH EXISTING AND PROPOSED IMPROVEMENTS

The current alignment of Mulholland Highway with existing and proposed improvements are depicted on the enclosed draft Feasibility Study Layout Sheets. Re-aligning of the roadway is shown on Sheets 3, 4, 9 and 13. Lengthening of turn pockets are proposed as shown on Sheets 6, 8, and 11. Proposed widening the roadway is shown on Sheets 7, 8, 10, 11, 12, 13, and 14.

The following is a description of each retaining wall along with the anticipated type of earth material at the location and our anticipated foundation type for the proposed walls.

4.0 RETAINING WALL RECOMMENDATIONS

4.1 Wall No. 1

West of Mulholland Hwy Sta 26+50 to 28+80 (Sheets 3 & 4)

This wall will vary in height from 15 to 25 feet and expose older Alluvium and Conejo Volcanic. The road widening will be 13 feet. Due to the existing right of way, it appears there is inadequate room to lay the excavation back to a safe gradient. Therefore, soldier piles or soil nailing are recommended for this wall.

4.2 Wall No. 2

East of Mulholland Hwy Sta 24+50 to 29+80 (Sheets 3 & 4)

This wall varies in height from 10 to 25 feet and is expected to expose bedrock of the Upper Topanga Formation. This material is subject to raveling and sloughing. The roadway will be widened by 9 feet. Due to the existing right of way, it appears there is inadequate room to lay the excavation back to a safe gradient. Therefore, a soldier pile system should be used for wall construction. Soil nailing may also be

considered depending on the length of the nails. Soil nails should not extend beyond the existing right of way.

4.3 Wall No. 3

East of Mulholland Hwy Sta 98+75 to 100+60 (Sheets 9 & 10)

The wall height will be approximate 20 to 25 feet and is expected to expose bedrock of the Upper Topanga Formation. The street widening is 12 feet. Given the hardness of the on-site material, a steeper temporary backcut may allow conventional foundations to be utilized. Otherwise soldier piles may be used. Soil nailing may be considered but should not extend beyond the existing right of way.

A layback cut may be considered in lieu of a retaining wall performed at the flattest gradient possible reflective of site constraints.

4.4 Wall No. 4

East of Mulholland Hwy Sta 102+80 to 108+30 (Sheet 10)

This wall will vary in height from 6 to 20 feet and expose alluvium. The road widening will vary from 12 to 20 feet. For walls up to 10 feet high, conventional foundations appear feasible provided they meet current 2019 CBC setback requirements and are founded into competent alluvium and/or bedrock. For walls over 10 feet, due to the size of the foundation, it may be more economical to found the walls on piles extending into bedrock.

4.5 Wall No. 5

East of Mulholland Hwy Sta 109+00 to 112+00 (Sheets 10 & 11)

This wall will vary in height from 2 to 10 feet and expose bedrock of the upper Topanga. The road widening will be 10 feet. Due to the height location of the wall and type of bedrock material, it appears a retaining wall on conventional foundations may be utilizes. All foundations must be founded into bedrock material. This wall can be eliminated with a rock cut at a ratio of 1:1. Breakers may be used for rock cutting.

4.6 Wall No. 6

West Side of Old Topanga Canyon Road (West) along Mulholland Highway Sta 146+00 to 151+00 (Sheets 14)

This wall will expose alluvial soils. The height of this wall will vary from 2 to 10 feet. The width of the street widening will be 4 to 6 feet. It appears this wall may be founded on conventional foundations or piles founded into competent alluvium.

4.7 Wall No. 7

East Side of Old Topanga Canyon Road (West) Along Mulholland Highway Station 148+00 to 151+00 (Sheet 14)

This wall will be 5 feet in height and expose alluvial soils. The roadway will be widened 6 feet. It appears this wall may be founded on conventional foundations into alluvium.

4.8 Wall No. 8

East Side of Mulholland Hwy Sta 157+50 to 157+55 (Sheet 15)

The height of the wall will be 5 feet and is anticipated to expose bedrock of the Monterey Formation. The roadway will be widened 6 feet. Due to the height of this wall it appears this wall may be founded on conventional foundations into bedrock material.

5.0 DEBRIS AND EROSION CONTROL AREAS

Debris control areas are noted on Sheets 3, 5, 9, 10, 11, 12, and 13. Anticipated debris or erosion will be either fine grained soils or rock blocks. The following methods can be employed for erosion control:

5.1 Slope Trimming

Where topography, right of way easements, and existing improvements allow, the steep road cut slopes are recommended to be trimmed back to the flattest gradient possible up to an approximate 2:1 (H:V) gradient. Laying back slopes is recommended to limit potential erosion and debris deposition within roadway improvement areas. Trimming back slopes is anticipated to be limited to within the right of way limits and not recommended to be performed adjacent to existing homes. A civil engineer specializing in grading should be consulted to verify feasibility of all grading of slopes within the highway right of way.

5.2 Debris Fences/Walls

Debris fences or debris walls are recommended where potential debris can be deposited on roadway areas from adjacent steep slopes. Periodic cleaning of debris behind the fences/walls should be anticipated. Debris fences will not contain all of the finer grained debris; however fences are anticipated to be less costly than debris walls.

5.3 Wire Mesh Cable Net Image

Wire mesh/cable net debris devices are appropriate for slopes where the potential debris is considered larger (up to approximately 4 feet) and is most appropriate within the cuts exposing the hard bedrock of the Upper Topanga Formation within the study area. A typical wire mesh arrangement is shown on Figure 4.

5.4 Alternative Debris Limiting Devices

In the road cuts exposing Older Alluvium, Conejo Formation Volcanics, and Monterey Formation bedrock, finer grained potential debris is anticipated. Although most appropriate to lay back slopes to limit erosion, alternative debris limiting devices such as jute net or reinforced blankets (turf reinforcing mats) could be employed. These methods are not entirely permanent and rely on establishing vegetation as a form of stabilization. A Wire blanket system is also an option and is



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DEBRIS FENCE FOR EROSION
CONTROL OF BEDROCK

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DATE:	10/2020

FIGURE 4

composed of biodegradable netting sandwiched between welded wire mesh, and held in place with slope anchors. Vegetative cover is provided by a hydroseed application of fiber and seed. This method is more costly and all the methods described above may not be appropriate for very steep cuts (greater than 1.5:1).

An expert in the design and installation of erosion and debris control devices specifically within steep road cuts/highway projects is recommended to be consulted to discuss the applicability of the latest debris control devices.

A description and preliminary recommendations for the erosion control areas are provided below.

6.0 EROSION CONTROL RECOMMENDATIONS

6.1 Area East Side of Mulholland Hwy Sta 23+00 to 24+30

(Sheet 3)

This existing steep road cut is underlain by Older Alluvium. An existing driveway located above the cut may preclude laying the slope back. A debris fence/wall could be constructed at the toe of slope if a slope trim cannot be performed.

A similar condition is present on the existing road cut on the east side of Mulholland Highway between stations 33+00 to 36+00 (sheet 4). This steep road cut expose Older Alluvium. Existing improvements are not adjacent to the cut however the existing right of way may preclude trimming the slope back to a 2:1. This area is recommended to be provided with the same debris fence/wall protection at the toe.

6.2 Area East Side of Mulholland Hwy Sta 41+70 to 44+60

(Sheet 5)

This existing road cut exposes Older Alluvium and is recommended to be laid back at a 2:1 gradient. The topography above the cut is not very steep and the existing right of way appears to provide enough room for the recommended slope trim. An

analysis by a civil engineer is recommended to be consulted to evaluate existing and proposed grades along with right of way limits to determine feasibility.

6.3 Area East Side of Mulholland Hwy Sta 90+80 to 92+10

(Sheet 9)

This steep road cut expose hard bedrock of the Upper Topanga Formation. Though north dipping bedding is favorable in relation to the road cut and the rock is hard, the bedrock is moderately fractured resulting in bedrock blocks and finer debris being deposited on and adjacent to the roadway. This area is recommended to be trimmed back to 1:1 gradient and/or provided with a debris wall/fence at the toe of slope. A wire mesh/cable net system could also be employed as an alternative in this hard rock area to preclude the larger blocks from impacting the roadway.

6.4 Areas West Side of Mulholland Hwy Sta 104+00 to 106+00 and 107+90 to 110+65

(Sheet 5) and (Sheets 10 & 11)

These steep cuts expose bedrock of the Upper Topanga Formation. North dipping bedding is favorable in relation to the road cuts; however, the rock is moderately fractured. Due to existing improvements in the area of Station 109+10 and steep slopes above the cuts, trimming is not recommended for this area. A wire mesh/cable net system could be employed in this hard rock area to preclude the larger blocks from impacting the roadway. A debris fence is recommended at the toe of slope as a minimum debris recommendation but, due to these cuts being nearly vertical in places, debris may still be deposited on the roadway if fences are the only debris mitigation employed.

6.5 Area North Side of Mulholland Hwy Sta 117+65 to 119+50

(Sheet 11)

This existing road cut is not very tall and exposes Monterey Formation bedrock.

North dipping bedding is favorable in relation to the cut. The bedrock is moderately hard but very fractured and weathered. It appears this cut can be trimmed back to a 2:1 gradient. Every steep cut in Monterey formation bedrock is prone to fine debris deposition due to deep weathering and fracturing.

6.6 Areas North Side of Mulholland Hwy Sta 122+70 to 125+70,

126+80 to 127+80, and 128+95 to 129+60

(Sheet 12)

These road cuts expose Monterey Formation bedrock. North dipping bedding is favorable in relation to road cuts. The bedrock is highly fractured and weathered. Trimming back portions of slopes appears feasible except in areas close to right of way boundaries or where upslope topography is steep. Debris fences/walls are recommended at the toes of slopes in order to contain debris from slope areas not able to be trimmed to a 2:1 gradient.

6.7 Area North Side of Mulholland Hwy Sta 139+65 to 141+40

(Sheet 13)

This road cut expose Monterey Formation bedrock. North dipping bedding is favorable in relation to the cut. Laying back this slope may not be feasible as the existing cut extends beyond the right of way limits and topography is steep in the area above the cut. A debris fence/wall is recommended at the toe of slope to contain potential debris.

7.0 POTENTIAL WALL TYPES

The primary objective of any retaining wall is to support an excavation in such a manner that a stable excavation will be maintained and that the material outside the excavation on either side of the retaining wall will not be adversely disturbed. Common potential Wall types may be: A) Reinforced Concrete Walls with Backfill, B) CalTrans Standard Wall with

Conventional Foundation, C) Soldier Pile Walls and, D) Walls with Soil Nails supporting the backcuts. Wall types A and B are not suitable when space is not available for the conventional footings necessary to protect against over-turning and sliding. Wall types C and D are desirable where there are limited right of ways or other property line restrictions.

Other factors that may be considered in planning and designing are: 1) geologic data, such as bedding, dip of folds, fractures, and other discontinuations, 2) groundwater conditions, 3) height and slope of proposed cut to be supported by the wall, 4) active and passive pressures, 5) dynamic loading, if any, 6) rippability and/or need for blasting, 7) design life of cut, as compared to weathering or deterioration rate of proposed cut surface, and 8) effect of overexcavation and/or blasting on adjacent structures.

Based on the ease of construction and unit price, reinforced concrete walls with backfill are recommended.

8.0 PRELIMINARY DESIGN RECOMMENDATIONS

Proposed retaining walls along the Mulholland Highway may be founded on conventional spread footings and/or CIDH piles provided there is enough room within the right of way. These recommendations are preliminary and for cost estimating purposes only. These recommendations may be refined after a detailed subsurface investigation is performed.

8.1 Conventional Foundation

An allowable bearing capacity for Older Alluvium (Qol) 1500 psf can be used. This value can be increased to 3000 psf for bedrock material. An allowable passive pressure of 250 pcf and 350 pcf may be allowed for Older Alluvium and bedrock respectively.

All footings should be a minimum 24 inches deep below the lowest adjacent grade and a minimum of 18 inches wide. All foundations must satisfy current code setback requirements. This requires any footings constructed near the top of a descending slope to be located a distance of one third of the vertical height of the slope with a minimum of five feet and a maximum of 40 feet measured horizontally from the slope

surface to the lower edge of the footing. This setback requirement may be satisfied by deepening the footings or using CDIH piles. The minimum CDIH pile diameter should be 18 inches. Drilled cast-in-place piles designed for a skin friction of 500 pcf for older alluvium and 800 pcf for bedrock may be used for foundation support. Slope stability of proposed cuts be analyzed after determining the engineering characteristics of the on-site materials.

8.2 Plan Review

Retaining wall foundation plans should be reviewed by this office.

8.3 Subgrade

All retaining wall foundation subgrades should consist of competent alluvial or bedrock material. Under no circumstances should footings be cast atop loose or soft soil, slough, debris, or surfaces covered by standing water. We recommend that the condition of all subgrades be verified by the Geotechnical Engineer.

8.4 Hydrostatic Pressure

To preclude the build-up of hydrostatic pressure, we recommend that a four-inch-diameter perforated drain pipe be installed behind the heel of the wall and that a curtain drain be placed behind the entire wall. This curtain drain should consist of pea gravel, washed rock, or a mixture of these materials wrapped in approved filter material, extending outward at least one foot from the wall and extending from the footing drain upward to within about three feet of the ground surface. The backside of all walls should be waterproofed.

To allow the dissipation of potential hydrostatic pressure behind the retaining wall, we recommend that all retaining wall backfill placed behind the curtain drain should consist of clean, free-draining, granular material.

8.5 Backfill Compaction

To prevent the build-up of lateral soil pressures in excess of the recommended design pressures, overcompaction of the fill behind the wall should be avoided; however, a lesser degree of compaction may permit excessive post-construction settlements. Backfill above a 45-degree plane projected upward from the base should be placed in horizontal lifts not exceeding 8 inches in loose depth and compacted by small, hand-operated compaction equipment.

To retard the infiltration of surface water into the wall backfill soils, the backfill surface of exterior walls should be adequately sloped to drain away from the wall. We also recommend that the backfill surface directly behind the wall be capped with two feet of asphalt, concrete, or three feet of low-permeability soil.

8.6 Active At-Rest Pressures

Overturning and sliding loads applied to retaining walls can be classified as active, at-rest, surcharge, and seismic. Our recommended methods of calculating design pressures are discussed in the following paragraphs.

Yielding (cantilever) retaining walls should be designed to withstand an appropriate active lateral earth pressure, whereas non-yielding (restrained) walls should be designed to withstand an appropriate at-rest lateral earth pressure. These pressures act over the entire back of the wall and vary with the backslope inclination. For retaining walls with various backslope angles, we recommend using the active and at-rest pressures (given as equivalent fluid unit weights) provided in the following table.

RETAINING PRESSURE		
Backslope Angle	Static Active Pressure (pcf)	Static At-Rest Pressure (pcf)
Level	45	65
2H:1V	65	98

8.7 Seismic Criteria

The following seismic design criteria must be incorporated into the design of the retaining walls, where applicable:

From NavFac: $P_{ae} = 3/8\gamma H^2 k_h$
 H = Height of wall
 γ = Unit Weight of In-Situ Soil
 $K_n = 0.4 S_{DS}$

Where S_{DS} = the design spectral response acceleration parameter per equation 16-38, Earthquake Design Chapter 16, Section 1613 of 2019 CBC.

