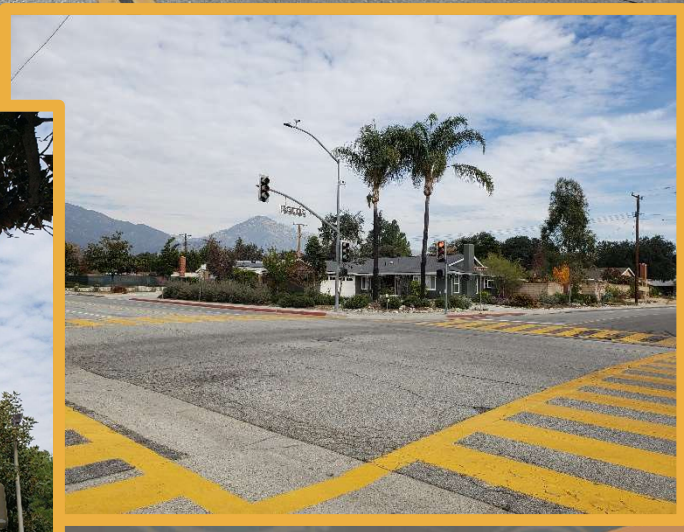
ATTACHMENT

City of Claremont

Mountain Avenue Between Foothill Boulevard and Base Line Road Corridor Study

Date: January 19, 2022



Prepared by:

ADVANTEC Consulting Engineers

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Release Version:

Release Date	Version	Prepared by:	Reviewed by:
1/19/2022	1.0 Draft	NP	JD

1. Introduction

ADVANTEC Consulting Engineers (ADVANTEC) was requested by the City of Claremont to perform a corridor evaluation study at Mountain Avenue between Foothill Boulevard and Base Line Road (project corridor) and an intersection analysis at Mountain Avenue/Scripps Drive (project intersection).

The purpose of this study is to analyze the existing conditions of the project location in order to enhance the safety and visibility of and for motorists and cyclists traveling through the project corridor and project intersection.

This study analyzes the project location geometry, signing, and striping, and traffic volumes along Mountain Avenue between Foothill Boulevard and Base Line Road and the intersection of Mountain Avenue/Scripps Drive. This study also summarizes the results of the analysis and provides alternative striping and lane geometric recommendations to promote multimodal modes of transportation.

1.1 Study Area

Mountain Avenue between Foothill Boulevard and Base Line Road runs north-south and is located in the midwestern area of the City of Claremont. The signalized intersection of Mountain Avenue/Scripps Road is located along the project corridor. The land use adjacent to the project location is predominantly residential. Condit Elementary School lies southeast, and North Hills Church lies southwest from the intersection of Mountain Avenue/Scripps Road.

Figure 1 shows the project location.

2. Existing Conditions

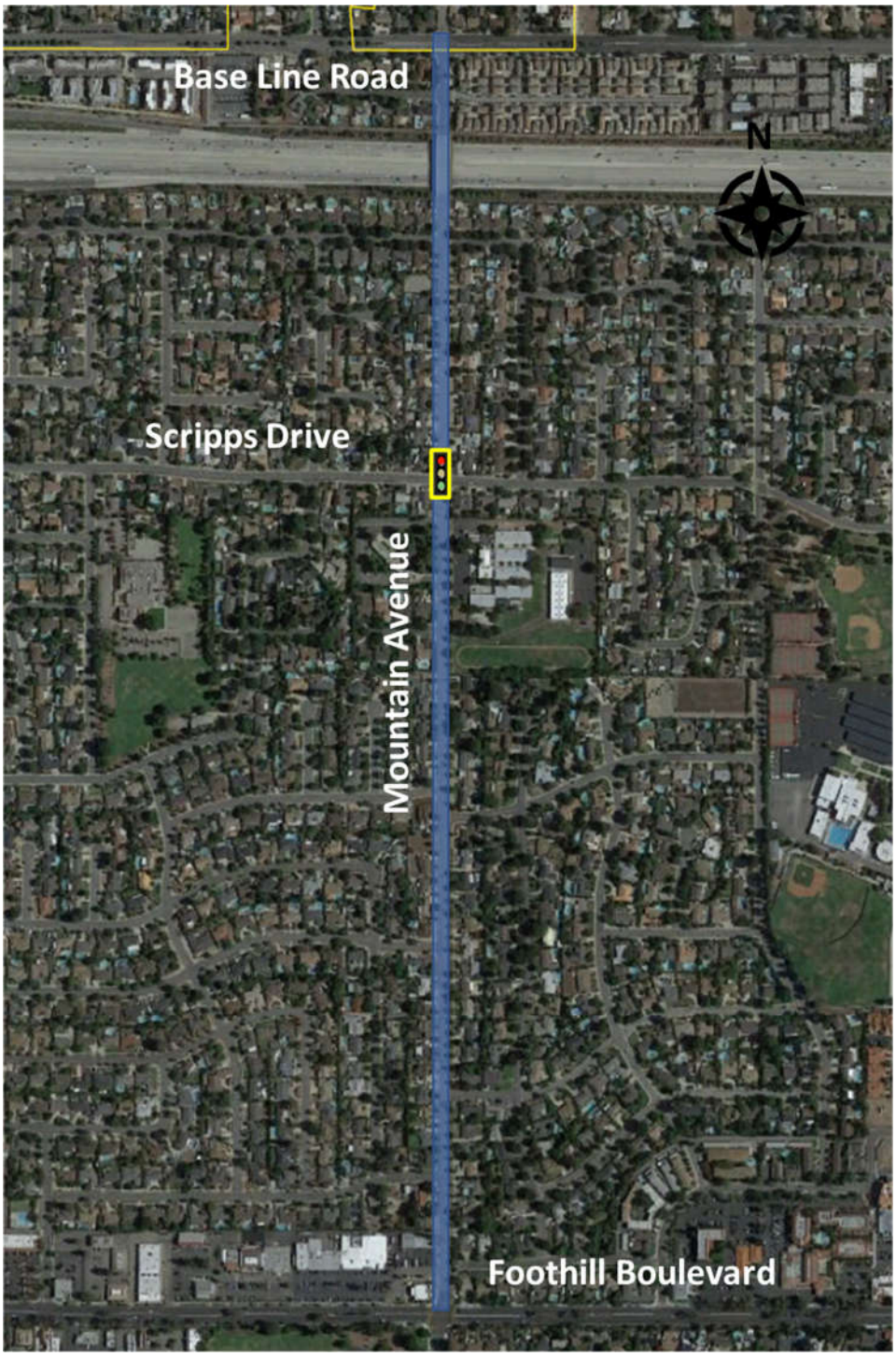
This section presents an overview of the existing project location and the roadway conditions along Mountain Avenue between Foothill Boulevard and Base Line Road, such as the roadway alignment, lane configuration, intersection control, traffic volumes, and existing speed. The following presents a detailed assessment of these characteristics.

2.1 Roadway Description

Mountain Avenue is designated as a “Secondary Arterial” in the City of Claremont’s General Plan. This is a north-south four-lane undivided roadway with existing Class II bicycle lanes, and parking is allowed along the roadway segment. The posted speed limit is 35 miles per hour (mph) in both directions.

Scripps Drive is designated as a “Collector Roadway” in the City of Claremont’s General Plan. This is an east-west two-lane undivided roadway with existing Class III bicycle lanes with sharrow lane striping, and parking is allowed along the roadway segment. The posted speed limit is 25 mph in both directions.

Figure 1: Project Location



2.2 Project Corridor and Intersection Geometry and Control

2.2.1 Existing Signage, Striping, Landscaping, and Pavement Markings

ADVANTEC conducted a project site analysis in order to provide a comprehensive understanding of existing traffic conditions, roadway alignment, signage, striping, and potential concerns at the project corridor. The existing signs can be referenced from the *California Manual on Uniform Traffic Control Devices, 2014 Edition, Revision 4* (CA MUTCD).

The existing cross-section for the project corridor consists of a 7-foot parking and bicycle lane, an 11-foot through lane, and a 10-foot through lane in each direction, for a total roadway width of 56 feet. **Figures 2 to 6** illustrate the existing signage, pavement markings, and roadway alignment along Mountain Avenue between Foothill Boulevard and Base Line Road. The Mountain Avenue/Scripps Drive project intersection utilizes permitted left-turns in all directions.

2.3 Traffic Volumes

Traffic, pedestrian, and bicycle volumes were collected in order to understand the use of the project intersection, and the number of vehicles that travels through the project corridor and project intersection on a typical day during the week.

ADVANTEC collected five-day peak-hour vehicle, pedestrian, and bicycle counts from Tuesday, November 2, 2021 to Friday, November 5, 2021, and Monday, November 8, 2021 at the intersection of Mountain Avenue/Scripps Drive. ADVANTEC also collected average daily traffic (ADT) counts along the project corridor on Thursday, January 6, 2022. The ADT vehicle counts were collected for 24 continuous hours. Based on the review of the peak-hour vehicle counts, it was determined that the highest traffic volumes occurred on Thursday, November 4, 2021. The peak-hour vehicle, pedestrian, and bicyclist volumes are provided in **Table 1**. The ADT counts along Mountain Avenue are provided in **Table 2**. The traffic volumes are contained in **Appendix A**.

