



# Jack Northrop Avenue Pedestrian Study

Jack Northrop Ave,  
Hawthorne, CA 90250

May 2026

Prepared For:  
City of Hawthorne

Prepared By:

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## 1. Introduction

The City of Hawthorne (“City”) retained Kimley-Horn and Associates, Inc. (“Kimley-Horn”) to conduct a pedestrian study along Jack Northrop Avenue, an east–west collector street that bisects the SpaceX campus, in response to pedestrian safety concerns related to crossing the roadway. Pedestrian activity across the roadway is driven by employees moving between SpaceX facilities on the north and south sides and from the employee parking Lavender Lot on the south side. Existing marked crossings are limited, and there are no sidewalks on the south side of the roadway. The roadway’s width, traffic volumes, vehicle speeds, proximity to the Union Pacific Railroad (UPRR) rail lines, lack of sidewalk on the south side, and on-street parking create challenging conditions for pedestrians, particularly at uncontrolled or midblock locations.

This study first evaluates existing marked pedestrian crossings along Jack Northrop Avenue, all of which are currently controlled, to determine whether enhancements are recommended. The study then assesses pedestrian demand and roadway conditions to determine whether additional marked crosswalks are warranted at new locations. For potential new marked crosswalks, the study evaluates the need for pedestrian safety enhancements and the need for controlled crossings, consistent with guidance from the California Manual on Uniform Traffic Control Devices (CA MUTCD), Federal Highway Administration (FHWA), and applicable local agency standards. Conceptual-level improvements and planning-level cost estimates are provided. The Project Study area is shown in **Figure 1**.



Figure 1: Project Study Area

## 2. Key Terms

The following section defines key pedestrian crossing terms and traffic control devices referenced throughout this report. The study evaluates existing and potential crossing treatments along Jack Northrop Avenue, including both marked crosswalks and additional traffic control devices. The devices described below, Rectangular Rapid Flashing Beacons (RRFBs), Pedestrian Hybrid Beacons (PHBs), and Midblock Pedestrian Signals (MPS), represent progressively higher levels of traffic control. While each treatment can improve pedestrian safety, their applicability depends on site-specific conditions.

### 2.1 Crosswalk

#### **Crosswalk**

Under California Vehicle Code Section 275, a crosswalk is either<sup>1</sup>:

- (a) The part of a roadway that connects the edges of sidewalks at intersections, or
- (b) Any part of a roadway clearly marked for pedestrian crossing.

A crosswalk does not exist where signs indicate crossing is prohibited. This means that crosswalks can be unmarked (defined by law at most intersections) or marked with pavement lines to show where pedestrians should cross.

#### **Marked Crosswalk**

A marked crosswalk is a crosswalk outlined with pavement markings consisting of two transverse lines.

#### **High-Visibility Crosswalk**

High-visibility crosswalk markings use a series of longitudinal stripes, parallel to traffic, with or without transverse lines, to clearly define the pedestrian crossing and increase driver awareness. Data from the FHWA shows that high-visibility crosswalks reduce pedestrian injury crashes by up to 40%<sup>2</sup>. An example of a high visibility crosswalk can be seen in **Figure 2**.



Figure 2. High-Visibility Crosswalk

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<sup>1</sup> CVC, [California Code, VEH 275](#).

<sup>2</sup> FHWA,

[https://highways.dot.gov/sites/fhwa.dot.gov/files/Crosswalk%20Visibility%20Enhancements\\_508\\_1.pdf](https://highways.dot.gov/sites/fhwa.dot.gov/files/Crosswalk%20Visibility%20Enhancements_508_1.pdf)

## 2.2 Pedestrian Enhancements

### **Rectangular Rapid Flashing Beacons**

Rectangular Rapid Flashing Beacons (RRFBs) are pedestrian-activated flashing light-emitting diode (LED) lights, mounted below warning signage that signal to drivers that a pedestrian is about to enter a crosswalk. An example of an RRFB can be seen in **Figure 3**. RRFBs are installed at uncontrolled marked crosswalks, including midblock crossings, trail crossings, and locations without stop signs or traffic signals. Data from the FHWA shows that RRFBs reduce pedestrian crashes by 47%.<sup>3</sup>



Figure 3: RRFB

### **Pedestrian Hybrid Beacon**

The Pedestrian Hybrid Beacon (PHB), also known as a High Intensity Activated Crosswalk Beacon (HAWK), is an overhead traffic control device designed to help pedestrians safely cross higher-speed roadways at midblock crossings and uncontrolled intersections. The beacon head consists of two red lenses above a single yellow lens. When activated by a pedestrian, the beacon features a sequence of flashing and solid lights that alert drivers to stop. An example of a PHB can be found below in **Figure 4**. Data shows that PHBs reduce pedestrian crashes by 55% and can result in a total crash reduction of 29%.<sup>4</sup>



Figure 4: Pedestrian Hybrid Beacon

### **Mid-Block Pedestrian Signal**

A Midblock Pedestrian Signal (MPS) is a traffic control device that functions similarly to a regular traffic signal. The signal stays green until a pedestrian or cyclist activates a push button, providing a red signal to drivers and a walk signal to pedestrians. Data from the FHWA shows that MPS's reduce pedestrian crashes by 45%.<sup>5</sup> An example of an MPS can be found in **Figure 5**.



Figure 5: Mid-Block Pedestrian Signal

<sup>3</sup> FHWA, <https://highways.dot.gov/safety/proven-safety-countermeasures/rectangular-rapid-flashing-beacons-rrfb>

<sup>4</sup> FHWA, <https://highways.dot.gov/safety/proven-safety-countermeasures/pedestrian-hybrid-beacons>

<sup>5</sup> Crash Modification Factor Clearing House, [CMF Clearinghouse](http://www.cmfclearinghouse.com)

## 3. Existing Conditions

### 3.1 Corridor Overview

Jack Northrop Avenue is an approximately one-mile east–west corridor connecting Prairie Avenue to Crenshaw Boulevard. The roadway was originally constructed as a private facility serving Northrop Grumman and was subsequently vacated to the City when the company relocated its operations. **Figure 6** illustrates the corridor’s existing conditions.

### 3.2 Roadway Characteristics and Traffic Control

The corridor generally consists of one eastbound travel lane, two westbound travel lanes, a two-way left-turn lane (TWLTL) striped median, and on-street parking on both sides of the roadway. The posted speed limit is 40 miles per hour.

Several former signalized intersections located near the western portion of the corridor (near Gate 3 and Gate 5) have been decommissioned. These intersections currently operate as all-way stop control. These intersections represent the only controlled pedestrian crossings along the corridor, except for the signalized intersections at Prairie Avenue and Crenshaw Boulevard at the corridor limits.

### 3.3 Pedestrian Facilities

A five- to six-foot-wide sidewalk is provided along the north side of the roadway, occasionally separated from the curb by a landscaped buffer. No sidewalk is provided on the south side.

As noted in Section 3.2, controlled pedestrian crossings are limited to the signalized intersections at the corridor endpoints and the stop-controlled crossings at Gates 3 and 5 near the western end. No other controlled crossings are provided along the remainder of the corridor. Spacing between controlled crossings ranges from approximately 390 feet (between Prairie Avenue and Gate 5) to approximately 3,840 feet, with the longest stretch between Gate 3 and Crenshaw Boulevard.

The absence of pedestrian infrastructure on the south side, combined with limited crossing opportunities, encourages pedestrians to cross midblock at uncontrolled locations when accessing the Lavender Lot or traveling between SpaceX facilities.

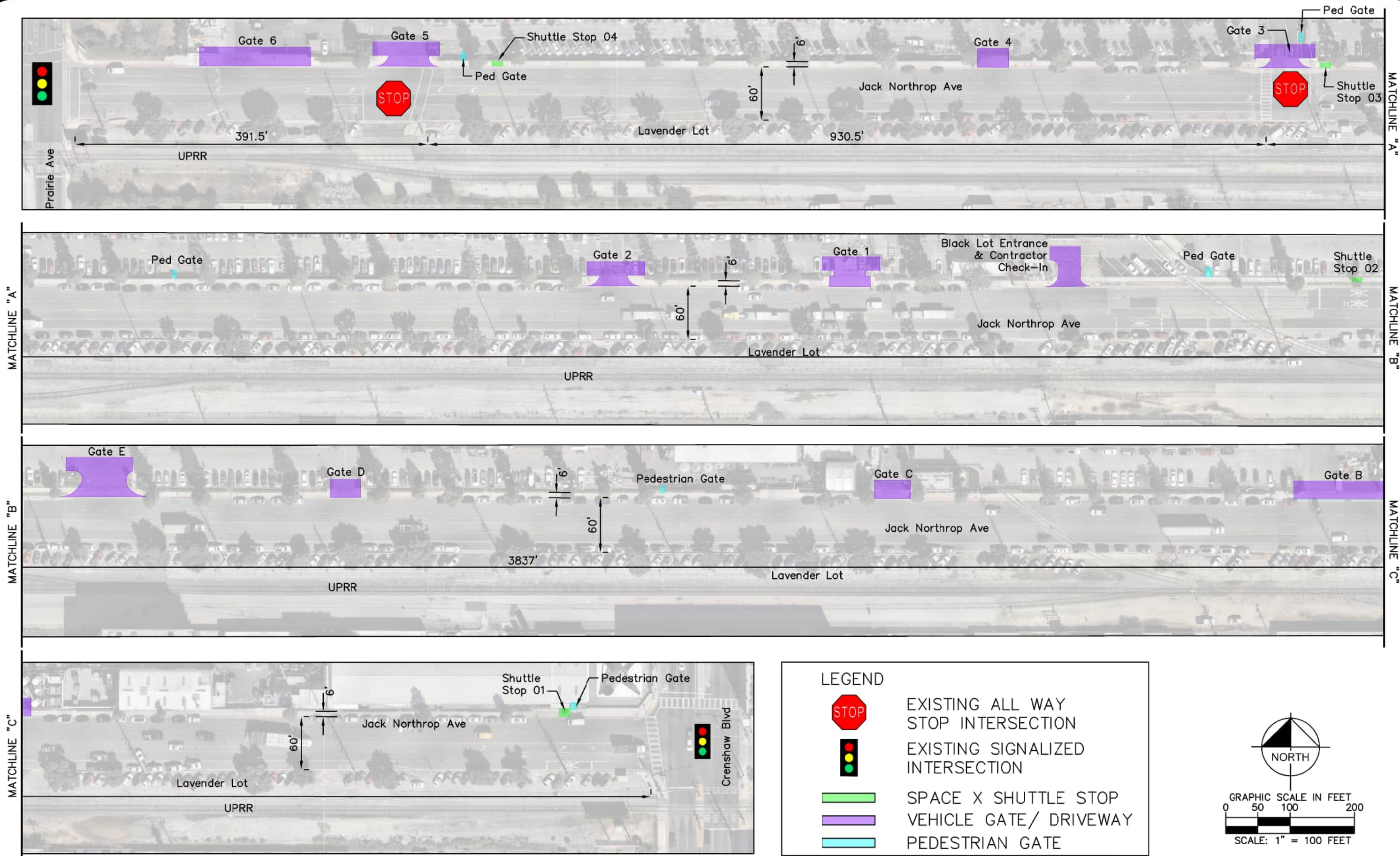


Figure 6: Existing Conditions

### 3.4 Railroad and Right-of-Way

The UPRR mainline parallels the south side of Jack Northrop Avenue. Two abandoned spur tracks diverge from the mainline and cross Jack Northrop Avenue at separate locations. The proximity of the rail line imposes significant constraints. In general, a 15-foot clearance area on either side of the track centerline must remain unobstructed, limiting opportunities for constructing pedestrian infrastructure within this envelope.