8.8 Surcharge Pressures

Any anticipated, superimposed loading (i.e., upper retaining walls, traffic surcharge or other structures, etc.) within a 45-degree plane projected upward from the wall bottom, except retained earth, shall be considered as surcharge and provided for in the design. For a uniformly distributed load behind the wall, a corresponding uniform distributed lateral soil pressure equal to 30 percent of the surcharge should be added to the equivalent fluid pressure. A vertical component equal to one-third of the horizontal force so obtained may be assumed at the plane of application of the force.

8.9 Resisting Forces

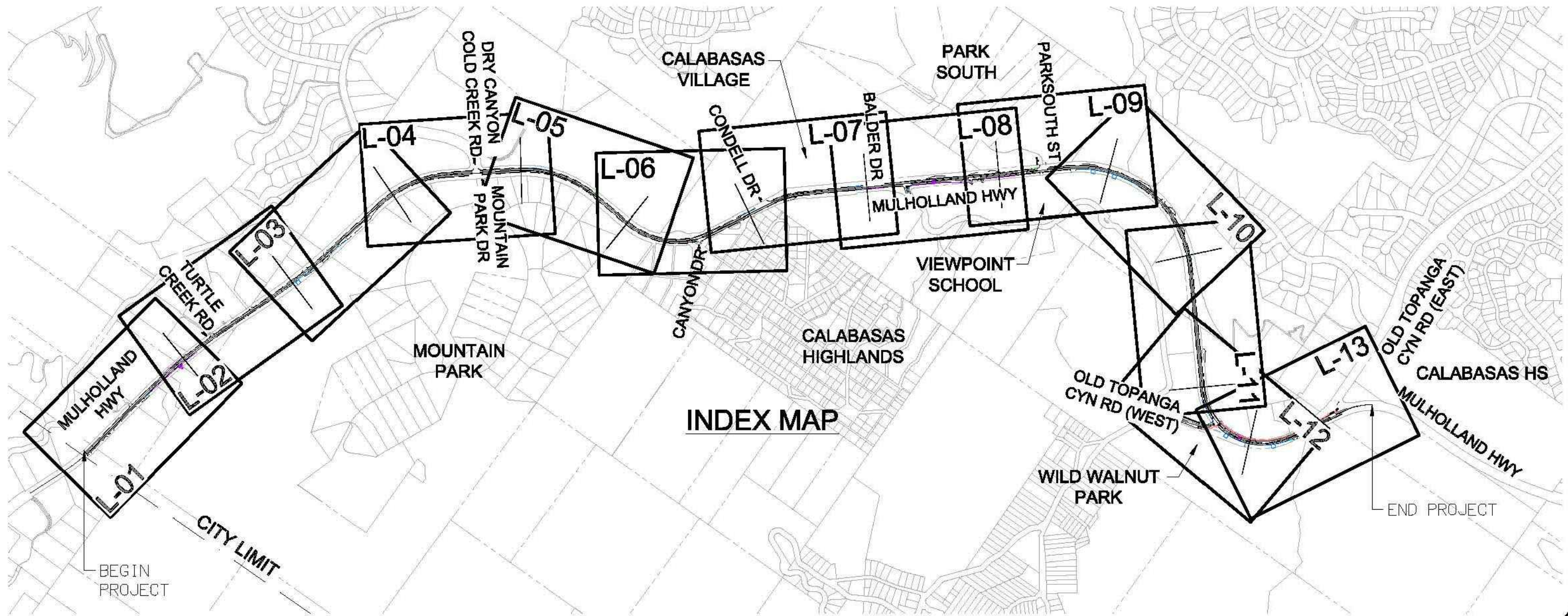
Active pressures, at-rest pressures, and surcharge pressures for conventional retaining wall foundations are resisted by a combination of passive lateral earth pressure, base friction, and subgrade bearing capacity. Passive pressure acts over the embedded front of the wall (neglecting the upper 1 foot for paved foreslopes, or the upper 2 feet for soil foreslopes) and varies with the foreslope inclination, whereas base friction and bearing capacity act along the bottom of the footings. For retaining

walls with a level foreslope and zero hydrostatic pressure behind the wall, we recommend the resisting design values presented in the following table.

The recommended bearing capacities in the table above may be increased by 20 percent for each additional foot of depth deeper than the minimum recommended depth of 24 inches, plus 10 percent for each additional foot of width wider than the minimum recommended width of 24 inches.

9.0 PAVEMENT THICKNESS

Pavement thickness of the highway depends on the Traffic Index (TI) and Coefficient of Sub-Grade Reaction (R-Value) of the underlying sub-grading material. The pavement section recommendation can be submitted after the subsurface exploration and testing for R-Values have been performed.



INDEX MAP

ABBREVIATIONS

Q	CENTERLINE	PROP	PROPOSED
(XX)	EXISTING DIMENSION	R/W	RIGHT-OF-WAY
AC	ASPHALT CONCRETE	R	RADIUS
ETW	EDGE OF TRAVEL WAY	RD	ROAD
EX	EXISTING	SHLD	SHOULDER
FG	FINISHED GROUND	SW	SIDEWALK
FH	FIRE HYDRANT		
H	HEIGHT		
HWY	HIGHWAY		
L	LENGTH		
OG	ORIGINAL GROUND		
PP	POWER POLE		

LEGEND

	EXISTING K-RAIL
	EXISTING WALL
	EXISTING GUARDRAIL
	EXISTING ETW
	EXISTING APPURTENANCE
	PROPOSED RETAINING WALL
	PROPOSED GUARDRAIL
	PROPOSED SIDEWALK
	PROPOSED EDGE OF SHOULDER
	PROPOSED ETW
	PROPOSED HEADWALL
	PROPOSED PP / FH
	EROSION CONTROL

SHEET INDEX

SHEET NO	DESCRIPTION
1	INDEX MAP
2	TYPICAL CROSS SECTIONS
3-15	LAYOUT SHEETS

**DRAFT MULHOLLAND
HIGHWAY CONCEPT
PLANS DATED MAY 2020**

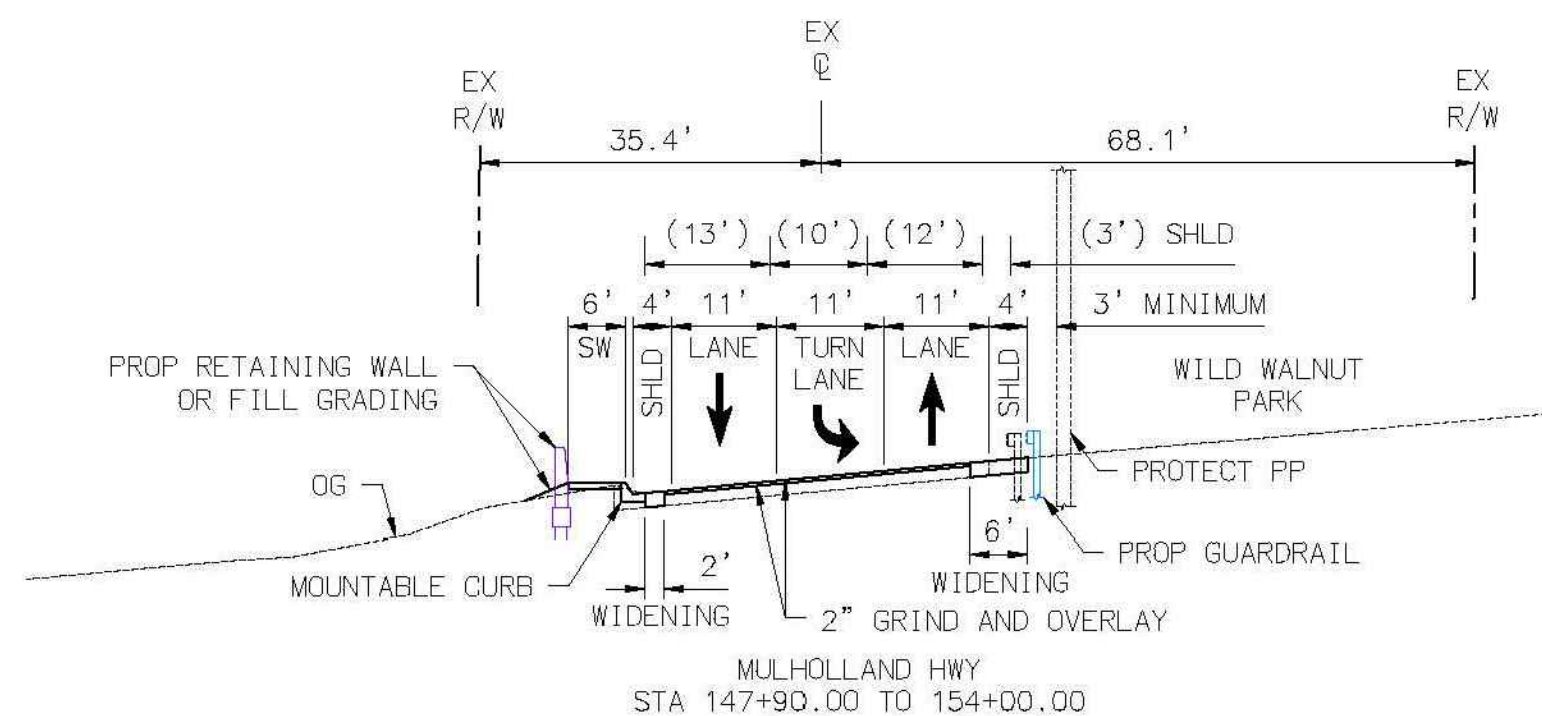
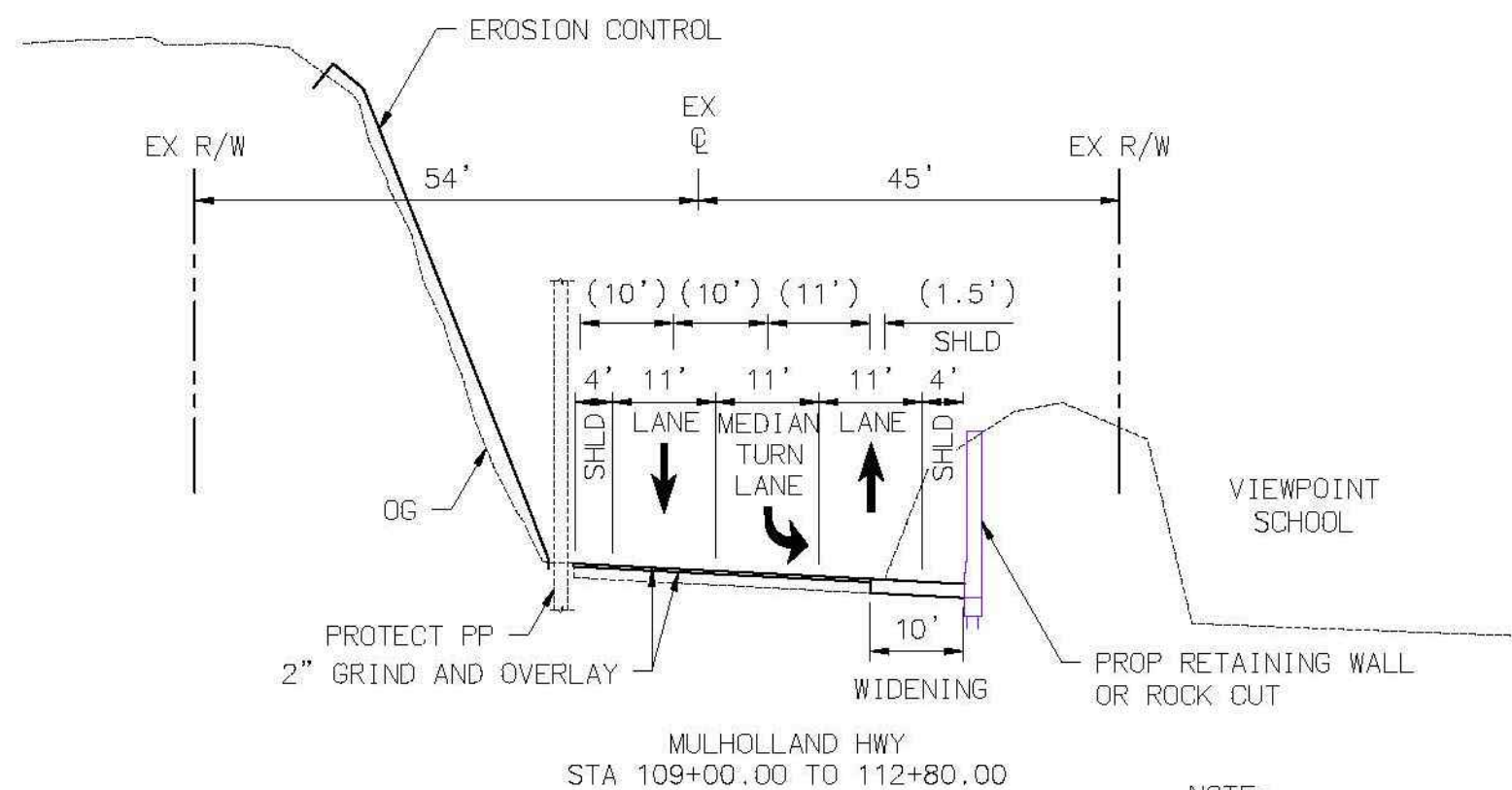
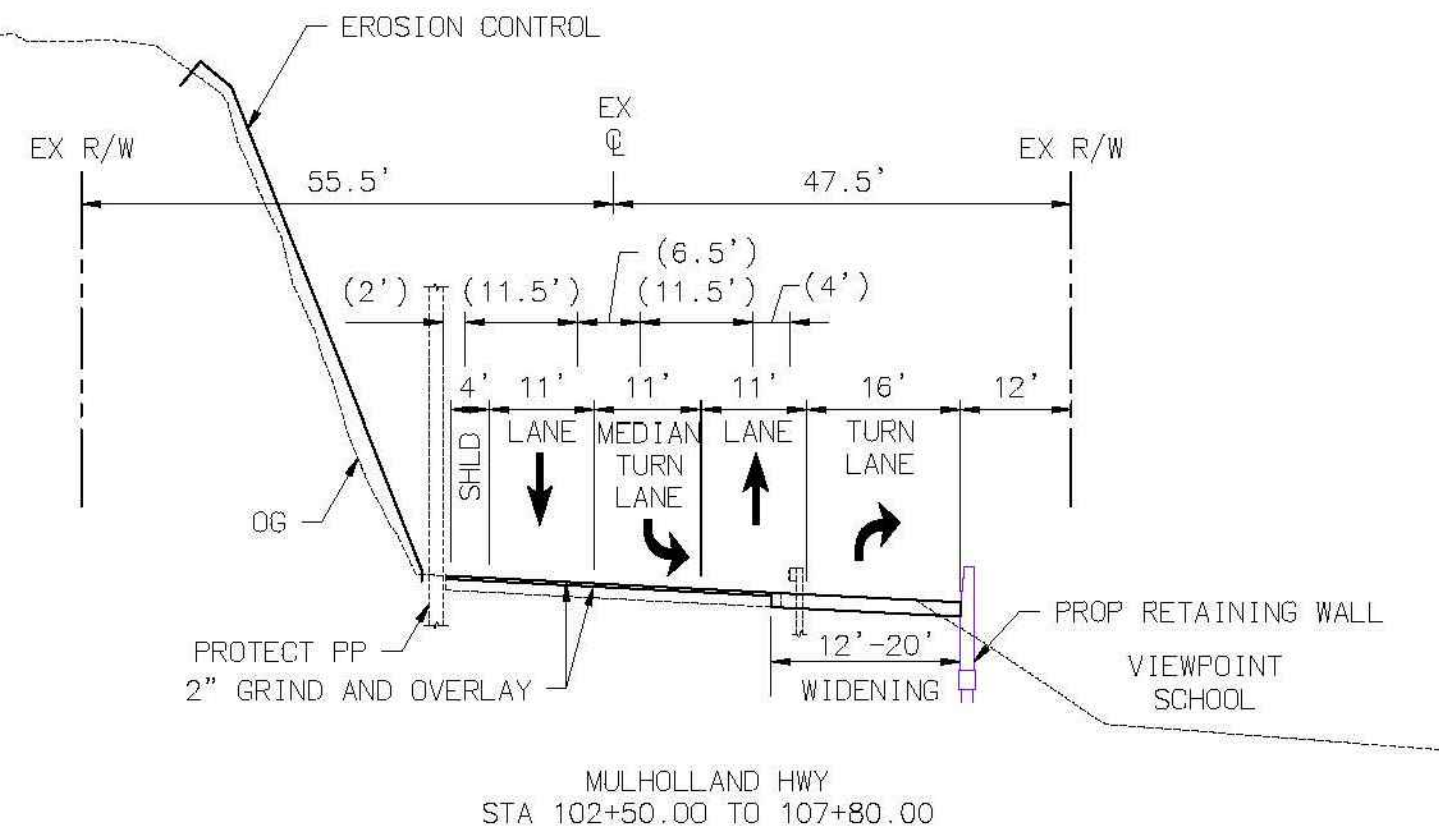
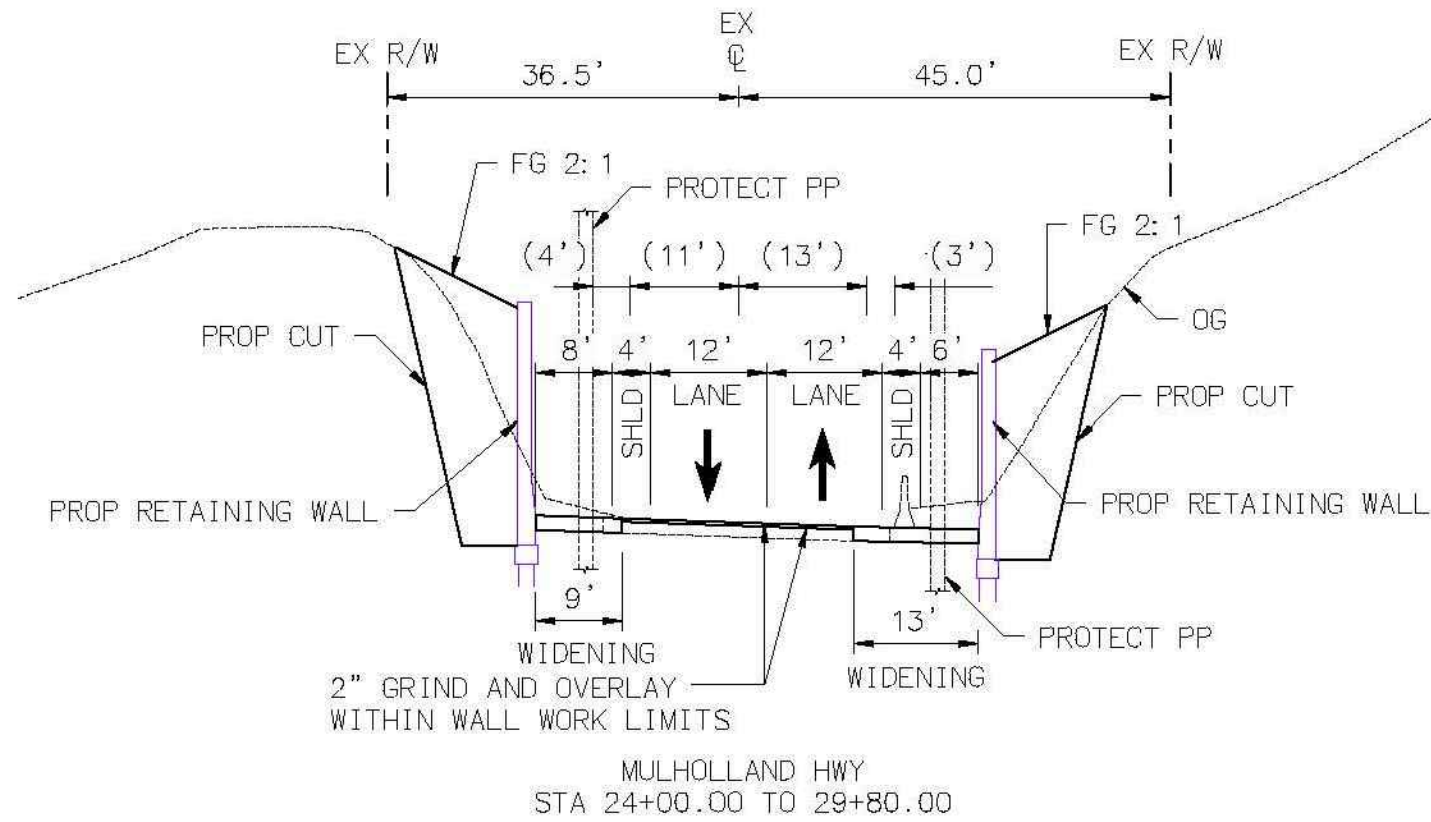
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MULHOLLAND HIGHWAY FEASIBILITY STUDY
 OLD TOPANGA CYN RD - CITY LIMIT
 INDEX MAP

