

APPENDIX E
LOCAL MOBILITY ANALYSIS

LOCAL MOBILITY ANALYSIS
**PEDIATRIC MENTAL AND BEHAVIORAL HEALTH
CAMPUS PROJECT**
October 2022

LLG Ref. 3-22-3603

Prepared by:
Amelia Giacalone
Senior Transportation Planner

Under the Supervision of:
John Boarman, P.E.
Principal

**Linscott, Law &
Greenspan, Engineers**
4542 Ruffner Street
Suite 100
San Diego, CA 92111
858.300.8800 T
858.300.8810 F
www.llgengineers.com

EXECUTIVE SUMMARY

Linscott, Law & Greenspan, Engineers has prepared this Local Mobility Analysis for the Pediatric Mental and Behavioral Health Campus (MBH) Project (hereby referred to as the “Project”). The Project site is located on Birmingham Way east of Meadow Lark Drive on County of San Diego-owned land within the Serra Mesa Community Planning Area of the City of San Diego.

Project Description

The Project includes the construction of two new patient care buildings totaling approximately 93,000 square feet. These are the Outpatient Psychiatric Clinic and the Inpatient Acute Psychiatric Hospital.

The approximately 11,000-SF Outpatient Psychiatric Clinic would provide outpatient services, administration and academic services, clinical ancillary services, and facility support services. It is expected to serve approximately 72 patients per day in two 36-patient blocks. The facility would be constructed on the north-central area of the Project site and would be a one-story building.

The approximately 82,000-SF Inpatient Acute Psychiatric Hospital would include the Acute Psychiatric Unit and the Crisis Stabilization Unit with a combined total of 84 beds. The Acute Psychiatric Hospital would include up to 60 beds, all in private rooms and in five 12-bed neighborhoods. The Crisis Stabilization Unit within the hospital would include 24 beds in two 12-bed neighborhoods. This building would be constructed on the eastern portion of the Project site and would be a four-story building.

Construction of the Project is expected to take 24 to 30 months. Construction would begin with demolition of the surface parking lot and is expected to start in 2024, with the Opening Year considered as Year 2027.

In conformance with Senate Bill 743, under a separate cover, a Transportation Impact Analysis was prepared that evaluates the Project’s transportation impacts using a Vehicle Miles Traveled metric under the California Environmental Quality Act, per the City of San Diego’s Transportation Study Manual (September 2020), pursuant to guidance from the Governor’s Office of Planning and Research in December 2018. Consistent with SB 743 and CEQA Guidelines 15064.3, the CEQA significance determination for the Project will be based only on VMT and not on Level of Service. This report is a Local Mobility Analysis that focuses on automobile delay and LOS within the Project’s study area and evaluates the effects of the Project on the local transportation system to determine if the Project triggers the need for improvements.

Trip Generation

The Project is estimated to generate approximately 779 Average Daily Trips with 62 AM peak hour trips (46 inbound / 16 outbound) and 78 PM peak hour trips (23 inbound / 55 outbound).

To determine the potential Near-Term (Opening Year 2027) traffic effects from the Project, traffic volumes for the Near-Term (Opening Year 2027) without Project and Near-Term (Opening Year 2027) with Project scenarios were developed and traffic operations were evaluated.

Conclusions

The Project is not calculated to result in any substantial transportation related effects, and no transportation related off-site improvements are required.

The following off-site improvements are proposed along Birmingham Way on the north side of the Project site within the City of San Diego-owned right-of-way. These improvements are proposed as part of the Project, and not as improvements to address Project deficiencies.

- Provision of dedicated right-turn lanes into each of the two new Project driveways along Birmingham Way (i.e., the northwestern and northeastern driveways)
- Provision of a dedicated left-turn lane into the northwestern driveway, opposite Birmingham Drive.
- Construction of new curb, sidewalk, and patient drop-off area along Birmingham Way between the two driveways. The drop-off area should be designed such that it does not conflict with the existing bike lane on Birmingham Way.

In addition, it is recommended that the Project construct a sidewalk along the Project's frontage on the south side of Birmingham Way to connect the existing sidewalks on either side of the site.

Two access schemes were evaluated with the only difference being that one scheme would not provide access to Meadow Lark Drive. Both access schemes are calculated to result in acceptable operations, with no difference in the recommended improvements.

TABLE OF CONTENTS

SECTION	PAGE
1.0 Introduction.....	1
2.0 Project Description	3
2.1 Project Location	3
2.2 Project Description.....	3
2.3 Project Access	3
2.4 Project Improvements	4
3.0 Study Objectives, Analysis Approach and Methodology	7
3.1 Report Approach	7
3.2 Study Objectives	7
3.3 Analysis Approach and Methodology	7
3.4 Intersections	8
3.4.1 Identifying Off-Site Improvements.....	8
4.0 Existing Vehicular Mobility	10
4.1 Project Study Area	10
4.2 Existing Roadway Network	10
4.3 Existing Traffic Volumes.....	11
5.0 Existing Analysis	14
5.1 Peak Hour Intersection Operations	14
6.0 Trip Generation/Distribution/Assignment	16
6.1 Trip Generation.....	16
6.2 Trip Distribution & Assignment	16
7.0 Cumulative Projects.....	20
8.0 Near-Term (Opening Year 2027) Analysis	21
8.1 Near-Term (Opening Year 2027) Auto Conditions and Traffic Volumes.....	21
8.2 Near-Term (Opening Year 2027) without Project	21
8.2.1 Peak Hour Intersection Operations	21
8.3 Near-Term (Opening Year 2027) + Project	21
8.3.1 Peak Hour Intersection Operations	21
9.0 Alternative Access Analysis	25
9.1 Alternative Access Trip Distribution & Assignment.....	25
9.2 Alternative Access Near-Term (Opening Year 2027) + Project Analysis.....	25

10.0 Site Access.....	30
10.1 Birmingham Way Roadway Improvements.....	30
11.0 Parking.....	34
12.0 Conclusions.....	35

APPENDICES

APPENDIX

- A. Intersection Manual Count Sheets
- B. Existing Intersection Analysis Calculation Sheets
- C. Behavioral Health Trip Generation Study
- D. Design Plans for the Signalization of the Vista Hill Avenue / Meadow Lark Drive Intersection
- E. Near-Term (Opening Year 2027) Intersection Analysis Calculation Sheets
- F. Near-Term (Opening Year 2027) + Project Intersection Analysis Calculation Sheets
- G. Alternative Access Near-Term (Opening Year 2027) + Project Intersection Analysis Calculation Sheets

LIST OF FIGURES

SECTION—FIGURE #	PAGE
Figure 1–1 Vicinity Map	2
Figure 2–1 Project Area Map	5
Figure 2–2 Proposed Site Plan	6
Figure 4–1 Existing Conditions Diagram.....	12
Figure 4–2 Existing Traffic Volumes.....	13
Figure 6–1 Project Traffic Distribution.....	18
Figure 6–2 Project Traffic Volumes.....	19
Figure 8–1 Near-Term (Opening Year 2027) Traffic Volumes	23
Figure 8–2 Near-Term (Opening Year 2027) + Project Traffic Volumes	24
Figure 9–1 Alternative Access Project Traffic Distribution	27
Figure 9–2 Alternative Access Project Traffic Volumes	28
Figure 9–3 Alternative Access Near-Term (Opening Year 2027) + Project Traffic Volumes	29
Figure 10–1 Project Access Traffic Volumes.....	32
Figure 10–2 Alternative Access Scheme Project Access Traffic Volumes.....	33

LIST OF TABLES

SECTION—TABLE #	PAGE
Table 3–1 Intersection LOS & Delay Ranges.....	8
Table 5–1 Existing Intersection Operations.....	15
Table 6–1 Project Trip Generation	17
Table 8–1 Near-Term (Opening Year 2027) Intersection Operations	22
Table 9–1 Alternative Access: Near-Term (Opening Year 2027) Intersection Operations.....	26

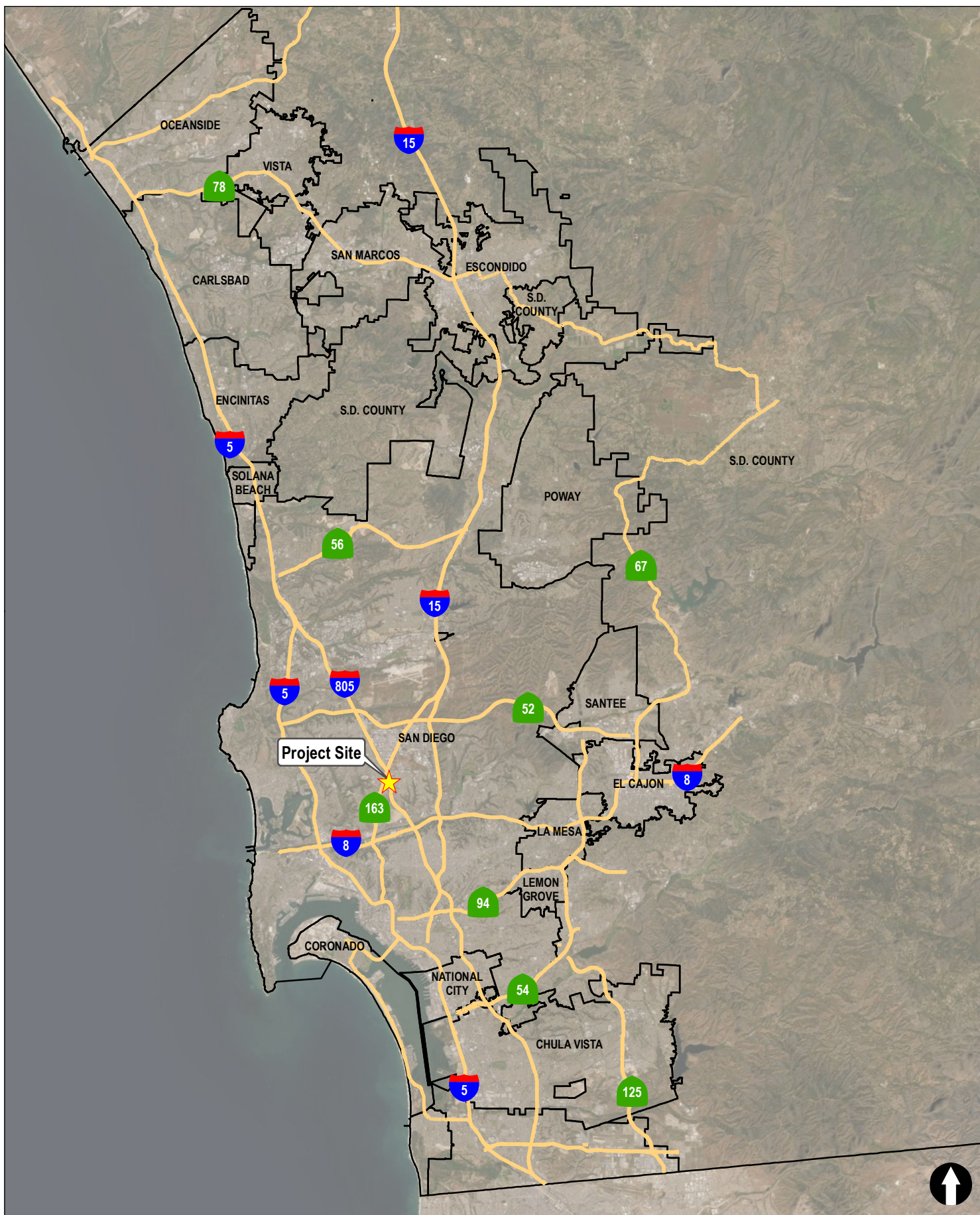
LOCAL MOBILITY ANALYSIS
PEDIATRIC MENTAL AND BEHAVIORAL HEALTH CAMPUS
October 2022

1.0 INTRODUCTION

Linscott, Law & Greenspan, Engineers (LLG) has prepared this Local Mobility Analysis (LMA) for the Pediatric Mental and Behavioral Health Campus (hereby referred to as the “Project”). The Project site is located on Birmingham Way east of Meadow Lark Drive on County of San Diego-owned land within the Serra Mesa Community Planning Area of the City of San Diego.

A detailed Project description is included in *Section 2.0*.

Figure 1–1 includes a Project vicinity map.



2.0 PROJECT DESCRIPTION

2.1 Project Location

The Project site is located on Birmingham Way east of Meadow Lark Drive on County of San Diego-owned land within the City of San Diego, south of the Interstate (I)-805 and State Route (SR) 163 freeway interchange in the Serra Mesa Community Planning Area. The Project site is located along Birmingham Way on the San Diego Youth Transition Center (YTC) —formerly the Juvenile Justice Center (JJC) — and is adjacent to the Rady Children’s Hospital-San Diego (RCHSD) and Sharp Memorial Hospital campuses.

Figure 2–1 shows a Project area map. *Figure 2–2* depicts the proposed site plan.

2.2 Project Description

The Project includes the construction of two new patient care buildings totaling approximately 93,000 square feet (SF). These are the Outpatient Psychiatric Clinic and the Inpatient Acute Psychiatric Hospital.

The approximately 11,000-SF Outpatient Psychiatric Clinic would provide outpatient services, administration and academic services, clinical ancillary services, and facility support services. It is expected to serve approximately 72 patients per day in two 36-patient blocks. The facility would be constructed on the north-central area of the Project site and would be a one-story building.

The approximately 82,000-SF Inpatient Acute Psychiatric Hospital would include the Acute Psychiatric Unit and the Crisis Stabilization Unit with a combined total of 84 beds. The Acute Psychiatric Hospital would include up to 60 beds, all in private rooms and in five 12-bed neighborhoods. The Crisis Stabilization Unit within the hospital would include 24 beds in two 12-bed neighborhoods. This building would be constructed on the eastern portion of the Project site and would be a four-story building.

Construction of the Project is expected to take 24 to 30 months. Construction would begin with demolition of the surface parking lot and is expected to start in 2024, with the Opening Year considered as Year 2027.

2.3 Project Access

Current vehicle access to the site’s existing surface parking lot is from Meadow Lark Drive on the west via two driveways, one located on each side (north and south) of the County’s Juvenile Probation Building. The Project would not include the existing northern driveway. The southern driveway on Meadow Lark Drive would be reconfigured within the existing curb cut to provide access to the southwestern entrance of the new parking structure to serve existing Court and Probation Center users, and to the southeastern entrance of the new parking structure to serve Pediatric MBH users.

Additionally, two new driveways would be constructed on Birmingham Way for site access, one on the northwestern corner of the Project site, opposite Birmingham Drive, and the other located at the

northeast end of the Project site. The northwestern driveway would provide access to the northwestern parking structure entrance/exit for Pediatric MBH users. The northeastern driveway would be for Pediatric MBH service and emergency vehicles, with access provided through a secured and controlled entrance. Site access would be designed to comply with City of San Diego Fire Department access requirements.

An alternative access scheme in which access to the Pediatric MBH site is only provided via the Birmingham Way driveways (i.e., no access via Meadow Lark Drive) is discussed further in *Section 9* of this report.

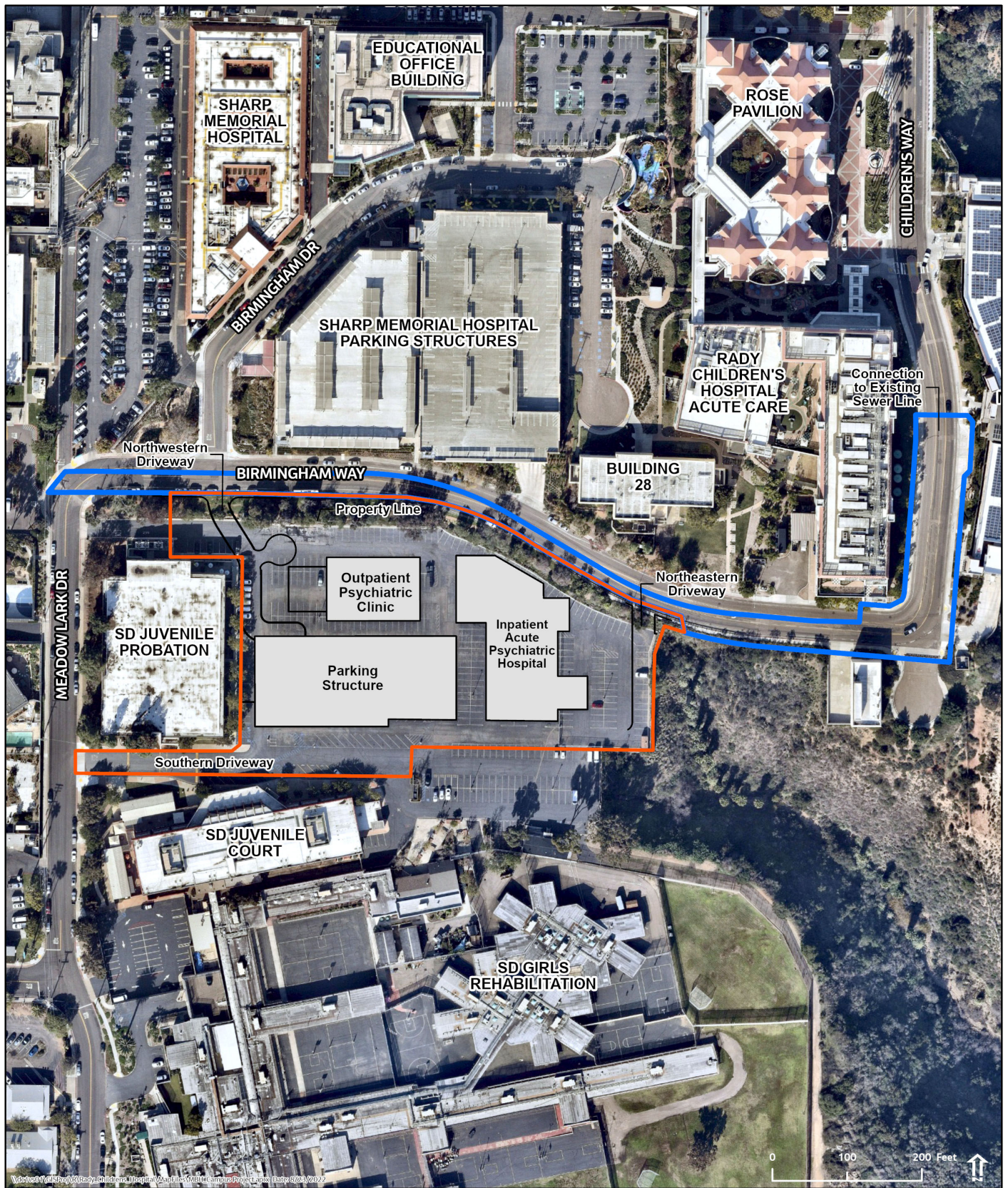
2.4 Project Improvements

The following off-site improvements are proposed along Birmingham Way on the north side of the Project site within the City of San Diego-owned right-of-way. These improvements are proposed as part of the Project, and not as improvements to address Project deficiencies.

- Provision of dedicated right-turn lanes into each of the two new Project driveways along Birmingham Way (i.e., the northwestern and northeastern driveways)
- Provision of a dedicated left-turn lane into the northwestern driveway, opposite Birmingham Drive.
- Construction of new curb, sidewalk, and patient drop-off area along Birmingham Way between the two driveways. The drop-off area should be designed such that it does not conflict with the existing bike lane on Birmingham Way.

In addition, it is recommended that the Project construct a sidewalk along the Project's frontage on the south side of Birmingham Way to connect the existing sidewalks on either side of the site.





- Project Site Boundary
- Temporary Impact Area
- Proposed Building Footprints



3.0 STUDY OBJECTIVES, ANALYSIS APPROACH AND METHODOLOGY

This section discusses the LMA study objectives and the analysis approach and methodology used in the preparation of the study.

3.1 Report Approach

In conformance with Senate Bill 743 (SB 743), under a separate cover, a Transportation Impact Analysis was prepared that evaluates the Project's transportation impacts using a Vehicle Miles Traveled (VMT) metric under the California Environmental Quality Act (CEQA), per the City of San Diego's Transportation Study Manual (TSM) (September 2020), pursuant to guidance from the Governor's Office of Planning and Research (OPR) in December 2018.

This report is a LMA that focuses on automobile delay and Level of Service (LOS) within the Project's study area within the Serra Mesa Community Planning Area. The LOS analysis was conducted to identify the Project traffic's effect in the Project study area and recommends improvements to ensure that the Project is consistent with the Serra Mesa Community Plan transportation improvements and that the Project proposes any improvements for which it triggers the need. Consistent with SB 743 and CEQA Guidelines 15064.3, the CEQA significance determination for the Project will be based only on VMT and not on LOS.

3.2 Study Objectives

This LMA evaluates the Project's traffic effect on mobility, access, and circulation in the study area. The LMA has the following objectives per the City of San Diego TSM (September 2020):

- Ensures that the project proposed improvements that will be implemented are consistent with those identified in the Community Plan and support multi-modal circulation and access are constructed at the time when the project triggers the need for them.
- Identifies improvements needed to support and promote active transportation and transit modes.
- Ensures the project provides connections to the active transportation network and transit system.

3.3 Analysis Approach and Methodology

LOS is the term used to denote the different vehicular operating conditions which occur on a given roadway segment under various traffic volume loads. It is a qualitative measure used to describe a quantitative analysis considering factors such as roadway geometries, signal phasing, speed, travel delay, freedom to maneuver, and safety. Level of service provides an index to the operational qualities of a roadway segment or an intersection. Level of service designations range from A to F, with LOS A representing the best operating conditions and LOS F representing the worst operating conditions. Level of service designation is reported differently for signalized and unsignalized intersections, as well as for roadway segments.

3.4 Intersections

Signalized intersections were analyzed under weekday 7:00-9:00 AM and 4:00-6:00 PM peak hour conditions. Average vehicle delay was determined utilizing the methodology found in Chapter 18 of the *2016 Highway Capacity Manual (HCM 6th Edition)*, with the assistance of the *Synchro* (version 11) computer software. The delay values (represented in seconds) were qualified with a corresponding intersection LOS. **Table 3–1** shows the signalized intersection delay categorized for each LOS.

Unsignalized intersections were analyzed under weekday 7:00-9:00 AM and 4:00-6:00 PM peak hour conditions. Average vehicle delay and LOS were determined based upon the procedures found in Chapters 19 and 20 of the *HCM 6*, with the assistance of the *Synchro* (version 11) computer software. **Table 3–1** shows the unsignalized intersection delay categorized for each LOS.

TABLE 3–1
INTERSECTION LOS & DELAY RANGES

LOS	Delay (seconds/vehicle)	
	Signalized Intersections	Unsignalized Intersections
A	≤ 10.0	≤ 10.0
B	10.1 to 20.0	10.1 to 15.0
C	20.1 to 35.0	15.1 to 25.0
D	35.1 to 55.0	25.1 to 35.0
E	55.1 to 80.0	35.1 to 50.0
F	≥ 80.1	≥ 50.1

Source: Highway Capacity Manual

3.4.1 Identifying Off-Site Improvements

Signalized Intersections

Based on the TSM, signal timing improvements/signal modifications should be considered if the following criteria is met for study intersections:

- Within ½ mile path of travel of a Major Transit Stop: if the project causes an intersection to degrade to LOS F, or if the project adds traffic to a signal already operating at LOS F.
- Outside of a ½ mile path of travel a Major Transit Stop: if the project causes an intersection to degrade to LOS E or F, or if the project adds traffic to a signal already operating at LOS E or F.

All-Way Stop Controlled Intersections

Based on the TSM, an intersection control evaluation should be prepared if the project causes an all-way stop-controlled intersection to degrade as follows:

- Within a 1/2 mile path of travel of a Major Transit Stop: If the project causes an all-way stop-controlled intersection located to degrade to LOS F, or if the project adds traffic to an all-way stop-controlled intersection already operating at LOS F.
- Outside of a 1/2 mile path of travel of a Major Transit Stop: If the project causes an all-way stop-controlled intersection to degrade to LOS E or F, or if the project adds traffic to a adds traffic to an all-way stop controlled intersection already operating at LOS E or F.

Side-Street Stop Controlled Intersections

Based on the TSM, an intersection control evaluation should be prepared if the project causes a side-street stop-controlled intersection to degrade as follows:

- Within a 1/2 mile path of travel of a Major Transit Stop: If the project causes the worst movement of a side -street stop controlled intersection to degrade to LOS F, or if the project adds traffic to the worst movement of a side-street stop controlled intersection that is already operating at LOS F.
- Outside of a 1/2 mile path of travel of a Major Transit Stop: If the project causes the worst movement of a side -street stop controlled intersection to degrade to LOS E or F, or if the project adds traffic to the worst movement of a side-street stop controlled intersection that is already operating LOS E or F.

In addition, the project should make improvements to study intersections and roadways to preserve consistency with Community Plan identified improvements.

4.0 EXISTING VEHICULAR MOBILITY

This section presents the intersections, roadways, and freeway segments, and describes existing roadway conditions within the Project area. *Figure 4–1* shows the existing conditions diagram.

4.1 Project Study Area

The study area was based on the criteria identified in the City of San Diego TSM. Per the TSM guidelines, the following is a description of the study intersections criteria for projects that generate fewer than 2,400 daily final driveway trips:

- Signalized Intersections located within ½ mile path of travel distance measured from the center of the intersection formed by each project driveway where the project will add 50 or more peak hour cumulative trips to any turning movement at the intersection.
- Unsignalized Intersections (side street stop controlled, all-way stop controlled, or roundabouts) and unsignalized project driveways located within ½ mile path of travel distance measured from the center of the intersection formed by each project driveway where the project will add 50 or more peak hour cumulative trips on any approach.
- All freeway ramp terminal intersections where a project adds 50 or more peak hour final primary (cumulative) (AM or PM) net new trips in either direction must be analyzed regardless of their distance from the project site.

Based on the TSM guidelines, the Project’s study area includes the following intersections.

STUDY INTERSECTIONS

1. Birmingham Way / Birmingham Drive
2. Vista Hill Avenue / Health Center Drive
3. Vista Hill Avenue / Meadow Lark Drive
4. Starling Drive / Meadow Lark Drive
5. Genesee Avenue / Starling Drive / Health Center Drive
6. Genesee Avenue / SR-163 NB Ramps / Cardinal Road

4.2 Existing Roadway Network

The following is a description of the existing roadway network in the study area.

Birmingham Way is an unclassified local street in the Serra Mesa Transportation Element. Birmingham Way is currently constructed as a two-lane undivided roadway with a striped median. On-street parking is generally allowed. Sidewalks are provided on the north side of the roadway. No sidewalks are provided on the south side of the roadway. Class II bike lanes are provided. There is no posted speed limit.

Birmingham Drive is classified as a Collector in the Serra Mesa Transportation Element. Birmingham Drive is currently constructed as a two-lane undivided roadway with on-street parking

generally allowed. Sidewalks are provided on both sides of the roadway. No bicycle facilities are provided. There is no posted speed limit.

Vista Hill Avenue is an unclassified local street in the Serra Mesa Community Plan Transportation Element. Vista Hill Avenue is constructed as a two-lane undivided roadway. On-street parking is provided.

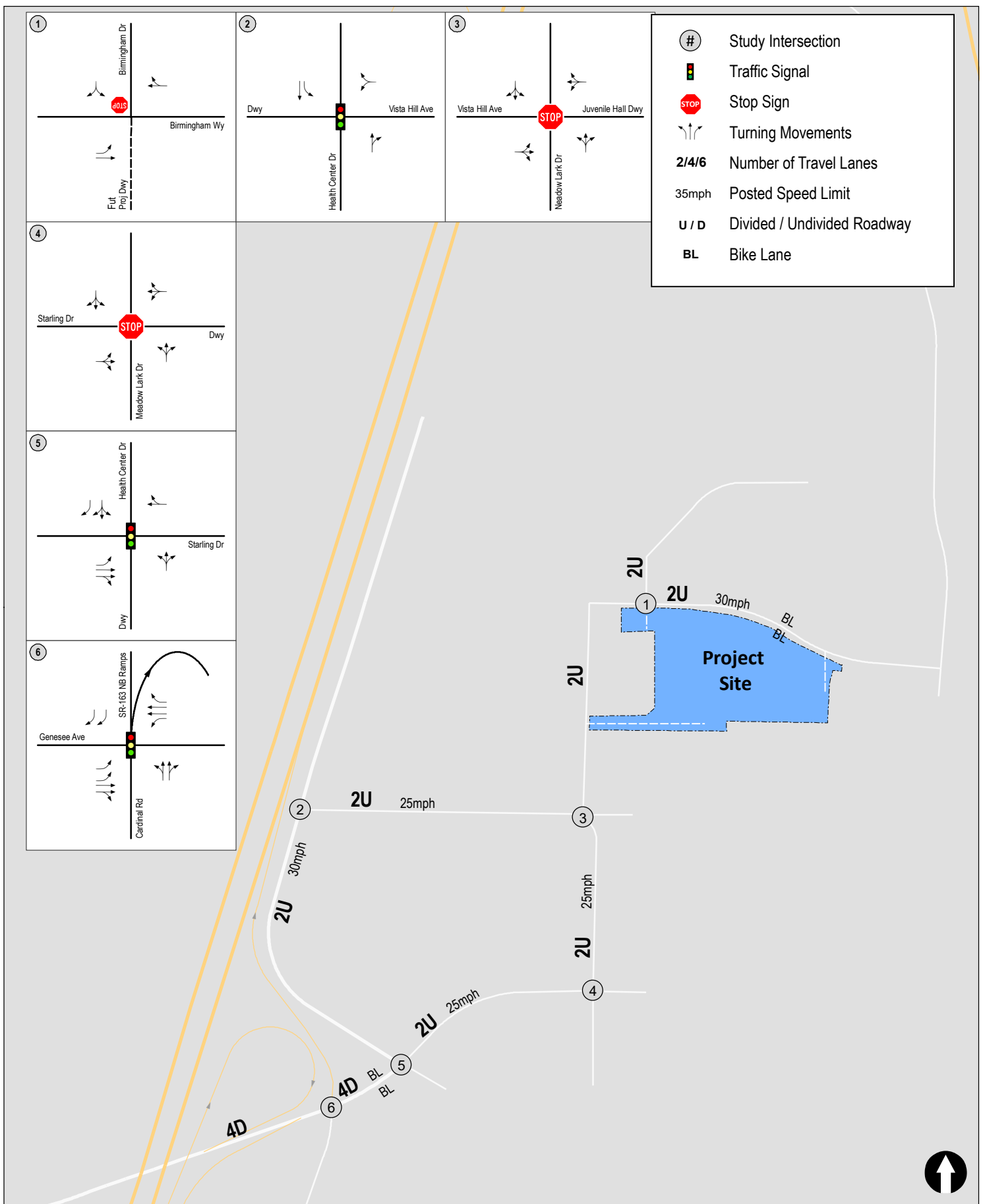
Meadow Lark Drive is classified as a Collector in the Serra Mesa Transportation Element. Meadow Lark Drive is currently constructed as a two-lane undivided roadway with on-street parking generally allowed. The posted speed limit is 25 mph.

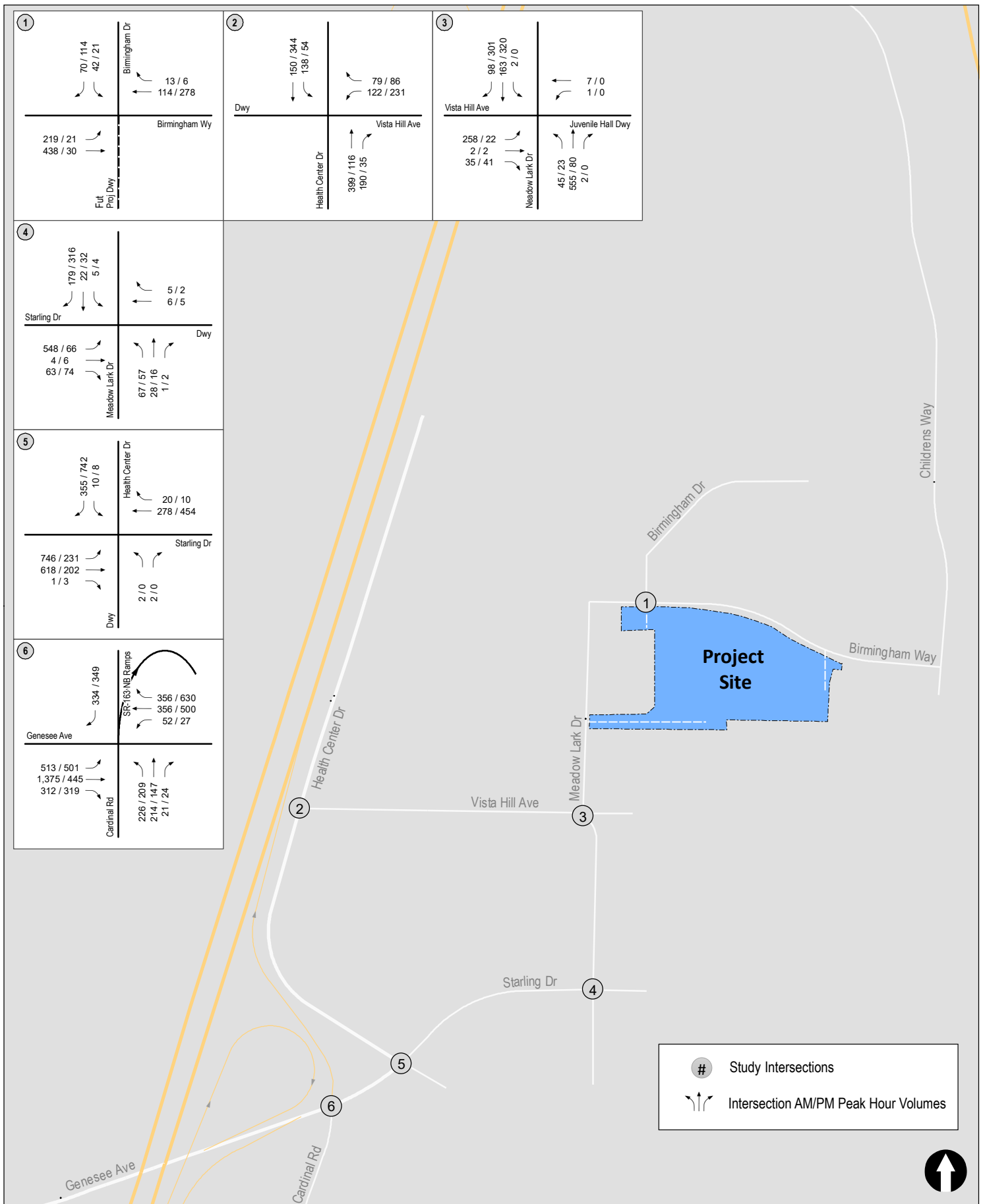
Genesee Avenue is classified in the Serra Mesa Transportation Element as a Major Street from Linda Vista Road to SR-163 and as a Collector between SR-163 to Health Center Drive. This portion of Genesee Avenue is generally constructed as a four-lane divided roadway, though the road narrows to a single through-lane in the eastbound direction between the SR-163 southbound and northbound ramp intersections. The posted speed limit is 45 mph. Class II bicycle lanes are provided west of the freeway interchange.

Starling Drive is classified as a Collector in the Serra Mesa Transportation Element. It is currently constructed as a two-lane roadway with striped median. On-street parking is generally allowed and the posted speed limit is 25 mph.

4.3 Existing Traffic Volumes

Existing weekday AM and PM peak hour (7:00-9:00 AM and 4:00-6:00 PM) intersection counts (including bicycle and pedestrian counts) were conducted on Tuesday, June 14, 2022. **Figure 4-2** shows the existing traffic volumes. **Appendix A** contains the traffic count sheets.





N:\3603\Figures
 Date: 8/23/2022
 Time: 2:55 PM

Figure 4-2
Existing Traffic Volumes

5.0 EXISTING ANALYSIS

The analysis of existing conditions includes the assessment of the study area intersections using the methodologies described in *Section 3.0*.

5.1 Peak Hour Intersection Operations

Table 5–1 summarizes the existing peak hour intersection operations. As seen in *Table 5–1*, the study area intersections are calculated to operate acceptably at LOS D or better with the exception of Vista Hill Avenue / Meadow Lark Drive which is calculated to currently operate at LOS E during the AM peak hour.

Appendix B contains the intersection analysis worksheets for the Existing scenario.

**TABLE 5-1
EXISTING INTERSECTION OPERATIONS**

Intersection	Control Type	Peak Hour	Existing	
			Delay ^a	LOS ^b
1. Birmingham Way / Birmingham Drive	MSSC ^c	AM PM	18.3 11.4	C B
2. Vista Hill Avenue / Health Center Drive	Signal	AM PM	16.7 11.5	B B
3. Vista Hill Avenue / Meadow Lark Drive	AWSC ^d	AM PM	39.8 15.6	E C
4. Starling Drive / Meadow Lark Drive	AWSC	AM PM	30.0 9.2	D A
5. Genesee Avenue / Starling Drive / Health Center Drive	Signal	AM PM	14.5 16.8	B B
6. Genesee Avenue / SR-163 NB Ramps / Cardinal Road	Signal	AM PM	36.5 40.9	D D

Footnotes:

- a. Average delay expressed in seconds per vehicle.
- b. Level of Service.
- c. Minor-Street Stop Control. Worst case movement delay is reported
- d. All-Way Stop Control. Average intersection delay is reported.

SIGNALIZED		UNSIGNALIZED	
DELAY/LOS THRESHOLDS		DELAY/LOS THRESHOLDS	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

6.0 TRIP GENERATION/DISTRIBUTION/ASSIGNMENT

The section below provides a detailed description of the Project's trip generation.

6.1 Trip Generation

The Project includes the construction of two new patient care buildings including an 11,000-SF outpatient psychiatric clinic and a total of 84 inpatient beds.

Table 6-1 summarizes the Project's estimated trip generation. As shown in *Table 6-1*, the Project is estimated to generate approximately 779 Average Daily Trips (ADT) with 62 AM peak hour trips (46 inbound / 16 outbound) and 78 PM peak hour trips (23 inbound / 55 outbound).

The trip generation calculations for the outpatient uses were based on the "Medical Office" trip rates found in the City of San Diego Trip Generation Manual (May 2003). Specifically, half of the City's "Medical Office" driveway trip rate was assumed based on the Project's proposed uses. This is a conservative assumption because the Project's outpatient use is expected to serve approximately 72 patients per day in two 36-patient blocks. Assuming each patient generates two (2) ADT (in and out of the site) equates to 144 ADT. A very conservative estimate of one health care worker for each of the patients in the 36-patient block results in an additional 72 ADT (assuming each health care worker generates two (2) ADT), for a total of 216 ADT. Therefore, the 275 ADT calculated for the outpatient facility is a conservative estimate.

There are no published trip rates for inpatient behavioral hospitals in the City's Trip Generation Manual or in the SANDAG or ITE trip generation publications. Therefore, the trip generation calculations for the Project's inpatient uses were based on a trip generation study conducted by LLG in 2021 (included in *Appendix C*). This comprehensive study included five (5) behavioral health hospitals with nine (9) days of counts at each location and resulted in a calculated trip rate of approximately six (6) ADT per bed.

6.2 Trip Distribution & Assignment

The Project trip distribution was developed based on the locations of the proposed access points, traffic patterns observed from the existing traffic counts, and the proximity of the Project site to surrounding freeways, attractions, and residential and commercial areas.

Figure 6-1 shows the Project trip distribution percentages. **Figure 6-2** shows the Project traffic volumes. The distribution and assignment shown in *Figures 6-1 and 6-2*, respectively, assume 55% of Project trips would utilize the Meadow Lark driveway, 35% would use the western driveway on Birmingham Way and 10% of Project trips would use the gated and secured eastern driveway on Birmingham Way. An alternative access scheme in which access to the Pediatric MBH site would only be provided via the Birmingham Way driveways (i.e., no access via Meadow Lark Drive) is analyzed in this *Section 9* of this report.

**TABLE 6-1
PROJECT TRIP GENERATION**

Land Use	Quantity	Daily Trip Ends (ADT)		AM Peak Hour					PM Peak Hour				
				% of ADT	In:Out Split	Volume			% of ADT	In:Out Split	Volume		
		Rate ^a	Volume			In	Out	Total			In	Out	Total
Inpatient Facility	84 Beds	6/Bed ^b	504	9%	70:30	32	13	45	10%	30:70	15	35	50
Outpatient Facility	11 KSF	25/KSF ^c	275	6%	80:20	14	3	17	10%	30:70	8	20	28
Total Proposed Trips	-	-	779	-	-	46	16	62	-	-	23	55	78

Footnotes:

- a. Trip rates based on the *Trip Generation Manual*, City of San Diego, May 2003.
- b. Trip rate based on a Trip Generation Study conducted by LLG in 2021 focusing on Inpatient Behavioral Hospital related land uses. This study resulted in a land use specific trip rate of 6 ADT/Bed.
- c. Half of the City's Medical Office Driveway Trip Rate assumed based on the proposed uses. This is a conservative assumption because the Project's Outpatient use is expected to serve approximately 72 patients per day in two 36-patient blocks. Assuming each patient generates two (2) ADT (in and out of the site) equates to 144 ADT. A very conservative estimate of one health care worker for each of the patients in the 36-patient block results in an additional 72 ADT (assuming each health care worker generates two (2) ADT), for a total of 216 ADT. Therefore, the 275 ADT calculated for the Outpatient facility is a conservative estimate.
- d. KSF - 1,000 Square Feet.



7.0 CUMULATIVE PROJECTS

“Cumulative” projects are other projects in the study area that are expected to be constructed and occupied by the Project’s expected Opening Year in Year 2027, thus adding traffic to the local circulation system. LLG researched ongoing cumulative projects in the study area that could be constructed and generating traffic in the study area vicinity by the expected Opening Year of the Project in Year 2027. Based on this research, three (3) cumulative projects are planned nearby that could add to traffic to study area intersections.

The following is a brief description of the three (3) identified cumulative projects. These projects have completed the CEQA documentation process

1. **University of San Diego Master Plan Update** – This project proposes to increase student enrollment by 750 FTE (full-time equivalent) students in the near-term. The university is located on Linda Vista Road, east of Morena Boulevard. This project is calculated to generate approximately 2,550 daily trips in the near-term.
2. **Francis Parker School Master Plan Update** – This project proposes to increase student enrollment by 140 students. The school is located less than one-half mile east of the University of San Diego, south of Linda Vista Road. This project is calculated to generate approximately 476 daily trips.
3. **Kearny Mesa Juvenile Detention Center** – This project proposes the redevelopment and reorganization of the Juvenile Justice Campus, a 31.49-acre parcel, which currently includes the Kearny Mesa Juvenile Detention Facility (KMJDF), formerly the San Diego County Juvenile Hall. The Project objectives include development of a juvenile detention design and specification guidance consistent with current juvenile rehabilitation and development models, trends in juvenile arrests and detention, ages of youth offenders, nature of crimes, and effectiveness of intervention programs. Net Project Buildout is calculated to generate 161 ADT.

The Kearny Mesa Juvenile Detention Center project is required to design and construct a traffic signal and a dedicated northbound left-turn lane at the intersection of Vista Hill Avenue and Meadow Lark Drive, which is currently all-way stop controlled, prior to the issuance of any occupancy permits. Design plans for the proposed traffic signal are included in **Appendix D**. The Near-Term intersection analysis presented in the following section assumes the required traffic signal is in place under baseline (without Project) conditions.

8.0 NEAR-TERM (OPENING YEAR 2027) ANALYSIS

The following section presents the analysis of study area locations under Near-Term (Opening Year 2027) conditions.

8.1 Near-Term (Opening Year 2027) Auto Conditions and Traffic Volumes

As noted in the previous section, the Kearny Mesa Juvenile Detention Center project is required to design and construct a traffic signal and a dedicated northbound left-turn lane at the intersection of Vista Hill Avenue and Meadow Lark Drive (analysis intersection #3), which is currently all-way stop controlled, prior to the issuance of any occupancy permits. The Near-Term intersection analysis presented in the following section assumes the required traffic signal is in place under baseline (without Project) conditions.

Additionally, a new driveway is proposed to be constructed on Birmingham Way opposite Birmingham Drive, at analysis intersection #1: Birmingham Drive / Birmingham Way. The Near-Term + Project intersection analysis presented in the following section assumes the driveway as the south leg of the intersection in place under “with Project” conditions.

The Near-Term (Opening Year 2027) without Project forecast volumes were calculated by adding the volumes generated by the three (3) cumulative projects discussed in *Section 7.0* to the existing traffic volumes.

Figure 8–1 shows the Near-Term (Opening Year 2027) traffic volumes. *Figure 8–2* shows the Near-Term (Opening Year 2027) + Project traffic volumes.

8.2 Near-Term (Opening Year 2027) without Project

8.2.1 Peak Hour Intersection Operations

Table 8–1 summarizes the peak hour intersection operations for the Near-Term (Opening Year 2027) without Project condition. As seen in *Table 8–1*, the study area intersections are calculated to operate acceptably at LOS D or better.

Appendix E contains the intersection analysis worksheets for the Near-Term (Opening Year 2027) scenario.

8.3 Near-Term (Opening Year 2027) + Project

8.3.1 Peak Hour Intersection Operations

Table 8–1 summarizes the peak hour intersection operations for the Near-Term (Opening Year 2027) + Project condition. As seen in *Table 8–1*, with the addition of Project traffic, the study area intersections are calculated to continue to operate acceptably at LOS D or better. Therefore, the Project is not calculated to result in a substantial effect, and no mitigation measures are required.

Appendix F contains the intersection analysis worksheets for the Near-Term (Opening Year 2027) + Project scenario.

