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REVISED LOCAL CIRCULATION ANALYSIS
2555 W. 190TH STREET
WAREHOUSE/MANUFACTURING PROJECT

Torrance, California

February 6, 2025 (Original date July 27, 2022)

Prepared for:

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EXECUTIVE SUMMARY

Project Description

- The Project site is located at 2555 W. 190th Street in the City of Torrance, California. It is bounded by Crenshaw Boulevard/Crenshaw Place to the west and by W. 190th Street to the south. Upon initiation of this Project the site was developed with an existing 160,000 SF office building which has recently been demolished.
- The proposed Project includes development of a state-of-the-art warehouse/industrial/ manufacturing facility that could range between 270,600 SF to 284,130 SF[1]. Two (2) Project Options are proposed:
  - **Option A** includes 284,130 square-feet (SF) of floor area consisting of 85,239 SF of warehouse, 170,478 SF of manufacturing, and 28,413 SF of office, inclusive of 13,530 SF of mezzanine space. Parking for the Project, calculated at 1 space per 1500 SF for warehouse/storage space, 1 space per 400 SF of manufacturing, and 1 space per 250 SF of office space per Section 93.2.33 of the City's Municipal Code, will be provided via 600 on-site parking spaces
  - **Option B** includes 270,600 SF of floor area consisting of 257,070 SF of warehouse, and 13,530 SF of office space. Parking for this Project option, calculated at 1 space per 1500 SF for warehouse/storage space, and 1 space per 250 SF of office space per Section 93.2.33 of the City's Municipal Code, will be provided via 377 on-site parking spaces.
- Vehicular access will be maintained at the two (2) existing unsignalized full access driveway on 190th Street (referred to as Project Driveways 2 and 3), and the signalized intersection of 190th Street at Honeywell (referred to as Project Driveway 1), as well as the existing unsignalized full access driveway on Crenshaw Place (referred to as Project Driveway 5). One additional unsignalized driveway, to be located on Crenshaw Place in close proximity to Crenshaw Boulevard, is proposed and will serve as the primary access for the Project's truck-related traffic (referred to as Project Driveway 4). As a Project Design Feature, the Project will widen Crenshaw Place along project frontage from 190th Street north to Project Driveway 4, and also widen 190th Street to construct a westbound right-turn lane at this intersection to facilitate truck access.
- It is anticipated that, whether one tenant or two tenants occupies the Project, access to the "gated/secured" truck loading areas would require trucks to enter the site via the proposed northerly driveway on Crenshaw Place (Project Driveway 4). All large semi-trucks (tractor–trailer) will be prohibited from entering the site via the existing signalized site driveway along W. 190th Street (Project Driveway 1), but with concurrence by the City, it is expected truck traffic would be allowed to exit. Site access for passenger vehicles would be allowed at all project driveways. It is expected that only single-unit/box trucks (SU-40 or smaller) no longer

[1] The site plan provided in this report (i.e. *Figures 2-2, 2-3, and 9-1 through 9-13*) was prepared by Ware Malcomb dated 12-16-24, and depicts the final footprint of the proposed development, which includes a total of 262,970 SF. However, this traffic study analysis is based on a previous iteration of the site plan which provides a conservative assessment.

than 40-feet in length would be allowed to enter via the existing signalized site driveway (Project Driveway 1) along W. 190th Street.

- The existing office building has a trip generation potential of 1,734 daily trips, with 243 trips (214 inbound, 29 outbound) produced in the AM peak hour and 230 trips (39 inbound, 191 outbound) produced in the PM peak hour on a weekday. It should be noted that to provide a conservative assessment no trip credit has been applied.

- The proposed Project Option A, after applying passenger car equivalent (PCE) factors to the warehousing/manufacturing components, is forecast to generate approximately 1,562 weekday daily PCE trips, with 231 PCE trips (181 inbound, 50 outbound) produced in the AM peak hour and 258 PCE trips (77 inbound, 181 outbound) produced in the PM peak hour. Of the total trips generated by Project, truck trips related to the warehousing/manufacturing components are forecast total 494 weekday daily PCE trips, with 94 PCE trips produced in the AM peak hour and 125 PCE trips produced in the PM peak hour.

  A comparison of trips generated by Project Option A to the Existing Land Use indicates that the net trip generation for the proposed Project would result in 172 fewer daily trips, 12 fewer AM peak hour trips, and 28 more PM peak hour trips. However, since the existing office building is currently vacant, the existing trip credit was not applied to the analysis to provide a conservative assessment.

- The proposed Project Option B, after applying passenger car equivalent (PCE) factors to the warehousing/manufacturing components, is forecast to generate approximately 723 weekday daily PCE trips, with 84 PCE trips (65 inbound, 19 outbound) produced in the AM peak hour and 90 PCE trips (26 inbound, 64 outbound) produced in the PM peak hour. Of the total trips generated by Project, truck trips related to the warehousing component are forecast total 226 weekday daily PCE trips, with 32 PCE trips produced in the AM peak hour and 40 PCE trips produced in the PM peak hour.

  A comparison of trips generated by Project Option B to the Existing Land Use indicates that the net trip generation for the proposed Project would result in 1,011 fewer daily trips, 159 fewer AM peak hour trips, and 140 fewer PM peak hour trips. However, since the existing office building is currently vacant, the existing trip credit was not applied to the analysis.

  A comparison of trips generated by Project Option A to that of Option B indicates that Option A will result in a greater amount of trips. As such, the potential traffic impact of Option A is evaluated in the LCA to provide a conservative assessment.

- The eleven (11) key area intersections selected for evaluation in this report, all of which are located within the City of Torrance, provide local and regional access to the study area. They consist of the following:

  1. Crenshaw Boulevard at W. 182nd Street (Torrance)
  2. I-405 Northbound Ramps at W. 182nd Street (Torrance/Caltrans)
  3. Crenshaw Boulevard at I-405 Southbound Ramps (Torrance/Caltrans)
  4. Western Avenue at I-405 Northbound Ramps (Torrance/Caltrans)

5. Crenshaw Boulevard at Crenshaw Place (Torrance)
6. Crenshaw Boulevard at W. 190th Street (Torrance)
7. Crenshaw Place at W. 190th Street (Torrance)
8. Project Driveway 1 at W. 190th Street (Torrance)
9. Van Ness Avenue at W. 190th Street (Torrance)
10. I-405 Southbound Ramps at W. 190th Street (Torrance/Caltrans)
11. Western Avenue at W. 190th Street (Torrance)

Traffic Analysis

Existing Traffic Conditions

- For Existing traffic conditions, four (4) of the eleven (11) key study intersections currently operate at unacceptable level of service during the AM and/or PM peak hours when compared to the LOS standards defined in this report. The remaining study intersections operate at acceptable level of service during the AM and PM peak hours. The intersections operating adversely are as follows:

	AM Peak Hour		PM Peak Hour	
Key Intersection	ICU	LOS	ICU	LOS
1. Crenshaw Boulevard at W. 182nd Street	--	--	1.064	F
5. Crenshaw Boulevard at Crenshaw Place	99.2 s/v	F	--	--
6. Crenshaw Boulevard at W. 190th Street	1.042	F	0.957	E
7. Crenshaw Place at W. 190th Street	68.4 s/v	F	--	--

Existing With Ambient Growth Traffic Conditions

- For Existing with Ambient Growth traffic conditions, four (4) of the eleven (11) key study intersections are forecast to operate at unacceptable level of service during the AM and/or PM peak hours when compared to the LOS standards defined in this report. The intersections operating adversely are as follows:

	AM Peak Hour		PM Peak Hour	
Key Intersection	ICU	LOS	ICU	LOS
1. Crenshaw Boulevard at W. 182nd Street	--	--	1.074	F
5. Crenshaw Boulevard at Crenshaw Place	106.7 s/v	F	--	--
6. Crenshaw Boulevard at W. 190th Street	1.051	F	0.965	E
7. Crenshaw Place at W. 190th Street	71.2 s/v	F	--	--

Existing With Ambient Growth With Project Traffic Conditions

- For Existing with Ambient Growth with Project traffic conditions, the proposed Project exceeds the level of service thresholds and require Project-related improvements at four (4) study intersections. The intersections include Crenshaw Boulevard at W. 182nd Street, Crenshaw Boulevard at Crenshaw Place, Crenshaw Boulevard at W. 190th Street, and

Crenshaw Place at W. 190th Street. The implementation of planned and/or recommended improvements at the intersections will help offset the Project's increment.

Traffic Analysis – Caltrans Requirements (HCM Methodology)

Existing Traffic Conditions (HCM Methodology)

- For Existing traffic conditions, all four (4) state-controlled study intersections currently operate at acceptable level of service D or better during the AM and PM peak hours.

Existing With Ambient Growth Traffic Conditions (HCM Methodology)

- For Existing with Ambient Growth traffic conditions, all four (4) state-controlled study intersections are forecast to operate at acceptable level of service D or better during the AM and PM peak hours.

Existing with Ambient Growth With Project Traffic Conditions (HCM Methodology)

- For Existing with Ambient Growth with Project traffic conditions, all four (4) state-controlled study intersections are forecast to operate at acceptable level of service D or better during the AM and PM peak hours.

Caltrans Off-Ramp Queueing Analysis

Existing Traffic Conditions

- For Existing traffic conditions, the queues are adequate during both the AM and PM peak hours.

Existing With Ambient Growth Traffic Conditions

- For Existing with Ambient Growth traffic conditions, the queues are adequate during both the AM and PM peak hours.

Existing with Ambient Growth With Project Traffic Conditions

- For Existing with Ambient Growth with Project traffic conditions, the queues are adequate during both the AM and PM peak hours.

Site Access

- The driveways are forecast to operate at acceptable levels of service in the AM and PM peak hours. Project Design Features include a westbound right-turn pocket along 190th Street at Crenshaw Place to help facilitate truck movements into the site.
- Access to and from the site via fire trucks and WB-67 are generally considered adequate with the exception that 75 feet of red curb shall be installed along Crenshaw Place to keep vehicles from parking in the truck swing zone. To minimize truck conflicts when existing the site from Project Driveway 1 it is recommended that a no right turn on red sign for commercial trucks

be installed, R13A(CA)(MOD). It should be noted that trucks will be prohibited from entering Project Driveway 1 from 190th Street. To prevent trucks from using Project Driveway 1 way finding signage shall be added as you approach the signalized intersection to direct trucks to use Crenshaw Place. Additional signage shall be added stating no truck access. Internal to the site will be an "outbound only" gated access upstream of the truck turnaround area, as well as restricted signage noting note "gated access no trucks". *Figure 9-2D* presents the wayfinding signage and restrictive signage along with recommended red curb.

- Potential truck access has been assessed related to a WB-67 accessing the site via southbound left-turn inbound movement and westbound right-turn outbound movement at Crenshaw Place at Crenshaw Boulevard. It was concluded that trucks with over 4-axles should be restricted from making the southbound left-turn inbound movement and westbound right-turn outbound movement at Crenshaw Place at Crenshaw Boulevard.

Project-Specific Circulation Enhancements

The following improvements are to be implemented as part of the proposed Project to enhance access to the Project, particularly for truck-related access. The Project is expected to pay the full construction costs and collaborate with City of Torrance on project design features. It is noted that the improvements documented herein and illustrated in the Project site plan have been conceptually approved by the City of Torrance as designed by DRC, the Project Civil Engineers. See ***Appendix E*** that includes the City Approved Truck Path Exhibits prepared by DRC Engineering (Dated 9/27/24).

- **Intersection 7 – Crenshaw Place at W. 190th Street:** Widen Crenshaw Place by 17 feet and restripe the intersection of Crenshaw Place at 190th Street to include a pedestrian crosswalk on the north leg of the intersection. Widen and provide the additional right-of-way required to construct an exclusive 14-feet wide westbound right-turn lane with 160-feet of storage and 90-feet of transition on W. 190th Street. Install 75 feet of red curb along Crenshaw Place to keep vehicles from parking in the truck swing zone. In addition, install 50 feet of double yellow center line as noted in *Figures 2-2* and *2-3.* This improvement, which has been incorporated in the Project site plan as a Project "design feature" is subject to the review and approval of the City of Torrance.

- **Intersection 9 – Project Driveway 1 at W. 190th Street:** Modify the northwest curb radii to a radius of 12' to accommodate large trucks. Restripe to provide an exclusive southbound left-turn and right-turn lane. Install way finding signage along with restrictive signage as noted in *Figures 2-2* and *2-3*. This improvement should be incorporated in the Project site plan as a Project "design feature" and is subject to the review and approval of the City of Torrance.

- **Project Driveway 4 at Crenshaw Place:** Modify the northeast curb radii to a radius of 25'. Install restrictive signage as noted in *Figures 2-2* and *2-3*. This improvement should be incorporated in the Project site plan as a Project "design feature" and is subject to the review and approval of the City of Torrance.

- **Crenshaw Place, between 190th Street and Project Driveway 4:** As a result of the proposed street widening on the east side of Crenshaw Place along the Project frontage, the Project is proposing to install angled parking and a centerline striping along Crenshaw Place.

Planned and Recommended Circulation Enhancements

Existing With Ambient Growth (Year 2024) With Project Traffic Conditions

Project-related improvements necessary at one (1) study intersections under Existing with Ambient Growth with Project traffic conditions are as follows:

- **Intersection 1 – Crenshaw Boulevard at W. 182nd Street:** Planned improvements at the intersection include constructing an exclusive westbound right-turn lane. Additional right-of-way will be required to construct these improvements. Modify the existing traffic signal as necessary. These planned improvements, which have been approved and funded, are consistent with the improvements identified in the *I-405 at Crenshaw Boulevard/182nd Street Interchange Improvement Project Final Initial Study/Environmental Assessment Report*. It should be noted that at the time this traffic study was initiated in 2022, the City was in the process of constructing these improvements. It is our understanding that these improvements have been completed as of 2024.

REVISED LOCAL CIRCULATION ANALYSIS

2555 W. 190TH STREET WAREHOUSE/MANUFACTURING PROJECT

Torrance, California

February 6, 2025 (Original date July 27, 2022)

1.0 INTRODUCTION

This traffic circulation analysis evaluates the potential traffic and circulation needs associated with the proposed 2555 W. 190th Street Warehouse/Manufacturing Project (hereinafter referred to as Project) in the City of Torrance, California. The subject property was developed with an existing vacant 160,000 square-foot (SF) office building which has recently been demolished. The proposed Project includes the development of a state-of-the-art warehouse/industrial warehouse/manufacturing facility that could range between 270,600 SF to 284,130 SF[2].

1.1 Scope of Work

This report documents the findings and recommendations of a traffic analysis conducted by Linscott, Law & Greenspan Engineers (LLG) to determine the need for potential Project-related improvements in relation to the guidance provided in the City of Torrance General Plan. The traffic analysis evaluates the operating conditions at eleven (11) key study intersections and Project site driveways, estimates the trip generation potential of the Project, and forecasts future (near -term) operating conditions without and with the Project.

This local circulation analysis has been prepared according to the traffic impact requirements of the City of Torrance. The approved Scope of Work for this local circulation analysis, which was developed in collaboration with City staff, is included in ***Appendix A***. The City of Torrance Traffic Impact Analysis Guidelines (https://www.torranceca.gov/our-city/public-works/civil-and-traffic-engineering/traffic-engineering/traffic-impact-analysis-guidelines) was used to assess the potential traffic impacts of development projects within the City jurisdiction, inclusive of the significant impact thresholds.

The Project site has been visited and an inventory of adjacent area roadways and intersections was performed. Existing traffic count information has been compiled and is utilized in this report in support of a detailed intersection capacity analysis.

1.2 Study Area

The eleven (11) key study intersections selected for evaluation in this report provide local and regional access to the study area. They consist of the following:

1. Crenshaw Boulevard at W. 182nd Street (Torrance)
2. I-405 Northbound Ramps at W. 182nd Street (Torrance/Caltrans)
3. Crenshaw Boulevard at I-405 Southbound Ramps (Torrance/Caltrans)

[2] The site plan provided in this report (i.e. *Figures 2-2, 2-3, and 9-1 through 9-13*) was prepared by Ware Malcomb dated 12-16-24, and depicts the final footprint of the proposed development, which includes a total of 262,970 SF. However, this traffic study analysis is based on a previous iteration of the site plan which provides a conservative assessment.

4. Western Avenue at I-405 Northbound Ramps (Torrance/Caltrans)
5. Crenshaw Boulevard at Crenshaw Place (Torrance)
6. Crenshaw Boulevard at W. 190th Street (Torrance)
7. Crenshaw Place at W. 190th Street (Torrance)
8. Project Driveway 1 at W. 190th Street (Torrance)
9. Van Ness Avenue at W. 190th Street (Torrance)
10. I-405 Southbound Ramps at W. 190th Street (Torrance/Caltrans)
11. Western Avenue at W. 190th Street (Torrance)

Figure 1-1 presents a Vicinity Map, which illustrates the general location of the Project and depicts the study intersections and surrounding street system.

1.3 Local Circulation Analysis Components

The Volume-Capacity (V/C) and corresponding Level of Service (LOS) calculations at the key study intersections were used to evaluate the potential traffic-related impacts associated with area growth and the proposed Project. When necessary, this report recommends intersection improvements that may be required to accommodate future traffic volumes and restore/maintain an acceptable Level of Service and/or addresses the impact of the Project.