Along the southern curb line, the City controls approximately 10 feet of right-of-way beyond the curb. Through an agreement between the City and SpaceX, this area has been converted into permitted employee parking and is known as the Lavender Lot. The UPRR right-of-way begins immediately south of this 10-foot strip.

### 3.5 Land Use and Pedestrian Generators

Industrial properties along the north side of the corridor were previously owned by Northrop Grumman and are now primarily occupied by SpaceX and other industrial users. These facilities generate substantial pedestrian activity, particularly during employee shift changes.

There are ten vehicular driveways on the north side of Jack Northrop Avenue (Gates B–E and 1–6) providing access to SpaceX and other industrial businesses. In addition, six pedestrian access gates for SpaceX employees contribute to concentrated midblock pedestrian crossing demand.

Due to high employee volumes and limited on-site parking availability, SpaceX operates a private shuttle service along Jack Northrop Avenue. The shuttle circulates approximately every 10 minutes and serves four designated stops along the north side of the corridor. Service operates between 3:00 AM and 11:30 PM and is available exclusively to SpaceX personnel.

### 3.6 Vehicle and Pedestrian Activity

Vehicle and pedestrian data were collected on Thursday, January 15, 2026. For vehicular traffic, both volume and speed data were obtained. The 24-hour traffic volume along Jack Northrop Avenue was 5,578 vehicles. The peak hour of vehicular traffic occurred at 8:00 AM in the morning and 2:45 PM in the afternoon.

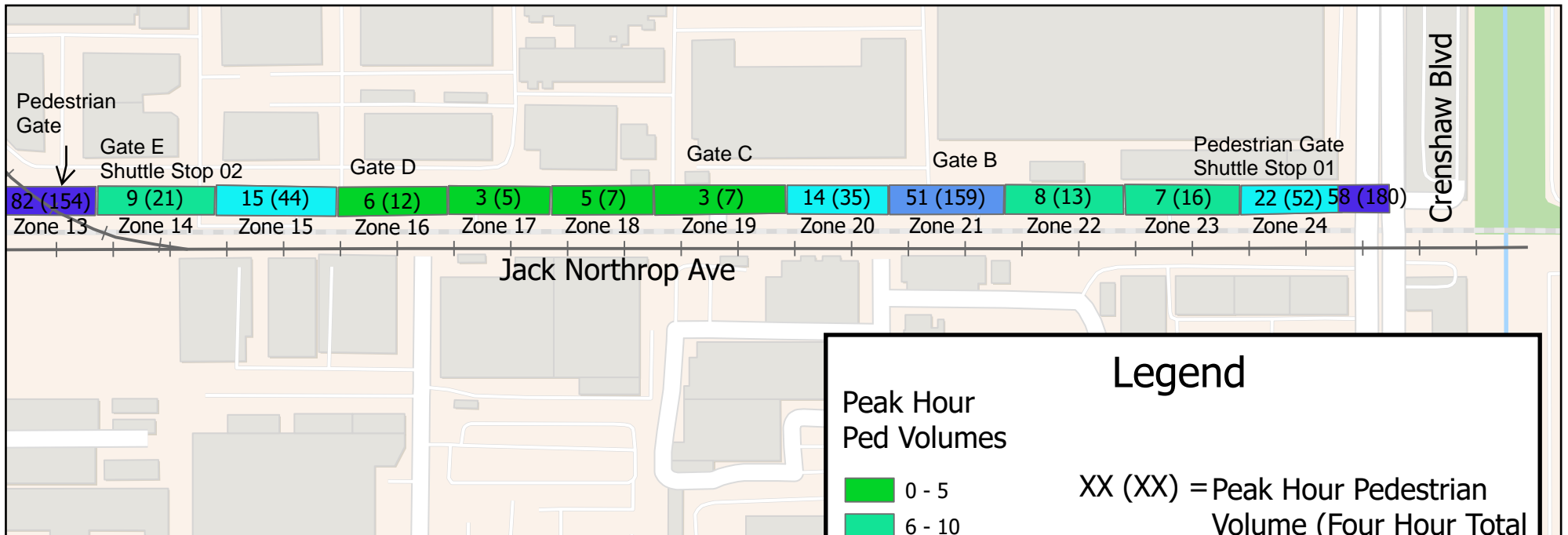
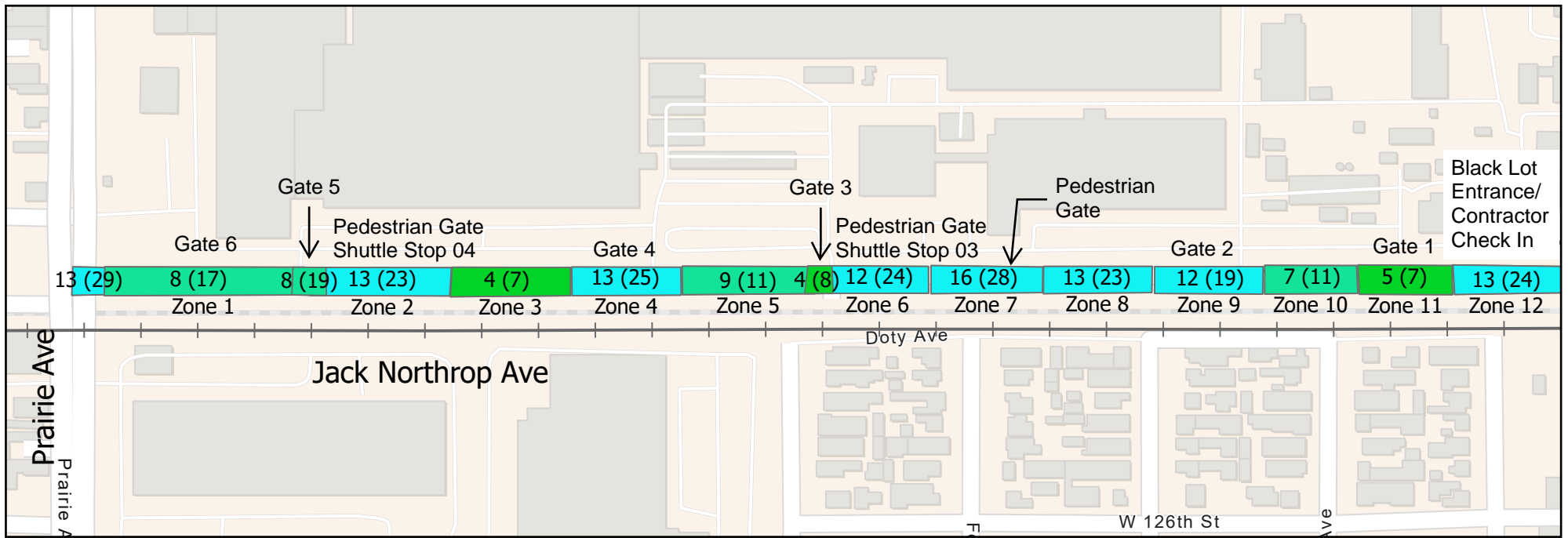
The average vehicle speed recorded along the corridor was 32 mph, and the 85th percentile speed was 41 mph. The 85th percentile speed represents the speed at or below which 85 percent of vehicles are traveling and is commonly used in traffic engineering to evaluate

operating conditions, set speed limits, and inform the selection of appropriate traffic control measures.

Pedestrian volumes were also collected on Thursday, January 15, 2026, during a four-hour mid-day period (9:00 AM – 1:00 PM). The data collection effort documented both the total number of pedestrians crossing Jack Northrop Avenue and the specific locations at which crossings occurred. During the four hour data collection period, 236 pedestrians were recorded using the north-south crosswalk at the controlled intersections (Prairie Avenue, Crenshaw Boulevard, and Gates 3 and 5). Additionally, 744 pedestrians were observed crossing mid-block, bringing the total north-south pedestrian volume along the corridor to 980 pedestrians in a four-hour window. The peak hour for mid-block pedestrian activity was 9:30 AM, with 245 pedestrians crossing mid-block during this time. Because pedestrian data was collected for only a portion of the day, actual daily pedestrian demand is expected to be higher than the recorded counts.

For analysis purposes, the corridor was divided into 24 zones to better understand the distribution and concentration of crossing activity. A heat map illustrating pedestrian crossing patterns and relative crossing intensity is included as **Figure 7**.

Pedestrian crossings are concentrated near the gate in Zone 13 (adjacent to Shuttle Stop 02) and Zone 21 (near Gate B), providing a basis for evaluating crosswalk placement and appropriate pedestrian crossing treatments. Data collection sheets are provided in **Attachment A**.



### Legend

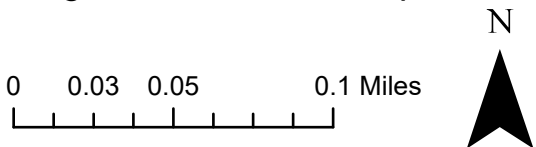
Peak Hour Ped Volumes

- 0 - 5
- 6 - 10
- 11 - 20
- 21 - 50
- 51 - 85

XX (XX) = Peak Hour Pedestrian Volume (Four Hour Total Pedestrian Volume)

—+— Railroad

Figure 7: Jack Northrop Ave Pedestrian Volumes



## 4. Methodology

### 4.1 Crossing Evaluation Process

The evaluation of upgraded and/or additional pedestrian crossings along Jack Northrop Avenue follows a three-part process:

1. **Step 1: Determining the need for a marked crosswalk.** Using pedestrian and vehicular volumes, roadway geometry, and crash history, this study will assess whether a marked crosswalk is warranted at a given location.
2. **Step 2: Identifying the location for a marked crosswalk.** Potential crossing locations are evaluated based on observed pedestrian paths of travel, proximity to pedestrian access gates, shuttle stops, and other pedestrian generators. Spacing relative to existing crossings is considered to reduce midblock risk and consolidate pedestrian movement. Physical constraints, including utilities, street lighting poles, sidewalk width, fire hydrants, and other features also impact the proposed locations.
3. **Step 3: Evaluation of crossing enhancements.** Where a marked crosswalk is warranted, this study considers supplemental traffic control measures such as high visibility crosswalk treatments, additional or enhanced signage, RRFBs, or PHBs/HAWKs. The selection of enhancements is guided by roadway conditions, traffic volumes and speeds, and CA MUTCD guidance and FHWA countermeasure recommendations.