SCALE: N/A
 SHEET NO. 1 of 15
 IDX-01



NOTE:

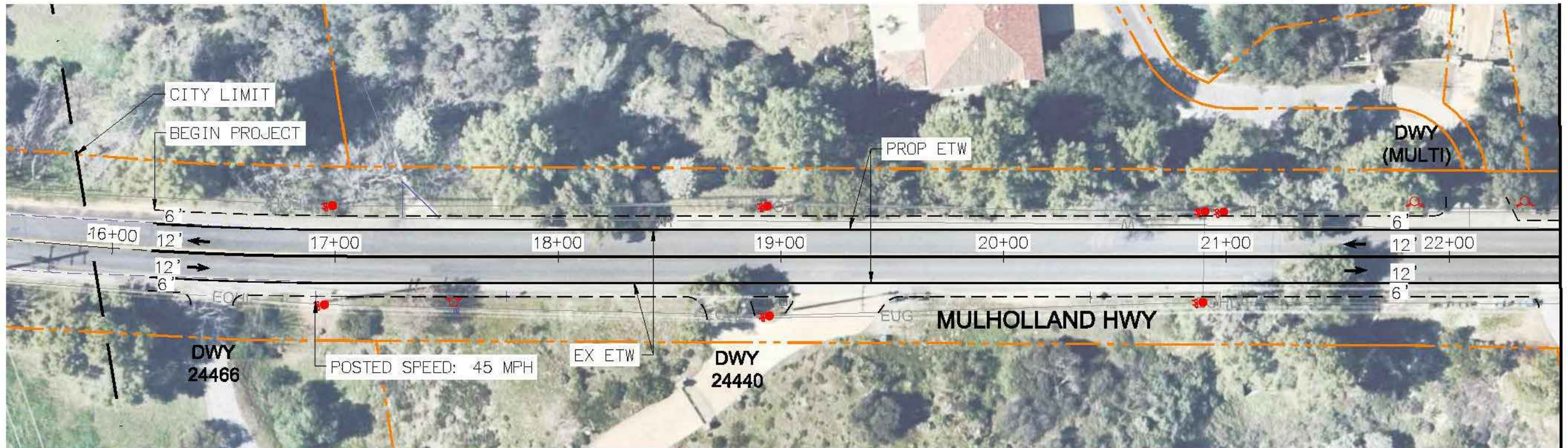
- MULHOLLAND HWY PAVEMENT GRIND AND OVERLAY LIMITS ARE FROM CANYON DRIVE TO OLD TOPANGA CANYON ROAD (EAST) EXCEPT AS NOTED.

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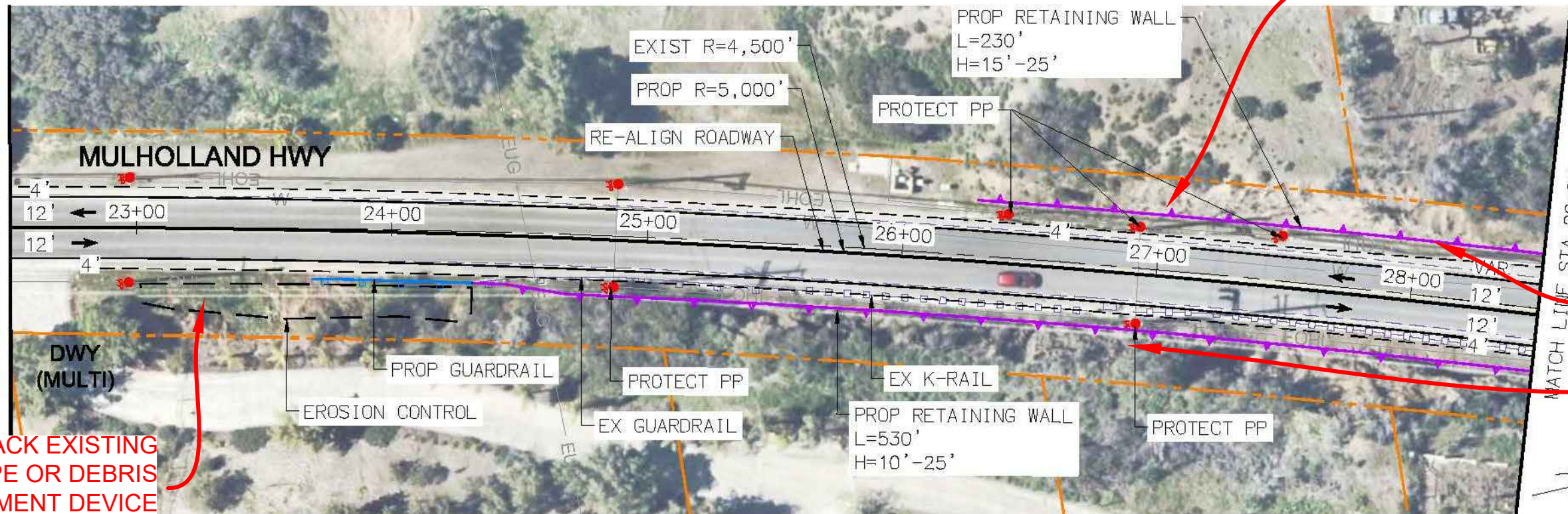
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MULHOLLAND HIGHWAY FEASIBILITY STUDY
OLD TOPANGA CYN RD - CITY LIMIT
TYPICAL CROSS SECTIONS

XC-01
SCALE: N/A
SHEET NO. 2 of 15



MATCH LINE STA 22+50



MATCH LINE STA 28+50




LAYBACK EXISTING SLOPE OR DEBRIS CONTAINMENT DEVICE AT TOE OF SLOPE

STEEP HIGH CUT

VERY WEATHERED CONEJO FORMATION

VOLCANIC BEDROCK

L-01

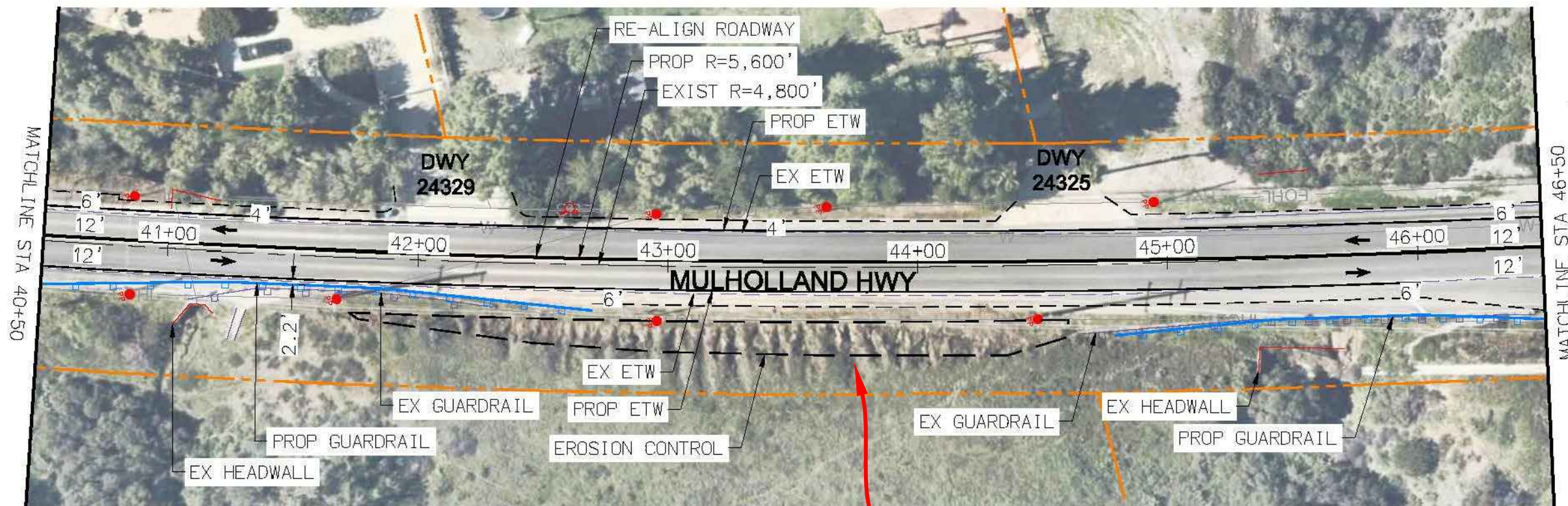
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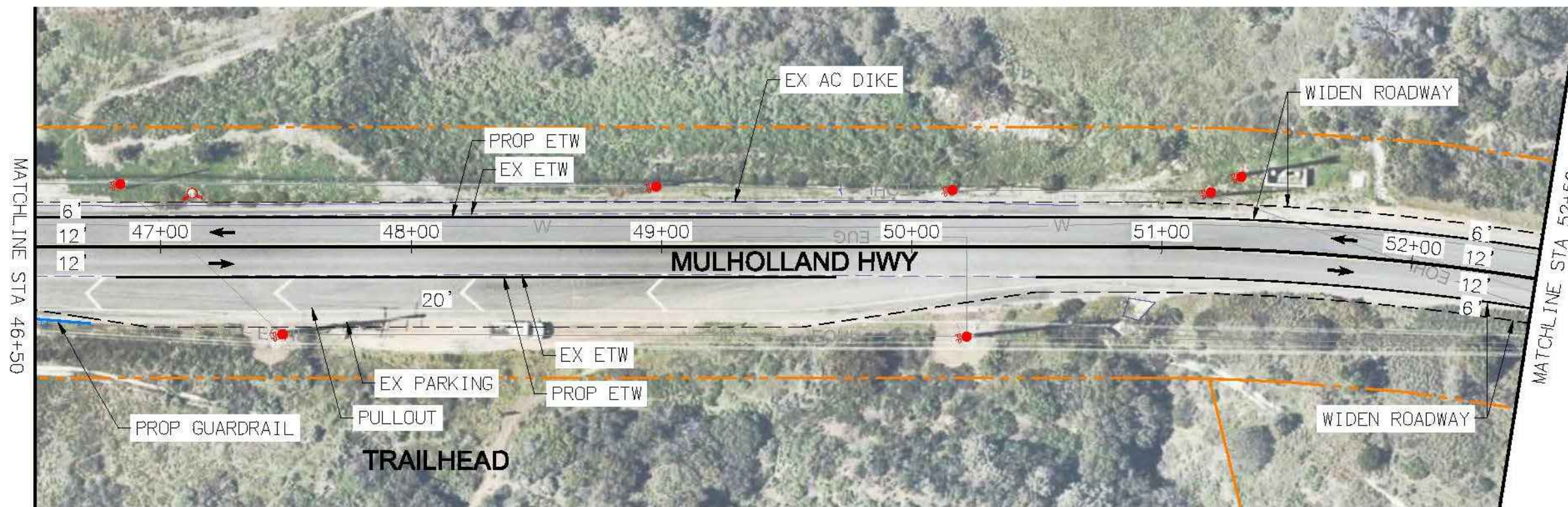