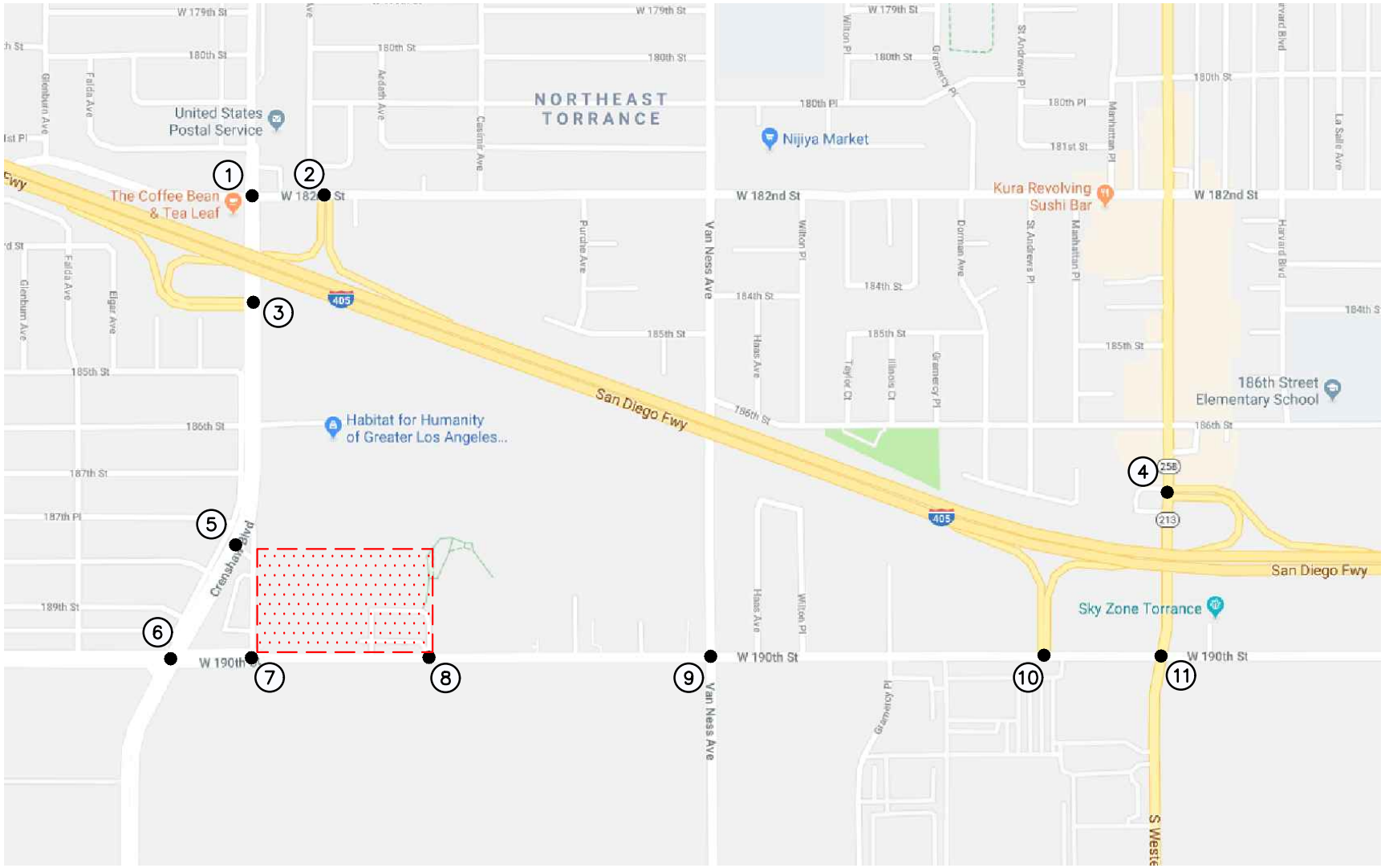
Included in this Traffic Impact Analysis are:

- Existing Traffic Counts,
- Estimated Project traffic generation/distribution/assignment,
- AM and PM peak hour LOS analyses for Existing Conditions,
- AM and PM peak hour LOS analyses for Existing with Ambient Growth to the Year 2024 (Near-term) conditions without and with Project traffic,
- State of California (Caltrans) analysis,
- Recommended Improvements to mitigate Project-Related impacts, and
- Site Access and Internal Circulation Evaluation.

1.4 Local Circulation Analysis Scenarios

The following scenarios are those for which volume-capacity (V/C) and corresponding LOS calculations have been performed at the key intersections for Existing and Year 2024 traffic conditions:

A. Existing Traffic Conditions,
B. Existing With Ambient Growth (Year 2024) Traffic Conditions,
C. Existing With Ambient Growth (Year 2024) With Project Traffic Conditions,
D. Scenario (C) With Recommended Improvements, if any.



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SOURCE: GOOGLE

KEY

(#) = STUDY INTERSECTION

= PROJECT SITE

NO SCALE

FIGURE 1-1

VICINITY MAP

2555 W. 190TH STREET WAREHOUSE/MANUFACTURING PROJECT, TORRANCE

2.0 PROJECT DESCRIPTION AND LOCATION

The Project site is located at 2555 W. 190th Street in the City of Torrance, California. It is bounded by Crenshaw Boulevard/Crenshaw Place to the west and by W. 190th Street to the south. Upon initiation of this Project the site was developed with an existing 160,000 SF office building which has recently been demolished. ***Figure 2-1*** displays the existing site aerial of current site layout and access locations.

Table 2-1 presents the development summary for the existing and proposed uses of the Project. Review of *Table 2-1* indicates that the proposed Project includes development of a state-of-the-art warehouse/industrial/manufacturing facility that could range between 270,600 SF to 284,130 SF[3]. Two (2) Project Options are proposed:

- **Option A** includes 284,130 square-feet (SF) of floor area consisting of 85,239 SF of warehouse, 170,478 SF of manufacturing, and 28,413 SF of office, inclusive of 13,530 SF of mezzanine space. Parking for the Project, calculated at 1 space per 1500 SF for warehouse/storage space, 1 space per 400 SF of manufacturing, and 1 space per 250 SF of office space per Section 93.2.33 of the City's Municipal Code, will be provided via 600 on-site parking spaces. ***Figure 2-2***[4] illustrates –the conceptual site plan for Project Option A, prepared by Ware Malcomb, dated 10-03-2024.

- **Option B** includes 270,600 SF of floor area consisting of 257,070 SF of warehouse, and 13,530 SF of office space. Parking for this Project option, calculated at 1 space per 1500 SF for warehouse/storage space, and 1 space per 250 SF of office space per Section 93.2.33 of the City's Municipal Code, will be provided via 377 on-site parking spaces. ***Figure 2-3***[5] illustrates the conceptual site plan for Project Option B, prepared by Ware Malcomb, dated 10-03-2024.

The Project is expected to be constructed by Year 2024, which has been assumed as the Project's potential opening year (full buildout/occupancy) and has been utilized to assess the need for potential Project-related traffic improvements within a near-term traffic setting.

2.1 Project Access

The Project site plan indicates that vehicular access will be maintained at the two (2) existing unsignalized full access driveway on 190th Street (referred to as Project Driveways 2 and 3), and the signalized intersection of 190th Street at Honeywell (referred to as Project Driveway 1), as well as the existing unsignalized full access driveway on Crenshaw Place (referred to as Project Driveway 5).

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[3] The site plan provided in this report (i.e. *Figures 2-2, 2-3, and 9-1 through 9-13*) was prepared by Ware Malcomb dated 12-16-24, and depicts the final footprint of the proposed development, which includes a total of 262,970 SF. However, this traffic study analysis is based on a previous iteration of the site plan which provides a conservative assessment.

[4] It should be noted that the proposed development described for Option A is based on a previous iteration of the site plan (Scheme 10c - Conceptual Site Plan [LAX18-0056-00_SS010c]) prepared by Ware Malcomb, dated 05-13-2022.

[5] It should be noted that the proposed development described for Option B is based on a previous iteration of the site plan (Scheme 10d - Conceptual Site Plan [LAX18-0056-00_SS010d]) prepared by Ware Malcomb, dated 05-13-2022.

A fifth unsignalized driveway, to be located on Crenshaw Place in close proximity to Crenshaw Boulevard, is proposed and will serve as the primary access for the Project's truck-related traffic (referred to as Project Driveway 4). As a Project Design Feature, the Project will widen Crenshaw Place by 17 feet and restripe the Crenshaw Place at 190th Street to include a pedestrian crosswalk on the north leg of the intersection. As illustrated in *Figures 2-2 and 2-3*, the proposed Project will also install red curb along Crenshaw Place and provide angled striped on-street parking as well as centerline striping. The Project also proposes to widen 190th Street by 14 feet and construct 14-feet wide westbound right-turn pocket with 160-feet of storage and a 90-feet transition at this intersection to facilitate truck access.

It is anticipated that, whether one tenant or two tenants occupies the Project, access to the "gated/secured" truck loading areas would require trucks to enter the site via the proposed northerly driveway on Crenshaw Place (Project Driveway 4). All large semi-trucks (tractor–trailer) will be prohibited from entering the site via the existing signalized site driveway along W. 190th Street (Project Driveway 1), but with concurrence by the City, it is expected truck traffic would be allowed to exit. *Figure 2-2* and *2-3* identifies the wayfinding signage as you approach Project Driveway 1 along with restrictive signage that should installed to prohibit movements that are to be restricted. Site access for passenger-vehicles would be allowed at all project driveways. It is expected that only single-unit/box trucks (SU-40 or smaller) no longer than 40-feet in length would be allowed to enter via the existing signalized site driveway (Project Driveway 1) along W. 190th Street.

2.2 Pedestrian Circulation

Pedestrian circulation will be provided via existing public sidewalks along W. 190th Street and Crenshaw Place within the vicinity of the project frontage. The proposed Project will protect the existing sidewalk along project frontage and if necessary, repair or reconstruct sidewalks along the project frontage per the City's request. The existing sidewalk system within the project vicinity provides direct connectivity to the surrounding commercial properties and major thoroughfares.

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N NO SCALE

SOURCE: GOOGLE

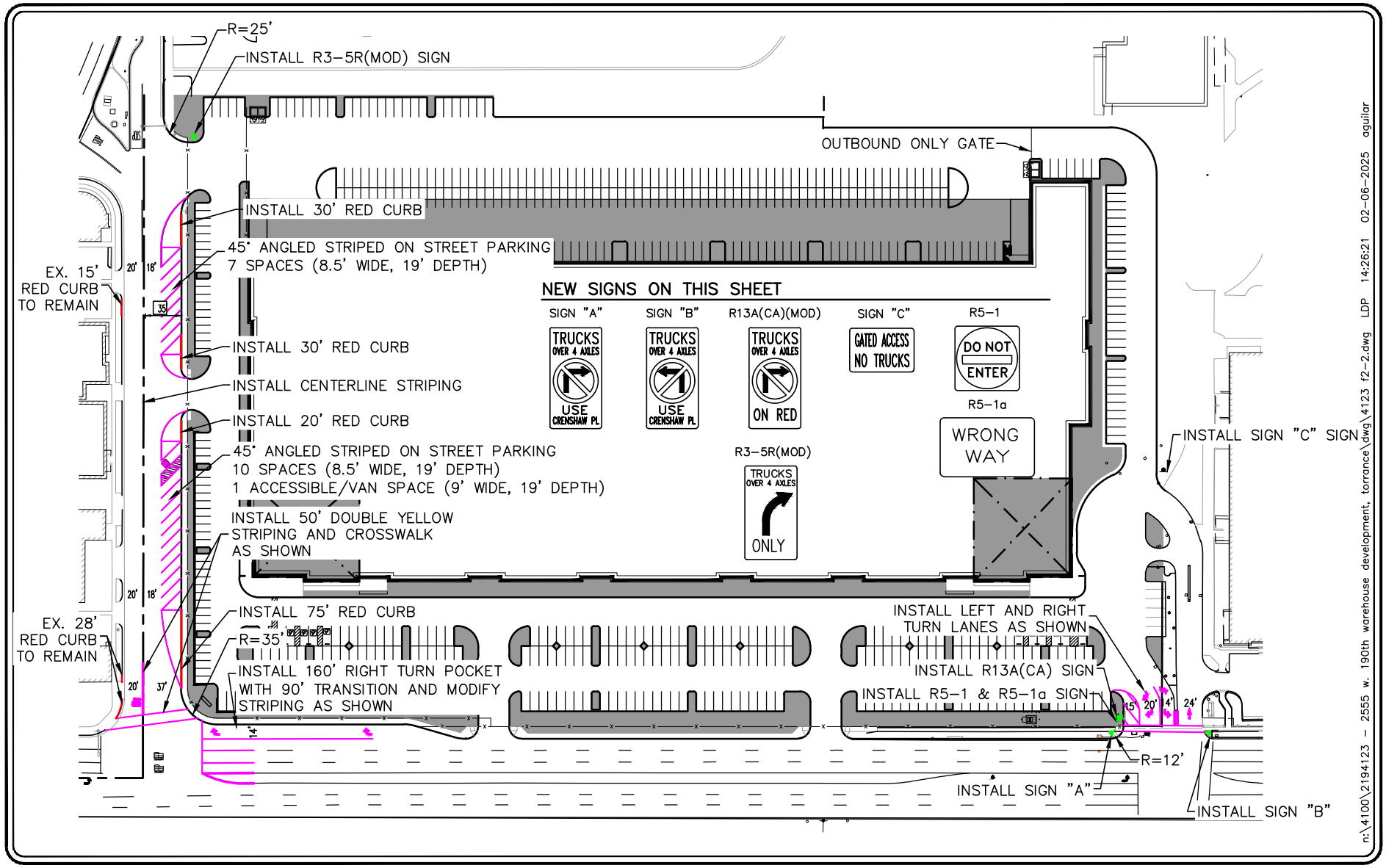
KEY

= PROJECT SITE

FIGURE 2-1

EXISTING SITE PLAN

2555 W. 190TH STREET WAREHOUSE/MANUFACTURING PROJECT, TORRANCE



SOURCE: DRC ENGINEERING INC.

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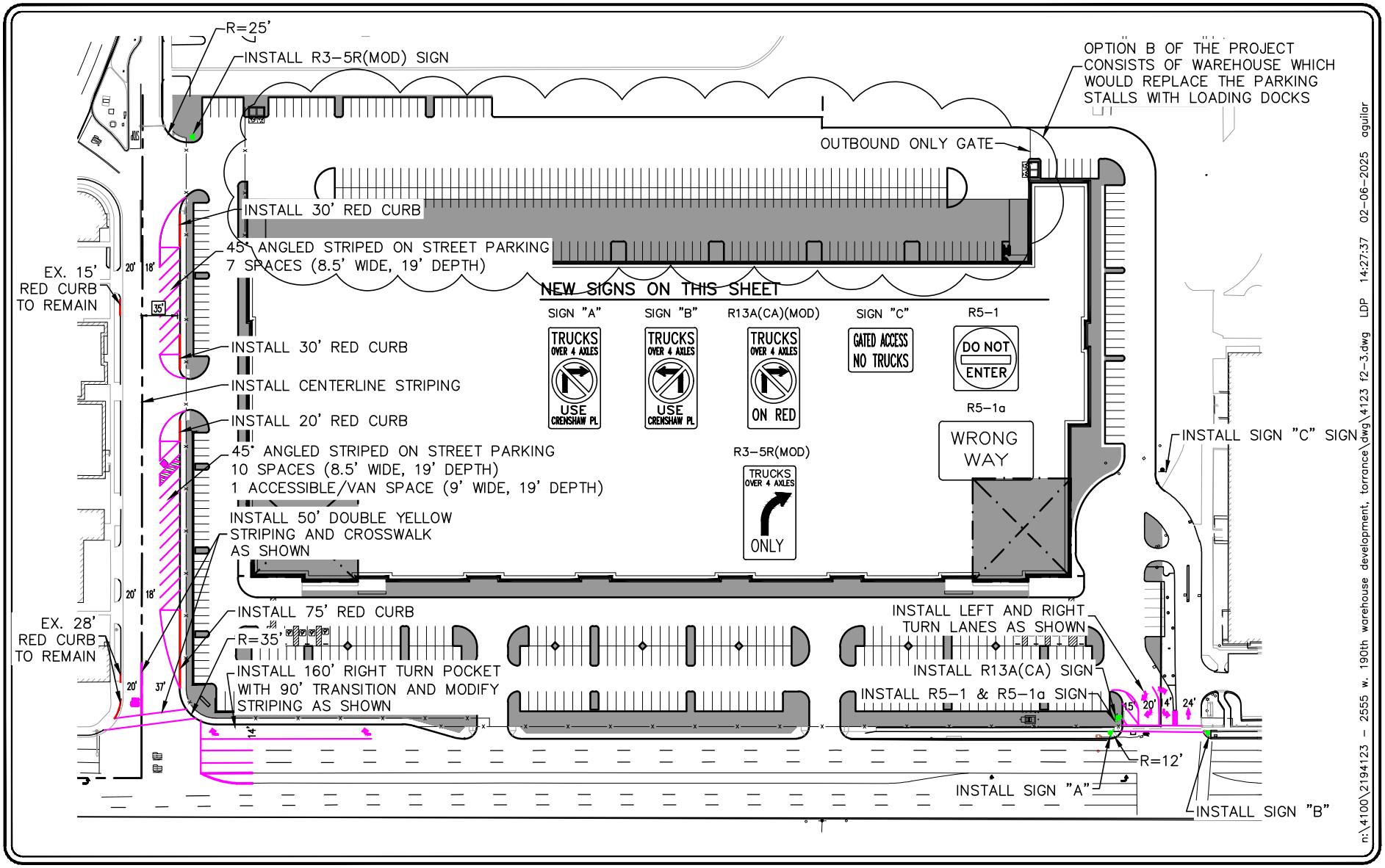
N NO SCALE

FIGURE 2-2

PROPOSED SITE PLAN

2555 W. 190TH STREET WAREHOUSE/MANUFACTURING PROJECT, TORRANCE



SOURCE: DRC ENGINEERING INC.

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FIGURE 2-3

PROPOSED SITE PLAN – OPTION B

2555 W. 190TH STREET WAREHOUSE/MANUFACTURING PROJECT, TORRANCE

TABLE 2-1

PROJECT DEVELOPMENT SUMMARY[6,7]

Land Use / Project Description	Prior Development – Square-Footage (SF)	Proposed Project Development Option A – Square-Footage (SF) [8]	Proposed Project Development Option B – Square-Footage (SF) [9]
Office/ Warehouse / Manufacturing Floor Area Allocation			
❑ Office	160,000 SF	28,413 SF	13,530 SF
❑ Warehouse	--	85,239 SF	257,070 SF
❑ Manufacturing	---	170,478 SF	---
Total Building Floor Area	**160,000 SF**	**284,130 SF**	**270,600 SF**

Notes:
- SF = square foot of development

6 Source: Comstock Crosser & Associates/ware Malcomb, *Conceptual Site Plan – Scheme 12b.*

7 The site plan provided in this report (i.e. *Figures 2-2, 2-3, and 9-1 through 9-13*) was prepared by Ware Malcomb dated 12-16-24, and depicts the final footprint of the proposed development, which includes a total of 262,970 SF. However, this traffic study analysis is based on a previous iteration of the site plan which provides a conservative assessment.

8 Source: Conceptual Site Plan Scheme 10c (LAX18-0056-00), prepared by Ware Malcomb, dated 05.13.2022.

9 Source: Conceptual Site Plan Scheme 10d (LAX18-0056-00), prepared by Ware Malcomb, dated 05.13.2022.

3.0 ANALYSIS CONDITIONS AND METHODOLOGY

3.1 Existing Street System

The principal local network of streets serving the proposed Project is Crenshaw Boulevard, Crenshaw Place, Van Ness Avenue, Western Avenue, W. 182nd Street and W. 190th Street. The following discussion provides a brief synopsis of these key area roadways. The descriptions are based on an inventory of existing roadway conditions.

Crenshaw Boulevard is a north-south, six-lane, divided roadway that borders the Project site. The posted speed limit on Crenshaw Boulevard is 40 mph north of W. 190th street and 45 mph south of W. 190th street. On-street parking is generally not permitted along either side of the roadway within the vicinity of the Project. The City of Torrance Circulation Element designates Crenshaw Boulevard as a Major Arterial. The study intersections of Crenshaw Boulevard at W. 182nd Street, I-405 Southbound Ramps, and W. 190th Street are controlled by a traffic signal. The study intersection of Crenshaw Boulevard at Crenshaw Place is controlled by a one-way stop sign.