### 4.2 Crosswalk Guidance

Marked crosswalks delineate pedestrian paths and provide guidance at intersections and along other crossing locations. Per CA MUTCD Section 3C.02, at uncontrolled approaches, an engineering study should be performed before a marked crosswalk is installed. The following criteria should be considered:

- A. Total number of approach lanes,
- B. The presence of a median,
- C. The distance from adjacent signalized intersections or other controlled crossings,
- D. Projected pedestrian and bicyclist volumes,
- E. Pedestrian and bicyclist paths of travel,
- F. Pedestrian ages and abilities,
- G. Pedestrian and bicyclist delays,
- H. Location or frequency of public transit stops,

- I. Average daily traffic (ADT),
- J. Speed limit or the 85th-percentile speed,
- K. The horizontal and vertical geometry of the crossing location,
- L. The possible consolidation of multiple crossing points,
- M. The availability of street lighting, and
- N. Other appropriate factors.

The CA MUTCD recommends that additional traffic control measures should be considered along with a new marked crosswalk where one or more of the following conditions exist:

- The roadway has four or more lanes of travel without a raised median or pedestrian refuge island and an ADT 12,000 vehicles per day or greater; or
- The roadway has four or more lanes of travel with a raised median or pedestrian refuge island and an ADT of 15,000 vehicles per day or greater, or
- The posted speed limit is 40 mph or greater, or
- A crash study reveals that multiple-threat crashes are the predominant crash type on a multi-lane approach, or
- When adequate visibility cannot be provided by parking prohibitions.

### 4.3 RRFB Guidance

While the CA MUTCD does not provide explicit installation thresholds for RRFBs, FHWA *Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations* (2018)<sup>6</sup> define roadway features and conditions where RRFBs may be appropriate. **Table 1** presents initial countermeasure options for various roadway conditions. Each cell lists potential countermeasures for designated pedestrian crossings; it is not necessary to install all measures at a given location.

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<sup>6</sup> FHWA, [https://highways.dot.gov/sites/fhwa.dot.gov/files/2022-09/STEP\\_Guide\\_for\\_Improving\\_Ped\\_Safety\\_at\\_Unsig\\_Loc\\_3-2018\\_07\\_17-508compliant.pdf](https://highways.dot.gov/sites/fhwa.dot.gov/files/2022-09/STEP_Guide_for_Improving_Ped_Safety_at_Unsig_Loc_3-2018_07_17-508compliant.pdf)

Table 1: Pedestrian Crash Countermeasures<sup>7</sup>

Roadway Configuration	Posted Speed Limit and AADT								
	Vehicle AADT <9,000			Vehicle AADT 9,000–15,000			Vehicle AADT >15,000		
	≤30 mph	35 mph	≥40 mph	≤30 mph	35 mph	≥40 mph	≤30 mph	35 mph	≥40 mph
<b>2 lanes</b> (1 lane in each direction)	① 2 4 5 6	① 5 6 7 9	① 5 6 ⑦ ⑨	① 4 5 6 7 9	① 5 6 ⑦ ⑨	① 5 6 ⑦ ⑨	① 4 5 6 7 9	① 5 6 7 9	① 5 6 ⑨
<b>3 lanes with raised median</b> (1 lane in each direction)	① 2 3 4 5	① ③ 5 7 9	① ③ 5 ⑦ ⑨	① 3 4 5 7 9	① ③ 5 ⑦ ⑨	① ③ 5 ⑦ ⑨	① ③ 4 5 7 9	① ③ 5 ⑦ ⑨	① ③ 5 ⑨
<b>3 lanes w/o raised median</b> (1 lane in each direction with a two-way left-turn lane)	① 2 3 4 5 6 7 9	① ③ 5 6 7 9	① ③ 5 6 ⑨	① 3 4 5 6 7 9	① ③ 5 6 ⑦ ⑨	① ③ 5 6 ⑨	① ③ 4 5 6 7 9	① ③ 5 6 ⑨	① ③ 5 6 ⑨
<b>4+ lanes with raised median</b> (2 or more lanes in each direction)	① ③ 5 7 8 9	① ③ 5 7 8 9	① ③ 5 8 ⑨	① ③ 5 7 8 9	① ③ 5 ⑦ 8 ⑨	① ③ 5 8 ⑨	① ③ 5 ⑦ 8 ⑨	① ③ 5 8 ⑨	① ③ 5 8 ⑨
<b>4+ lanes w/o raised median</b> (2 or more lanes in each direction)	① ③ 5 6 7 8 9	① ③ 5 ⑥ 7 8 9	① ③ 5 ⑥ 8 ⑨	① ③ 5 ⑥ 7 8 9	① ③ 5 ⑥ ⑦ 8 ⑨	① ③ 5 ⑥ 8 ⑨	① ③ 5 ⑥ ⑦ 8 ⑨	① ③ 5 ⑥ 8 ⑨	① ③ 5 ⑥ 8 ⑨
<p>Given the set of conditions in a cell,</p> <p># Signifies that the countermeasure is a candidate treatment at a marked uncontrolled crossing location.</p> <p>● Signifies that the countermeasure should always be considered, but not mandated or required, based upon engineering judgment at a marked uncontrolled crossing location.</p> <p>○ Signifies that crosswalk visibility enhancements should always occur in conjunction with other identified countermeasures.*</p> <p>The absence of a number signifies that the countermeasure is generally not an appropriate treatment, but exceptions may be considered following engineering judgment.</p>					<p>1 High-visibility crosswalk markings, parking restrictions on crosswalk approach, adequate nighttime lighting levels, and crossing warning signs</p> <p>2 Raised crosswalk</p> <p>3 Advance Yield Here To (Stop Here For) Pedestrians sign and yield (stop) line</p> <p>4 In-Street Pedestrian Crossing sign</p> <p>5 Curb extension</p> <p>6 Pedestrian refuge island</p> <p>7 Rectangular Rapid-Flashing Beacon (RRFB)**</p> <p>8 Road Diet</p> <p>9 Pedestrian Hybrid Beacon (PHB)**</p>				

### 4.4 PHB Guidance

The CA MUTCD provides volume-based guidance for the installation of Pedestrian Hybrid Beacons (PHBs). Per Section 4J.02, a PHB may be considered at marked crosswalks where:

- The location does not meet traffic signal warrants, or
- The location meets traffic signal warrants under CA MUTCD Sections 4C.05 and/or 4C.06, but a traffic signal is not installed by decision.

<sup>7</sup> FHWA [https://highways.dot.gov/sites/fhwa.dot.gov/files/2022-09/STEP\\_Guide\\_for\\_Improving\\_Ped\\_Safety\\_at\\_Unsig\\_Loc\\_3-2018\\_07\\_17-508compliant.pdf](https://highways.dot.gov/sites/fhwa.dot.gov/files/2022-09/STEP_Guide_for_Improving_Ped_Safety_at_Unsig_Loc_3-2018_07_17-508compliant.pdf)

Figure 4J-2 of the CA MUTCD establishes Pedestrians Per Hour (PPH) and Vehicles Per Hour (VPH) thresholds to guide PHB installation decisions. When pedestrian and vehicle volumes meet or exceed these thresholds, a PHB should be considered to provide appropriate traffic control. **Figure 8** reproduces the CA MUTCD Figure 4J-2 volume thresholds for PHB installation. As noted in Section 4.3, **Table 1** from the FHWA also identifies PHBs as a countermeasure based on roadway characteristics.

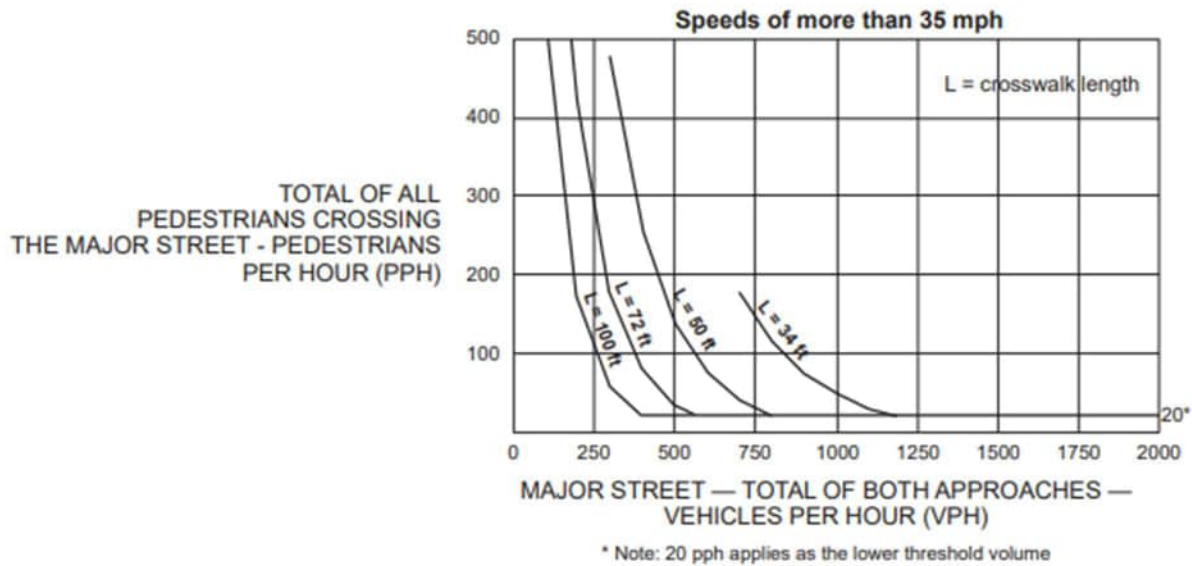


Figure 8: Guidelines for the Installation of Pedestrian Hybrid Beacons (CA MUTCD Figure 4J-2)

## 5. Analysis

This section evaluates the need for marked crosswalks and pedestrian safety enhancements along Jack Northrop Avenue, focusing on Zones 13 and 21 where pedestrian demand is highest. The analysis follows the three-step process outlined in Section 4.1. Recommendations are based on observed pedestrian and vehicle volumes, corridor characteristics, and guidance from the CA MUTCD and FHWA.