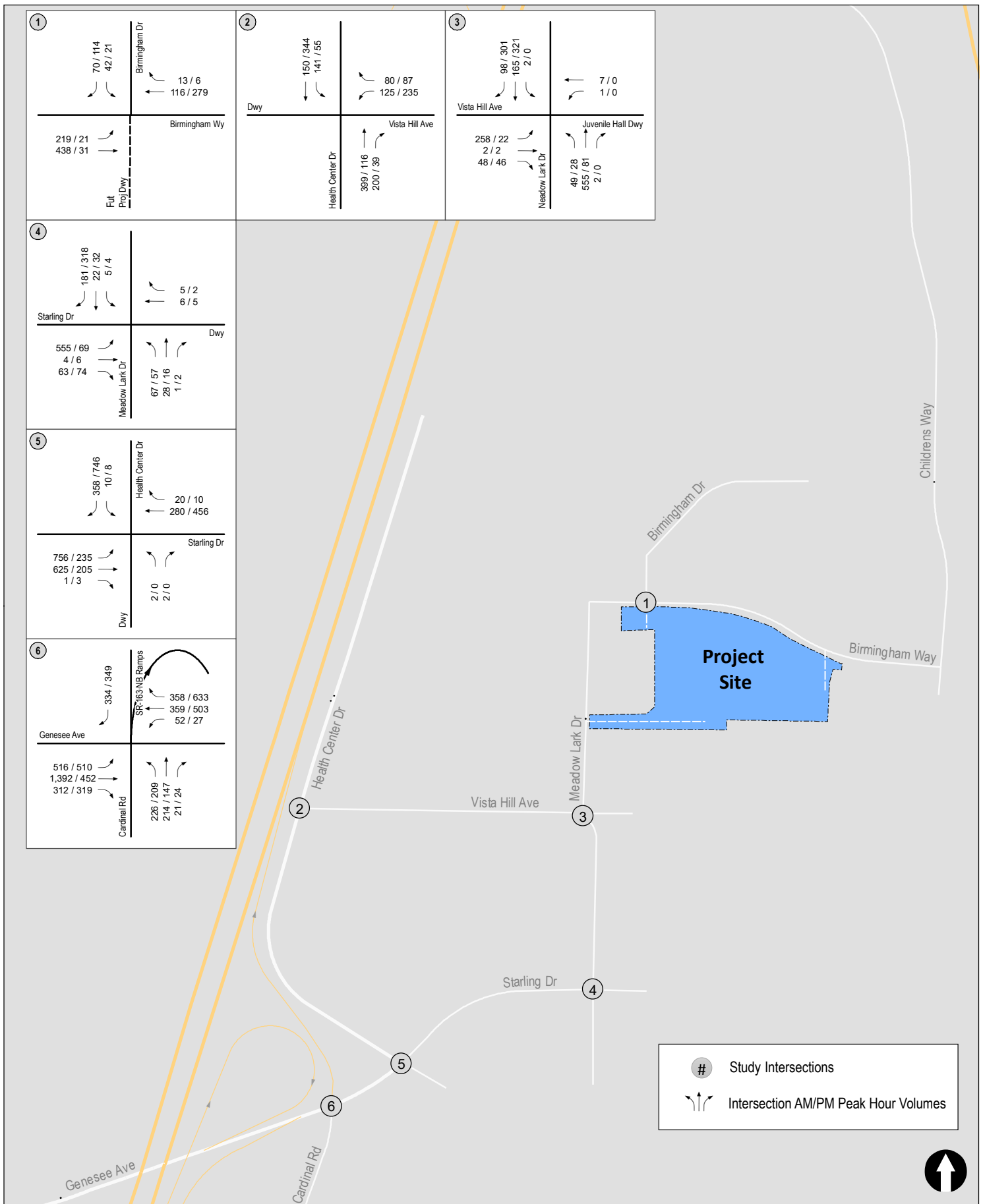
**TABLE 8-1
NEAR-TERM (OPENING YEAR 2027) INTERSECTION OPERATIONS**

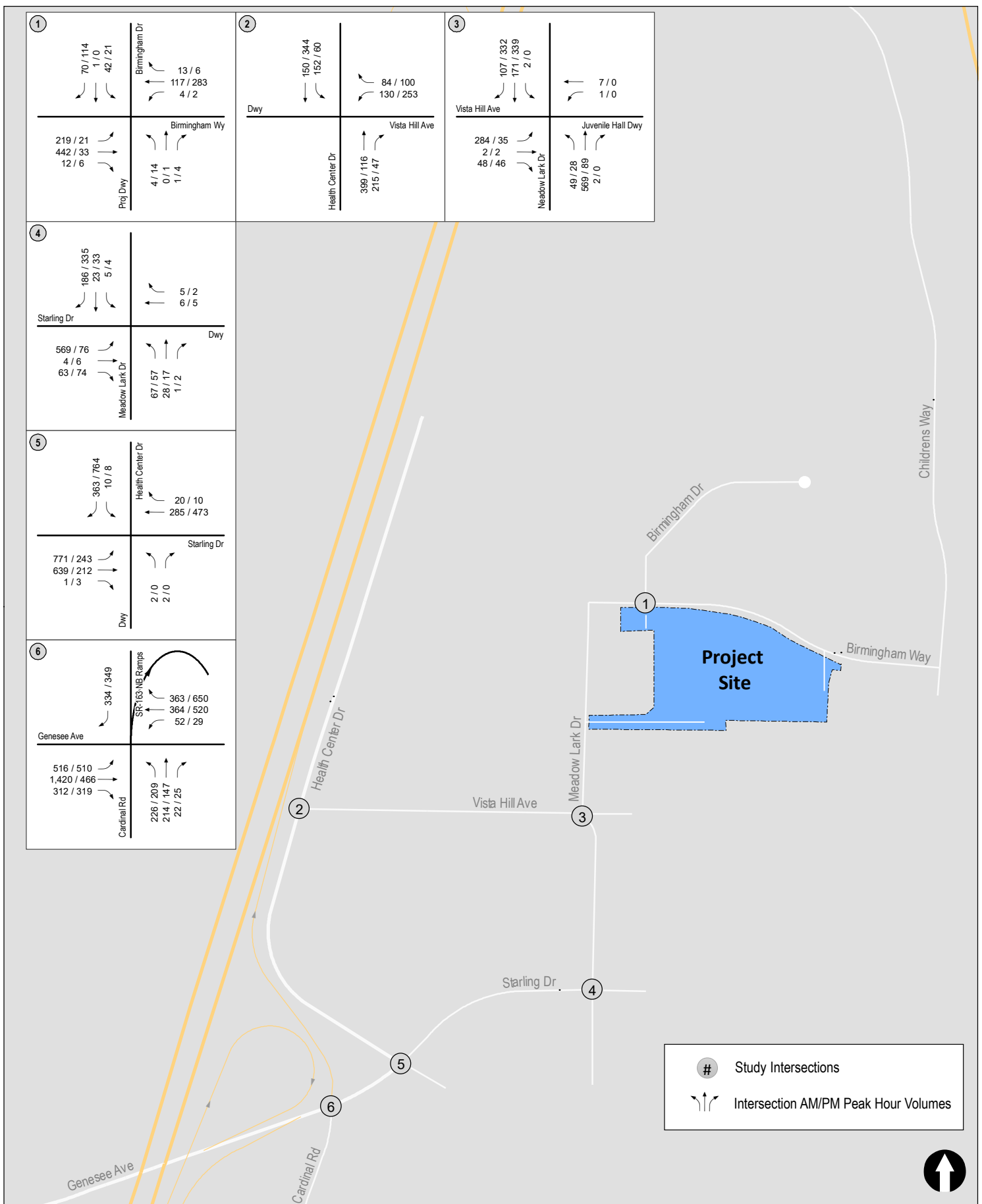
Intersection	Control Type	Peak Hour	Near-Term (Opening Year 2027)		Near-Term (Opening Year 2027) + Project		Δ^c
			Delay ^a	LOS ^b	Delay ^a	LOS ^b	
1. Birmingham Way / Birmingham Drive	MSSC ^d	AM	18.3	C	31.2	D	12.9
		PM	11.4	B	13.9	B	2.5
2. Vista Hill Avenue / Health Center Drive	Signal	AM	17.2	B	18.6	B	1.4
		PM	11.6	B	12.2	B	0.6
3. Vista Hill Avenue / Meadow Lark Drive	Signal ^e	AM	9.3	A	10.1	A	0.8
		PM	5.3	A	5.8	A	0.5
4. Starling Drive / Meadow Lark Drive	AWSC ^f	AM	31.2	D	34.6	D	3.4
		PM	9.2	A	9.5	A	0.3
5. Genesee Avenue / Starling Drive / Health Center Drive	Signal	AM	14.7	B	15.2	B	0.5
		PM	16.9	B	17.8	B	0.9
6. Genesee Avenue / SR-163 NB Ramps / Cardinal Road	Signal	AM	37.1	D	38.3	D	1.2
		PM	41.7	D	44.4	D	2.7

Footnotes:

- a. Average delay expressed in seconds per vehicle.
- b. Level of Service.
- c. Δ denotes the project-induced increase in delay.
- d. Minor-Street Stop Control. Worst case movement delay is reported
- e. Signalization assumed under Near-Term conditions in association with the Kearny Mesa Juvenile Detention Center project
- f. All-Way Stop Control. Average intersection delay is reported.

SIGNALIZED		UNSIGNALIZED	
DELAY/LOS THRESHOLDS		DELAY/LOS THRESHOLDS	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F





N:\3603\Figures
Date: 10/24/2022
Time: 3:23 PM

Figure 8-2
Near-Term (Year 2027) + Project Traffic Volumes

9.0 ALTERNATIVE ACCESS ANALYSIS

An alternative access scheme in which access to the Pediatric MBH site would only be provided via the Birmingham Way driveways (i.e., no access via Meadow Lark Drive) is analyzed in this section of the report. Under this alternative, existing Court and Probation Center users would continue to have access to the site via the two existing driveways on Meadow Lark Drive. Pediatric MBH users would access the site via the two proposed driveways on Birmingham Way with no access via Meadow Lark Drive. Consistent with the original access scheme previously analyzed in this study, the northwestern driveway would provide access to the northwestern parking structure entrance/exit for Pediatric MBH users and the northeastern driveway would be for Pediatric MBH service and emergency vehicles, with access provided through a secured and controlled entrance. Site access would be designed to comply with City of San Diego Fire Department access requirements.

9.1 Alternative Access Trip Distribution & Assignment

As compared to the access scheme previously analyzed in this report, the alternative access scenario would only affect the Birmingham Drive / Birmingham Way intersection. The distribution of Project trips remains unchanged at all the remaining study area intersections. The alternative access scenario assumes 90% of Project trips would utilize the western driveway and 10% of Project trips would use the gated and secured eastern driveway on Birmingham Way.

Figure 9-1 shows the Alternative Access Project trip distribution percentages. *Figure 9-2* shows the Alternative Access Project traffic volumes. *Figure 9-3* shows the Near-Term (Opening Year 2027) + Project traffic volumes for the Alternative Access scenario.

9.2 Alternative Access Near-Term (Opening Year 2027) + Project Analysis

Table 9-1 summarizes the peak hour intersection operations for the Alternative Access Near-Term (Opening Year 2027) + Project condition. As seen in *Table 9-1*, with the addition of Alternative Access Project traffic, the study area intersections, and specifically the intersection of Birmingham Way and Birmingham Drive, are calculated to continue to operate acceptably at LOS D or better. Therefore, the Project is not calculated to result in a substantial effect. The access related improvements are the same for both alternatives.

Appendix G contains the intersection analysis worksheets for the Alternative Access Near-Term (Opening Year 2027) + Project scenario.

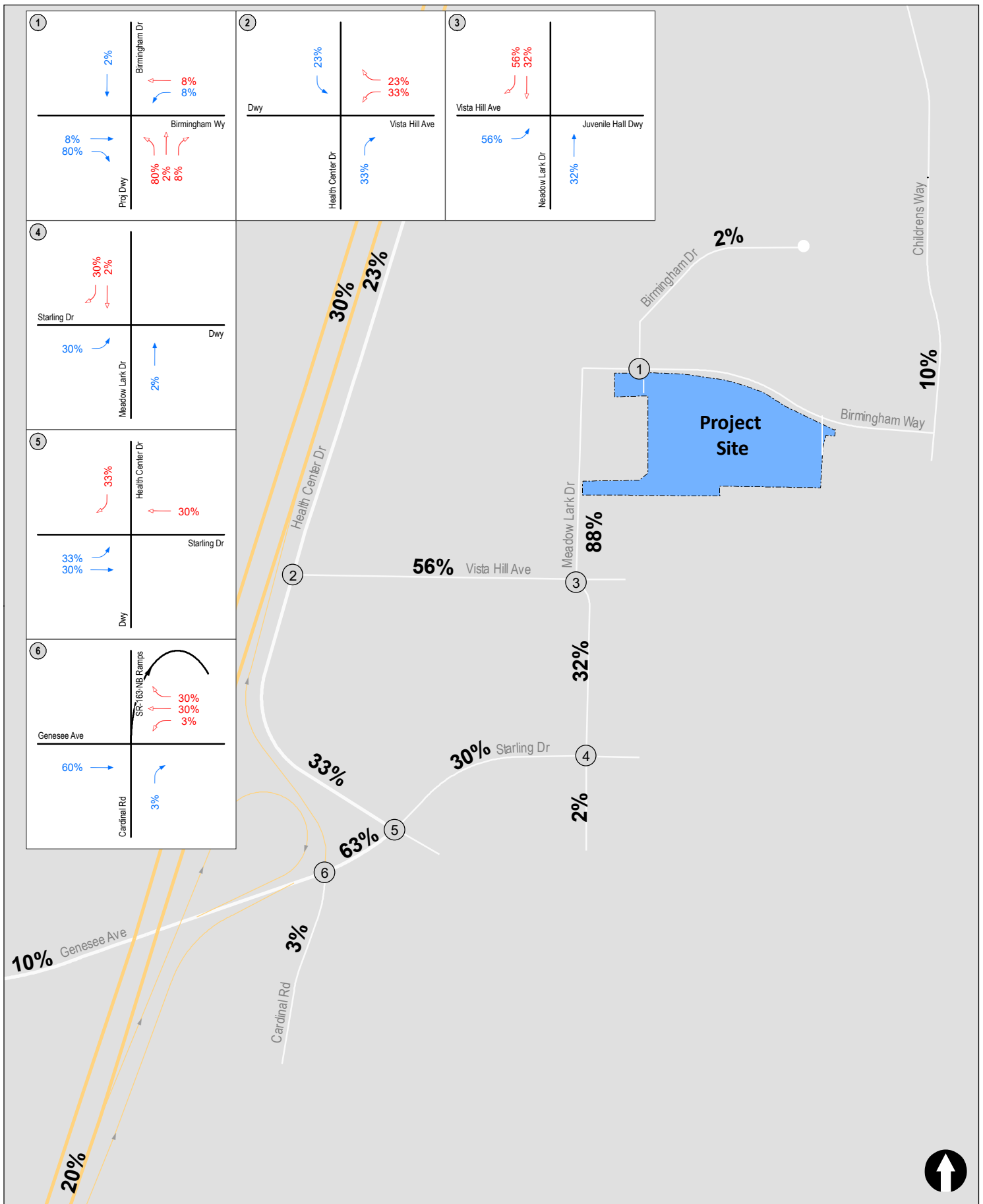
TABLE 9-1
ALTERNATIVE ACCESS: NEAR-TERM (OPENING YEAR 2027) INTERSECTION OPERATIONS

Intersection	Control Type	Peak Hour	Near-Term (Opening Year 2027)		Near-Term (Opening Year 2027) + Project		Δ^c
			Delay ^a	LOS ^b	Delay ^a	LOS ^b	
1. Birmingham Way / Birmingham Drive	MSSC ^d	AM	18.3	C	33.1	D	14.8
		PM	11.4	B	14.8	B	3.4
2. Vista Hill Avenue / Health Center Drive	Signal	AM	17.2	B	18.6	B	1.4
		PM	11.6	B	12.2	B	0.6
3. Vista Hill Avenue / Meadow Lark Drive	Signal ^e	AM	9.3	A	10.1	A	0.8
		PM	5.3	A	5.8	A	0.5
4. Starling Drive / Meadow Lark Drive	AWSC ^f	AM	31.2	D	34.7	D	3.5
		PM	9.2	A	9.5	A	0.3
5. Genesee Avenue / Starling Drive / Health Center Drive	Signal	AM	14.7	B	15.2	B	0.5
		PM	16.9	B	17.8	B	0.9
6. Genesee Avenue / SR-163 NB Ramps / Cardinal Road	Signal	AM	37.1	D	38.3	D	1.2
		PM	41.7	D	45.0	D	3.3

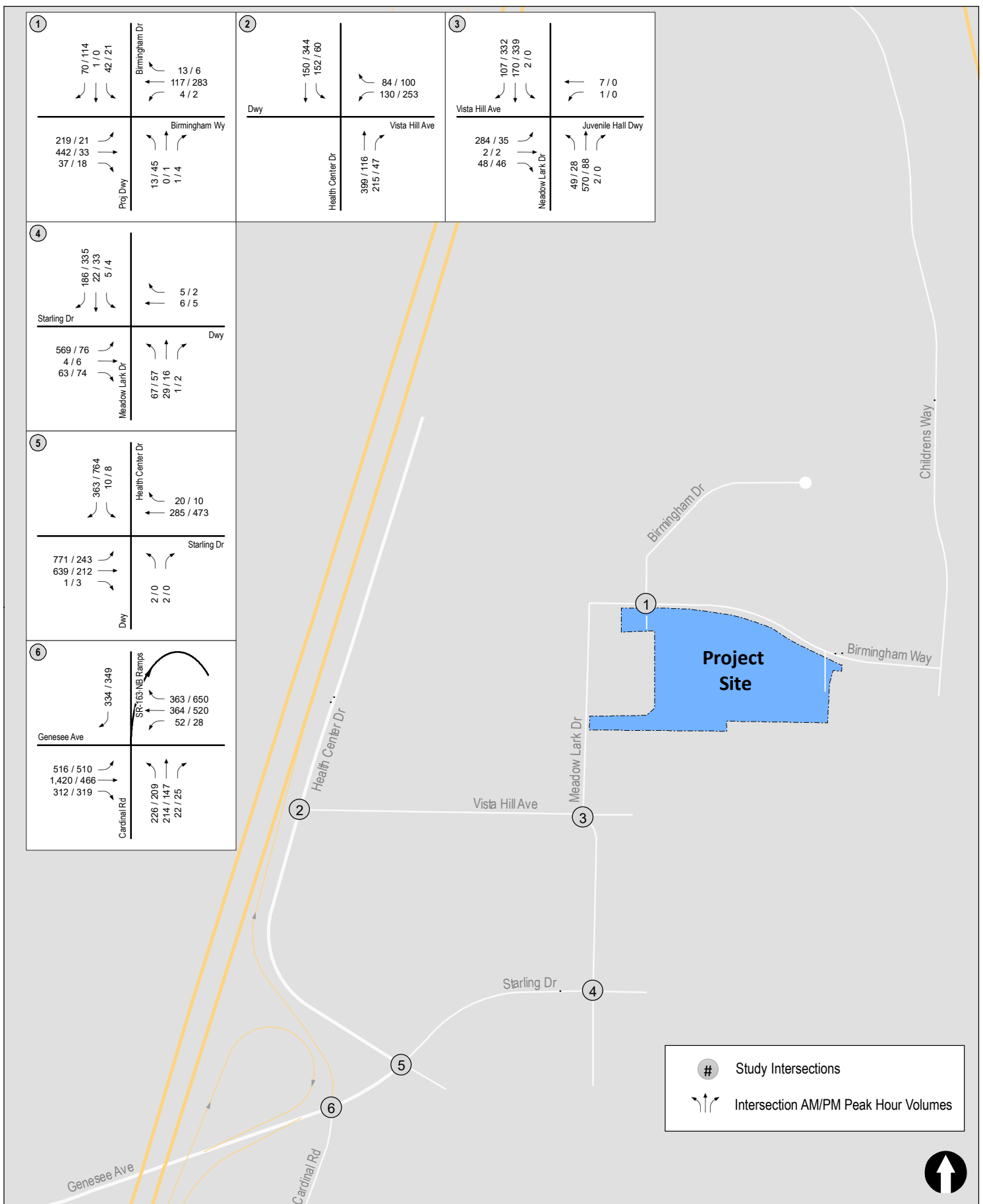
Footnotes:

- a. Average delay expressed in seconds per vehicle.
- b. Level of Service.
- c. Δ denotes the project-induced increase in delay.
- d. Minor-Street Stop Control. Worst case movement delay is reported
- e. Signalization assumed under Near-Term conditions in association with the Kearny Mesa Juvenile Detention Center project
- f. All-Way Stop Control. Average intersection delay is reported.

SIGNALIZED		UNSIGNALIZED	
DELAY/LOS THRESHOLDS		DELAY/LOS THRESHOLDS	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F







10.0 SITE ACCESS

Current vehicle access to the site's existing surface parking lot is from Meadow Lark Drive on the west via two driveways, one located on each side (north and south) of the County's Juvenile Probation Building. The Project would not include the existing northern driveway. The southern driveway on Meadow Lark Drive would be reconfigured within the existing curb cut to provide access to the southwestern entrance of the new parking structure to serve existing Court and Probation Center users, and to the southeastern entrance of the new parking structure to serve Pediatric MBH users.

Additionally, two new driveways would be constructed on Birmingham Way for site access, one on the northwestern corner of the Project site, opposite Birmingham Drive, and the other located at the northeast end of the Project site. The northwestern driveway would provide access to the northwestern parking structure entrance/exit for Pediatric MBH users. The northeastern driveway would be for Pediatric MBH service and emergency vehicles with access provided through a secured and controlled entrance. Site access would be designed to comply with City of San Diego Fire Department access requirements.

An alternative access scheme in which access to the Pediatric MBH site would only be provided via the Birmingham Way driveways (i.e., no access via Meadow Lark Drive) was also under consideration at the time this report was prepared. This alternative is discussed in *Section 9* of this report.

Project traffic volumes for the original access scheme at the three Project driveways are shown on **Figure 10-1**. Project traffic volumes for the alternative access scheme are shown on **Figure 10-2**.

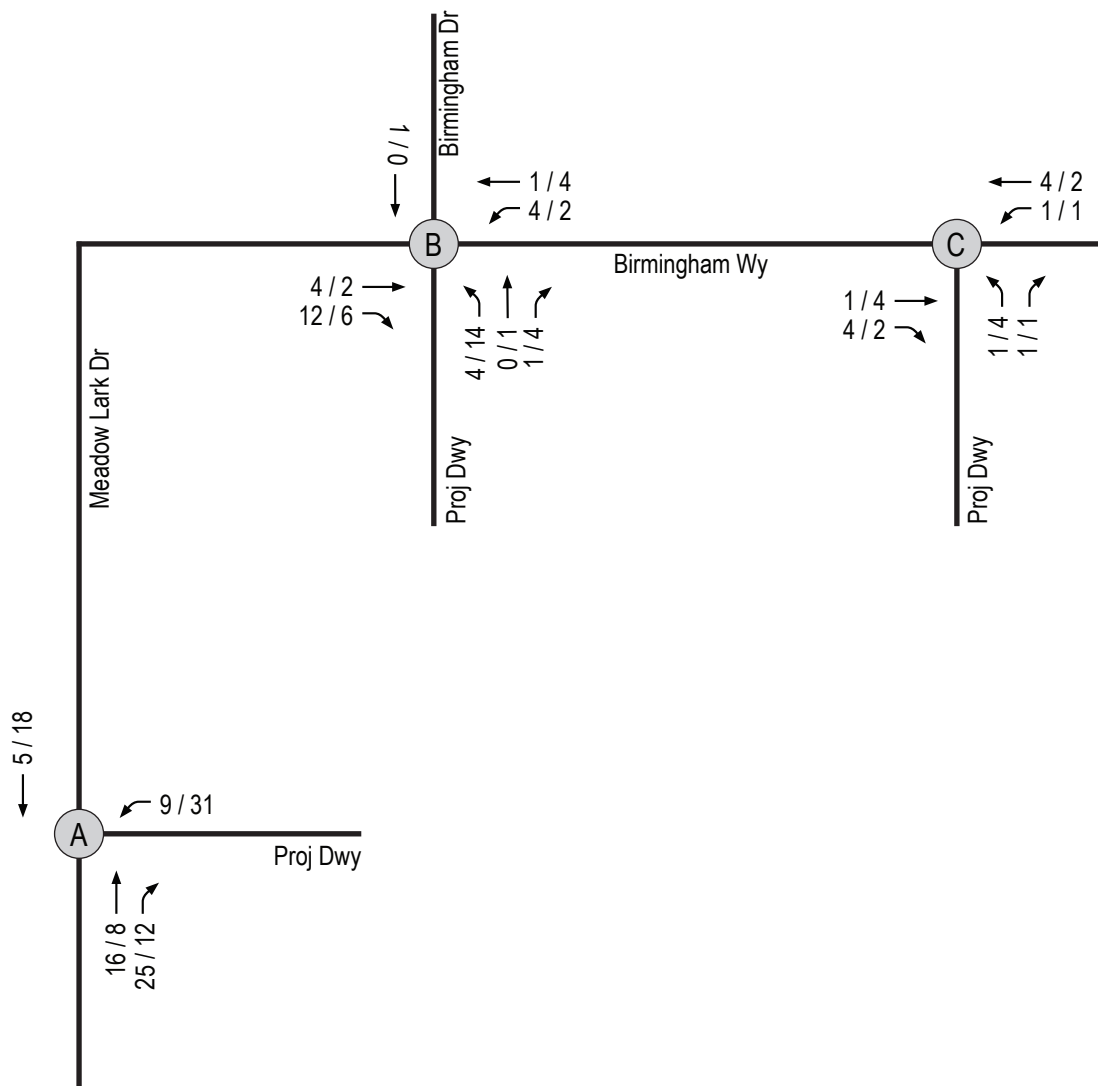
10.1 Birmingham Way Roadway Improvements

The following off-site circulation improvements are proposed along Birmingham Way on the north side of the Project site within the City of San Diego-owned right-of-way. These improvements are proposed as part of the Project, and not as improvements to address Project deficiencies. These improvements apply to both of the Project's proposed access schemes.

- Provision of dedicated right-turn lanes into each of the two new Project driveways along Birmingham Way (i.e., the northwestern and northeastern driveways)
- Provision of a dedicated left-turn lane into the northwestern driveway, opposite Birmingham Drive.
- Construction of new curb, sidewalk, and patient drop-off area along Birmingham Way between the two driveways. The drop-off area should be designed such that it does not conflict with the existing bike lane on Birmingham Way.

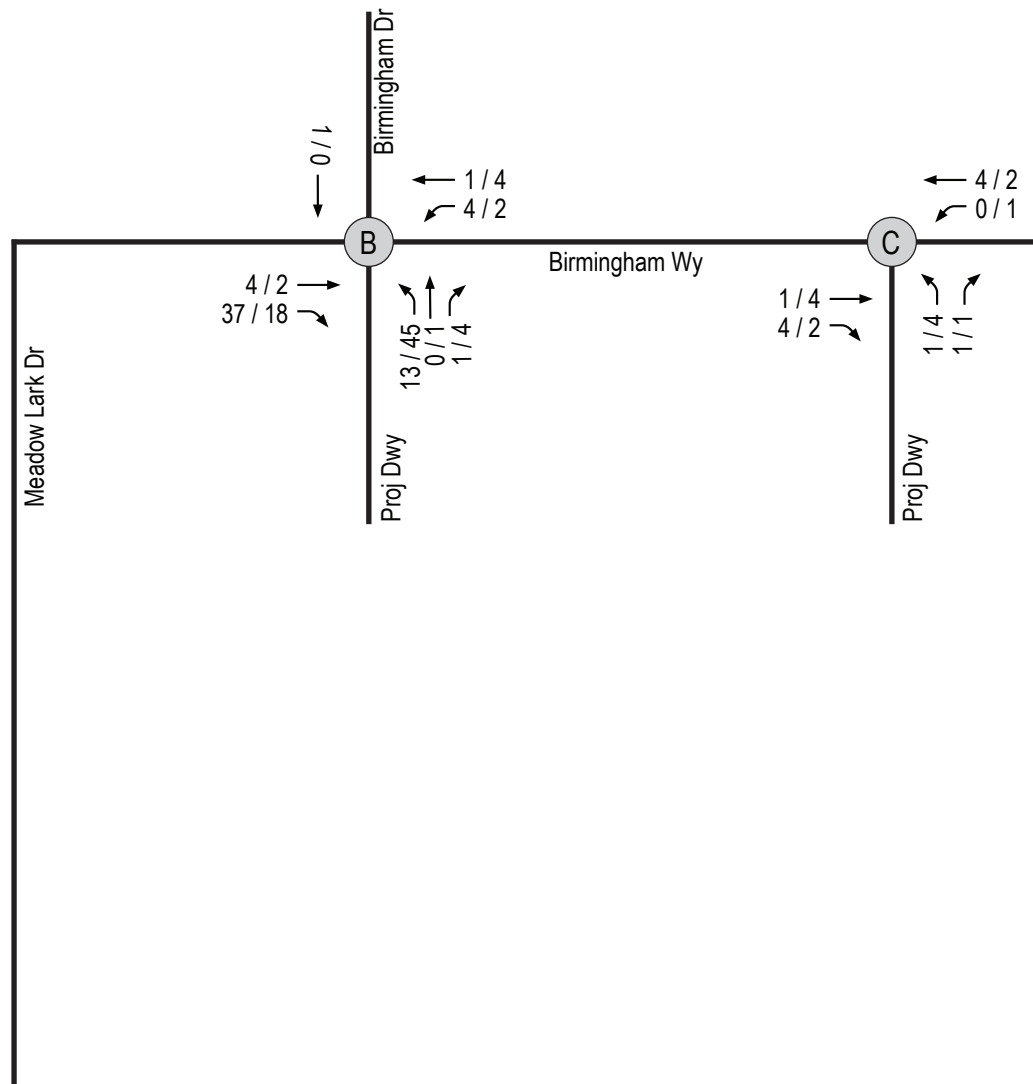
In addition, it is recommended that the Project construct a sidewalk along the Project's frontage on the south side of Birmingham Way to connect the existing sidewalks on either side of the site.

These improvements may include removal of existing pavement and landscaping along Birmingham Way, as well as restriping. These improvements would conform to the City of San Diego Standards.



AM / PM
AM / PM Intersection
Peak Hour Volumes





AM / PM ↗ ↘ AM / PM Intersection Peak Hour Volumes



Figure 10-2

Project Driveway Traffic Volumes (Alternative Access Scheme)

11.0 PARKING

A new up to approximately 369,000 SF, eleven-level (including a partial height basement level) open-air parking structure would be constructed at the southwestern corner of the Project site. The parking structure would have up to approximately 900 parking spaces, which would be an increase of 459 spaces over the existing 441 spaces on the portion of the paved surface parking lot that is within the Project site boundary and that would be removed to allow construction of the MBH. The new Parking Structure would have three entrance/exits located in the southeastern, northeastern, and southwestern corners of the parking structure and would not exceed 117 feet in height.

The parking structure would serve both the proposed Pediatric MBH Project and the existing County's Juvenile Court and Juvenile Probation Center. The parking areas for Court users and Probation Center users would be physically separated from the parking areas for the Pediatric MBH users. Court users and Probation Center users would use the southwestern entrance to the Parking Structure which would be controlled to limit access to those users. Pediatric MBH users would use the southeastern and northwestern entrances.

Because of security concerns of the adjacent YTC, the parking structure would include screening to block lines of sight between the structure and YTC facilities.

12.0 CONCLUSIONS

The Project is not calculated to result in any substantial transportation related effects under either of the proposed access schemes, and therefore no transportation related off-site improvements are required.

The following off-site improvements are proposed along Birmingham Way on the north side of the Project site within the City of San Diego-owned right-of-way. These improvements are proposed as part of the Project, and not as improvements to address Project deficiencies. These improvements apply to both of the Project's proposed access schemes.

- Provision of dedicated right-turn lanes into each of the two new Project driveways along Birmingham Way (i.e., the northwestern and northeastern driveways)
- Provision of a dedicated left-turn lane into the northwestern driveway, opposite Birmingham Drive.
- Construction of new curb, sidewalk, and patient drop-off area along Birmingham Way between the two driveways. The drop-off area should be designed such that it does not conflict with the existing bike lane on Birmingham Way.

In addition, it is recommended that the Project construct a sidewalk along the Project's frontage on the south side of Birmingham Way to connect the existing sidewalks on either side of the site.

These improvements may include removal of existing pavement and landscaping along Birmingham Way, as well as restriping. These improvements would conform to the City of San Diego Standards.

TECHNICAL APPENDICES TO THE LMA STUDY
PREPARED FOR THE:
**PEDIATRIC MENTAL AND BEHAVIORAL
HEALTH CAMPUS**
October 2022

LLG Ref. 3-22-3603

**Linscott, Law &
Greenspan, Engineers**
4542 Ruffner Street
Suite 100
San Diego, CA 92111
858.300.8800 T
858.300.8810 F
www.llgengineers.com

APPENDIX A

INTERSECTION MANUAL COUNT SHEETS

Birmingham Drive / Birmingham Way

Day: Thursday
Date: June 23, 2022

Time	Southbound		Westbound		Eastbound	
	Left <i>LA</i>	Right <i>RL</i>	Through	Right	Left	Through
7-8 AM	42	70	114	13	219	438
8-9 AM	32	33	65	18	111	290

Birmingham Drive / Birmingham Way

Day: Thursday
Date: June 23, 2022

Time	Soutbound		Westbound		Eastbound	
	Left 	Right 	Through	Right	Left	Through
4-5 PM	21	114	278	6	21	30
5-6 PM	11	92	263	7	14	58

Intersection Turning Movement - Peak Hour Vehicle Count

**LINSCOTT
LAW &
GREENSPAN**
engineers

Location: #01
Intersection: Health Center Drive & Vista Hill Avenue
Date of Count: Tuesday, June 14, 2022

File Name: ITM-22-057-01
Project: LLG Ref. 3-22-3445
Juvenile Justice

AM	Health Center Drive Southbound			Vista Hill Avenue Westbound			Health Center Drive Northbound			- Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00	26	19	0	7	0	10	0	79	38	0	0	0	179
7:15	27	21	0	23	0	10	0	90	41	0	0	0	212
7:30	49	54	0	37	0	35	0	104	58	0	0	0	337
7:45	34	39	0	35	0	21	0	101	53	0	0	0	283
8:00	28	36	0	27	0	13	0	104	38	0	0	0	246
8:15	23	31	0	13	0	11	0	85	41	0	0	0	204
8:30	32	35	0	13	0	15	0	100	30	0	0	0	225
8:45	11	41	0	9	0	9	0	96	30	0	0	0	196
Total	230	276	0	164	0	124	0	759	329	0	0	0	1882
Approach%	45.5	54.5	-	56.9	-	43.1	-	69.8	30.2	-	-	-	
Total%	12.2	14.7	-	8.7	-	6.6	-	40.3	17.5	-	-	-	

AM Intersection Peak Hour: 07:15 to 08:15

Volume	138	150	-	122	-	79	-	399	190	-	-	-	1,078
Approach%	47.9	52.1	-	60.7	-	39.3	-	67.7	32.3	-	-	-	
Total%	12.8	13.9	-	11.3	-	7.3	-	37.0	17.6	-	-	-	
PHF			0.70			0.70			0.91			#DIV/0!	0.80

PM	Health Center Drive Southbound			Vista Hill Avenue Westbound			Health Center Drive Northbound			- Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16:00	19	81	0	60	0	29	0	34	14	0	0	0	237
16:15	16	95	0	46	0	22	0	43	8	0	0	0	230
16:30	9	98	0	76	0	20	0	24	5	0	0	0	232
16:45	10	70	0	49	0	15	0	15	8	0	0	0	167
17:00	11	73	0	74	0	29	0	18	10	0	0	0	215
17:15	11	54	0	43	0	15	0	12	13	0	0	0	148
17:30	17	56	0	41	0	13	0	18	7	0	0	0	152
17:45	9	45	0	26	0	7	0	8	5	0	0	0	100
Total	102	572	0	415	0	150	0	172	70	0	0	0	1481
Approach%	15.1	84.9	-	73.5	-	26.5	-	71.1	28.9	-	-	-	
Total%	6.9	38.6	-	28.0	-	10.1	-	11.6	4.7	-	-	-	

PM Intersection Peak Hour: 16:00 to 17:00

Volume	54	344	-	231	-	86	-	116	35	-	-	-	866
Approach%	13.6	86.4	-	72.9	-	27.1	-	76.8	23.2	-	-	-	
Total%	6.2	39.7	-	26.7	-	9.9	-	13.4	4.0	-	-	-	
PHF			0.90			0.83			0.74			#DIV/0!	0.91

Intersection Turning Movement - Bicycle & Pedestrian Count

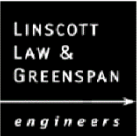


Location: #01	File Name: ITM-22-057-01
Intersection: Health Center Drive & Vista Hill Avenue	Project: LLG Ref. 3-22-3445
Date of Count: Tuesday, June 14, 2022	Juvenile Justice

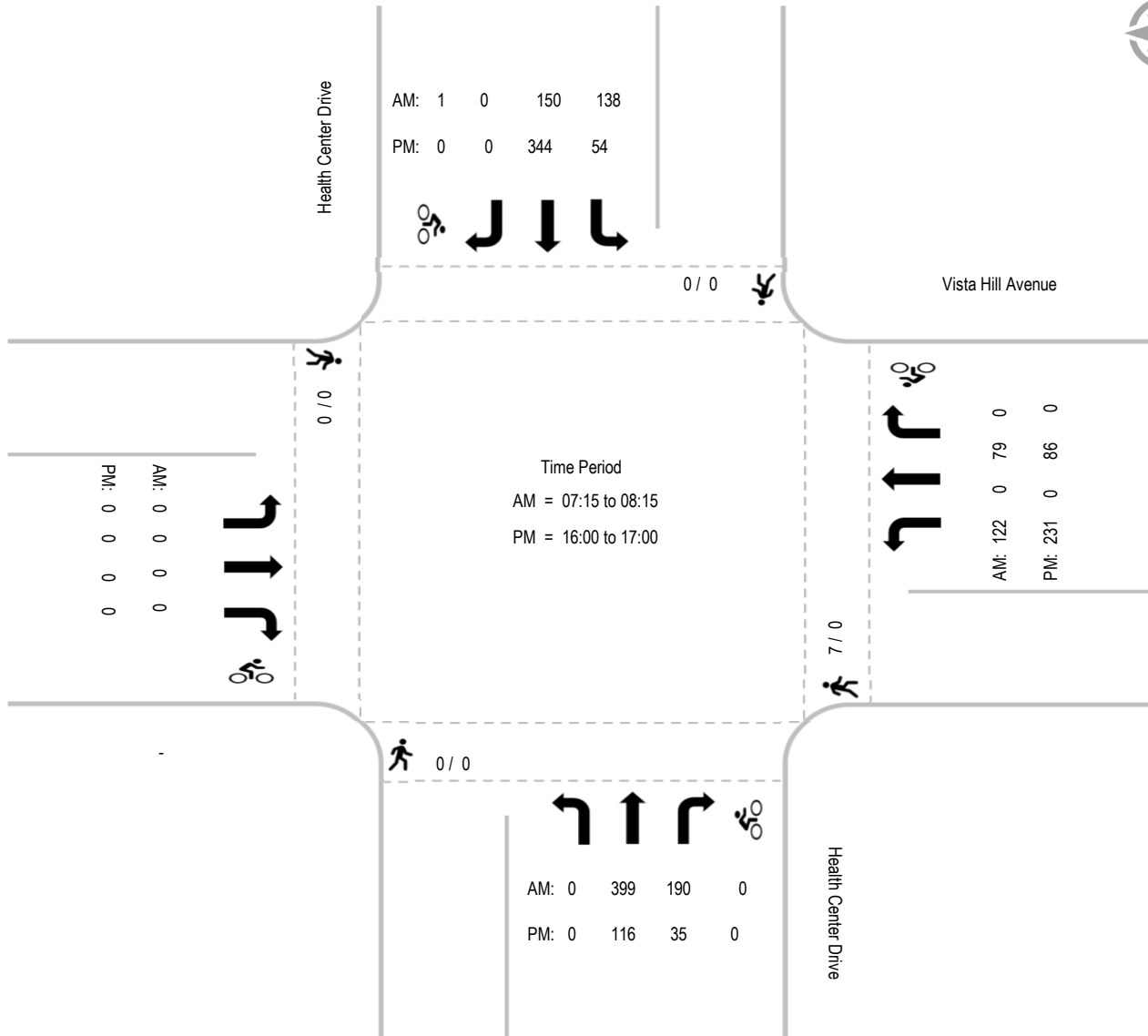
AM	Health Center Drive Southbound				Vista Hill Avenue Westbound				Health Center Drive Northbound				- Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
7:00	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0
7:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1
7:45	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0
8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0
8:30	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2	0
8:45	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0
Ped Total	0				7				0				0				7	
Bike Total		1	0	0		0	0	0		0	0	0		0	0	0		1

PM	Health Center Drive Southbound				Vista Hill Avenue Westbound				Health Center Drive Northbound				- Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Total	0				0				0				0				0	
Bike Total		0	0	0		0	0	0		0	0	0		0	0	0		0

Intersection Turning Movement - Peak Hour Summary



Location: #01	File Name: ITM-22-057-01
Intersection: Health Center Drive & Vista Hill Avenue	Project: LLG Ref. 3-22-3445
Date of Count: Tuesday, June 14, 2022	Juvenile Justice



Intersection Turning Movement - Peak Hour Vehicle Count



Location: #02
 Intersection: Meadow Lark Drive & Vista Hill Avenue
 Date of Count: Tuesday, June 14, 2022

File Name: ITM-22-057-02
 Project: LLG Ref. 3-22-3445
 Juvenile Justice

AM	Meadow Lark Drive Southbound			Vista Hill Avenue Westbound			Meadow Lark Drive Northbound			Vista Hill Avenue Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00	0	9	7	1	1	0	11	118	0	47	1	14	209
7:15	0	28	11	0	3	0	5	134	0	66	0	5	252
7:30	0	67	43	0	1	0	13	147	0	79	2	13	365
7:45	2	48	31	0	0	0	12	126	2	75	0	7	303
8:00	0	20	13	1	3	0	15	148	0	38	0	10	248
8:15	0	24	13	0	1	2	13	123	1	42	0	8	227
8:30	0	14	13	0	0	0	4	83	0	24	3	5	146
8:45	0	16	11	0	2	0	5	83	1	20	2	7	147
Total	2	226	142	2	11	2	78	962	4	391	8	69	1897
Approach%	0.5	61.1	38.4	13.3	73.3	13.3	7.5	92.1	0.4	83.5	1.7	14.7	
Total%	0.1	11.9	7.5	0.1	0.6	0.1	4.1	50.7	0.2	20.6	0.4	3.6	

AM Intersection Peak Hour: 07:15 to 08:15

Volume	2	163	98	1	7	-	45	555	2	258	2	35	1,168
Approach%	0.8	62.0	37.3	12.5	87.5	-	7.5	92.2	0.3	87.5	0.7	11.9	
Total%	0.2	14.0	8.4	0.1	0.6	-	3.9	47.5	0.2	22.1	0.2	3.0	
PHF			0.60			0.50			0.92			0.78	0.80

PM	Meadow Lark Drive Southbound			Vista Hill Avenue Westbound			Meadow Lark Drive Northbound			Vista Hill Avenue Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16:00	0	74	79	0	0	0	7	22	0	6	1	8	197
16:15	0	67	51	0	0	0	7	19	0	5	0	11	160
16:30	0	73	88	0	0	0	5	23	0	6	0	8	203
16:45	0	90	66	0	0	0	5	22	0	5	2	13	203
17:00	0	90	96	0	0	0	6	16	0	6	0	9	223
17:15	0	64	58	0	0	0	4	15	0	7	0	9	157
17:30	0	55	39	0	0	0	3	11	0	8	0	9	125
17:45	0	46	22	0	0	0	1	20	0	13	0	2	104
Total	0	559	499	0	0	0	38	148	0	56	3	69	1372
Approach%	-	52.8	47.2	-	-	-	20.4	79.6	-	43.8	2.3	53.9	
Total%	-	40.7	36.4	-	-	-	2.8	10.8	-	4.1	0.2	5.0	

PM Intersection Peak Hour: 16:15 to 17:15

Volume	-	320	301	-	-	-	23	80	-	22	2	41	789
Approach%	-	51.5	48.5	-	-	-	22.3	77.7	-	33.8	3.1	63.1	
Total%	-	40.6	38.1	-	-	-	2.9	10.1	-	2.8	0.3	5.2	
PHF			0.83			#DIV/0!			0.92			0.81	0.88