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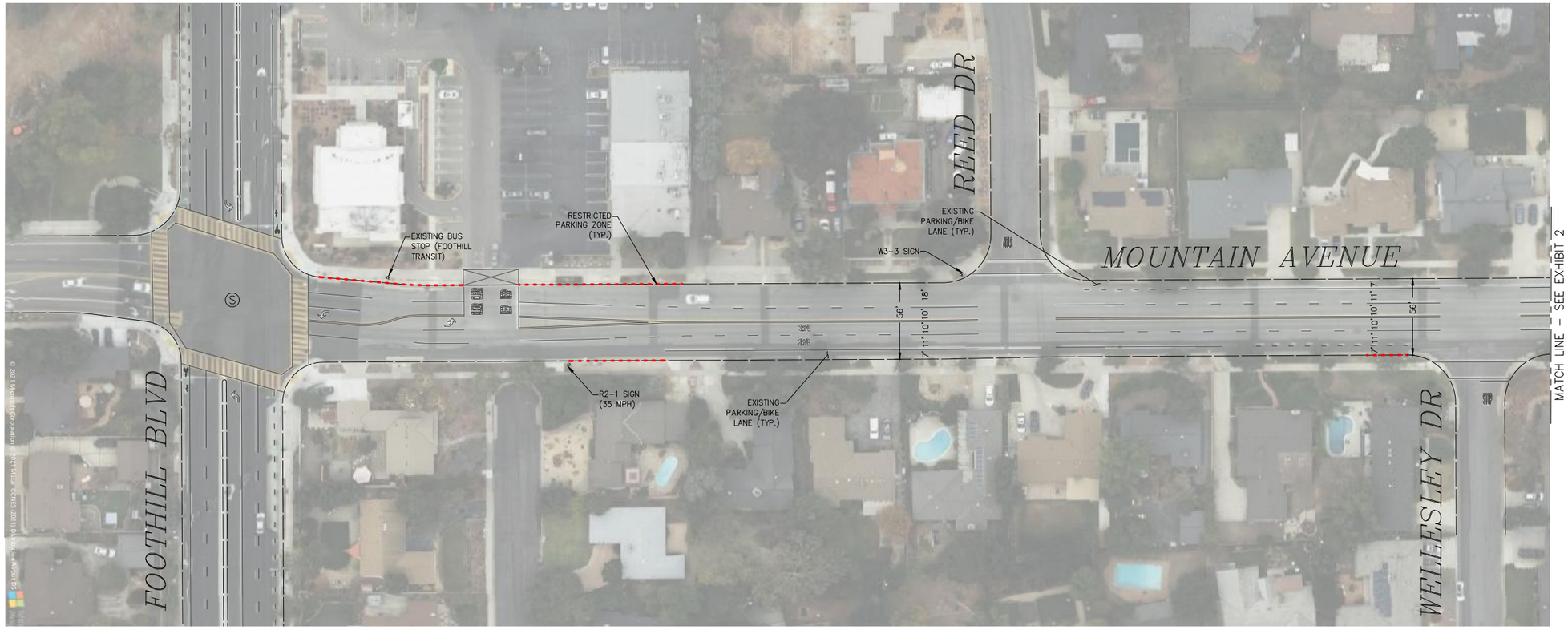
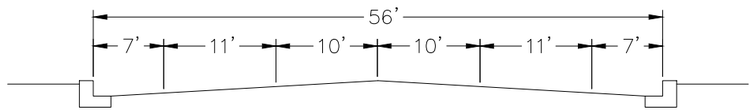




MOUNTAIN AVENUE CROSS-SECTION

NOT TO SCALE

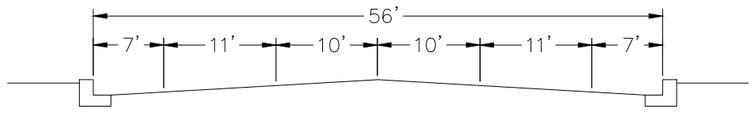
LEGEND:

- Ⓢ EXISTING SIGNALIZED INTERSECTION
- EXISTING RED CURB (NO PARKING)
- EXISTING DRIVEWAY (SHOWN NEAR SCRIPPS DRIVE)

Figure 2: Existing Conditions - Exhibit 1 of 5

Corridor Analysis - Mountain Avenue from Foothill Boulevard to Base Line Road

SCALE: 1" = 40'



MOUNTAIN AVENUE CROSS-SECTION

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- (S) EXISTING SIGNALIZED INTERSECTION
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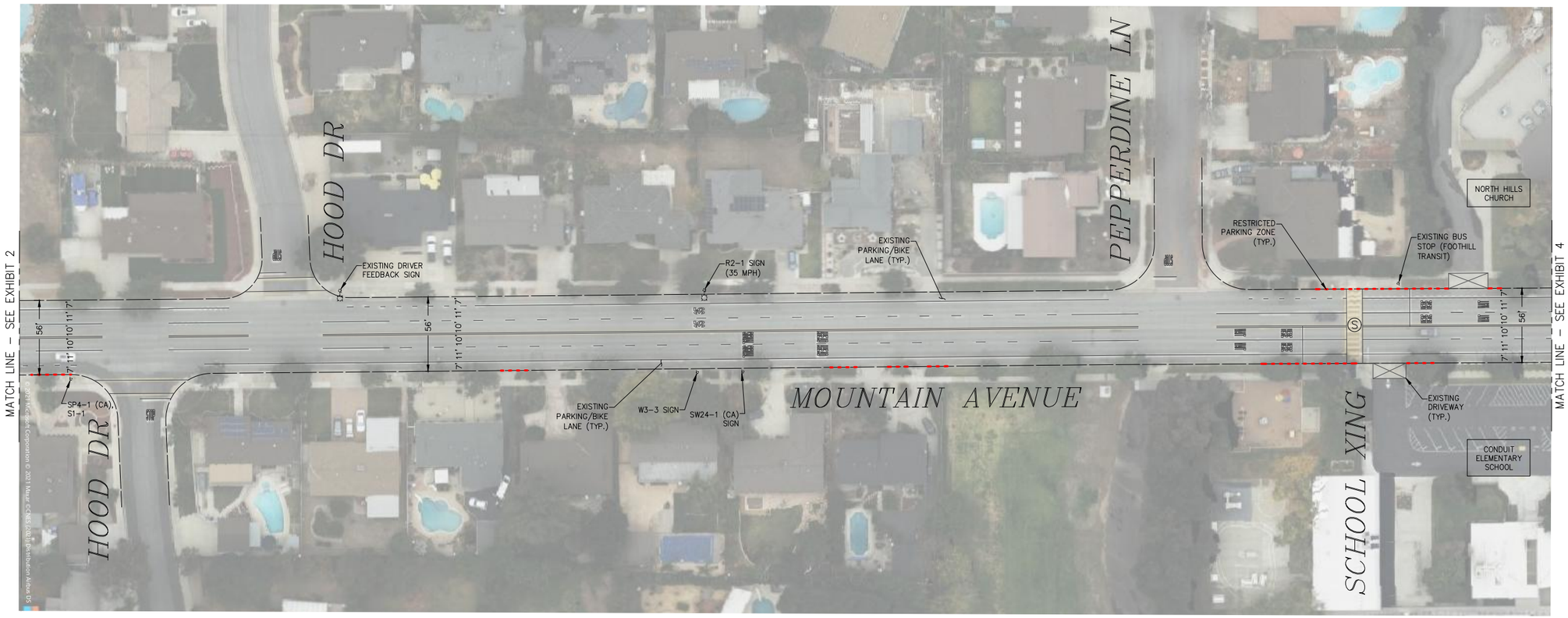
Figure 3: Existing Conditions - Exhibit 2 of 5

Corridor Analysis - Mountain Avenue from Foothill Boulevard to Base Line Road

SCALE: 1" = 40'



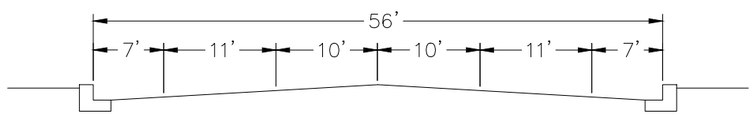


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Figure 4: Existing Conditions - Exhibit 3 of 5

Corridor Analysis - Mountain Avenue from Foothill Boulevard to Base Line Road

SCALE: 1" = 40'

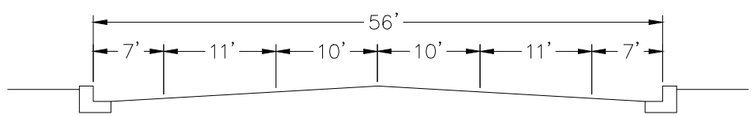

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Figure 5: Existing Conditions - Exhibit 4 of 5