MULHOLLAND HIGHWAY FEASIBILITY STUDY
 OLD TOPANGA CYN RD - CITY LIMIT
 LAYOUT SHEETS


SCALE:	1"=50'
SHEET NO.:	3 of 15



LAYBACK (OLDER ALLUVIUM)



L-03

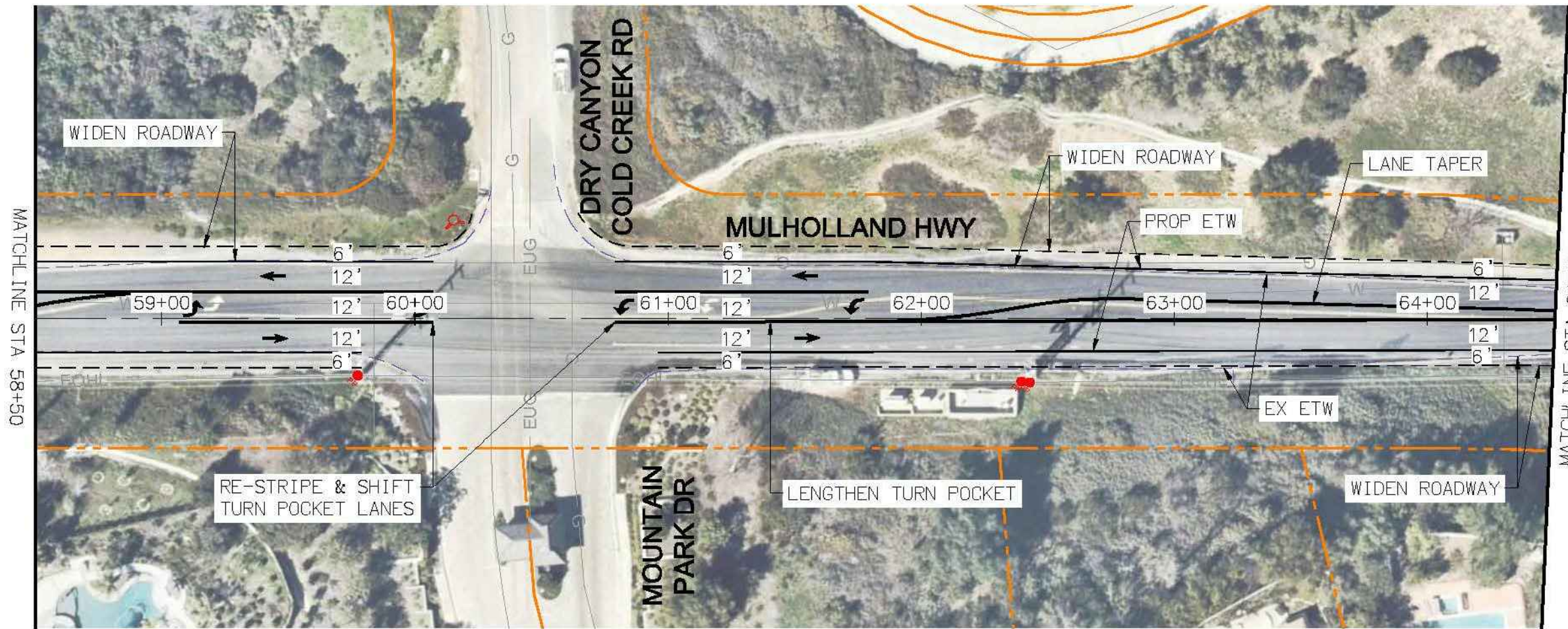
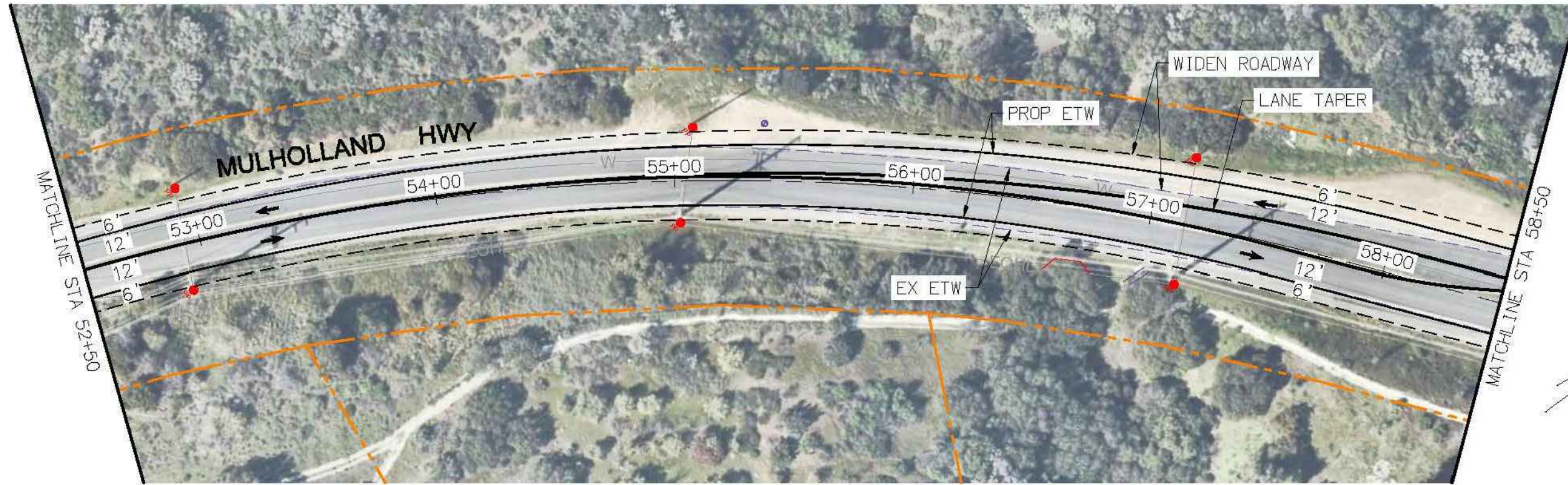
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MULHOLLAND HIGHWAY FEASIBILITY STUDY
 OLD TOPANGA CYN RD - CITY LIMIT
 LAYOUT SHEETS

SCALE:
 1"=50'
 SHEET NO.
 5 of 15



L-04

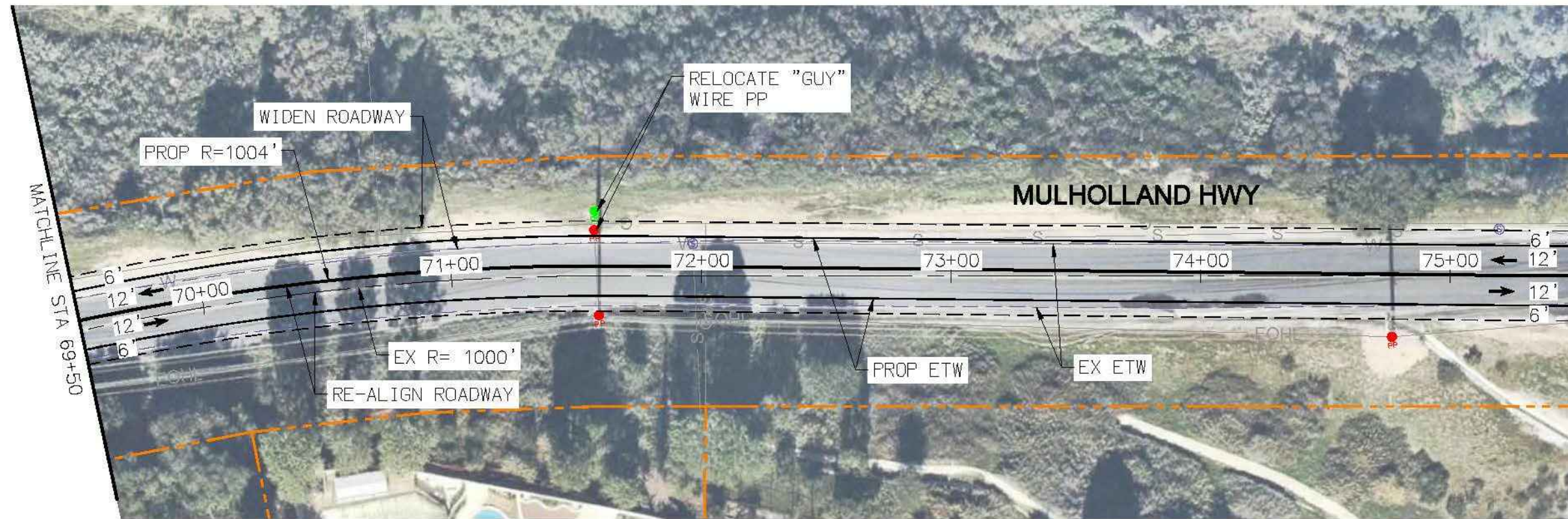
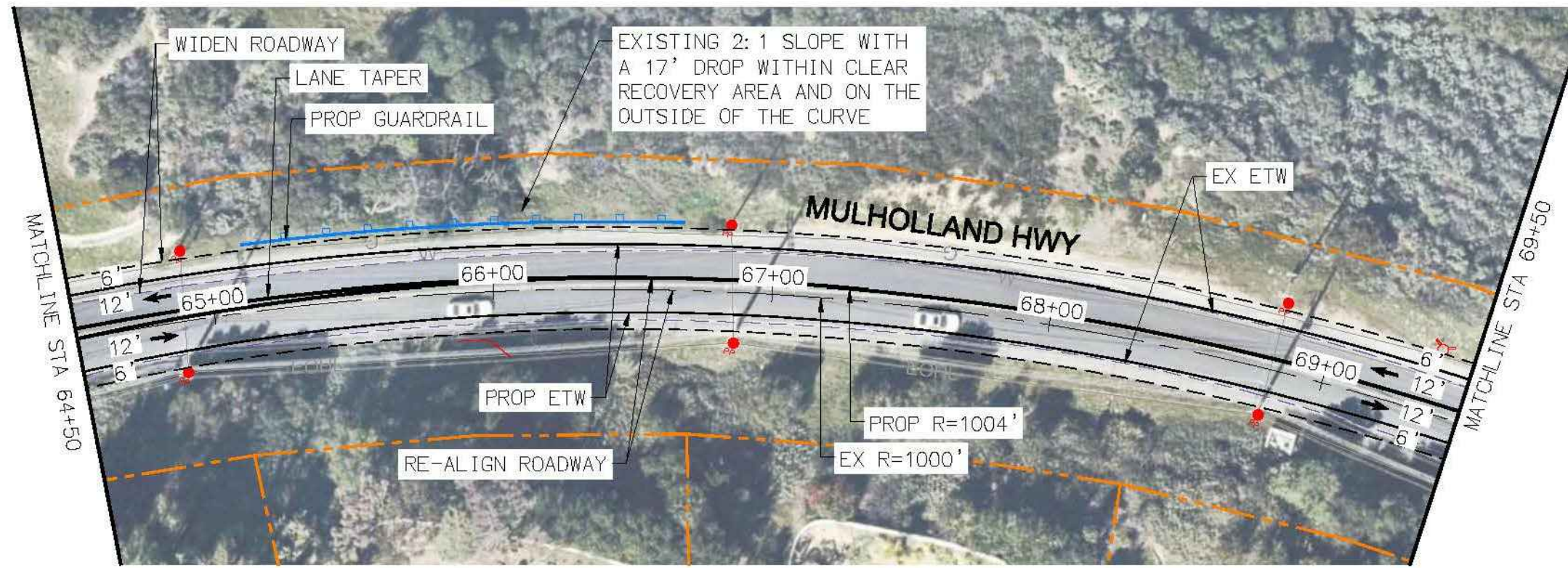
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MULHOLLAND HIGHWAY FEASIBILITY STUDY
 OLD TOPANGA CYN RD - CITY LIMIT
 LAYOUT SHEETS