Crenshaw Place is a north-south, two-lane, undivided roadway that borders the Project site. The posted speed limit on Crenshaw Place is 25 mph. On-street parking is generally permitted along both sides of the roadway within the vicinity of the Project. The City of Torrance Circulation Element designates Crenshaw Place as a Local Street. The study intersection of Crenshaw Place at W. 190th Street, as well as the intersection with Crenshaw Boulevard, are both controlled by a one-way stop sign.

Van Ness Avenue is a north-south, four-lane, divided roadway located east of the Project site. The posted speed limit on Van Ness Avenue is 35 mph. On street parking is permitted along the northbound side north of W. 190th street. The city of Torrance Circulation Element designates Van Ness Avenue as a Minor Arterial. The study intersection of Van Ness Avenue at W. 190th Street is controlled by a traffic signal.

Western Avenue is a north-south, four-lane, divided roadway located east of the Project site. The posted speed limit on Western Avenue is 45 mph. On-street parking is permitted along the northbound side north of W. 190th street. The City of Torrance Circulation Element designates Western Avenue as a Major Arterial. The study intersections of Western Avenue at I-405 Northbound Ramps and W. 190th street are controlled by a traffic signal.

W. 182nd Street is an east-west, four lane, divided roadway located to the north of the Project site. The posted speed limit on W. 182nd Street is 35 mph. On street parking is permitted along the westbound side. The City of Torrance Circulation Element designates W. 182nd Street as a Minor Arterial. The study intersection of I-405 Northbound Ramps at W. 182nd Street is controlled by a traffic signal.

W. 190th Street is an east-west, six-lane, divided roadway located south of the Project site. The posted speed limit of W. 190th Street is 45 mph. On street parking is generally not permitted along both sides of the roadway within the vicinity of the Project. The City of Torrance Circulation Element designates

W. 190th Street as a Major Arterial. The study intersections of Project Driveway 1 and I-405 Southbound Ramps at W. 190th Street are controlled by a traffic signal. The study intersection of Project Driveways 2 and 3 at W. 190th Street are controlled by a one-way stop sign.

Figure 3-1 presents an inventory of the existing roadway conditions for the arterials and intersections evaluated in this report. This figure identifies the number of travel lanes for key arterials, as well as intersection configurations and controls for the key area intersections neighboring the Project site.

3.2 Existing Traffic Volumes

Manual vehicular turning movement counts were conducted at the eleven (11) key study locations during the weekday morning and evening peak commuter periods to determine the existing AM and PM peak hour traffic volumes. AM and PM peak hour traffic counts at the key study intersections were collected by National Data and Surveying Services in May 2019. To establish existing 2022 conditions, the 2019 traffic counts will be factored by an annual growth rate 0.525% per year.

Figures 3-2 and ***3-3*** depict the existing AM and PM peak hour traffic volumes at the eleven (11) key study intersections, respectively. The existing AM and PM peak hour traffic volumes illustrated in *Figures 3-2* and *3-3* are comprised of passenger vehicles, large 2-axle trucks, 3-axle trucks, 4+ axle trucks, recreational vehicles and buses. The large trucks, recreational vehicles and buses turning movements were converted to passenger car equivalents (P.C.E.'s) factors of 1.5, 2.0 and 3.0 were utilized for large 2-axle trucks, 3-axle trucks and 4+-axle trucks, respectively. ***Appendix B*** contains the detailed manual turning movement count sheets for the eleven (11) key study intersections evaluated in this report.

3.3 Existing Public Transit

Torrance Transit, as illustrated in ***Figure 3-4***, operates Lines 5, 6, and 10 within the study area. Gardena Transit, as illustrated in ***Figure 3-5***, operates Line 2 within the study area. Bus stops, as illustrated in ***Figure 3-6***, are generally provided along Crenshaw Boulevard, Van Ness Avenue, Western Avenue, and W. 190th Street.

Torrance Transit Line 5:

- The route extends from Pacific Coast Highway/Crenshaw Boulevard to Crenshaw Station.
- The route traverses the study area on Van Ness Avenue, with the closest bus stops located in the northwest and southeast corner of Van Ness Avenue/W. 190th Street.
- During the AM and PM peak hours, headways are approximately one bus in each direction every hour.

Torrance Transit Line 6:

- The route extends from Carson Street/Hawthorne Boulevard to Artesia Station
- The route traverses the study area on W. 190th Street, with the closest bus stops located in the northeast and southeast corner of Honeywell/W. 190th Street.

- During the AM and PM peak hours, headways are approximately one bus in each direction every 45 minutes.

Torrance Transit Line 10:

- The route extends Pacific Coast Highway/Crenshaw Boulevard to Crenshaw Station.
- The route traverses the study area on Crenshaw Boulevard with the closest bus stops located on the northeast and southwest corner of Crenshaw Boulevard/W. 190th Street.
- During the AM and PM peak hours, headways are approximately one bus in each direction every 60 minutes.

Gardena Transit Line 2:

- The route circles Western Avenue, Imperial Highway, Vermont Avenue, Normandie Avenue, and Pacific Coast Highway.
- The route traverses the study area on Western Avenue with the closest bus stops located on the southwest corner of Western Avenue/W. 190th Street.
- During the AM and PM peak hours, headways are approximately one bus in each direction every 15 minutes.

3.4 Level of Service (LOS) Analysis Methodologies

AM and PM peak hour operating conditions for the key signalized study intersections were evaluated using the *Intersection Capacity Utilization (ICU) Methodology* for signalized intersections. Any unsignalized key study intersections were evaluated using the methodology outlined in the *Highway Capacity Manual (HCM)*.

3.4.1 *Intersection Capacity Utilization (ICU) Method of Analysis (Signalized Intersections)*

In conformance with City of Torrance requirements, existing AM and PM peak hour operating conditions for the key signalized study intersections were evaluated using the *Intersection Capacity Utilization (ICU)* method of analysis. The ICU technique is intended for signalized intersection analysis and estimates the volume to capacity (V/C) relationship for an intersection based on the individual V/C ratios for key conflicting traffic movements. The ICU numerical value represents the percent signal (green) time and thus capacity, required by existing and/or future traffic. It should be noted that the ICU methodology assumes uniform traffic distribution per intersection approach lane and optimal signal timing.

The ICU calculations use a lane capacity of 1,600 vehicles per hour (vph) for left-turn, through and right-turn lanes and dual left-turn capacity of 2,880 vph. A clearance adjustment factor of 0.10 was added to each Level of Service calculation.

The ICU value translates to a Level of Service (LOS) estimate, which is a relative measure of the intersection performance. The six qualitative categories of Level of Service have been defined along with the corresponding ICU value range and are shown in ***Table 3-1***. The ICU value is the sum of the critical volume-to-capacity ratios at an intersection; it is not intended to be indicative of the LOS of each of the individual turning movements.

3.4.2 *Highway Capacity Manual (HCM) Method of Analysis (Unsignalized Intersections)*

The HCM unsignalized methodology for stop-controlled intersections was utilized for the analysis of the unsignalized intersections. This methodology estimates the average control delay for each of the subject movements and determines the level of service for each movement. For all-way stop controlled intersections, the overall average control delay measured in seconds per vehicle, and level of service is then calculated for the entire intersection. For one-way and two-way stop-controlled (minor street stop-controlled) intersections, this methodology estimates the worst side street delay, measured in seconds per vehicle and determines the level of service for that approach. The HCM control delay value translates to a Level of Service (LOS) estimate, which is a relative measure of the intersection performance. The six qualitative categories of Level of Service have been defined along with the corresponding HCM control delay value range, as shown in ***Table 3-2.***

3.5 Level of Service Criteria and Thresholds

The need for potential Project-related improvements due to the added Project traffic volumes generated by the proposed Project during the AM and PM peak hours was evaluated based on analysis of future operating conditions at the key study intersections, without, then with, the proposed Project using the *Intersection Capacity Utilization (ICU) Methodology* and the *Highway Capacity Manual (HCM) Methodology*. The previously discussed capacity analysis procedures were utilized to investigate the future volume-to-capacity relationships, delay and service level characteristics at each key study intersection. Each key study intersection was then evaluated using the following LOS criteria. It is noted that according to the City of Torrance, LOS D or better is the City's target for intersection operation. The LOS D objective for the roadway network reflects the City's desire to maintain a minimum acceptable condition during the morning and evening peak commute hours on all intersections within the City.

3.5.1 *Signalized Intersections Criteria*

- For signalized intersections, Project-related improvements are needed if the project related increase in the volume to capacity (V/C) ratio equals or exceeds the threshold shown below:

Level of Service (LOS)	Project-Related V/C Increase
C	0.04 or more
D	0.02 or more
E/F	0.01 or more

Source: City of Torrance Traffic Circulation Analysis (TCA) Guidelines

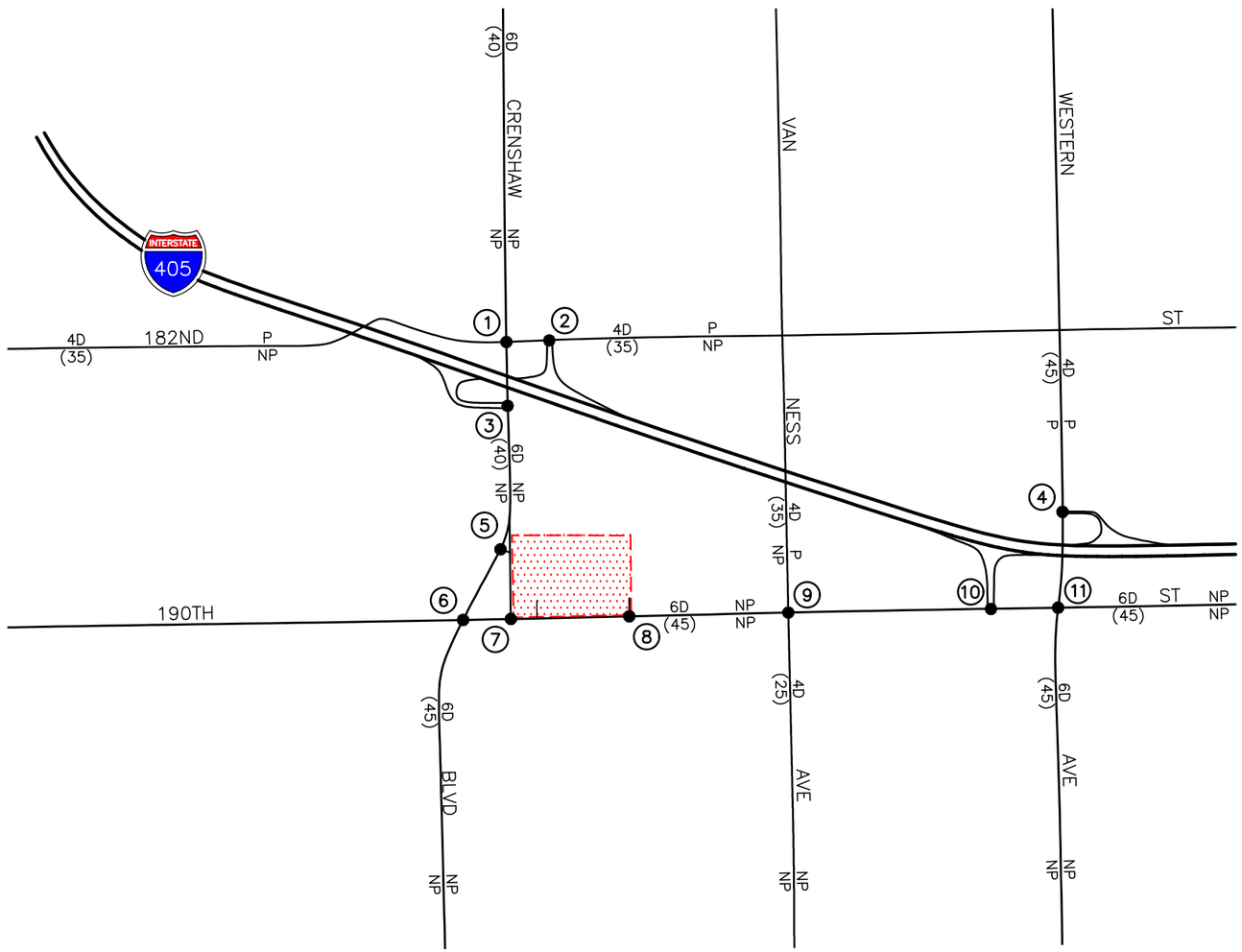
As indicated above, the Project-related increase in ICU value that defines whether Project-related improvements are needed varies with LOS. At LOS C or LOS D, the threshold is an increase of 0.04 or greater or 0.02 or greater, respectively, in the ICU value. This is reduced to 0.01 or greater under LOS E and F.

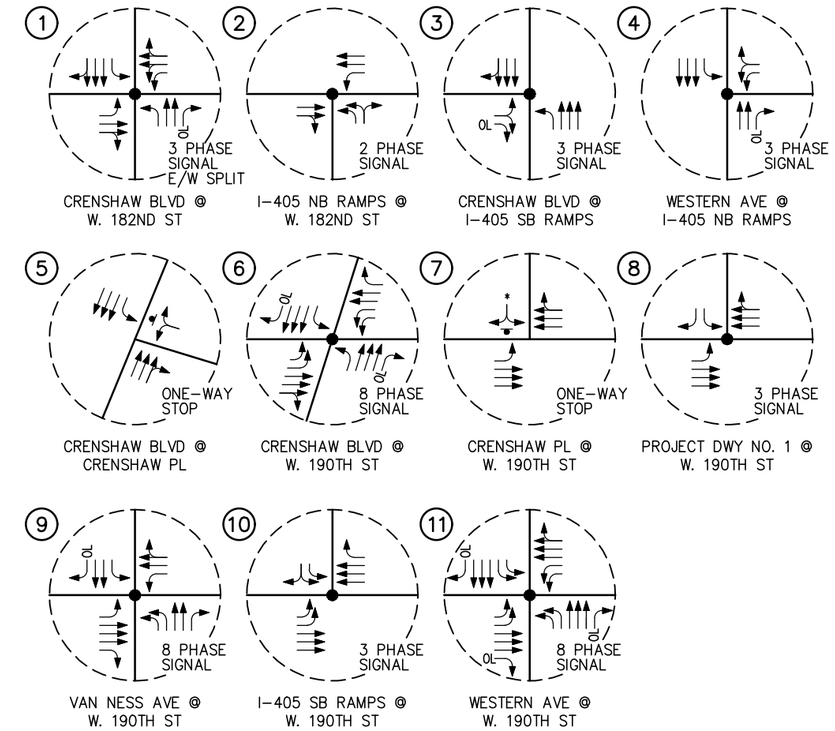
3.5.2 *Unsignalized Intersections Criteria*

- For unsignalized intersections, Project-related improvements are needed if the project causes an intersection at LOS D or better to degrade to LOS E or F.

  However, unsignalized intersection LOS is based on the control delay, but delay is only assessed for those traffic movements that are stopped or must yield to through traffic. Some movements, including cross traffic on the minor street or left turns onto the major street are acceptable with long delays, provided through traffic and right turns from a major street do not experience any delays at stopped intersections. When delay for cross traffic is severe (LOS F), the intersection should be further evaluated for possible improvement with traffic signals. In some cases, this analysis determines that the delay is being experienced by a very low number of vehicles and traffic signals are not warranted. For this condition, the intersection does not satisfy the need for Project-related improvements, but measures to reduce delay may be considered, if appropriate. In other cases, the number of stopped vehicles is substantial and traffic signals may be justified as a circulation enhancement. Therefore, the following significance criteria for unsignalized intersections are used:

  An unsignalized intersection requires Project-related improvements if the project causes an intersection at LOS D or better to degrade to LOS E or F, and the traffic signal warrant analysis determines that a signal is justified.





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KEY

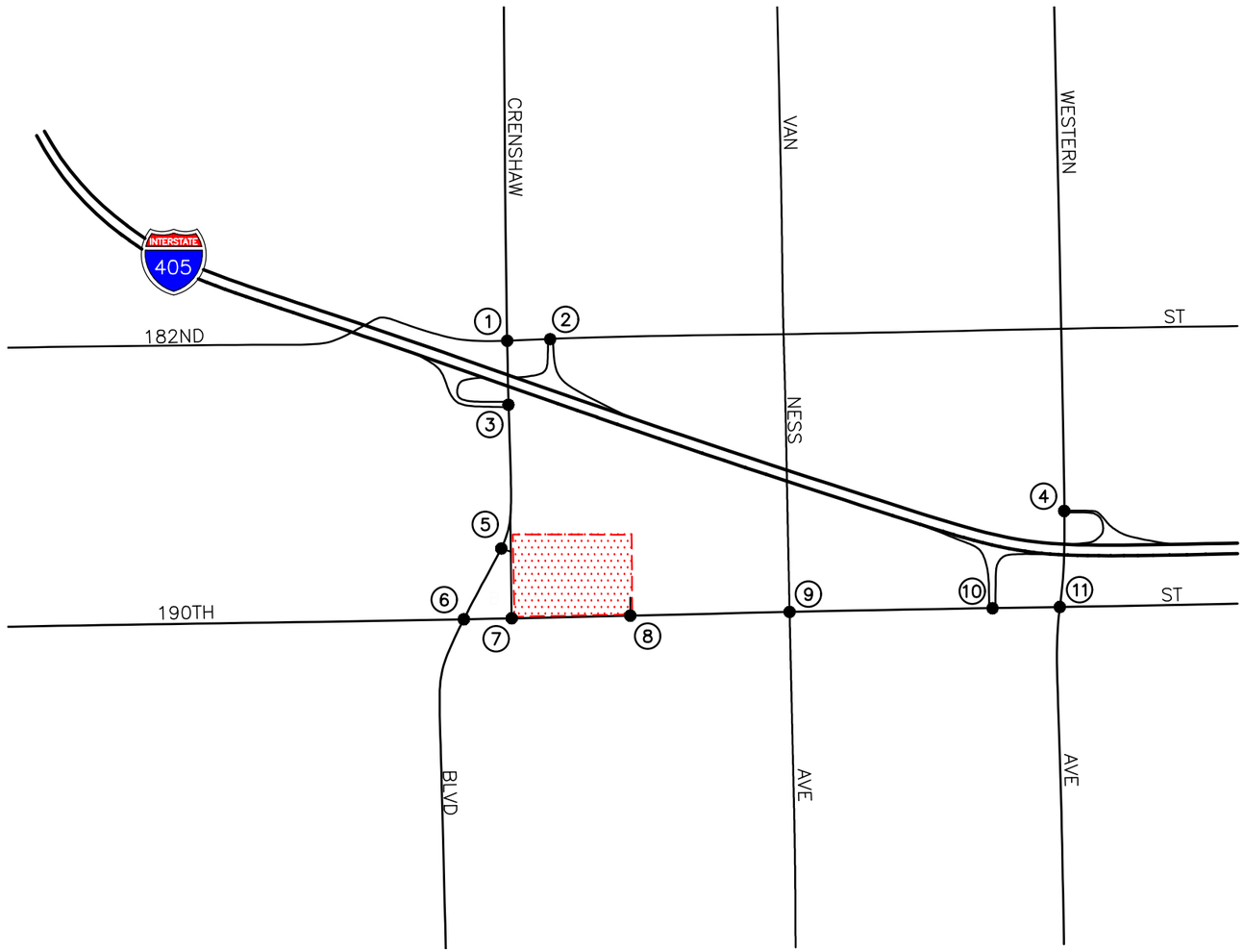
(#) = STUDY INTERSECTION
← = APPROACH LANE ASSIGNMENT
● = TRAFFIC SIGNAL, ☛ = STOP SIGN
P = PARKING, NP = NO PARKING
* = NO LEFT-TURN BETWEEN 4:00PM TO 6:00PM