Intersection Turning Movement - Bicycle & Pedestrian Count



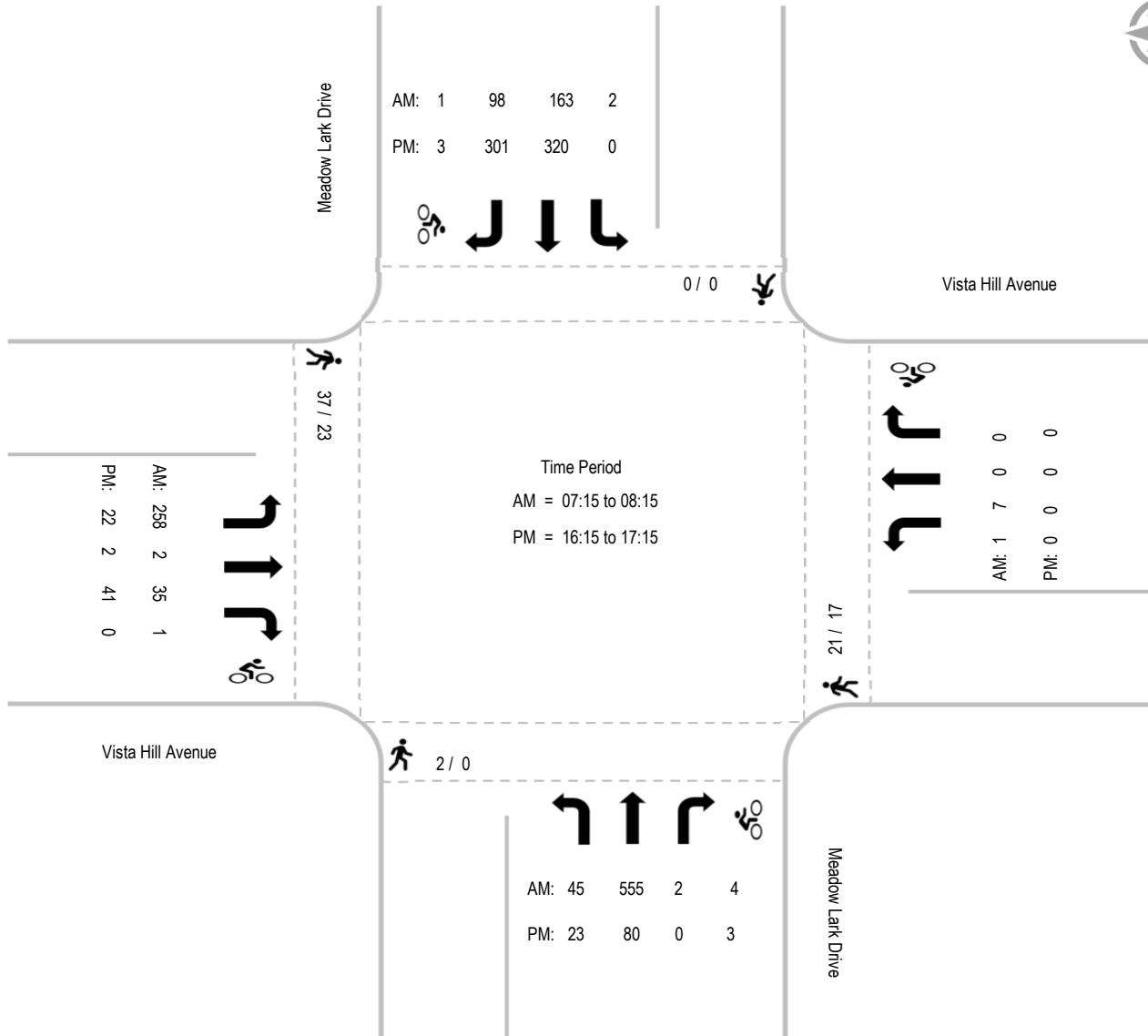
Location: #02	File Name: ITM-22-057-02
Intersection: Meadow Lark Drive & Vista Hill Avenue	Project: LLG Ref. 3-22-3445
Date of Count: Tuesday, June 14, 2022	Juvenile Justice

AM	Meadow Lark Drive Southbound				Vista Hill Avenue Westbound				Meadow Lark Drive Northbound				Vista Hill Avenue Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
7:00	0	0	0	0	2	0	0	0	0	0	0	0	5	0	0	0	7	0
7:15	0	0	0	0	4	0	0	0	0	0	0	0	3	0	0	0	7	0
7:30	0	0	1	0	6	0	0	0	0	0	0	0	4	0	0	0	10	1
7:45	0	0	0	0	3	0	0	0	0	0	2	0	11	0	0	0	14	2
8:00	0	0	0	0	3	0	0	0	0	0	1	0	3	0	0	0	6	1
8:15	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	5	0
8:30	0	0	0	0	1	0	0	0	0	0	0	0	3	0	1	0	4	1
8:45	0	0	0	0	2	0	0	0	2	1	0	0	3	0	0	0	7	1
Ped Total	0				21				2				37				60	
Bike Total		0	1	0		0	0	0		1	3	0		0	1	0		6

PM	Meadow Lark Drive Southbound				Vista Hill Avenue Westbound				Meadow Lark Drive Northbound				Vista Hill Avenue Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
16:00	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	0	8	0
16:15	0	0	0	0	3	0	0	0	0	0	0	0	1	0	0	0	4	0
16:30	0	0	0	0	6	0	0	0	0	0	2	0	0	0	0	0	6	2
16:45	0	0	2	0	1	0	0	0	0	0	1	0	3	0	0	0	4	3
17:00	0	0	0	0	6	0	0	0	0	0	0	0	7	0	0	0	13	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	1	0	0	0	0	0	0	0	0	0	2	0	0	0	2	1
17:45	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0	0	3	0
Ped Total	0				17				0				23				40	
Bike Total		0	3	0		0	0	0		0	3	0		0	0	0		6

Intersection Turning Movement - Peak Hour Summary

LINSCOTT LAW & GREENSPAN engineers	Location: #02	File Name: ITM-22-057-02
	Intersection: Meadow Lark Drive & Vista Hill Avenue	Project: LLG Ref. 3-22-3445
	Date of Count: Tuesday, June 14, 2022	Juvenile Justice



Intersection Turning Movement - Peak Hour Vehicle Count



Location: #03
 Intersection: Meadow Lark Drive & Starling Drive
 Date of Count: Tuesday, June 14, 2022

File Name: ITM-22-057-03
 Project: LLG Ref. 3-22-3445
 Juvenile Justice

AM	Meadow Lark Drive Southbound			Starling Drive Westbound			Meadow Lark Drive Northbound			Starling Drive Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00	4	5	13	0	1	1	22	4	0	118	2	8	178
7:15	1	4	26	0	1	2	17	5	0	136	2	13	207
7:30	2	11	73	0	1	0	18	8	0	139	0	19	271
7:45	1	5	51	0	1	3	15	9	0	119	1	13	218
8:00	1	2	29	0	3	0	17	6	1	154	1	18	232
8:15	2	5	29	0	0	0	17	11	0	120	4	15	203
8:30	1	3	18	1	0	2	22	3	1	86	5	7	149
8:45	0	5	17	0	0	1	11	7	1	83	1	14	140
Total	12	40	256	1	7	9	139	53	3	955	16	107	1598
Approach%	3.9	13.0	83.1	5.9	41.2	52.9	71.3	27.2	1.5	88.6	1.5	9.9	
Total%	0.8	2.5	16.0	0.1	0.4	0.6	8.7	3.3	0.2	59.8	1.0	6.7	

AM Intersection Peak Hour: 07:15 to 08:15

Volume	5	22	179	-	6	5	67	28	1	548	4	63	928
Approach%	2.4	10.7	86.9	-	54.5	45.5	69.8	29.2	1.0	89.1	0.7	10.2	
Total%	0.5	2.4	19.3	-	0.6	0.5	7.2	3.0	0.1	59.1	0.4	6.8	
PHF			0.60			0.69			0.92			0.89	0.86

PM	Meadow Lark Drive Southbound			Starling Drive Westbound			Meadow Lark Drive Northbound			Starling Drive Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16:00	1	4	82	0	0	0	13	3	0	27	0	13	143
16:15	1	10	69	0	0	1	17	6	0	20	1	18	143
16:30	0	5	75	0	5	0	15	0	1	23	1	23	148
16:45	3	9	88	0	0	1	11	2	0	9	0	17	140
17:00	0	8	84	0	0	0	14	8	1	14	4	16	149
17:15	0	6	66	0	1	2	17	1	0	15	1	23	132
17:30	0	6	62	0	0	0	19	3	0	11	6	14	121
17:45	0	3	46	0	3	0	14	0	4	23	6	12	111
Total	5	51	572	0	9	4	120	23	6	142	19	136	1087
Approach%	0.8	8.1	91.1	-	69.2	30.8	80.5	15.4	4.0	47.8	6.4	45.8	
Total%	0.5	4.7	52.6	-	0.8	0.4	11.0	2.1	0.6	13.1	1.7	12.5	

PM Intersection Peak Hour: 16:15 to 17:15

Volume	4	32	316	-	5	2	57	16	2	66	6	74	580
Approach%	1.1	9.1	89.8	-	71.4	28.6	76.0	21.3	2.7	45.2	4.1	50.7	
Total%	0.7	5.5	54.5	-	0.9	0.3	9.8	2.8	0.3	11.4	1.0	12.8	
PHF			0.88			0.35			0.82			0.78	0.97

Intersection Turning Movement - Bicycle & Pedestrian Count



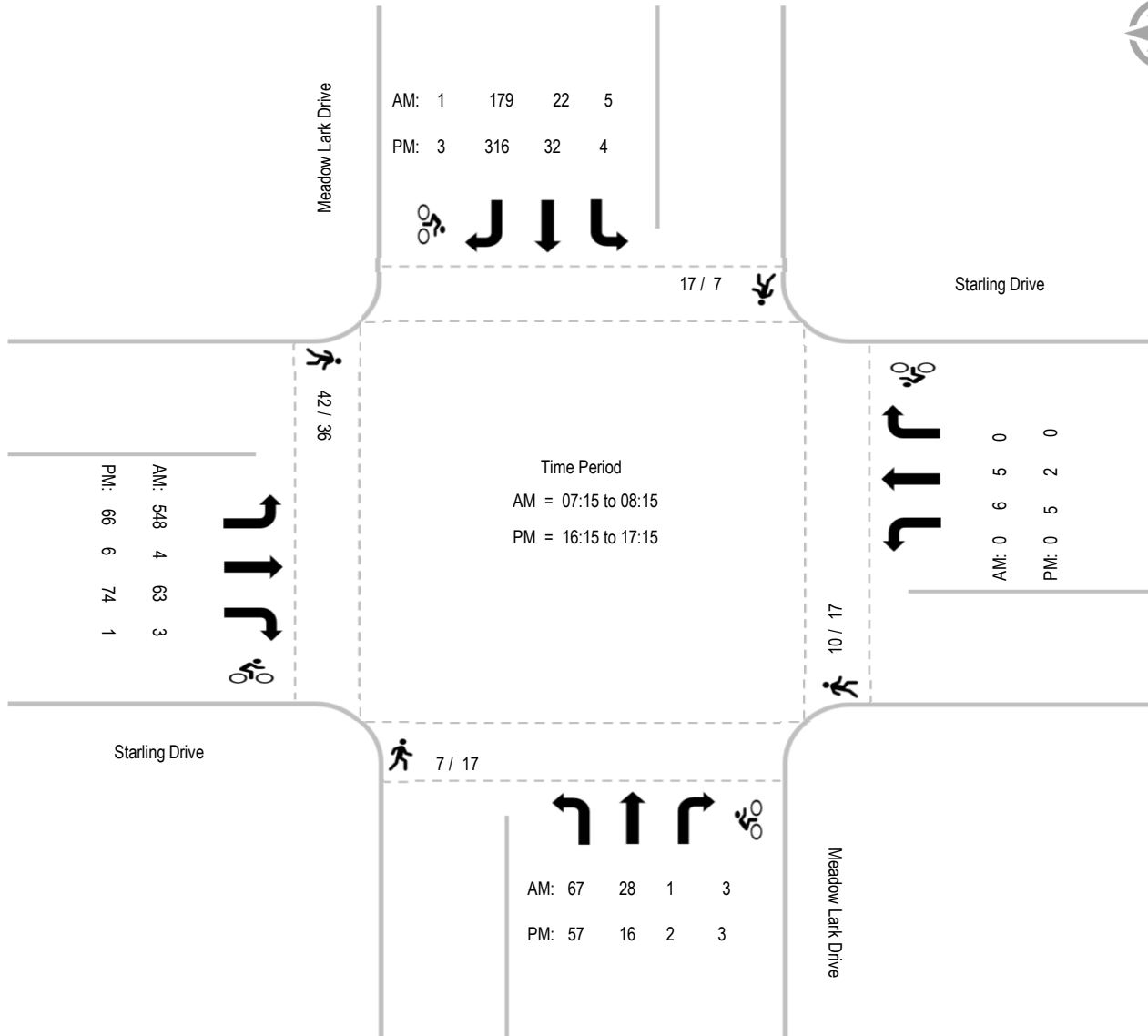
Location: #03	File Name: ITM-22-057-03
Intersection: Meadow Lark Drive & Starling Drive	Project: LLG Ref. 3-22-3445
Date of Count: Tuesday, June 14, 2022	Juvenile Justice

AM	Meadow Lark Drive Southbound				Starling Drive Westbound				Meadow Lark Drive Northbound				Starling Drive Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
7:00	2	0	0	0	0	0	0	0	1	0	0	0	5	0	0	0	8	0
7:15	5	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	7	1
7:30	1	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	7	0
7:45	2	1	0	0	0	0	0	0	3	0	1	0	7	1	0	0	12	3
8:00	2	0	0	0	2	0	0	0	2	0	0	1	3	0	0	0	9	1
8:15	2	0	0	0	0	0	0	0	1	0	0	0	6	0	0	0	9	0
8:30	2	0	0	0	3	0	0	0	0	0	0	0	5	0	1	0	10	1
8:45	1	0	0	0	5	0	0	0	0	0	1	0	8	0	0	0	14	1
Ped Total	17				10				7				42				76	
Bike Total		1	0	0		0	0	0		0	2	1		2	1	0		7

PM	Meadow Lark Drive Southbound				Starling Drive Westbound				Meadow Lark Drive Northbound				Starling Drive Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
16:00	0	0	0	0	0	0	0	0	2	0	0	0	12	0	0	0	14	0
16:15	3	0	0	0	3	0	0	0	1	0	0	0	1	0	0	0	8	0
16:30	0	0	0	0	7	0	0	0	6	0	2	0	12	0	0	1	25	3
16:45	2	0	2	0	1	0	0	0	0	0	0	0	5	0	0	0	8	2
17:00	0	0	0	0	3	0	0	0	3	1	0	0	1	0	0	0	7	1
17:15	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
17:30	0	0	1	0	0	0	0	0	2	0	0	0	0	0	0	0	2	1
17:45	2	0	0	0	3	0	0	0	3	0	0	0	4	0	0	0	12	0
Ped Total	7				17				17				36				77	
Bike Total		0	3	0		0	0	0		1	2	0		0	0	1		7

Intersection Turning Movement - Peak Hour Summary

LINSCOTT LAW & GREENSPAN engineers	Location: #03	File Name: ITM-22-057-03
	Intersection: Meadow Lark Drive & Starling Drive	Project: LLG Ref. 3-22-3445
	Date of Count: Tuesday, June 14, 2022	Juvenile Justice



Intersection Turning Movement - Peak Hour Vehicle Count

**LINSCOTT
LAW &
GREENSPAN**
engineers

Location: #04
Intersection: Health Center Drive & Starling Drive
Date of Count: Tuesday, June 14, 2022

File Name: ITM-22-057-04
Project: LLG Ref. 3-22-3445
Juvenile Justice

AM	Health Center Drive Southbound			Starling Drive Westbound			Health Center Drive Northbound			Starling Drive Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00	1	0	26	0	55	4	0	0	0	123	129	0	338
7:15	1	0	55	0	46	0	0	0	0	169	160	0	431
7:30	4	0	129	0	81	7	0	0	0	199	157	0	577
7:45	4	0	95	0	87	5	1	0	0	195	130	0	517
8:00	0	0	78	0	58	5	0	0	1	176	180	1	499
8:15	2	0	53	0	52	3	1	0	1	176	151	0	439
8:30	0	0	64	0	59	2	0	0	0	154	117	0	396
8:45	1	0	53	0	42	3	1	0	1	163	112	0	376
Total	13	0	553	0	480	29	3	0	3	1355	1136	1	3573
Approach%	2.3	-	97.7	-	94.3	5.7	50.0	-	50.0	54.4	45.6	0.0	
Total%	0.4	-	15.5	-	13.4	0.8	0.1	-	0.1	37.9	31.8	0.0	

AM Intersection Peak Hour: 07:30 to 08:30

Volume	10	-	355	-	278	20	2	-	2	746	618	1	2,032
Approach%	2.7	-	97.3	-	93.3	6.7	50.0	-	50.0	54.7	45.3	0.1	
Total%	0.5	-	17.5	-	13.7	1.0	0.1	-	0.1	36.7	30.4	0.0	
PHF			0.69			0.81			0.50			0.96	0.88

PM	Health Center Drive Southbound			Starling Drive Westbound			Health Center Drive Northbound			Starling Drive Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16:00	3	0	184	0	97	4	0	0	0	72	50	0	410
16:15	1	0	195	0	106	3	0	0	0	55	50	1	411
16:30	2	0	206	0	114	2	0	0	0	44	58	2	428
16:45	2	0	157	0	137	1	0	0	0	60	44	0	401
17:00	2	1	213	0	117	0	0	0	1	37	39	0	410
17:15	0	2	189	0	119	0	0	0	0	43	52	2	407
17:30	1	0	120	0	108	1	2	0	0	52	48	0	332
17:45	0	0	122	0	86	0	1	0	0	46	43	0	298
Total	11	3	1386	0	884	11	3	0	1	409	384	5	3097
Approach%	0.8	0.2	99.0	-	98.8	1.2	75.0	-	25.0	51.3	48.1	0.6	
Total%	0.4	0.1	44.8	-	28.5	0.4	0.1	-	0.0	13.2	12.4	0.2	

PM Intersection Peak Hour: 16:00 to 17:00

Volume	8	-	742	-	454	10	-	-	-	231	202	3	1,650
Approach%	1.1	-	98.9	-	97.8	2.2	-	-	-	53.0	46.3	0.7	
Total%	0.5	-	45.0	-	27.5	0.6	-	-	-	14.0	12.2	0.2	
PHF			0.90			0.84			#DIV/0!			0.89	0.96

Intersection Turning Movement - Bicycle & Pedestrian Count

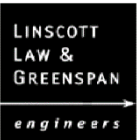


Location: #04	File Name: ITM-22-057-04
Intersection: Health Center Drive & Starling Drive	Project: LLG Ref. 3-22-3445
Date of Count: Tuesday, June 14, 2022	Juvenile Justice

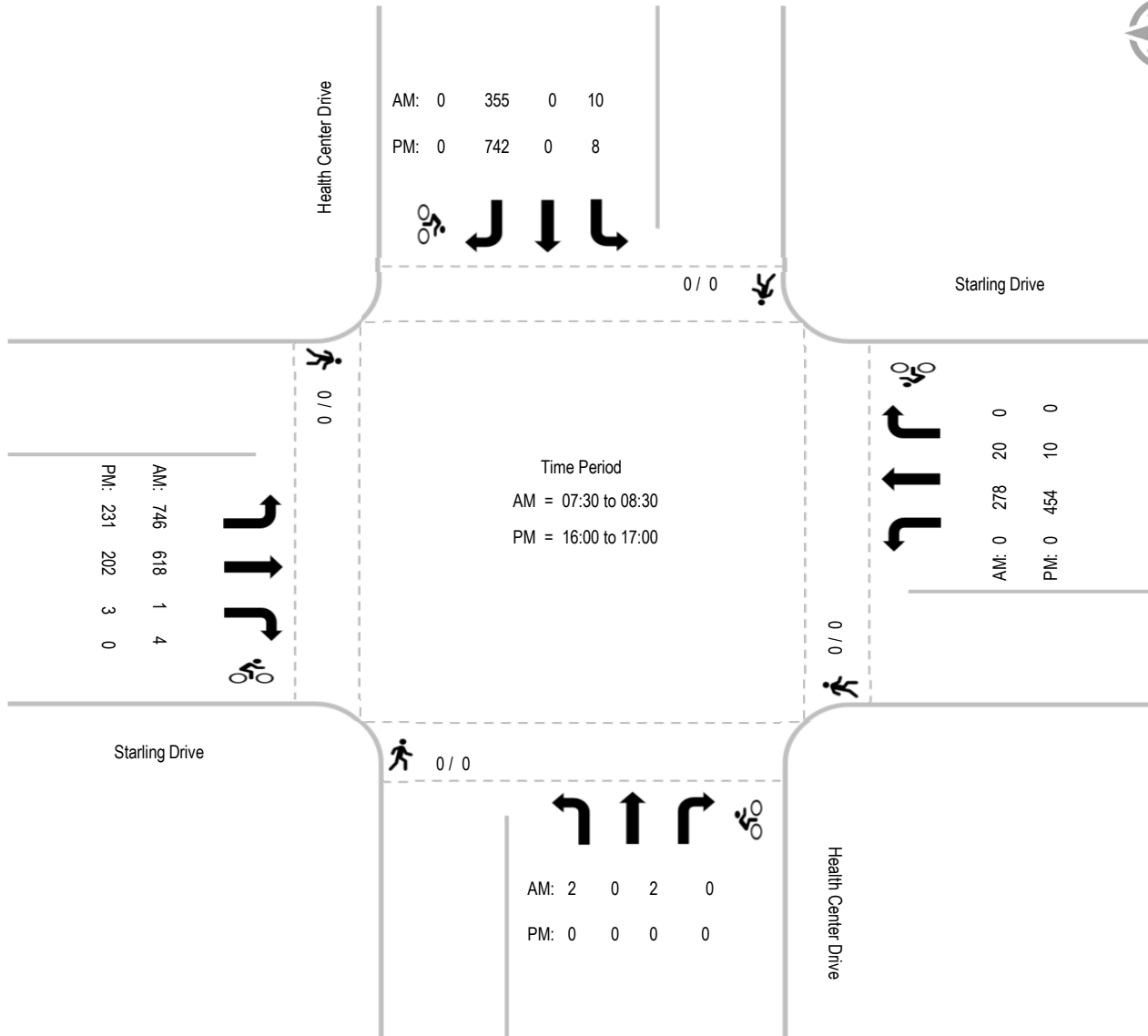
AM	Health Center Drive Southbound				Starling Drive Westbound				Health Center Drive Northbound				Starling Drive Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
8:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
8:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Total	0				0				0				0				0	
Bike Total		0	0	0		0	0	0		0	0	0		0	4	0		4

PM	Health Center Drive Southbound				Starling Drive Westbound				Health Center Drive Northbound				Starling Drive Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped Total	0				0				0				0				0	
Bike Total		0	0	0		0	0	0		0	0	0		0	0	0		0

Intersection Turning Movement - Peak Hour Summary



Location: #04	File Name: ITM-22-057-04
Intersection: Health Center Drive & Starling Drive	Project: LLG Ref. 3-22-3445
Date of Count: Tuesday, June 14, 2022	Juvenile Justice



Intersection Turning Movement - Peak Hour Vehicle Count



Location: #05
 Intersection: SR-163 NB Ramps & Genesee Avenue & Cardinal Drive
 Date of Count: Tuesday, June 14, 2022

File Name: ITM-22-057-05
 Project: LLG Ref. 3-22-3445
 Juvenile Justice

AM	SR-163 NB Ramps Southbound			Genesee Avenue Westbound			Cardinal Drive Northbound			Genesee Avenue Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00	0	0	43	2	43	45	26	36	2	132	280	42	651
7:15	0	0	64	3	45	50	47	43	7	118	318	43	738
7:30	0	0	73	11	109	116	50	53	6	141	383	82	1024
7:45	0	0	93	20	118	103	68	58	7	86	346	97	996
8:00	0	0	93	15	79	89	49	61	1	138	337	78	940
8:15	0	0	75	6	50	58	59	42	7	148	309	55	809
8:30	0	0	68	11	54	68	33	53	12	134	292	75	800
8:45	0	0	60	6	51	67	40	34	6	142	291	69	766
Total	0	0	569	74	549	596	372	380	48	1039	2556	541	6724
Approach%	-	-	100.0	6.1	45.0	48.9	46.5	47.5	6.0	25.1	61.8	13.1	
Total%	-	-	8.5	1.1	8.2	8.9	5.5	5.7	0.7	15.5	38.0	8.0	

AM Intersection Peak Hour: 07:30 to 08:30

Volume	-	-	334	52	356	366	226	214	21	513	1,375	312	3,769
Approach%	-	-	100.0	6.7	46.0	47.3	49.0	46.4	4.6	23.3	62.5	14.2	
Total%	-	-	8.9	1.4	9.4	9.7	6.0	5.7	0.6	13.6	36.5	8.3	
PHF			0.90			0.80			0.87			0.91	0.92

PM	SR-163 NB Ramps Southbound			Genesee Avenue Westbound			Cardinal Drive Northbound			Genesee Avenue Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
16:00	0	0	88	3	117	158	41	38	6	143	144	89	827
16:15	0	0	79	3	126	142	68	40	6	129	115	78	786
16:30	0	0	92	9	135	165	40	37	4	121	100	85	788
16:45	0	0	90	12	122	165	60	32	8	108	86	67	750
17:00	0	0	93	3	146	188	54	51	10	133	72	74	824
17:15	0	0	92	7	123	174	40	33	7	129	86	85	776
17:30	0	0	81	1	99	128	34	17	3	99	73	69	604
17:45	0	0	95	7	82	95	40	39	9	86	84	67	604
Total	0	0	710	45	950	1215	377	287	53	948	760	614	5959
Approach%	-	-	100.0	2.0	43.0	55.0	52.6	40.0	7.4	40.8	32.7	26.4	
Total%	-	-	11.9	0.8	15.9	20.4	6.3	4.8	0.9	15.9	12.8	10.3	

PM Intersection Peak Hour: 16:00 to 17:00

Volume	-	-	349	27	500	630	209	147	24	501	445	319	3,151
Approach%	-	-	100.0	2.3	43.2	54.5	55.0	38.7	6.3	39.6	35.2	25.2	
Total%	-	-	11.1	0.9	15.9	20.0	6.6	4.7	0.8	15.9	14.1	10.1	
PHF			0.95			0.94			0.83			0.84	0.95

Intersection Turning Movement - Bicycle & Pedestrian Count



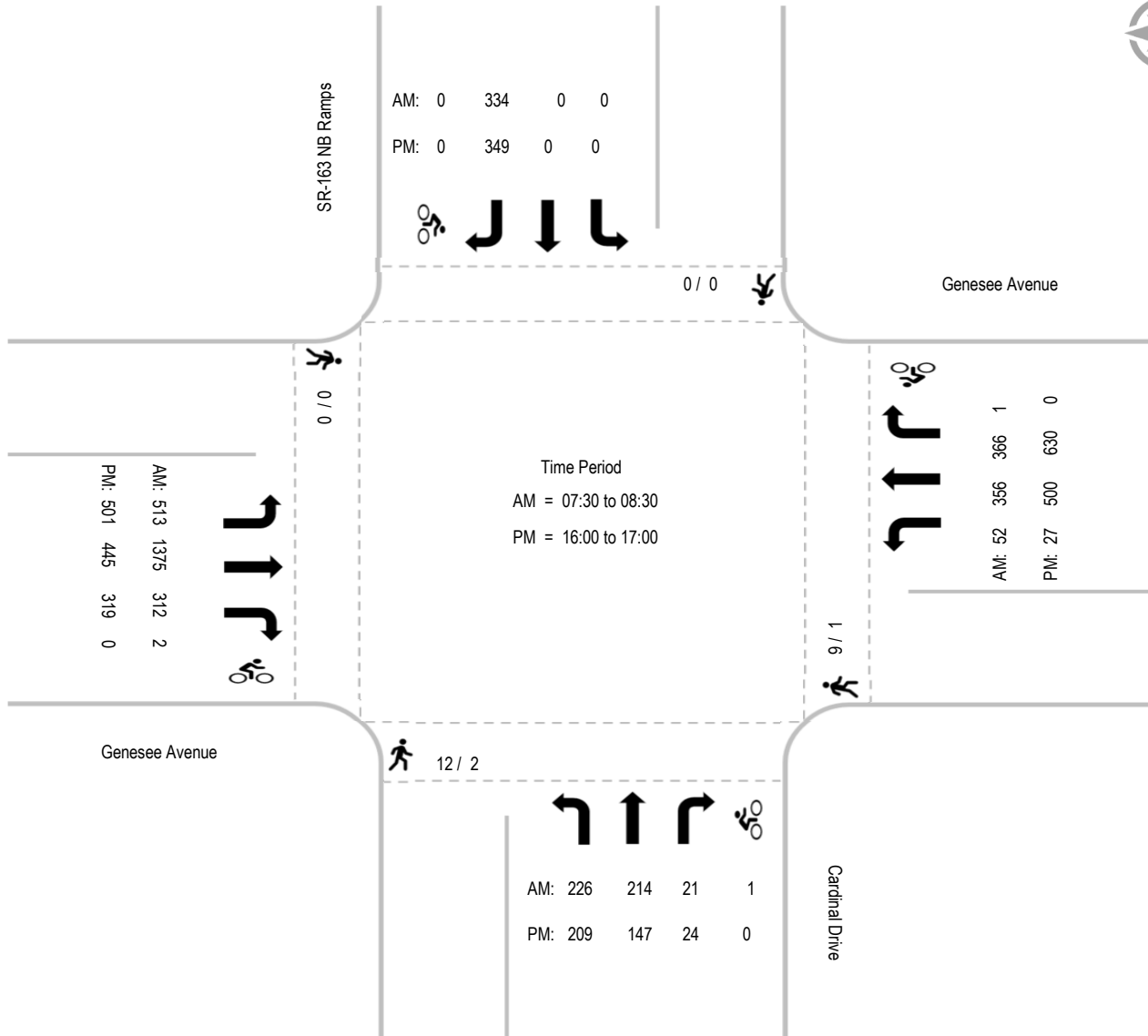
Location: #05	File Name: ITM-22-057-05
Intersection: SR-163 NB Ramps & Genesee Avenue & Cardinal Drive	Project: LLG Ref. 3-22-3445
Date of Count: Tuesday, June 14, 2022	Juvenile Justice

AM	SR-163 NB Ramps Southbound				Genesee Avenue Westbound				Cardinal Drive Northbound				Genesee Avenue Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
7:00	0	0	0	0	3	0	0	0	1	0	0	0	0	0	0	0	4	0
7:15	0	0	0	0	3	0	0	0	0	0	0	1	0	0	0	0	3	1
7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
8:00	0	0	0	0	0	0	1	0	3	0	0	0	0	0	1	0	3	2
8:15	0	0	0	0	2	0	0	0	5	0	0	0	0	0	0	0	7	0
8:30	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	2	0
8:45	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2	0
Ped Total	0				9				12				0				21	
Bike Total		0	0	0		0	1	0		0	0	1		0	2	0		4

PM	SR-163 NB Ramps Southbound				Genesee Avenue Westbound				Cardinal Drive Northbound				Genesee Avenue Eastbound				Totals	
	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	B-Left	B-Thru	B-Right	Ped	Bicycle
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
17:45	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0
Ped Total	0				1				2				0				3	
Bike Total		0	0	0		0	0	0		0	0	0		0	0	0		0

Intersection Turning Movement - Peak Hour Summary

LINSCOTT LAW & GREENSPAN engineers	Location: #05	File Name: ITM-22-057-05
	Intersection: SR-163 NB Ramps & Genesee Avenue & Cardinal Drive	Project: LLG Ref. 3-22-3445
	Date of Count: Tuesday, June 14, 2022	Juvenile Justice



APPENDIX B

EXISTING INTERSECTION ANALYSIS CALCULATION SHEETS

Intersection						
Int Delay, s/veh	4.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	219	438	114	13	42	70
Future Vol, veh/h	219	438	114	13	42	70
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	45	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	238	476	124	14	46	76
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	138	0	-	0	1083	131
Stage 1	-	-	-	-	131	-
Stage 2	-	-	-	-	952	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1446	-	-	-	240	919
Stage 1	-	-	-	-	895	-
Stage 2	-	-	-	-	375	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1446	-	-	-	200	919
Mov Cap-2 Maneuver	-	-	-	-	200	-
Stage 1	-	-	-	-	747	-
Stage 2	-	-	-	-	375	-
Approach	EB	WB		SB		
HCM Control Delay, s	2.7	0		18.3		
HCM LOS				C		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1446	-	-	-	391	
HCM Lane V/C Ratio	0.165	-	-	-	0.311	
HCM Control Delay (s)	8	-	-	-	18.3	
HCM Lane LOS	A	-	-	-	C	
HCM 95th %tile Q(veh)	0.6	-	-	-	1.3	

HCM 6th Signalized Intersection Summary

2: Health Center Dr & Vista Hill Ave

Existing AM
07/06/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	R	T	R	W	R
Traffic Volume (veh/h)	122	79	399	190	138	150
Future Volume (veh/h)	122	79	399	190	138	150
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.99	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	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	133	86	434	207	150	163
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	171	110	534	255	195	1203
Arrive On Green	0.17	0.17	0.45	0.45	0.11	0.64
Sat Flow, veh/h	1027	664	1192	569	1781	1870
Grp Volume(v), veh/h	220	0	0	641	150	163
Grp Sat Flow(s),veh/h/ln	1699	0	0	1760	1781	1870
Q Serve(g_s), s	6.4	0.0	0.0	16.2	4.2	1.8
Cycle Q Clear(g_c), s	6.4	0.0	0.0	16.2	4.2	1.8
Prop In Lane	0.60	0.39		0.32	1.00	
Lane Grp Cap(c), veh/h	282	0	0	789	195	1203
V/C Ratio(X)	0.78	0.00	0.00	0.81	0.77	0.14
Avail Cap(c_a), veh/h	764	0	0	1408	402	2078
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.5	0.0	0.0	12.3	22.3	3.6
Incr Delay (d2), s/veh	4.6	0.0	0.0	2.1	6.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	0.0	0.0	5.5	1.9	0.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	25.2	0.0	0.0	14.4	28.5	3.6
LnGrp LOS	C	A	A	B	C	A
Approach Vol, veh/h	220		641			313
Approach Delay, s/veh	25.2		14.4			15.6
Approach LOS	C		B			B
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	10.0	27.9			38.0	13.4
Change Period (Y+Rc), s	4.4	4.9			4.9	4.9
Max Green Setting (Gmax), s	11.6	41.1			57.1	23.1
Max Q Clear Time (g_c+I1), s	6.2	18.2			3.8	8.4
Green Ext Time (p_c), s	0.2	4.8			1.0	0.6

Intersection Summary

HCM 6th Ctrl Delay	16.7
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Intersection

Intersection Delay, s/veh39.8

Intersection LOS E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	258	2	35	1	7	0	45	555	2	2	163	98
Future Vol, veh/h	258	2	35	1	7	0	45	555	2	2	163	98
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	280	2	38	1	8	0	49	603	2	2	177	107
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left SB		NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right NB		SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	18.6	10.8	61.8	14.2
HCM LOS	C	B	F	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	7%	87%	12%	1%
Vol Thru, %	92%	1%	88%	62%
Vol Right, %	0%	12%	0%	37%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	602	295	8	263
LT Vol	45	258	1	2
Through Vol	555	2	7	163
RT Vol	2	35	0	98
Lane Flow Rate	654	321	9	286
Geometry Grp	1	1	1	1
Degree of Util (X)	1.011	0.584	0.018	0.468
Departure Headway (Hd)	5.561	6.558	7.661	5.998
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	648	545	470	603
Service Time	3.638	4.648	5.661	3.998
HCM Lane V/C Ratio	1.009	0.589	0.019	0.474
HCM Control Delay	61.8	18.6	10.8	14.2
HCM Lane LOS	F	C	B	B
HCM 95th-tile Q	16	3.7	0.1	2.5

Intersection

Intersection Delay, s/veh 30

Intersection LOS D

Movement EBL EBR NBL NBT SBT SBR

Lane Configurations 

Traffic Vol, veh/h 548 63 67 28 22 179

Future Vol, veh/h 548 63 67 28 22 179

Peak Hour Factor 0.92 0.92 0.92 0.92 0.92 0.92

Heavy Vehicles, % 2 2 2 2 2 2

Mvmt Flow 596 68 73 30 24 195

Number of Lanes 1 0 0 1 1 0

Approach EB NB SB

Opposing Approach SB NB

Opposing Lanes 0 1 1

Conflicting Approach Left SB EB

Conflicting Lanes Left 1 1 0

Conflicting Approach Right NB EB

Conflicting Lanes Right 1 0 1

HCM Control Delay 39.3 10.7 11

HCM LOS E B B

Lane NBLn1 EBLn1 SBLn1

Vol Left, % 71% 90% 0%

Vol Thru, % 29% 0% 11%

Vol Right, % 0% 10% 89%

Sign Control Stop Stop Stop

Traffic Vol by Lane 95 611 201

LT Vol 67 548 0

Through Vol 28 0 22

RT Vol 0 63 179

Lane Flow Rate 103 664 218

Geometry Grp 1 1 1

Degree of Util (X) 0.179 0.922 0.326

Departure Headway (Hd) 6.242 4.999 5.378

Convergence, Y/N Yes Yes Yes

Cap 573 731 666

Service Time 4.297 2.999 3.427

HCM Lane V/C Ratio 0.18 0.908 0.327

HCM Control Delay 10.7 39.3 11

HCM Lane LOS B E B

HCM 95th-tile Q 0.6 12.7 1.4

HCM 6th Signalized Intersection Summary

5: Genesee Ave/Starling Dr & Health Center Dr

Existing AM
07/06/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	746	618	1	0	278	20	2	0	2	10	0	355
Future Volume (veh/h)	746	618	1	0	278	20	2	0	2	10	0	355
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.97	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	0	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	495	1115	1	0	302	22	2	0	2	0	0	398
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	0	2	2	2	2	2	2	2	2
Cap, veh/h	732	1535	1	0	401	29	159	29	86	0	241	1711
Arrive On Green	0.41	0.41	0.41	0.00	0.23	0.23	0.13	0.00	0.13	0.00	0.00	0.13
Sat Flow, veh/h	1781	3737	3	0	1722	125	441	224	665	0	1870	3170
Grp Volume(v), veh/h	495	558	558	0	0	324	4	0	0	0	0	398
Grp Sat Flow(s), veh/h/ln	1781	1870	1870	0	0	1847	1331	0	0	0	1870	1585
Q Serve(g_s), s	12.0	13.2	13.2	0.0	0.0	8.6	0.0	0.0	0.0	0.0	0.0	3.5
Cycle Q Clear(g_c), s	12.0	13.2	13.2	0.0	0.0	8.6	0.1	0.0	0.0	0.0	0.0	3.5
Prop In Lane	1.00		0.00	0.00		0.07	0.50		0.50	0.00		1.00
Lane Grp Cap(c), veh/h	732	768	768	0	0	431	274	0	0	0	241	1711
V/C Ratio(X)	0.68	0.73	0.73	0.00	0.00	0.75	0.01	0.00	0.00	0.00	0.00	0.23
Avail Cap(c_a), veh/h	877	921	920	0	0	822	540	0	0	0	655	2412
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	12.7	13.1	13.1	0.0	0.0	18.8	20.1	0.0	0.0	0.0	0.0	6.4
Incr Delay (d2), s/veh	1.6	2.3	2.3	0.0	0.0	2.7	0.0	0.0	0.0	0.0	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	5.1	5.1	0.0	0.0	3.6	0.0	0.0	0.0	0.0	0.0	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.3	15.4	15.4	0.0	0.0	21.5	20.1	0.0	0.0	0.0	0.0	6.5
LnGrp LOS	B	B	B	A	A	C	C	A	A	A	A	A
Approach Vol, veh/h	1611			324			4			398		
Approach Delay, s/veh	15.1			21.5			20.1			6.5		
Approach LOS	B			C			C			A		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	25.7			10.8			16.3			10.8		
Change Period (Y+Rc), s	4.0			4.0			4.0			4.0		
Max Green Setting (Gmax), s	26.0			18.5			23.5			18.5		
Max Q Clear Time (g_c+I1), s	15.2			5.5			10.6			2.1		
Green Ext Time (p_c), s	6.5			1.3			1.5			0.0		

Intersection Summary

HCM 6th Ctrl Delay	14.5
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

HCM 6th Signalized Intersection Summary 6: Cardinal Rd/SR-163 NB Ramps & Genesee Ave

Existing AM
07/06/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↱	↑↑		↰	↑↑	↱		↰↱				↰↱
Traffic Volume (veh/h)	513	1375	312	52	356	356	226	214	21	0	0	334
Future Volume (veh/h)	513	1375	312	52	356	356	226	214	21	0	0	334
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	0	0	1870
Adj Flow Rate, veh/h	558	1495	339	57	387	387	246	233	23	0	0	363
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	0	0	2
Cap, veh/h	648	1656	364	188	1790	798	308	321	32	0	0	0
Arrive On Green	0.19	0.57	0.57	0.11	0.50	0.50	0.18	0.18	0.18	0.00	0.00	0.00
Sat Flow, veh/h	3456	2894	637	1781	3554	1585	1690	1760	175		0	
Grp Volume(v), veh/h	558	900	934	57	387	387	260	0	242		0.0	
Grp Sat Flow(s),veh/h/ln	1728	1777	1754	1781	1777	1585	1786	0	1839			
Q Serve(g_s), s	18.9	53.1	58.9	3.6	7.3	19.4	16.8	0.0	15.0			
Cycle Q Clear(g_c), s	18.9	53.1	58.9	3.6	7.3	19.4	16.8	0.0	15.0			
Prop In Lane	1.00		0.36	1.00		1.00	0.95		0.10			
Lane Grp Cap(c), veh/h	648	1017	1004	188	1790	798	326	0	335			
V/C Ratio(X)	0.86	0.89	0.93	0.30	0.22	0.48	0.80	0.00	0.72			
Avail Cap(c_a), veh/h	957	1046	1033	221	1790	798	561	0	578			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	47.6	22.4	23.7	50.0	16.7	19.7	47.3	0.0	46.5			
Incr Delay (d2), s/veh	5.5	9.1	14.1	0.9	0.1	0.5	4.5	0.0	2.9			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	8.6	23.5	26.9	1.6	3.0	7.2	7.9	0.0	7.1			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.1	31.5	37.8	50.8	16.8	20.2	51.8	0.0	49.5			
LnGrp LOS	D	C	D	D	B	C	D	A	D			
Approach Vol, veh/h	2392			831			502					
Approach Delay, s/veh	39.0			20.7			50.7					
Approach LOS	D			C			D					
Timer - Assigned Phs	1	2			5	6		8				
Phs Duration (G+Y+Rc), s	18.3	75.5			27.4	66.4		27.2				
Change Period (Y+Rc), s	5.5	* 6.3			* 4.7	5.5		5.1				
Max Green Setting (Gmax), s	15.0	* 71			* 34	53.5		38.0				
Max Q Clear Time (g_c+I), s	15.6	60.9			20.9	21.4		18.8				
Green Ext Time (p_c), s	0.1	8.3			1.7	4.3		2.9				

Intersection Summary

HCM 6th Ctrl Delay	36.5
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection						
Int Delay, s/veh	3.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	21	30	278	6	21	114
Future Vol, veh/h	21	30	278	6	21	114
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	45	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	23	33	302	7	23	124
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	309	0	-	0	385	306
Stage 1	-	-	-	-	306	-
Stage 2	-	-	-	-	79	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1252	-	-	-	618	734
Stage 1	-	-	-	-	747	-
Stage 2	-	-	-	-	944	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1252	-	-	-	607	734
Mov Cap-2 Maneuver	-	-	-	-	607	-
Stage 1	-	-	-	-	734	-
Stage 2	-	-	-	-	944	-
Approach	EB	WB		SB		
HCM Control Delay, s	3.3	0		11.4		
HCM LOS	B					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1252	-	-	-	711	
HCM Lane V/C Ratio	0.018	-	-	-	0.206	
HCM Control Delay (s)	7.9	-	-	-	11.4	
HCM Lane LOS	A	-	-	-	B	
HCM 95th %tile Q(veh)	0.1	-	-	-	0.8	

HCM 6th Signalized Intersection Summary

2: Health Center Dr & Vista Hill Ave

Existing PM
07/06/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	231	86	116	35	54	344
Future Volume (veh/h)	231	86	116	35	54	344
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	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	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	251	93	126	38	59	374
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	330	122	398	120	88	865
Arrive On Green	0.26	0.26	0.29	0.29	0.05	0.46
Sat Flow, veh/h	1254	465	1373	414	1781	1870
Grp Volume(v), veh/h	345	0	0	164	59	374
Grp Sat Flow(s),veh/h/ln	1724	0	0	1787	1781	1870
Q Serve(g_s), s	6.6	0.0	0.0	2.6	1.2	4.8
Cycle Q Clear(g_c), s	6.6	0.0	0.0	2.6	1.2	4.8
Prop In Lane	0.73	0.27		0.23	1.00	
Lane Grp Cap(c), veh/h	453	0	0	518	88	865
V/C Ratio(X)	0.76	0.00	0.00	0.32	0.67	0.43
Avail Cap(c_a), veh/h	1840	0	0	1357	529	2206
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.1	0.0	0.0	9.9	16.7	6.4
Incr Delay (d2), s/veh	2.7	0.0	0.0	0.3	8.4	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	2.3	0.0	0.0	0.8	0.6	1.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	14.8	0.0	0.0	10.3	25.0	6.8
LnGrp LOS	B	A	A	B	C	A
Approach Vol, veh/h	345		164			433
Approach Delay, s/veh	14.8		10.3			9.3
Approach LOS	B		B			A
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	6.2	15.2			21.4	14.3
Change Period (Y+Rc), s	4.4	4.9			4.9	4.9
Max Green Setting (Gmax), s	10.6	27.1			42.1	38.1
Max Q Clear Time (g_c+I1), s	3.2	4.6			6.8	8.6
Green Ext Time (p_c), s	0.1	0.9			2.5	1.1

Intersection Summary

HCM 6th Ctrl Delay	11.5
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Intersection

Intersection Delay, s/veh 15.6

Intersection LOS C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	22	2	41	0	0	0	23	80	0	0	320	301
Future Vol, veh/h	22	2	41	0	0	0	23	80	0	0	320	301
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	24	2	45	0	0	0	25	87	0	0	348	327
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left SB		NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right NB		SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.9	0	8.7	17.5
HCM LOS	A	-	A	C

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	22%	34%	0%	0%
Vol Thru, %	78%	3%	100%	52%
Vol Right, %	0%	63%	0%	48%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	103	65	0	621
LT Vol	23	22	0	0
Through Vol	80	2	0	320
RT Vol	0	41	0	301
Lane Flow Rate	112	71	0	675
Geometry Grp	1	1	1	1
Degree of Util (X)	0.149	0.103	0	0.742
Departure Headway (Hd)	4.801	5.24	5.687	3.959
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	747	682	0	918
Service Time	2.833	3.284	3.741	1.976
HCM Lane V/C Ratio	0.15	0.104	0	0.735
HCM Control Delay	8.7	8.9	8.7	17.5
HCM Lane LOS	A	A	N	C
HCM 95th-tile Q	0.5	0.3	0	7