Corridor Analysis - Mountain Avenue from Foothill Boulevard to Base Line Road

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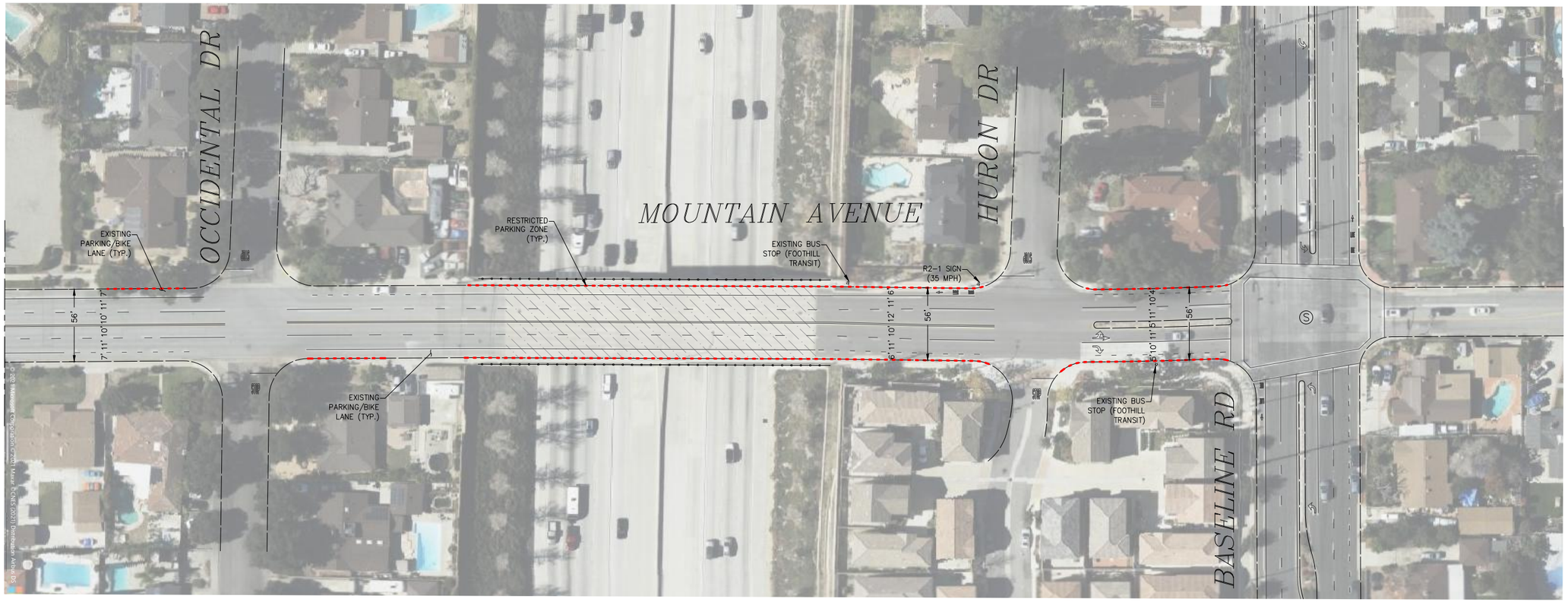

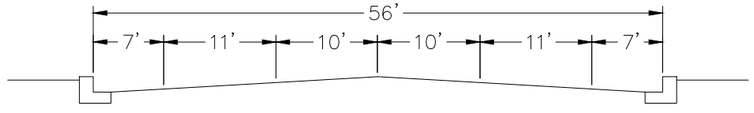

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Figure 6: Existing Conditions - Exhibit 5 of 5

Corridor Analysis - Mountain Avenue from Foothill Boulevard to Base Line Road

Table 1: Peak-Hour Counts

Type of Count	Peak-Hour Time	Peak-Hour Counts at Mountain Avenue/Scripps Drive											
		Northbound			Southbound			Eastbound			Westbound		
		NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBL
Vehicles	Thursday, 11/4/2021 7:30 AM-8:30 AM	76	187	81	25	320	28	17	122	66	47	84	34
	Thursday, 11/4/2021 4:45 PM-5:45 PM	39	189	38	16	133	16	14	60	43	19	48	19
Bicyclists	Thursday, 11/4/2021 7:30 AM-8:30 AM	0	0	0	1	11	0	0	4	0	1	3	0
	Thursday, 11/4/2021 4:45 PM-5:45 PM	2	5	1	1	3	0	0	3	0	0	2	0
Pedestrians	Thursday, 11/4/2021 7:30 AM-8:30 AM	123			39			79			37		
	Thursday, 11/4/2021 4:45 PM-5:45 PM	0			2			13			0		

Table 2: ADT Counts

Location	Posted Speed	ADT Counts		
		NB	SB	Combined
Mountain Avenue between Wellesley Drive and Hood Drive	35 mph	2705	2612	5317
Mountain Avenue between Scripps Drive and Base Line Road	35 mph	2223	2076	4299

3. Analysis Methodology

To determine the daily operations along the project corridor, the *Highway Capacity Manual* (HCM, Transportation Resources Board 6th Edition) and volume-to-capacity (v/c) methodologies were used. Vehicular volumes are divided by the calculated daily capacity of the roadway segment, resulting in a v/c ratio. The resulting v/c ratio is expressed in terms of level of service (LOS), where LOS A represents free-

flow activity and LOS F represents overcapacity operation. The following table illustrates the relationship of v/c to LOS.

Level of Service	Description of Traffic Conditions	Volume-to-Capacity (V/C) ratio
A	Excellent operation. All approaches to the intersection appear quite open, turning movements are easily made, and nearly all drivers find freedom of operation.	0.00 – 0.60
B	Very good operation. Many drivers begin to feel somewhat restricted within platoons of vehicles. This represents stable flow. An approach to an intersection may occasionally be fully utilized and traffic queues start to form.	0.61 – 0.70
C	Good operation. Occasionally backups may develop behind turning vehicles. Most drivers feel somewhat restricted.	0.71 – 0.80
D	Fair operation. There are no long-standing traffic queues. This level is typically associated with design practice for peak periods.	0.81 – 0.90
E	Poor operation. Some long-standing vehicular queues develop on critical approaches.	0.91 – 1.00
F	Forced flow. Represents jammed conditions. Backups from locations downstream or on the cross street may restrict or prevent movements of vehicles out of the intersection approach lanes; therefore, volumes carried are not predictable. Potential for stop-and-go-type traffic flow.	> 1.00

Average roadway capacity at Mountain Avenue was calculated using HCM methodology for multilane highways. The capacity for Mountain Avenue, a four-lane highway, was calculated to be approximately 1,450 vehicles per hour. The calculated daily capacity at the project corridor is calculated by multiplying the hourly capacity by 24 hours, resulting in approximately 35,000 vehicles per day.

For the purposes of this analysis, the daily capacity for a two-lane highway is estimated to be half the daily capacity of Mountain Avenue, which is an existing four-lane highway. In order to provide a conservative estimate, the daily capacity for a two-lane highway is estimated to be 15,000 vehicles per day.

According to the City of Claremont's *General Plan Community Mobility Element*, the performance criteria for minimum LOS objectives are provided in the table below:

Roadway Segment Classification	Minimum Acceptable LOS
Major Arterial	LOS E Minimum acceptable operations
Secondary Arterial	LOS D Minimum acceptable operations
Rural Secondary Arterial	LOS D Minimum acceptable operations
Collector	LOS C Minimum acceptable operations
Local Street	LOS B Minimum acceptable operations

Source: City of Claremont *General Plan Community Mobility Element*.

4. Existing Conditions Analysis

The existing conditions for the roadway segment of Mountain Avenue was analyzed using v/c calculations for LOS. The results of this analysis is summarized in **Table 4**.

Table 3: Existing Conditions Roadway Segment LOS

Location	# of Lanes	Calculated Daily Capacity* (vehicles/day)	Volume	V/C Ratio	LOS
Mountain Avenue between Wellesley Drive and Hood Drive	4	35,000	5,317	0.15	A
Mountain Avenue between Scripps Drive and Base Line Road	4	35,000	4,299	0.12	A

* Daily Capacity calculated using HCM, Transportation Resources Board 6th Edition methodology.

Table 4 shows that the roadway segment of Mountain Avenue currently operates at satisfactory LOS.

5. Alternatives Analysis

Based on ADVANTEC's evaluation of the existing conditions, traffic volumes, pedestrian volumes, and bicycle volumes this section provides alternative striping plans for the project corridor and alternative striping and phasing plans for the project intersection to enhance the safety of and for motorists, pedestrians, and cyclists traveling through the project corridor and intersection. The existing and proposed signs can be referenced from the CA MUTCD.