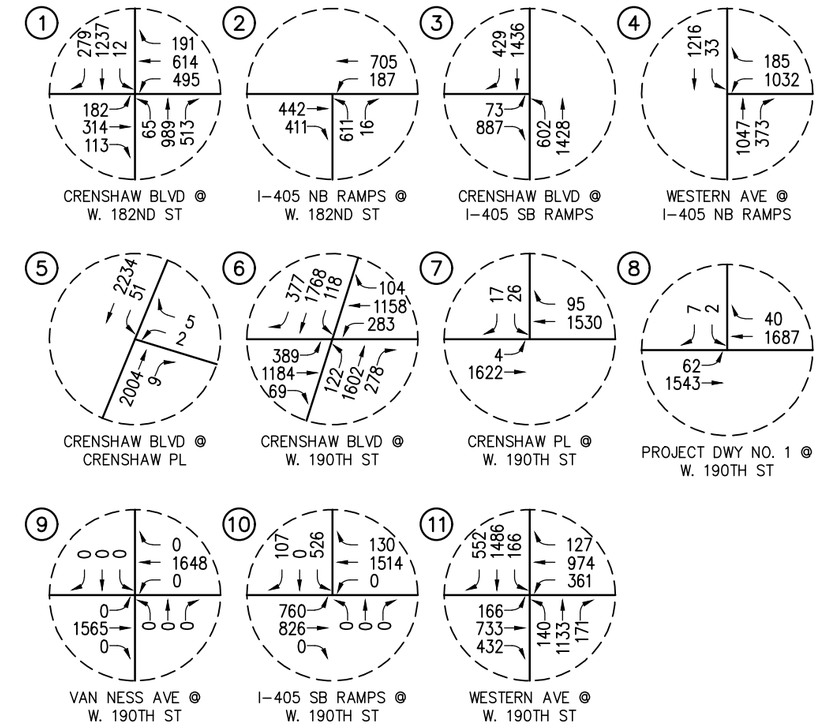
U = UNDIVIDED, D = DIVIDED
2 = NUMBER OF TRAVEL LANES
(XX) = POSTED SPEED LIMIT (MPH)
OL = OVERLAP
= PROJECT SITE

FIGURE 3–1

EXISTING ROADWAY CONDITIONS AND INTERSECTION CONTROLS

2555 W. 190TH STREET WAREHOUSE/MANUFACTURING PROJECT, TORRANCE





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KEY

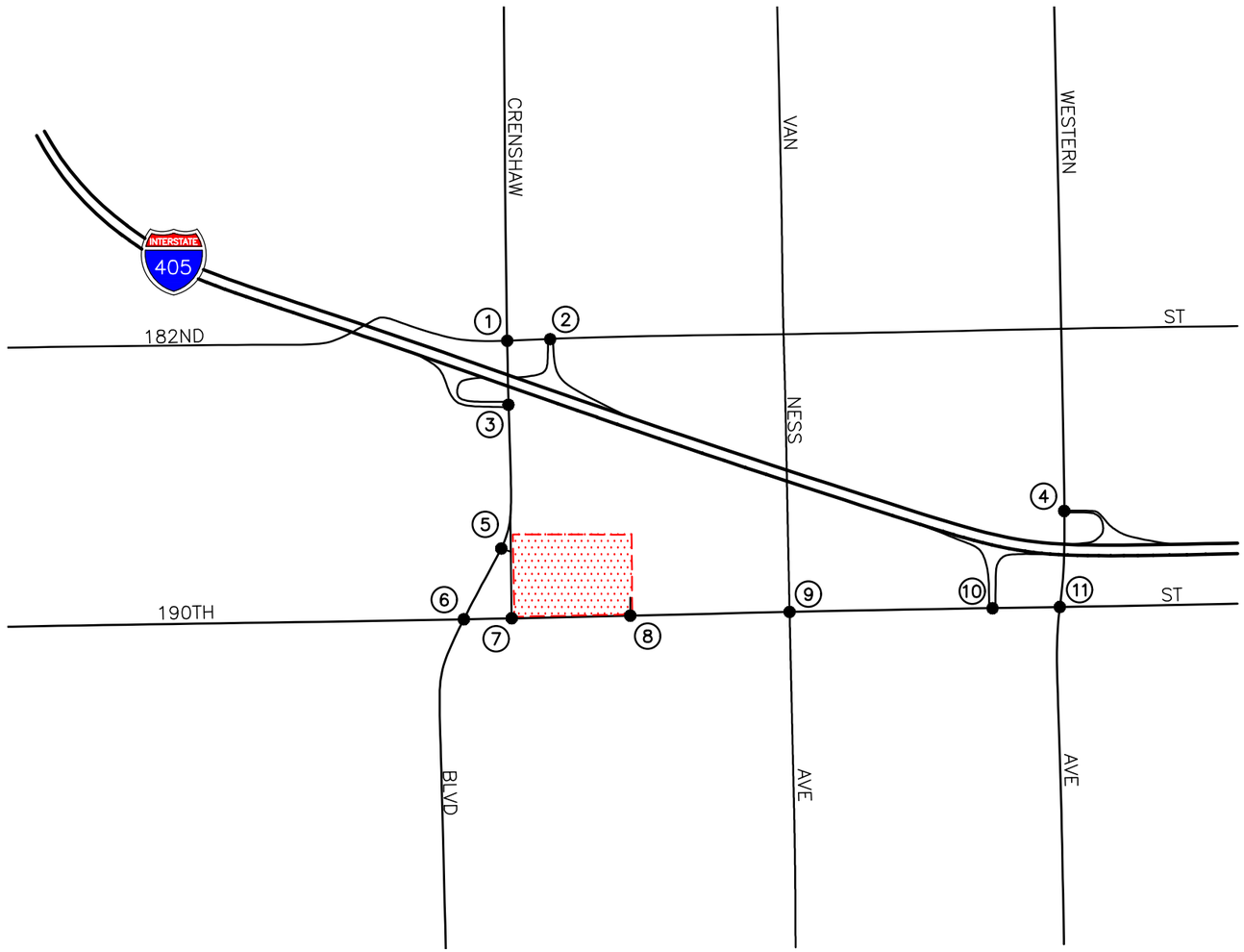
(#) = STUDY INTERSECTION

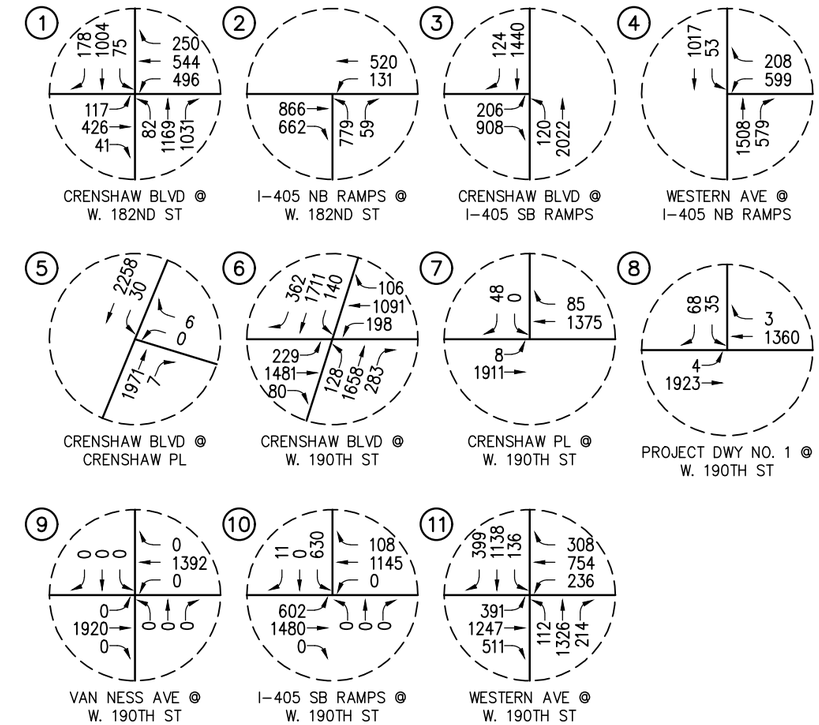
= PROJECT SITE

FIGURE 3–2

EXISTING AM PEAK HOUR TRAFFIC VOLUMES

2555 W. 190TH STREET WAREHOUSE/MANUFACTURING PROJECT, TORRANCE





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N NO SCALE

KEY

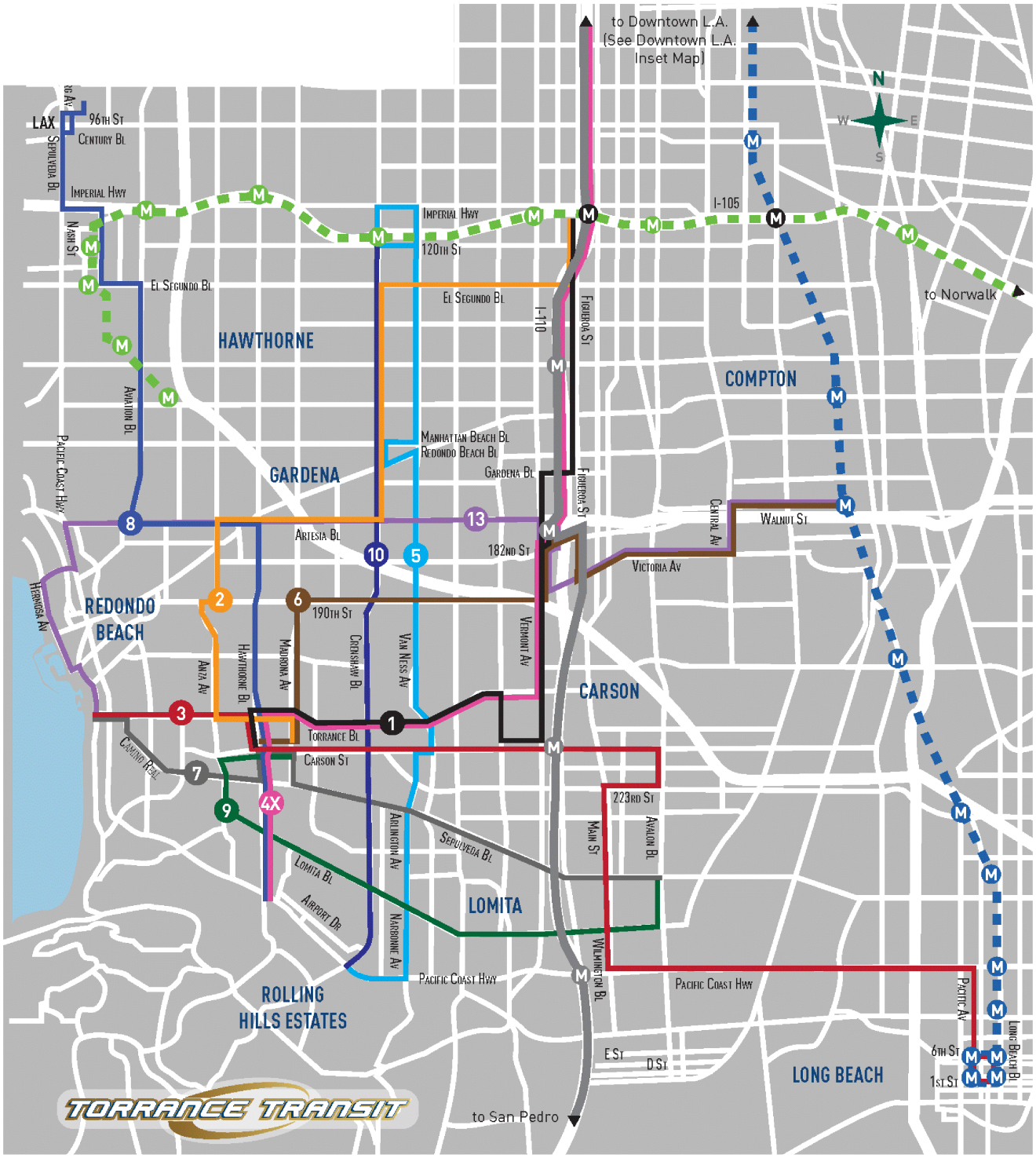
(#) = STUDY INTERSECTION

= PROJECT SITE

FIGURE 3–3

EXISTING PM PEAK HOUR TRAFFIC VOLUMES

2555 W. 190TH STREET WAREHOUSE/MANUFACTURING PROJECT, TORRANCE



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SOURCE: TORRANCE TRANSIT

FIGURE 3-4

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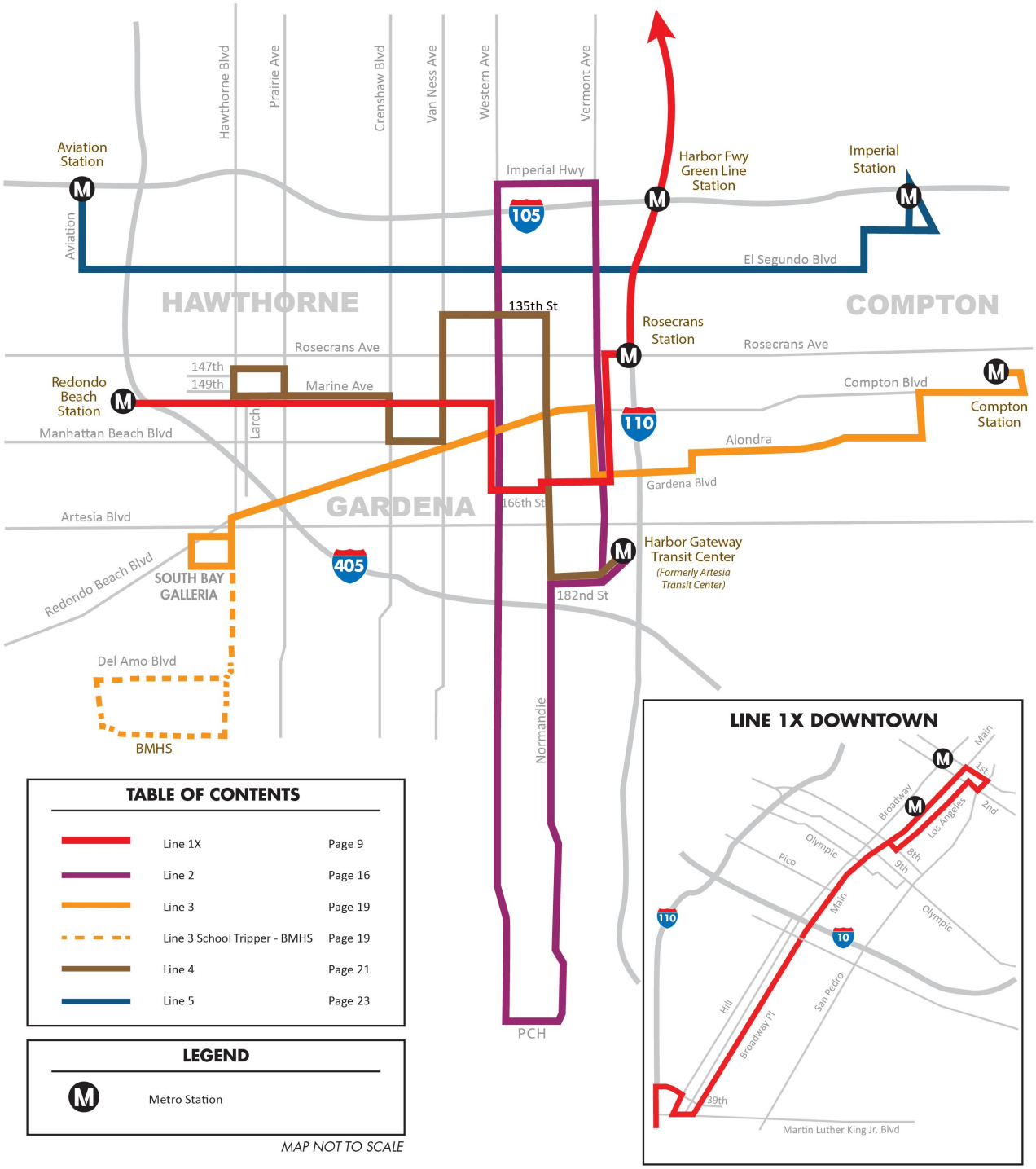
TORRANCE TRANSIT MAP