Intersection

Intersection Delay, s/veh 9.2

Intersection LOS A

Movement EBL EBR NBL NBT SBT SBR

Lane Configurations 

Traffic Vol, veh/h 66 74 57 16 32 316

Future Vol, veh/h 66 74 57 16 32 316

Peak Hour Factor 0.92 0.92 0.92 0.92 0.92 0.92

Heavy Vehicles, % 2 2 2 2 2 2

Mvmt Flow 72 80 62 17 35 343

Number of Lanes 1 0 0 1 1 0

Approach EB NB SB

Opposing Approach SB NB

Opposing Lanes 0 1 1

Conflicting Approach Left SB EB

Conflicting Lanes Left 1 1 0

Conflicting Approach Right NB EB

Conflicting Lanes Right 1 0 1

HCM Control Delay 8.8 8.4 9.5

HCM LOS A A A

Lane NBLn1 EBLn1 SBLn1

Vol Left, % 78% 47% 0%

Vol Thru, % 22% 0% 9%

Vol Right, % 0% 53% 91%

Sign Control Stop Stop Stop

Traffic Vol by Lane 73 140 348

LT Vol 57 66 0

Through Vol 16 0 32

RT Vol 0 74 316

Lane Flow Rate 79 152 378

Geometry Grp 1 1 1

Degree of Util (X) 0.106 0.196 0.405

Departure Headway (Hd) 4.823 4.647 3.856

Convergence, Y/N Yes Yes Yes

Cap 743 772 934

Service Time 2.849 2.678 1.87

HCM Lane V/C Ratio 0.106 0.197 0.405

HCM Control Delay 8.4 8.8 9.5

HCM Lane LOS A A A

HCM 95th-tile Q 0.4 0.7 2

HCM 6th Signalized Intersection Summary

5: Genesee Ave/Starling Dr & Health Center Dr

Existing PM
07/06/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	231	202	3	0	454	10	0	0	0	8	0	742
Future Volume (veh/h)	231	202	3	0	454	10	0	0	0	8	0	742
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	0	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	158	350	3	0	493	11	0	0	0	0	0	817
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	0	2	2	2	2	2	2	2	2
Cap, veh/h	330	686	6	0	601	13	0	496	0	0	496	1427
Arrive On Green	0.19	0.19	0.19	0.00	0.33	0.33	0.00	0.00	0.00	0.00	0.00	0.26
Sat Flow, veh/h	1781	3703	32	0	1822	41	0	1870	0	0	1870	3170
Grp Volume(v), veh/h	158	177	176	0	0	504	0	0	0	0	0	817
Grp Sat Flow(s), veh/h/ln	1781	1870	1864	0	0	1863	0	1870	0	0	1870	1585
Q Serve(g_s), s	4.3	4.6	4.6	0.0	0.0	13.5	0.0	0.0	0.0	0.0	0.0	10.4
Cycle Q Clear(g_c), s	4.3	4.6	4.6	0.0	0.0	13.5	0.0	0.0	0.0	0.0	0.0	10.4
Prop In Lane	1.00		0.02	0.00		0.02	0.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h	330	346	345	0	0	614	0	496	0	0	496	1427
V/C Ratio(X)	0.48	0.51	0.51	0.00	0.00	0.82	0.00	0.00	0.00	0.00	0.00	0.57
Avail Cap(c_a), veh/h	608	638	636	0	0	882	0	638	0	0	638	1669
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	19.9	20.0	20.0	0.0	0.0	16.8	0.0	0.0	0.0	0.0	0.0	11.1
Incr Delay (d2), s/veh	1.1	1.2	1.2	0.0	0.0	4.2	0.0	0.0	0.0	0.0	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	2.0	2.0	0.0	0.0	5.7	0.0	0.0	0.0	0.0	0.0	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.9	21.1	21.2	0.0	0.0	21.0	0.0	0.0	0.0	0.0	0.0	11.5
LnGrp LOS	C	C	C	A	A	C	A	A	A	A	A	B
Approach Vol, veh/h	511			504			0			817		
Approach Delay, s/veh	21.1			21.0			0.0			11.5		
Approach LOS	C			C						B		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	14.1			18.4			22.0			18.4		
Change Period (Y+Rc), s	4.0			4.0			4.0			4.0		
Max Green Setting (Gmax), s	18.6			18.6			25.8			18.6		
Max Q Clear Time (g_c+I1), s	6.6			12.4			15.5			0.0		
Green Ext Time (p_c), s	2.0			2.0			2.3			0.0		

Intersection Summary

HCM 6th Ctrl Delay	16.8
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

HCM 6th Signalized Intersection Summary

6: Cardinal Rd/SR-163 NB Ramps & Genesee Ave

Existing PM
07/06/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑		↰	↑↑	↰		↰				↰
Traffic Volume (veh/h)	501	445	319	27	500	630	209	147	24	0	0	349
Future Volume (veh/h)	501	445	319	27	500	630	209	147	24	0	0	349
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	0	0	1870
Adj Flow Rate, veh/h	545	484	347	29	543	685	227	160	26	0	0	379
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	0	0	2
Cap, veh/h	667	621	444	438	1382	616	372	327	53	0	0	0
Arrive On Green	0.19	0.31	0.31	0.25	0.39	0.39	0.21	0.21	0.21	0.00	0.00	0.00
Sat Flow, veh/h	3456	1975	1412	1781	3554	1585	1781	1569	255		0	
Grp Volume(v), veh/h	545	435	396	29	543	685	227	0	186		0.0	
Grp Sat Flow(s), veh/h/ln	1728	1777	1611	1781	1777	1585	1781	0	1824			
Q Serve(g_s), s	11.0	16.3	16.3	0.9	8.1	28.4	8.4	0.0	6.6			
Cycle Q Clear(g_c), s	11.0	16.3	16.3	0.9	8.1	28.4	8.4	0.0	6.6			
Prop In Lane	1.00		0.88	1.00		1.00	1.00		0.14			
Lane Grp Cap(c), veh/h	667	558	506	438	1382	616	372	0	380			
V/C Ratio(X)	0.82	0.78	0.78	0.07	0.39	1.11	0.61	0.00	0.49			
Avail Cap(c_a), veh/h	875	757	686	438	1382	616	927	0	949			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	28.2	22.7	22.8	21.1	16.1	22.3	26.2	0.0	25.5			
Incr Delay (d2), s/veh	4.6	3.7	4.1	0.1	0.2	70.8	1.6	0.0	1.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	4.8	6.9	6.4	0.4	3.1	21.7	3.6	0.0	2.8			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.9	26.4	26.9	21.2	16.3	93.1	27.8	0.0	26.4			
LnGrp LOS	C	C	C	C	B	F	C	A	C			
Approach Vol, veh/h	1376			1257			413					
Approach Delay, s/veh	29.1			58.3			27.2					
Approach LOS	C			E			C					
Timer - Assigned Phs	1	2			5	6		8				
Phs Duration (G+Y+Rc), s	23.5	29.2			18.8	33.9		20.3				
Change Period (Y+Rc), s	5.5	* 6.3			* 4.7	5.5		5.1				
Max Green Setting (Gmax), s	15.0	* 31			* 19	28.4		38.0				
Max Q Clear Time (g_c+I), s	12.9	18.3			13.0	30.4		10.4				
Green Ext Time (p_c), s	0.0	4.5			1.1	0.0		2.6				

Intersection Summary

HCM 6th Ctrl Delay	40.9
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

APPENDIX C

BEHAVIORAL HEALTH TRIP GENERATION STUDY

January 27, 2021

Mr. Scott Barker
City of Chula Vista
276 Fourth Avenue
Chula Vista, California 91910

LLG Reference: 3-18-3022

Subject: **Eastlake Behavioral Hospital, Trip Generation Study**

Dear Scott:

Linscott, Law & Greenspan, Engineers (LLG) completed a traffic study for the subject project that has been approved by the City and that was part of the CEQA process. The project is a 120-bed hospital to be located at the terminus of Showroom Place, north of Fenton Street in the City of Chula Vista. The traffic study used the SANDAG Trip Rate for “General Hospitals” since a rate for “Behavioral Hospitals” does not exist.

In order to forecast a more accurate trip rate for the project (to be used outside of the CEQA world), LLG commissioned a nine (9) day traffic count (3 successive weeks of Tuesday – Thursday counts) at five west coast Behavioral Hospitals with similar characteristics to the proposed Chula Vista location. **Table A** shows a summary of the 5 Behavioral Hospitals, including the location, number of beds, and dates counted. All counts were conducted with video technology. **Appendix A** contains aerials and details of each hospital site.

Table B shows that results of the counts. The highest ADT per bed rate was calculated to be 7.86 and the lowest 3.22. The average trip rate was 5.68 ADT per bed. **Appendix B** contains the detailed trip calculations for each hospital.

Engineers & Planners
Traffic
Transportation
Parking

Linscott, Law &
Greenspan, Engineers
4542 Ruffner Street
Suite 100
San Diego, CA 92111
858.300.8800 T
858.300.8810 F
www.llgengineers.com

Pasadena
Irvine
San Diego
Woodland Hills

Philip M. Linscott, PE (1924-2009)
William A. Law, PE (1921-2018)
Jack M. Greenspan, PE (Ret.)
Paul W. Wilkinson, PE (Ret.)
John P. Keating, PE
David S. Shender, PE
John A. Boarman, PE
Clare M. Look-Jaeger, PE
Richard E. Barretto, PE
Keil D. Maberry, PE
Walter B. Musial, PE
An LG2WB Company Founded 1966

In summary, there are no published trip rates for Behavioral Hospitals in SANDAG or ITE publications. Therefore, a comprehensive study of 5 locations with 9 days of counts at each location was conducted and a trip rate of 5.68 ADT per bed was calculated. LLG believes this is an accurate rate to be used for the purpose of fee calculations. It is not proposed to use this trip rate in the CEQA traffic study.

Please call me if you have any questions.

Sincerely,
Linscott, Law & Greenspan, Engineers



John Boarman, P.E.
Principal
California Registration: C50033

JB:wcs
cc: File

Table A
Behavioral Health Hospital Sites

Hospital	Address	City	Number of Beds	Dates Counted (2020)
1. Pacific Grove Behavioral Health Hospital	5900 Stockton Avenue	Riverside, CA	62	10/27-10/29, 11/10-11/13, 11/17-11/19
2. Oasis Behavioral Health Hospital	2190 N. Grace Boulevard	Chandler, AZ	146	10/27-10/29, 11/10-11/13, 11/17-11/19
3. Sonora Behavioral Health Hospital	6050 N. Corona Road	Tucson, AZ	140	10/27-10/29, 11/10-11/13, 11/17-11/19
4. San Jose Behavioral Health Hospital	455 Silicon Valley Boulevard	San Jose, CA	80	10/27-10/29, 11/10-11/13, 11/17-11/19
5. Cascade Behavioral Health Hospital	12844 Military Road S.	Tukwila, AZ	137	10/27-10/29, 11/10-11/13, 11/17-11/19

Table B
Behavioral Health Hospitals
Trip Generation Summary

	Hospital	Location	# of Beds	Average Driveway ADT			Trip Rate
				Entering	Exiting	Total	
1	Pacific Coast Hospital	Riverside, CA	62	190	191	381	6.14
2	Oasis Behavioral Health Hospital	Chandler, AZ	146	326	323	649	4.44
3	Sonora Behavioral Health Hospital	Tucson, AZ	140	225	226	451	3.22
4	San Jose Behavioral Health Hospital	San Jose, CA	80	267	270	538	6.72
5	Cascade Behavioral Health Hospital	Tukwila, WA	137	540	537	1,077	7.86
Average Trip Rate							5.68

APPENDIX A

BEHAVIORAL HOSPITAL SITES

Pacific Grove Behavioral Health Hospital – Riverside, CA

Address: 5900 Brockton Ave, Riverside, CA 92506



Oasis Behavioral Health Hospital – Chandler, AZ

Address: 2190 N Grace Blvd, Chandler, AZ 85225



Sonora Behavioral Health Hospital – Tucson, AZ

Address: 6050 N Corona Rd, Tucson, AZ 85704



San Jose Behavioral Health Hospital – San Jose, CA

Address: 455 Silicon Valley Blvd, San Jose, CA 95138



Cascade Behavioral Health Hospital – Tukwila, WA

Address: 12844 Military Rd S, Tukwila, WA 98168



APPENDIX B

TRIP CALCULATIONS PER SITE

Eastlake Behavioral Health														
Trip Generation Calculation														
1	Pacific Coast Hospital	Riverside, CA	Average			27-Oct	28-Oct	29-Oct	10-Nov	12-Nov	13-Nov	17-Nov	18-Nov	19-Nov
			Driveway 1	Entering	139	122	139	138	132	140	140	139	156	147
				Existing	128	107	123	134	119	121	136	137	145	130
				Total	267	229	262	272	251	261	276	276	301	277
			Driveway 2	Entering	51	42	43	64	50	53	59	53	46	50
				Existing	63	54	63	67	65	62	64	62	65	61
				Total	114	96	106	131	115	115	123	115	111	111
			Total Site	Entering	190	164	182	202	182	193	199	192	202	197
				Existing	191	161	186	201	184	183	200	199	210	191
				Total	381	325	368	403	366	376	399	391	412	388
	Number of Beds	62												
	Trip Rate per bed	6.14												
2	Oasis Behavioral Health Hospital	Chandler, AZ			Average	27-Oct	28-Oct	29-Oct	10-Nov	12-Nov	13-Nov	17-Nov	18-Nov	19-Nov
			Driveway 1	Entering	326	352	315	344	312	337	334	316	306	314
				Existing	323	331	321	346	308	335	338	305	306	318
				Total	649	683	636	690	620	672	672	621	612	632
			Total Site	Entering	326	352	315	344	312	337	334	316	306	314
				Existing	323	331	321	346	308	335	338	305	306	318
				Total	649	683	636	690	620	672	672	621	612	632
				Number of Beds	146									
	Trip Rate per bed	4.44												
3	Sonora Behavioral Health Hospital	Tuscon, AZ			Average	27-Oct	28-Oct	29-Oct	9-Nov	10-Nov	12-Nov	17-Nov	18-Nov	19-Nov
			Driveway 1	Entering	38	42	31	34	35	36	38	38	40	49
				Existing	61	65	68	50	58	54	49	70	66	71
				Total	99	107	99	84	93	90	87	108	106	120
				Driveway 2	Entering	187	176	209	180	182	176	173	193	187
			Existing		165	161	165	169	158	158	163	158	164	185
			Total		352	337	374	349	340	334	336	351	351	393
			Total Site	Entering	225	218	240	214	217	212	211	231	227	257
				Existing	226	226	233	219	216	212	212	228	230	256
				Total	451	444	473	433	433	424	423	459	457	513
	Number of Beds	140												
	Trip Rate per bed	3.22												
4	San Jose Behavioral Health Hospital	San Jose, CA			Average	27-Oct	28-Oct	29-Oct	10-Nov	12-Nov	13-Nov	17-Nov	18-Nov	19-Nov
			Driveway 1	Entering	231	224	215	230	246	257	212	207	236	253
				Existing	91	99	86	117	94	98	83	84	86	75
				Total	322	323	301	347	340	355	295	291	322	328
			Driveway 2	Entering	36	37	28	41	39	38	34	35	35	39
				Existing	179	175	162	173	190	191	171	162	182	206
				Total	215	212	190	214	229	229	205	197	217	245

			Total Site	Entering	267	261	243	271	285	295	246	242	271	292
				Existing	270	274	248	290	284	289	254	246	268	281
				Total	538	535	491	561	569	584	500	488	539	573
				Number of Beds	80									
				Trip Rate per bed	6.72									
					Average									
						4-Nov	5-Nov	9-Nov	10-Nov	12-Nov	17-Nov	18-Nov	19-Nov	
					Entering	36	42	32	35	39	38	28	40	
			Driveway 1	Existing	78	71	78	77	81	74	82	76	86	
				Total	114	107	120	109	116	113	120	104	126	
				Entering	231	209	227	235	217	228	242	239	250	
			Driveway 2	Existing	175	161	180	173	168	187	174	181	178	
				Total	406	370	407	408	385	415	416	420	428	
				Entering	26	17	25	23	28	27	30	29	25	
			Driveway 3	Existing	24	16	24	33	19	25	27	25	23	
				Total	50	33	49	56	47	52	57	54	48	
				Entering	13	13	12	19	14	9	14	14	5	
			Driveway 4	Existing	243	291	219	316	282	230	257	128	223	
				Total	256	304	231	335	296	239	271	142	228	
				Entering	235	238	198	275	243	205	234	293	194	
			Driveway 5	Existing	16	14	12	28	14	12	14	20	17	
				Total	251	252	210	303	257	217	248	313	211	
				Entering	540	513	504	584	537	508	558	603	514	
			Total Site	Existing	537	553	513	627	564	528	554	430	527	
				Total	1,077	1,066	1,017	1,211	1,101	1,036	1,112	1,033	1,041	
				Number of Beds	137									
				Trip Rate per bed	7.86									

APPENDIX D

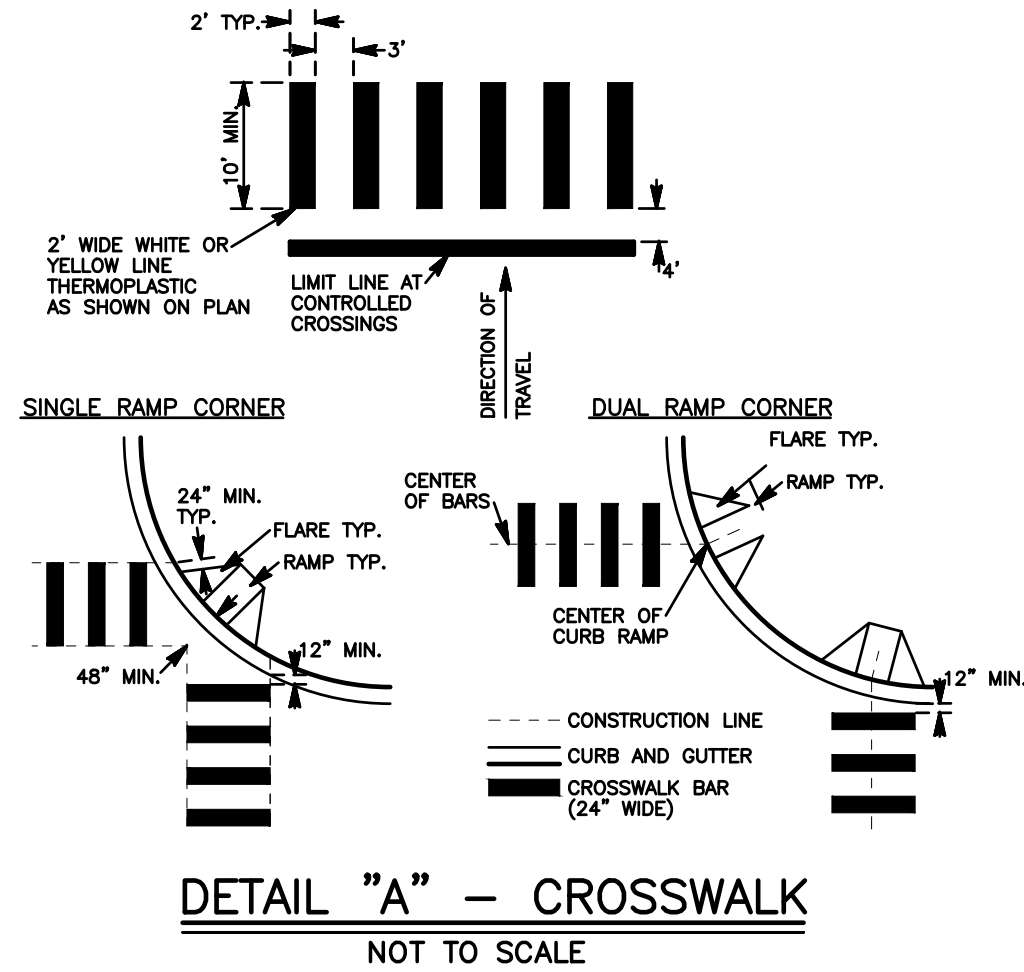
DESIGN PLANS FOR THE SIGNALIZATION OF THE VISTA HILL AVENUE / MEADOW LARK DRIVE INTERSECTION

STRIPING AND SIGNING GENERAL NOTES (THIS SHEET ONLY)

1. INSTALLATION OF ALL STRIPING, SIGNS AND PAVEMENT MARKERS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
2. ALL STRIPING AND SIGNING SHALL CONFORM TO THE MOST RECENTLY ADOPTED EDITION OF THE FOLLOWING MANUALS:
- | DESCRIPTION | EDITION | DOCUMENT NO. |
|--|---------|---------------|
| STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (THE "GREENBOOK") | 2018 | PWPI070116-01 |
| CITY OF SAN DIEGO STANDARD DRAWINGS | 2018 | PWPI070116-03 |
| CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (CA MUTCD) (REVISION 4), 2014 EDITION | 2014 | PWPI092816-07 |
3. ALL SIGNING AND STRIPING IS SUBJECT TO THE APPROVAL OF THE CITY ENGINEER PRIOR TO INSTALLATION AND/OR REMOVAL.
4. THE CONTRACTOR SHALL REMOVE ALL CONFLICTING STRIPING, PAVEMENT MARKINGS AND LEGENDS BY SANDBLASTING OR AND/OR GRINDING WITH THE SEAL. ANY DEBRIS SHALL BE PROMPTLY REMOVED BY THE CONTRACTOR.
5. SIGN POSTS SHALL BE INSTALLED WITH SQUARE PERFORATED STEEL TUBING WITH BREAKAWAY BASE PER CITY OF SAN DIEGO STANDARD DRAWING M-45.
6. ALL RAISED MEDIAN NOSES SHALL BE PAINTED YELLOW.
7. ALL SIGNS SHOWN ON THE STRIPING AND SIGNING PLANS SHALL BE NEW SIGNS PROVIDED AND INSTALLED BY THE CONTRACTOR, EXCEPT FOR EXISTING SIGNS SPECIFICALLY INDICATED TO BE RELOCATED OR TO REMAIN.
8. STRIPED CROSSWALKS SHALL HAVE AN INSIDE DIMENSION OF 10 FEET UNLESS INDICATED OTHERWISE.
9. ALL LIMIT LINES/STOP LINES, CROSSWALK LINES, PAVEMENT LEGENDS, AND ARROWS (EXCEPT WITHIN BIKE LANES) SHALL BE THERMOPLASTIC.
10. THE CONTRACTOR SHALL NOTIFY THE CITY TRAFFIC ENGINEER AT (858)495-4741 A MINIMUM OF FIVE (5) WORKING DAYS PRIOR TO AND UPON COMPLETION OF STRIPING AND SIGNING.

CONSTRUCTION NOTES

- 1 CONTRACTOR SHALL PAINT CURB RED AS SHOWN ON PLAN.
- 2 CONTRACTOR SHALL REFRESH EXISTING STRIPE AS SHOWN ON PLAN.



LEGEND (THIS SHEET ONLY)

- — PROPOSED STRIPING
- EXISTING ROADSIDE SIGN
- PROPOSED ROADSIDE SIGN
- INSTALL TYPE IV(L) PAVEMENT ARROW AS INDICATED
- INSTALL TYPE VII(L) PAVEMENT ARROW AS INDICATED
- INSTALL TYPE IV(R) PAVEMENT ARROW AS INDICATED
- INSTALL TYPE VII(R) PAVEMENT ARROW AS INDICATED
- INSTALL TYPE VIII PAVEMENT ARROW AS INDICATED
- INSTALL "STOP" PAVEMENT LEGEND AS INDICATED
- REMOVE CONFLICTING EXISTING STRIPING BY SANDBLASTING. ALL DEBRIS SHALL BE REMOVED BY THE END OF EACH WORK DAY.
- REMOVE AND SALVAGE EQUIPMENT (POLE/TELESAR INCLUDED)
- PROPOSED PAVEMENT STRIPING PER CALTRANS STRIPING DETAILS. SEE STANDARD PLAN A20A THRU A20D.
- STREET NAME SIGN
- TRAFFIC SIGNAL
- PEDESTRIAN BARRICADE PER SDG-141

WORK TO BE DONE (THIS SHEET ONLY)

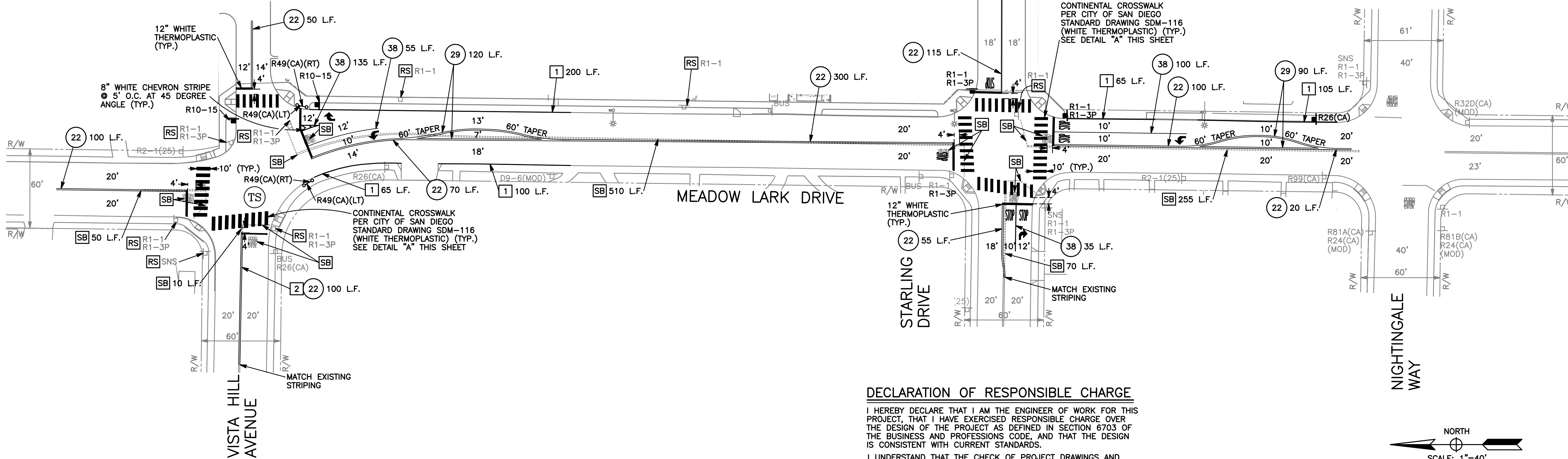
THE IMPROVEMENTS CONSIST OF THE FOLLOWING WORK TO BE DONE ACCORDING TO THESE PLANS AND THE SPECIFICATIONS AND STANDARD DRAWINGS OF THE CITY OF SAN DIEGO.

STANDARD SPECIFICATIONS:

DOCUMENT NO.	EDITION	DESCRIPTION
PWPI010119-01	2018	STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (THE "GREEN" BOOK)
PWPI010119-02	2018	CITY OF SAN DIEGO STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (THE "WHITE" BOOK)
PWPI010119-04	2018	CITYWIDE COMPUTER AIDED DESIGN AND DRAFTING (CADD) STANDARDS
PWPI092816-05	2018	CALIFORNIA DEPARTMENT OF TRANSPORTATION U.S. CUSTOMARY STANDARD SPECIFICATIONS
PWPI092816-07	2014	CALIFORNIA DEPARTMENT OF TRANSPORTATION MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES

STANDARD DRAWINGS:

DOCUMENT NO.	EDITION	DESCRIPTION
PWP010119-03	2018	CITY OF SAN DIEGO STANDARD DRAWINGS FOR PUBLIC WORKS CONSTRUCTION
PWPI092816-06	2018	CALIFORNIA DEPARTMENT OF TRANSPORTATION U.S. CUSTOMARY STANDARD PLANS



DECLARATION OF RESPONSIBLE CHARGE

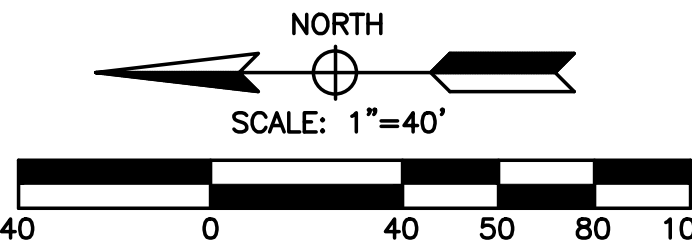
I HEREBY DECLARE THAT I AM THE ENGINEER OF WORK FOR THIS PROJECT, THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THE PROJECT AS DEFINED IN SECTION 6703 OF THE BUSINESS AND PROFESSIONS CODE, AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS.

I UNDERSTAND THAT THE CHECK OF PROJECT DRAWINGS AND SPECIFICATIONS BY THE CITY OF SAN DIEGO IS CONFINED TO A REVIEW ONLY AND DOES NOT RELIEVE ME, AS ENGINEER OF WORK, OF MY RESPONSIBILITIES FOR PROJECT DESIGN.

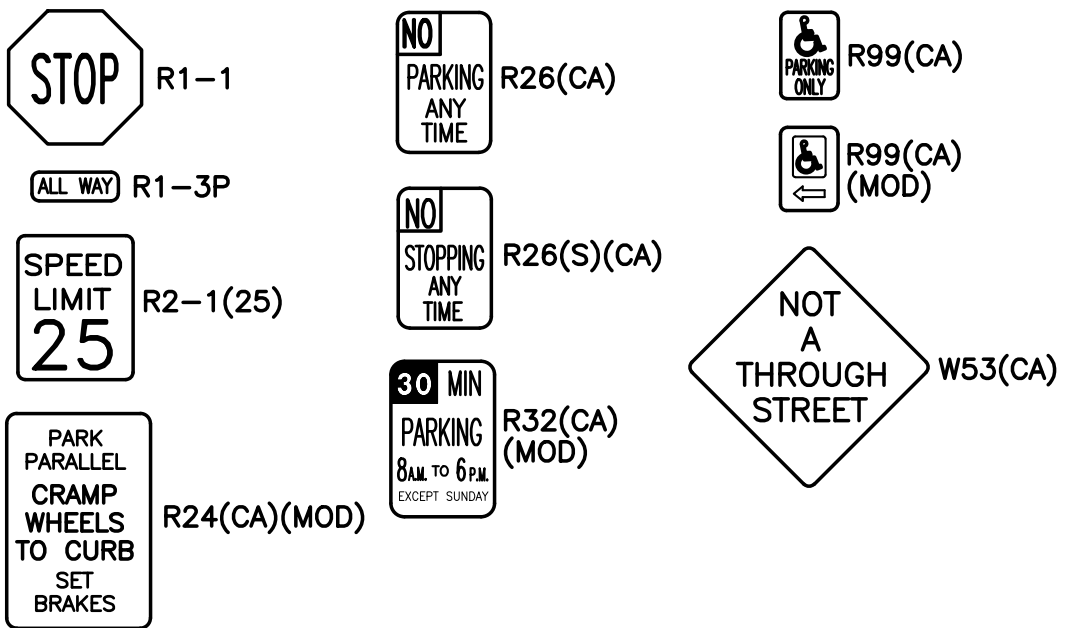
ENGINEER OF WORK

JOHN P. KEATING	R.C.E. 43595	DATE
LINSCOTT LAW & GREENSPAN	LINSCOTT, LAW & GREENSPAN, ENGINEERS 4542 Ruffner Street, Suite 100 San Diego, Ca 92111 (858)300-8800 (858)300-8810 (FX)	
LLG 3-206570.1	STR1-6570.DWG	11/5/20
Designed By: HQL	Drawn By: DVS	Checked By: JPK

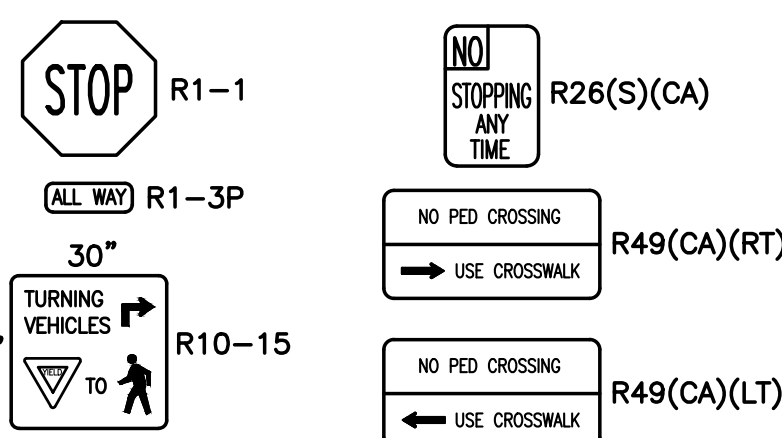
JOHN P. KEATING R.C.E. 43595	DATE REGISTRATION EXPIRES: 12/31/20	DESIGNED BY: HQL	PM REVIEW: JPK	SURVEY REVIEW BY: DVS
---------------------------------	--	------------------------	----------------------	-----------------------------



EXISTING SIGNS (THIS SHEET ONLY)



PROPOSED SIGNS (THIS SHEET ONLY)



SIGNING AND STRIPING PLAN FOR:

MEADOW LARK DRIVE

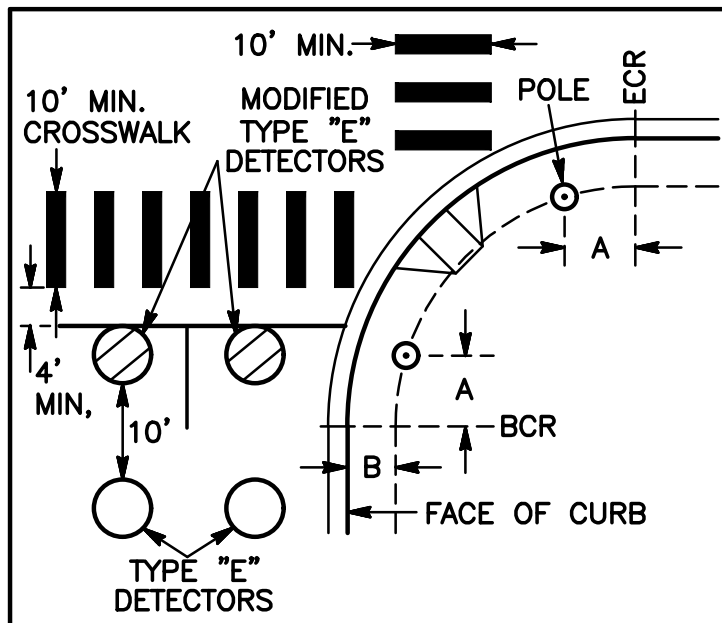
CITY OF SAN DIEGO, CALIFORNIA DEVELOPMENT SERVICES DEPARTMENT SHEET 9 OF 19 SHEETS				I.O. NO. N/A PROJECT NO. 659467
FOR CITY ENGINEER				V.T.M. N/A
DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	LLG			
AS-BUILTS				
CONTRACTOR		DATE STARTED		
INSPECTOR		DATE COMPLETED		
				1868-6283 NAD83 COORDINATES
				228-1723 LAMBERT COORDINATES
				41819-09-D

○ EQUIPMENT SCHEDULE													
LOC.	STANDARD			LUMINAIRE (LED)	PLACEMENT DIMENSIONS		SIGNAL MOUNTING AND PLACEMENT					REMARKS	
	TYPE	MASTARM			A.	B.	VEHICLE		PEDESTRIAN				
		HT.	SIG.				LUM.	POLE	MASTARM	SIGNAL	PPB		LOC.
(A)	1-A (10')	10'	-	-	-	12'	5.5'	SV-1-T ø2	-	SP-1-T ø2P	-	-	ALL NEW EQUIPMENT
(B)	19-3-100	30'	30'	12'	Z14	14.5'	5.5'	SV-2-TB ø6 , ø4	MAS ø4	SP-2-T ø2P, ø4P	ø2P ø4P	1 7	ALL NEW EQUIPMENT 3 4 5
(C)	PPB POST	40"	-	-	-	19'	5'	-	-	-	ø4P	7	ALL NEW EQUIPMENT
(D)	19-3-100	30'	25'	12'	Z14	4'	6'	SV-2-TB ø6 , ø8	MAS ø6	SP-1-T ø4P	-	-	ALL NEW EQUIPMENT 3 4
(E)	1-A (10')	10'	20'	-	-	15.5'	7.5'	-	-	SP-1-T ø6P	ø6P	1	ALL NEW EQUIPMENT
(F)	24-3-100	30'	35'	12'	Z14	8'	6'	SV-1-T ø8	MAS ø8	SP-1-T ø6P	ø6P	1	ALL NEW EQUIPMENT 3 4
(G)	16-3-100	18.5'	20'	-	-	48'	6'	SV-2-TB ø2 , ø4	MAS ø2	-	-	-	ALL NEW EQUIPMENT 3 4
(H)	PPB POST	40"	-	-	-	20.5'	6.5'	-	-	-	ø2P	7	ALL NEW EQUIPMENT

TRAFFIC SIGNAL GENERAL NOTES (THIS SHEET ONLY)

- PULL BOXES SHALL BE NO. 6, AND CONDUIT 3" UNLESS NOTED OTHERWISE. PULL BOXES SHALL BE SPACED AT A MAXIMUM OF 200 FEET.
- LOCATION OF ALL UNDERGROUND UTILITIES IS APPROXIMATE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATIONS AND VERIFY ALL CONDITIONS ON THE JOB SITE.
- THE TRAFFIC SIGNAL CONTRACTOR SHALL OBTAIN A TRAFFIC CONTROL PLAN PERMIT FROM THE CITY OF SAN DIEGO PERMIT COUNTER CENTER A MINIMUM OF FIVE (5) WORKING DAYS PRIOR TO START OF WORK.
- ALL TRAFFIC SIGNAL POLE FOUNDATIONS SHALL HAVE A 3" CONDUIT INSTALLED TO THE ADJACENT PULL BOX AND THE CONTROLLER FOUNDATION SHALL HAVE A SPARE 3" CONDUIT INSTALLED TO THE ADJACENT NO. 6 PULL BOX FOR FUTURE USE.
- THE TRAFFIC SIGNAL CONTRACTOR IS RESPONSIBLE FOR THE LAYOUT AND INSTALLATION OF LOOP DETECTORS, TRAFFIC STRIPING, PAVEMENT MARKINGS, PARKING REMOVAL AND TRAFFIC SIGNING AS SHOWN ON THESE PLANS.
 - THE TRAFFIC SIGNAL CONTRACTOR SHALL OBTAIN THE APPROVAL OF CITY RESIDENT ENGINEER OF THE LOOP LOCATION PRIOR TO CUTTING AND THE STRIPING, PAVEMENT MARKING, PARKING REMOVAL AND SIGN LOCATIONS PRIOR TO PAINTING AND INSTALLATION.
 - AFTER APPROVAL OF LOCATION, THE TRAFFIC SIGNAL CONTRACTOR SHALL WAIT A MINIMUM OF FIFTEEN (15) WORKING DAYS BEFORE PERMANENTLY REMOVING ANY PARKING, SO THAT ADVANCE NOTICE TO ADJACENT PROPERTY OWNERS CAN BE MADE BY THE CITY.
 - THE TRAFFIC SIGNAL CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL OF ALL UNNECESSARY AND CONFLICTING STRIPING AND PAVEMENT MARKINGS.

GENERAL NOTES CONTINUED:



DETECTOR LOOP AND POLE LOCATION DETAIL
NOT TO SCALE

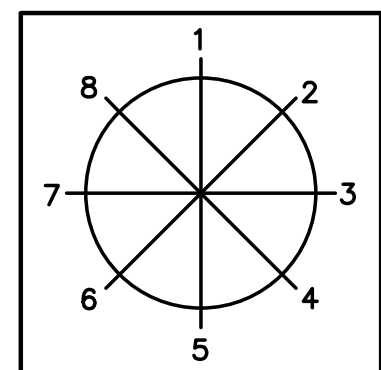
GENERAL NOTES CONTINUED:

- THE TRAFFIC SIGNAL CONTRACTOR SHALL NOT ERECT ANY SIGNAL STANDARDS MORE THAN THREE (3) WEEKS PRIOR TO SCHEDULED TRAFFIC SIGNAL TURN ON.
- CONTRACTOR SHALL PROVIDE ALL CABLING AND CONDUCTORS NECESSARY TO PERFORM ALL FUNCTIONS SHOWN ON THIS PLAN.
- ALL POLES, CONDUIT, PULL BOXES, STRIPING AND LOOP DETECTOR LOCATIONS SHOWN ON THIS PLAN ARE APPROXIMATE. ACTUAL LOCATIONS SHALL BE DETERMINED BY FIELD CONDITIONS AT THE TIME OF CONSTRUCTION AND AS DIRECTED BY THE CITY OF SAN DIEGO.
- ROUTING AND LOCATIONS OF UNDERGROUND ELECTRICAL SYSTEM IS DIAGRAMMATIC AND SUBJECT TO APPROVAL OF THE ENGINEER. UNDERGROUND ELECTRICAL LINES AND SUBSURFACE STRUCTURES MAY BE RELOCATED IF NECESSARY TO CLEAR OTHER EXISTING UNDERGROUND FACILITIES.
- ALL TREES AND SHRUBS SHALL BE TRIMMED OR REMOVED AS DETERMINED BY THE CITY RESIDENT ENGINEER AS REQUIRED TO MAINTAIN SIGNAL HEAD VISIBILITY AND SIGHT DISTANCE.
- ALL VEHICLE SIGNAL HEADS SHALL BE 12" WITH BACKPLATES.
- ALL VEHICLE AND PEDESTRIAN INDICATIONS SHALL BE OF THE L.E.D. TYPE. ALL PEDESTRIAN INDICATORS SHALL BE SIDE BY SIDE GELCORE COUNTDOWN PER CITY OF SAN DIEGO REQUIREMENTS.
- INSTALL TYPE "E" MODIFIED LOOP DETECTORS ON ALL FRONT LOOPS PER THE CITY OF SAN DIEGO REQUIREMENTS AS SHOWN ON THIS PLAN.
- PEDESTRIAN SIGNAL HEADS AND PUSH BUTTONS SHALL BE INTERNATIONAL SYMBOLS. PEDESTRIAN SIGNALS SHALL BE 16"x18" L.E.D. COUNTDOWN INDICATIONS. PEDESTRIAN PUSH BUTTONS SHALL BE 2" PER ADA REQUIREMENTS.
- METALLIC PEDESTRIAN PUSH BUTTON HOUSING COLOR SHALL MATCH COLOR NO. 33538 OF FED-STD-595 WHEN PEDESTRIAN PUSH BUTTONS ARE PLACED ON A TRAFFIC SIGNAL POLE.

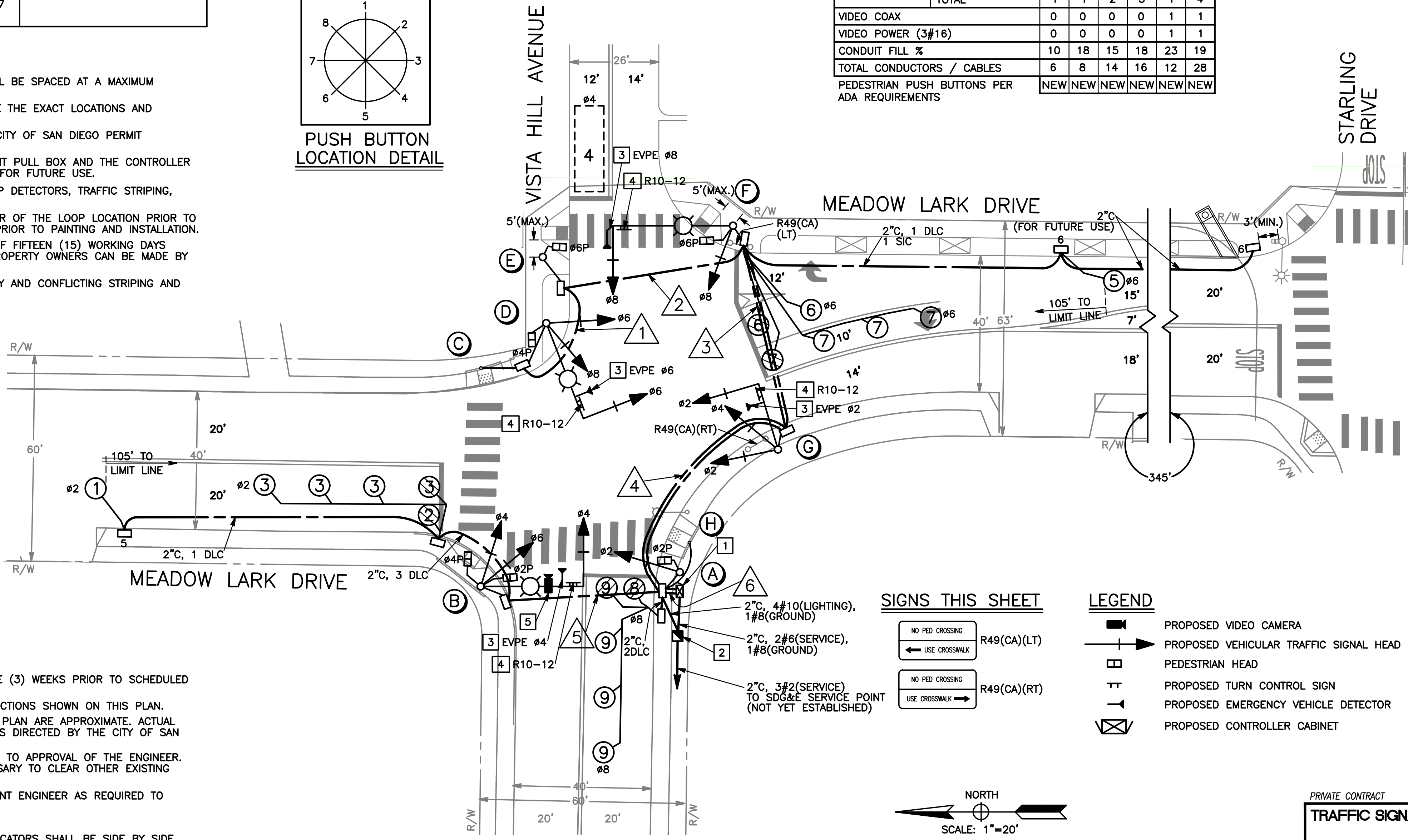
DESIGN SPEED ON MEADOW LANE DRIVE: 25 MPH
DESIGN SPEED ON VISTA HILL AVENUE: 25 MPH
THIS PLAN ACCURATE FOR ELECTRICAL WORK ONLY

CONSTRUCTION NOTES (THIS SHEET ONLY)

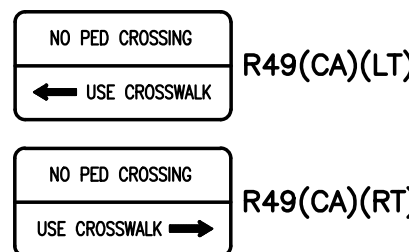
- FURNISH AND INSTALL TYPE 170 CONTROLLER IN MODEL 332 ANODIZED ALUMINUM CABINET. CONTROLLER UNIT SHALL BE EQUIPPED WITH ONE MODEL 412C PROGRAM MODULE, TWELVE MODEL 200 SWITCH PACKS, FOUR MODEL 204 FLASHER UNIT MODULES, TWELVE MODEL C822-F LOOP DETECTOR SENSOR UNITS, FOUR MODEL 242 ISOLATORS, TWO MODEL 752 MODULES, TWO MODEL 722 OPTICAL DETECTORS, TWO MODEL 400 MODEMS, ONE MODEL 210 MONITOR UNIT, ONE COMMUNICATION TERMINAL PANEL.
- INSTALL TYPE III-BF SIGNAL AND LIGHTING SERVICE ENCLOSURE PER SDG&E REQUIREMENTS. PROVIDE 50A-1P, 120V SIGNAL METERED CIRCUIT BREAKER, 15A-1P, 120V I.I.S.N.S. METERED CIRCUIT BREAKER, AND 30A-2P, 240V LIGHTING UNMETERED CIRCUIT BREAKER. SERVICE CABINET SHALL BE FABRICATED FROM ANODIZED ALUMINUM SHEET PER CALTRANS SPECIFICATIONS. INSTALL CLARY CORPORATION SP SERIES 1000 TRAFFIC UPS OR APPROVED EQUAL. PROVIDE THE ELECTRONICS MODULE, POWER INTERFACE MODULE, AND BATTERY SYSTEM CONSISTING OF SIX OUTPOST OPB-1241 BATTERIES.
- INSTALL SINGLE CHANNEL VEHICLE PRE-EMPTION DETECTOR EQUIPMENT (E.V.P.E.) PER CITY OF SAN DIEGO REQUIREMENTS.
- INSTALL MAST ARM MOUNTED SIGN PER SIGN MOUNTING DETAILS "DETAIL U", CALTRANS STANDARD PLAN ES-7N. SIGN TYPE AS NOTED ON PLAN.
- INSTALL VIDEO DETECTION SYSTEM (ITERIS, AUTOSCOPE SOLOPRO, OR TRAFFICON) TO PROVIDE VIDEO DETECTION FOR ALL APPROACHES AS SHOWN ON PLAN. INCLUDE VIDEO DETECTION PROCESSORS AND VIDEO MONITOR IN THE CONTROLLER CABINET. VIDEO DETECTION CAMERAS MOUNTED ON LUMINAIRE OR SIGNAL MAST ARM AND INCLUDE ALL WIRING AND ANCILLARY EQUIPMENT. FOR SIGNAL MAST ARM MOUNTINGS, USE 5" PELCO" EXTENSION. FOR SIGNAL STANDARD MOUNTINGS, USE "L" TYPE BRACKET. INCLUDE ONE (1) "SPARE" VIDEO CAMERA, VIDEO PROCESSOR/EXTENSION MODULE, SURGE PROTECTOR AND DELIVER TO CITY TRAFFIC OPERATIONS STAFF.