5.1 Corridor Alternatives

5.1.1 Corridor Alternative 1: Sharrows

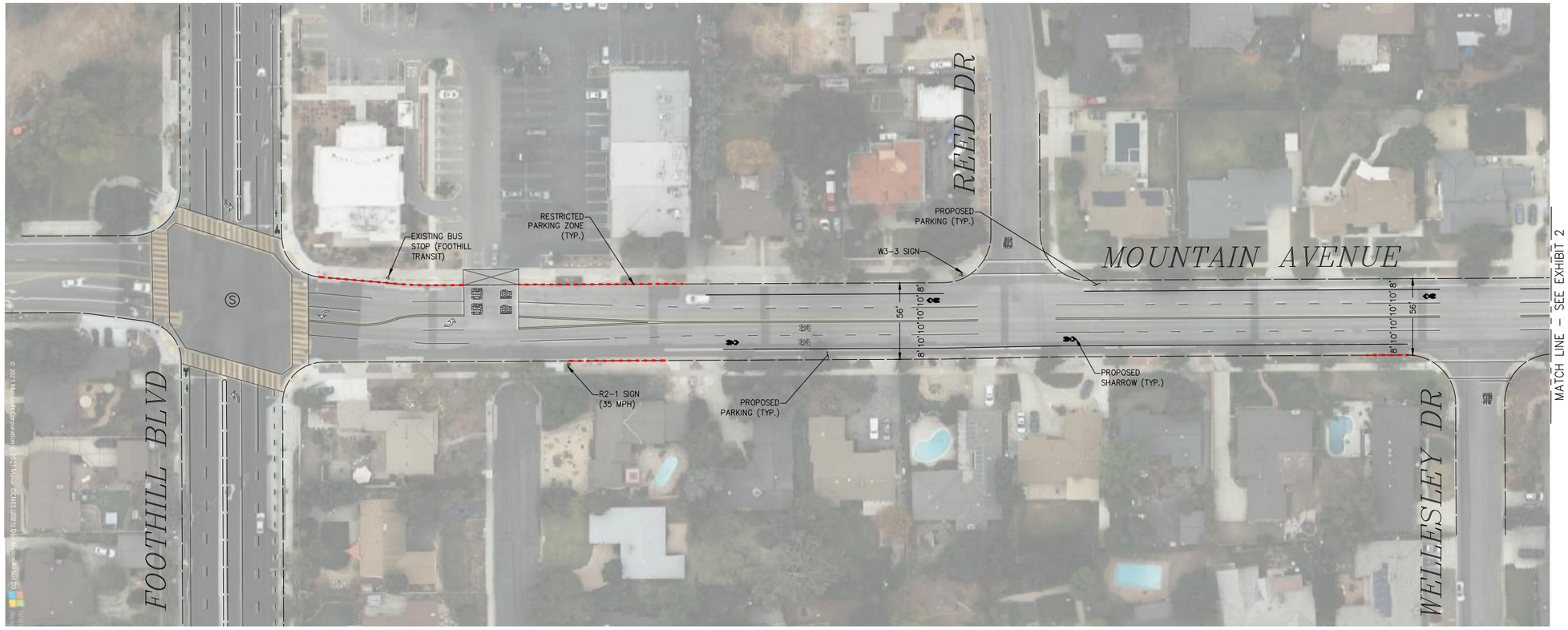
Alternative 1 for the Mountain Avenue corridor between Foothill Boulevard and Base Line Road consists of widening the existing parking lane by one foot (8-feet wide) and turning the outer through lane of traffic into a sharrow, or a shared travel lane for vehicles and bicyclists, in each direction. The resulting cross-section for alternative 1 of the project corridor is as follows:

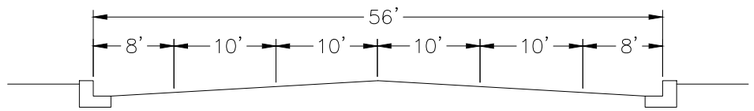
- 8-foot parking lane (northbound)
- 10-foot sharrow (northbound)
- 10-foot vehicular lane (northbound)
- 10-foot vehicular lane (southbound)
- 10-foot sharrow (southbound)
- 8-foot parking lane (southbound)
- Total roadway width of 56 feet

The bicycle lane in the existing condition is shared with the parking lane, making it difficult for bicyclists to stay in the lane when parked cars are blocking the way. The proposed alternative will allow bicyclists to be able to stay in a single lane along Mountain Avenue without having to avoid parked vehicles.

Figures 7 to 11 illustrate the proposed striping, pavement markings, and roadway alignment along Mountain Avenue between Foothill Boulevard and Base Line Road for alternative 1 of the project corridor.

SCALE: 1" = 40'





MOUNTAIN AVENUE CROSS-SECTION

NOT TO SCALE

LEGEND:

- EXISTING SIGNALIZED INTERSECTION
- EXISTING RED CURB (NO PARKING)
- EXISTING DRIVEWAY (SHOWN NEAR SCRIPPS DRIVE)
- PROPOSED SHARROW LANE STRIPING

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Figure 7: Alternative No. 1: Corridor Reconfiguration - Exhibit 1 of 5

Corridor Analysis - Mountain Avenue from Foothill Boulevard to Base Line Road

SCALE: 1" = 40'

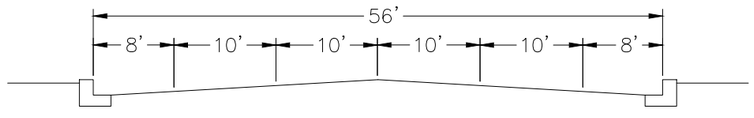

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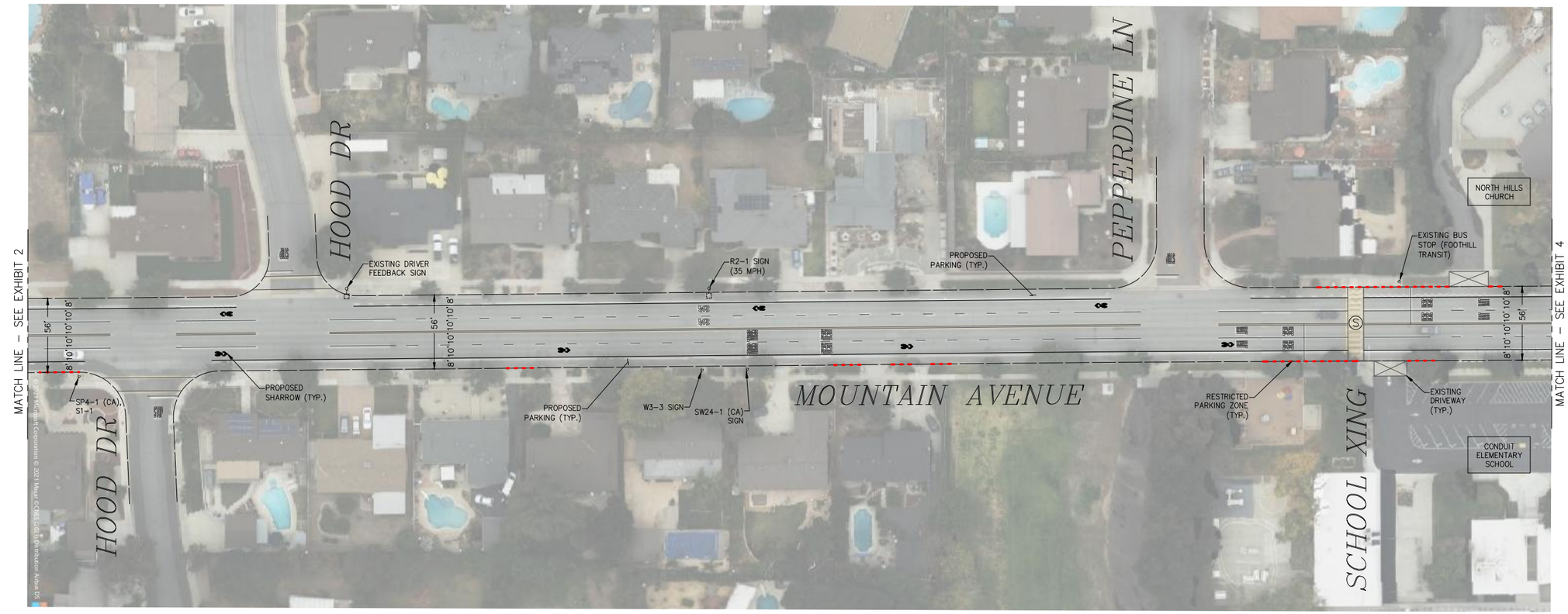
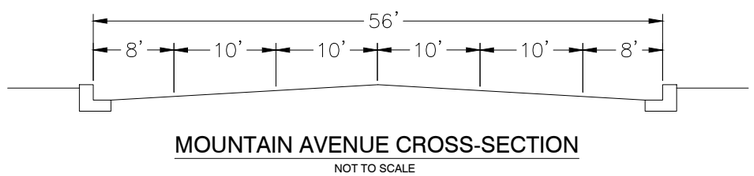
Figure 8: Alternative No. 1: Corridor Reconfiguration - Exhibit 2 of 5

Corridor Analysis - Mountain Avenue from Foothill Boulevard to Base Line Road

SCALE: 1" = 40'





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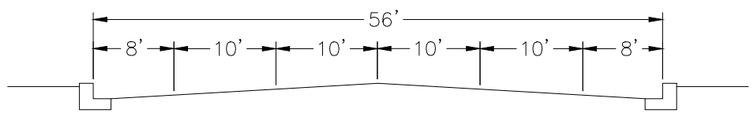
- EXISTING DRIVEWAY (SHOWN NEAR SCRIPPS DRIVE)
- PROPOSED SHARROW LANE STRIPING

Figure 9: Alternative No. 1: Corridor Reconfiguration - Exhibit 3 of 5

Corridor Analysis - Mountain Avenue from Foothill Boulevard to Base Line Road

SCALE: 1" = 40'



MOUNTAIN AVENUE CROSS-SECTION

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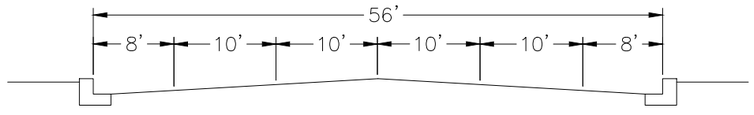
- EXISTING RED CURB (NO PARKING)
- EXISTING DRIVEWAY (SHOWN NEAR SCRIPPS DRIVE)
- PROPOSED SHARROW LANE STRIPING