2555 W. 190TH STREET WAREHOUSE/MANUFACTURING PROJECT, TORRANCE



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SOURCE: GARDENA TRANSIT

FIGURE 3-5

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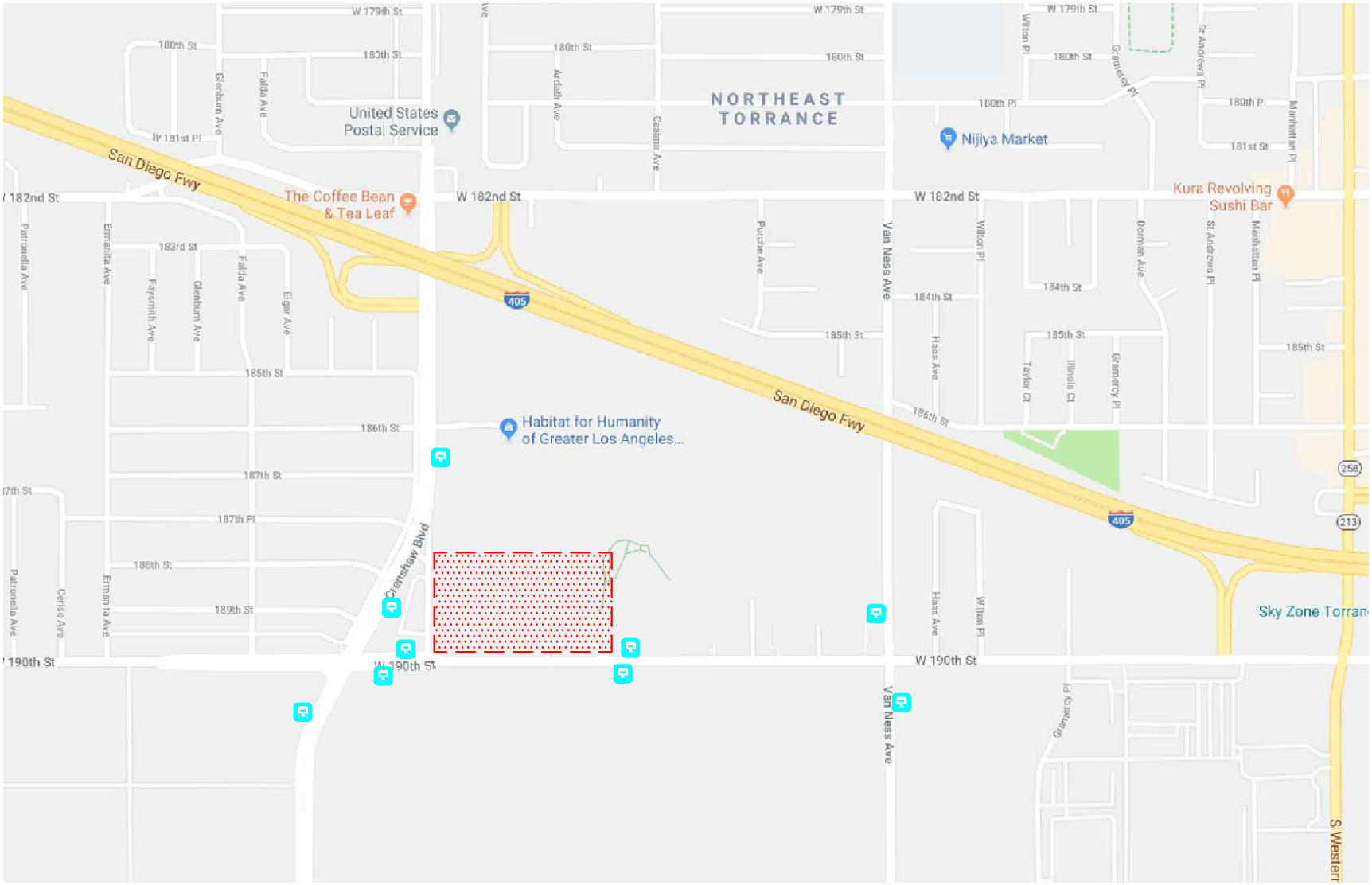
GARDENA TRANSIT MAP

2555 W. 190TH STREET WAREHOUSE/MANUFACTURING PROJECT, TORRANCE



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N NO SCALE

SOURCE: GOOGLE

KEY

= PROJECT SITE

= TRANSIT STOP

FIGURE 3-6

TRANSIT STOP LOCATIONS

2555 W. 190TH STREET WAREHOUSE/MANUFACTURING PROJECT, TORRANCE

TABLE 3-1

LEVEL OF SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS (ICU METHODOLOGY)[10]

Level of Service (LOS)	Intersection Capacity Utilization Value (ICU)	Level of Service Description
A	≤ 0.600	**EXCELLENT**. No vehicle waits longer than one red light and no approach phase is fully used.
B	0.601 – 0.700	**VERY GOOD**. An occasional approach phase is fully utilized; many drivers begin to feel somewhat restricted within groups of vehicles.
C	0.701 – 0.800	**GOOD**. Occasionally drivers may have to wait through more than one red light; backups may develop behind turning vehicles.
D	0.801 – 0.900	**FAIR**. Delays may be substantial during portions of the rush hours, but enough lower volume periods occur to permit clearing of developing lines, preventing excessive backups.
E	0.901 – 1.000	**POOR**. Represents the most vehicles intersection approaches can accommodate; may be long lines of waiting vehicles through several signal cycles.
F	> 1.000	**FAILURE**. Backups from nearby locations or on cross streets may restrict or prevent movement of vehicles out of the intersection approaches. Potentially very long delays with continuously increasing queue lengths.

[10] Source: *Transportation Research Board Circular 212 - Interim Materials on Highway Capacity.*

TABLE 3-2

LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS (HCM METHODOLOGY)[11]

Level of Service (LOS)	Highway Capacity Manual Delay Value (sec/veh)	Level of Service Description
A	≤ 10.0	Little or no delay
B	> 10.0 and ≤ 15.0	Short traffic delays
C	> 15.0 and ≤ 25.0	Average traffic delays
D	> 25.0 and ≤ 35.0	Long traffic delays
E	> 35.0 and ≤ 50.0	Very long traffic delays
F	> 50.0	Severe congestion

[11] Source: *Highway Capacity Manual*, (Unsignalized Intersections).

4.0 TRAFFIC FORECASTING METHODOLOGY

In order to estimate the traffic characteristics of the Project, a multi-step process has been utilized. The first step is traffic generation, which estimates the total arriving and departing traffic on a peak hour and daily basis. The traffic generation potential is forecast by applying the appropriate vehicle trip generation equations and/or rates to the Project development tabulation.

The second step of the forecasting process is traffic distribution, which identifies the origins and destinations of inbound and outbound Project traffic. These origins and destinations are typically based on demographics and existing/expected future travel patterns in the study area.

The third step is traffic assignment, which involves the allocation of Project traffic to study area streets and intersections. Traffic assignment is typically based on minimization of travel time, which may or may not involve the shortest route, depending on prevailing operating conditions and travel speeds. Traffic distribution patterns are indicated by general percentage orientation, while traffic assignment allocates specific volume forecasts to individual roadway segments and intersection turning movements throughout the study area.

With the forecasting process complete and Project traffic assignments developed, the Project is isolated by comparing operational (LOS) conditions at selected key intersections using expected future traffic volumes with and without forecast Project traffic. If necessary, the need for site-specific and/or cumulative local area traffic improvements can then be evaluated.

5.0 PROJECT TRAFFIC CHARACTERISTICS

5.1 Project Trip Generation Forecast

Traffic generation is expressed in vehicle trip ends, defined as one-way vehicular movements, either entering or exiting the generating land use. Generation equations and/or rates used in the traffic forecasting procedure are found in the 11th Edition of *Trip Generation*, published by the Institute of Transportation Engineers (ITE) [Washington D.C., 2021].

Table 5-1. Based on the anticipated project uses, and as shown in the upper portion of *Table 5-2*, trips generated by the proposed Project will be estimated using ITE Land Use 140: Manufacturing, ITE Land Use 150: Warehousing, and/or ITE Land Use 710: General Office Building average trip rates. For the Existing/Entitled Land Use, ITE Land Use 710: General Office Building average trip rates will be used to forecast the trip generation potential of the existing 160,000 SF office building.

Table 5-2 presents the trip generation forecast for the Existing Land Use and the proposed Project.

5.1.1 *Existing Land Use*

For informational purposes *Table 5-2* includes trip generation estimates for the existing/entitled site based on ITE trip rates. As shown in the upper portion of *Table 5-2*, the Existing/Entitled Land Use has a trip generation potential of 1,734 daily trips, with 243 trips (214 inbound, 29 outbound) produced in the AM peak hour and 230 trips (39 inbound, 191 outbound) produced in the PM peak hour on a weekday. It should be noted that to provide a conservative assessment no trip credit has been applied.

5.1.2 *Proposed Project Option A*

A review of the middle portion of *Table 5-2* indicates that the proposed Project, after applying passenger car equivalent (PCE) factors to the warehousing/ manufacturing components, is forecast to generate approximately 1,562 weekday daily PCE trips, with 231 PCE trips (181 inbound, 50 outbound) produced in the AM peak hour and 258 PCE trips (77 inbound, 181 outbound) produced in the PM peak hour. Of the total trips generated by Project, truck trips related to the warehousing/manufacturing components are forecast total 494 weekday daily PCE trips, with 94 PCE trips produced in the AM peak hour and 125 PCE trips produced in the PM peak hour.

A comparison of trips generated by Project Option A to the Existing/Entitled Land Use indicates that the net trip generation for the proposed Project would result in 172 <u>fewer</u> daily trips, 12 <u>fewer</u> AM peak hour trips, and 28 <u>more</u> PM peak hour trips. However, since the existing office building is currently vacant, the existing trip credit was not applied to the analysis to provide a conservative assessment.

5.1.3 *Proposed Project Option B*

For Proposed Option B, a review of the middle portion of *Table 5-3* indicates that, after applying passenger car equivalent (PCE) factors to the warehousing component, the Project is forecast to generate approximately 723 weekday daily PCE trips, with 84 PCE trips (65 inbound, 19 outbound) produced in the AM peak hour and 90 PCE trips (26 inbound, 64 outbound) produced in the PM peak hour. Of the total trips generated by Project, truck trips related to the warehousing component are

forecast total 226 weekday daily PCE trips, with 32 PCE trips produced in the AM peak hour and 40 PCE trips produced in the PM peak hour.

A comparison of trips generated by Project Option B to the Existing/Entitled Land Use indicates that the net trip generation for the proposed Project would result in 1,011 fewer daily trips, 159 fewer AM peak hour trips, and 140 fewer PM peak hour trips. However, since the existing office building is currently vacant, the existing trip credit was not applied to the analysis.

A comparison of trips generated by Project Option A to that of Option B indicates that Option A will result in a greater amount of trips. As such, the potential traffic impact of Option A is evaluated in the LCA to provide a conservative assessment.

5.2 Project Trip Distribution and Assignment

The directional traffic distribution pattern for passenger car traffic and truck traffic of the proposed Project is graphically presented in ***Figures 5-1*** and ***5-2***, respectively. Project traffic volumes both entering and exiting the site have been distributed and assigned to the adjacent street system based on the following considerations:

- location of site access points in relation to the surrounding street system,
- the site's proximity to major traffic carriers and regional access routes,
- physical characteristics of the circulation system such as lane channelization and presence of traffic signals that affect travel patterns,
- presence of traffic congestion in the surrounding vicinity,
- ingress/egress availability at the Project site,
- Torrance Truck Route Map and
- input from City staff.

The anticipated AM and PM peak hour Project volumes associated with the proposed Project are presented in ***Figures 5-3*** and ***5-4,*** respectively. The traffic volume assignments presented in *Figures 5-3* and *5-4* reflect the traffic distribution characteristics shown in *Figures 5-1* and *5-2* and the traffic generation forecast for Option A as presented in *Table 5-2.*

TABLE 5-1

PROJECT TRIP GENERATION RATES WITH PCE CONVERSION FACTORS[12]

ITE Land Use Code	Daily 2-Way	AM Peak Hour			PM Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total
Trip Generation Rates:							
▪ ***140: Manufacturing – Total (TE/1000 SF)***	***4.75***	***0.52***	***0.16***	***0.68***	***0.23***	***0.51***	***0.74***
❑ Passenger Cars – 79.57% Daily (TE/1000 SF)	3.78	0.37	0.12	0.49	0.15	0.33	0.48
❑ 2 Axle Trucks – 3.46% Daily/16.95% Peak Hour (TE/1000 SF)	0.16	0.03	0.00	0.03	0.01	0.03	0.04
❑ 3 Axle Trucks – 4.64% Daily/22.71% Peak Hour (TE/1000 SF)	0.22	0.03	0.01	0.04	0.02	0.04	0.06
❑ 4+ Axle Trucks – 12.33% Daily/60.34% Peak Hour (TE/1000 SF)	0.59	0.09	0.03	0.12	0.05	0.11	0.16
▪ ***150: Warehousing – Total (TE/1000 SF)***	***1.71***	***0.13***	***0.04***	***0.17***	***0.05***	***0.13***	***0.18***
❑ Passenger Cars – 79.57% Daily (TE/1000 SF)	1.36	0.09	0.03	0.12	0.03	0.09	0.12
❑ 2 Axle Trucks – 3.46% Daily/16.95% Peak Hour (TE/1000 SF)	0.06	0.01	0.00	0.01	0.00	0.01	0.01
❑ 3 Axle Trucks – 4.64% Daily/22.71% Peak Hour (TE/1000 SF)	0.08	0.01	0.00	0.01	0.00	0.01	0.01
❑ 4+ Axle Trucks – 12.33% Daily/60.34% Peak Hour (TE/1000 SF)	0.21	0.02	0.01	0.03	0.02	0.02	0.04
▪ **710: General Office Building (TE/1000 SF)**	**10.84**	**88%**	**12%**	**1.52**	**17%**	**83%**	**1.44**

Notes:
- TE/1000 SF = Trip ends per 1,000 SF of development
- SF = Square-feet of gross floor area
- PCE = Passenger Car Equivalent

[12] Source: *Trip Generation, 10th Edition, Institute of Transportation Engineers (ITE), Washington, D.C. (2017)*. Recommended mix of traffic, including mix of 2-axle, 3-axle, and 4+-axle trucks are based on the *Truck Trip Generation Study – City of Fontana, August 2003.* All 2-axle, 3-axle and 4+-axle trucks are converted to passenger car equivalents using a factor of 1.5 vehicles per truck, 2.0 vehicles per truck, and 3.0 vehicles per truck, respectively.

TABLE 5-2
PROJECT TRIP GENERATION FORECAST – OPTION A[13]

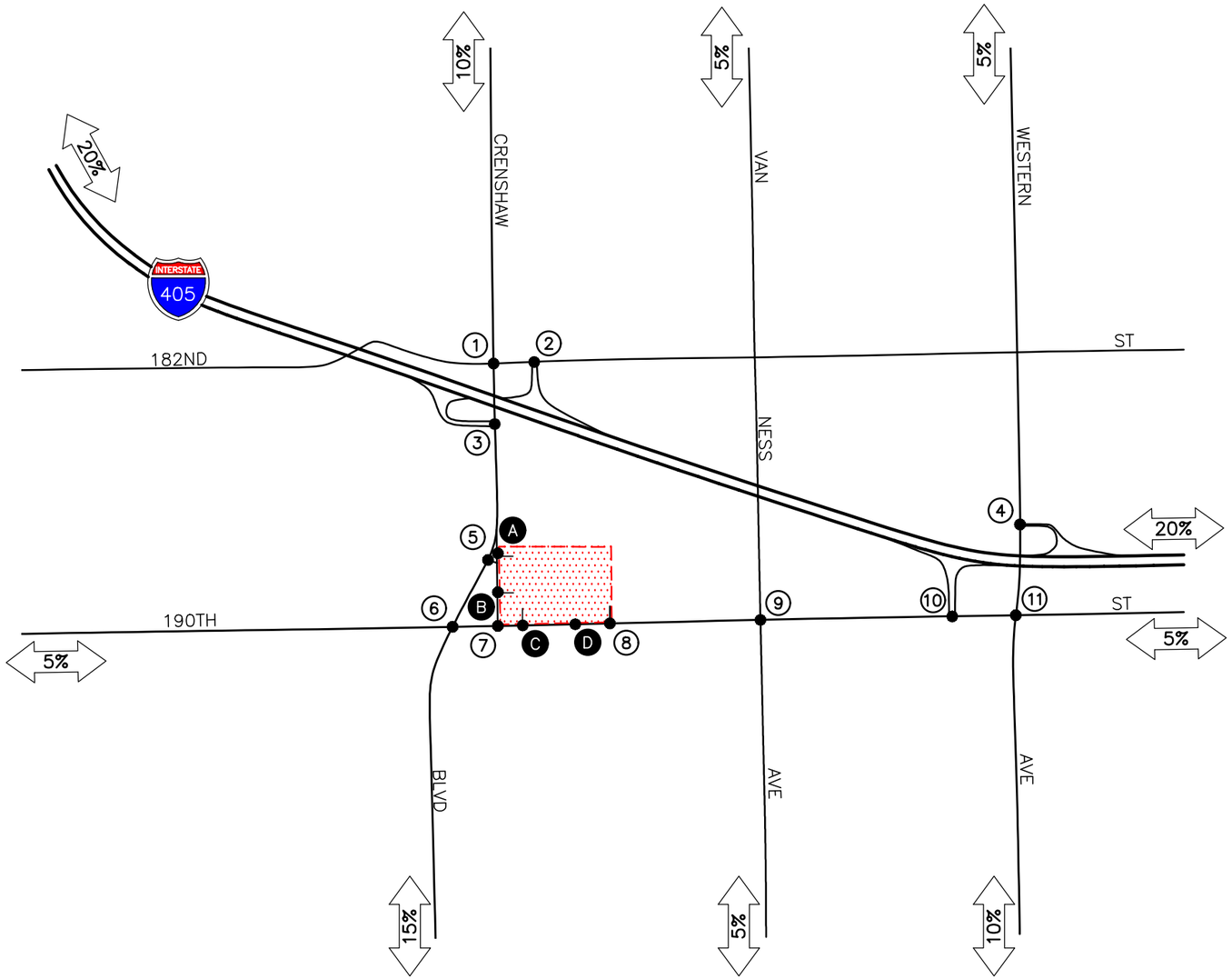
ITE Land Use Code / Project Description	Daily 2-Way	AM Peak Hour			PM Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total
Existing/Entitled Land Use Trip Generation Forecast:							
▪ 710: Office Building (160,000 SF)	1,734	214	29	243	39	191	230
Project Trip Generation Forecast – Option A:							
▪ 150: Warehousing (85,239 SF)							
❑ Passenger Cars	116	8	2	10	3	7	10
❑ 2 Axle Trucks	8	1	0	1	0	1	1
❑ 3 Axle Trucks	14	2	0	2	0	2	2
❑ 4+ Axle Trucks	54	5	3	8	5	5	10
Warehousing Total	**192**	**16**	**5**	**21**	**8**	**15**	**23**
▪ 140: Manufacturing (170,478 SF)							
❑ Passenger Cars	644	63	21	84	26	56	82
❑ 2 Axle Trucks	41	8	0	8	3	7	10
❑ 3 Axle Trucks	75	10	4	14	7	13	20
❑ 4+ Axle Trucks	302	46	15	61	26	56	82
Manufacturing Total	**1,062**	**127**	**40**	**167**	**62**	**132**	**194**
▪ 710: Office Space (28,413 SF)	308	38	5	43	7	34	41
Total Passenger Car Traffic	**1,068**	**109**	**28**	**137**	**36**	**97**	**133**
Total Truck PCE Traffic	**494**	**72**	**22**	**94**	**41**	**84**	**125**
Total Project Trip Generation	**1,562**	**181**	**50**	**231**	**77**	**181**	**258**

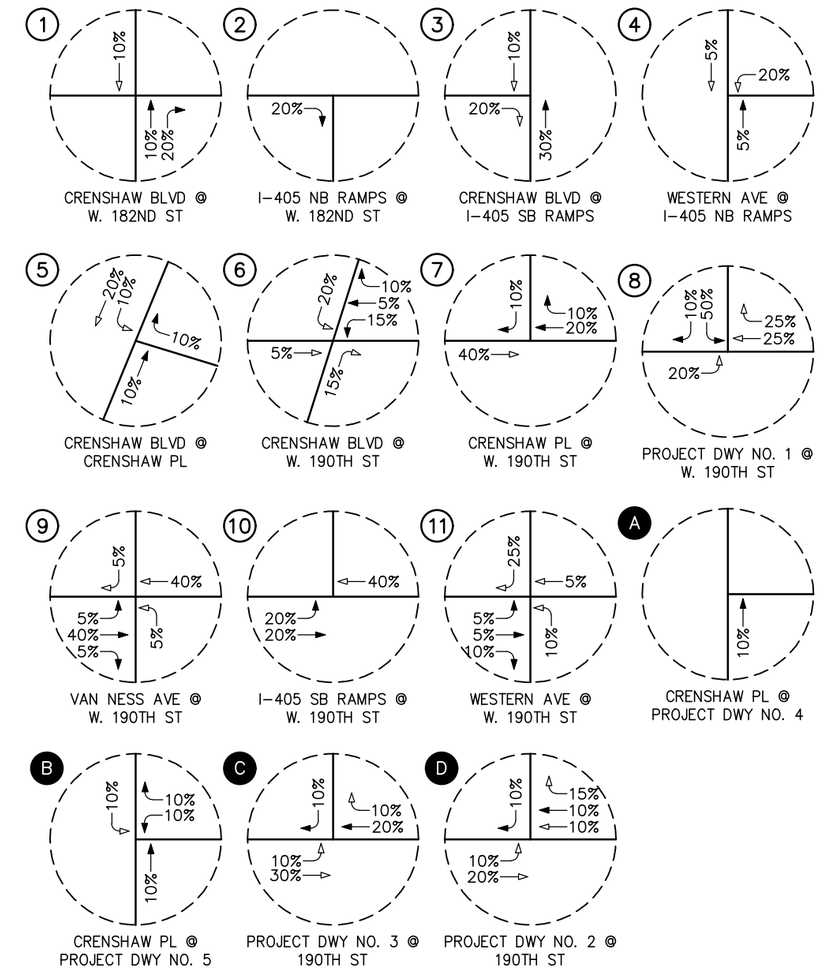
[13] Source: *Trip Generation, 11th Edition, Institute of Transportation Engineers (ITE), Washington, D.C. (2021)*. Recommended mix of traffic, including mix of 2-axle, 3-axle, and 4+-axle trucks are based on the *Truck Trip Generation Study – City of Fontana, August 2003.* All 2-axle, 3-axle and 4+-axle trucks are converted to passenger car equivalents using a factor of 1.5 vehicles per truck, 2.0 vehicles per truck, and 3.0 vehicles per truck, respectively.