### 5.1 Crash History

Crash records along Jack Northrop Avenue from 2020 through 2025 indicate a total of five (5) reported crashes, including one (1) involving a pedestrian. The California Transportation Injury Mapping System (TIMS) database was reviewed to confirm crash locations, types, and severity. The crash diagram for Jack Northrop Avenue is shown in **Figure 9**. The primary collision factor for the pedestrian-involved crash was identified as a Pedestrian Violation,

meaning the pedestrian crossed the roadway outside of a crosswalk and did not yield the right-of-way to approaching vehicle. Of the five (5) total collisions, three (3) involved drivers under the influence, and two (2) resulted from improper turning maneuvers.

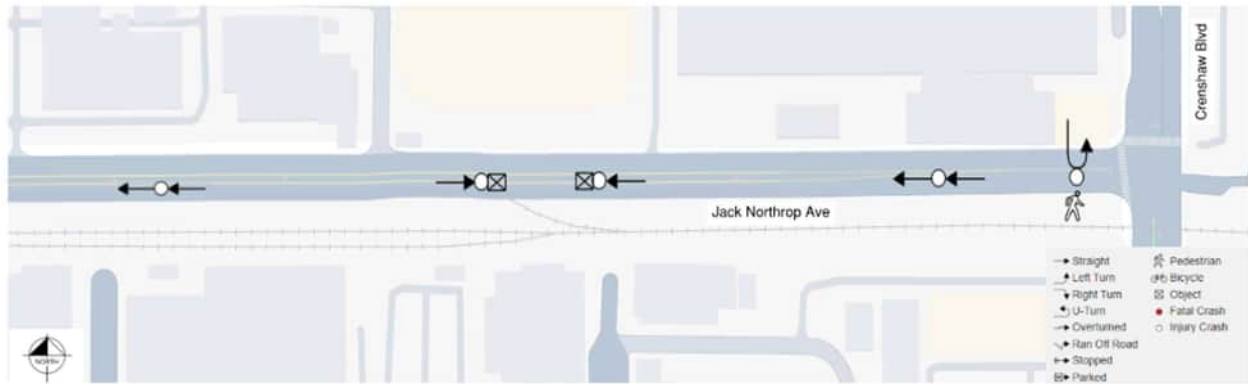


Figure 9: Crash Diagram (2020-2025)

## 5.2 Crosswalk Need and Location Evaluation

Pedestrian crossings are concentrated near the gate in Zone 13 (adjacent to Shuttle Stop 02) and Zone 21 (near Gate B), indicating locations of highest pedestrian activity along Jack Northrop Avenue.

### **Proposed Crosswalk #1 – Zone 13**

- Peak Hour Pedestrian Volume (PPH): 82
- Four-Hour Total Pedestrian Volume: 154
- Distance to nearest controlled pedestrian crossing: 2,215 feet east to the signalized intersection at Crenshaw Boulevard, 1,615 feet west to the stop-controlled crosswalk at Gate 3.

### **Proposed Crosswalk #2 – Zone 21**

- Peak Hour Pedestrian Volume (PPH): 51
- Four-Hour Total Pedestrian Volume: 159
- Distance to nearest controlled pedestrian crossing: 685 feet east to the signalized intersection at Crenshaw Boulevard, 3,140 feet west to the stop-controlled crosswalk at Gate 3.

The combination of high pedestrian demand observed midblock crossing behavior, and spacing from existing controlled crossings supports consideration of marked midblock crosswalks at Zone 13 and Zone 21.

## 5.3 Roadway Characteristics

Jack Northrop Avenue's features increase pedestrian exposure and influence enhancement selection:

- Four lane cross section: one eastbound lane, two westbound lanes, and a two-way-left-turn lane
- Posted speed limit: 40 mph
- Peak-hour vehicle volumes: 320 (AM Peak hour), 568 (Mid-day Peak hour), and 400 (PM Peak hour)
- Crossing width: 60 feet

These factors suggest that marked crosswalks alone may not provide sufficient safety, and supplemental traffic control should be considered.

## 5.4 Enhancement Evaluation

The two proposed crosswalk locations along Jack Northrop Avenue (Proposed Location 1 – Zone 13 and Proposed Location 2 – Zone 21) were evaluated for pedestrian safety enhancements. Per the criteria outlined in Section 4.2 of this report, the CA MUTCD recommends supplemental traffic control measures when conditions such as high posted speeds, limited pedestrian visibility, or other roadway characteristics that increase pedestrian risk are present. In the case of Jack Northrop Avenue, the posted speed limit of 40 mph and constrained visibility due to parked vehicles and large trucks meet these conditions. Therefore, enhanced traffic control devices are recommended and analyzed below.

### ***RRFB Evaluation***

Based on **Table 2**, considering Jack Northrop Avenue's roadway configuration, 40 mph posted speed limit, visibility constraints, RRFBs are not recommended at this location. However, other countermeasures, such as Stop Here for Pedestrians signs, a Pedestrian Refuge Island, and a PHB, are recommended at Proposed Crosswalks 1 and 2.

Table 2: Pedestrian Crash Countermeasures for Proposed Crosswalks 1 and 2

Roadway Configuration	Posted Speed Limit and AADT								
	Vehicle AADT <9,000			Vehicle AADT 9,000–15,000			Vehicle AADT >15,000		
	≤30 mph	35 mph	≥40 mph	≤30 mph	35 mph	≥40 mph	≤30 mph	35 mph	≥40 mph
2 lanes (1 lane in each direction)	① 2 4 5 6	① 7 9	① 5 6 7 9	① 4 5 6	① 7 9	① 5 6 7 9	① 4 5 6	① 7 9	① 5 6 7 9
3 lanes with raised median (1 lane in each direction)	① 2 3 4 5	① ③ 5 6 7 9	① ③ 5 6 7 9	① 3 4 5	① ③ 5 6 7 9	① ③ 5 6 7 9	① ③ 4 5	① ③ 5 6 7 9	① ③ 5 6 7 9
3 lanes w/o raised median (1 lane in each direction with a two-way left-turn lane)	① 2 3 4 5 6 7 9	① ③ 5 6 7 9	① ③ 5 6 7 9	① 3 4 5 6 7 9	① ③ 5 6 7 9	① ③ 5 6 7 9	① ③ 4 5 6 7 9	① ③ 5 6 7 9	① ③ 5 6 7 9
4+ lanes with raised median (2 or more lanes in each direction)	① ③ 5 6 7 8 9	① ③ 5 6 7 8 9	① ③ 5 6 7 8 9	① ③ 5 6 7 8 9	① ③ 5 6 7 8 9	① ③ 5 6 7 8 9	① ③ 5 6 7 8 9	① ③ 5 6 7 8 9	① ③ 5 6 7 8 9
4+ lanes w/o raised median (2 or more lanes in each direction)	① ③ 5 6 7 8 9	① ③ 5 6 7 8 9	① ③ 5 6 7 8 9	① ③ 5 6 7 8 9	① ③ 5 6 7 8 9	① ③ 5 6 7 8 9	① ③ 5 6 7 8 9	① ③ 5 6 7 8 9	① ③ 5 6 7 8 9

**Proposed Crosswalks 1 and 2**

Given the set of conditions in a cell,

- # Signifies that the countermeasure is a candidate treatment at a marked uncontrolled crossing location.
- Signifies that the countermeasure should always be considered, but not mandated or required, based upon engineering judgment at a marked uncontrolled crossing location.
- Signifies that crosswalk visibility enhancements should always occur in conjunction with other identified countermeasures.\*

The absence of a number signifies that the countermeasure is generally not an appropriate treatment, but exceptions may be considered following engineering judgment.

- 1 High-visibility crosswalk markings, parking restrictions on crosswalk approach, adequate nighttime lighting levels, and crossing warning signs
- 2 Raised crosswalk
- 3 Advance Yield Here To (Stop Here For) Pedestrians sign and yield (stop) line
- 4 In-Street Pedestrian Crossing sign
- 5 Curb extension
- 6 Pedestrian refuge island
- 7 Rectangular Rapid-Flashing Beacon (RRFB)\*\*
- 8 Road Diet
- 9 Pedestrian Hybrid Beacon (PHB)\*\*

**PHB Evaluation**

Although the FHWA **Table 2** identifies the PHB as a potential countermeasure, the proposed crossings were also evaluated using the volume-based thresholds in CA MUTCD Figure 4J-2 to determine whether a PHB is recommended based on pedestrian and conflicting vehicle volumes.

For Proposed Crosswalk #1 (Zone 13), the peak pedestrian volume was 82 pedestrians per hour (9:00 AM), with a corresponding conflicting vehicle volume of 368 vehicles per hour. For Proposed Crosswalk #2 (Zone 21), the peak pedestrian volume was 51 pedestrians per hour (9:30 AM), with a corresponding conflicting vehicle volume of 327 vehicles per hour.

Based on a crossing length of approximately 60 feet, **Figure 10** shows that neither location meets the CA MUTCD Figure 4J-2 threshold for PHB installation, primarily due to low conflicting vehicle volumes.