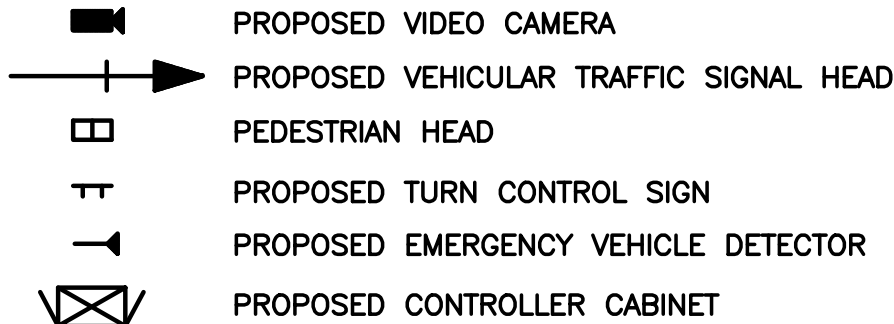
PUSH BUTTON LOCATION DETAIL



SIGNS THIS SHEET



LEGEND



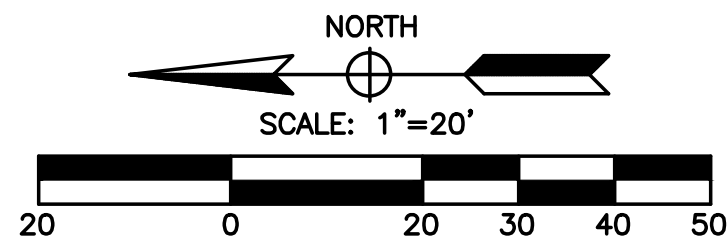
DECLARATION OF RESPONSIBLE CHARGE

I HEREBY DECLARE THAT I AM THE ENGINEER OF WORK FOR THIS PROJECT, THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THE PROJECT AS DEFINED IN SECTION 6703 OF THE BUSINESS AND PROFESSIONS CODE, AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS.

I UNDERSTAND THAT THE CHECK OF PROJECT DRAWINGS AND SPECIFICATIONS BY THE CITY OF SAN DIEGO IS CONFINED TO A REVIEW ONLY AND DOES NOT RELIEVE ME, AS ENGINEER OF WORK, OF MY RESPONSIBILITIES FOR PROJECT DESIGN.

ENGINEER OF WORK

JOHN P. KEATING R.C.E. 43595 DATE



LINSOTT, LAW & GREENSPAN, ENGINEERS 4542 Ruffner Street, Suite 100 San Diego, Ca 92111 (858)300-8800 (858)300-8810 (FX)		
LLG 3-206570.1	TS1-6570.DWG	11/5/20
Designed By: HQL	Drawn By: DVS	Checked By: JPK

JOHN P. KEATING R.C.E. 43595	DATE REGISTRATION EXPIRES: 12/31/20 TS1-6570.DWG	DESIGNED BY: HQL	PM REVIEW: 11/5/20 JPK	SURVEY REVIEW BY: DVS
---------------------------------	--	---------------------	------------------------------	--------------------------

WORK TO BE DONE (THIS SHEET ONLY)

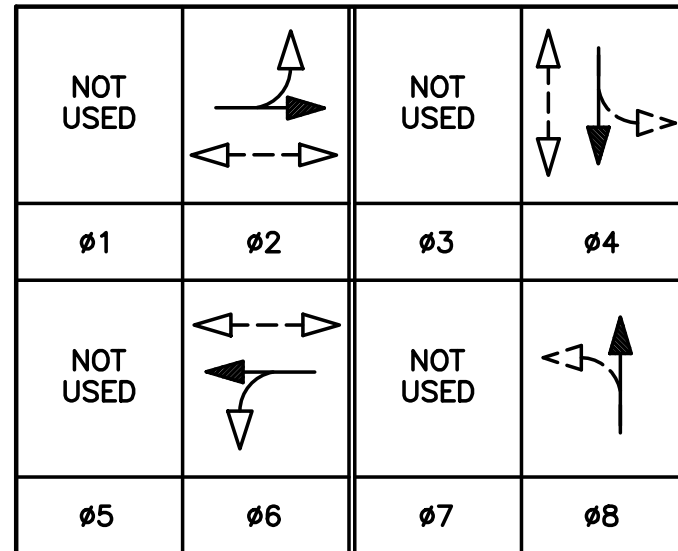
THE IMPROVEMENTS CONSIST OF THE FOLLOWING WORK TO BE DONE ACCORDING TO THESE PLANS AND THE SPECIFICATIONS AND STANDARD DRAWINGS OF THE CITY OF SAN DIEGO.

STANDARD SPECIFICATIONS:

DOCUMENT NO.	EDITION	DESCRIPTION
PWPI010119-01	2018	STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (THE "GREEN" BOOK)
PWPI010119-02	2018	CITY OF SAN DIEGO STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (THE "WHITE" BOOK)
PWPI010119-04	2018	CITYWIDE COMPUTER AIDED DESIGN AND DRAFTING (CADD) STANDARDS
PWPI092816-05	2018	CALIFORNIA DEPARTMENT OF TRANSPORTATION U.S. CUSTOMARY STANDARD SPECIFICATIONS
PWPI092816-07	2014	CALIFORNIA DEPARTMENT OF TRANSPORTATION MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES

STANDARD DRAWINGS:

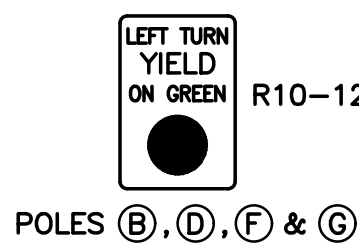
DOCUMENT NO.	EDITION	DESCRIPTION
PWP010119-03	2018	CITY OF SAN DIEGO STANDARD DRAWINGS FOR PUBLIC WORKS CONSTRUCTION
PWPI092816-06	2018	CALIFORNIA DEPARTMENT OF TRANSPORTATION U.S. CUSTOMARY STANDARD PLANS



FLASHING OPERATION SHALL BE RED IN ALL RED.

PROPOSED PHASE DIAGRAM

MAST ARM MOUNTED SIGNS 4



DETECTOR ASSIGNMENTS			
DETECTOR NUMBER	PHASE	SLOT NUMBER	FIELD TERMINALS
1	#2	I2U	T2-5 & 6
2	#2	I2L	T2-7 & 8
3	#2	I3U	T2-9 & 10
4	#4	I6U	VIDEO
5	#6	J2U	T3-5 & 6
6	#6	J2L	T3-7 & 8
7	#6	J3U	T3-9 & 10
8	#8	J6U	T5-9 & 10
9	#8	J6L	T5-11 & 12
2P	#2P	I12U	T8-4 & COM6
4P	#4P	I12L	T8-5 & COM6
6P	#6P	I13U	T8-7 & COM9
EVA	#2	J12U	T9-4 & COM6
EVB	#8	J13L	T9-8 & COM9
EVD	#6	J12L	T9-5 & COM6
EVF	#4	J13U	T9-7 & COM9

PRIVATE CONTRACT

TRAFFIC SIGNAL PLAN FOR:

MEADOW LARK DRIVE and VISTA HILL AVENUE

CITY OF SAN DIEGO, CALIFORNIA DEVELOPMENT SERVICES DEPARTMENT SHEET 10 OF 19 SHEETS		I.O. NO. N/A PROJECT NO. 659467
FOR CITY ENGINEER		V.T.M. N/A
DESCRIPTION	BY	APPROVED
ORIGINAL	LLG	
AS-BUILTS		
CONTRACTOR	DATE STARTED	DATE COMPLETED
INSPECTOR		
41819-10-D		

TRAFFIC CONTROL NOTES (5000 ADT OR MORE)(SHEETS T2 TO T11)

1. VALIDATION: THE TRAFFIC CONTROL PLAN IS NOT VALID UNTIL WORK DATES ARE APPROVED. THE CONTRACTOR SHALL, PER SECTION 601-2 OF THE CITY SUPPLEMENT TO THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, CONTACT THE PUBLIC WORKS TRAFFIC CONTROL SECTION AT (858) 495-4742 TO OBTAIN A PERMIT. THE CONTRACTOR MUST SUBMIT A COMPLETED TRAFFIC CONTROL PERMIT FORM A MINIMUM OF TWO (2) WORKING DAYS PRIOR TO STARTING WORK, OR FIVE (5) WORKING DAYS WHEN THE WORK WILL AFFECT A TRAFFIC SIGNAL.

2. STANDARDS. THIS TRAFFIC CONTROL PLAN SHALL CONFORM TO THE EACH OF THE FOLLOWING MANUALS:

DOCUMENT NO.	EDITION	DESCRIPTION
PWPI010119-01	2018	STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION ("GREENBOOK")
PWPI010119-02	2018	CITY OF SAN DIEGO SUPPLEMENT TO THE "GREENBOOK" ("WHITEBOOK")
PWPI010119-03	2018	CITY OF SAN DIEGO STANDARD DRAWINGS
PWPI010119-08	2014	CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (CA MUTCD)(REVISION 4)

3. NOTIFICATIONS. THE CONTRACTOR SHALL NOTIFY THE FOLLOWING ACCEPTED AGENCIES A MINIMUM OF FIVE (5) WORKING DAYS PRIOR TO ANY EXCAVATION, CONSTRUCTION, OR TRAFFIC CONTROL:

FIRE DEPARTMENT DISPATCH	(STREET OR ALLEY CLOSURE)	(858) 573-1300
POLICE DEPARTMENT DISPATCH	(STREET OR ALLEY CLOSURE)	(858) 531-2000
ENVIRONMENTAL SERVICES	(REFUSE COLLECTION)	(858) 492-5060
STREET DIVISION / ELECTRICAL	(TRAFFIC SIGNALS)	(619) 527-7500
METROPOLITAN TRANSIT SYSTEM	(BUS STOPS)	(619) 595-7038 EXT. 6451
METROPOLITAN TRANSIT SYSTEM	(TAXI ZONES)	(619) 235-2644
METROPOLITAN TRANSIT SYSTEM	(TROLLEY LINES)	(619) 595-4960
UNDERGROUND SERVICE ALERT	(ANY EXCAVATION)	(800) 422-4133

THE CONTRACTOR SHALL NOTIFY PROPERTY OWNERS AND TENANTS A MINIMUM OF FIVE (5) WORKING DAYS PRIOR TO CLOSURE OF DRIVEWAYS. THE CONTRACTOR SHALL POST SIGNS NOTIFYING THE PUBLIC A MINIMUM OF FIVE (5) WORKING DAYS PRIOR TO CLOSURE OF STREETS.

4. POSTING NO PARKING SIGNS. THE CONTRACTOR SHALL POST "TOW-AWAY/NO PARKING" SIGNS SEVENTY-TWO (72) HOURS IN ADVANCE FOR TEMPORARY PARKING REMOVAL. SIGNS SHALL INDICATE SPECIFIC DAYS, DATES AND TIMES OF RESTRICTIONS.

5. EXCAVATIONS. EXCEPT AS OTHERWISE SHOWN ON THE PLANS, TRENCHES SHALL BE BACKFILLED OR TRENCH-PLATED AT THE END OF EACH WORKDAY. AN ASPHALT RAMP SHALL BE PLACED AROUND EACH TRENCH PLATE TO PREVENT THE PLATE FROM BEING DISLODGED. CONTRACTOR SHALL MONITOR TRENCH PLATES DURING NON-WORKING HOURS TO ENSURE THAT THEY DO NOT BECOME DISLODGED. UPON COMPLETION OF EXCAVATION BACKFILL, THE CONTRACTOR SHALL PROVIDE A SATISFACTORY SURFACE FOR TRAFFIC. WHEN CONSTRUCTION OPERATIONS ARE NOT ACTIVELY IN PROGRESS, THE CONTRACTOR SHALL MAINTAIN ALL TRAVEL LANES, BIKE LANES, AND PEDESTRIAN WALKWAYS OPEN TO APPROPRIATE TRAFFIC, EXCEPT AS OTHERWISE SHOWN ON THE PLANS.

6. RESTORATION OF TRAFFIC CONTROL DEVICES. THE CONTRACTOR SHALL REPAIR OR REPLACE TRAFFIC CONTROL DEVICES (INCLUDING TRAFFIC SIGNS, STRIPING, PAVEMENT MARKERS, PAVEMENT MARKINGS, LEGENDS, CURB MARKINGS, LOOP DETECTORS, TRAFFIC SIGNAL EQUIPMENT, ETC.) DAMAGED OR REMOVED AS A RESULT OF OPERATIONS AND NOT DESIGNATED FOR REMOVAL. REPAIRS AND REPLACEMENTS SHALL BE EQUAL TO EXISTING IMPROVEMENTS.

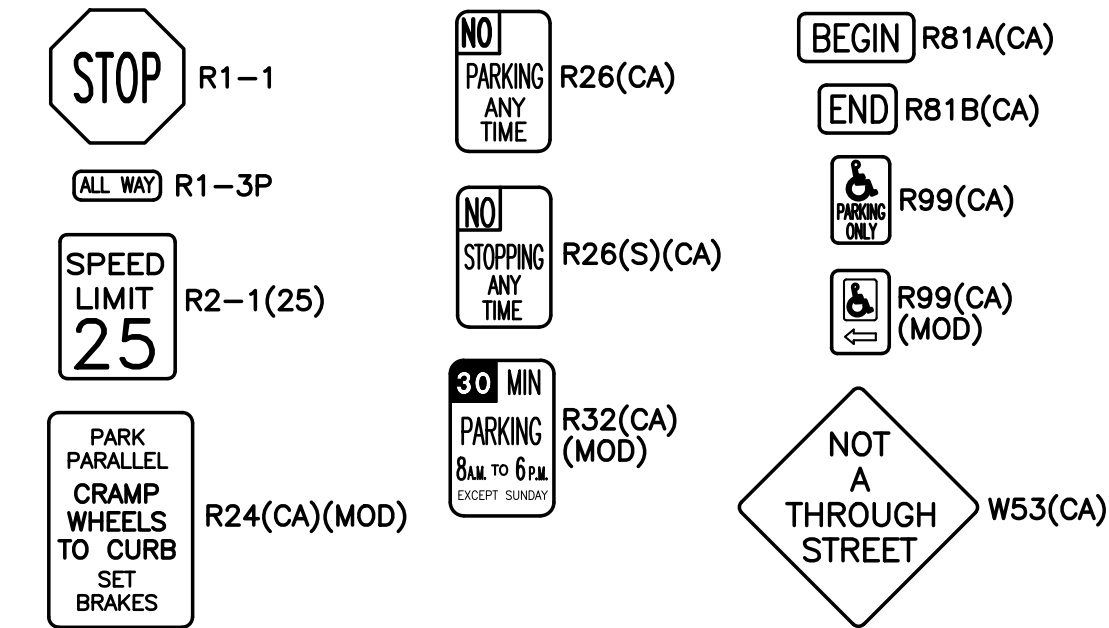
7. TEMPORARY TRAFFIC SIGNAL DETECTION. THE CONTRACTOR SHALL INSTALL CITY APPROVED TEMPORARY VIDEO OR RADAR DETECTION WHEN EXISTING TRAFFIC SIGNAL DETECTION SYSTEMS ARE DAMAGED, DISABLED OR BECOME INEFFECTIVE DUE TO CONSTRUCTION FOR A PERIOD OF FIVE (5) OR MORE DAYS. THE CONTRACTOR SHALL COMPLETELY REMOVE ALL TEMPORARY TRAFFIC SIGNAL DETECTION EQUIPMENT AND RESORE/INSTALL A CITY APPROVED PERMANENT VEHICLE DETECTION SYSTEM UPON COMPLETION OF CONSTRUCTION. ALL INSTALLATIONS AND REMOVALS ARE SUBJECT TO APPROVAL BY THE CITY ENGINEER.

8. CHANGES IN WORK. THE CITY RESIDENT ENGINEER WILL OBSERVE THESE TRAFFIC CONTROL PLANS IN OPERATION AND RESERVES THE RIGHT TO MAKE CHANGES AS THE FIELD CONDITIONS WARRANT. ANY SUCH CHANGES SHALL BE DOCUMENTED AND SUPERSEDE THESE PLANS.

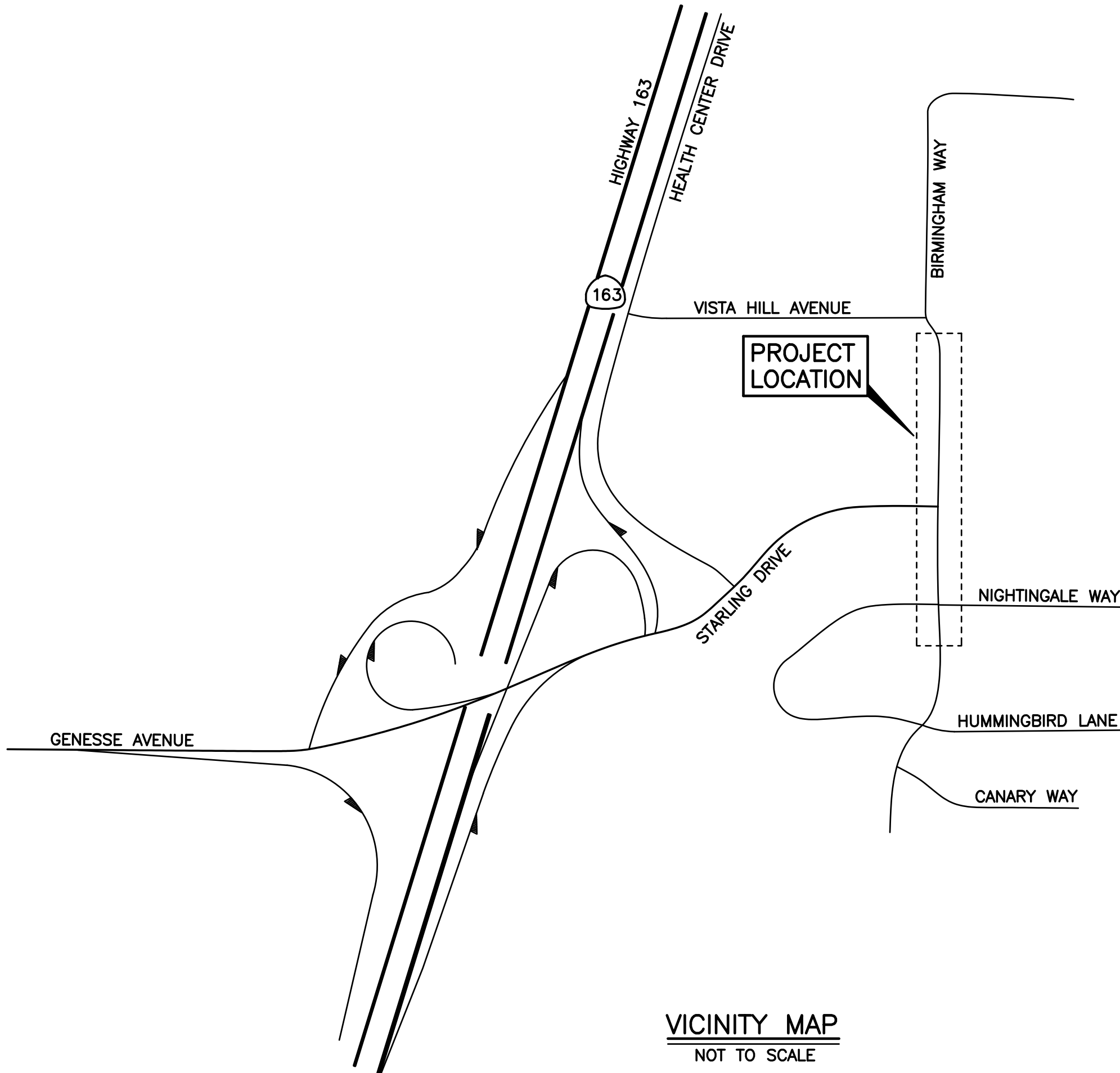
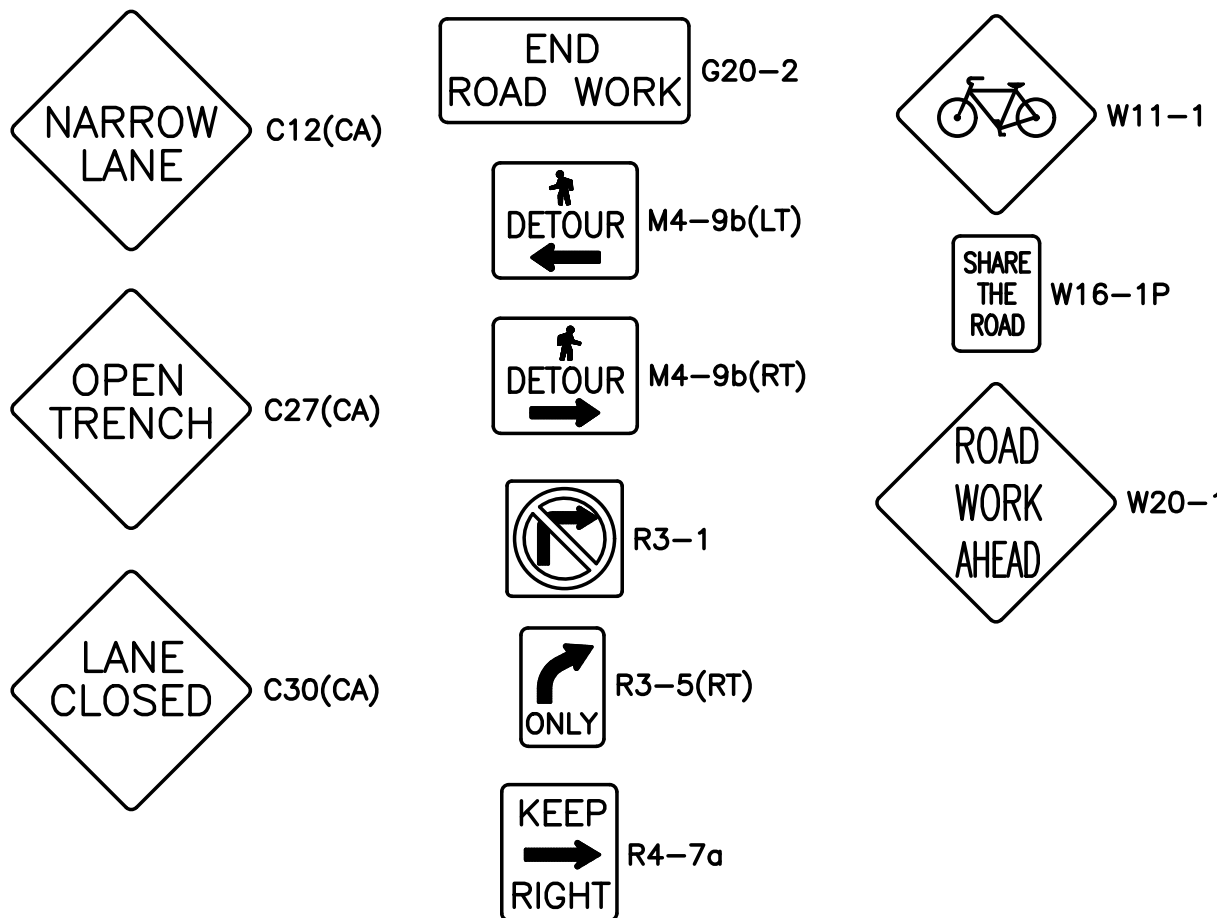
9. OPEN TRENCH. THE CONTRACTOR SHALL PLACE "OPEN TRENCH" SIGNS (C27(CA)) ON TYPE III BARRICADES WITHIN THE WORK ZONE, AHEAD OF ANY WORK AREA WHICH INCLUDES OPEN TRENCHES IN EXCESS OF THREE (3) INCHES IN DEPTH, PER CA MUTCH SECTION 6F.103 (CA) GUIDELINES.

10. FOR WORK NOT COVERED BY THESE TRAFFIC CONTROL PLANS, THE CONTRACTOR SHALL PREPARE TRAFFIC CONTROL WORKING DRAWINGS AND SUBMIT THEM TO THE CITY RESIDENT ENGINEER. THE CONTRACTOR SHALL ALLOW A MINIMUM OF TWENTY (20) WORKING DAYS FOR REVIEW OF THE WORKING DRAWINGS. UPON APPROVAL OF THE TRAFFIC CONTROL PLAN, THE PUBLIC WORKS TRAFFIC CONTROL SECTION WILL ISSUE A TRAFFIC CONTROL PLAN (TCP) PERMIT FOR THIS WORK.

EXISTING SIGNS(SHEETS T2 TO T11)



TEMPORARY CONSTRUCTION SIGNS(SHEETS T2 TO T11)



VICINITY MAP
NOT TO SCALE

WORK TO BE DONE(SHEETS T2 TO T11)

THE IMPROVEMENTS CONSIST OF THE FOLLOWING WORK TO BE DONE ACCORDING TO THESE PLANS AND THE SPECIFICATIONS AND STANDARD DRAWINGS OF THE CITY OF SAN DIEGO.

STANDARD SPECIFICATIONS:

DOCUMENT NO.	DESCRIPTION
PWPI010119-01	STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (GREENBOOK), 2018 EDITION
PWPI010119-02	CITY OF SAN DIEGO STANDARD SPECIFICATIONS FOR PUBLICWORKS CONSTRUCTION (WHITEBOOK), 2018 EDITION
PWPI010119-04	CITYWIDE COMPUTER AIDED DESIGN AND DRAFTING (CADD) STANDARDS, 2018 EDITION
PWPI030119-07	CALIFORNIA DEPARTMENT OF TRANSPORTATION MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (REVISION 3), 2014 EDITION
PWPI030119-05	CALIFORNIA DEPARTMENT OF TRANSPORTATION U.S. CUSTOMARY STANDARD SPECIFICATIONS, 2018 EDITION

STANDARD DRAWINGS:

DOCUMENT NO.	DESCRIPTION
PWPI010119-03	CITY OF SAN DIEGO STANDARD DRAWINGS FOR PUBLIC WORKS CONSTRUCTION, 2018 EDITION
PWPI030119-06	CALIFORNIA DEPARTMENT OF TRANSPORTATION U.S. CUSTOMARY STANDARD PLANS, 2018

LEGEND (SHEETS T2 TO T11)

ITEM	SYMBOL
EXISTING STRIPING	— — — — —
EXISTING ROADSIDE SIGN	— — — — —
PROPOSED ROADSIDE SIGN	■
TYPE II BARRICADE WITH SIGN	■
PORTABLE DELINEATOR	●
DIRECTION OF TRAVEL	→
FLASHING ARROW SIGN	→
WORK ZONE	⊠
ORANGE MESH	× × × × ×
SWINGING GATE	↗
CHAIN LINK FENCE	— — — — —
TEMPORARY CRASH CUSHION	— — — — —
TEMPORARY WATER-FILLED BARRIER	— — — — —

DECLARATION OF RESPONSIBLE CHARGE

I HEREBY DECLARE THAT I AM THE ENGINEER OF WORK FOR THIS PROJECT, THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THE PROJECT AS DEFINED IN SECTION 6703 OF THE BUSINESS AND PROFESSIONS CODE, AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS.

I UNDERSTAND THAT THE CHECK OF PROJECT DRAWINGS AND SPECIFICATIONS BY THE CITY OF SAN DIEGO IS CONFINED TO A REVIEW ONLY AND DOES NOT RELIEVE ME, AS ENGINEER OF WORK, OF MY RESPONSIBILITIES FOR PROJECT DESIGN.

ENGINEER OF WORK

JOHN P. KEATING	R.C.E. 43595	DATE
LINSCOTT LAW & GREENSPAN	LINSCOTT, LAW & GREENSPAN, ENGINEERS 4542 Ruffner Street, Suite 100 San Diego, Ca 92111 (858)300-8800	(858)300-8810 (FX)
LLG 3-206570.1	TC1_NOTES6570.DWG	11/5/20
Designed By: HQL	Drawn By: DVS	Checked By: JPK

JOHN P. KEATING R.C.E 43595	DATE REGISTRATION EXPIRES: 12/31/20	DESIGNED BY: HQL	PM REVIEW: JPK	SURVEY REVIEW BY: DVS
--------------------------------	--	------------------------	----------------------	-----------------------------

PRIVATE CONTRACT

NOTES FOR:

MEADOW LARK DRIVE
COUNTY OF SAN DIEGO
JUVENILE JUSTICE CAMPUS (JJC) URBAN CAMP

CITY OF SAN DIEGO, CALIFORNIA DEVELOPMENT SERVICES DEPARTMENT SHEET T1 OF T11 SHEETS		I.O. NO. N/A PROJECT NO. 659467
FOR CITY ENGINEER		V.T.M. N/A
DESCRIPTION	BY	APPROVED
ORIGINAL	LLG	
AS-BUILTS		
CONTRACTOR	DATE STARTED	
INSPECTOR	DATE COMPLETED	

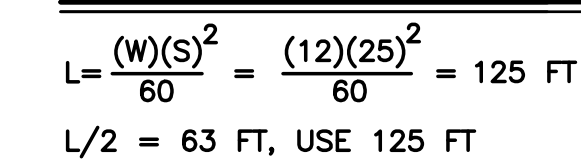
1868-6283
NAD83 COORDINATES

228-1723
LAMBERT COORDINATES

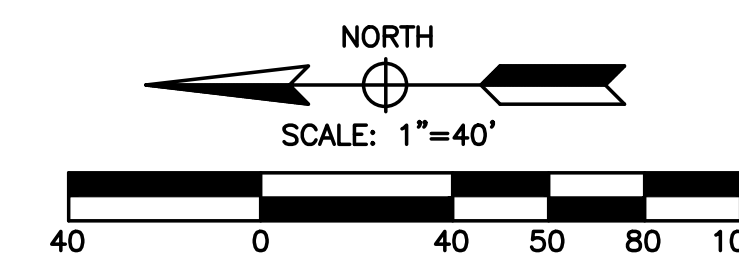
41819-T01-D

1. DELINEATORS SHALL BE PLACED AT 25' INTERVALS.
2. DELINEATORS SHALL BE PLACED AT 15' INTERVALS.
3. DELINEATORS SHALL BE PLACED AT 10' INTERVALS.
4. CONTRACTOR SHALL COORDINATE WITH MTS (5) FIVE DAYS PRIOR TO WORK TO CLOSE OR RELOCATE EXISTING BUS STOP DURING THIS STAGE OF CONSTRUCTION.

- CROSS-GUTTER CONSTRUCTION.



JOHN P. KEATING	R.C.E. 43595	DATE
-----------------	--------------	------



JOHN P. KEATING R.C.E 43595	DATE REGISTRATION EXPIRES: 12/31/20	DESIGNED BY: HQL	PM REVIEW: JPK	SURVEY REVIEW BY: DVS
--------------------------------	--	----------------------------	--------------------------	---------------------------------

TRAFFIC CONTROL PLAN FOR:					
MEADOW LARK DRIVE (PHASE 1)					
CITY OF SAN DIEGO, CALIFORNIA DEVELOPMENT SERVICES DEPARTMENT SHEET T2 OF T11 SHEETS				I.O. NO. N/A PROJECT NO. 659467	
FOR CITY ENGINEER				DATE	
DESCRIPTION	BY	APPROVED	DATE	V.T.M. N/A	
ORIGINAL	LLG			1868-6283 NAD83 COORDINATES	
				228-1723 LAMBERT COORDINATES	
AS-BUILTS					
CONTRACTOR INSPECTOR			DATE STARTED	41819-T02-D	
			DATE COMPLETED		

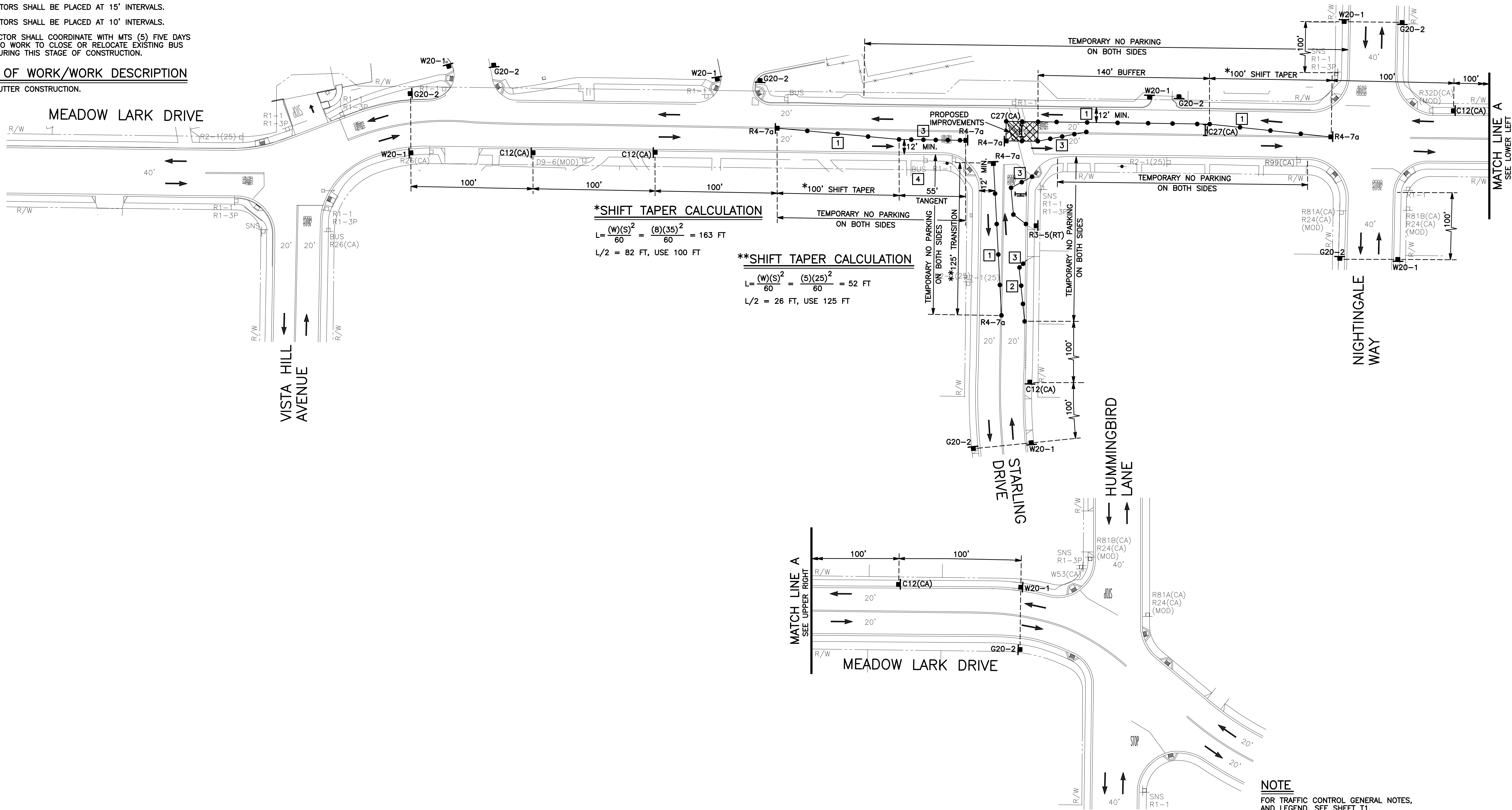
TRAFFIC CONTROL DESIGN SPEED
MEADOW LARK DRIVE = 35 MPH
STARLING DRIVE = 25 MPH

CONSTRUCTION NOTES (THIS SHEET ONLY)

- 1 DELINEATORS SHALL BE PLACED AT 25' INTERVALS.
2 DELINEATORS SHALL BE PLACED AT 15' INTERVALS.
3 DELINEATORS SHALL BE PLACED AT 10' INTERVALS.
4 CONTRACTOR SHALL COORDINATE WITH MTS (5) FIVE DAYS PRIOR TO WORK TO CLOSE OR RELOCATE EXISTING BUS STOP DURING THIS STAGE OF CONSTRUCTION.

SCOPE OF WORK/WORK DESCRIPTION

•CROSS-GUTTER CONSTRUCTION.



*SHIFT TAPER CALCULATION

$$L = \frac{(W)(S)^2}{60} = \frac{(8)(35)^2}{60} = 163 \text{ FT}$$
$$L/2 = 82 \text{ FT, USE 100 FT}$$

**SHIFT TAPER CALCULATION

$$L = \frac{(W)(S)^2}{60} = \frac{(5)(25)^2}{60} = 52 \text{ FT}$$
$$L/2 = 26 \text{ FT, USE 125 FT}$$

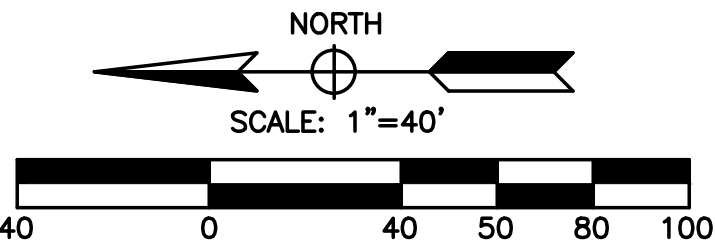
DECLARATION OF RESPONSIBLE CHARGE

I HEREBY DECLARE THAT I AM THE ENGINEER OF WORK FOR THIS PROJECT, THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THE PROJECT AS DEFINED IN SECTION 6703 OF THE BUSINESS AND PROFESSIONS CODE, AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS.

I UNDERSTAND THAT THE CHECK OF PROJECT DRAWINGS AND SPECIFICATIONS BY THE CITY OF SAN DIEGO IS CONFINED TO A REVIEW ONLY AND DOES NOT RELIEVE ME, AS ENGINEER OF WORK, OF MY RESPONSIBILITIES FOR PROJECT DESIGN.

ENGINEER OF WORK

JOHN P. KEATING R.C.E. 43595 DATE



LINSOTT LAW & GREENSPAN engineers			LINSOTT, LAW & GREENSPAN, ENGINEERS 4542 Ruffner Street, Suite 100 San Diego, Ca 92111 (858)300-8800 (858)300-8810 (FX)		
LLG 3-206570.1	TC3-6570-STG2.DWG	11/5/20	Designed By: HQL	Drawn By: DVS	Checked By: JPK

JOHN P. KEATING R.C.E. 43595	DATE REGISTRATION EXPIRES: 12/31/20	DESIGNED BY: HQL	PM REVIEW: JPK	SURVEY REVIEW BY: DVS
---------------------------------	--	------------------------	----------------------	-----------------------------

NOTE

FOR TRAFFIC CONTROL GENERAL NOTES, AND LEGEND, SEE SHEET T1.

PRIVATE CONTRACT

TRAFFIC CONTROL PLAN FOR:

MEADOW LARK DRIVE
(PHASE 2)

CITY OF SAN DIEGO, CALIFORNIA DEVELOPMENT SERVICES DEPARTMENT SHEET 13 OF 111 SHEETS					I.O. NO. N/A PROJECT NO. 659467
FOR CITY ENGINEER					V.T.M. N/A
DESCRIPTION	BY	APPROVED	DATE	FILMED	
ORIGINAL	LLG				
					1868-6283 NAD83 COORDINATES
					228-1723 LAMBERT COORDINATES
AS-BUILTS					
CONTRACTOR	DATE STARTED		41819-T03-D		
INSPECTOR	DATE COMPLETED				

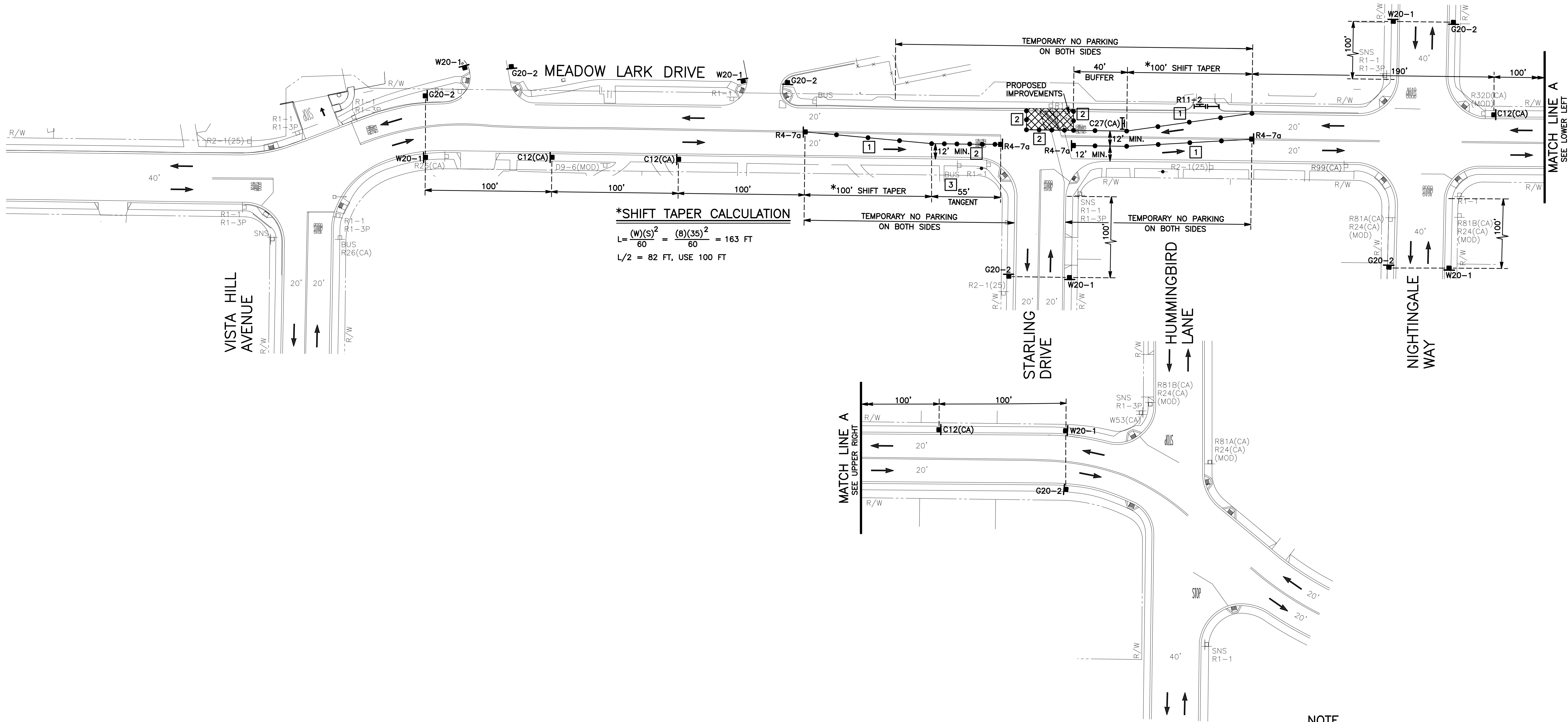
TRAFFIC CONTROL DESIGN SPEED
MEADOW LARK DRIVE = 35 MPH

CONSTRUCTION NOTES (THIS SHEET ONLY)

- 1 DELINEATORS SHALL BE PLACED AT 25' INTERVALS.
2 DELINEATORS SHALL BE PLACED AT 10' INTERVALS.
3 CONTRACTOR SHALL COORDINATE WITH MTS (5) FIVE DAYS PRIOR TO WORK TO CLOSE OR RELOCATE EXISTING BUS STOP DURING THIS STAGE OF CONSTRUCTION.