SCALE: 1"=50'
 SHEET NO.
6 of 15



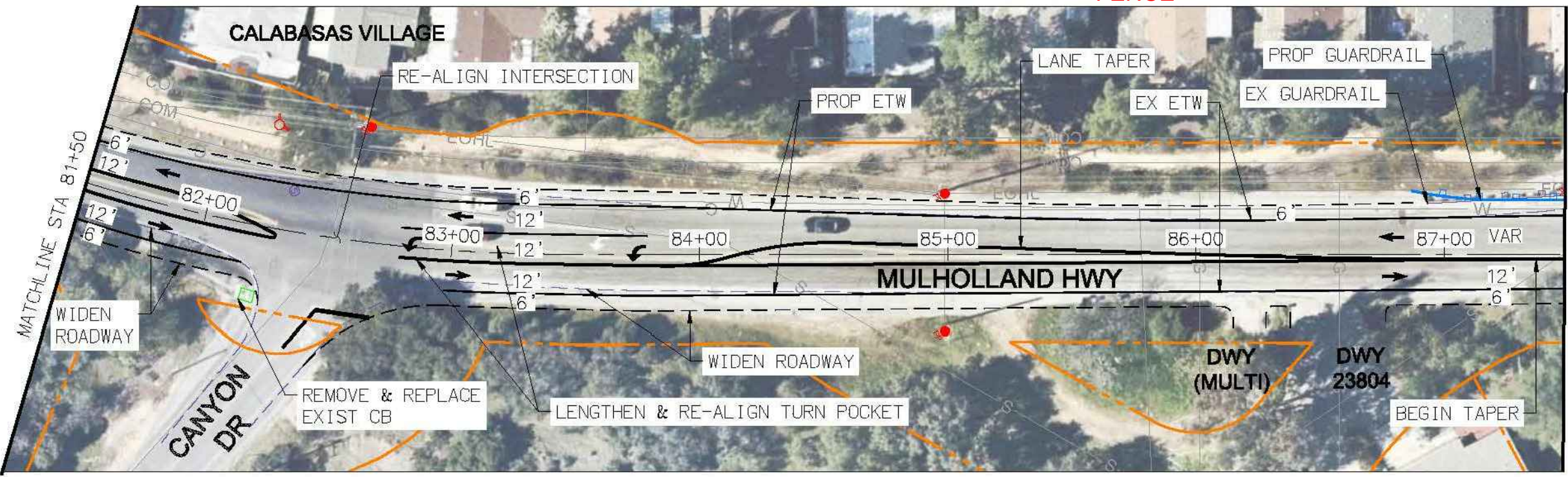
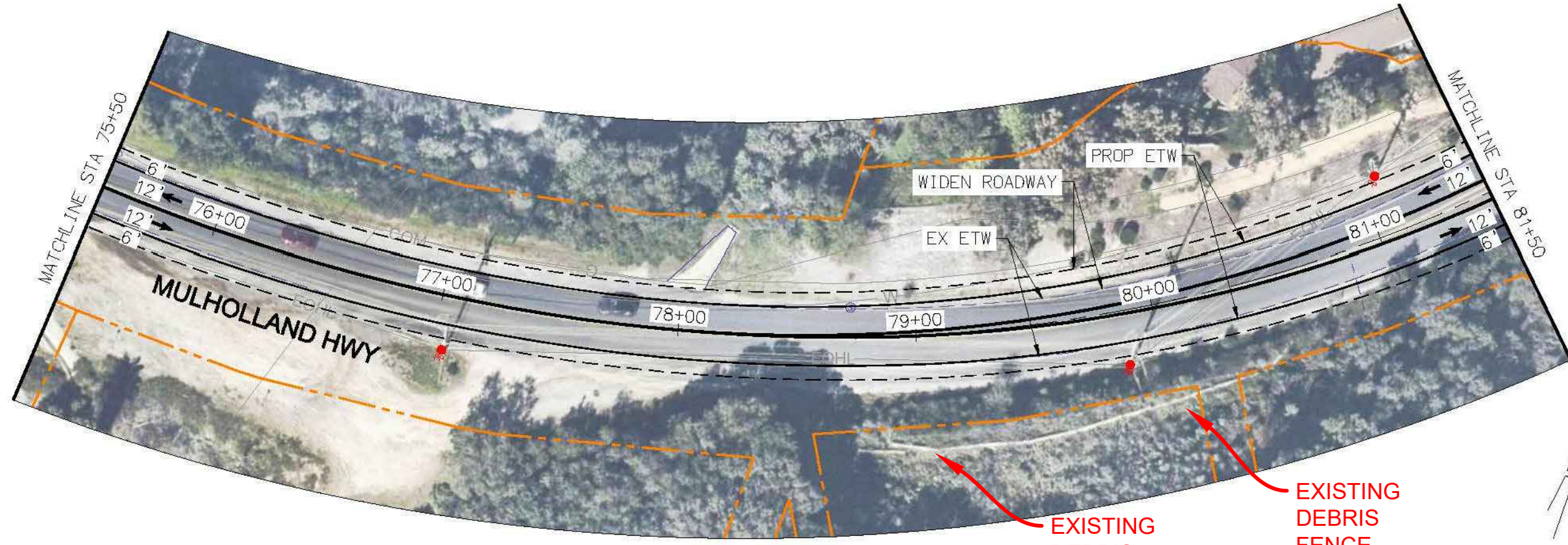
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 Phone: (213) 250-7359
 MBAKERINTL.COM



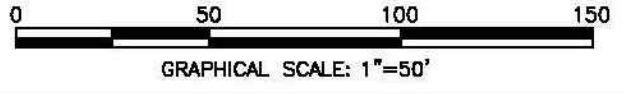
MULHOLLAND HIGHWAY FEASIBILITY STUDY
 OLD TOPONGA CYN RD - CITY LIMIT
 LAYOUT SHEETS

L-05
 SCALE: 1"=50'
 SHEET NO.
 7 of 15



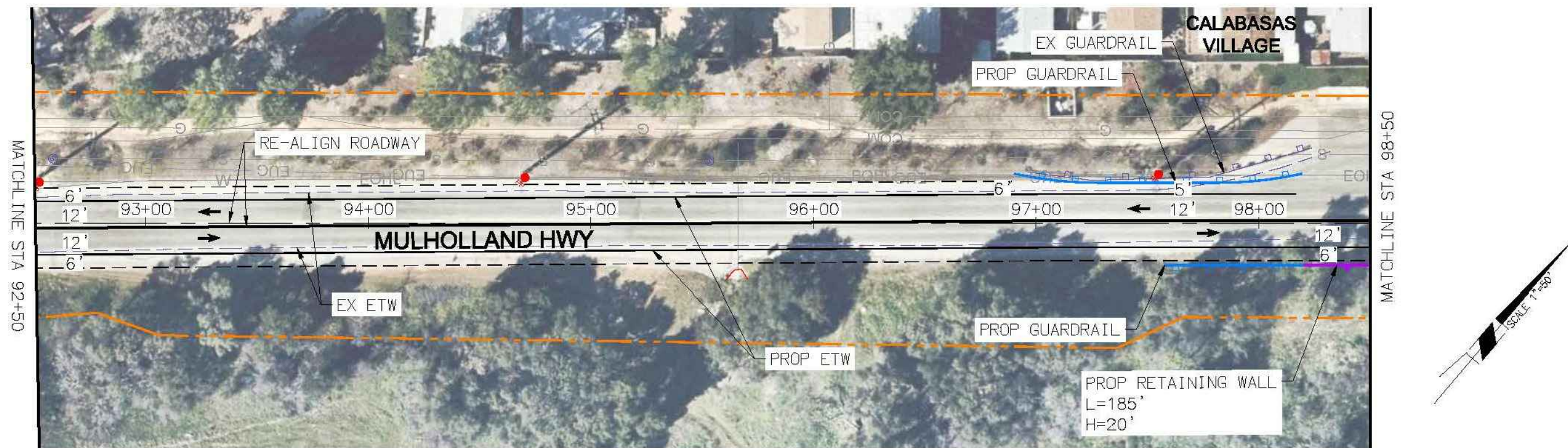
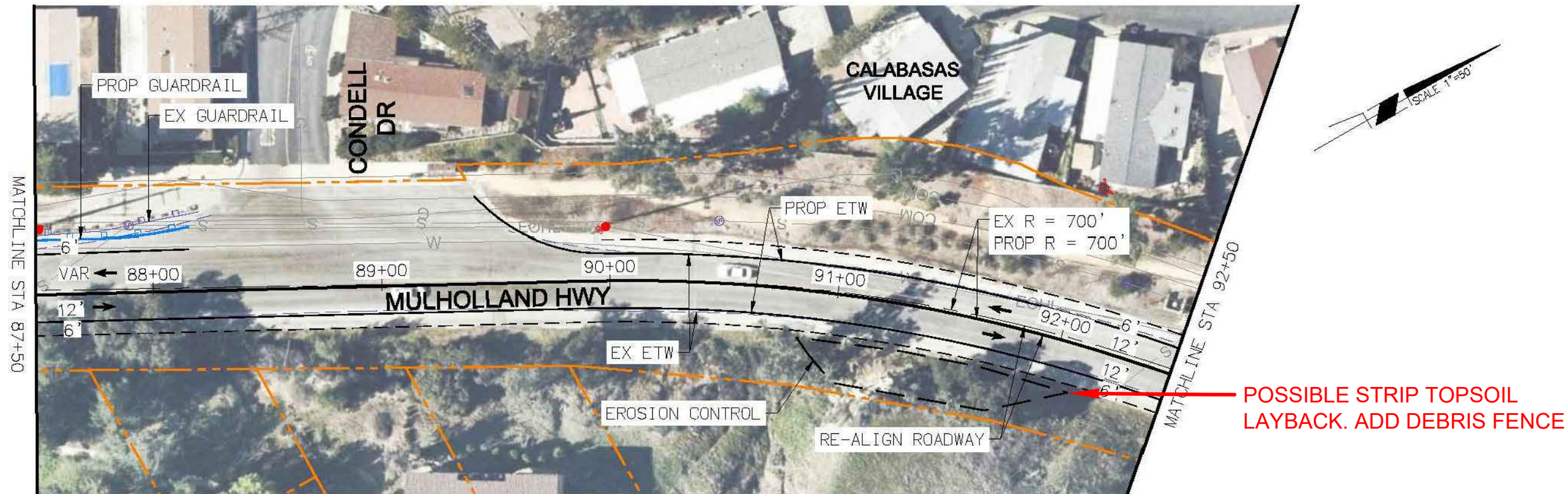
PREPARED FOR:

CITY of CALABASAS
 PUBLIC WORKS DEPARTMENT
 100 CIVIC CENTER BLVD
 CALABASAS, CA 91302
 PHONE: 818.224.1800
 FAX: 818.223.7338
 WWW.CITYOF-CALABASAS.COM

PREPARED BY:
Michael Baker
 INTERNATIONAL
 801 S Grand Ave #250
 Los Angeles, CA 90017
 Phone: (213) 250-7359
 MBAKERINTL.COM




MULHOLLAND HIGHWAY FEASIBILITY STUDY
 OLD TOPANGA CYN RD - CITY LIMIT
 LAYOUT SHEETS

L-06
 SCALE: 1"=50'
 SHEET NO.
8 of 15



L-07

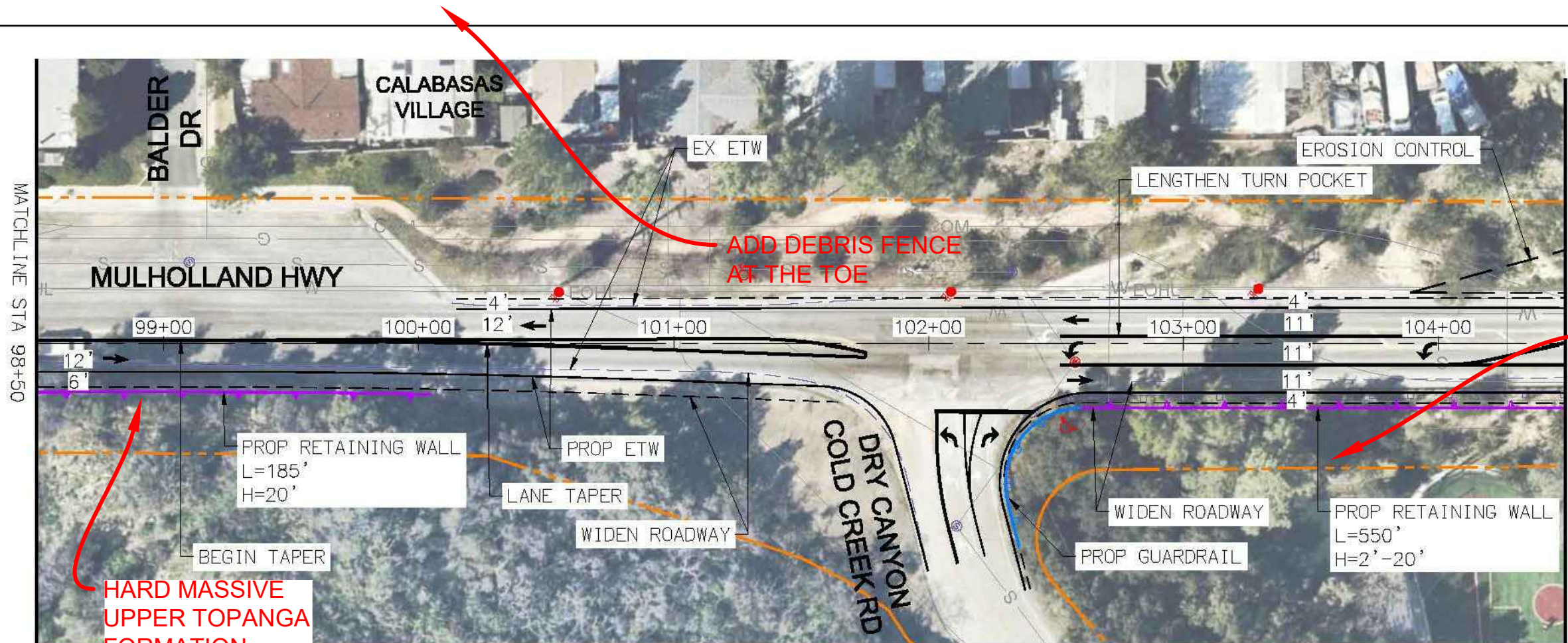
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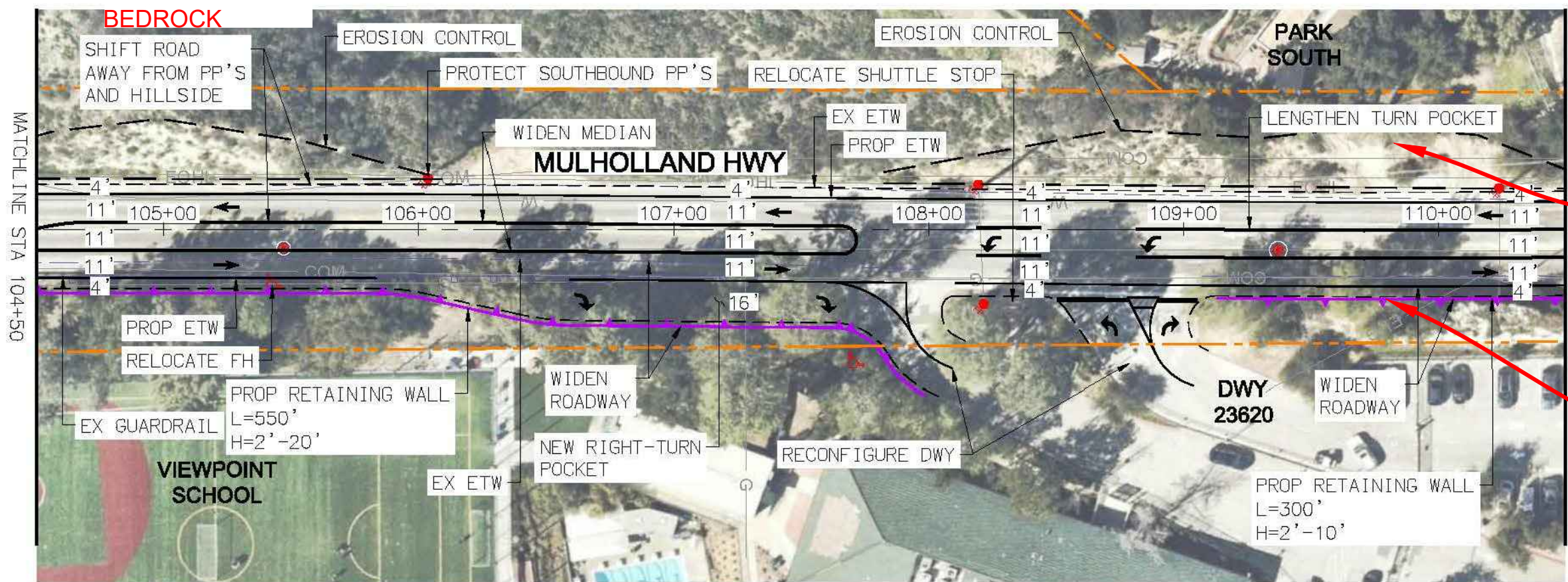
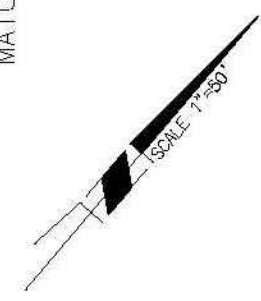


MULHOLLAND HIGHWAY FEASIBILITY STUDY
 OLD TOPANGA CYN RD - CITY LIMIT
 LAYOUT SHEETS

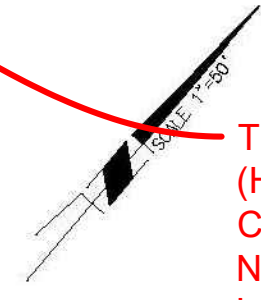
SCALE: 1"=50'
 SHEET NO. 9 of 15



ALLUVIUM/FILL?