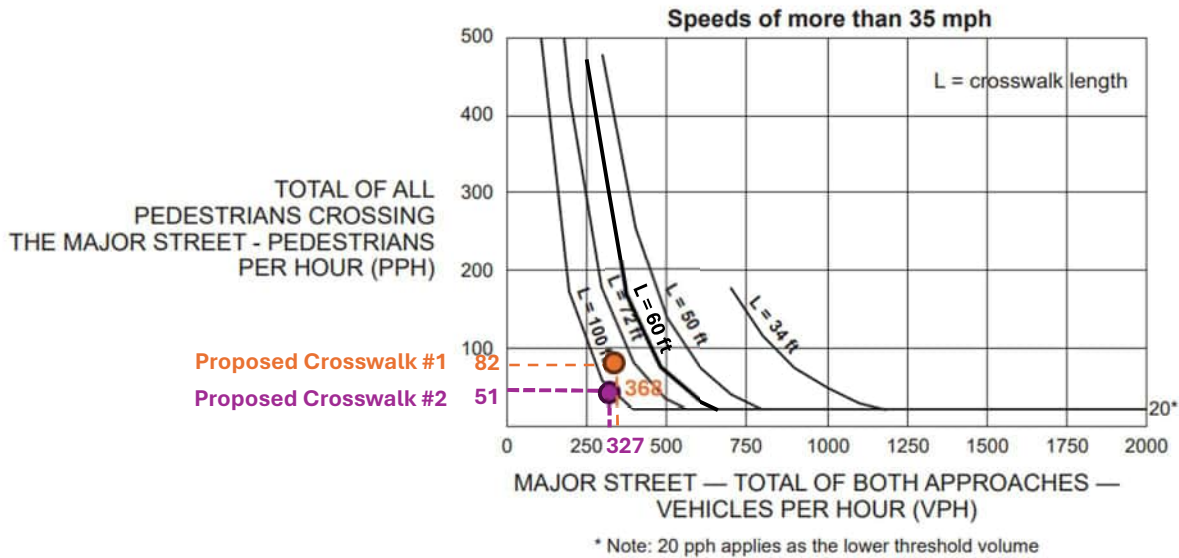


Figure 10: Proposed Crosswalks #1 and #2 (CA MUTCD Figure 4J-2)

## 5.5 Recommendations

Marked midblock crosswalks are recommended at Proposed Crosswalk #1 (Zone 13) and Proposed Crosswalk #2 (Zone 21) due to concentrated pedestrian demand and substantial spacing from existing controlled crossings. While FHWA guidance identifies a PHB as a potential countermeasure, evaluation under CA MUTCD Figure 4J-2 indicates PHB volume thresholds are not met. RRFBs are also not recommended, as they are better suited to narrower, lower-speed roadways and may not provide adequate control on this 40 mph multilane corridor.

Given the roadway speed, multilane configuration, nighttime pedestrian activity, and visibility constraints, enhanced traffic control is warranted. An overhead midblock pedestrian signal with a conventional red-yellow-green indications is recommended, as it provides continuous signal control with standard indications that may improve driver recognition and compliance.

In addition, the existing stop-controlled crosswalks at Gate 3 and Gate 5 should be enhanced with upgraded signage and high-visibility striping, along with improvements to bring each crossing into full ADA compliance. These enhancements will improve safety and accessibility at existing crossings without changing their current stop-controlled operation.

In addition to corridor-wide recommendations, an alternative configuration at Gate 3 was evaluated at the request of SpaceX, as discussed below.

### ***Evaluation of Relocated Crossing Near Gate 3***

At the request of SpaceX, alternatives were evaluated to either (1) remove the existing west leg crosswalk at Gate 3 (Existing Crosswalk #2) and construct a new controlled crossing approximately 200 feet to the east, or (2) retain the existing crosswalk and install an additional controlled crosswalk approximately 200 feet to the east.

Both alternatives would introduce a new crossing near the existing stop-controlled intersection. Removing the existing intersection crosswalk would reduce the effectiveness of the all-way stop and shift pedestrian activity to a less expected midblock location. Retaining the existing crosswalk and adding a new crossing would result in two closely spaced, independent crossings, which increases vehicle–pedestrian conflict points.

The proposed spacing of approximately 200 feet does not provide sufficient separation for the intersection and the new crossing to operate independently. Vehicles departing the stop-controlled intersection may encounter the downstream crossing with limited reaction time. Based on these considerations, neither alternative is recommended, and the existing crossing configuration at Gate 3 should be retained with enhancements only. Enhancements to the existing stop-controlled crossing at Gate 3, as described above and presented in Section 6.2, remain the most effective approach to improving pedestrian safety at this location.

## **6. Conceptual Design**

This section presents conceptual design improvements for two existing stop-controlled crosswalks and two new midblock crossings along Jack Northrop Avenue.

### **6.1 Existing Crosswalk #1**

Existing Crosswalk #1 is the east leg crosswalk at Gate 5 in Zone 13. Proposed improvements are shown in **Figure 11**.

#### ***Recommended Improvements:***

- High-visibility pavement markings on the existing east leg crosswalk
- Addition of solar-powered LED stop signs in the center of the roadway (left side of travel lanes) on both east and west approaches to reinforce the stop control
- Replacement of existing stop signs with solar-powered LED stop signs

- Installation of truncated domes at the southeast curb ramp to meet ADA requirements

**Construction Cost Estimate:** \$45,000 – \$55,000

## 6.2 Existing Crosswalk #2

Existing Crosswalk #2 is the west leg crosswalk at Gate 3 in Zone 21. This improvement scenario assumes retention of the existing crosswalk at Gate 3 with no relocation or addition of a new crossing, consistent with the evaluation presented in Section 5.5. Proposed improvements are shown in **Figure 12**.

### **Recommended Improvements:**

- Addition of solar-powered LED stop signs in the center of the roadway (left side of travel lanes) on both east and west approaches to reinforce the stop control
- Replacement of existing stop signs with solar-powered LED stop signs
- Install raised medians to protect pedestrians on southwest corner and provide truncated domes to meet ADA requirements

**Conceptual Cost Estimate:** \$60,000 – \$70,000

1 IN-STREET STOP SIGN INSTALLATION



2 STOP SIGN WITH LED BORDER



3 DETECTABLE WARNING SURFACE

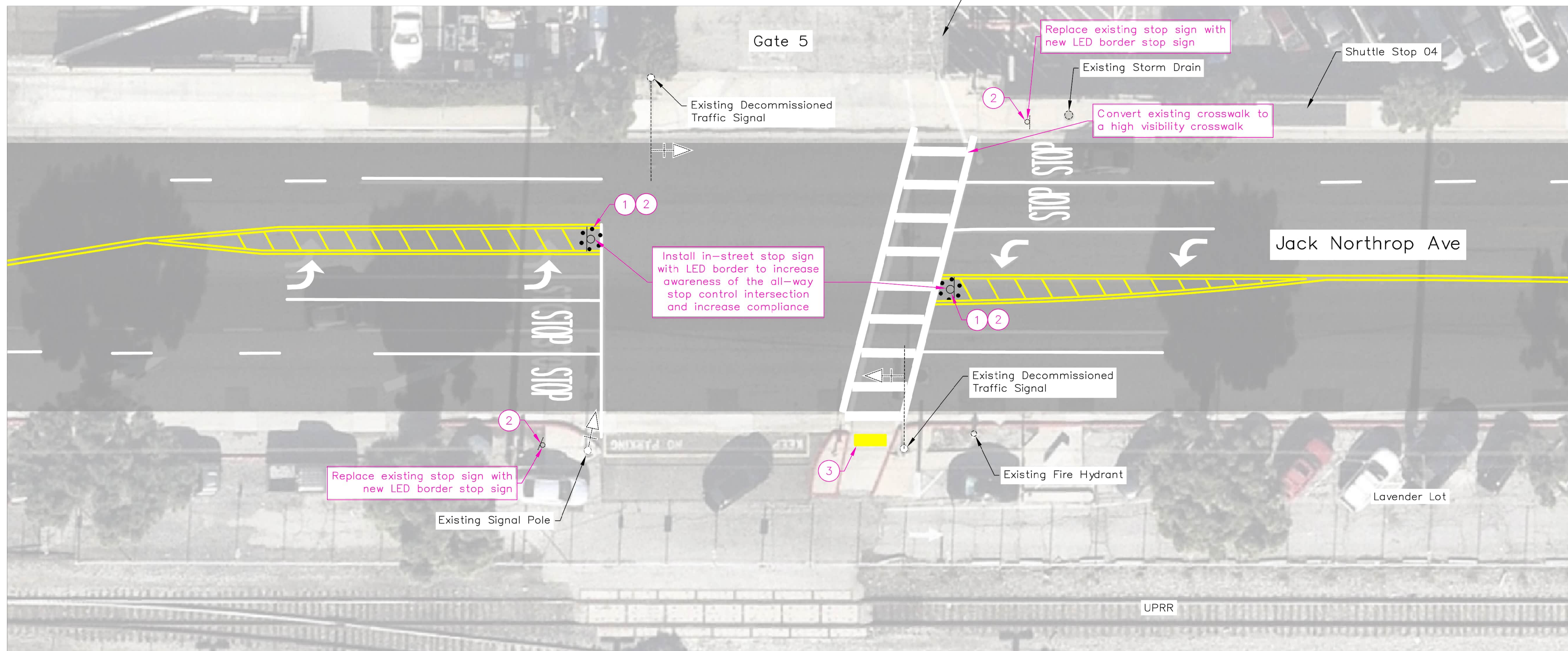
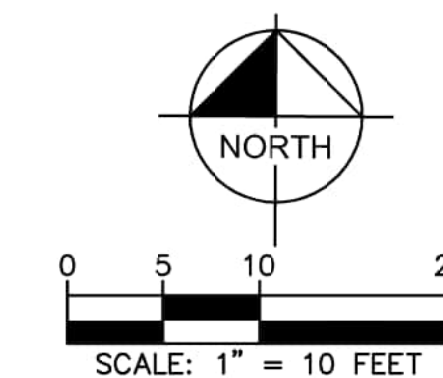