TABLE 5-3
PROJECT TRIP GENERATION FORECAST – OPTION B[14]

ITE Land Use Code / Project Description	Daily 2-Way	AM Peak Hour			PM Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total
Existing/Entitled Land Use Trip Generation Forecast:							
▪ 710: Office Building (160,000 SF)	1,734	214	29	243	39	191	230
Project Trip Generation Forecast:							
▪ 150: Warehousing (257,070 SF)							
❑ Passenger Cars	350	23	8	31	8	23	31
❑ 2 Axle Trucks	23	4	0	4	0	4	4
❑ 3 Axle Trucks	41	5	0	5	0	5	5
❑ 4+ Axle Trucks	162	15	8	23	15	16	31
Warehousing Total	**576**	**47**	**16**	**63**	**23**	**48**	**71**
▪ 710: Office Space (13,530 SF)	147	18	3	21	3	16	19
Total Passenger Car Traffic	**497**	**41**	**11**	**52**	**11**	**39**	**50**
Total Truck PCE Traffic	**226**	**24**	**8**	**32**	**15**	**25**	**40**
Total Project Trip Generation	**723**	**65**	**19**	**84**	**26**	**64**	**90**

[14] Source: *Trip Generation, 11th Edition, Institute of Transportation Engineers (ITE), Washington, D.C. (2021)*. Recommended mix of traffic, including mix of 2-axle, 3-axle, and 4+-axle trucks are based on the *Truck Trip Generation Study – City of Fontana, August 2003.* All 2-axle, 3-axle and 4+-axle trucks are converted to passenger car equivalents using a factor of 1.5 vehicles per truck, 2.0 vehicles per truck, and 3.0 vehicles per truck, respectively.





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= INBOUND PERCENTAGE

= OUTBOUND PERCENTAGE

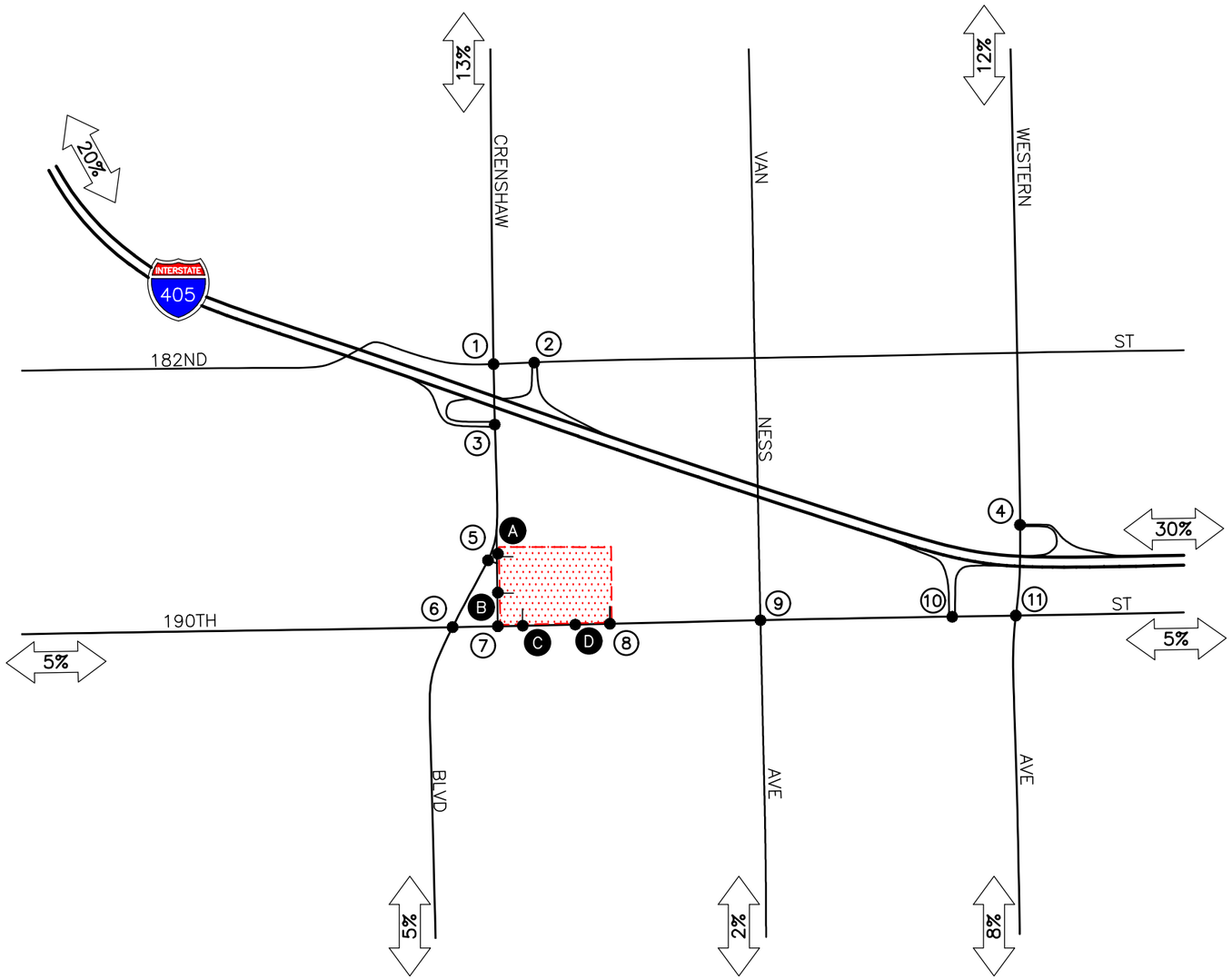
(#) = STUDY INTERSECTION

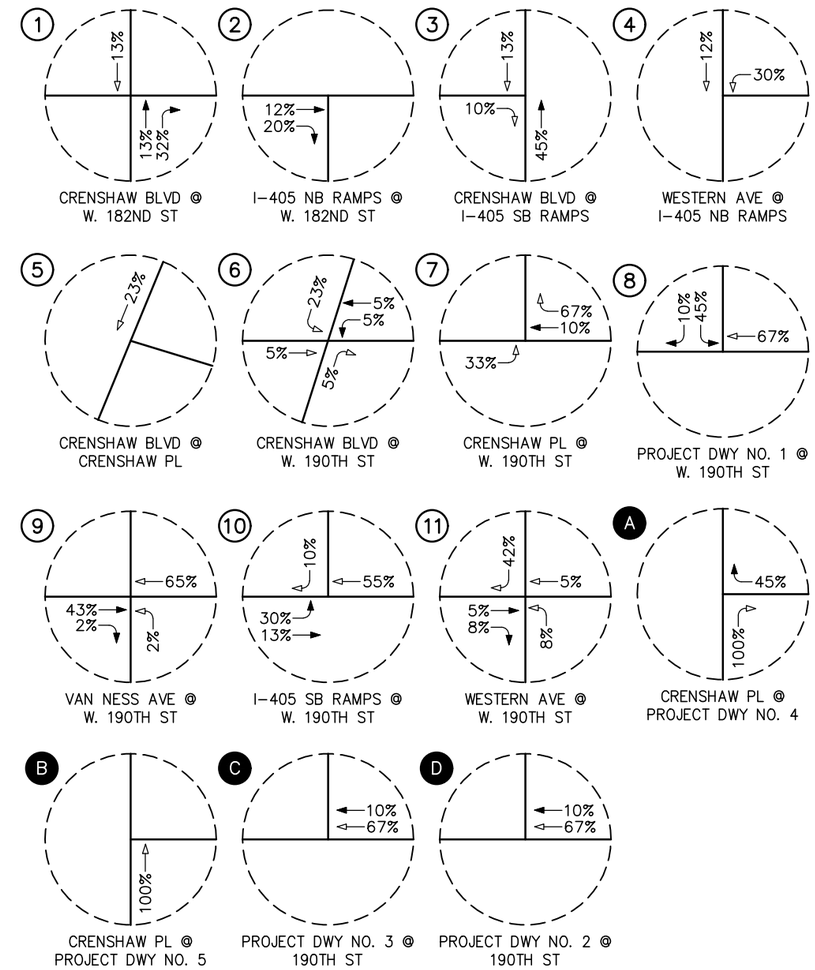
= PROJECT SITE

FIGURE 5–1

PROJECT TRAFFIC DISTRIBUTION PATTERN (PASSENGER CARS)

2555 W. 190TH STREET WAREHOUSE/MANUFACTURING PROJECT, TORRANCE





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= INBOUND PERCENTAGE

= OUTBOUND PERCENTAGE

(#) = STUDY INTERSECTION

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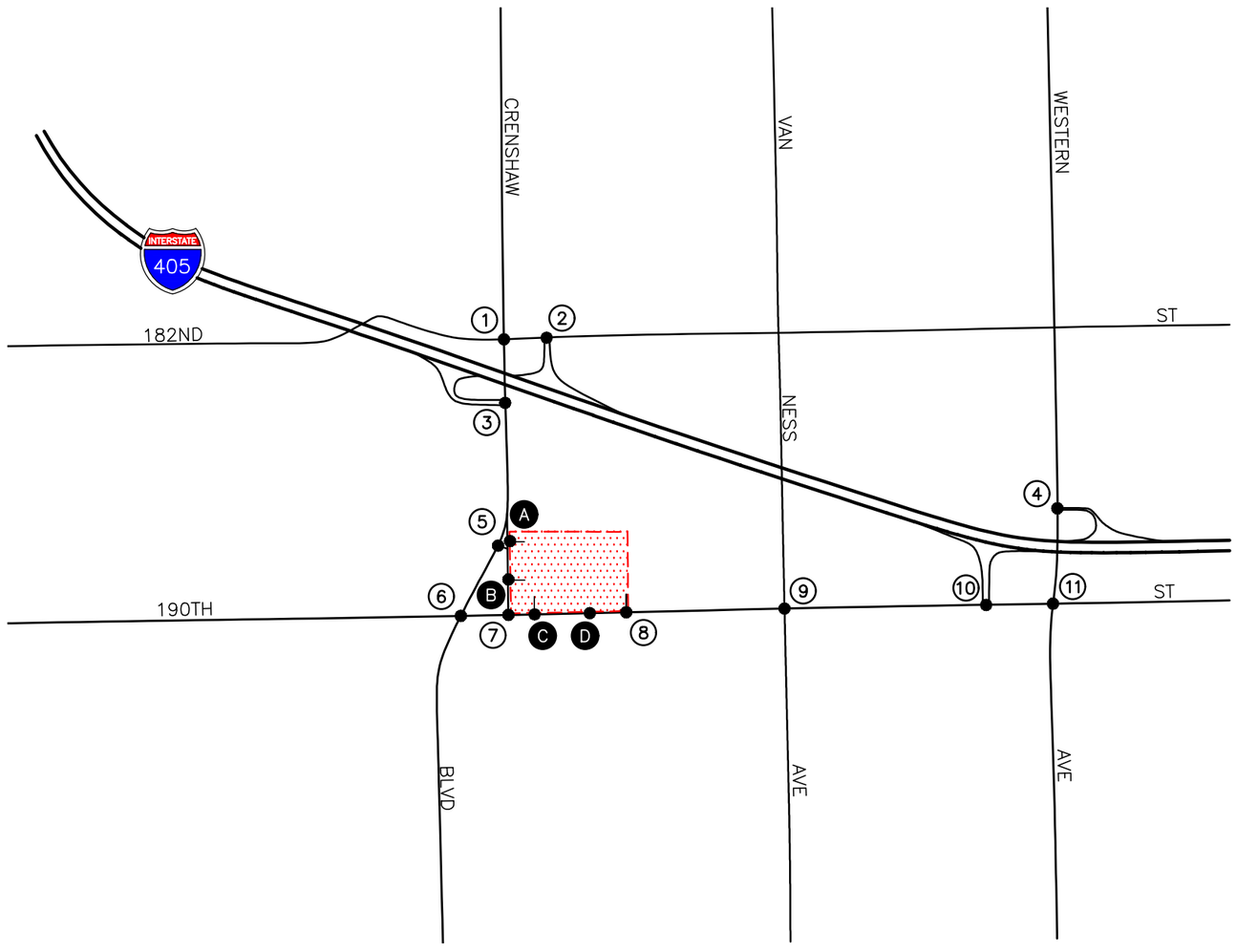
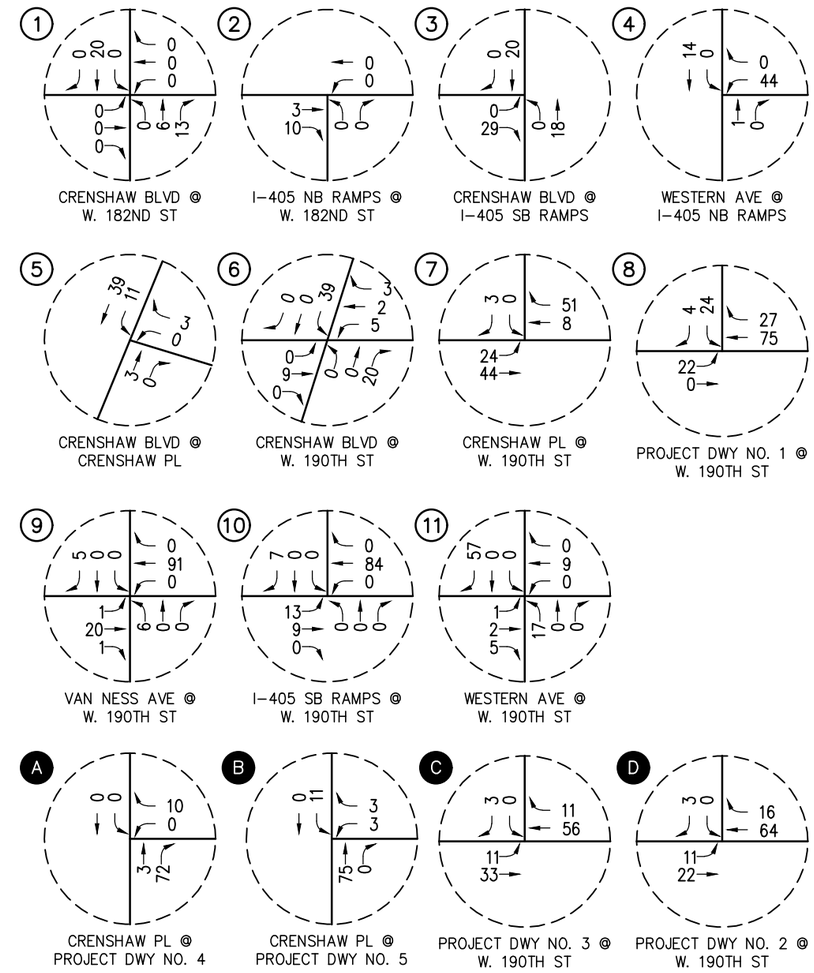
FIGURE 5–2

PROJECT TRAFFIC DISTRIBUTION PATTERN (TRUCKS)