SCOPE OF WORK/WORK DESCRIPTION

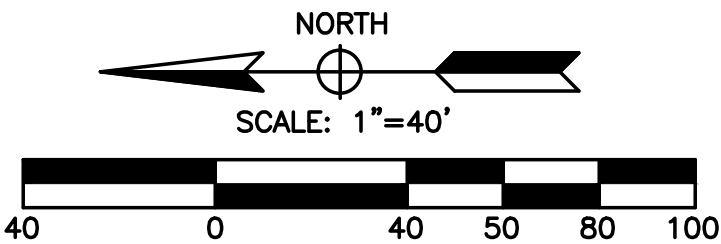
●CROSS-GUTTER CONSTRUCTION.



***SHIFT TAPER CALCULATION**
$$L = \frac{(W)(S)^2}{60} = \frac{(8)(35)^2}{60} = 163 \text{ FT}$$
$$L/2 = 82 \text{ FT, USE } 100 \text{ FT}$$

MATCH LINE A
SEE UPPER RIGHT

MATCH LINE A
SEE LOWER LEFT



DECLARATION OF RESPONSIBLE CHARGE

I HEREBY DECLARE THAT I AM THE ENGINEER OF WORK FOR THIS PROJECT, THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THE PROJECT AS DEFINED IN SECTION 6703 OF THE BUSINESS AND PROFESSIONS CODE, AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS.

I UNDERSTAND THAT THE CHECK OF PROJECT DRAWINGS AND SPECIFICATIONS BY THE CITY OF SAN DIEGO IS CONFINED TO A REVIEW ONLY AND DOES NOT RELIEVE ME, AS ENGINEER OF WORK, OF MY RESPONSIBILITIES FOR PROJECT DESIGN.

ENGINEER OF WORK

JOHN P. KEATING R.C.E. 43595 DATE



LINSCOTT LAW & GREENSPAN, ENGINEERS
4542 Ruffner Street, Suite 100
San Diego, Ca 92111
(858)300-8800 (858)300-8810 (FX)

LLG 3-206570.1	TC4-6570_STG3.DWG	11/5/20
Designed By: HQL	Drawn By: DVS	Checked By: JPK

JOHN P. KEATING R.C.E. 43595	DATE REGISTRATION EXPIRES: 12/31/20	DESIGNED BY: HQL	PM REVIEW: JPK	SURVEY REVIEW BY: DVS
---------------------------------	--	---------------------	-------------------	--------------------------

NOTE

FOR TRAFFIC CONTROL GENERAL NOTES, AND LEGEND, SEE SHEET T1.

PRIVATE CONTRACT

T-4

TRAFFIC CONTROL PLAN FOR:					
MEADOW LARK DRIVE (PHASE 3)					
CITY OF SAN DIEGO, CALIFORNIA DEVELOPMENT SERVICES DEPARTMENT SHEET 74 OF 111 SHEETS				I.O. NO. N/A	PROJECT NO. 659467
FOR CITY ENGINEER				V.T.M. N/A	
DESCRIPTION	BY	APPROVED	DATE	FILMED	
ORIGINAL	LLG				
AS-BUILTS					
CONTRACTOR					
INSPECTOR					
DATE STARTED				DATE COMPLETED	
				41819-T04-D	

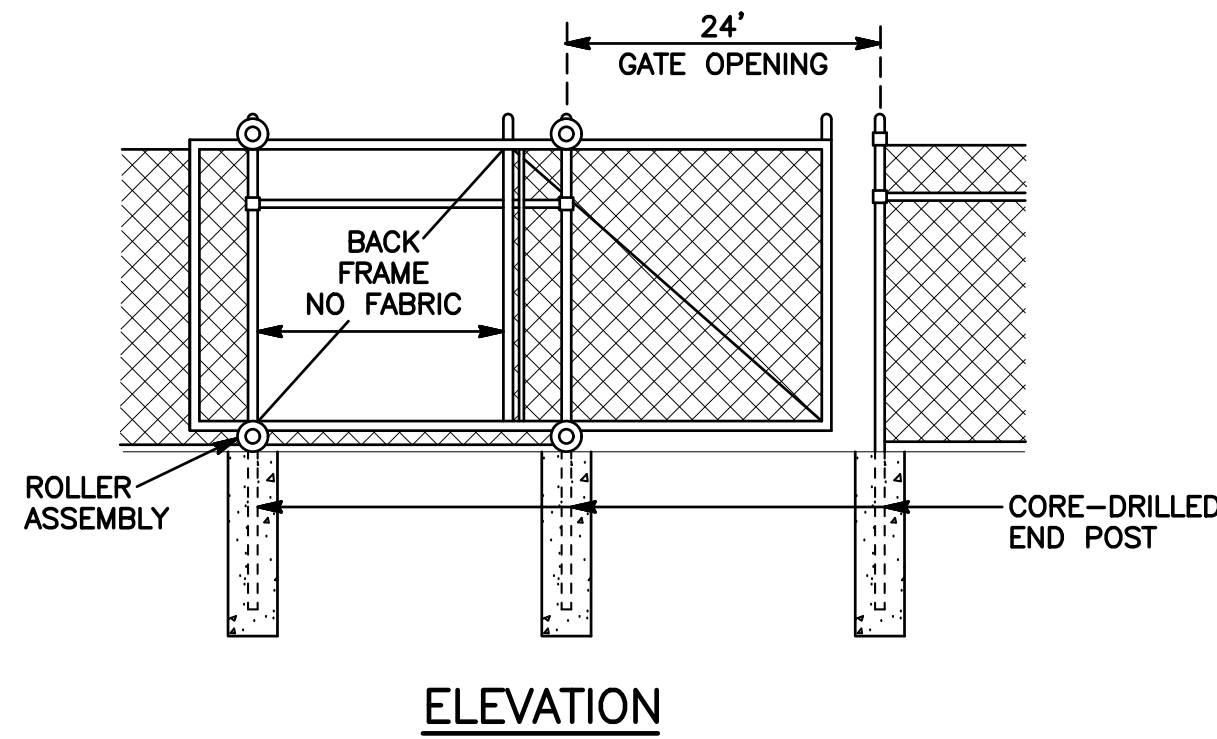
TRAFFIC CONTROL DESIGN SPEED
MEADOW LARK DRIVE = 35 MPH

CONSTRUCTION NOTES (THIS SHEET ONLY)

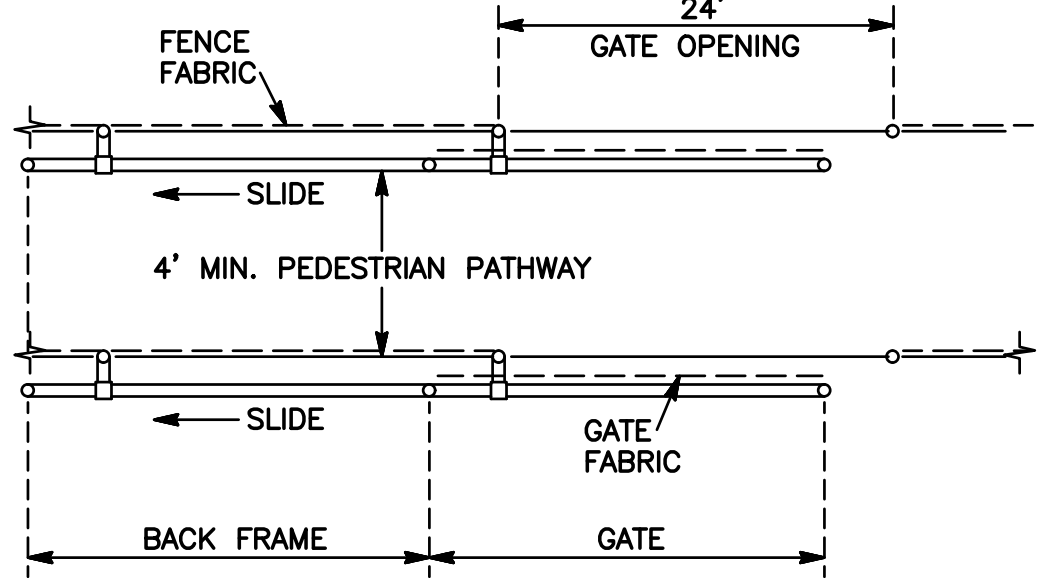
- 1] DELINEATORS SHALL BE PLACED AT 25' INTERVALS.
- 2] DELINEATORS SHALL BE PLACED AT 10' INTERVALS WITH ORANGE MESH.
- 3] CONTRACTOR SHALL PHASE WORK ZONE TO PROVIDE ACCESS TO DRIVEWAY AT ALL TIMES. CONTRACTOR SHALL PROVIDE STEEL PLATES TO COVER OPEN TRENCHES FOR CURING CONCRETE OUTSIDE OF WORK HOURS. CONTRACTOR SHALL PROVIDE W8-24 SIGNS AT ALL TIMES A MINIMUM OF 100' IN ADVANCE OF STEEL PLATES.
- 4] CONTRACTOR SHALL INSTALL SLIDING GATES WITH 6' HIGH CHAIN LINK FENCE AS SHOWN ON PLAN. SEE DETAIL "C" THIS SHEET.

SCOPE OF WORK/WORK DESCRIPTION

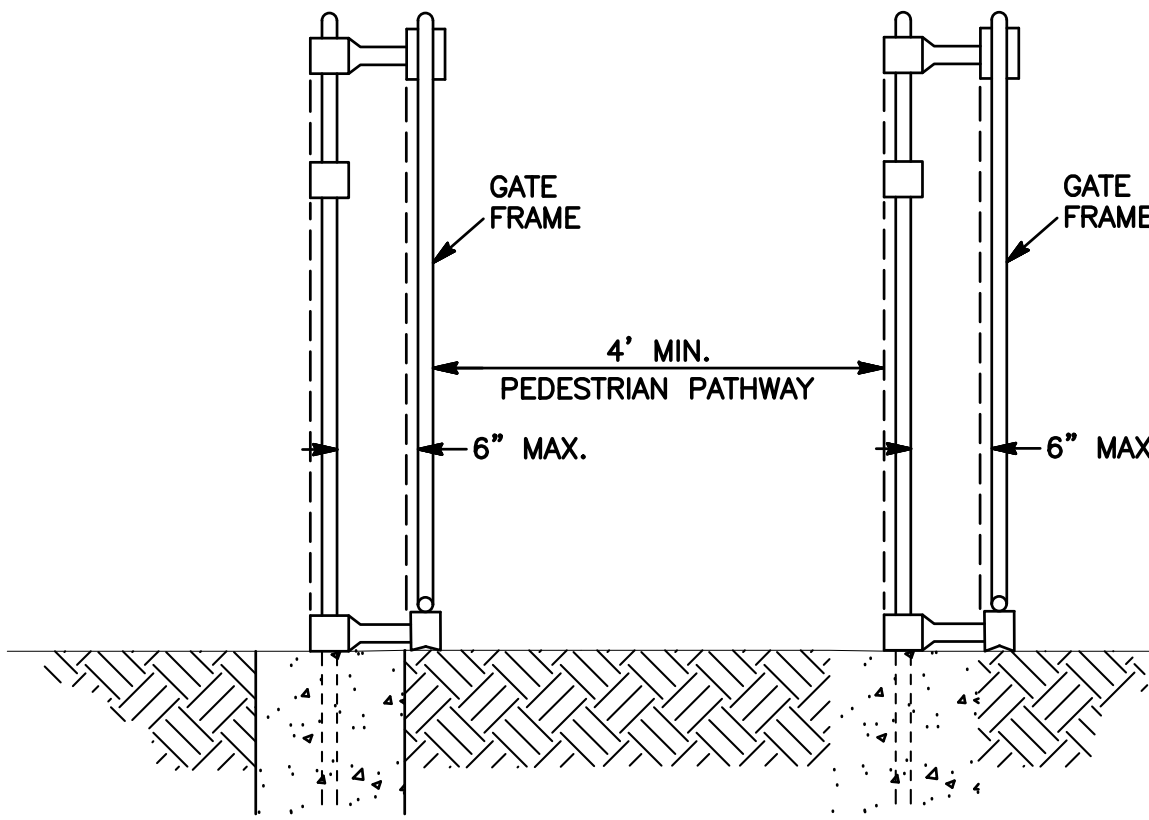
- REMOVE EXISTING CURB, GUTTER, AND SIDEWALK.
- NEW CURB, GUTTER, SIDEWALK, STREET LIGHT, CROSS-GUTTER AND CURB RAMPS.



ELEVATION

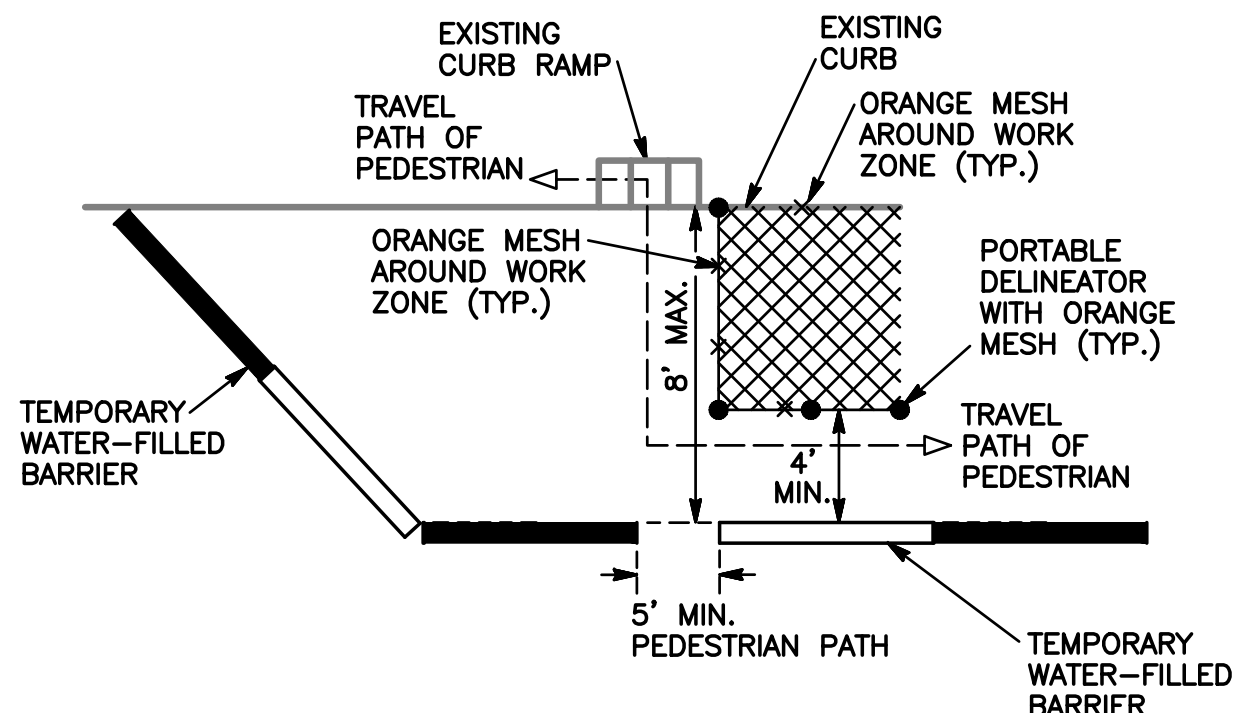
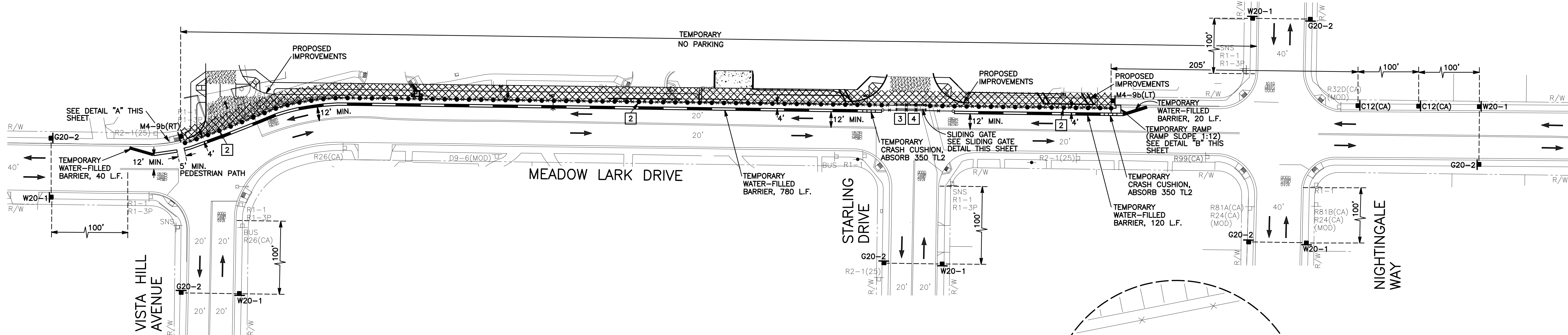


PLAN

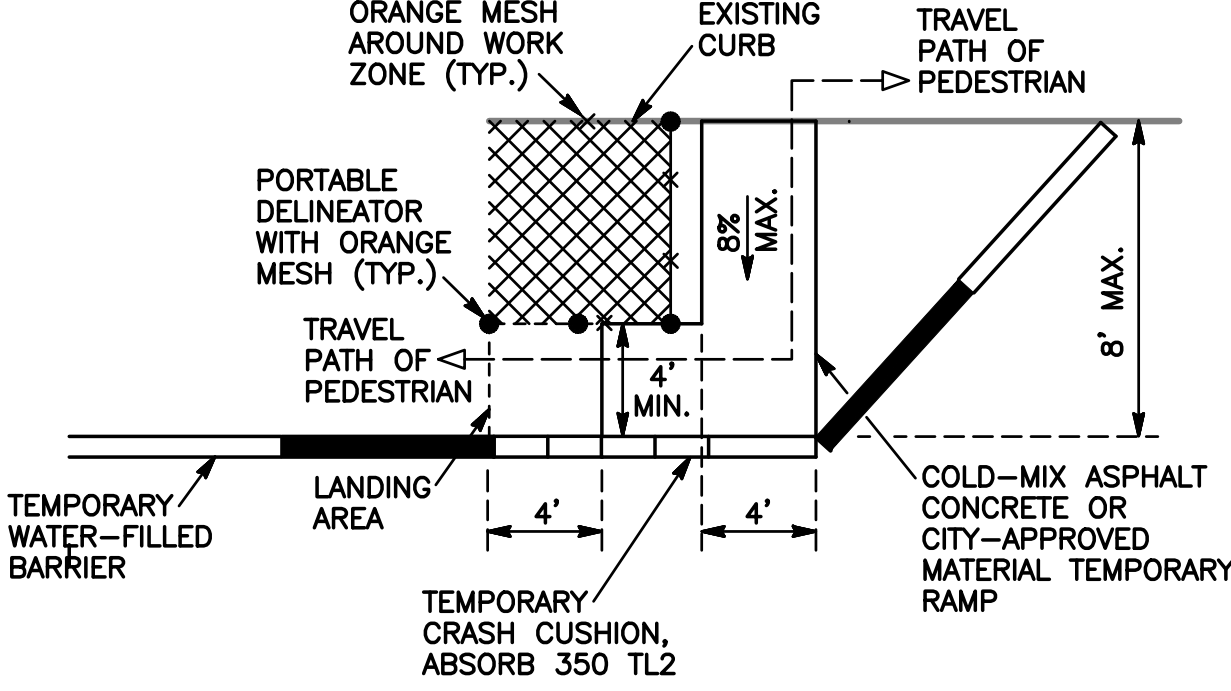


SIDE VIEW

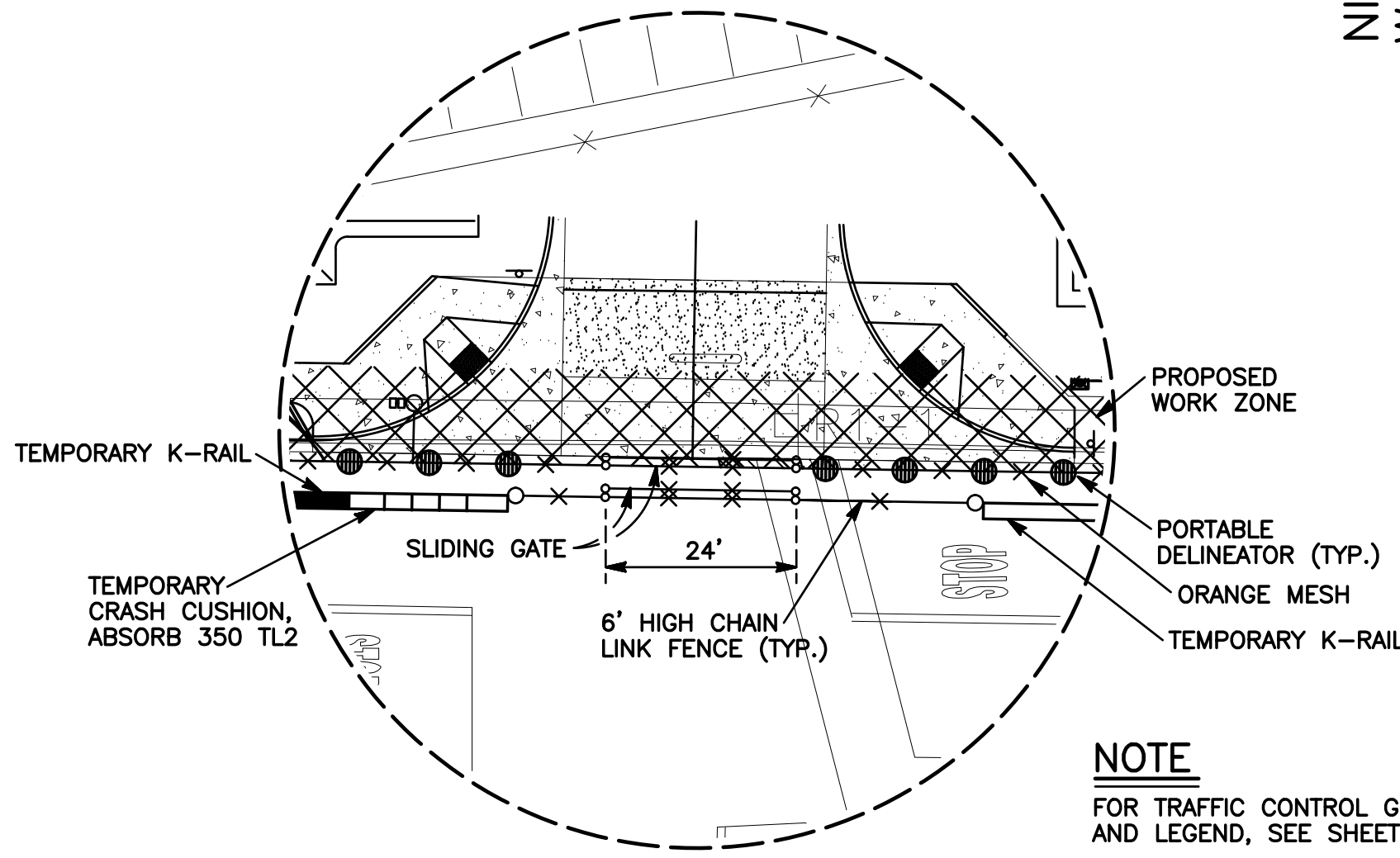
SLIDING GATE DETAIL
NOT TO SCALE



DETAIL "A"
NOT TO SCALE



DETAIL "B"
NOT TO SCALE



DETAIL "C"
SCALE: 1"=20'

NOTE
FOR TRAFFIC CONTROL GENERAL NOTES, AND LEGEND, SEE SHEET T1.

TRAFFIC CONTROL PLAN FOR:
MEADOW LARK DRIVE (PHASE 4)

CITY OF SAN DIEGO, CALIFORNIA DEVELOPMENT SERVICES DEPARTMENT SHEET 75 OF T11 SHEETS		I.O. NO. N/A PROJECT NO. 659467
FOR CITY ENGINEER		V.T.M. N/A
DESCRIPTION	BY	APPROVED
ORIGINAL	LLG	
AS-BUILTS		
CONTRACTOR	DATE STARTED	DATE COMPLETED
INSPECTOR		

1868-6283
NAD83 COORDINATES
228-1723
LAMBERT COORDINATES
41819-T05-D

DECLARATION OF RESPONSIBLE CHARGE

I HEREBY DECLARE THAT I AM THE ENGINEER OF WORK FOR THIS PROJECT, THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THE PROJECT AS DEFINED IN SECTION 6703 OF THE BUSINESS AND PROFESSIONS CODE, AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS.

I UNDERSTAND THAT THE CHECK OF PROJECT DRAWINGS AND SPECIFICATIONS BY THE CITY OF SAN DIEGO IS CONFINED TO A REVIEW ONLY AND DOES NOT RELIEVE ME, AS ENGINEER OF WORK, OF MY RESPONSIBILITIES FOR PROJECT DESIGN.

ENGINEER OF WORK

JOHN P. KEATING R.C.E. 43595 DATE

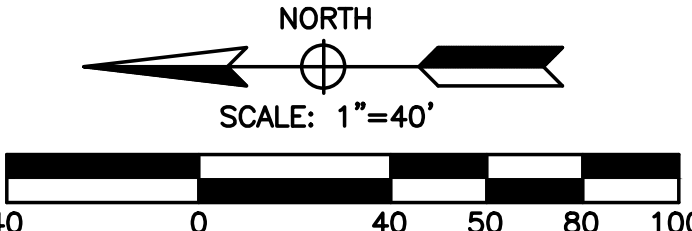


LINSCOTT, LAW & GREENSPAN, ENGINEERS
4542 Ruffner Street, Suite 100
San Diego, Ca 92111
(858)300-8800 (858)300-8810 (FX)

LLG 3-206570.1	TC5-6570_STG4.DWG	11/5/20
Designed By: HQL	Drawn By: DVS	Checked By: JPK

JOHN P. KEATING R.C.E. 43595	DATE REGISTRATION EXPIRES: 12/31/20	DESIGNED BY: HQL	PM REVIEW: JPK	SURVEY REVIEW BY: DVS
---------------------------------	--	------------------------	----------------------	-----------------------------

TRAFFIC CONTROL DESIGN SPEED
MEADOW LARK DRIVE = 35 MPH

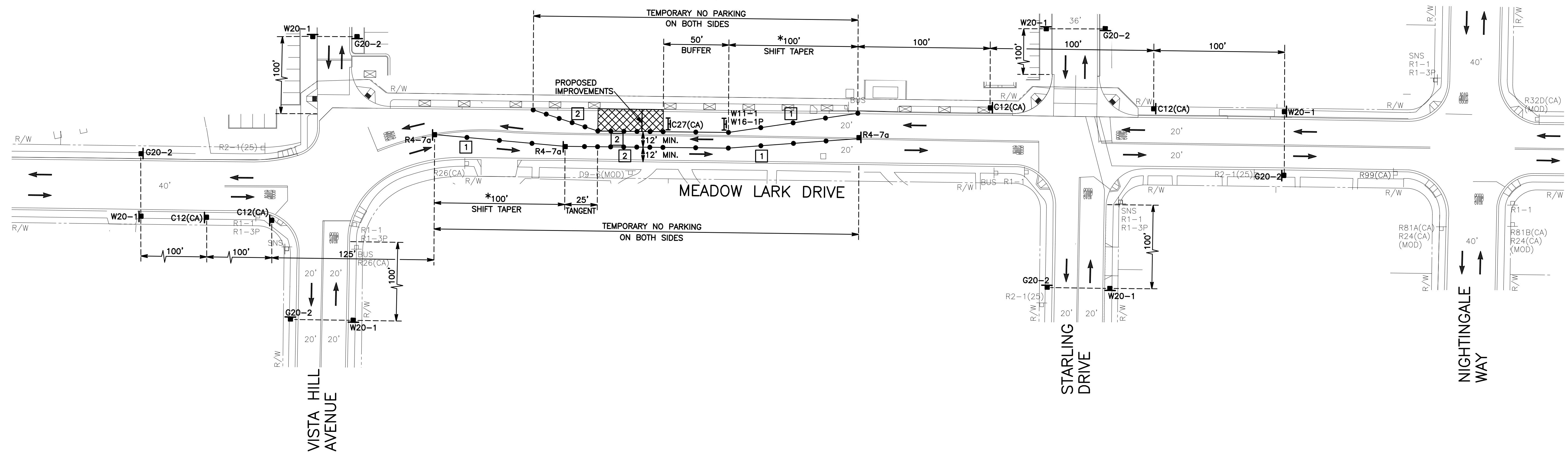


- 1

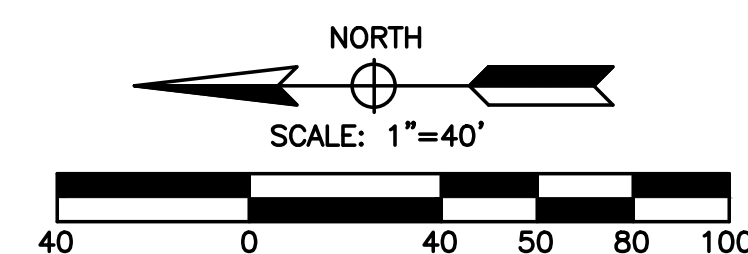
 DELINEATORS SHALL BE PLACED AT 25' INTERVALS.
- 2

 DELINEATORS SHALL BE PLACED AT 10' INTERVALS.

- WATER LATERAL.

$$L = \frac{(W)(S)^2}{60} = \frac{(8)(35)^2}{60} = 163 \text{ FT}$$
$$L/2 = 82 \text{ FT, USE } 100 \text{ FT}$$


JOHN P. KEATING	R.C.E. 43595	DATE
-----------------	--------------	------



JOHN P. KEATING R.C.E. 43595	DATE REGISTRATION EXPIRES: 12/31/20	DESIGNED BY: HQL	PM REVIEW: JPK	SURVEY REVIEW BY: DVS
---------------------------------	--	----------------------------	--------------------------	---------------------------------

TRAFFIC CONTROL PLAN FOR:					
MEADOW LARK DRIVE (PHASE 5)					
CITY OF SAN DIEGO, CALIFORNIA DEVELOPMENT SERVICES DEPARTMENT SHEET 76 OF T11 SHEETS				I.O. NO. N/A PROJECT NO. 659467	
FOR CITY ENGINEER				DATE	
DESCRIPTION		BY	APPROVED	DATE	FILMED
ORIGINAL		LLG			
AS-BUILTS					
CONTRACTOR				DATE STARTED	
INSTRUCTOR				DATE COMPLETED	
				V.T.M. N/A	
				1868-6283 NAD83 COORDINATES	
				228-1723 LAMBERT COORDINATES	
				41819-T06-D	

TRAFFIC CONTROL DESIGN SPEED
MEADOW LARK DRIVE = 35 MPH

CONSTRUCTION NOTES (THIS SHEET ONLY)

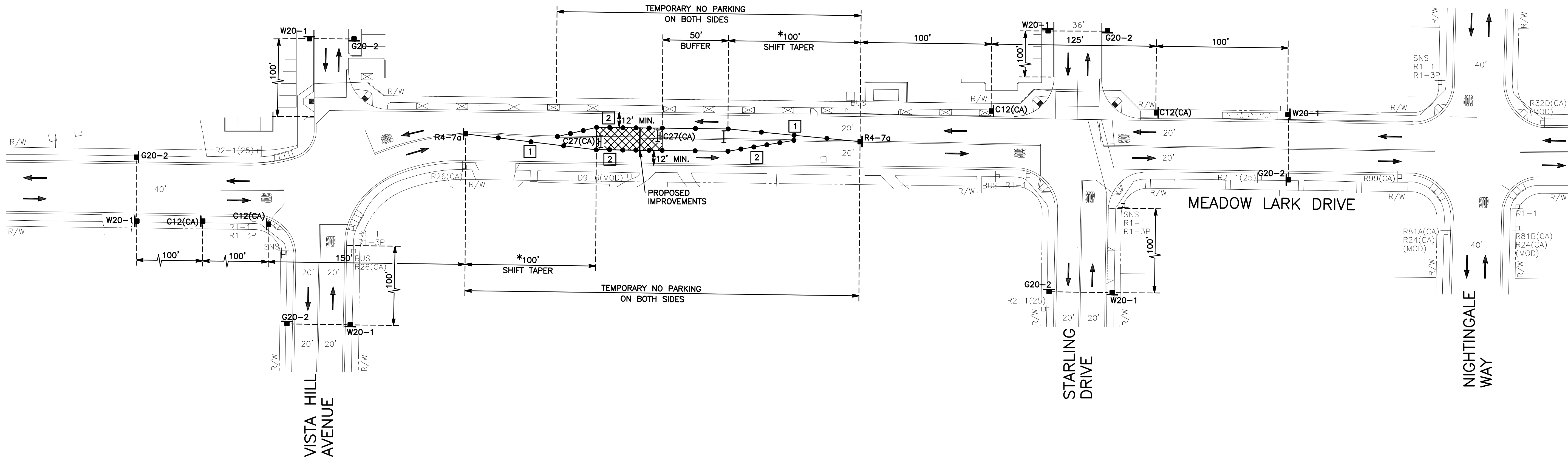
- 1 DELINEATORS SHALL BE PLACED AT 25' INTERVALS.
2 DELINEATORS SHALL BE PLACED AT 10' INTERVALS.

SCOPE OF WORK/WORK DESCRIPTION

●WATER LATERAL.

*SHIFT TAPER CALCULATION

$$L = \frac{(W)(S)^2}{60} = \frac{(8)(35)^2}{60} = 163 \text{ FT}$$
$$L/2 = 82 \text{ FT, USE 100 FT}$$



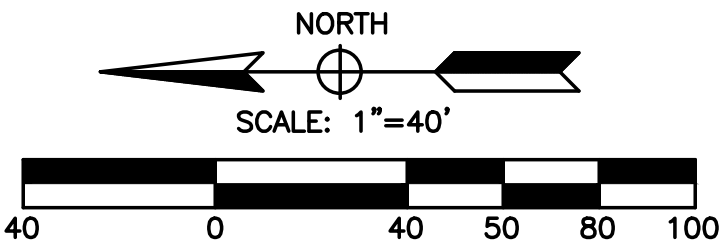
DECLARATION OF RESPONSIBLE CHARGE

I HEREBY DECLARE THAT I AM THE ENGINEER OF WORK FOR THIS PROJECT, THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THE PROJECT AS DEFINED IN SECTION 6703 OF THE BUSINESS AND PROFESSIONS CODE, AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS.

I UNDERSTAND THAT THE CHECK OF PROJECT DRAWINGS AND SPECIFICATIONS BY THE CITY OF SAN DIEGO IS CONFINED TO A REVIEW ONLY AND DOES NOT RELIEVE ME, AS ENGINEER OF WORK, OF MY RESPONSIBILITIES FOR PROJECT DESIGN.

ENGINEER OF WORK

JOHN P. KEATING R.C.E. 43595 DATE



LINSOTT, LAW & GREENSPAN, ENGINEERS 4542 Ruffner Street, Suite 100 San Diego, Ca 92111 (858)300-8800 (858)300-8810 (FX)		
LLG 3-206570.1	TC7-6570_STG6.DWG	11/5/20
Designed By: HQL	Drawn By: DVS	Checked By: JPK

JOHN P. KEATING R.C.E. 43595	DATE REGISTRATION EXPIRES: 12/31/20	DESIGNED BY: HQL	PM REVIEW: JPK	SURVEY REVIEW BY: DVS
---------------------------------	--	------------------------	----------------------	-----------------------------

TRAFFIC CONTROL DESIGN SPEED
MEADOW LARK DRIVE = 35 MPH

NOTE

FOR TRAFFIC CONTROL GENERAL NOTES,
AND LEGEND, SEE SHEET T1.

PRIVATE CONTRACT

T-7

TRAFFIC CONTROL PLAN FOR:

MEADOW LARK DRIVE
(PHASE 6)

CITY OF SAN DIEGO, CALIFORNIA DEVELOPMENT SERVICES DEPARTMENT SHEET 17 OF 111 SHEETS					I.O. NO. N/A PROJECT NO. 659467
FOR CITY ENGINEER					V.T.M. N/A
DESCRIPTION	BY	APPROVED	DATE	FILMED	
ORIGINAL	LLG				
					1868-6283 NAD83 COORDINATES
AS-BUILTS					228-1723 LAMBERT COORDINATES
CONTRACTOR	DATE STARTED		41819-T07-D		
INSPECTOR	DATE COMPLETED				

CONSTRUCTION NOTES (THIS SHEET ONLY)

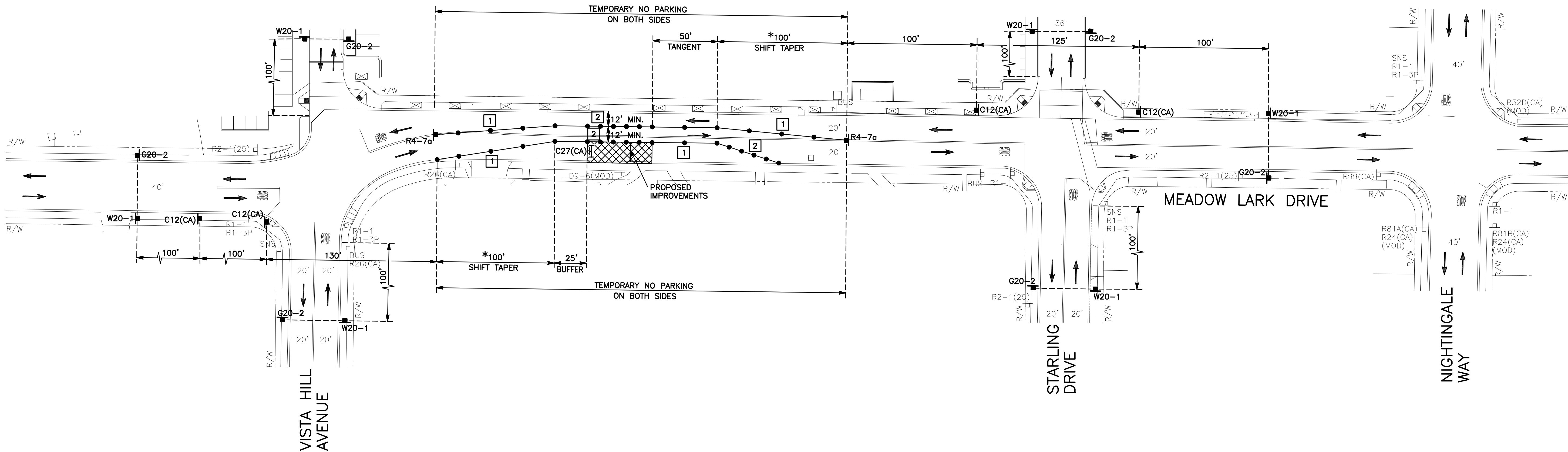
- 1 DELINEATORS SHALL BE PLACED AT 25' INTERVALS.
2 DELINEATORS SHALL BE PLACED AT 10' INTERVALS.

SCOPE OF WORK/WORK DESCRIPTION

●WATER LATERAL.

*SHIFT TAPER CALCULATION

$$L = \frac{(W)(S)^2}{60} = \frac{(8)(35)^2}{60} = 163 \text{ FT}$$
$$L/2 = 82 \text{ FT, USE } 100 \text{ FT}$$



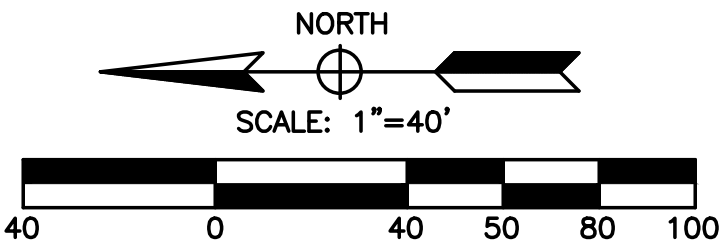
DECLARATION OF RESPONSIBLE CHARGE

I HEREBY DECLARE THAT I AM THE ENGINEER OF WORK FOR THIS PROJECT, THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THE PROJECT AS DEFINED IN SECTION 6703 OF THE BUSINESS AND PROFESSIONS CODE, AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS.

I UNDERSTAND THAT THE CHECK OF PROJECT DRAWINGS AND SPECIFICATIONS BY THE CITY OF SAN DIEGO IS CONFINED TO A REVIEW ONLY AND DOES NOT RELIEVE ME, AS ENGINEER OF WORK, OF MY RESPONSIBILITIES FOR PROJECT DESIGN.

ENGINEER OF WORK

JOHN P. KEATING R.C.E. 43595 DATE



LINSOTT LAW & GREENSPAN engineers			LINSOTT, LAW & GREENSPAN, ENGINEERS 4542 Ruffner Street, Suite 100 San Diego, Ca 92111 (858)300-8800 (858)300-8810 (FX)		
LLG 3-206570.1	TCB-6570_STG7.DWG	11/5/20			
Designed By: HQL	Drawn By: DVS	Checked By: JPK			

JOHN P. KEATING R.C.E. 43595	DATE REGISTRATION EXPIRES: 12/31/20	DESIGNED BY: HQL	PM REVIEW: JPK	SURVEY REVIEW BY: DVS
---------------------------------	--	------------------------	----------------------	-----------------------------

NOTE

FOR TRAFFIC CONTROL GENERAL NOTES,
AND LEGEND, SEE SHEET T1.

PRIVATE CONTRACT

TRAFFIC CONTROL PLAN FOR: MEADOW LARK DRIVE (PHASE 7)					
CITY OF SAN DIEGO, CALIFORNIA DEVELOPMENT SERVICES DEPARTMENT SHEET 78 OF T11 SHEETS				I.O. NO. N/A	PROJECT NO. 659467
FOR CITY ENGINEER				V.T.M. N/A	
DESCRIPTION	BY	APPROVED	DATE	FILMED	
ORIGINAL	LLG				
AS-BUILTS					
CONTRACTOR	DATE STARTED		DATE COMPLETED		
INSPECTOR			41819-T08-D		

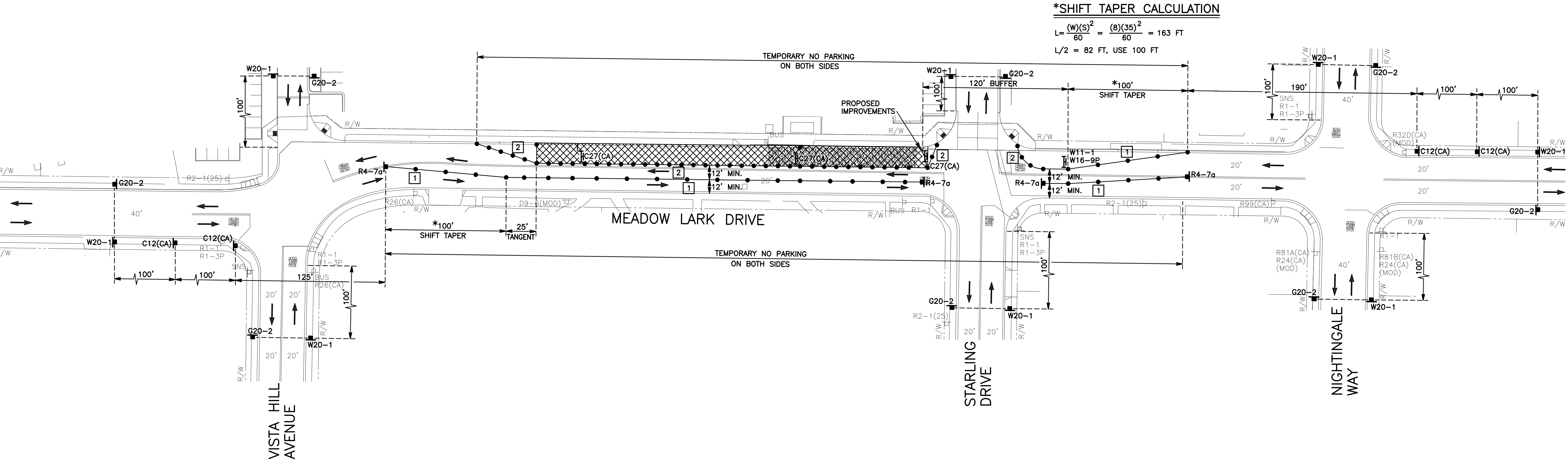
TRAFFIC CONTROL DESIGN SPEED
MEADOW LARK DRIVE = 35 MPH

CONSTRUCTION NOTES (THIS SHEET ONLY)

- 1 DELINEATORS SHALL BE PLACED AT 25' INTERVALS.
2 DELINEATORS SHALL BE PLACED AT 10' INTERVALS.

SCOPE OF WORK/WORK DESCRIPTION

- ELECTRICAL LINE.
• UTILITY TRENCH.



*SHIFT TAPER CALCULATION

$$L = \frac{(W)(S)^2}{60} = \frac{(8)(35)^2}{60} = 163 \text{ FT}$$
$$L/2 = 82 \text{ FT, USE 100 FT}$$

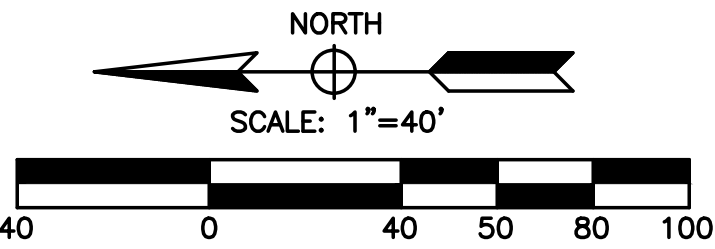
DECLARATION OF RESPONSIBLE CHARGE

I HEREBY DECLARE THAT I AM THE ENGINEER OF WORK FOR THIS PROJECT, THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THE PROJECT AS DEFINED IN SECTION 6703 OF THE BUSINESS AND PROFESSIONS CODE, AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS.

I UNDERSTAND THAT THE CHECK OF PROJECT DRAWINGS AND SPECIFICATIONS BY THE CITY OF SAN DIEGO IS CONFINED TO A REVIEW ONLY AND DOES NOT RELIEVE ME, AS ENGINEER OF WORK, OF MY RESPONSIBILITIES FOR PROJECT DESIGN.