NO ROOM TO LAYBACK. HARD ROCK. ADD DEBRIS FENCE AT TOE OF THE UPPER TOPANGA FORMATION



TOPANGA FORMATION (HARD) CURRENT VERTICAL CUTS POSSIBLE. NO WALL NEEDED, LAY CUT BACK.

L-08

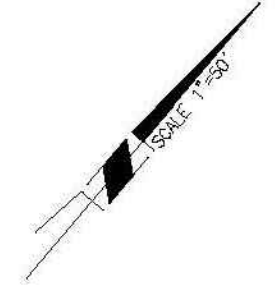
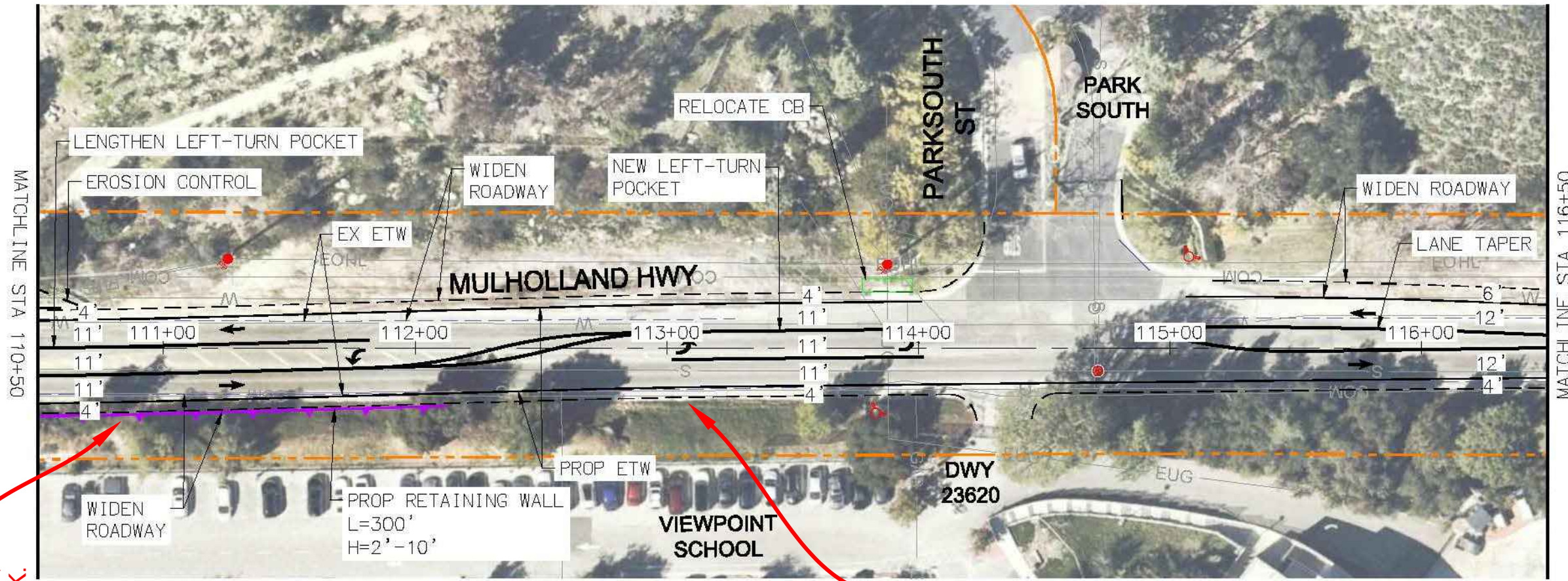
PREPARED FOR:

CITY of CALABASAS
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MULHOLLAND HIGHWAY FEASIBILITY STUDY
 OLD TOPANGA CYN RD - CITY LIMIT
 LAYOUT SHEETS

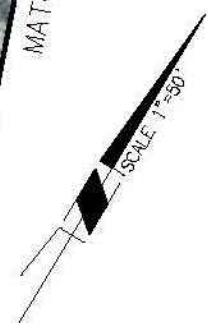
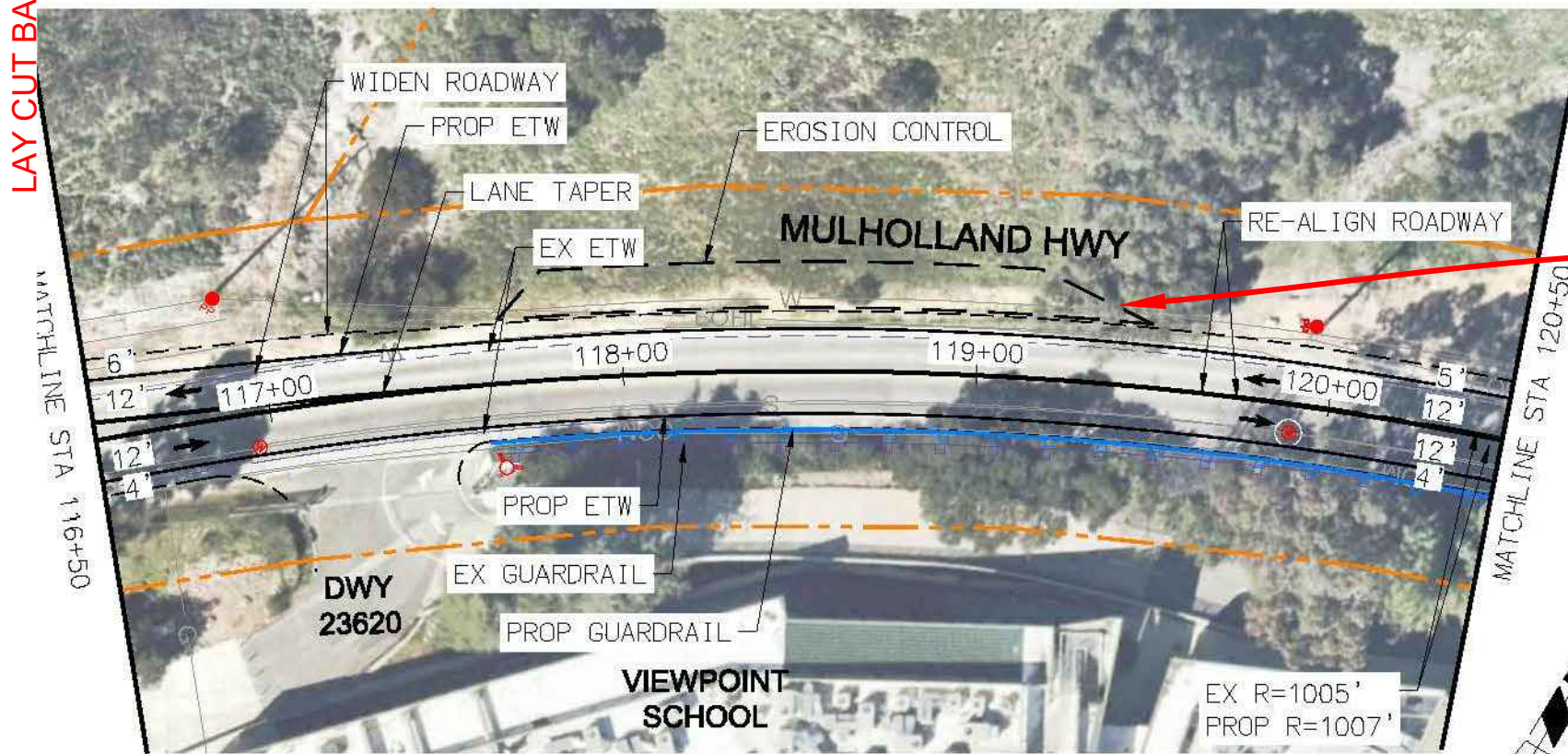
SCALE:
1"=50'
 SHEET NO.
10 of 15



TOPANGA FORMATION
(HARD) CURRENT VERTICAL
CUTS POSSIBLE.
NO WALL NEEDED,
LAY CUT BACK.

SOFTER ROCK. RECOMMENDED TO LAYBACK

EVERY CUT IN MONTEREY FORMATION
IS HIGHLY FRACTURED AND PRONE TO
DEBRIS DEPOSITION IN STEEP CUTS



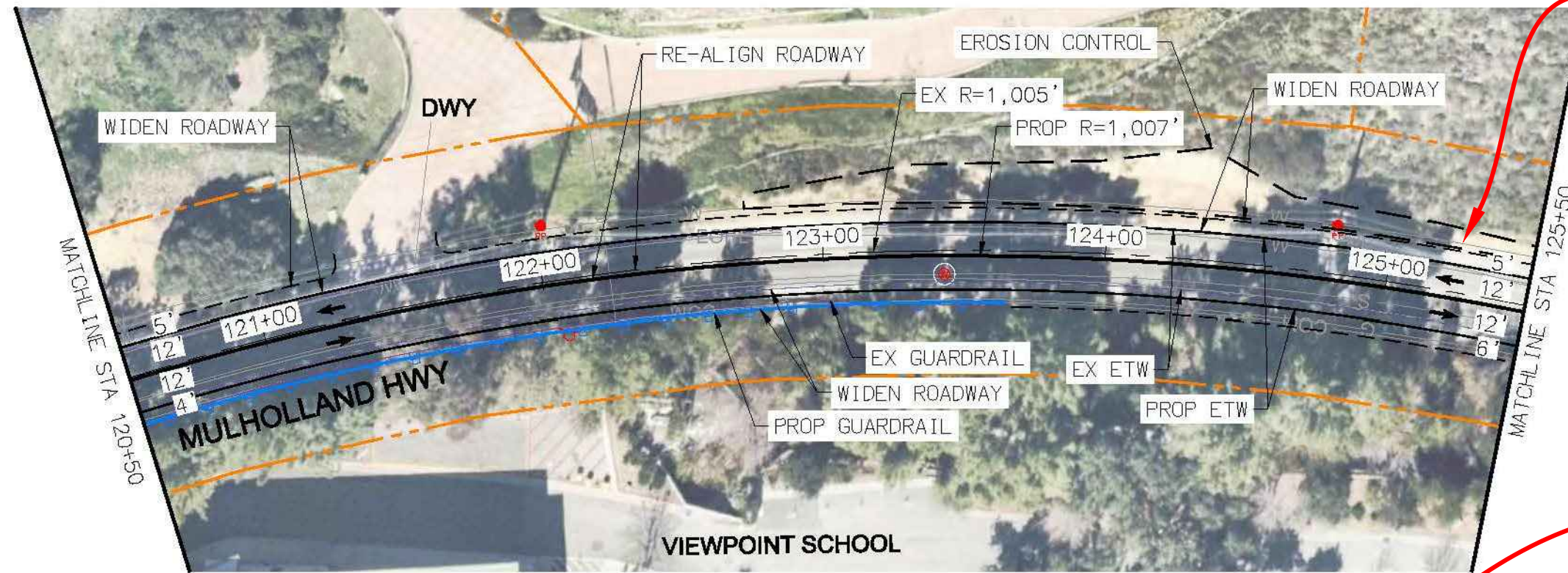
PREPARED FOR:
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PUBLIC WORKS DEPARTMENT
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CALABASAS, CA 91302
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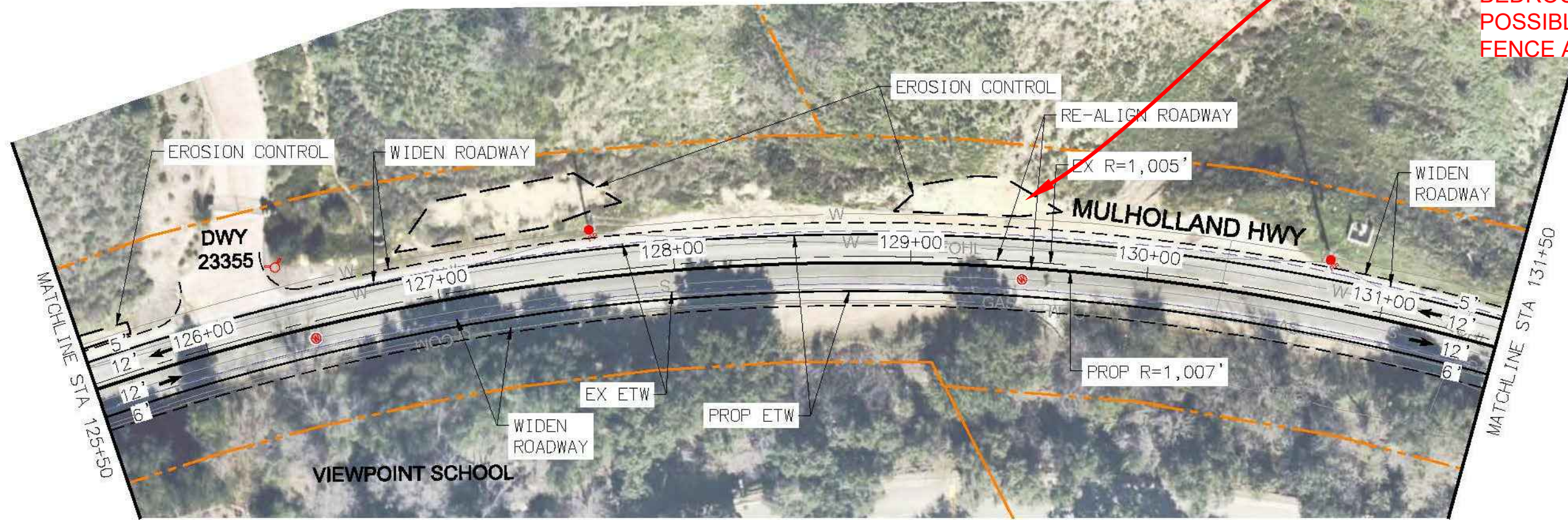


MULHOLLAND HIGHWAY FEASIBILITY STUDY
OLD TOPANGA CYN RD - CITY LIMIT
LAYOUT SHEETS


L-09
SCALE: 1"=50'
SHEET NO.
11 of 15



LAYBACK. ADD DEBRIS FENCE AT TOE. MONTEREY FORMATION. NORTH DIPS FAVORABLE TOWARDS PROPOSED CUT



NORTH DIPS ARE FAVORABLE. MONTEREY FORMATION VERY FRACTURED & WEATHERED BEDROCK LAYBACK? POSSIBLE DEBRIS FENCE AT THE TOE