2555 W. 190TH STREET WAREHOUSE/MANUFACTURING PROJECT, TORRANCE





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(#) = STUDY INTERSECTION

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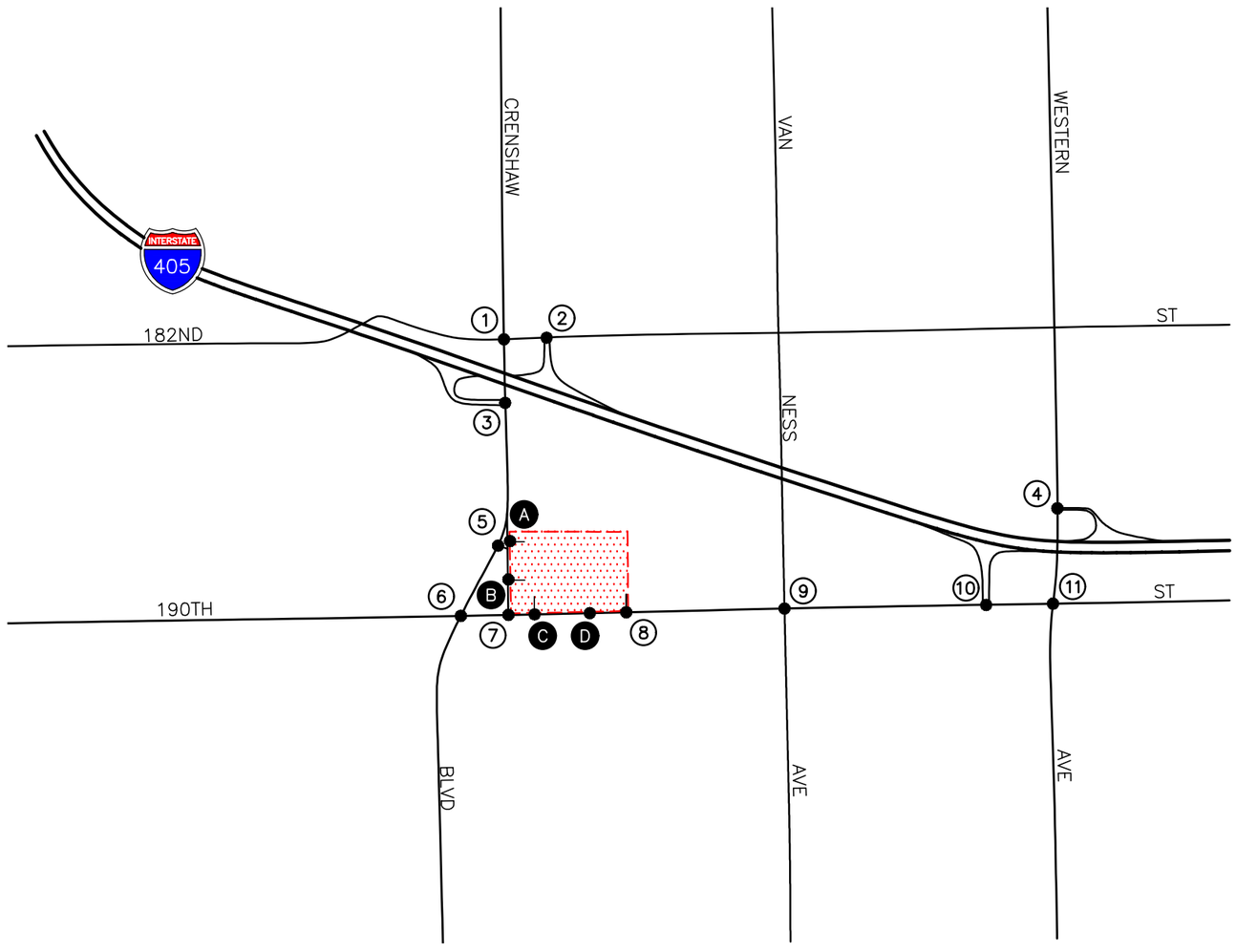
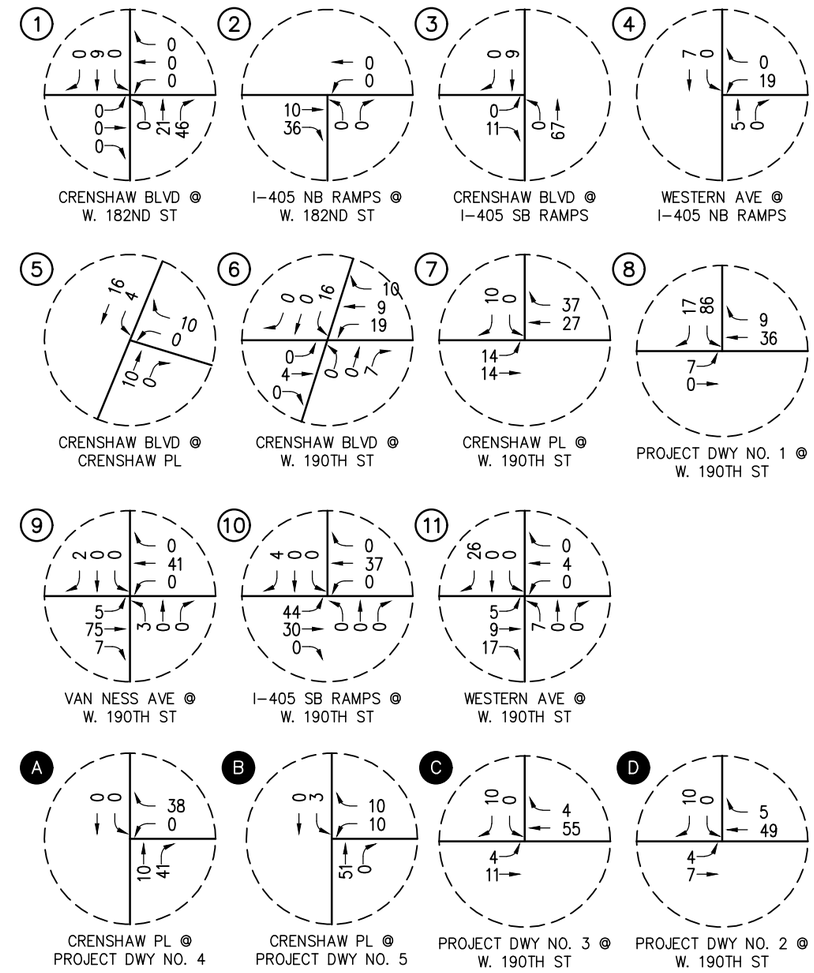
FIGURE 5-3

AM PEAK HOUR PROJECT TRAFFIC VOLUMES

2555 W. 190TH STREET WAREHOUSE/MANUFACTURING PROJECT, TORRANCE





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KEY

(#) = STUDY INTERSECTION

= PROJECT SITE

FIGURE 5-4

PM PEAK HOUR PROJECT TRAFFIC VOLUMES

2555 W. 190TH STREET WAREHOUSE/MANUFACTURING PROJECT, TORRANCE

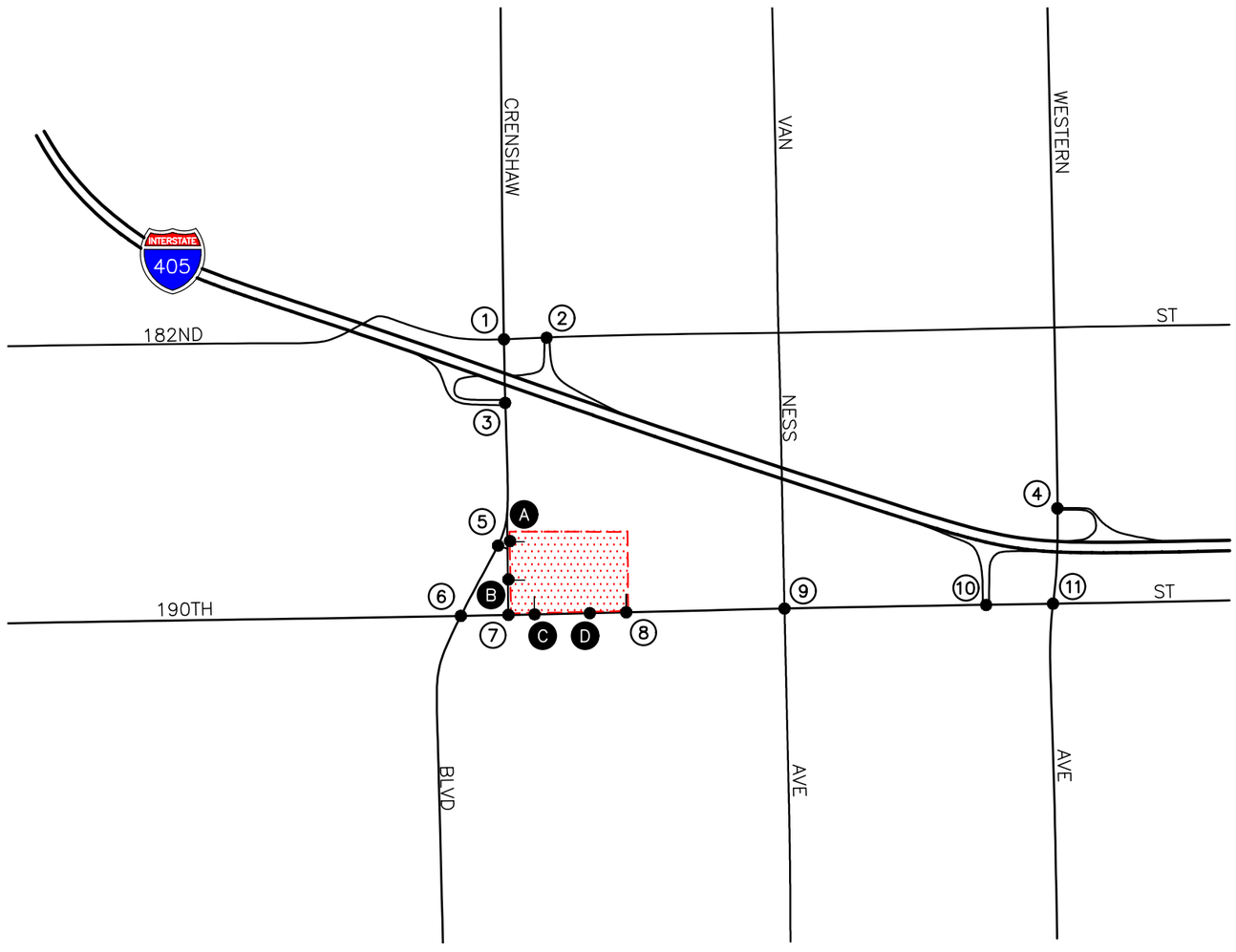
6.0 FUTURE TRAFFIC CONDITIONS

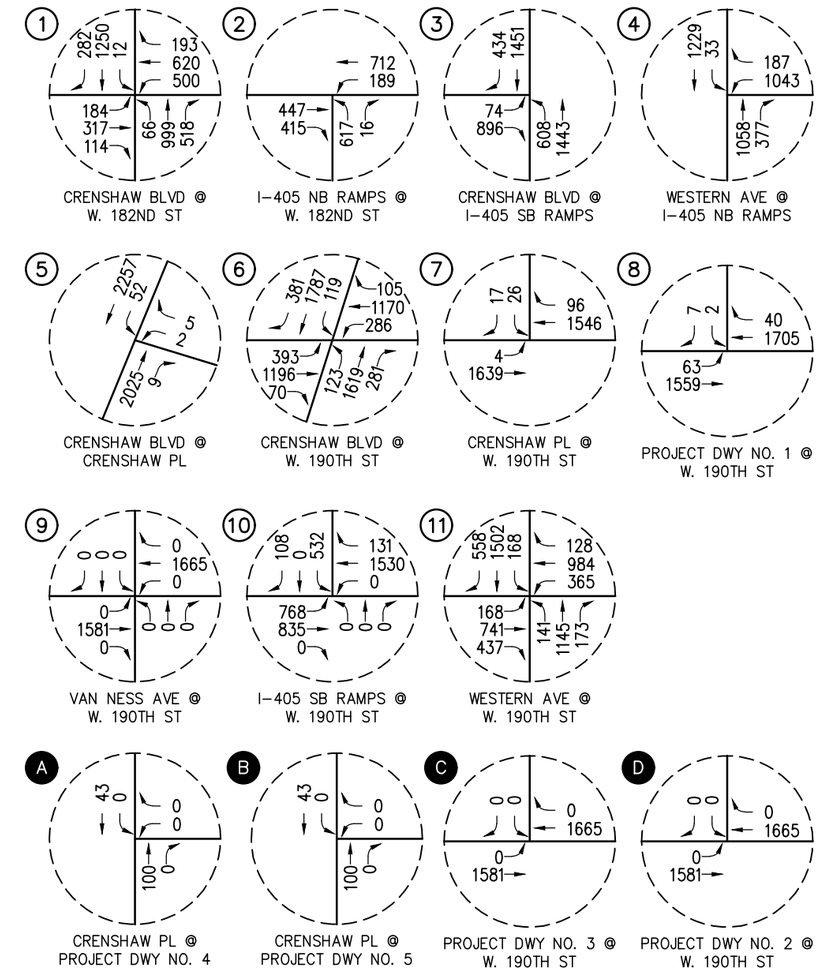
6.1 Ambient Traffic Growth

For future traffic conditions, background traffic growth estimates have been calculated using an ambient growth factor. The ambient growth factor is intended to include unknown and future cumulative projects in the study area, as well as account for regular growth in traffic volumes due to the development of projects outside the study area. An annual growth rate of 0.525 percent was applied to baseline Year 2022 traffic volumes at the key study intersections to develop horizon Year 2024 traffic volumes.

6.2 Year 2024 Traffic Volumes

Figures 6-1 and ***6-2*** present the AM and PM peak hour Existing with Ambient Growth to the Year 2024 traffic volumes at the eleven (11) key study intersections, respectively. ***Figures 6-3*** and ***6-4*** present the AM and PM peak hour Existing with Ambient Growth to the Year 2024 with Project traffic volumes at the eleven (11) key study intersections, inclusive of the Project driveways, respectively.





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(#) = STUDY INTERSECTION

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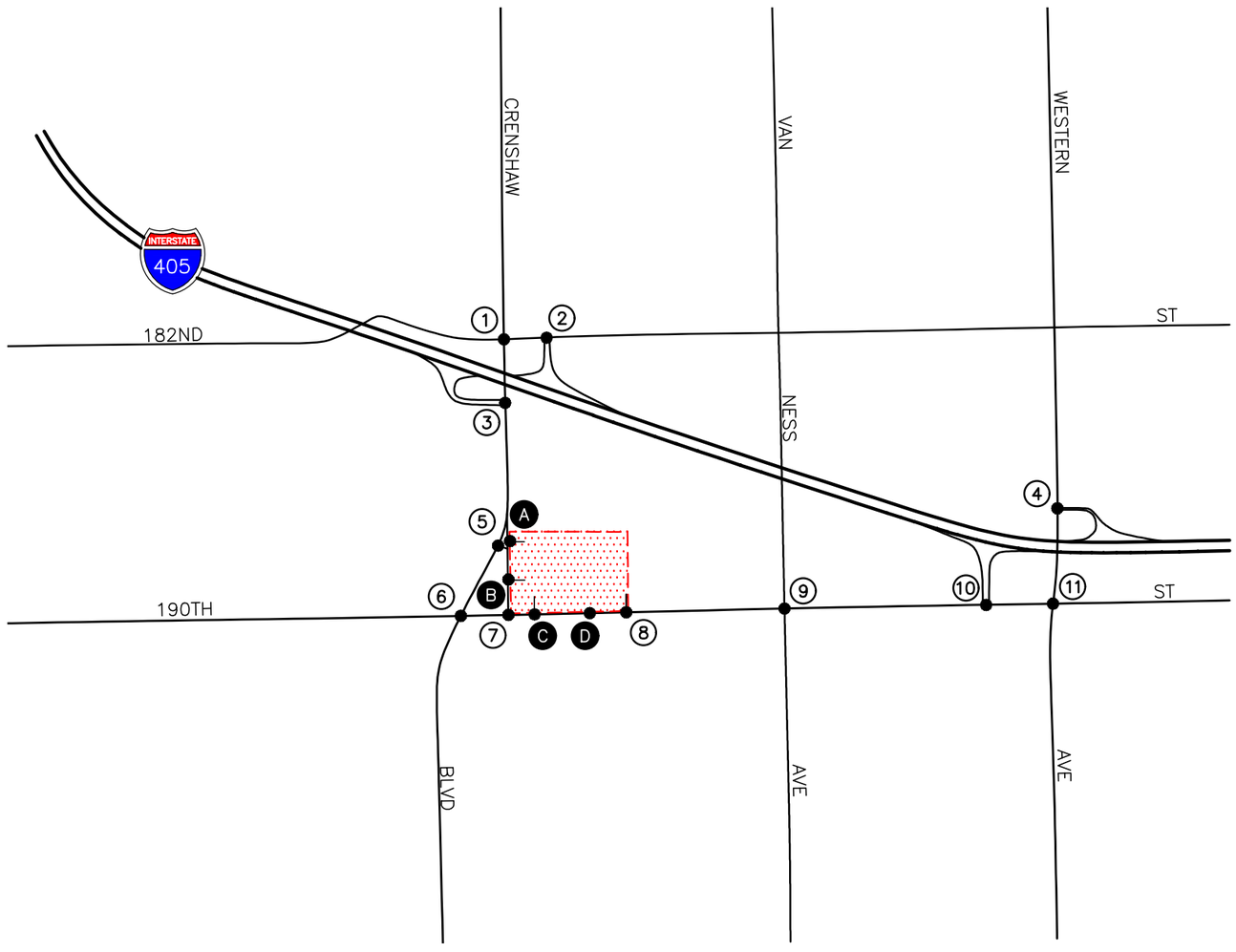
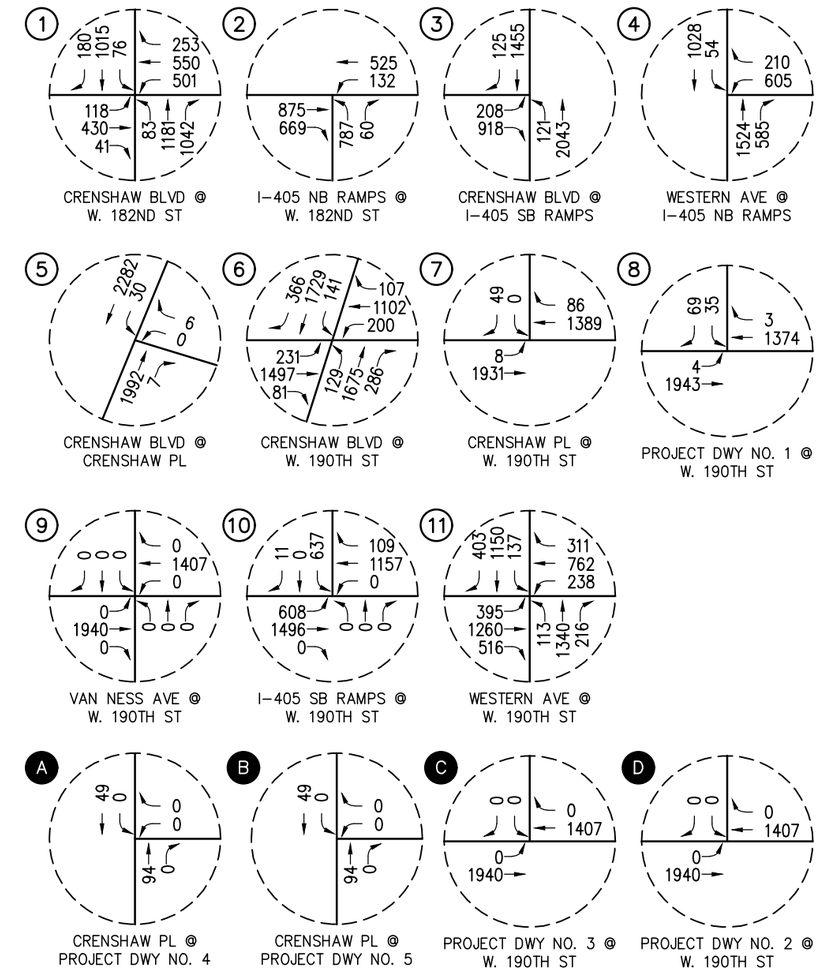
FIGURE 6–1