ENGINEER OF WORK

JOHN P. KEATING R.C.E. 43595 DATE



LINSKOTT LAW & GREENSPAN engineers			LINSKOTT, LAW & GREENSPAN, ENGINEERS 4542 Ruffner Street, Suite 100 San Diego, Ca 92111 (858)300-8800 (858)300-8810 (FX)		
LLG 3-206570.1	TC9-6570-STG8.DWG	11/5/20			
Designed By: HQL	Drawn By: DVS	Checked By: JPK			

JOHN P. KEATING R.C.E. 43595	DATE REGISTRATION EXPIRES: 12/31/20	DESIGNED BY: HQL	PM REVIEW: JPK	SURVEY REVIEW BY: DVS
---------------------------------	--	------------------------	----------------------	-----------------------------

NOTE

FOR TRAFFIC CONTROL GENERAL NOTES,
AND LEGEND, SEE SHEET T1.

PRIVATE CONTRACT

T-9

TRAFFIC CONTROL PLAN FOR:					
MEADOW LARK DRIVE (PHASE 8)					
CITY OF SAN DIEGO, CALIFORNIA DEVELOPMENT SERVICES DEPARTMENT SHEET 79 OF T11 SHEETS				I.O. NO.	N/A
				PROJECT NO.	659467
FOR CITY ENGINEER				V.T.M. N/A	
DATE					
DESCRIPTION	BY	APPROVED	DATE	FILMED	
ORIGINAL	LLG				
AS-BUILTS					
CONTRACTOR INSPECTOR			DATE STARTED	1968-6283 NAD83 COORDINATES	
			DATE COMPLETED	228-1723 LAMBERT COORDINATES	
				41819-T09-D	

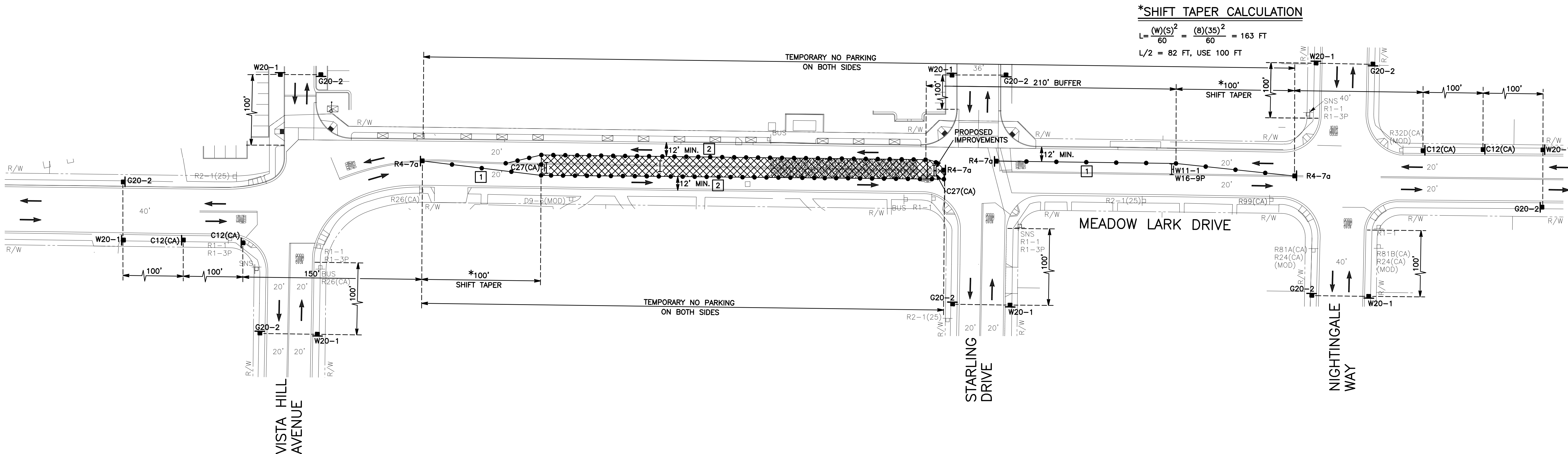
TRAFFIC CONTROL DESIGN SPEED
MEADOW LARK DRIVE = 35 MPH

CONSTRUCTION NOTES (THIS SHEET ONLY)

- 1 DELINEATORS SHALL BE PLACED AT 25' INTERVALS.
2 DELINEATORS SHALL BE PLACED AT 10' INTERVALS.

SCOPE OF WORK/WORK DESCRIPTION

- ELECTRICAL LINE.
• UTILITY TRENCH.



*SHIFT TAPER CALCULATION

$$L = \frac{(W)(S)^2}{60} = \frac{(8)(35)^2}{60} = 163 \text{ FT}$$
$$L/2 = 82 \text{ FT, USE 100 FT}$$

NOTE

FOR TRAFFIC CONTROL GENERAL NOTES,
AND LEGEND, SEE SHEET T1.

PRIVATE CONTRACT

T-10

TRAFFIC CONTROL PLAN FOR:

MEADOW LARK DRIVE
(PHASE 9)

CITY OF SAN DIEGO, CALIFORNIA DEVELOPMENT SERVICES DEPARTMENT SHEET T10 OF T11 SHEETS					I.O. NO. N/A PROJECT NO. 65946
FOR CITY ENGINEER					V.T.M. N/A
DESCRIPTION	BY	APPROVED	DATE	FILMED	
ORIGINAL	LLG				
					1868-6283 NAD83 COORDINATES
					228-1723 LAMBERT COORDINATES
AS-BUILTS					
CONTRACTOR	DATE STARTED		41819-T10-		
INSPECTOR	DATE COMPLETED				

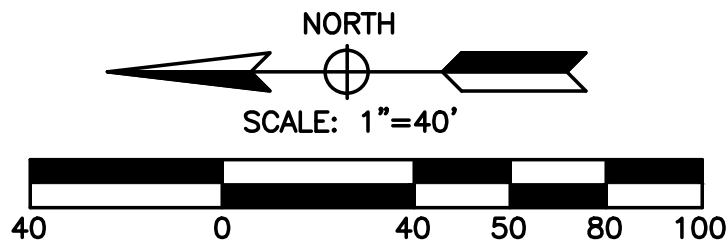
DECLARATION OF RESPONSIBLE CHARGE

I HEREBY DECLARE THAT I AM THE ENGINEER OF WORK FOR THIS PROJECT, THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THE PROJECT AS DEFINED IN SECTION 6703 OF THE BUSINESS AND PROFESSIONS CODE, AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS.

I UNDERSTAND THAT THE CHECK OF PROJECT DRAWINGS AND SPECIFICATIONS BY THE CITY OF SAN DIEGO IS CONFINED TO A REVIEW ONLY AND DOES NOT RELIEVE ME, AS ENGINEER OF WORK, OF MY RESPONSIBILITIES FOR PROJECT DESIGN.

ENGINEER OF WORK

JOHN P. KEATING R.C.E. 43595 DATE



LINSCOTT LAW & GREENSPAN engineers	LINSCOTT, LAW & GREENSPAN, ENGINEERS 4542 Ruffner Street, Suite 100 San Diego, Ca 92111 (858)300-8800		(858)300-8810 (FX)
LLG 3-206570.1	TC10-6570_STG9.DWG	11/5/20	
Designed By: HQL	Drawn By: DVS	Checked By: JPK	

JOHN P. KEATING R.C.E. 43595	DATE REGISTRATION EXPIRES: 12/31/20	DESIGNED BY: HQL	PM REVIEW: JPK	SURVEY REVIEW BY: DVS
---------------------------------	--	------------------------	----------------------	-----------------------------

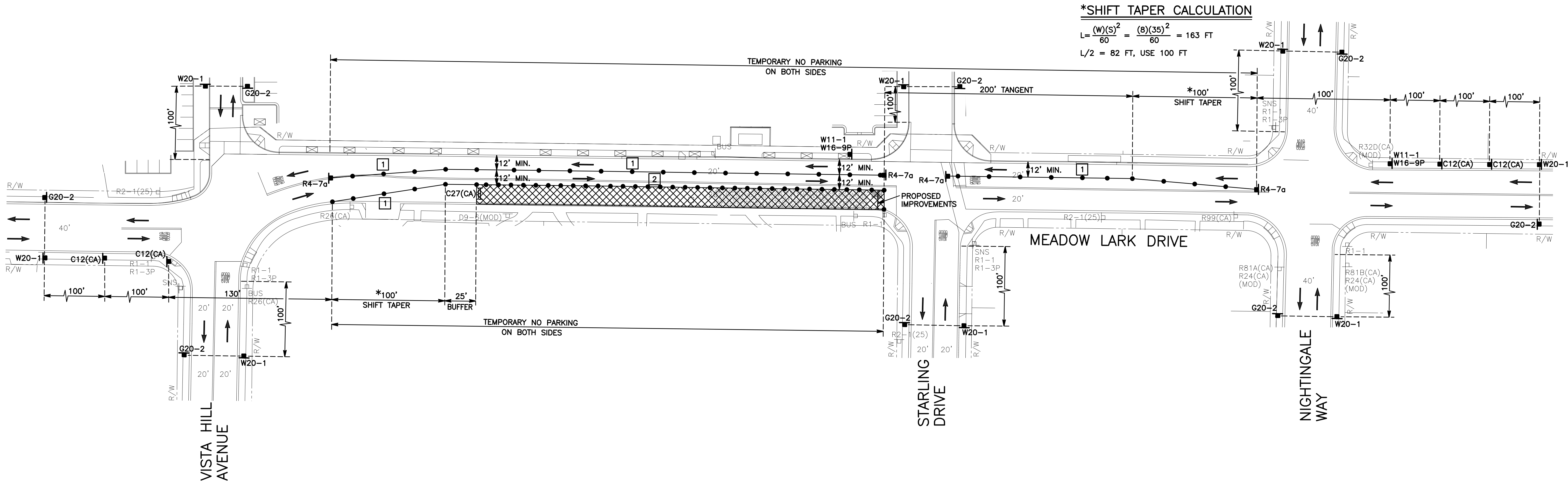
TRAFFIC CONTROL DESIGN SPEED
MEADOW LARK DRIVE = 35 MPH

CONSTRUCTION NOTES (THIS SHEET ONLY)

- 1 DELINEATORS SHALL BE PLACED AT 25' INTERVALS.
2 DELINEATORS SHALL BE PLACED AT 10' INTERVALS.

SCOPE OF WORK/WORK DESCRIPTION

- ELECTRICAL LINE.
• UTILITY TRENCH.



*SHIFT TAPER CALCULATION

$$L = \frac{(W)(S)^2}{60} = \frac{(8)(35)^2}{60} = 163 \text{ FT}$$
$$L/2 = 82 \text{ FT, USE } 100 \text{ FT}$$

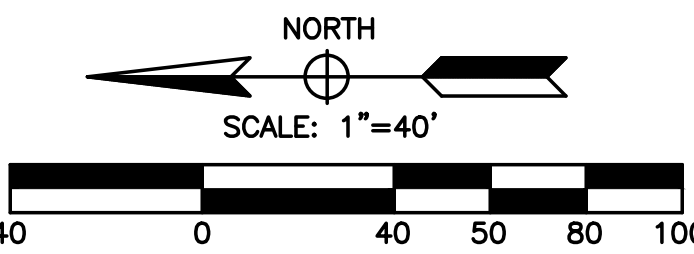
DECLARATION OF RESPONSIBLE CHARGE

I HEREBY DECLARE THAT I AM THE ENGINEER OF WORK FOR THIS PROJECT, THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THE PROJECT AS DEFINED IN SECTION 6703 OF THE BUSINESS AND PROFESSIONS CODE, AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS.

I UNDERSTAND THAT THE CHECK OF PROJECT DRAWINGS AND SPECIFICATIONS BY THE CITY OF SAN DIEGO IS CONFINED TO A REVIEW ONLY AND DOES NOT RELIEVE ME, AS ENGINEER OF WORK, OF MY RESPONSIBILITIES FOR PROJECT DESIGN.

ENGINEER OF WORK

JOHN P. KEATING R.C.E. 43595 DATE



LINSCOTT LAW & GREENSPAN
engineers

LINSCOTT, LAW & GREENSPAN, ENGINEERS
4542 Ruffner Street, Suite 100
San Diego, Ca 92111
(858)300-8800 (858)300-8810 (FX)

LLG 3-206570.1	TC11-6570_STG10.DWG	11/5/20
Designed By: HQL	Drawn By: DVS	Checked By: JPK

JOHN P. KEATING R.C.E. 43595	DATE REGISTRATION EXPIRES: 12/31/20	DESIGNED BY: HQL	PM REVIEW: JPK	SURVEY REVIEW BY: DVS
---------------------------------	--	------------------------	----------------------	-----------------------------

NOTE

FOR TRAFFIC CONTROL GENERAL NOTES,
AND LEGEND, SEE SHEET T1.

PRIVATE CONTRACT

T-11

TRAFFIC CONTROL PLAN FOR:				
MEADOW LARK DRIVE (PHASE 10)				
CITY OF SAN DIEGO, CALIFORNIA DEVELOPMENT SERVICES DEPARTMENT SHEET T11 OF T11 SHEETS			I.O. NO. N/A PROJECT NO. 659467	V.T.M. N/A
FOR CITY ENGINEER			DATE	
DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL	LLG			
AS-BUILTS				
CONTRACTOR			DATE STARTED	
INSPECTOR			DATE COMPLETED	
41819-T11-D				

TRAFFIC CONTROL DESIGN SPEED
MEADOW LARK DRIVE = 35 MPH

APPENDIX E

NEAR-TERM (OPENING YEAR 2027) INTERSECTION ANALYSIS CALCULATION SHEETS

Intersection						
Int Delay, s/veh	4.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	219	438	116	13	42	70
Future Vol, veh/h	219	438	116	13	42	70
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	45	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	238	476	126	14	46	76
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	140	0	-	0	1085	133
Stage 1	-	-	-	-	133	-
Stage 2	-	-	-	-	952	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1443	-	-	-	240	916
Stage 1	-	-	-	-	893	-
Stage 2	-	-	-	-	375	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1443	-	-	-	200	916
Mov Cap-2 Maneuver	-	-	-	-	200	-
Stage 1	-	-	-	-	746	-
Stage 2	-	-	-	-	375	-
Approach	EB	WB		SB		
HCM Control Delay, s	2.7	0		18.3		
HCM LOS				C		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1443	-	-	-	391	
HCM Lane V/C Ratio	0.165	-	-	-	0.311	
HCM Control Delay (s)	8	-	-	-	18.3	
HCM Lane LOS	A	-	-	-	C	
HCM 95th %tile Q(veh)	0.6	-	-	-	1.3	

HCM 6th Signalized Intersection Summary

2: Health Center Dr & Vista Hill Ave

Existing + Cumulative AM

07/06/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	R	T	T	L	T
Traffic Volume (veh/h)	125	80	399	200	141	150
Future Volume (veh/h)	125	80	399	200	141	150
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.99	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	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	136	87	434	217	153	163
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	174	111	529	265	198	1209
Arrive On Green	0.17	0.17	0.45	0.45	0.11	0.65
Sat Flow, veh/h	1032	660	1171	586	1781	1870
Grp Volume(v), veh/h	224	0	0	651	153	163
Grp Sat Flow(s),veh/h/ln	1700	0	0	1757	1781	1870
Q Serve(g_s), s	6.7	0.0	0.0	17.1	4.4	1.8
Cycle Q Clear(g_c), s	6.7	0.0	0.0	17.1	4.4	1.8
Prop In Lane	0.61	0.39		0.33	1.00	
Lane Grp Cap(c), veh/h	286	0	0	794	198	1209
V/C Ratio(X)	0.78	0.00	0.00	0.82	0.77	0.13
Avail Cap(c_a), veh/h	743	0	0	1366	391	2020
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.1	0.0	0.0	12.6	22.8	3.6
Incr Delay (d2), s/veh	4.7	0.0	0.0	2.2	6.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	0.0	0.0	5.8	2.0	0.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	25.8	0.0	0.0	14.8	29.1	3.7
LnGrp LOS	C	A	A	B	C	A
Approach Vol, veh/h	224		651			316
Approach Delay, s/veh	25.8		14.8			16.0
Approach LOS	C		B			B
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	10.3	28.8			39.1	13.8
Change Period (Y+Rc), s	4.4	4.9			4.9	4.9
Max Green Setting (Gmax), s	11.6	41.1			57.1	23.1
Max Q Clear Time (g_c+I1), s	6.4	19.1			3.8	8.7
Green Ext Time (p_c), s	0.2	4.8			1.0	0.6

Intersection Summary

HCM 6th Ctrl Delay	17.2
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

HCM 6th Signalized Intersection Summary

3: Meadow Lark Dr & Vista Hill Ave

Existing + Cumulative AM

07/06/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↖	↗			↔	
Traffic Volume (veh/h)	258	2	48	1	7	0	49	555	2	2	165	98
Future Volume (veh/h)	258	2	48	1	7	0	49	555	2	2	165	98
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.98		0.97	0.99		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	280	2	52	1	8	0	53	603	2	2	179	107
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	539	6	67	129	533	0	749	843	3	101	490	290
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.00	0.45	0.45	0.45	0.45	0.45	0.45
Sat Flow, veh/h	1193	19	224	60	1788	0	1071	1863	6	2	1082	641
Grp Volume(v), veh/h	334	0	0	9	0	0	53	0	605	288	0	0
Grp Sat Flow(s),veh/h/ln	1436	0	0	1848	0	0	1071	0	1869	1725	0	0
Q Serve(g_s), s	7.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.5	0.0	0.0	0.0
Cycle Q Clear(g_c), s	7.7	0.0	0.0	0.1	0.0	0.0	0.6	0.0	9.5	4.0	0.0	0.0
Prop In Lane	0.84		0.16	0.11		0.00	1.00		0.00	0.01		0.37
Lane Grp Cap(c), veh/h	612	0	0	662	0	0	749	0	846	881	0	0
V/C Ratio(X)	0.55	0.00	0.00	0.01	0.00	0.00	0.07	0.00	0.71	0.33	0.00	0.00
Avail Cap(c_a), veh/h	956	0	0	1094	0	0	1197	0	1628	1598	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	11.6	0.0	0.0	8.9	0.0	0.0	5.6	0.0	8.0	6.5	0.0	0.0
Incr Delay (d2), s/veh	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9	0.0	0.0	0.0	0.0	0.0	0.2	0.0	2.6	0.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.3	0.0	0.0	9.0	0.0	0.0	5.6	0.0	9.1	6.7	0.0	0.0
LnGrp LOS	B	A	A	A	A	A	A	A	A	A	A	A
Approach Vol, veh/h		334			9			658			288	
Approach Delay, s/veh		12.3			9.0			8.9			6.7	
Approach LOS		B			A			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		20.9		15.3		20.9		15.3				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		31.5		19.5		31.5		19.5				
Max Q Clear Time (g_c+I1), s		11.5		9.7		6.0		2.1				
Green Ext Time (p_c), s		4.3		1.4		1.8		0.0				
Intersection Summary												
HCM 6th Ctrl Delay			9.3									
HCM 6th LOS			A									

Intersection	
Intersection Delay, s/veh	31.2
Intersection LOS	D

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	555	63	67	28	22	181
Future Vol, veh/h	555	63	67	28	22	181
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	603	68	73	30	24	197
Number of Lanes	1	0	0	1	1	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left SB		EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right NB			EB
Conflicting Lanes Right	1	0	1
HCM Control Delay	40.9	10.7	11.1
HCM LOS	E	B	B

Lane	NBLn1	EBLn1	SBLn1
Vol Left, %	71%	90%	0%
Vol Thru, %	29%	0%	11%
Vol Right, %	0%	10%	89%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	95	618	203
LT Vol	67	555	0
Through Vol	28	0	22
RT Vol	0	63	181
Lane Flow Rate	103	672	221
Geometry Grp	1	1	1
Degree of Util (X)	0.18	0.931	0.331
Departure Headway (Hd)	6.272	4.988	5.402
Convergence, Y/N	Yes	Yes	Yes
Cap	571	725	664
Service Time	4.322	3.011	3.446
HCM Lane V/C Ratio	0.18	0.927	0.333
HCM Control Delay	10.7	40.9	11.1
HCM Lane LOS	B	E	B
HCM 95th-tile Q	0.7	13	1.4

HCM 6th Signalized Intersection Summary

5: Genesee Ave/Starling Dr & Health Center Dr

Existing + Cumulative AM

07/06/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	756	625	1	0	280	20	2	0	2	10	0	358
Future Volume (veh/h)	756	625	1	0	280	20	2	0	2	10	0	358
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.97	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	0	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	501	1129	1	0	304	22	2	0	2	0	0	401
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	0	2	2	2	2	2	2	2	2
Cap, veh/h	734	1540	1	0	403	29	158	29	86	0	241	1715
Arrive On Green	0.41	0.41	0.41	0.00	0.23	0.23	0.13	0.00	0.13	0.00	0.00	0.13
Sat Flow, veh/h	1781	3737	3	0	1723	125	441	223	664	0	1870	3170
Grp Volume(v), veh/h	501	565	565	0	0	326	4	0	0	0	0	401
Grp Sat Flow(s), veh/h/ln	1781	1870	1870	0	0	1847	1329	0	0	0	1870	1585
Q Serve(g_s), s	12.3	13.6	13.6	0.0	0.0	8.7	0.0	0.0	0.0	0.0	0.0	3.5
Cycle Q Clear(g_c), s	12.3	13.6	13.6	0.0	0.0	8.7	0.1	0.0	0.0	0.0	0.0	3.5
Prop In Lane	1.00		0.00	0.00		0.07	0.50		0.50	0.00		1.00
Lane Grp Cap(c), veh/h	734	771	771	0	0	432	273	0	0	0	241	1715
V/C Ratio(X)	0.68	0.73	0.73	0.00	0.00	0.76	0.01	0.00	0.00	0.00	0.00	0.23
Avail Cap(c_a), veh/h	869	913	912	0	0	815	535	0	0	0	649	2407
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	12.8	13.2	13.2	0.0	0.0	19.0	20.3	0.0	0.0	0.0	0.0	6.4
Incr Delay (d2), s/veh	1.7	2.5	2.5	0.0	0.0	2.7	0.0	0.0	0.0	0.0	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	5.3	5.2	0.0	0.0	3.7	0.0	0.0	0.0	0.0	0.0	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.6	15.7	15.7	0.0	0.0	21.7	20.3	0.0	0.0	0.0	0.0	6.5
LnGrp LOS	B	B	B	A	A	C	C	A	A	A	A	A
Approach Vol, veh/h	1631			326			4			401		
Approach Delay, s/veh	15.4			21.7			20.3			6.5		
Approach LOS	B			C			C			A		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	26.0			10.9			16.5			10.9		
Change Period (Y+Rc), s	4.0			4.0			4.0			4.0		
Max Green Setting (Gmax), s	26.0			18.5			23.5			18.5		
Max Q Clear Time (g_c+I1), s	15.6			5.5			10.7			2.1		
Green Ext Time (p_c), s	6.4			1.3			1.5			0.0		

Intersection Summary

HCM 6th Ctrl Delay 14.7

HCM 6th LOS B

Notes

User approved volume balancing among the lanes for turning movement.

HCM 6th Signalized Intersection Summary 6: Cardinal Rd/SR-163 NB Ramps & Genesee Ave

Existing + Cumulative AM

07/06/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↑↑		↰	↑↑	↰		↰				↰
Traffic Volume (veh/h)	516	1392	312	52	359	358	226	214	21	0	0	334
Future Volume (veh/h)	516	1392	312	52	359	358	226	214	21	0	0	334
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	0	0	1870
Adj Flow Rate, veh/h	561	1513	339	57	390	389	246	233	23	0	0	363
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	0	0	2
Cap, veh/h	650	1664	361	188	1790	798	308	321	32	0	0	0
Arrive On Green	0.19	0.57	0.57	0.11	0.50	0.50	0.18	0.18	0.18	0.00	0.00	0.00
Sat Flow, veh/h	3456	2902	630	1781	3554	1585	1690	1760	175		0	
Grp Volume(v), veh/h	561	908	944	57	390	389	260	0	242		0.0	
Grp Sat Flow(s),veh/h/ln	1728	1777	1756	1781	1777	1585	1786	0	1839			
Q Serve(g_s), s	19.1	54.2	60.3	3.6	7.4	19.6	16.9	0.0	15.1			
Cycle Q Clear(g_c), s	19.1	54.2	60.3	3.6	7.4	19.6	16.9	0.0	15.1			
Prop In Lane	1.00		0.36	1.00		1.00	0.95		0.10			
Lane Grp Cap(c), veh/h	650	1019	1006	188	1790	798	325	0	335			
V/C Ratio(X)	0.86	0.89	0.94	0.30	0.22	0.49	0.80	0.00	0.72			
Avail Cap(c_a), veh/h	953	1041	1029	220	1790	798	559	0	575			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	47.8	22.6	23.9	50.2	16.8	19.8	47.5	0.0	46.8			
Incr Delay (d2), s/veh	5.7	9.7	15.3	0.9	0.1	0.5	4.5	0.0	2.9			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	8.7	24.1	27.8	1.7	3.1	7.3	7.9	0.0	7.2			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.5	32.3	39.2	51.1	16.9	20.3	52.1	0.0	49.7			
LnGrp LOS	D	C	D	D	B	C	D	A	D			
Approach Vol, veh/h	2413			836			502					
Approach Delay, s/veh	39.9			20.8			50.9					
Approach LOS	D			C			D					
Timer - Assigned Phs	1	2			5	6		8				
Phs Duration (G+Y+Rc), s	18.3	75.9			27.6	66.7		27.2				
Change Period (Y+Rc), s	5.5	* 6.3			* 4.7	5.5		5.1				
Max Green Setting (Gmax), s	15.0	* 71			* 34	53.5		38.0				
Max Q Clear Time (g_c+I), s	15.6	62.3			21.1	21.6		18.9				
Green Ext Time (p_c), s	0.1	7.3			1.7	4.4		2.9				

Intersection Summary

HCM 6th Ctrl Delay	37.1
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection						
Int Delay, s/veh	3.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	21	31	279	6	21	114
Future Vol, veh/h	21	31	279	6	21	114
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	45	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	23	34	303	7	23	124

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	310	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.12	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.218	-	-
Pot Cap-1 Maneuver	1250	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1250	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	3.2	0	11.4
HCM LOS	B		

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1250	-	-	-	710
HCM Lane V/C Ratio	0.018	-	-	-	0.207
HCM Control Delay (s)	7.9	-	-	-	11.4
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.8

HCM 6th Signalized Intersection Summary

2: Health Center Dr & Vista Hill Ave

Existing + Cumulative PM

07/06/2022

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	235	87	116	39	55	344
Future Volume (veh/h)	235	87	116	39	55	344
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	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	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	255	95	126	42	60	374
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	334	124	385	128	89	862
Arrive On Green	0.27	0.27	0.29	0.29	0.05	0.46
Sat Flow, veh/h	1252	467	1336	445	1781	1870
Grp Volume(v), veh/h	351	0	0	168	60	374
Grp Sat Flow(s),veh/h/ln	1724	0	0	1781	1781	1870
Q Serve(g_s), s	6.7	0.0	0.0	2.7	1.2	4.8
Cycle Q Clear(g_c), s	6.7	0.0	0.0	2.7	1.2	4.8
Prop In Lane	0.73	0.27		0.25	1.00	
Lane Grp Cap(c), veh/h	460	0	0	513	89	862
V/C Ratio(X)	0.76	0.00	0.00	0.33	0.67	0.43
Avail Cap(c_a), veh/h	1828	0	0	1343	526	2192
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.1	0.0	0.0	10.1	16.8	6.5
Incr Delay (d2), s/veh	2.7	0.0	0.0	0.4	8.4	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	2.3	0.0	0.0	0.8	0.6	1.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	14.8	0.0	0.0	10.4	25.2	6.9
LnGrp LOS	B	A	A	B	C	A
Approach Vol, veh/h	351		168			434
Approach Delay, s/veh	14.8		10.4			9.4
Approach LOS	B		B			A
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	6.2	15.2			21.4	14.5
Change Period (Y+Rc), s	4.4	4.9			4.9	4.9
Max Green Setting (Gmax), s	10.6	27.1			42.1	38.1
Max Q Clear Time (g_c+I1), s	3.2	4.7			6.8	8.7
Green Ext Time (p_c), s	0.1	0.9			2.5	1.1
Intersection Summary						
HCM 6th Ctrl Delay			11.6			
HCM 6th LOS			B			

Notes

User approved volume balancing among the lanes for turning movement.

HCM 6th Signalized Intersection Summary

3: Meadow Lark Dr & Vista Hill Ave

Existing + Cumulative PM

07/06/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Volume (veh/h)	22	2	46	0	0	0	28	81	0	0	321	301
Future Volume (veh/h)	22	2	46	0	0	0	28	81	0	0	321	301
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		1.00	1.00		1.00	0.99		1.00	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	24	2	50	0	0	0	30	88	0	0	349	327
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	218	3	86	0	159	0	496	1082	0	0	507	475
Arrive On Green	0.09	0.09	0.09	0.00	0.00	0.00	0.58	0.58	0.00	0.00	0.58	0.58
Sat Flow, veh/h	483	40	1005	0	1870	0	757	1870	0	0	876	820
Grp Volume(v), veh/h	76	0	0	0	0	0	30	88	0	0	0	676
Grp Sat Flow(s), veh/h/ln	1528	0	0	0	1870	0	757	1870	0	0	0	1696
Q Serve(g_s), s	1.3	0.0	0.0	0.0	0.0	0.0	0.8	0.6	0.0	0.0	0.0	7.5
Cycle Q Clear(g_c), s	1.3	0.0	0.0	0.0	0.0	0.0	8.2	0.6	0.0	0.0	0.0	7.5
Prop In Lane	0.32		0.66	0.00		0.00	1.00		0.00	0.00		0.48
Lane Grp Cap(c), veh/h	307	0	0	0	159	0	496	1082	0	0	0	981
V/C Ratio(X)	0.25	0.00	0.00	0.00	0.00	0.00	0.06	0.08	0.00	0.00	0.00	0.69
Avail Cap(c_a), veh/h	1210	0	0	0	1265	0	988	2299	0	0	0	2084
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	11.8	0.0	0.0	0.0	0.0	0.0	6.8	2.5	0.0	0.0	0.0	4.0
Incr Delay (d2), s/veh	0.4	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.2	0.0	0.0	0.0	0.0	0.0	6.9	2.5	0.0	0.0	0.0	4.8
LnGrp LOS	B	A	A	A	A	A	A	A	A	A	A	A
Approach Vol, veh/h		76			0			118			676	
Approach Delay, s/veh		12.2			0.0			3.6			4.8	
Approach LOS		B						A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		20.0		6.8		20.0		6.8				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		32.9		18.1		32.9		18.1				
Max Q Clear Time (g_c+I1), s		10.2		3.3		9.5		0.0				
Green Ext Time (p_c), s		0.6		0.3		5.4		0.0				
Intersection Summary												
HCM 6th Ctrl Delay				5.3								
HCM 6th LOS				A								

Intersection

Intersection Delay, s/veh 9.2

Intersection LOS A

Movement EBL EBR NBL NBT SBT SBR

Lane Configurations 

Traffic Vol, veh/h 69 74 57 16 32 318

Future Vol, veh/h 69 74 57 16 32 318

Peak Hour Factor 0.92 0.92 0.92 0.92 0.92 0.92

Heavy Vehicles, % 2 2 2 2 2 2

Mvmt Flow 75 80 62 17 35 346

Number of Lanes 1 0 0 1 1 0

Approach EB NB SB

Opposing Approach SB NB

Opposing Lanes 0 1 1

Conflicting Approach Left SB EB

Conflicting Lanes Left 1 1 0

Conflicting Approach Right NB EB

Conflicting Lanes Right 1 0 1

HCM Control Delay 8.9 8.4 9.5

HCM LOS A A A

Lane NBLn1 EBLn1 SBLn1

Vol Left, % 78% 48% 0%

Vol Thru, % 22% 0% 9%

Vol Right, % 0% 52% 91%

Sign Control Stop Stop Stop

Traffic Vol by Lane 73 143 350

LT Vol 57 69 0

Through Vol 16 0 32

RT Vol 0 74 318

Lane Flow Rate 79 155 380

Geometry Grp 1 1 1

Degree of Util (X) 0.107 0.201 0.408

Departure Headway (Hd) 4.834 4.66 3.863

Convergence, Y/N Yes Yes Yes

Cap 741 769 932

Service Time 2.863 2.695 1.881

HCM Lane V/C Ratio 0.107 0.202 0.408

HCM Control Delay 8.4 8.9 9.5

HCM Lane LOS A A A

HCM 95th-tile Q 0.4 0.7 2

HCM 6th Signalized Intersection Summary

5: Genesee Ave/Starling Dr & Health Center Dr

Existing + Cumulative PM

07/06/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	235	205	3	0	456	10	0	0	0	8	0	746
Future Volume (veh/h)	235	205	3	0	456	10	0	0	0	8	0	746
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	0	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	160	356	3	0	496	11	0	0	0	0	0	821
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	0	2	2	2	2	2	2	2	2
Cap, veh/h	328	683	6	0	603	13	0	497	0	0	497	1426
Arrive On Green	0.18	0.18	0.18	0.00	0.33	0.33	0.00	0.00	0.00	0.00	0.00	0.27
Sat Flow, veh/h	1781	3704	31	0	1823	40	0	1870	0	0	1870	3170
Grp Volume(v), veh/h	160	180	179	0	0	507	0	0	0	0	0	821
Grp Sat Flow(s), veh/h/ln	1781	1870	1864	0	0	1863	0	1870	0	0	1870	1585
Q Serve(g_s), s	4.4	4.7	4.8	0.0	0.0	13.7	0.0	0.0	0.0	0.0	0.0	10.5
Cycle Q Clear(g_c), s	4.4	4.7	4.8	0.0	0.0	13.7	0.0	0.0	0.0	0.0	0.0	10.5
Prop In Lane	1.00		0.02	0.00		0.02	0.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h	328	345	344	0	0	616	0	497	0	0	497	1426
V/C Ratio(X)	0.49	0.52	0.52	0.00	0.00	0.82	0.00	0.00	0.00	0.00	0.00	0.58
Avail Cap(c_a), veh/h	605	636	633	0	0	878	0	636	0	0	636	1662
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	20.0	20.1	20.1	0.0	0.0	16.8	0.0	0.0	0.0	0.0	0.0	11.2
Incr Delay (d2), s/veh	1.1	1.2	1.2	0.0	0.0	4.3	0.0	0.0	0.0	0.0	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	2.0	2.0	0.0	0.0	5.8	0.0	0.0	0.0	0.0	0.0	4.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.1	21.4	21.4	0.0	0.0	21.2	0.0	0.0	0.0	0.0	0.0	11.5
LnGrp LOS	C	C	C	A	A	C	A	A	A	A	A	B
Approach Vol, veh/h	519			507			0			821		
Approach Delay, s/veh	21.3			21.2			0.0			11.5		
Approach LOS	C			C						B		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	14.1			18.5			22.1			18.5		
Change Period (Y+Rc), s	4.0			4.0			4.0			4.0		
Max Green Setting (Gmax), s	18.6			18.6			25.8			18.6		
Max Q Clear Time (g_c+I1), s	6.8			12.5			15.7			0.0		
Green Ext Time (p_c), s	2.0			2.0			2.3			0.0		

Intersection Summary

HCM 6th Ctrl Delay 16.9

HCM 6th LOS B

Notes

User approved volume balancing among the lanes for turning movement.

HCM 6th Signalized Intersection Summary

6: Cardinal Rd/SR-163 NB Ramps & Genesee Ave

Existing + Cumulative PM

07/06/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↱	↑↑		↰	↑↑	↰		↰↱				↰↱
Traffic Volume (veh/h)	510	452	319	27	503	633	209	147	24	0	0	349
Future Volume (veh/h)	510	452	319	27	503	633	209	147	24	0	0	349
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	0	0	1870
Adj Flow Rate, veh/h	554	491	347	29	547	688	227	160	26	0	0	379
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	0	0	2
Cap, veh/h	675	628	443	437	1378	615	370	326	53	0	0	0
Arrive On Green	0.20	0.32	0.32	0.25	0.39	0.39	0.21	0.21	0.21	0.00	0.00	0.00
Sat Flow, veh/h	3456	1988	1402	1781	3554	1585	1781	1569	255		0	
Grp Volume(v), veh/h	554	439	399	29	547	688	227	0	186		0.0	
Grp Sat Flow(s), veh/h/ln	1728	1777	1613	1781	1777	1585	1781	0	1824			
Q Serve(g_s), s	11.3	16.4	16.5	0.9	8.2	28.4	8.5	0.0	6.6			
Cycle Q Clear(g_c), s	11.3	16.4	16.5	0.9	8.2	28.4	8.5	0.0	6.6			
Prop In Lane	1.00		0.87	1.00		1.00	1.00		0.14			
Lane Grp Cap(c), veh/h	675	561	509	437	1378	615	370	0	379			
V/C Ratio(X)	0.82	0.78	0.78	0.07	0.40	1.12	0.61	0.00	0.49			
Avail Cap(c_a), veh/h	873	754	685	437	1378	615	924	0	946			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	28.2	22.8	22.8	21.2	16.2	22.4	26.3	0.0	25.6			
Incr Delay (d2), s/veh	4.9	3.8	4.3	0.1	0.2	73.8	1.6	0.0	1.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	4.9	7.0	6.5	0.4	3.1	22.2	3.6	0.0	2.8			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.1	26.6	27.1	21.3	16.4	96.2	28.0	0.0	26.6			
LnGrp LOS	C	C	C	C	B	F	C	A	C			
Approach Vol, veh/h	1392			1264			413					
Approach Delay, s/veh	29.3			59.9			27.3					
Approach LOS	C			E			C					
Timer - Assigned Phs	1	2			5	6		8				
Phs Duration (G+Y+Rc), s	23.5	29.4			19.0	33.9		20.3				
Change Period (Y+Rc), s	5.5	* 6.3			* 4.7	5.5		5.1				
Max Green Setting (Gmax), s	15.0	* 31			* 19	28.4		38.0				
Max Q Clear Time (g_c+I), s	12.9	18.5			13.3	30.4		10.5				
Green Ext Time (p_c), s	0.0	4.5			1.1	0.0		2.6				

Intersection Summary

HCM 6th Ctrl Delay 41.7

HCM 6th LOS D

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

APPENDIX F

NEAR-TERM (OPENING YEAR 2027) + PROJECT ANALYSIS CALCULATION SHEETS

Intersection												
Int Delay, s/veh	4.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	219	442	12	4	117	13	4	0	1	42	1	70
Future Vol, veh/h	219	442	12	4	117	13	4	0	1	42	1	70
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	45	-	0	0	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	238	480	13	4	127	14	4	0	1	46	1	76
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	141	0	0	493	0	0	1137	1105	480	1105	1111	134
Stage 1	-	-	-	-	-	-	956	956	-	142	142	-
Stage 2	-	-	-	-	-	-	181	149	-	963	969	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1442	-	-	1071	-	-	179	211	586	188	209	915
Stage 1	-	-	-	-	-	-	310	336	-	861	779	-
Stage 2	-	-	-	-	-	-	821	774	-	307	332	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1442	-	-	1071	-	-	142	176	586	163	174	915
Mov Cap-2 Maneuver	-	-	-	-	-	-	142	176	-	163	174	-
Stage 1	-	-	-	-	-	-	259	281	-	719	776	-
Stage 2	-	-	-	-	-	-	749	771	-	256	277	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	2.6			0.3			27.2			22.1		
HCM LOS							D			C		
Minor Lane/Major Mvmt	NBLn1		NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1		
Capacity (veh/h)	142		586	1442	-	-	1071	-	-	332		
HCM Lane V/C Ratio	0.031		0.002	0.165	-	-	0.004	-	-	0.37		
HCM Control Delay (s)	31.2		11.2	8	-	-	8.4	-	-	22.1		
HCM Lane LOS	D		B	A	-	-	A	-	-	C		
HCM 95th %tile Q(veh)	0.1		0	0.6	-	-	0	-	-	1.7		

HCM 6th Signalized Intersection Summary

2: Health Center Dr & Vista Hill Ave

Existing + Cumulative + Project AM

10/21/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	R	T	T	T	T
Traffic Volume (veh/h)	130	84	399	215	152	150
Future Volume (veh/h)	130	84	399	215	152	150
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.99	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	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	141	91	434	234	165	163
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	177	115	519	280	212	1222
Arrive On Green	0.17	0.17	0.46	0.46	0.12	0.65
Sat Flow, veh/h	1028	664	1138	614	1781	1870
Grp Volume(v), veh/h	233	0	0	668	165	163
Grp Sat Flow(s),veh/h/ln	1699	0	0	1752	1781	1870
Q Serve(g_s), s	7.4	0.0	0.0	18.9	5.1	1.9
Cycle Q Clear(g_c), s	7.4	0.0	0.0	18.9	5.1	1.9
Prop In Lane	0.61	0.39		0.35	1.00	
Lane Grp Cap(c), veh/h	293	0	0	799	212	1222
V/C Ratio(X)	0.79	0.00	0.00	0.84	0.78	0.13
Avail Cap(c_a), veh/h	697	0	0	1260	386	1897
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.3	0.0	0.0	13.5	24.1	3.7
Incr Delay (d2), s/veh	4.9	0.0	0.0	2.9	6.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	0.0	0.0	6.7	2.3	0.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	27.2	0.0	0.0	16.4	30.2	3.8
LnGrp LOS	C	A	A	B	C	A
Approach Vol, veh/h	233		668			328
Approach Delay, s/veh	27.2		16.4			17.0
Approach LOS	C		B			B
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	11.1	30.6			41.7	14.6
Change Period (Y+Rc), s	4.4	4.9			4.9	4.9
Max Green Setting (Gmax), s	12.2	40.5			57.1	23.1
Max Q Clear Time (g_c+I1), s	7.1	20.9			3.9	9.4
Green Ext Time (p_c), s	0.2	4.8			1.0	0.6

Intersection Summary

HCM 6th Ctrl Delay	18.6
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

HCM 6th Signalized Intersection Summary

3: Meadow Lark Dr & Vista Hill Ave

Existing + Cumulative + Project AM

10/21/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔			↔	
Traffic Volume (veh/h)	284	2	48	1	7	0	49	569	2	2	171	107
Future Volume (veh/h)	284	2	48	1	7	0	49	569	2	2	171	107
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.98		0.97	0.99		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	309	2	52	1	8	0	53	618	2	2	186	116
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	564	3	66	125	570	0	705	830	3	95	473	293
Arrive On Green	0.32	0.32	0.32	0.32	0.32	0.00	0.45	0.45	0.45	0.45	0.45	0.45
Sat Flow, veh/h	1221	8	206	66	1782	0	1056	1863	6	2	1062	657
Grp Volume(v), veh/h	363	0	0	9	0	0	53	0	620	304	0	0
Grp Sat Flow(s),veh/h/ln	1435	0	0	1848	0	0	1056	0	1869	1721	0	0
Q Serve(g_s), s	8.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.6	0.0	0.0	0.0
Cycle Q Clear(g_c), s	8.8	0.0	0.0	0.1	0.0	0.0	0.8	0.0	10.6	4.6	0.0	0.0
Prop In Lane	0.85		0.14	0.11		0.00	1.00		0.00	0.01		0.38
Lane Grp Cap(c), veh/h	633	0	0	696	0	0	705	0	832	861	0	0
V/C Ratio(X)	0.57	0.00	0.00	0.01	0.00	0.00	0.08	0.00	0.74	0.35	0.00	0.00
Avail Cap(c_a), veh/h	977	0	0	1127	0	0	1047	0	1437	1415	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	11.9	0.0	0.0	8.9	0.0	0.0	6.1	0.0	8.8	7.2	0.0	0.0
Incr Delay (d2), s/veh	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	0.0	0.0	0.0	0.0	0.0	0.2	0.0	3.1	1.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.7	0.0	0.0	8.9	0.0	0.0	6.2	0.0	10.2	7.4	0.0	0.0
LnGrp LOS	B	A	A	A	A	A	A	A	B	A	A	A
Approach Vol, veh/h	363			9			673		304			
Approach Delay, s/veh	12.7			8.9			9.9		7.4			
Approach LOS	B			A			A		A			
Timer - Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	21.6		16.8		21.6		16.8					
Change Period (Y+Rc), s	4.5		4.5		4.5		4.5					
Max Green Setting (Gmax), s	29.5		21.5		29.5		21.5					
Max Q Clear Time (g_c+I1), s	12.6		10.8		6.6		2.1					
Green Ext Time (p_c), s	4.2		1.6		1.9		0.0					
Intersection Summary												
HCM 6th Ctrl Delay			10.1									
HCM 6th LOS			B									

Intersection

Intersection Delay, s/veh 34.6

Intersection LOS D

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	569	63	67	28	23	186
Future Vol, veh/h	569	63	67	28	23	186
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	618	68	73	30	25	202
Number of Lanes	1	0	0	1	1	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left SB		EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right NB			EB
Conflicting Lanes Right	1	0	1
HCM Control Delay	45.9	10.8	11.4
HCM LOS	E	B	B

Lane	NBLn1	EBLn1	SBLn1
Vol Left, %	71%	90%	0%
Vol Thru, %	29%	0%	11%
Vol Right, %	0%	10%	89%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	95	632	209
LT Vol	67	569	0
Through Vol	28	0	23
RT Vol	0	63	186
Lane Flow Rate	103	687	227
Geometry Grp	1	1	1
Degree of Util (X)	0.182	0.957	0.344
Departure Headway (Hd)	6.341	5.017	5.456
Convergence, Y/N	Yes	Yes	Yes
Cap	565	721	657
Service Time	4.394	3.04	3.503
HCM Lane V/C Ratio	0.182	0.953	0.346
HCM Control Delay	10.8	45.9	11.4
HCM Lane LOS	B	E	B
HCM 95th-tile Q	0.7	14.2	1.5

HCM 6th Signalized Intersection Summary

5: Genesee Ave/Starling Dr & Health Center Dr

Existing + Cumulative + Project AM

10/21/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	771	639	1	0	285	20	2	0	2	10	0	363
Future Volume (veh/h)	771	639	1	0	285	20	2	0	2	10	0	363
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.97	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	0	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	511	1152	1	0	310	22	2	0	2	0	0	407
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	0	2	2	2	2	2	2	2	2
Cap, veh/h	736	1545	1	0	407	29	157	28	86	0	242	1720
Arrive On Green	0.41	0.41	0.41	0.00	0.24	0.24	0.13	0.00	0.13	0.00	0.00	0.13
Sat Flow, veh/h	1781	3737	3	0	1725	122	442	220	662	0	1870	3170
Grp Volume(v), veh/h	511	577	576	0	0	332	4	0	0	0	0	407
Grp Sat Flow(s),veh/h/ln	1781	1870	1870	0	0	1848	1324	0	0	0	1870	1585
Q Serve(g_s), s	12.8	14.2	14.2	0.0	0.0	9.1	0.0	0.0	0.0	0.0	0.0	3.7
Cycle Q Clear(g_c), s	12.8	14.2	14.2	0.0	0.0	9.1	0.1	0.0	0.0	0.0	0.0	3.7
Prop In Lane	1.00		0.00	0.00		0.07	0.50		0.50	0.00		1.00
Lane Grp Cap(c), veh/h	736	773	773	0	0	436	271	0	0	0	242	1720
V/C Ratio(X)	0.69	0.75	0.75	0.00	0.00	0.76	0.01	0.00	0.00	0.00	0.00	0.24
Avail Cap(c_a), veh/h	855	898	897	0	0	801	524	0	0	0	639	2393
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	13.1	13.5	13.5	0.0	0.0	19.3	20.6	0.0	0.0	0.0	0.0	6.5
Incr Delay (d2), s/veh	2.0	2.9	2.9	0.0	0.0	2.8	0.0	0.0	0.0	0.0	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.7	5.6	5.6	0.0	0.0	3.8	0.0	0.0	0.0	0.0	0.0	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.1	16.4	16.4	0.0	0.0	22.1	20.6	0.0	0.0	0.0	0.0	6.6
LnGrp LOS	B	B	B	A	A	C	C	A	A	A	A	A
Approach Vol, veh/h	1664			332			4			407		
Approach Delay, s/veh	16.0			22.1			20.6			6.6		
Approach LOS	B			C			C			A		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	26.4			11.0			16.8			11.0		
Change Period (Y+Rc), s	4.0			4.0			4.0			4.0		
Max Green Setting (Gmax), s	26.0			18.5			23.5			18.5		
Max Q Clear Time (g_c+I1), s	16.2			5.7			11.1			2.1		
Green Ext Time (p_c), s	6.2			1.4			1.6			0.0		

Intersection Summary

HCM 6th Ctrl Delay 15.2

HCM 6th LOS B

Notes

User approved volume balancing among the lanes for turning movement.