Figure 10: Alternative No. 1: Corridor Reconfiguration - Exhibit 4 of 5

Corridor Analysis - Mountain Avenue from Foothill Boulevard to Base Line Road

SCALE: 1" = 40'



MOUNTAIN AVENUE CROSS-SECTION
NOT TO SCALE

LEGEND:

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- EXISTING RED CURB (NO PARKING)
- EXISTING DRIVEWAY (SHOWN NEAR SCRIPPS DRIVE)
- PROPOSED SHARROW LANE STRIPING

Figure 11: Alternative No. 1: Corridor Reconfiguration - Exhibit 5 of 5

Corridor Analysis - Mountain Avenue from Foothill Boulevard to Base Line Road

5.1.2 Corridor Alternative 2: Road Diet

Alternative 2 for the Mountain Avenue corridor between Foothill Boulevard and Base Line Road is consistent with the road diet plan for Mountain Avenue in the City of Claremont's *General Plan Community Mobility Element*. Alternative 2 consists of widening the existing parking lane by one foot (8-feet wide), adding a 5-foot bike lane, having a single 10-foot through lane for vehicular traffic, and adding a 10-foot two-way left-turn lane in the middle of the roadway segment. The resulting cross-section for alternative 2 of the project corridor is as follows:

- 8-foot parking lane (northbound)
- 5-foot bike lane (northbound)
- 10-foot vehicular lane (northbound)
- 10-foot two-way left-turn lane (median)
- 10-foot vehicular lane (southbound)
- 5-foot bike lane (southbound)
- 8-foot parking lane (southbound)
- Total roadway width of 56 feet

As stated previously, the bicycle lane in the existing condition is shared with the parking lane, making it difficult for bicyclists to stay in the lane when parked cars are blocking the way. The proposed alternative will allow bicyclists to be able to stay in a single lane along Mountain Avenue without having to avoid parked vehicles. It should be noted that Mountain Avenue south of Foothill Boulevard is currently following corridor alternative 2.

Figures 12 to 16 illustrate the proposed striping, pavement markings, and roadway alignment along Mountain Avenue between Foothill Boulevard and Base Line Road for alternative 2 of the project corridor.

The proposed conditions for alternative 2 of Mountain Avenue will reduce the number of lanes from four lanes to two lanes. Therefore, the proposed alternative was analyzed using v/c calculations for LOS. The results of this analysis is summarized in **Table 5**. Alternative 2 for the project corridor is also consistent with the City of Claremont's *General Plan Community Mobility Element*'s description of Mountain Avenue, stating that traffic volumes are below 8,000 vehicles a day and only two lanes are needed along the corridor.

Table 4: Alternative 2 Conditions Roadway Segment LOS

Location	# of Lanes	Calculated Daily Capacity* (vehicles/day)	Volume	V/C Ratio	LOS
Mountain Avenue between Wellesley Drive and Hood Drive	2	15000	5317	0.35	A
Mountain Avenue between Scripps Drive and Base Line Road	2	15000	4299	0.29	A

* Daily Capacity calculated using HCM, Transportation Resources Board 6th Edition methodology.

Table 5 shows that the roadway segments of Mountain Avenue and Scripps Drive are projected to operate at satisfactory LOS for alternative 2.

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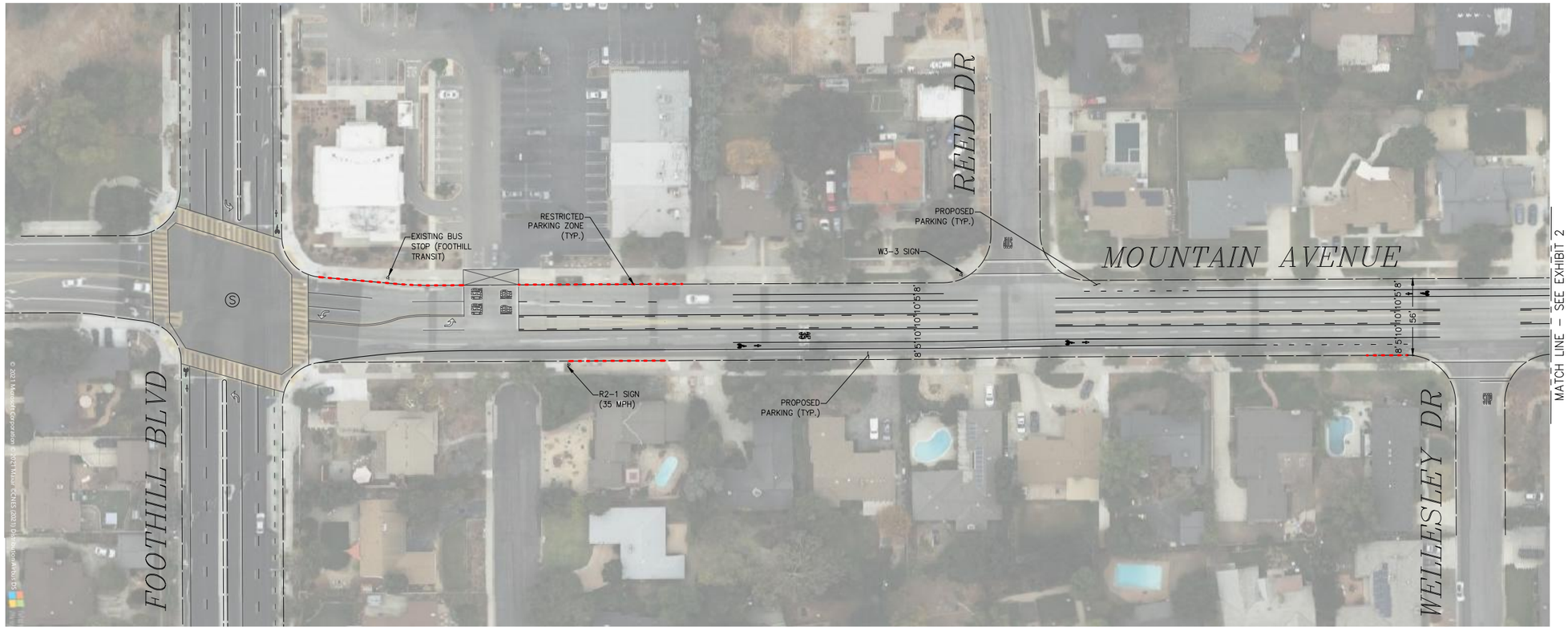
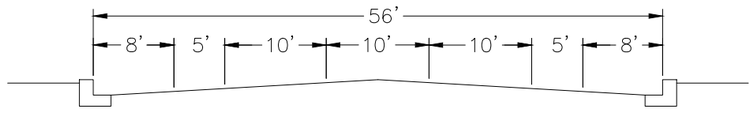




MOUNTAIN AVENUE CROSS-SECTION

NOT TO SCALE

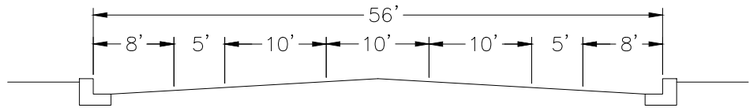
LEGEND:

- Ⓢ EXISTING SIGNALIZED INTERSECTION
- EXISTING RED CURB (NO PARKING)
- EXISTING DRIVEWAY (SHOWN NEAR SCRIPPS DRIVE)

Figure 12: Alternative No. 2: Corridor Reconfiguration - Exhibit 1 of 5

Corridor Analysis - Mountain Avenue from Foothill Boulevard to Base Line Road

SCALE: 1" = 40'



MOUNTAIN AVENUE CROSS-SECTION

NOT TO SCALE

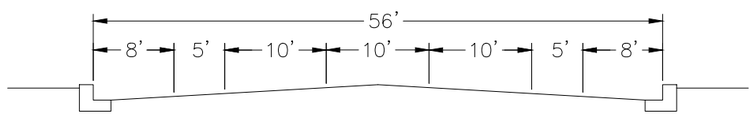
LEGEND:

- Ⓢ EXISTING SIGNALIZED INTERSECTION
- EXISTING RED CURB (NO PARKING)
- EXISTING DRIVEWAY (SHOWN NEAR SCRIPPS DRIVE)

Figure 13: Alternative No. 2: Corridor Reconfiguration - Exhibit 2 of 5

Corridor Analysis - Mountain Avenue from Foothill Boulevard to Base Line Road

SCALE: 1" = 40'