Figure 11: Existing Crosswalk #1 – Conceptual Design



1 IN-STREET STOP SIGN INSTALLATION



2 STOP SIGN WITH LED BORDER



3 DETECTABLE WARNING SURFACE



4 Concrete Medians

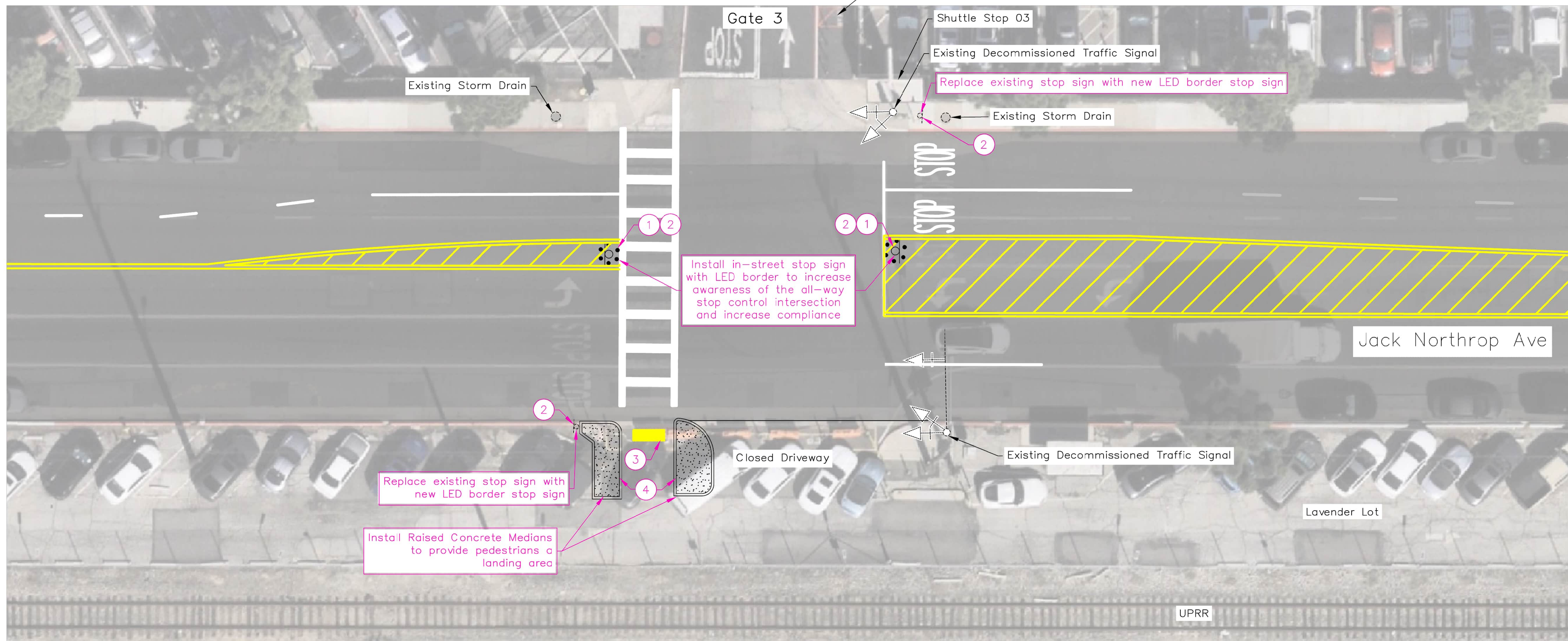
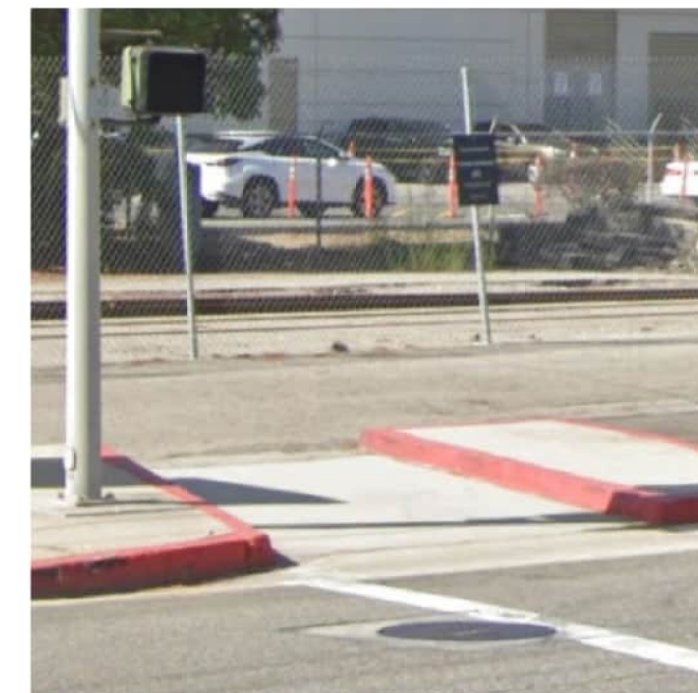
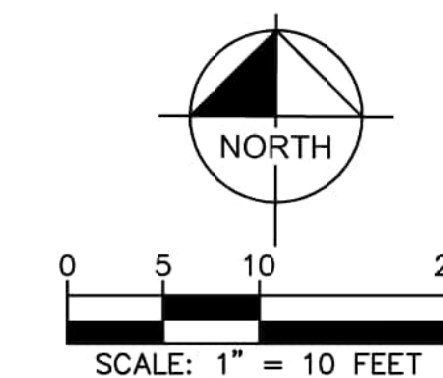


Figure 12: Existing Crosswalk #2 – Conceptual Design



### 6.3 Proposed Crosswalk #1

Proposed Crosswalk #1 is a midblock location near Shuttle Stop 02. Proposed improvements are shown in **Figure 13**.

***Recommended Improvements:***

- Installation of a midblock pedestrian signal including two signal poles with mast arms, two pedestrian push button posts, cabinet, controller, pull boxes, and wiring
- Installation of high visibility crosswalk and associated signage
- New curb ramps on north and south sides of Jack Northrop Avenue
- Installation of red curb adjacent to crosswalk per Assembly Bill 413 daylighting requirements

**Construction Cost Estimate:** \$330,000 – \$350,000

### 6.4 Proposed Crosswalk #2

Proposed Crosswalk #1 is a midblock location near Gate B. Proposed improvements are shown in **Figure 14**.

***Recommended Improvements:***

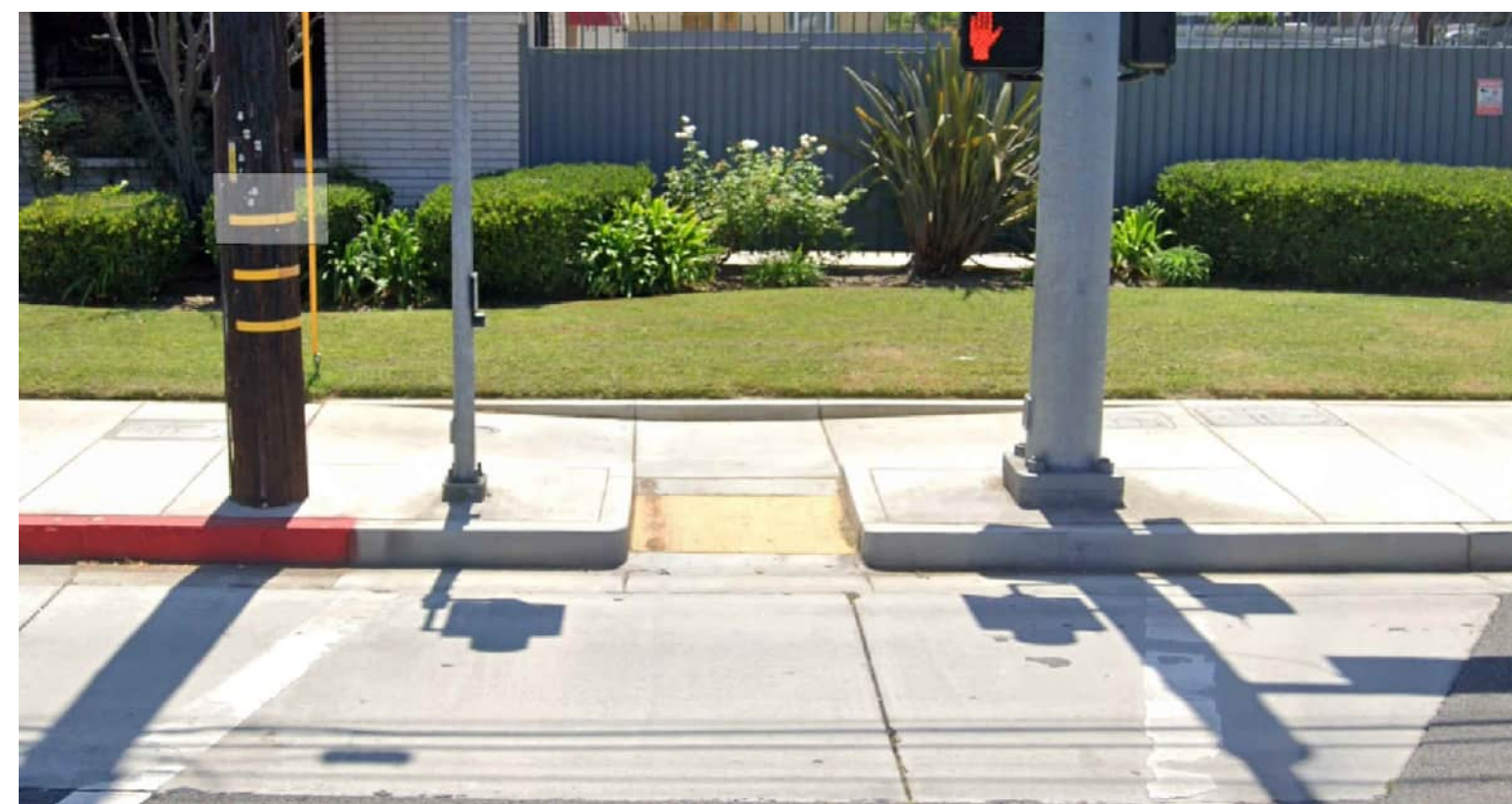
- Installation of a midblock pedestrian signal including two signal poles with mast arms, two pedestrian push button posts, cabinet, controller, pull boxes, and wiring
- Installation of high visibility crosswalk and associated signage
- New curb ramps on north and south sides of Jack Northrop Avenue; north-side curb ramp requires a curb extension to accommodate an ADA-compliant ramp
- Raised median to support signal pole in westbound direction
- Installation of red curb adjacent to crosswalk per Assembly Bill 413 daylighting requirements