HCM 6th Signalized Intersection Summary

6: Cardinal Rd/SR-163 NB Ramps & Genesee Ave

Existing + Cumulative + Project AM

10/21/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↱	↑↑		↰	↑↑	↱		↰↱				↰↱
Traffic Volume (veh/h)	516	1420	312	52	364	363	226	214	22	0	0	334
Future Volume (veh/h)	516	1420	312	52	364	363	226	214	22	0	0	334
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	0	0	1870
Adj Flow Rate, veh/h	561	1543	339	57	396	395	246	233	24	0	0	363
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	0	0	2
Cap, veh/h	650	1675	356	187	1793	800	307	320	33	0	0	0
Arrive On Green	0.19	0.57	0.57	0.10	0.50	0.50	0.18	0.18	0.18	0.00	0.00	0.00
Sat Flow, veh/h	3456	2915	620	1781	3554	1585	1686	1755	182		0	
Grp Volume(v), veh/h	561	921	961	57	396	395	261	0	242		0.0	
Grp Sat Flow(s), veh/h/ln	1728	1777	1758	1781	1777	1585	1786	0	1837			
Q Serve(g_s), s	19.3	56.0	62.8	3.6	7.6	20.1	17.1	0.0	15.2			
Cycle Q Clear(g_c), s	19.3	56.0	62.8	3.6	7.6	20.1	17.1	0.0	15.2			
Prop In Lane	1.00		0.35	1.00		1.00	0.94		0.10			
Lane Grp Cap(c), veh/h	650	1021	1010	187	1793	800	326	0	335			
V/C Ratio(X)	0.86	0.90	0.95	0.30	0.22	0.49	0.80	0.00	0.72			
Avail Cap(c_a), veh/h	952	1034	1023	218	1793	800	555	0	571			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	48.1	23.0	24.4	50.6	16.9	20.0	47.9	0.0	47.1			
Incr Delay (d2), s/veh	5.7	10.8	17.6	0.9	0.1	0.5	4.6	0.0	3.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	8.8	25.2	29.5	1.7	3.1	7.4	8.0	0.0	7.2			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.8	33.7	42.0	51.5	17.0	20.5	52.5	0.0	50.1			
LnGrp LOS	D	C	D	D	B	C	D	A	D			
Approach Vol, veh/h	2443			848			503					
Approach Delay, s/veh	41.6			20.9			51.3					
Approach LOS	D			C			D					
Timer - Assigned Phs	1	2			5	6		8				
Phs Duration (G+Y+Rc), s	18.3	76.6			27.7	67.2		27.4				
Change Period (Y+Rc), s	5.5	* 6.3			* 4.7	5.5		5.1				
Max Green Setting (Gmax), s	15.0	* 71			* 34	53.3		38.0				
Max Q Clear Time (g_c+I), s	15.6	64.8			21.3	22.1		19.1				
Green Ext Time (p_c), s	0.1	5.5			1.8	4.4		2.9				

Intersection Summary

HCM 6th Ctrl Delay	38.3
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection												
Int Delay, s/veh	4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	21	33	6	2	283	6	14	1	4	21	0	114
Future Vol, veh/h	21	33	6	2	283	6	14	1	4	21	0	114
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	45	-	0	0	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	23	36	7	2	308	7	15	1	4	23	0	124
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	315	0	0	43	0	0	460	401	36	404	405	312
Stage 1	-	-	-	-	-	-	82	82	-	316	316	-
Stage 2	-	-	-	-	-	-	378	319	-	88	89	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1245	-	-	1566	-	-	512	538	1037	557	535	728
Stage 1	-	-	-	-	-	-	926	827	-	695	655	-
Stage 2	-	-	-	-	-	-	644	653	-	920	821	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1245	-	-	1566	-	-	418	528	1037	545	525	728
Mov Cap-2 Maneuver	-	-	-	-	-	-	418	528	-	545	525	-
Stage 1	-	-	-	-	-	-	909	812	-	682	654	-
Stage 2	-	-	-	-	-	-	534	652	-	898	806	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	2.8			0.1			12.7			11.6		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1 NBLn2		EBL	EBT	EBR	WBL	WBT	WBR	SBLn1			
Capacity (veh/h)	418	869	1245	-	-	1566	-	-	692			
HCM Lane V/C Ratio	0.036	0.006	0.018	-	-	0.001	-	-	0.212			
HCM Control Delay (s)	13.9	9.2	7.9	-	-	7.3	-	-	11.6			
HCM Lane LOS	B	A	A	-	-	A	-	-	B			
HCM 95th %tile Q(veh)	0.1	0	0.1	-	-	0	-	-	0.8			

HCM 6th Signalized Intersection Summary 2: Health Center Dr & Vista Hill Ave

Existing + Cumulative + Project PM
10/21/2022

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	253	100	116	47	60	344
Future Volume (veh/h)	253	100	116	47	60	344
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	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	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	275	109	126	51	65	374
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	354	140	350	142	94	840
Arrive On Green	0.29	0.29	0.28	0.28	0.05	0.45
Sat Flow, veh/h	1229	487	1258	509	1781	1870
Grp Volume(v), veh/h	385	0	0	177	65	374
Grp Sat Flow(s),veh/h/ln	1721	0	0	1768	1781	1870
Q Serve(g_s), s	7.6	0.0	0.0	3.0	1.3	5.1
Cycle Q Clear(g_c), s	7.6	0.0	0.0	3.0	1.3	5.1
Prop In Lane	0.71	0.28		0.29	1.00	
Lane Grp Cap(c), veh/h	495	0	0	492	94	840
V/C Ratio(X)	0.78	0.00	0.00	0.36	0.69	0.45
Avail Cap(c_a), veh/h	1808	0	0	1192	555	2065
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.2	0.0	0.0	10.8	17.3	7.1
Incr Delay (d2), s/veh	2.7	0.0	0.0	0.4	8.8	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	2.6	0.0	0.0	1.0	0.7	1.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	14.8	0.0	0.0	11.2	26.2	7.4
LnGrp LOS	B	A	A	B	C	A
Approach Vol, veh/h	385		177			439
Approach Delay, s/veh	14.8		11.2			10.2
Approach LOS	B		B			B
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	6.4	15.3			21.6	15.6
Change Period (Y+Rc), s	4.4	4.9			4.9	4.9
Max Green Setting (Gmax), s	11.6	25.1			41.1	39.1
Max Q Clear Time (g_c+I1), s	3.3	5.0			7.1	9.6
Green Ext Time (p_c), s	0.1	0.9			2.5	1.3
Intersection Summary						
HCM 6th Ctrl Delay			12.2			
HCM 6th LOS			B			
Notes						
User approved volume balancing among the lanes for turning movement.						

HCM 6th Signalized Intersection Summary

3: Meadow Lark Dr & Vista Hill Ave

Existing + Cumulative + Project PM

10/21/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Volume (veh/h)	35	2	46	0	0	0	28	89	0	0	339	332
Future Volume (veh/h)	35	2	46	0	0	0	28	89	0	0	339	332
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.99		1.00	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	38	2	50	0	0	0	30	97	0	0	368	361
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	238	3	79	0	175	0	456	1108	0	0	506	497
Arrive On Green	0.09	0.09	0.09	0.00	0.00	0.00	0.59	0.59	0.00	0.00	0.59	0.59
Sat Flow, veh/h	638	34	839	0	1870	0	721	1870	0	0	855	838
Grp Volume(v), veh/h	90	0	0	0	0	0	30	97	0	0	0	729
Grp Sat Flow(s), veh/h/ln	1510	0	0	0	1870	0	721	1870	0	0	0	1693
Q Serve(g_s), s	1.6	0.0	0.0	0.0	0.0	0.0	0.9	0.6	0.0	0.0	0.0	8.8
Cycle Q Clear(g_c), s	1.6	0.0	0.0	0.0	0.0	0.0	9.7	0.6	0.0	0.0	0.0	8.8
Prop In Lane	0.42		0.56	0.00		0.00	1.00		0.00	0.00		0.50
Lane Grp Cap(c), veh/h	320	0	0	0	175	0	456	1108	0	0	0	1003
V/C Ratio(X)	0.28	0.00	0.00	0.00	0.00	0.00	0.07	0.09	0.00	0.00	0.00	0.73
Avail Cap(c_a), veh/h	1133	0	0	0	1182	0	857	2148	0	0	0	1944
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	12.5	0.0	0.0	0.0	0.0	0.0	7.7	2.5	0.0	0.0	0.0	4.2
Incr Delay (d2), s/veh	0.5	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.0	0.0	0.0	0.0	0.0	0.0	7.7	2.5	0.0	0.0	0.0	5.2
LnGrp LOS	B	A	A	A	A	A	A	A	A	A	A	A
Approach Vol, veh/h		90			0			127			729	
Approach Delay, s/veh		13.0			0.0			3.8			5.2	
Approach LOS		B						A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		21.5		7.2		21.5		7.2				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		32.9		18.1		32.9		18.1				
Max Q Clear Time (g_c+I1), s		11.7		3.6		10.8		0.0				
Green Ext Time (p_c), s		0.6		0.3		5.8		0.0				
Intersection Summary												
HCM 6th Ctrl Delay				5.8								
HCM 6th LOS				A								

Intersection

Intersection Delay, s/veh 9.5

Intersection LOS A

Movement EBL EBR NBL NBT SBT SBR

Lane Configurations 

Traffic Vol, veh/h 76 74 57 17 33 335

Future Vol, veh/h 76 74 57 17 33 335

Peak Hour Factor 0.92 0.92 0.92 0.92 0.92 0.92

Heavy Vehicles, % 2 2 2 2 2 2

Mvmt Flow 83 80 62 18 36 364

Number of Lanes 1 0 0 1 1 0

Approach EB NB SB

Opposing Approach SB NB

Opposing Lanes 0 1 1

Conflicting Approach Left SB EB

Conflicting Lanes Left 1 1 0

Conflicting Approach Right NB EB

Conflicting Lanes Right 1 0 1

HCM Control Delay 9.1 8.5 9.8

HCM LOS A A A

Lane NBLn1 EBLn1 SBLn1

Vol Left, % 77% 51% 0%

Vol Thru, % 23% 0% 9%

Vol Right, % 0% 49% 91%

Sign Control Stop Stop Stop

Traffic Vol by Lane 74 150 368

LT Vol 57 76 0

Through Vol 17 0 33

RT Vol 0 74 335

Lane Flow Rate 80 163 400

Geometry Grp 1 1 1

Degree of Util (X) 0.109 0.214 0.432

Departure Headway (Hd) 4.878 4.724 3.888

Convergence, Y/N Yes Yes Yes

Cap 734 758 928

Service Time 2.911 2.762 1.908

HCM Lane V/C Ratio 0.109 0.215 0.431

HCM Control Delay 8.5 9.1 9.8

HCM Lane LOS A A A

HCM 95th-tile Q 0.4 0.8 2.2

HCM 6th Signalized Intersection Summary

5: Genesee Ave/Starling Dr & Health Center Dr

Existing + Cumulative + Project PM

10/21/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	243	212	3	0	473	10	0	0	0	8	0	764
Future Volume (veh/h)	243	212	3	0	473	10	0	0	0	8	0	764
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	0	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	166	368	3	0	514	11	0	0	0	0	0	840
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	0	2	2	2	2	2	2	2	2
Cap, veh/h	320	666	5	0	616	13	0	502	0	0	502	1422
Arrive On Green	0.18	0.18	0.18	0.00	0.34	0.34	0.00	0.00	0.00	0.00	0.00	0.27
Sat Flow, veh/h	1781	3705	30	0	1824	39	0	1870	0	0	1870	3170
Grp Volume(v), veh/h	166	186	185	0	0	525	0	0	0	0	0	840
Grp Sat Flow(s), veh/h/ln	1781	1870	1865	0	0	1863	0	1870	0	0	1870	1585
Q Serve(g_s), s	4.7	5.1	5.1	0.0	0.0	14.6	0.0	0.0	0.0	0.0	0.0	11.2
Cycle Q Clear(g_c), s	4.7	5.1	5.1	0.0	0.0	14.6	0.0	0.0	0.0	0.0	0.0	11.2
Prop In Lane	1.00		0.02	0.00		0.02	0.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h	320	336	335	0	0	629	0	502	0	0	502	1422
V/C Ratio(X)	0.52	0.55	0.55	0.00	0.00	0.83	0.00	0.00	0.00	0.00	0.00	0.59
Avail Cap(c_a), veh/h	590	620	618	0	0	857	0	620	0	0	620	1621
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	20.8	21.0	21.0	0.0	0.0	17.1	0.0	0.0	0.0	0.0	0.0	11.6
Incr Delay (d2), s/veh	1.3	1.4	1.4	0.0	0.0	5.3	0.0	0.0	0.0	0.0	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	2.2	2.2	0.0	0.0	6.4	0.0	0.0	0.0	0.0	0.0	5.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.1	22.4	22.4	0.0	0.0	22.4	0.0	0.0	0.0	0.0	0.0	12.1
LnGrp LOS	C	C	C	A	A	C	A	A	A	A	A	B
Approach Vol, veh/h	537			525			0			840		
Approach Delay, s/veh	22.3			22.4			0.0			12.1		
Approach LOS	C			C						B		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	14.1			19.1			23.0			19.1		
Change Period (Y+Rc), s	4.0			4.0			4.0			4.0		
Max Green Setting (Gmax), s	18.6			18.6			25.8			18.6		
Max Q Clear Time (g_c+I1), s	7.1			13.2			16.6			0.0		
Green Ext Time (p_c), s	2.1			1.9			2.3			0.0		

Intersection Summary

HCM 6th Ctrl Delay 17.8

HCM 6th LOS B

Notes

User approved volume balancing among the lanes for turning movement.

HCM 6th Signalized Intersection Summary

6: Cardinal Rd/SR-163 NB Ramps & Genesee Ave

Existing + Cumulative + Project PM

10/21/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↱	↑↑		↰	↑↑	↱		↰↱				↰↱
Traffic Volume (veh/h)	510	466	319	29	520	650	209	147	25	0	0	349
Future Volume (veh/h)	510	466	319	29	520	650	209	147	25	0	0	349
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	0	0	1870
Adj Flow Rate, veh/h	554	507	347	32	565	707	227	160	27	0	0	379
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	0	0	2
Cap, veh/h	678	646	441	426	1369	611	372	326	55	0	0	0
Arrive On Green	0.20	0.32	0.32	0.24	0.39	0.39	0.21	0.21	0.21	0.00	0.00	0.00
Sat Flow, veh/h	3456	2016	1378	1781	3554	1585	1781	1559	263		0	
Grp Volume(v), veh/h	554	447	407	32	565	707	227	0	187		0.0	
Grp Sat Flow(s), veh/h/ln	1728	1777	1617	1781	1777	1585	1781	0	1823			
Q Serve(g_s), s	11.2	16.6	16.7	1.0	8.5	28.1	8.4	0.0	6.6			
Cycle Q Clear(g_c), s	11.2	16.6	16.7	1.0	8.5	28.1	8.4	0.0	6.6			
Prop In Lane	1.00		0.85	1.00		1.00	1.00		0.14			
Lane Grp Cap(c), veh/h	678	569	518	426	1369	611	372	0	381			
V/C Ratio(X)	0.82	0.78	0.79	0.08	0.41	1.16	0.61	0.00	0.49			
Avail Cap(c_a), veh/h	891	758	690	426	1369	611	928	0	950			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	28.1	22.5	22.5	21.5	16.4	22.4	26.2	0.0	25.4			
Incr Delay (d2), s/veh	4.6	3.9	4.4	0.1	0.2	88.4	1.6	0.0	1.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	4.9	7.1	6.5	0.4	3.3	24.5	3.6	0.0	2.8			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.7	26.4	26.9	21.6	16.6	110.8	27.8	0.0	26.4			
LnGrp LOS	C	C	C	C	B	F	C	A	C			
Approach Vol, veh/h	1408			1304			414					
Approach Delay, s/veh	29.0			67.8			27.2					
Approach LOS	C			E			C					
Timer - Assigned Phs	1	2			5	6		8				
Phs Duration (G+Y+Rc), s	22.9	29.7			19.0	33.6		20.3				
Change Period (Y+Rc), s	5.5	* 6.3			* 4.7	5.5		5.1				
Max Green Setting (Gmax), s	15.0	* 31			* 19	28.1		38.0				
Max Q Clear Time (g_c+I), s	13.0	18.7			13.2	30.1		10.4				
Green Ext Time (p_c), s	0.0	4.6			1.1	0.0		2.6				

Intersection Summary

HCM 6th Ctrl Delay 44.9

HCM 6th LOS D

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

APPENDIX G

ALTERNATIVE ACCESS NEAR-TERM (OPENING YEAR 2025) + PROJECT ANALYSIS CALCULATION SHEETS

Intersection												
Int Delay, s/veh	5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	219	442	37	4	117	13	13	0	1	42	1	70
Future Vol, veh/h	219	442	37	4	117	13	13	0	1	42	1	70
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	45	-	0	0	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	238	480	40	4	127	14	14	0	1	46	1	76

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	141	0	0	520	0	0	1137	1105	480	1119	1138	134
Stage 1	-	-	-	-	-	-	956	956	-	142	142	-
Stage 2	-	-	-	-	-	-	181	149	-	977	996	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1442	-	-	1046	-	-	179	211	586	184	201	915
Stage 1	-	-	-	-	-	-	310	336	-	861	779	-
Stage 2	-	-	-	-	-	-	821	774	-	302	322	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1442	-	-	1046	-	-	142	176	586	160	167	915
Mov Cap-2 Maneuver	-	-	-	-	-	-	142	176	-	160	167	-
Stage 1	-	-	-	-	-	-	259	281	-	719	776	-
Stage 2	-	-	-	-	-	-	749	771	-	252	269	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	2.5			0.3			31.5			22.4		
HCM LOS							D			C		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	142	586	1442	-	-	1046	-	-	328
HCM Lane V/C Ratio	0.1	0.002	0.165	-	-	0.004	-	-	0.374
HCM Control Delay (s)	33.1	11.2	8	-	-	8.5	-	-	22.4
HCM Lane LOS	D	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.3	0	0.6	-	-	0	-	-	1.7

HCM 6th Signalized Intersection Summary

2: Health Center Dr & Vista Hill Ave

Existing + Cumulative + Project AM (Alt Access)

10/21/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	R	T	T	L	T
Traffic Volume (veh/h)	130	84	399	215	152	150
Future Volume (veh/h)	130	84	399	215	152	150
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.99	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	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	141	91	434	234	165	163
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	177	115	519	280	212	1222
Arrive On Green	0.17	0.17	0.46	0.46	0.12	0.65
Sat Flow, veh/h	1028	664	1138	614	1781	1870
Grp Volume(v), veh/h	233	0	0	668	165	163
Grp Sat Flow(s),veh/h/ln	1699	0	0	1752	1781	1870
Q Serve(g_s), s	7.4	0.0	0.0	18.9	5.1	1.9
Cycle Q Clear(g_c), s	7.4	0.0	0.0	18.9	5.1	1.9
Prop In Lane	0.61	0.39		0.35	1.00	
Lane Grp Cap(c), veh/h	293	0	0	799	212	1222
V/C Ratio(X)	0.79	0.00	0.00	0.84	0.78	0.13
Avail Cap(c_a), veh/h	697	0	0	1260	386	1897
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.3	0.0	0.0	13.5	24.1	3.7
Incr Delay (d2), s/veh	4.9	0.0	0.0	2.9	6.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	0.0	0.0	6.7	2.3	0.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	27.2	0.0	0.0	16.4	30.2	3.8
LnGrp LOS	C	A	A	B	C	A
Approach Vol, veh/h	233		668			328
Approach Delay, s/veh	27.2		16.4			17.0
Approach LOS	C		B			B
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	11.1	30.6			41.7	14.6
Change Period (Y+Rc), s	4.4	4.9			4.9	4.9
Max Green Setting (Gmax), s	12.2	40.5			57.1	23.1
Max Q Clear Time (g_c+I1), s	7.1	20.9			3.9	9.4
Green Ext Time (p_c), s	0.2	4.8			1.0	0.6

Intersection Summary

HCM 6th Ctrl Delay	18.6
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

HCM 6th Signalized Intersection Summary

3: Meadow Lark Dr & Vista Hill Ave

Existing + Cumulative + Project AM (Alt Access)

10/21/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔			↔	
Traffic Volume (veh/h)	284	2	48	1	7	0	49	570	2	2	170	107
Future Volume (veh/h)	284	2	48	1	7	0	49	570	2	2	170	107
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.98		0.97	0.99		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	309	2	52	1	8	0	53	620	2	2	185	116
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	564	3	66	125	570	0	706	831	3	95	473	294
Arrive On Green	0.32	0.32	0.32	0.32	0.32	0.00	0.45	0.45	0.45	0.45	0.45	0.45
Sat Flow, veh/h	1221	8	206	66	1782	0	1057	1863	6	2	1060	659
Grp Volume(v), veh/h	363	0	0	9	0	0	53	0	622	303	0	0
Grp Sat Flow(s),veh/h/ln	1435	0	0	1848	0	0	1057	0	1869	1721	0	0
Q Serve(g_s), s	8.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.6	0.0	0.0	0.0
Cycle Q Clear(g_c), s	8.8	0.0	0.0	0.1	0.0	0.0	0.8	0.0	10.6	4.5	0.0	0.0
Prop In Lane	0.85		0.14	0.11		0.00	1.00		0.00	0.01		0.38
Lane Grp Cap(c), veh/h	632	0	0	695	0	0	706	0	833	862	0	0
V/C Ratio(X)	0.57	0.00	0.00	0.01	0.00	0.00	0.08	0.00	0.75	0.35	0.00	0.00
Avail Cap(c_a), veh/h	975	0	0	1125	0	0	1046	0	1435	1412	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	11.9	0.0	0.0	8.9	0.0	0.0	6.1	0.0	8.8	7.2	0.0	0.0
Incr Delay (d2), s/veh	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	0.0	0.0	0.0	0.0	0.0	0.2	0.0	3.1	1.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.7	0.0	0.0	8.9	0.0	0.0	6.2	0.0	10.2	7.4	0.0	0.0
LnGrp LOS	B	A	A	A	A	A	A	A	B	A	A	A
Approach Vol, veh/h	363			9			675		303			
Approach Delay, s/veh	12.7			8.9			9.9		7.4			
Approach LOS	B			A			A		A			
Timer - Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	21.6		16.8		21.6		16.8					
Change Period (Y+Rc), s	4.5		4.5		4.5		4.5					
Max Green Setting (Gmax), s	29.5		21.5		29.5		21.5					
Max Q Clear Time (g_c+I1), s	12.6		10.8		6.5		2.1					
Green Ext Time (p_c), s	4.2		1.6		1.9		0.0					
Intersection Summary												
HCM 6th Ctrl Delay			10.1									
HCM 6th LOS			B									

Intersection

Intersection Delay, s/veh 34.7

Intersection LOS D

Movement EBL EBR NBL NBT SBT SBR

Lane Configurations



Traffic Vol, veh/h 569 63 67 29 22 186

Future Vol, veh/h 569 63 67 29 22 186

Peak Hour Factor 0.92 0.92 0.92 0.92 0.92 0.92

Heavy Vehicles, % 2 2 2 2 2 2

Mvmt Flow 618 68 73 32 24 202

Number of Lanes 1 0 0 1 1 0

Approach EB NB SB

Opposing Approach SB NB

Opposing Lanes 0 1 1

Conflicting Approach Left SB EB

Conflicting Lanes Left 1 1 0

Conflicting Approach Right NB EB

Conflicting Lanes Right 1 0 1

HCM Control Delay 46 10.8 11.3

HCM LOS E B B

Lane NBLn1 EBLn1 SBLn1

Vol Left, % 70% 90% 0%

Vol Thru, % 30% 0% 11%

Vol Right, % 0% 10% 89%

Sign Control Stop Stop Stop

Traffic Vol by Lane 96 632 208

LT Vol 67 569 0

Through Vol 29 0 22

RT Vol 0 63 186

Lane Flow Rate 104 687 226

Geometry Grp 1 1 1

Degree of Util (X) 0.184 0.957 0.343

Departure Headway (Hd) 6.337 5.017 5.456

Convergence, Y/N Yes Yes Yes

Cap 565 721 658

Service Time 4.391 3.042 3.503

HCM Lane V/C Ratio 0.184 0.953 0.343

HCM Control Delay 10.8 46 11.3

HCM Lane LOS B E B

HCM 95th-tile Q 0.7 14.2 1.5

HCM 6th Signalized Intersection Summary Existing + Cumulative + Project AM (Alt Access)
 5: Genesee Ave/Starling Dr & Health Center Dr 10/21/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	771	639	1	0	285	20	2	0	2	10	0	363
Future Volume (veh/h)	771	639	1	0	285	20	2	0	2	10	0	363
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.97	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	0	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	511	1152	1	0	310	22	2	0	2	0	0	407
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	0	2	2	2	2	2	2	2	2
Cap, veh/h	736	1545	1	0	407	29	157	28	86	0	242	1720
Arrive On Green	0.41	0.41	0.41	0.00	0.24	0.24	0.13	0.00	0.13	0.00	0.00	0.13
Sat Flow, veh/h	1781	3737	3	0	1725	122	442	220	662	0	1870	3170
Grp Volume(v), veh/h	511	577	576	0	0	332	4	0	0	0	0	407
Grp Sat Flow(s), veh/h/ln	1781	1870	1870	0	0	1848	1324	0	0	0	1870	1585
Q Serve(g_s), s	12.8	14.2	14.2	0.0	0.0	9.1	0.0	0.0	0.0	0.0	0.0	3.7
Cycle Q Clear(g_c), s	12.8	14.2	14.2	0.0	0.0	9.1	0.1	0.0	0.0	0.0	0.0	3.7
Prop In Lane	1.00		0.00	0.00		0.07	0.50		0.50	0.00		1.00
Lane Grp Cap(c), veh/h	736	773	773	0	0	436	271	0	0	0	242	1720
V/C Ratio(X)	0.69	0.75	0.75	0.00	0.00	0.76	0.01	0.00	0.00	0.00	0.00	0.24
Avail Cap(c_a), veh/h	855	898	897	0	0	801	524	0	0	0	639	2393
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	13.1	13.5	13.5	0.0	0.0	19.3	20.6	0.0	0.0	0.0	0.0	6.5
Incr Delay (d2), s/veh	2.0	2.9	2.9	0.0	0.0	2.8	0.0	0.0	0.0	0.0	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.7	5.6	5.6	0.0	0.0	3.8	0.0	0.0	0.0	0.0	0.0	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.1	16.4	16.4	0.0	0.0	22.1	20.6	0.0	0.0	0.0	0.0	6.6
LnGrp LOS	B	B	B	A	A	C	C	A	A	A	A	A
Approach Vol, veh/h	1664			332			4			407		
Approach Delay, s/veh	16.0			22.1			20.6			6.6		
Approach LOS	B			C			C			A		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	26.4			11.0			16.8			11.0		
Change Period (Y+Rc), s	4.0			4.0			4.0			4.0		
Max Green Setting (Gmax), s	26.0			18.5			23.5			18.5		
Max Q Clear Time (g_c+I1), s	16.2			5.7			11.1			2.1		
Green Ext Time (p_c), s	6.2			1.4			1.6			0.0		

Intersection Summary

HCM 6th Ctrl Delay	15.2
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

HCM 6th Signalized Intersection Summary Existing + Cumulative + Project AM (Alt Access) 6: Cardinal Rd/SR-163 NB Ramps & Genesee Ave

10/21/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↱	↑↑		↰	↑↑	↱		↰↱				↰↱
Traffic Volume (veh/h)	516	1420	312	52	364	363	226	214	22	0	0	334
Future Volume (veh/h)	516	1420	312	52	364	363	226	214	22	0	0	334
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	0	0	1870
Adj Flow Rate, veh/h	561	1543	339	57	396	395	246	233	24	0	0	363
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	0	0	2
Cap, veh/h	650	1675	356	187	1793	800	307	320	33	0	0	0
Arrive On Green	0.19	0.57	0.57	0.10	0.50	0.50	0.18	0.18	0.18	0.00	0.00	0.00
Sat Flow, veh/h	3456	2915	620	1781	3554	1585	1686	1755	182		0	
Grp Volume(v), veh/h	561	921	961	57	396	395	261	0	242		0.0	
Grp Sat Flow(s),veh/h/ln	1728	1777	1758	1781	1777	1585	1786	0	1837			
Q Serve(g_s), s	19.3	56.0	62.8	3.6	7.6	20.1	17.1	0.0	15.2			
Cycle Q Clear(g_c), s	19.3	56.0	62.8	3.6	7.6	20.1	17.1	0.0	15.2			
Prop In Lane	1.00		0.35	1.00		1.00	0.94		0.10			
Lane Grp Cap(c), veh/h	650	1021	1010	187	1793	800	326	0	335			
V/C Ratio(X)	0.86	0.90	0.95	0.30	0.22	0.49	0.80	0.00	0.72			
Avail Cap(c_a), veh/h	952	1034	1023	218	1793	800	555	0	571			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	48.1	23.0	24.4	50.6	16.9	20.0	47.9	0.0	47.1			
Incr Delay (d2), s/veh	5.7	10.8	17.6	0.9	0.1	0.5	4.6	0.0	3.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	8.8	25.2	29.5	1.7	3.1	7.4	8.0	0.0	7.2			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.8	33.7	42.0	51.5	17.0	20.5	52.5	0.0	50.1			
LnGrp LOS	D	C	D	D	B	C	D	A	D			
Approach Vol, veh/h	2443			848			503					
Approach Delay, s/veh	41.6			20.9			51.3					
Approach LOS	D			C			D					
Timer - Assigned Phs	1	2			5	6		8				
Phs Duration (G+Y+Rc), s	18.3	76.6			27.7	67.2		27.4				
Change Period (Y+Rc), s	5.5	* 6.3			* 4.7	5.5		5.1				
Max Green Setting (Gmax), s	15.0	* 71			* 34	53.3		38.0				
Max Q Clear Time (g_c+I), s	15.6	64.8			21.3	22.1		19.1				
Green Ext Time (p_c), s	0.1	5.5			1.8	4.4		2.9				

Intersection Summary

HCM 6th Ctrl Delay 38.3

HCM 6th LOS D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection												
Int Delay, s/veh	4.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	21	33	18	2	283	6	45	1	4	21	0	114
Future Vol, veh/h	21	33	18	2	283	6	45	1	4	21	0	114
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	45	-	0	0	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	23	36	20	2	308	7	49	1	4	23	0	124

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	315	0	0	56	0	0	460	401	36	411	418	312
Stage 1	-	-	-	-	-	-	82	82	-	316	316	-
Stage 2	-	-	-	-	-	-	378	319	-	95	102	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1245	-	-	1549	-	-	512	538	1037	551	526	728
Stage 1	-	-	-	-	-	-	926	827	-	695	655	-
Stage 2	-	-	-	-	-	-	644	653	-	912	811	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1245	-	-	1549	-	-	418	528	1037	539	516	728
Mov Cap-2 Maneuver	-	-	-	-	-	-	418	528	-	539	516	-
Stage 1	-	-	-	-	-	-	909	812	-	682	654	-
Stage 2	-	-	-	-	-	-	534	652	-	890	796	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.3	0.1	14.2	11.6
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	418	869	1245	-	-	1549	-	-	690
HCM Lane V/C Ratio	0.117	0.006	0.018	-	-	0.001	-	-	0.213
HCM Control Delay (s)	14.8	9.2	7.9	-	-	7.3	-	-	11.6
HCM Lane LOS	B	A	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.4	0	0.1	-	-	0	-	-	0.8

HCM 6th Signalized Intersection Summary

2: Health Center Dr & Vista Hill Ave

Existing + Cumulative + Project PM (Alt Access)

10/21/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	R	T	T	T	T
Traffic Volume (veh/h)	253	100	116	47	60	344
Future Volume (veh/h)	253	100	116	47	60	344
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	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	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	275	109	126	51	65	374
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	354	140	350	142	94	840
Arrive On Green	0.29	0.29	0.28	0.28	0.05	0.45
Sat Flow, veh/h	1229	487	1258	509	1781	1870
Grp Volume(v), veh/h	385	0	0	177	65	374
Grp Sat Flow(s),veh/h/ln	1721	0	0	1768	1781	1870
Q Serve(g_s), s	7.6	0.0	0.0	3.0	1.3	5.1
Cycle Q Clear(g_c), s	7.6	0.0	0.0	3.0	1.3	5.1
Prop In Lane	0.71	0.28		0.29	1.00	
Lane Grp Cap(c), veh/h	495	0	0	492	94	840
V/C Ratio(X)	0.78	0.00	0.00	0.36	0.69	0.45
Avail Cap(c_a), veh/h	1808	0	0	1192	555	2065
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.2	0.0	0.0	10.8	17.3	7.1
Incr Delay (d2), s/veh	2.7	0.0	0.0	0.4	8.8	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	2.6	0.0	0.0	1.0	0.7	1.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	14.8	0.0	0.0	11.2	26.2	7.4
LnGrp LOS	B	A	A	B	C	A
Approach Vol, veh/h	385		177			439
Approach Delay, s/veh	14.8		11.2			10.2
Approach LOS	B		B			B
Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	6.4	15.3			21.6	15.6
Change Period (Y+Rc), s	4.4	4.9			4.9	4.9
Max Green Setting (Gmax), s	11.6	25.1			41.1	39.1
Max Q Clear Time (g_c+I1), s	3.3	5.0			7.1	9.6
Green Ext Time (p_c), s	0.1	0.9			2.5	1.3

Intersection Summary

HCM 6th Ctrl Delay	12.2
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

HCM 6th Signalized Intersection Summary

3: Meadow Lark Dr & Vista Hill Ave

Existing + Cumulative + Project PM (Alt Access)

10/21/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
Traffic Volume (veh/h)	35	2	46	0	0	0	28	88	0	0	339	332
Future Volume (veh/h)	35	2	46	0	0	0	28	88	0	0	339	332
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.99		1.00	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	38	2	50	0	0	0	30	96	0	0	368	361
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	238	3	79	0	175	0	456	1108	0	0	506	497
Arrive On Green	0.09	0.09	0.09	0.00	0.00	0.00	0.59	0.59	0.00	0.00	0.59	0.59
Sat Flow, veh/h	638	34	839	0	1870	0	721	1870	0	0	855	838
Grp Volume(v), veh/h	90	0	0	0	0	0	30	96	0	0	0	729
Grp Sat Flow(s), veh/h/ln	1510	0	0	0	1870	0	721	1870	0	0	0	1693
Q Serve(g_s), s	1.6	0.0	0.0	0.0	0.0	0.0	0.9	0.6	0.0	0.0	0.0	8.8
Cycle Q Clear(g_c), s	1.6	0.0	0.0	0.0	0.0	0.0	9.7	0.6	0.0	0.0	0.0	8.8
Prop In Lane	0.42		0.56	0.00		0.00	1.00		0.00	0.00		0.50
Lane Grp Cap(c), veh/h	320	0	0	0	175	0	456	1108	0	0	0	1003
V/C Ratio(X)	0.28	0.00	0.00	0.00	0.00	0.00	0.07	0.09	0.00	0.00	0.00	0.73
Avail Cap(c_a), veh/h	1133	0	0	0	1182	0	857	2148	0	0	0	1944
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	12.5	0.0	0.0	0.0	0.0	0.0	7.7	2.5	0.0	0.0	0.0	4.2
Incr Delay (d2), s/veh	0.5	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.0	0.0	0.0	0.0	0.0	0.0	7.7	2.5	0.0	0.0	0.0	5.2
LnGrp LOS	B	A	A	A	A	A	A	A	A	A	A	A
Approach Vol, veh/h		90			0			126			729	
Approach Delay, s/veh		13.0			0.0			3.8			5.2	
Approach LOS		B						A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		21.5		7.2		21.5		7.2				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		32.9		18.1		32.9		18.1				
Max Q Clear Time (g_c+I1), s		11.7		3.6		10.8		0.0				
Green Ext Time (p_c), s		0.6		0.3		5.8		0.0				

Intersection Summary

HCM 6th Ctrl Delay	5.8
HCM 6th LOS	A

Intersection

Intersection Delay, s/veh 9.5

Intersection LOS A

Movement EBL EBR NBL NBT SBT SBR

Lane Configurations



Traffic Vol, veh/h 76 74 57 16 33 335

Future Vol, veh/h 76 74 57 16 33 335

Peak Hour Factor 0.92 0.92 0.92 0.92 0.92 0.92

Heavy Vehicles, % 2 2 2 2 2 2

Mvmt Flow 83 80 62 17 36 364

Number of Lanes 1 0 0 1 1 0

Approach EB NB SB

Opposing Approach SB NB

Opposing Lanes 0 1 1

Conflicting Approach Left SB EB

Conflicting Lanes Left 1 1 0

Conflicting Approach Right NB EB

Conflicting Lanes Right 1 0 1

HCM Control Delay 9.1 8.5 9.8

HCM LOS A A A

Lane NBLn1 EBLn1 SBLn1

Vol Left, % 78% 51% 0%

Vol Thru, % 22% 0% 9%

Vol Right, % 0% 49% 91%

Sign Control Stop Stop Stop

Traffic Vol by Lane 73 150 368

LT Vol 57 76 0

Through Vol 16 0 33

RT Vol 0 74 335

Lane Flow Rate 79 163 400

Geometry Grp 1 1 1

Degree of Util (X) 0.108 0.214 0.432

Departure Headway (Hd) 4.88 4.722 3.887

Convergence, Y/N Yes Yes Yes

Cap 734 758 928

Service Time 2.913 2.761 1.907

HCM Lane V/C Ratio 0.108 0.215 0.431

HCM Control Delay 8.5 9.1 9.8

HCM Lane LOS A A A

HCM 95th-tile Q 0.4 0.8 2.2

HCM 6th Signalized Intersection Summary Existing + Cumulative + Project PM (Alt Access)
 5: Genesee Ave/Starling Dr & Health Center Dr 10/21/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	243	212	3	0	473	10	0	0	0	8	0	764
Future Volume (veh/h)	243	212	3	0	473	10	0	0	0	8	0	764
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	0	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	166	368	3	0	514	11	0	0	0	0	0	840
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	0	2	2	2	2	2	2	2	2
Cap, veh/h	320	666	5	0	616	13	0	502	0	0	502	1422
Arrive On Green	0.18	0.18	0.18	0.00	0.34	0.34	0.00	0.00	0.00	0.00	0.00	0.27
Sat Flow, veh/h	1781	3705	30	0	1824	39	0	1870	0	0	1870	3170
Grp Volume(v), veh/h	166	186	185	0	0	525	0	0	0	0	0	840
Grp Sat Flow(s), veh/h/ln	1781	1870	1865	0	0	1863	0	1870	0	0	1870	1585
Q Serve(g_s), s	4.7	5.1	5.1	0.0	0.0	14.6	0.0	0.0	0.0	0.0	0.0	11.2
Cycle Q Clear(g_c), s	4.7	5.1	5.1	0.0	0.0	14.6	0.0	0.0	0.0	0.0	0.0	11.2
Prop In Lane	1.00		0.02	0.00		0.02	0.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h	320	336	335	0	0	629	0	502	0	0	502	1422
V/C Ratio(X)	0.52	0.55	0.55	0.00	0.00	0.83	0.00	0.00	0.00	0.00	0.00	0.59
Avail Cap(c_a), veh/h	590	620	618	0	0	857	0	620	0	0	620	1621
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	20.8	21.0	21.0	0.0	0.0	17.1	0.0	0.0	0.0	0.0	0.0	11.6
Incr Delay (d2), s/veh	1.3	1.4	1.4	0.0	0.0	5.3	0.0	0.0	0.0	0.0	0.0	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	1.9	2.2	2.2	0.0	0.0	6.4	0.0	0.0	0.0	0.0	0.0	5.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	22.1	22.4	22.4	0.0	0.0	22.4	0.0	0.0	0.0	0.0	0.0	12.1
LnGrp LOS	C	C	C	A	A	C	A	A	A	A	A	B
Approach Vol, veh/h	537			525			0			840		
Approach Delay, s/veh	22.3			22.4			0.0			12.1		
Approach LOS	C			C						B		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	14.1			19.1			23.0			19.1		
Change Period (Y+Rc), s	4.0			4.0			4.0			4.0		
Max Green Setting (Gmax), s	18.6			18.6			25.8			18.6		
Max Q Clear Time (g_c+I1), s	7.1			13.2			16.6			0.0		
Green Ext Time (p_c), s	2.1			1.9			2.3			0.0		

Intersection Summary

HCM 6th Ctrl Delay	17.8
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

HCM 6th Signalized Intersection Summary Existing + Cumulative + Project PM (Alt Access)

6: Cardinal Rd/SR-163 NB Ramps & Genesee Ave

10/21/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↱	↑↑		↰	↑↑	↰		↰↱				↰↱
Traffic Volume (veh/h)	510	466	319	28	520	650	209	147	25	0	0	349
Future Volume (veh/h)	510	466	319	28	520	650	209	147	25	0	0	349
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	0	0	1870
Adj Flow Rate, veh/h	554	507	347	30	565	707	227	160	27	0	0	379
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	0	0	2
Cap, veh/h	678	646	441	426	1369	611	372	326	55	0	0	0
Arrive On Green	0.20	0.32	0.32	0.24	0.39	0.39	0.21	0.21	0.21	0.00	0.00	0.00
Sat Flow, veh/h	3456	2016	1378	1781	3554	1585	1781	1559	263		0	
Grp Volume(v), veh/h	554	447	407	30	565	707	227	0	187		0.0	
Grp Sat Flow(s), veh/h/ln	1728	1777	1617	1781	1777	1585	1781	0	1823			
Q Serve(g_s), s	11.2	16.6	16.7	1.0	8.5	28.1	8.4	0.0	6.6			
Cycle Q Clear(g_c), s	11.2	16.6	16.7	1.0	8.5	28.1	8.4	0.0	6.6			
Prop In Lane	1.00		0.85	1.00		1.00	1.00		0.14			
Lane Grp Cap(c), veh/h	678	569	518	426	1369	611	372	0	381			
V/C Ratio(X)	0.82	0.78	0.79	0.07	0.41	1.16	0.61	0.00	0.49			
Avail Cap(c_a), veh/h	891	758	690	426	1369	611	928	0	950			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(l)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	28.1	22.5	22.5	21.5	16.4	22.4	26.2	0.0	25.4			
Incr Delay (d2), s/veh	4.6	3.9	4.4	0.1	0.2	88.4	1.6	0.0	1.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	4.9	7.1	6.5	0.4	3.3	24.5	3.6	0.0	2.8			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.7	26.4	26.9	21.5	16.6	110.8	27.8	0.0	26.4			
LnGrp LOS	C	C	C	C	B	F	C	A	C			
Approach Vol, veh/h	1408			1302			414					
Approach Delay, s/veh	29.0			67.9			27.2					
Approach LOS	C			E			C					
Timer - Assigned Phs	1	2			5	6		8				
Phs Duration (G+Y+Rc), s	22.9	29.7			19.0	33.6		20.3				
Change Period (Y+Rc), s	5.5	* 6.3			* 4.7	5.5		5.1				
Max Green Setting (Gmax), s	15.0	* 31			* 19	28.1		38.0				
Max Q Clear Time (g_c+I), s	13.0	18.7			13.2	30.1		10.4				
Green Ext Time (p_c), s	0.0	4.6			1.1	0.0		2.6				

Intersection Summary

HCM 6th Ctrl Delay 45.0

HCM 6th LOS D

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

END OF APPENDICES