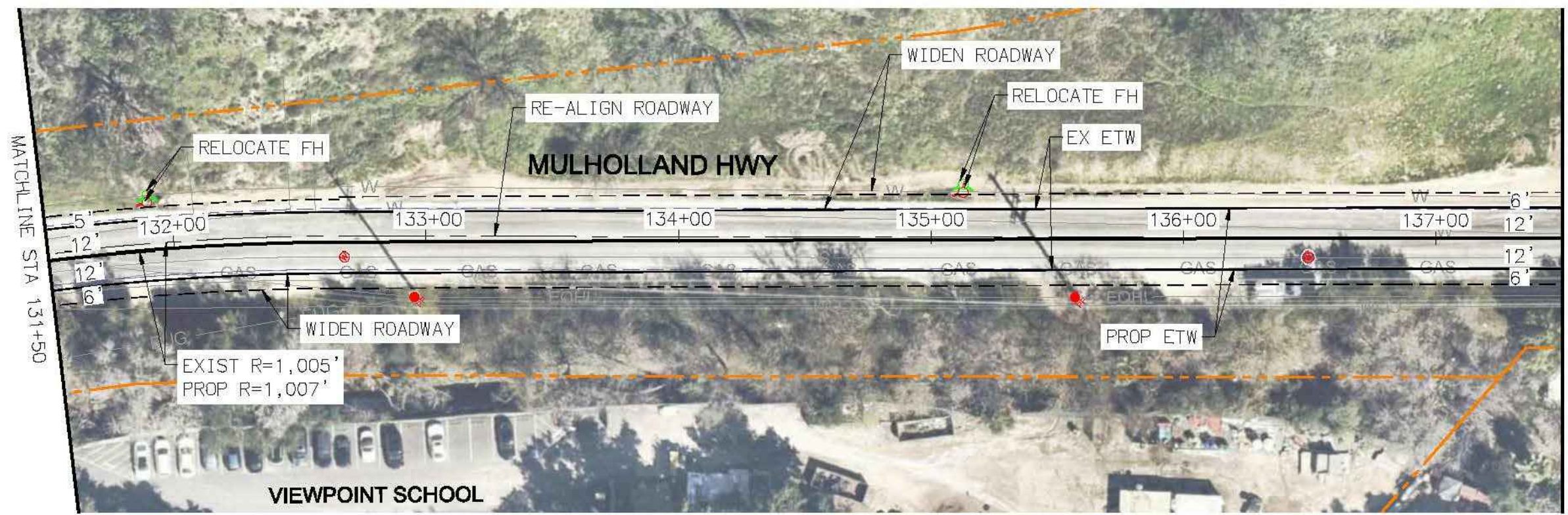
PREPARED FOR:

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 100 CIVIC CENTER BLVD
 CALABASAS, CA 91302
 PHONE: 818.224.1600
 FAX: 818.223.7338
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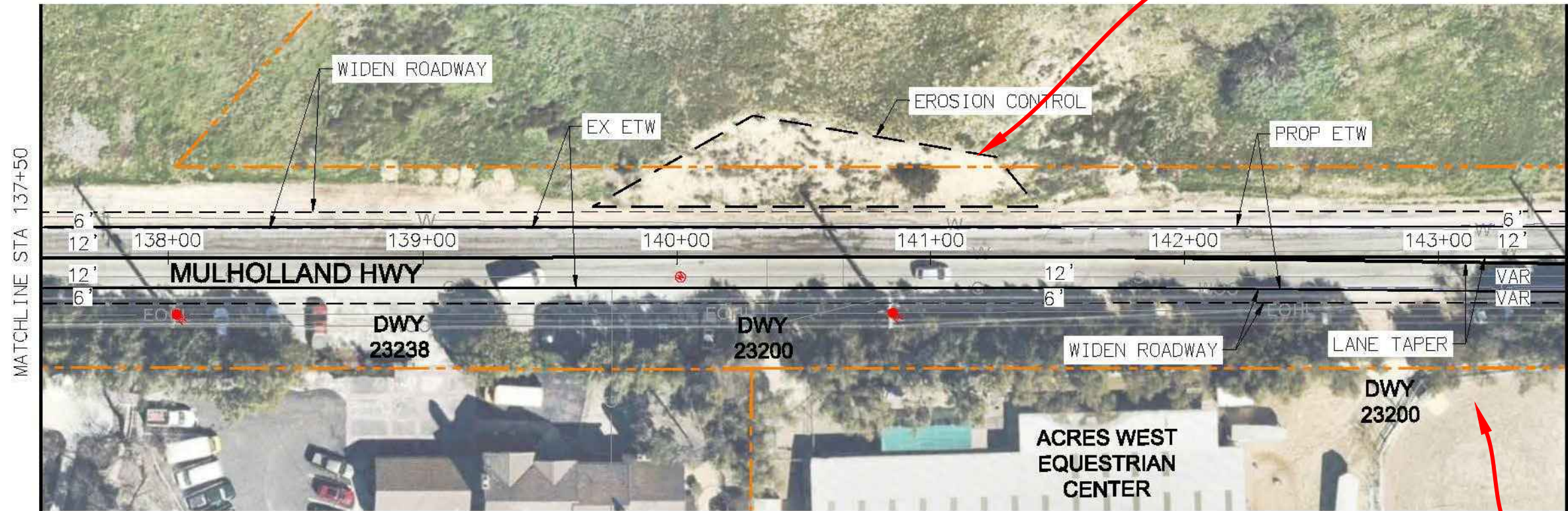


MULHOLLAND HIGHWAY FEASIBILITY STUDY
 OLD TOPANGA CYN RD - CITY LIMIT
 LAYOUT SHEETS


L-10
 SCALE: 1"=50'
 SHEET NO.
 12 of 15



MONTEREY FORMATION HIGHLY FRACTURED & WEATHERED. LAYBACK MAY NOT BE POSSIBLE DUE TO ROAD EASEMENT



BEDDING PLANES DIPPING TOWARDS THE NORTH ARE FAVORABLE

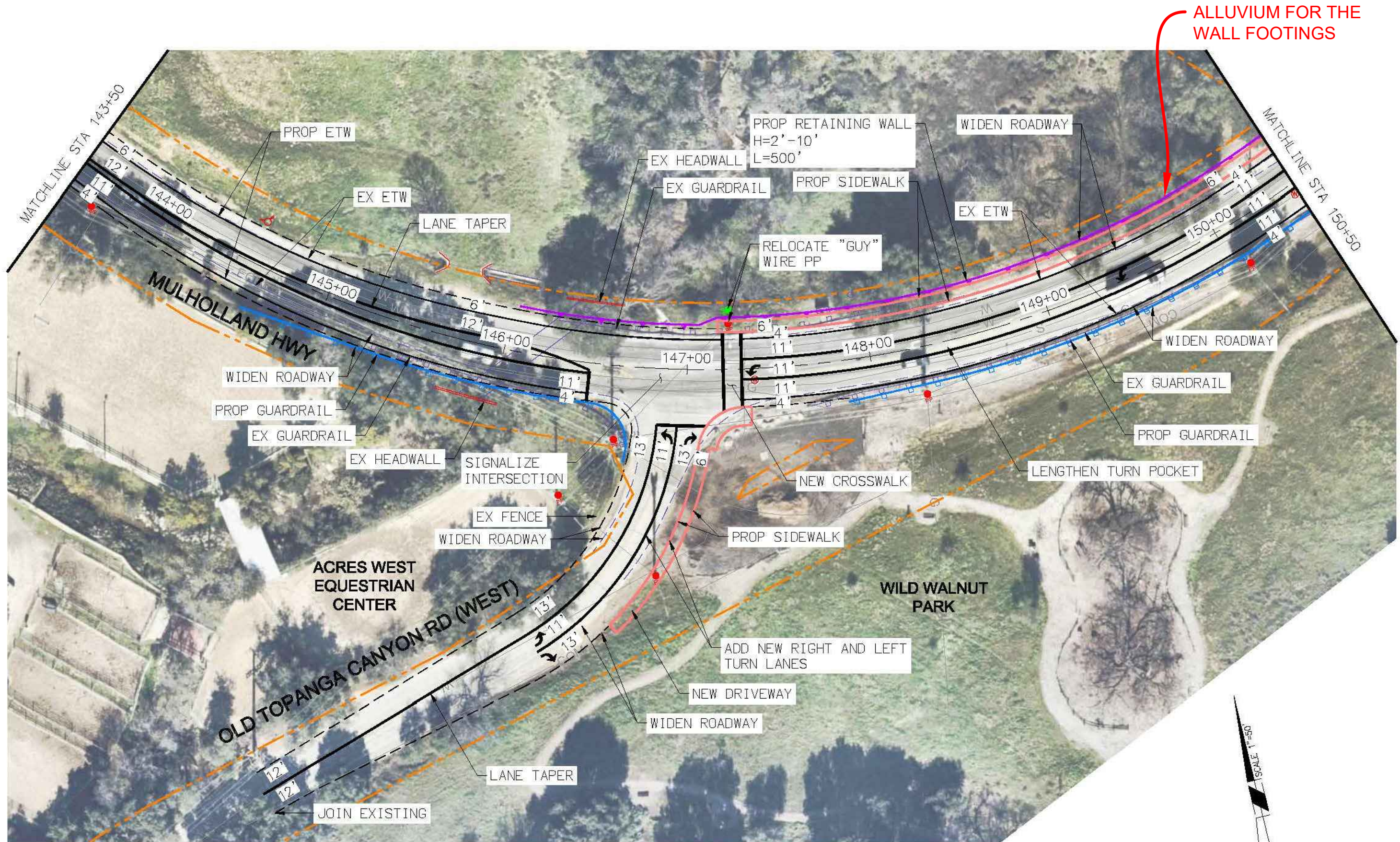
PREPARED FOR:

CITY of CALABASAS
 PUBLIC WORKS DEPARTMENT
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MULHOLLAND HIGHWAY FEASIBILITY STUDY
 OLD TOPANGA CYN RD - CITY LIMIT
 LAYOUT SHEETS


L-11
 SCALE: 1"=50'
 SHEET NO.
 13 of 15



ALLUVIUM FOR THE WALL FOOTINGS



L-12

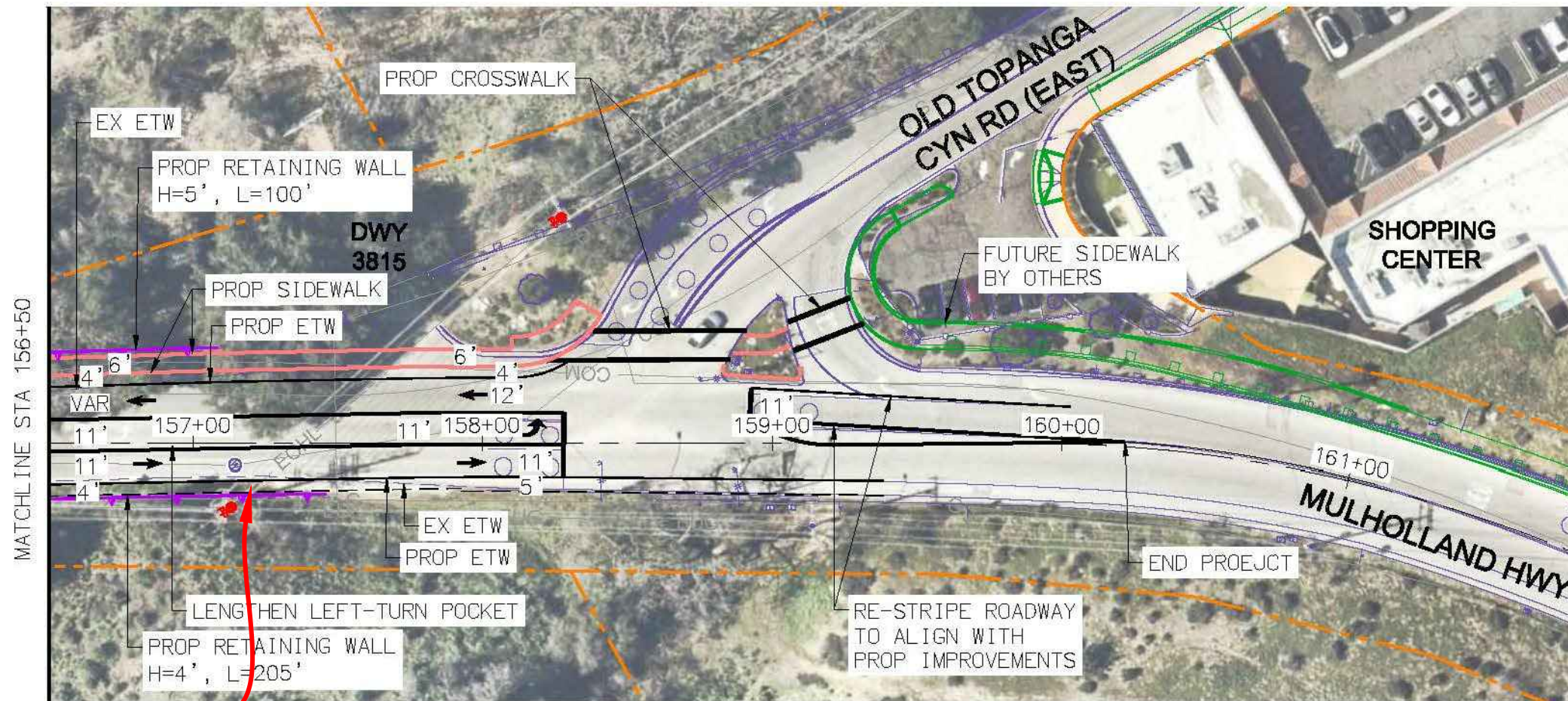
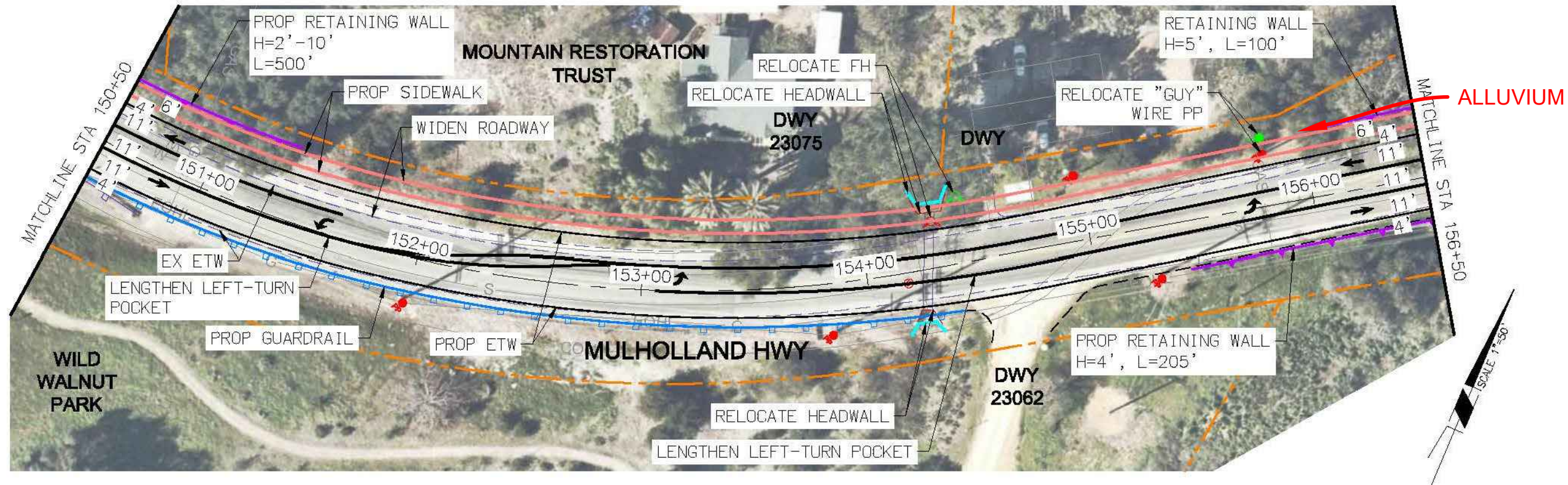
PREPARED FOR:

CITY of CALABASAS
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 CALABASAS, CA 91302
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MULHOLLAND HIGHWAY FEASIBILITY STUDY
 OLD TOPONGA CYN RD - CITY LIMIT
 LAYOUT SHEETS


SCALE: 1"=50'
 SHEET NO.
14 of 15



DEBRIS FENCE

L-13

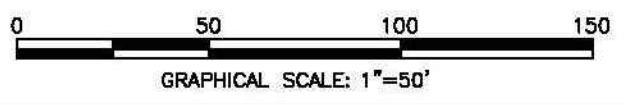
PREPARED FOR:



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PUBLIC WORKS DEPARTMENT
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CALABASAS, CA 91302
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Michael Baker INTERNATIONAL
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MBAKERINTL.COM



MULHOLLAND HIGHWAY FEASIBILITY STUDY
OLD TOPANGA CYN RD - CITY LIMIT
LAYOUT SHEETS

SCALE: 1"=50'
SHEET NO. 15 of 15

APPENDIX H – Federal Emergency Management Agency (FEMA) Maps

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations (BFEs)** and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0 North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 11. The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov/> or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, NNGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, MD 20910-3282

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at <http://www.ngs.noaa.gov/>.