MOUNTAIN AVENUE CROSS-SECTION
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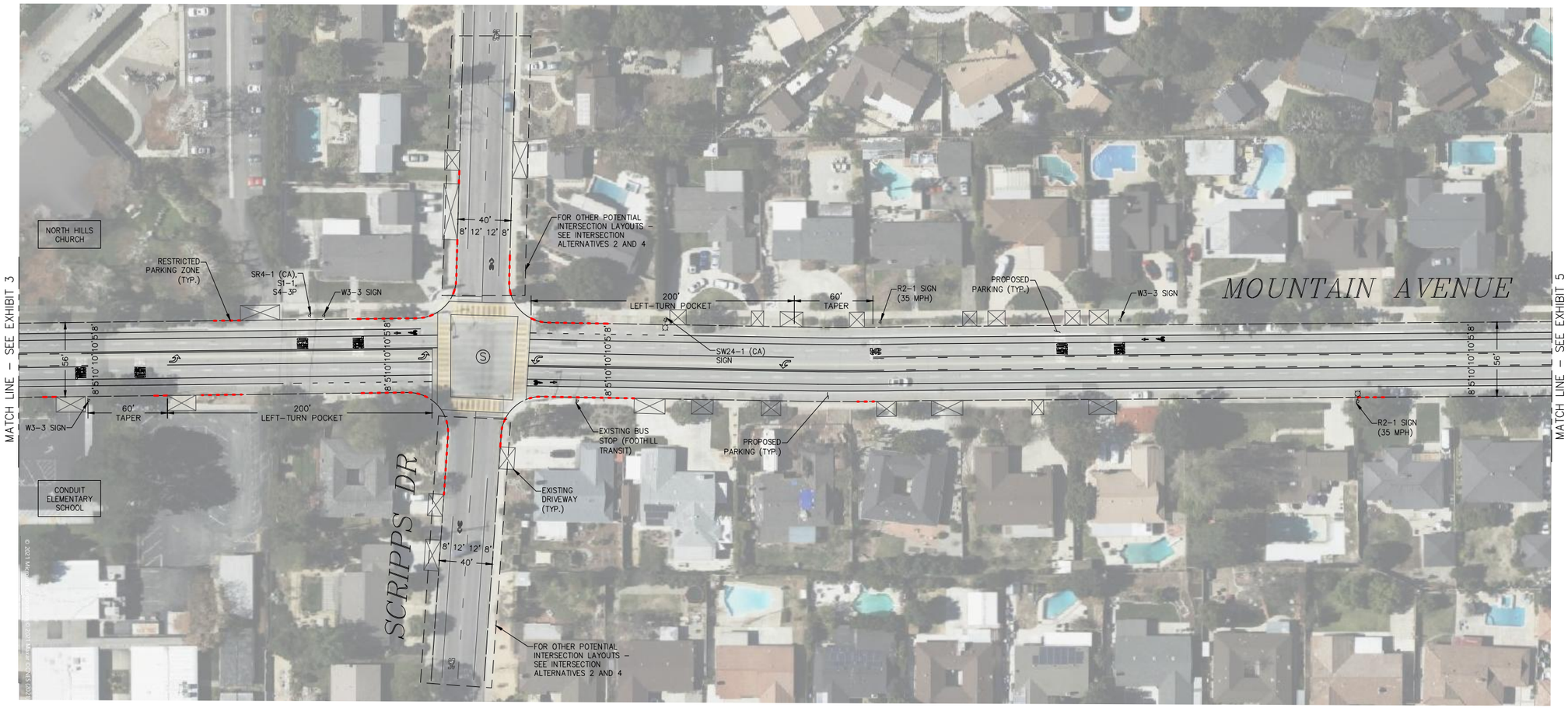
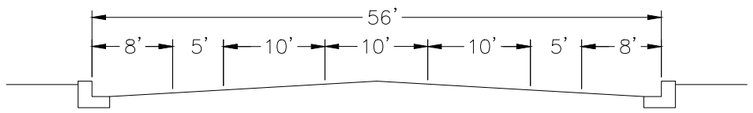
Figure 14: Alternative No. 2: Corridor Reconfiguration - Exhibit 3 of 5

Corridor Analysis - Mountain Avenue from Foothill Boulevard to Base Line Road

SCALE: 1" = 40'





MOUNTAIN AVENUE CROSS-SECTION

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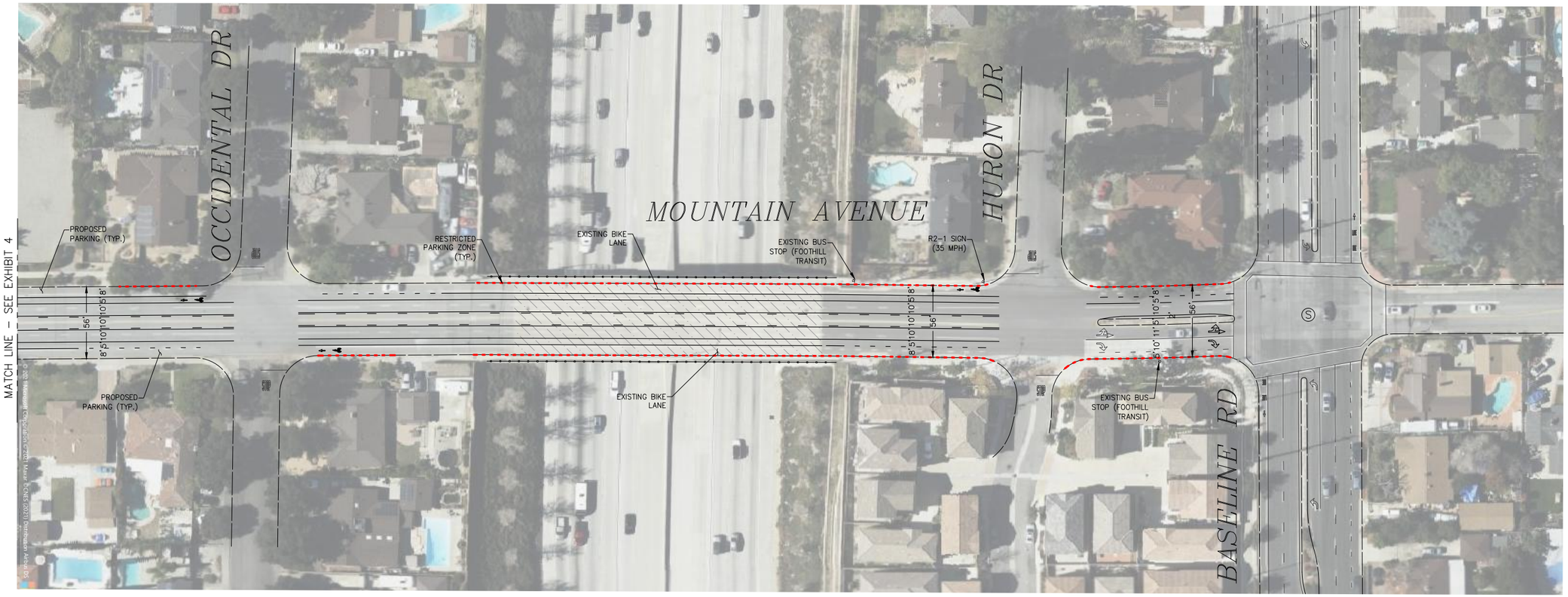
Figure 15: Alternative No. 2: Corridor Reconfiguration - Exhibit 4 of 5

Corridor Analysis - Mountain Avenue from Foothill Boulevard to Base Line Road

SCALE: 1" = 40'



MOUNTAIN AVENUE CROSS-SECTION
NOT TO SCALE

LEGEND:

- Ⓢ EXISTING SIGNALIZED INTERSECTION
- EXISTING RED CURB (NO PARKING)
- EXISTING DRIVEWAY (SHOWN NEAR SCRIPPS DRIVE)

Figure 16: Alternative No. 2: Corridor Reconfiguration - Exhibit 5 of 5

Corridor Analysis - Mountain Avenue from Foothill Boulevard to Base Line Road

5.2 Intersection Alternatives

5.2.1 Intersection Alternative 1: North-South Left-Turn Lanes

Intersection alternative 1 proposes the following changes at the intersection of Mountain Avenue/Scripps Drive:

- Stripe in dedicated left-turn lanes for the north and south legs at the project intersection.
    - Each left-turn lane will have a 100-foot turn-pocket and a 60-foot bay taper.
    - Due to the addition of left-turn lanes, the existing parking and bike lanes on both sides of Mountain Avenue will be shortened near the project intersection.
        - Street parking will be restricted for approximately 220 feet adjacent to the intersection on both sides of Mountain Avenue.
        - Due to the reduced lane width adjacent to the curb along Mountain Avenue, residents may have to place curbside trash bins at alternate locations to avoid potential conflict with traffic.
- No right-turns-on-red in all directions of travel, due to sight and safety constraints for student pedestrians traveling to and from the adjacent Conduit Elementary School.
    - Right-turns-on-red will be restricted on Monday-Friday, 7:00 AM-9:00AM and 1:30 PM-3:30 PM, except on modified Wednesdays from 7:00 AM-9:00AM and 12:30 PM-2:30 PM.

Figure 17 shows the proposed striping, pavement markings, and roadway alignment for intersection alternative 1.

5.2.2 Intersection Alternative 2: Left-Turn Lanes All Directions

Intersection alternative 2 proposes the following changes at the intersection of Mountain Avenue/Scripps Drive:

- Stripe in dedicated left-turn lanes for all legs at the project intersection.
    - Each left-turn lane will have a 100-foot turn-pocket and a 60-foot bay taper.
    - Due to the addition of left-turn lanes, the existing parking and bike lanes on both sides of Mountain Avenue and Scripps Drive will be shortened near the project intersection.
        - Street parking will be restricted for approximately 220 feet adjacent to the intersection on both sides of Mountain Avenue and for approximately 160 feet on both sides of Scripps Drive.
        - Due to the reduced lane width adjacent to the curb along Mountain Avenue and Scripps Drive, residents may have to place curbside trash bins at alternate locations to avoid potential conflict with traffic.
- No right-turns-on-red in all directions of travel, due to sight and safety constraints for student pedestrians traveling to and from the adjacent Conduit Elementary School.
    - Right-turns-on-red will be restricted on Monday-Friday, 7:00 AM-9:00AM and 1:30 PM-3:30 PM, except on modified Wednesdays from 7:00 AM-9:00AM and 12:30 PM-2:30 PM.