**Construction Cost Estimate:** \$350,000 – \$370,000

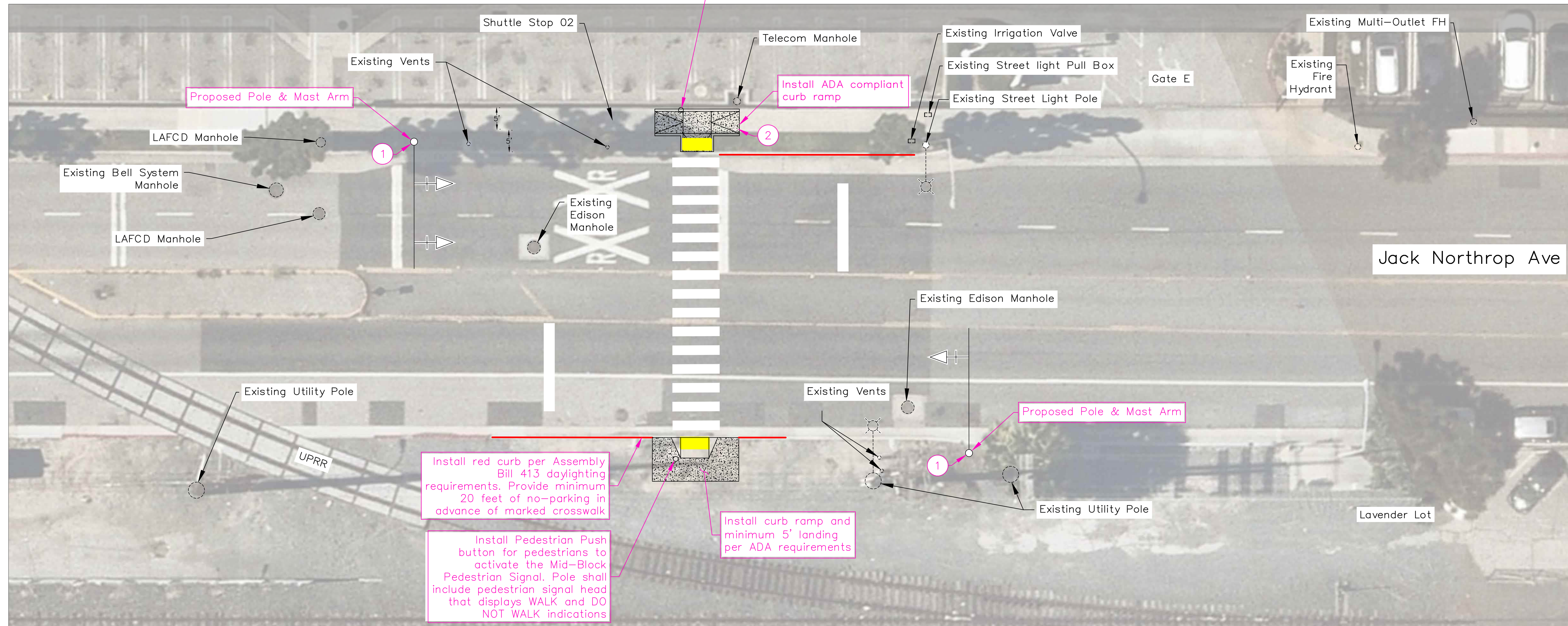
1 Mid-Block Pedestrian Signal



2 Curb Ramp



Install Pedestrian Push button for pedestrians to activate the Mid-Block Pedestrian Signal. Pole shall include pedestrian signal head that displays WALK and DO NOT WALK indications



NOTE: Equipment locations are preliminary; subject to change per potholing and utility verification.

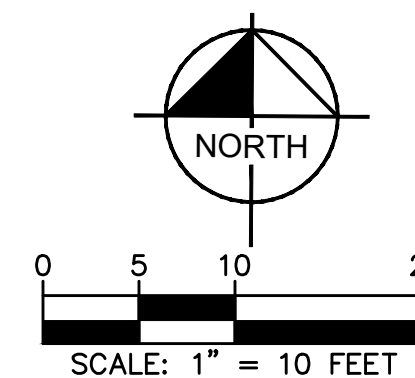


Figure 13: Proposed Crosswalk #1 – Conceptual Design

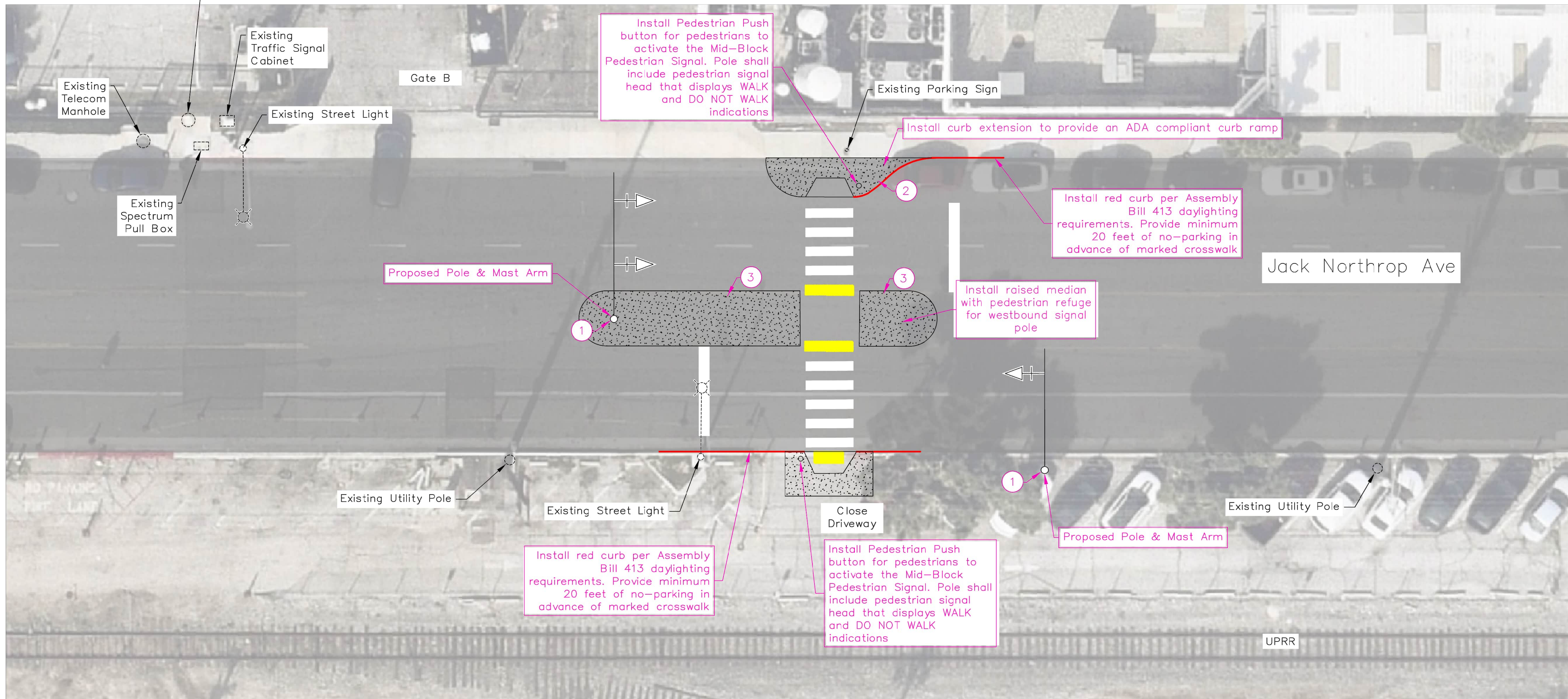
1 Mid-Block Pedestrian Signal



2 Curb Ramp



3 Raised Median with Pedestrian Refuge



NOTE: Equipment locations are preliminary; subject to change per potholing and utility verification.

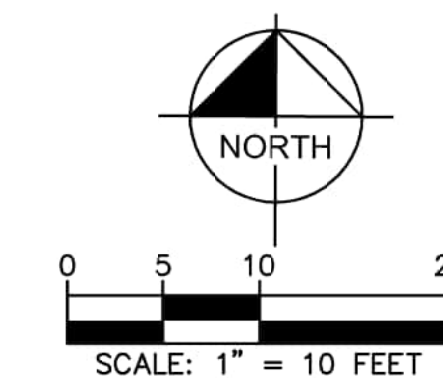


Figure 14: Proposed Crosswalk #2 – Conceptual Design

## 7. Conclusion

The pedestrian study along Jack Northrop Avenue identifies both existing and potential crossing locations where improvements are warranted. Analysis of pedestrian demand indicates that the highest midblock pedestrian activity occurs near Zone 13 (Proposed Crosswalk #1, adjacent to Shuttle Stop 02) and Zone 21 (Proposed Crosswalk #2, near Gate B). While FHWA guidance identifies PHBs as a potential countermeasure, evaluation under CA MUTCD Figure 4J-2 shows that neither location meets the conflict vehicle volume thresholds for PHB installation. RRFBs are also not recommended, as they are more effective on narrower, lower-speed roadways.

Given the 40 mph posted speed limit, lane configuration, large truck traffic impacting pedestrian visibility, and nighttime pedestrian activity, enhanced traffic control is recommended at the proposed midblock crossings. Accordingly, installation of overhead midblock pedestrian signals with conventional red-yellow-green displays is recommended. This treatment provides a higher and more consistent level of control compared to a PHB's flashing-light sequence, improving driver expectancy and compliance.

In addition, the existing stop-controlled crosswalks at Gate 3 and Gate 5 should be enhanced with high-visibility pavement markings, upgraded signage, and ADA-compliant curb ramps and truncated domes. These improvements maintain the current stop-controlled operation while enhancing pedestrian safety and accessibility. Corridor-wide recommendations are presented in **Figure 15**.

Alternatives involving removal or addition of a nearby controlled crossing at Gate 3 (Existing Crosswalk #2) were evaluated but not recommended due to operational and safety considerations discussed in Section 5.5.