Base map information shown on this FIRM was derived from U.S. Geological Survey Digital Orthophoto Quadrangles produced at a scale of 1:12,000 from photography dated 1994 or later and from National Geospatial Intelligence Agency imagery produced at a scale of 1:4,000 from photography dated 2003 or later.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

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Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at <http://www.msc.fema.gov/>.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA MAP (1-877-336-2627) or visit the FEMA website at <http://www.fema.gov/>.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

- ZONE A** No Base Flood Elevations determined.
- ZONE AE** Base Flood Elevations determined.
- ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AR** Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently deteriorated. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE A99** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

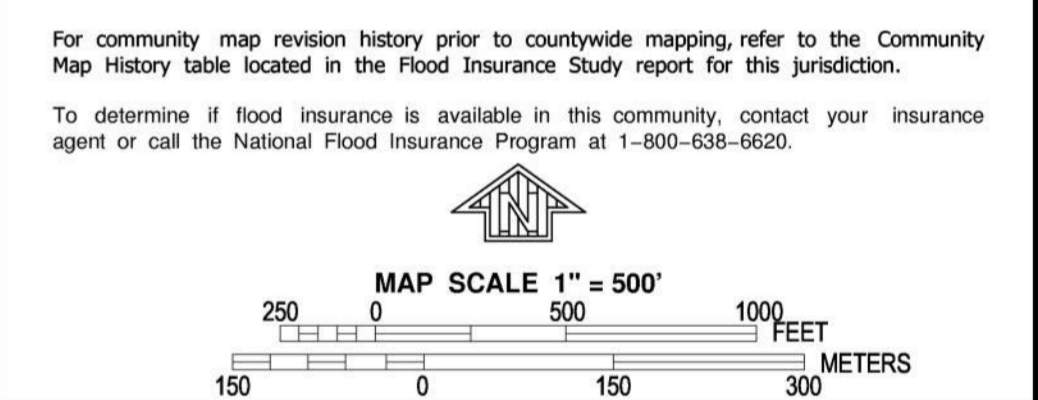
- ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.
- OTHER AREAS** Areas determined to be outside the 0.2% annual chance floodplain.
- ZONE D** Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

- CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.
- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- Base Flood Elevation line and value; elevation in feet* (EL 987)
- Base Flood Elevation value where uniform within zone; elevation in feet*

- * Referenced to the North American Vertical Datum of 1988 (NAVD 88)
- (A) Cross section line
- (2) Transsect line
- 97°07'30", 32°22'30" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 42°75'00"N 1000-meter Universal Transverse Mercator grid values, zone 11
- 6000000 FT 5000-foot grid ticks: California State Plane coordinate system, V zone (FIPSZONE 0405), Lambert Conformal Conic
- DX5510 Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 River Mile
- MAP REPOSITORIES Refer to Map Repositories list on Map Index.
- EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP September 26, 2008
- EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL



Project Area

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1269F

FIRM FLOOD INSURANCE RATE MAP

LOS ANGELES COUNTY, CALIFORNIA AND INCORPORATED AREAS

PANEL 1269 OF 2350
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
LOS ANGELES COUNTY	065043	1269	F
CALABASAS, CITY OF	060749	1269	F
LOS ANGELES, CITY OF	060137	1269	F

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER 06037C1269F

EFFECTIVE DATE SEPTEMBER 26, 2008

Federal Emergency Management Agency

NOTES TO USERS

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NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, MD 20910-3282

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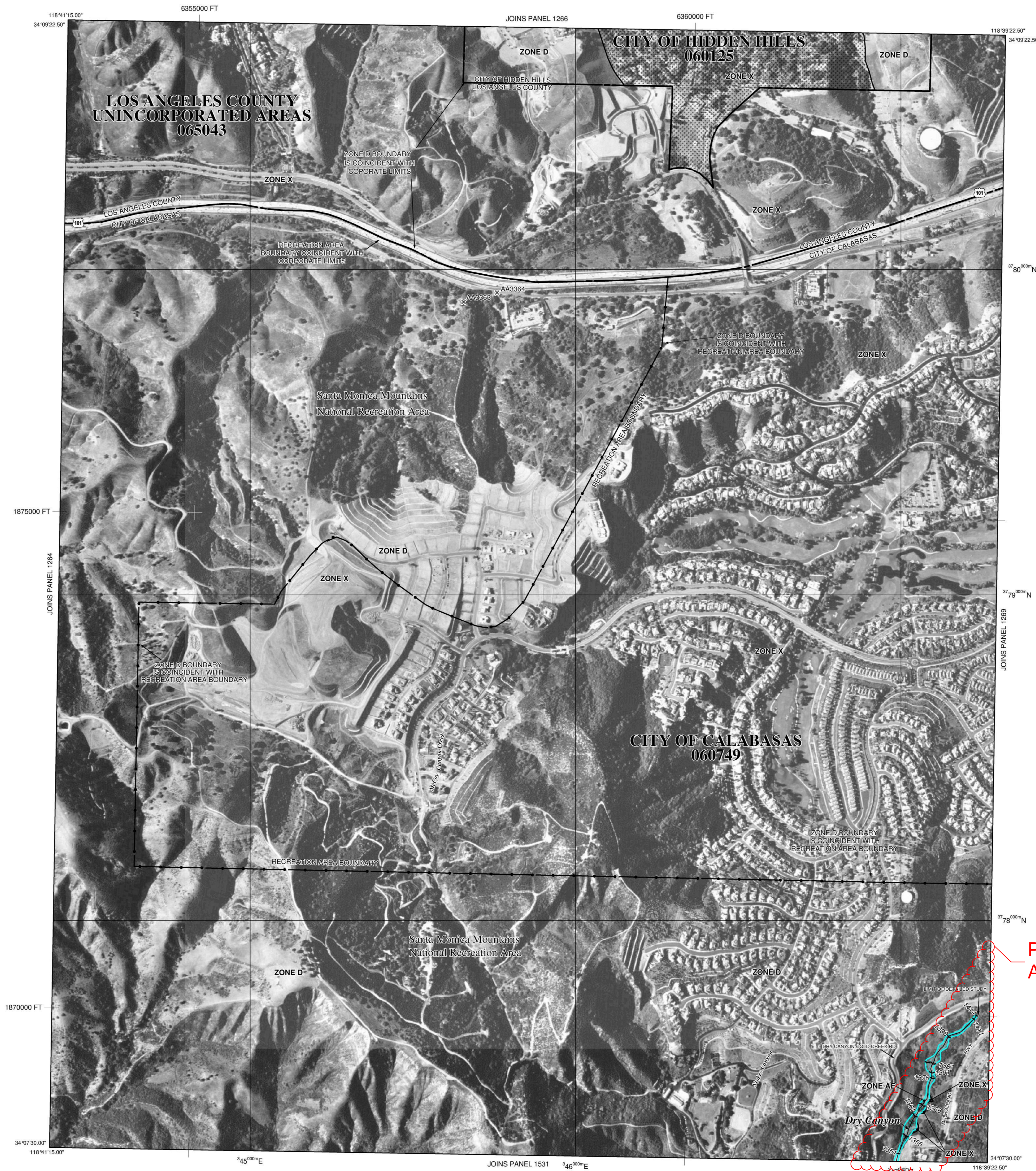
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If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA MAP (1-877-336-2627) or visit the FEMA website at <http://www.fema.gov/>.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A
No Base Flood Elevations determined.

ZONE AE
Base Flood Elevations determined.

ZONE AH
Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO
Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR
Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE A99
Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V
Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE
Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X
Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X
Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D
Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary
0.2% annual chance floodplain boundary
Floodway boundary
Zone D boundary
CBRS and OPA boundary
Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
Base Flood Elevation line and value; elevation in feet*
Base Flood Elevation value where uniform within zone; elevation in feet*
* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

(A) (B) Cross section line
(23) (24) Transect line
97°07'30", 32°22'30" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
42°75'00"N 1000-meter Universal Transverse Mercator grid values, zone 11
6000000 FT 5000-foot grid ticks: California State Plane coordinate system, V zone (FIPSZONE 0405), Lambert Conformal Conic
DX5510 Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5 River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
September 26, 2008
EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1268F

FIRM FLOOD INSURANCE RATE MAP

LOS ANGELES COUNTY, CALIFORNIA AND INCORPORATED AREAS

PANEL 1268 OF 2350
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:	NUMBER	PANEL	SUFFIX
LOS ANGELES COUNTY	065043	1268	F
CALABASAS, CITY OF	060749	1268	F
HIDDEN HILLS, CITY OF	060125	1268	F

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
06037C1268F

EFFECTIVE DATE
SEPTEMBER 26, 2008

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations (BFEs)** and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 11. The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov/> or contact the National Geodetic Survey at the following address:

NGS Information Services
 NOAA, NNGS12
 National Geodetic Survey
 SSMC-3, #9202
 1315 East-West Highway
 Silver Spring, MD 20910-3282

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at <http://www.ngs.noaa.gov/>.

Base map information shown on this FIRM was derived from U.S. Geological Survey Digital Orthophoto Quadrangles produced at a scale of 1:12,000 from photography dated 1994 or later and from National Geospatial Intelligence Agency imagery produced at a scale of 1:4,000 from photography dated 2003 or later.

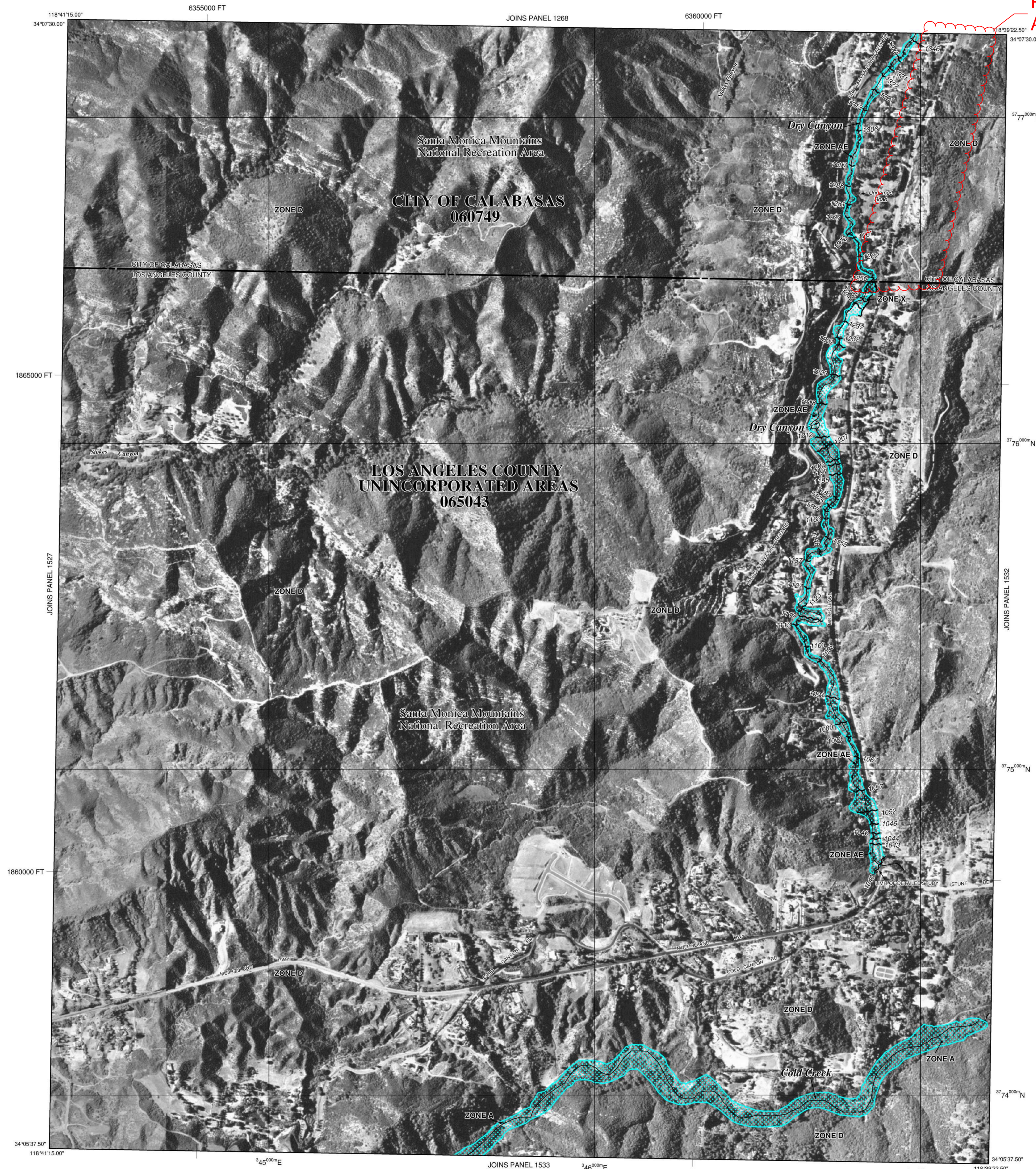
This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at <http://www.msc.fema.gov/>.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA MAP (1-877-336-2627) or visit the FEMA website at <http://www.fema.gov/>.



Project Area

LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A No Base Flood Elevations determined.

ZONE AE Base Flood Elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE A99 Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- Base Flood Elevation line and value; elevation in feet* (EL 987)
- Base Flood Elevation value where uniform within zone; elevation in feet

* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

Cross section line

Transect line

Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)

1000-meter Universal Transverse Mercator grid values, zone 11

5000-foot grid ticks: California State Plane coordinate system, V zone (FIPSZONE 0405), Lambert Conformal Conic

Bench mark (see explanation in Notes to Users section of this FIRM panel)

MAP REPOSITORIES

Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP

September 26, 2008

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1531F

FIRM FLOOD INSURANCE RATE MAP

LOS ANGELES COUNTY, CALIFORNIA AND INCORPORATED AREAS

PANEL 1531 OF 2350
 (SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
LOS ANGELES COUNTY	065043	1531	F
CALABASAS, CITY OF	060749	1531	F

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
 06037C1531F

EFFECTIVE DATE
 SEPTEMBER 26, 2008

Federal Emergency Management Agency