Figure 18 shows the proposed striping, pavement markings, and roadway alignment for intersection alternative 2.

NOTE: DUE TO THE REDUCED LANE WIDTH ADJACENT TO THE CURB ALONG MOUNTAIN AVENUE, RESIDENTS MAY HAVE TO PLACE CURBSIDE TRASH BINS AT ALTERNATE LOCATIONS TO AVOID POTENTIAL CONFLICT WITH TRAFFIC.

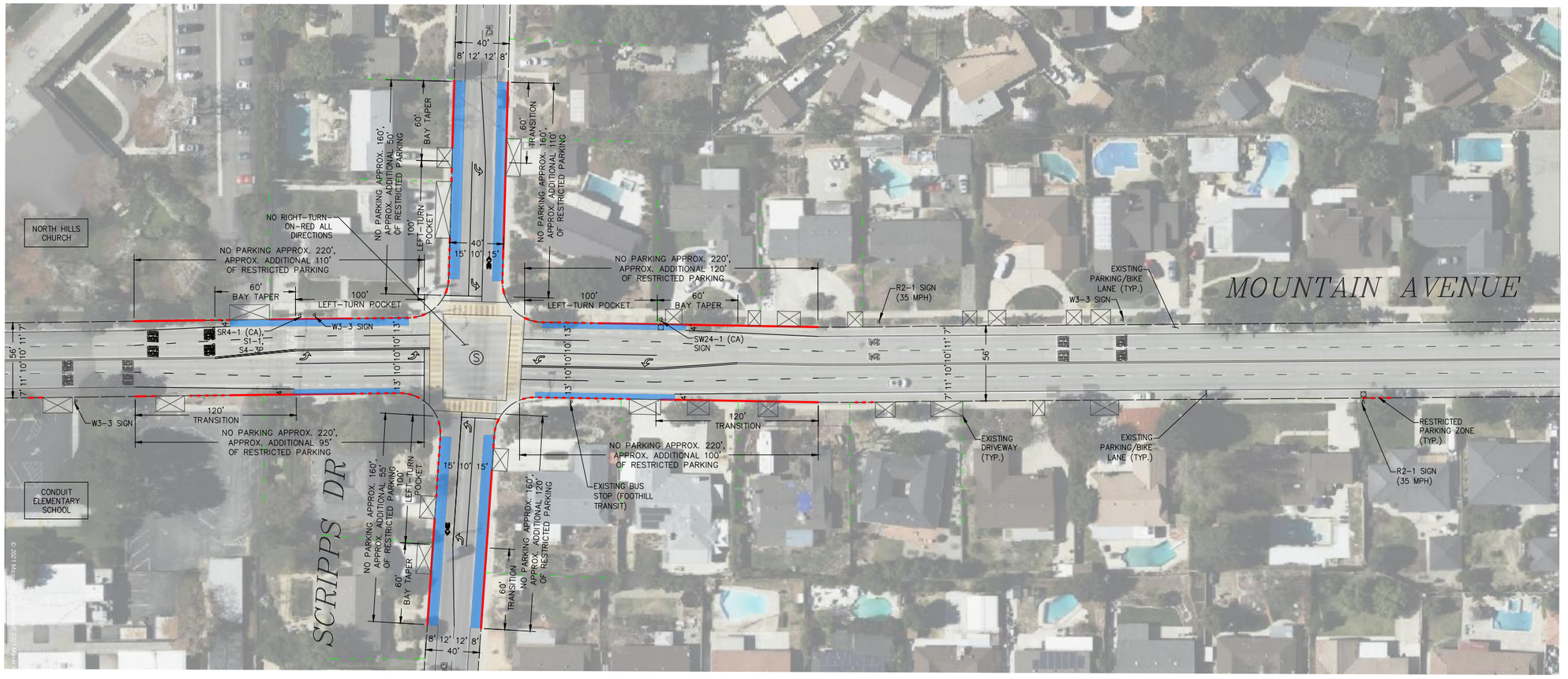
LEGEND:

- Ⓢ EXISTING SIGNALIZED INTERSECTION
- EXISTING RED CURB (NO PARKING)
- EXISTING DRIVEWAY (SHOWN NEAR SCRIPPS DRIVE)
- PROPOSED RED CURB (NO PARKING)
- DO NOT PLACE TRASH BINS IN THIS AREA
- EXISTING PROPERTY LOT LINES

Figure 17: Alternative No. 1: North-South Left-Turn Lanes

Intersection Analysis - Mountain Avenue at Scripps Drive

SCALE: 1" = 40'



NOTE: DUE TO THE REDUCED LANE WIDTH ADJACENT TO THE CURB ALONG MOUNTAIN AVENUE AND SCRIPPS DRIVE, RESIDENTS MAY HAVE TO PLACE CURBSIDE TRASH BINS AT ALTERNATE LOCATIONS TO AVOID POTENTIAL CONFLICT WITH TRAFFIC.

LEGEND:

- Ⓢ EXISTING SIGNALIZED INTERSECTION
- EXISTING RED CURB (NO PARKING)
- EXISTING DRIVEWAY (SHOWN NEAR SCRIPPS DRIVE)
- PROPOSED RED CURB (NO PARKING)
- DO NOT PLACE TRASH BINS IN THIS AREA
- EXISTING PROPERTY LOT LINES

Figure 18: Alternative No. 2: Left-Turn Lanes All Directions

Intersection Analysis - Mountain Avenue at Scripps Drive

5.2.3 Intersection Alternative 3: North-South Left-Turn Lanes with Single Lane Drop

Intersection alternative 1 proposes the following changes at the intersection of Mountain Avenue/Scripps Drive:

- Stripe in a lane drop along Mountain Avenue approaching the project intersection at both directions.
    - Lane merging signage and pavement markings are proposed per the CA MUTCD standards.
- Stripe in dedicated left-turn lanes for the north and south legs at the project intersection.
    - Each left-turn lane will have a 100-foot turn-pocket and a 60-foot bay taper.
    - The existing parking lanes along Mountain Avenue will not be affected due to the lane drop.
- No right-turns-on-red in all directions of travel, due to sight and safety constraints for student pedestrians traveling to and from the adjacent Conduit Elementary School.
    - Right-turns-on-red will be restricted on Monday-Friday, 7:00 AM-9:00AM and 1:30 PM-3:30 PM, except on modified Wednesdays from 7:00 AM-9:00AM and 12:30 PM-2:30 PM.

Figure 19 shows the proposed signing, striping, pavement markings, and roadway alignment for intersection alternative 3.

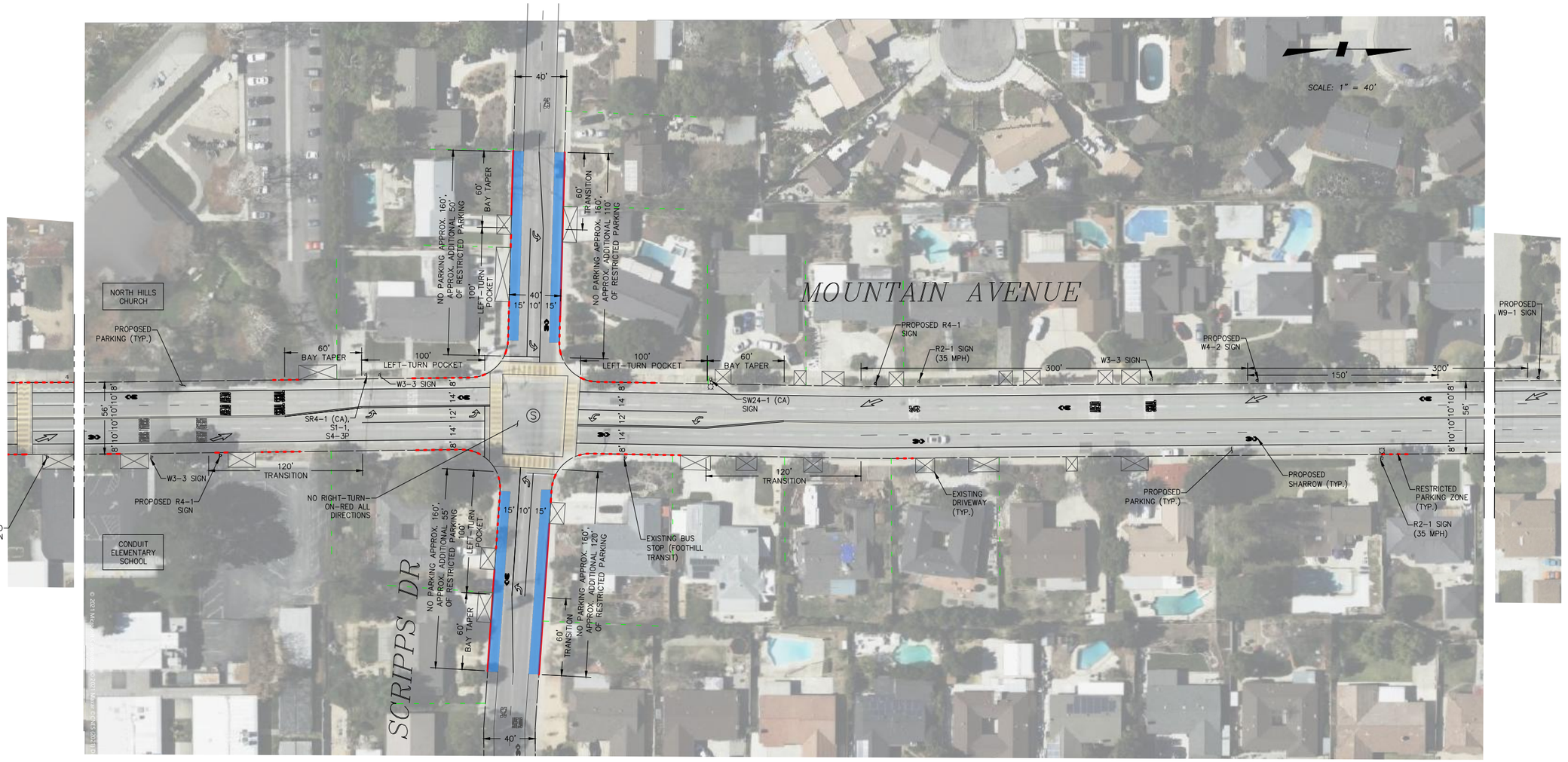
5.2.4 Intersection Alternative 4: Left-Turn Lanes All Directions with Single Lane Drop