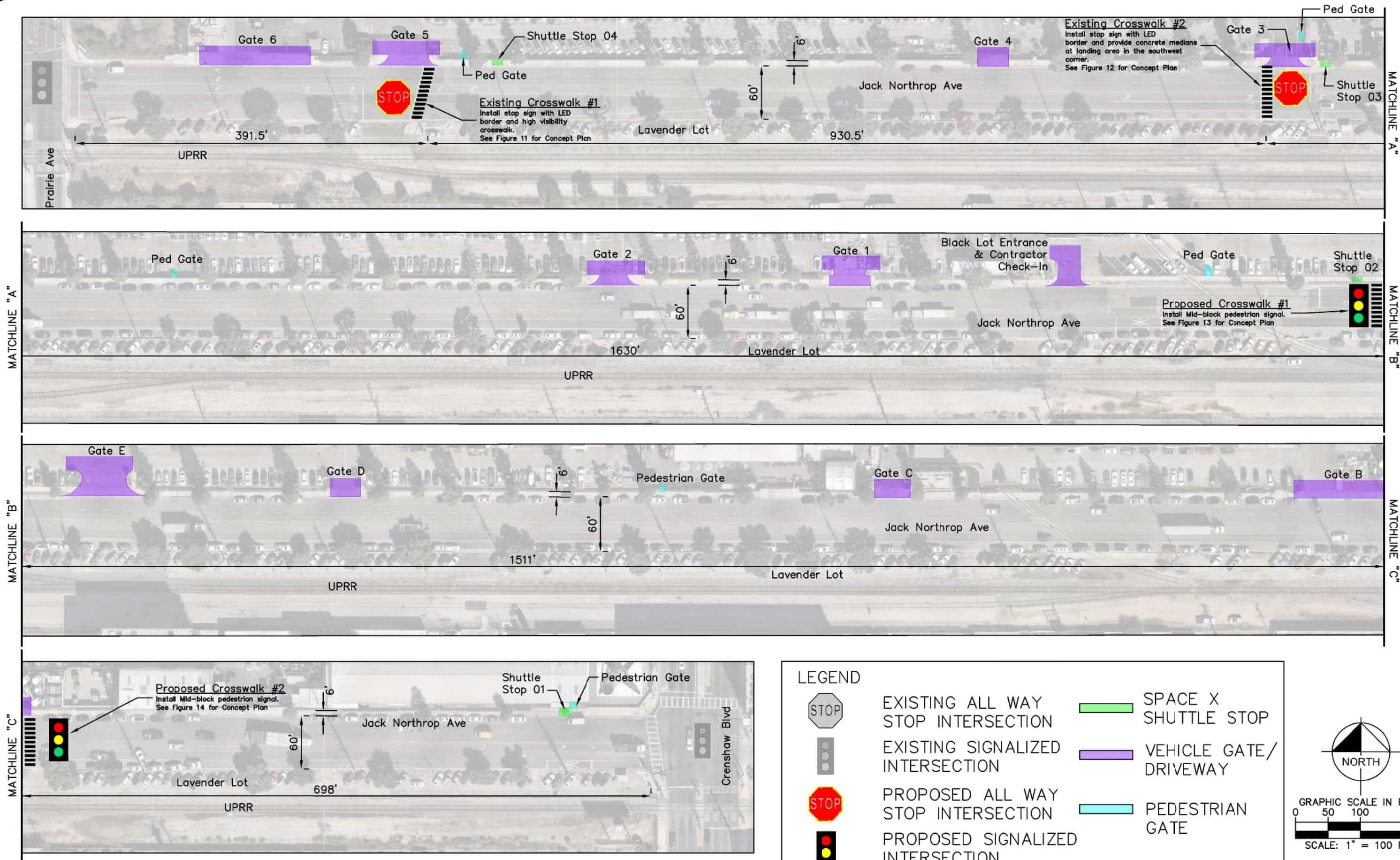


Figure 15: Recommendations

**Attachment A: Data Collection Sheets**

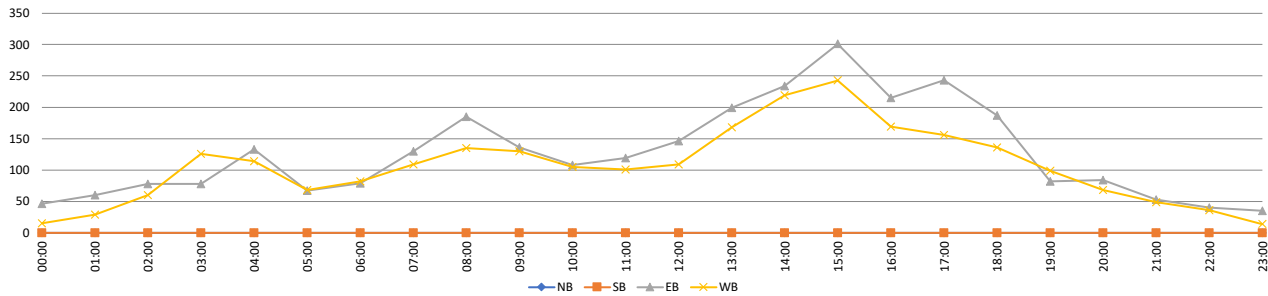
### VOLUME

#### Jack Northrop Ave Bet Prairie Ave & Crenshaw Blvd

Day: Thursday  
Date: 1/15/2026

City: Hawthorne  
Project #: CA26\_020026\_001

DAILY TOTALS						NB	SB	EB	WB	Total	DAILY TOTALS								
						0	0	3,038	2,540	5,578									
15-Minutes Interval											Hourly Intervals								
TIME	NB	SB	EB	WB	TOTAL	TIME	NB	SB	EB	WB	TOTAL	TIME	NB	SB	EB	WB	TOTAL		
0:00			5	1	6	12:00			35	24	59	00:00	01:00		46	15	61		
0:15			10	6	16	12:15			31	29	60	01:00	02:00		60	29	89		
0:30			13	2	15	12:30			35	27	62	02:00	03:00		78	60	138		
0:45			18	6	24	12:45			45	29	74	03:00	04:00		78	126	204		
1:00			10	5	15	13:00			39	28	67	04:00	05:00		133	114	247		
1:15			16	9	25	13:15			58	47	105	05:00	06:00		67	68	135		
1:30			9	8	17	13:30			40	41	81	06:00	07:00		79	82	161		
1:45			25	7	32	13:45			62	52	114	07:00	08:00		130	109	239		
2:00			15	5	20	14:00			40	46	86	08:00	09:00		185	135	320		
2:15			19	15	34	14:15			62	74	136	09:00	10:00		136	130	266		
2:30			20	25	45	14:30			49	50	99	10:00	11:00		108	105	213		
2:45			24	15	39	14:45			83	49	132	11:00	12:00		119	101	220		
3:00			17	20	37	15:00			64	47	111	12:00	13:00		146	109	255		
3:15			16	38	54	15:15			110	75	185	13:00	14:00		199	168	367		
3:30			31	43	74	15:30			64	76	140	14:00	15:00		234	219	453		
3:45			14	25	39	15:45			63	45	108	15:00	16:00		301	243	544		
4:00			19	30	49	16:00			59	40	99	16:00	17:00		215	169	384		
4:15			34	25	59	16:15			51	48	99	17:00	18:00		243	156	399		
4:30			45	28	73	16:30			46	44	90	18:00	19:00		187	136	323		
4:45			35	31	66	16:45			59	37	96	19:00	20:00		82	99	181		
5:00			18	23	41	17:00			60	37	97	20:00	21:00		84	68	152		
5:15			15	17	32	17:15			64	47	111	21:00	22:00		53	49	102		
5:30			19	9	28	17:30			60	36	96	22:00	23:00		40	36	76		
5:45			15	19	34	17:45			59	36	95	23:00	00:00		35	14	49		
6:00			11	19	30	18:00			49	39	88	STATISTICS							
6:15			19	19	38	18:15			51	39	90							NB	SB
6:30			24	22	46	18:30			55	25	80	Peak Period	00:00 to 12:00						
6:45			25	22	47	18:45			32	33	65	Volume					1219	1074	2293
7:00			31	23	54	19:00			22	29	51	Peak Hour					8:00	7:45	8:00
7:15			27	20	47	19:15			21	23	44	Peak Volume					185	138	320
7:30			34	33	67	19:30			21	24	45	Peak Hour Factor					0.784	0.932	0.833
7:45			38	33	71	19:45			18	23	41	Peak Period	12:00 to 00:00						
8:00			36	35	71	20:00			16	19	35	Volume					1819	1466	3285
8:15			38	33	71	20:15			25	20	45	Peak Hour					14:45	14:45	14:45
8:30			59	37	96	20:30			21	15	36	Peak Volume					321	247	568
8:45			52	30	82	20:45			22	14	36	Peak Hour Factor					0.730	0.813	0.768
9:00			33	35	68	21:00			15	12	27	Peak Period	07:00 to 09:00						
9:15			35	33	68	21:15			13	17	30	Volume					315	244	559
9:30			34	31	65	21:30			15	10	25	Peak Hour					8:00	7:45	8:00
9:45			34	31	65	21:45			10	10	20	Peak Volume					185	138	320
10:00			32	26	58	22:00			10	7	17	Peak Hour Factor					0.784	0.932	0.833
10:15			28	23	51	22:15			12	14	26	Peak Period	16:00 to 18:00						
10:30			26	29	55	22:30			11	8	19	Volume					458	325	783
10:45			22	27	49	22:45			7	7	14	Peak Hour					16:45	16:00	16:45
11:00			31	31	62	23:00			10	7	17	Peak Volume					243	169	400
11:15			28	16	44	23:15			12	5	17	Peak Hour Factor					0.949	0.880	0.901
11:30			39	24	63	23:30			13	2	15								
11:45			21	30	51	23:45			0	0	0								
<b>TOTALS</b>	<b>0</b>	<b>0</b>	<b>1219</b>	<b>1074</b>	<b>2293</b>	<b>TOTALS</b>	<b>0</b>	<b>0</b>	<b>1819</b>	<b>1466</b>	<b>3285</b>								
<b>SPLIT %</b>	<b>0%</b>	<b>0%</b>	<b>53%</b>	<b>47%</b>	<b>41%</b>	<b>SPLIT %</b>	<b>0%</b>	<b>0%</b>	<b>55%</b>	<b>45%</b>	<b>59%</b>								



SPEED

Jack Northrop Ave Bet Prairie Ave & Crenshaw Blvd

Day: Thursday  
Date: 1/15/2026

City: Hawthorne

Project #: CA26\_020026\_001

HOURLY BREAKDOWN table with columns for Time, EASTBOUND (5-70), WESTBOUND (5-70), and TOTALS (5-70, Total). Rows include hourly data from 0:00 to 23:00 and a Totals row.

STATISTICS table with columns for time intervals (06:00-12:00, 12:00-24:00, 07:00-09:00, 16:00-18:00) and various metrics like Peak Hour, Peak Volume, and Percentiles.

Percentiles table with columns for Direction (EASTBOUND, WESTBOUND, TOTALS) and Percentiles (15th, 50th, Average, 85th, 95th, ADT).

Pace table with columns for Direction (EASTBOUND, WESTBOUND, TOTALS) and Pace metrics (10mph Pace, # in Pace, % in Pace, Number of Vehicles >= 55 MPH, % of Vehicles >= 55 MPH).

15-MINUTE BREAKDOWN table with columns for time intervals (0:00 to 9:15) and 15-minute counts for each direction (EASTBOUND, WESTBOUND, TOTALS).



### Pedestrian Study

Location: Jack Northrop Ave between Prairie Ave & Crenshaw Blvd  
 City: Hawthorne

Date: 1/15/2026  
 Day: Thursday

TIME	Pedestrian Crossing Volume								TOTAL
	PEDS 001		PEDS 002		PEDS 003		PEDS 004		
	NB	SB	NB	SB	NB	SB	NB	SB	
9:00 AM	4	0	1	0	0	0	7	2	14
9:15 AM	3	1	3	0	1	0	6	0	14
9:30 AM	2	0	0	0	1	0	9	8	20
9:45 AM	2	1	2	0	0	0	3	5	13
10:00 AM	2	0	0	1	0	0	10	4	17
10:15 AM	1	0	0	0	0	1	4	4	10
10:30 AM	2	0	0	0	0	0	11	12	25
10:45 AM	2	0	1	3	0	0	8	5	19
11:00 AM	0	2	3	1	0	0	6	6	18
11:15 AM	1	1	0	0	0	0	1	3	6
11:30 AM	0	1	0	0	0	0	3	4	8
11:45 AM	1	0	0	0	1	0	1	6	9
12:00 PM	0	0	0	0	0	0	13	7	20
12:15 PM	2	0	0	0	2	0	16	3	23
12:30 PM	0	0	1	3	0	1	4	3	12
12:45 PM	1	0	0	0	0	1	3	3	8
Totals	23	6	11	8	5	3	105	75	236