Intersection alternative 1 proposes the following changes at the intersection of Mountain Avenue/Scripps Drive:

- Stripe in a lane drop along Mountain Avenue approaching the project intersection at both directions.
    - Lane merging signage and pavement markings are proposed per the CA MUTCD standards.
- Stripe in dedicated left-turn lanes for all legs at the project intersection.
    - Each left-turn lane will have a 100-foot turn-pocket and a 60-foot bay taper.
    - The existing parking lanes along Mountain Avenue will not be affected due to the lane drop.
    - Due to the addition of left-turn lanes along Scripps Drive, the existing parking lanes on both sides of Scripps Drive will be shortened near the project intersection.
        - Street parking will be restricted for approximately 160 feet adjacent to the intersection on both sides of Scripps Drive.
        - Due to the reduced lane width adjacent to the curb along Scripps Drive, residents may have to place curbside trash bins at alternate locations to avoid potential conflict with traffic.
- No right-turns-on-red in all directions of travel, due to sight and safety constraints for student pedestrians traveling to and from the adjacent Conduit Elementary School.
    - Right-turns-on-red will be restricted on Monday-Friday, 7:00 AM-9:00AM and 1:30 PM-3:30 PM, except on modified Wednesdays from 7:00 AM-9:00AM and 12:30 PM-2:30 PM.

Figure 20 shows the proposed signing, striping, pavement markings, and roadway alignment for intersection alternative 4.

Figure 19: Alternative No. 3: North-South Left-Turn Lanes With Single Lane Drop Along Mountain Avenue



NOTE: DUE TO THE REDUCED LANE WIDTH ADJACENT TO THE CURB ALONG SCRIPPS DRIVE, RESIDENTS MAY HAVE TO PLACE CURBSIDE TRASH BINS AT ALTERNATE LOCATIONS TO AVOID POTENTIAL CONFLICT WITH TRAFFIC.

LEGEND:

- EXISTING SIGNALIZED INTERSECTION
- EXISTING RED CURB (NO PARKING)
- EXISTING DRIVEWAY (SHOWN NEAR SCRIPPS DRIVE)
- PROPOSED RED CURB (NO PARKING)
- DO NOT PLACE TRASH BINS IN THIS AREA
- EXISTING PROPERTY LOT LINES
- PROPOSED SHARROW LANE STRIPING

Figure 20: Alternative No. 4: Left-Turn Lanes All Directions With Single Lane Drop Along Mountain Avenue

6. Recommended Improvements

Based on our evaluation of the existing conditions, traffic volumes, pedestrian volumes, and bicycle volumes this section provides the recommended alternatives for the project corridor and project intersection improvements.

6.1 Evaluation and Recommendation of the Corridor Alternatives (including Mountain Avenue at Scripps Drive)

Mountain Avenue between Foothill Boulevard and Base Line Road is evaluated to be a roadway segment with low traffic volumes with motorists driving slightly above the posted speed limit of 35 mph. Additionally, the existing bike lane is shared with the parking lane, forcing bicyclists to either use the sidewalk or merge onto the through lane of vehicular traffic if a parked car is blocking the bike lane. Both corridor alternatives 1 and 2 will take advantage of the lower traffic volumes along Mountain Road by allowing bicyclists to share the road via sharrow or dedicated bike lane. Both alternatives will also narrow the roadway lane width for vehicular traffic, which will encourage slower travel speeds.

ADVANTEC provides the following rankings for the corridor alternatives (in order):

1. **Corridor Alternative 2 - Preferred Alternative**
    a. Striping a dedicated bike lane will improve bicyclist safety and allow them to ride without having to change lanes from the existing parking lane.
    b. The vehicular volumes on Mountain Avenue are low enough to justify a lane reduction from four lanes to two lanes.
    c. The addition of a two-way left-turn lane will allow ease of access for motorists turning into or out of their driveways and at intersections along the entire corridor.
    d. The lane width reduction will encourage slower travel speeds along the corridor.
    e. The layout is consistent with the City of Claremont's *General Plan Community Mobility Element*'s description of the "road diet" cross-section along Mountain Avenue. In addition, the existing traffic volumes are below 8,000 vehicles a day threshold, which justifies the reduction from a four lane to a two-lane roadway.
    f. At the Mountain Avenue and Scripps Drive intersection:
        i. For NB and SB traffic:
            1. A dedicated left-turn pocket and permissive left-turn phasing for the north-south legs will allow safer left-turn movements through the intersection.
            2. It provides one through lane and the 8' parking lane can be used as a defacto right turn lane.
            3. The current peak-hour turning movements are relatively low, which is an indication that the intersection operations will not be impacted.
        ii. For WB and EB traffic (existing conditions):
            1. This will remain the same.

2. It provides 20' width in each direction, which allows enough space for vehicles to 1) make a left turn and a through or right turn movement, or 2) for a through and right turn movement.

iii. It is recommended to provide restricted right-turns-on-red in all directions, which will improve pedestrian safety and awareness (only at specific times during the weekday, typically when school begins and ends).

iv. Depending on the available space, additional signage maybe provided to enhance driver awareness when turning "to yield to pedestrians".

v. Line-of-sight should not be an issue since there is no roadway curvature or skewed angle, it is signalized, and it is recommended to restrict right-turns-on-red in all directions. Pedestrians and bicyclists are visible at all corners of the intersection. When vehicles are making right turns, they are allowed to creep into the crosswalk (when no pedestrians or bicyclists are present) in order to proceed safely with their turning movement.

vi. It is recommended to modify the existing signal timing to allow additional time for the pedestrians to walk into the crosswalk, while maintaining a "red" for vehicles travelling in the same direction. This is called a Leading Pedestrian Interval (LPI), which typically gives pedestrians a 3–7 second head start when entering the crosswalk.

1. This strategy would require a new traffic signal controller and upgraded software to provide this operation.

vii. Since there are existing video detection cameras, new presence and advance vehicle detection zones will be required. This improvement is minimal.

viii. When compared to the other intersection alternatives, there will be no additional on-street parking removal or restrictions regarding garbage bin placement for homeowners adjacent to the intersection. The maintains the quality of life for the residents at intersection.

g. The striping improvements and associated costs are anticipated to be significant compared to Alternative 1.

2. Corridor Alternative 1

a. Converting the outer traffic lane to a shared lane with bicyclists. This will be shown by adding pavement markings, "sharrows", along the outer lane at locations and spacing shown on the figures.

b. The potential downside for sharing a lane with vehicles and bicyclists along this corridor is understanding who the potential users will be. The Mountain Avenue corridor has an Elementary School on and south of this segment, as well as other Intermediate Schools and High Schools within the area. This raises a concern of having school age children riding bicycles along a shared lane with vehicles.

c. ***Due to this concern, this alternative is not recommended.***

Based on our evaluation of the corridor and intersection alternatives, it is recommended for the City to implement Corridor Alternative No. 2 as shown on Figures 12 through 16. This includes the improvements shown at the Mountain Avenue and Scripps Drive intersection.

It is recommended for the City to implement these improvements based on their resources and available funding including the costs to procure and install the recommended improvements shown.

6.2 Evaluation and Recommendation of the Additional Intersection Alternatives

Additional intersection alternatives were provided and evaluated as part of the Mountain Avenue Corridor Study. Each alternative for the project intersection proposes exclusive left-turn lanes along the north-south approach and/or east-west approach. With the implementation of left turn lanes, the width of travel lanes adjacent to the curb reduces, which restricts additional parking (providing red curb), and the placement of garbage bins may be impacted (e.g. not placed in front of the resident's home

Since there are potential impacts to the resident's associated with these additional intersection alternatives, these alternatives are not recommended.

See Section 6.1, "Evaluation and Recommendation of the Corridor Alternatives (including Mountain Avenue at Scripps Drive)" for our recommended alternative.