EXISTING WITH AMBIENT GROWTH (YEAR 2024) AM PEAK HOUR TRAFFIC VOLUMES

2555 W. 190TH STREET WAREHOUSE/MANUFACTURING PROJECT, TORRANCE





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(#) = STUDY INTERSECTION

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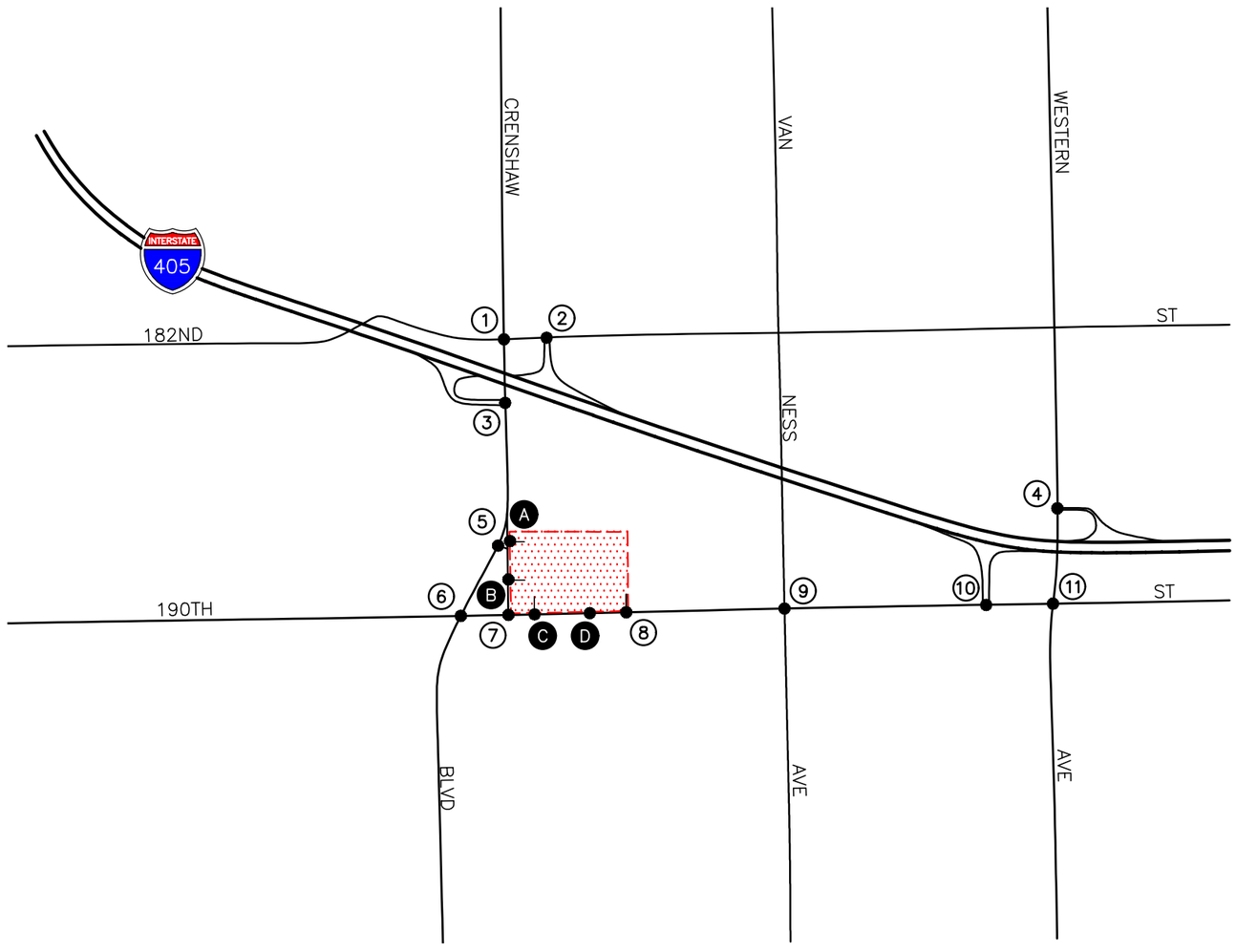
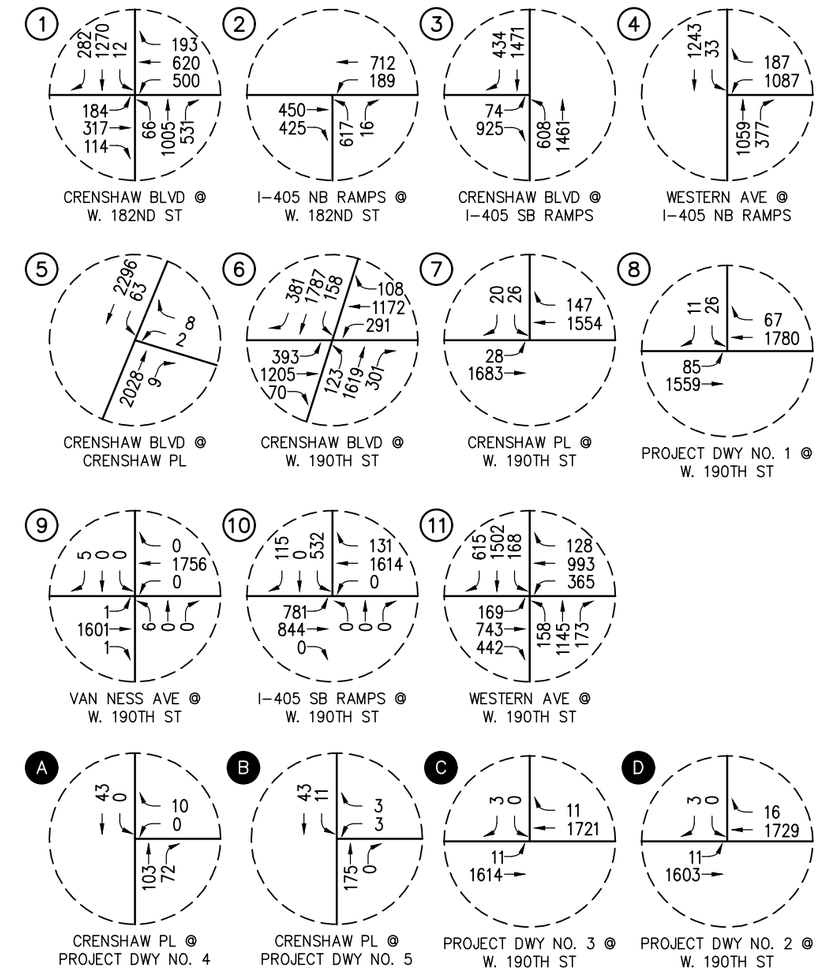
FIGURE 6-2

EXISTING WITH AMBIENT GROWTH (YEAR 2024) PM PEAK HOUR TRAFFIC VOLUMES

2555 W. 190TH STREET WAREHOUSE/MANUFACTURING PROJECT, TORRANCE





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(#) = STUDY INTERSECTION

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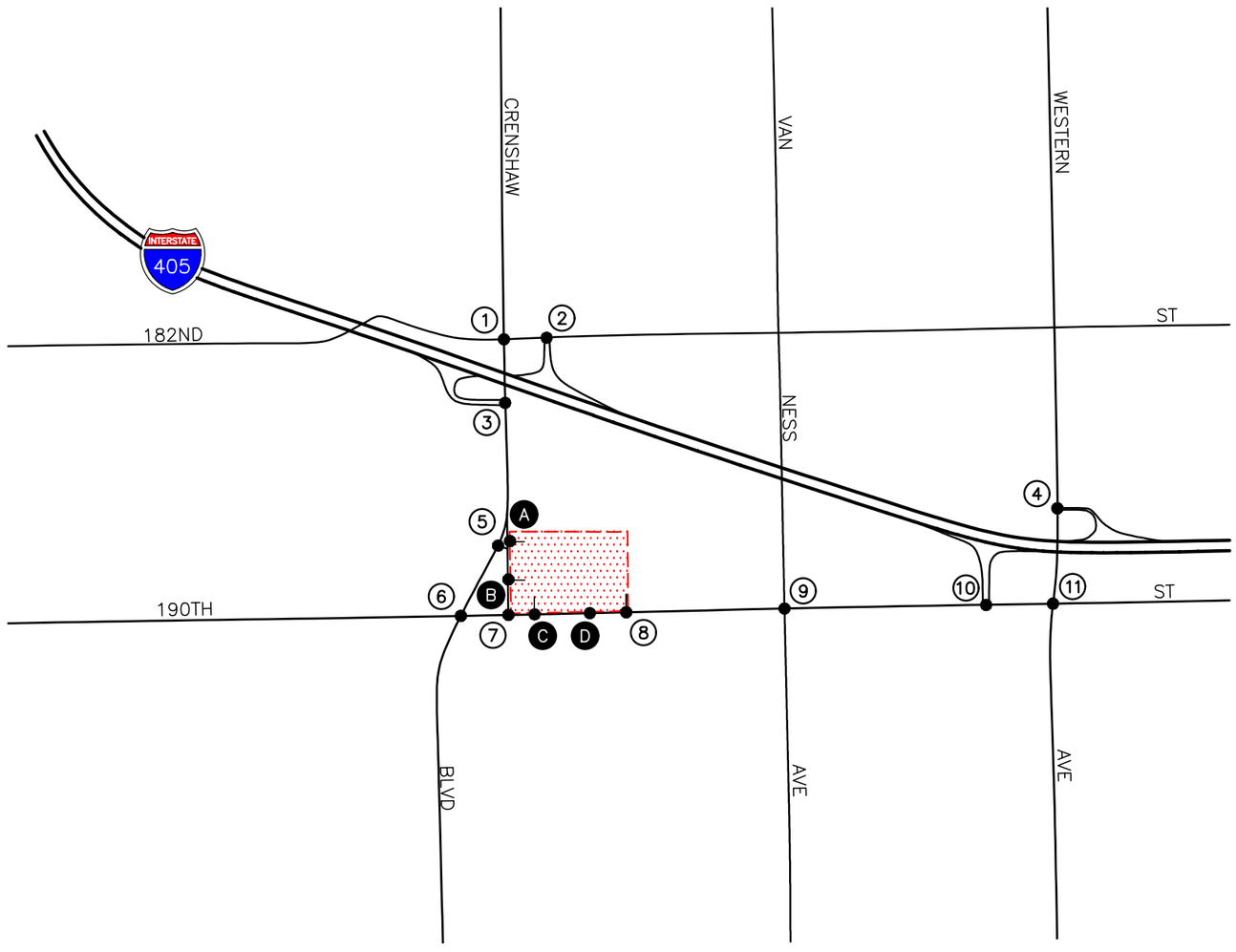
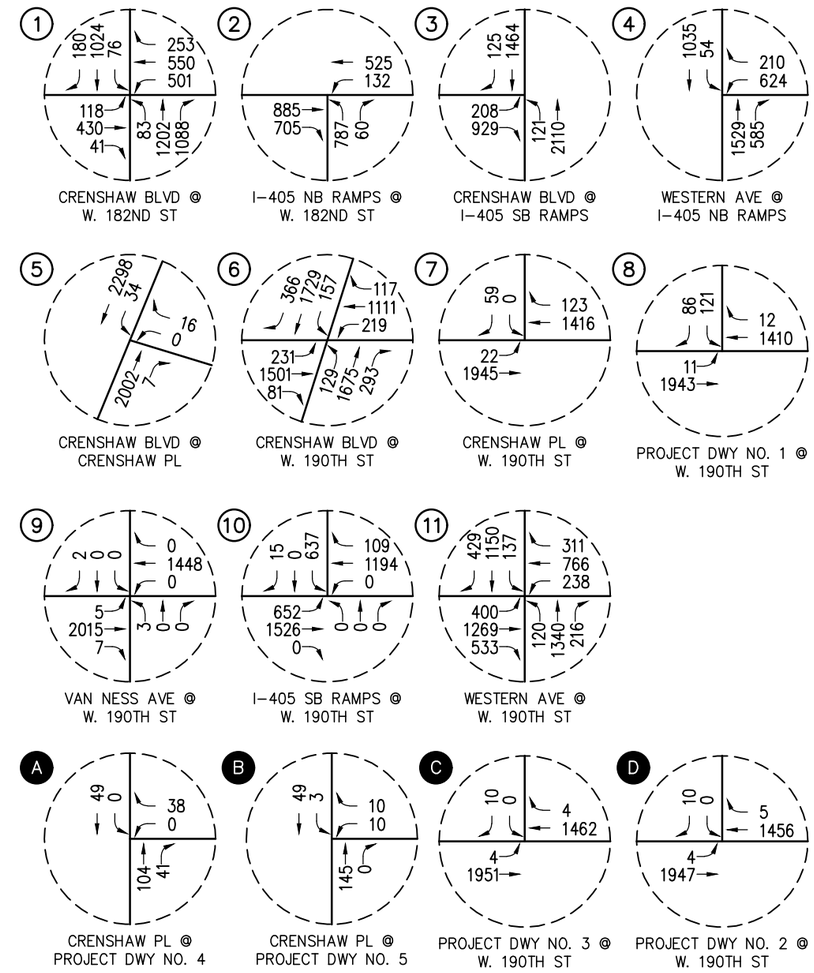
FIGURE 6–3

EXISTING WITH AMBIENT GROWTH (YEAR 2024) WITH PROJECT AM PEAK HOUR TRAFFIC VOLUMES

2555 W. 190TH STREET WAREHOUSE/MANUFACTURING PROJECT, TORRANCE





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(#) = STUDY INTERSECTION

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FIGURE 6-4

EXISTING WITH AMBIENT GROWTH (YEAR 2024) WITH PROJECT PM PEAK HOUR TRAFFIC VOLUMES

2555 W. 190TH STREET WAREHOUSE/MANUFACTURING PROJECT, TORRANCE

7.0 YEAR 2024 CONDITIONS TRAFFIC ANALYSIS

The relative impacts of the added Project traffic volumes generated by proposed Project during the AM and PM peak hour traffic conditions were evaluated based on analysis of future Year 2024 operating conditions at the eleven (11) key study intersections. The previously discussed capacity analysis procedures were utilized to investigate the future ICU/HCM relationships and service level characteristics at each study intersection. The significance of the potential impacts of the Project at each key intersection was then evaluated using the traffic impact criteria summarized in *Section 3.5* of this report.

7.1 Traffic Analysis Scenarios

The following scenarios are those for which AM and PM peak hour volume/capacity and delay calculations have been performed at the key study intersections:

A. Existing Traffic Conditions;
B. Existing Traffic Conditions Plus Ambient Growth Traffic to the Year 2024;
C. Scenario (B) plus Project Traffic Conditions;
D. Scenario (C) with Improvements, if necessary;

7.2 Year 2024 Conditions Intersection Capacity Analysis

Table 7-1 summarizes the AM and PM peak hour Level of Service results at the key study intersections for Year 2024 traffic conditions, based on the *Intersection Capacity Utilization (ICU)* Method of Analysis for signalized intersections and the *Highway Capacity Manual (HCM)* for unsignalized intersections.

The first column (1) of ICU/HCM/LOS values in *Table 7-1* presents a summary of existing AM and PM peak hour traffic conditions for key study intersections. The second column (2) presents Existing with Ambient Growth traffic conditions based on existing intersection geometry but without any traffic generated from the proposed project. The third column (3) identifies Existing with Ambient Growth traffic conditions with the addition of project traffic. The fourth column (4) shows the increase in ICU/HCM value due to the added peak hour Project trips and indicates whether the traffic associated with the Project will exceed the level of service thresholds mentioned in this report. The fifth column (5) presents the resultant level of service of Existing With Ambient Growth with Project traffic conditions with the inclusion of planned and/or recommended traffic improvements, if needed.

7.2.1 *Existing Traffic Conditions*

Review of column (1) of *Table 7-1* indicates that for existing traffic conditions, four (4) of the eleven (11) key study intersections currently operate at unacceptable level of service during the AM and/or PM peak hours when compared to the LOS standards defined in this report. The remaining study intersections operate at acceptable level of service during the AM and PM peak hours. The intersections operating adversely are as follows:

Key Intersection	AM Peak Hour ICU	AM Peak Hour LOS	PM Peak Hour ICU	PM Peak Hour LOS
1. Crenshaw Boulevard at W. 182nd Street	--	--	1.064	F
5. Crenshaw Boulevard at Crenshaw Place	99.2 s/v	F	--	--
6. Crenshaw Boulevard at W. 190th Street	1.042	F	0.957	E
7. Crenshaw Place at W. 190th Street	68.4 s/v	F	--	--

7.2.2 *Existing With Ambient Growth (Year 2024) Traffic Conditions*

Review of column (2) of *Table 7-1* indicates that for Existing with Ambient Growth traffic conditions, four (4) of the eleven (11) key study intersections are forecast to operate at unacceptable level of service during the AM and/or PM peak hours when compared to the LOS standards defined in this report. The intersections operating adversely are as follows:

Key Intersection	AM Peak Hour ICU	AM Peak Hour LOS	PM Peak Hour ICU	PM Peak Hour LOS
1. Crenshaw Boulevard at W. 182nd Street	--	--	1.074	F
5. Crenshaw Boulevard at Crenshaw Place	106.7 s/v	F	--	--
6. Crenshaw Boulevard at W. 190th Street	1.051	F	0.965	E
7. Crenshaw Place at W. 190th Street	71.2 s/v	F	--	--

7.2.3 *Existing With Ambient Growth (Year 2024) With Project Traffic Conditions*

Review of column (3) of *Table 7-1* indicates that for Existing with Ambient Growth with Project traffic conditions, four (4) of the eleven (11) key study intersections are forecast to continue to operate at unacceptable level of service during the AM and/or PM peak hours, based on the LOS standards specified in this report. The remaining study intersections are forecast to operate at acceptable level of service during the AM and PM peak hours. The intersections forecast to operate adversely are as follows:

Key Intersection	AM Peak Hour ICU	AM Peak Hour LOS	PM Peak Hour ICU	PM Peak Hour LOS
1. Crenshaw Boulevard at W. 182nd Street	0.903	E	1.103	F
5. Crenshaw Boulevard at Crenshaw Place	104.3 s/v	F	--	--
6. Crenshaw Boulevard at W. 190th Street	1.052	F	0.974	E
7. Crenshaw Place at W. 190th Street	85.6 s/v	F	--	--

Review of column (4) of *Table 7-1* indicates that Crenshaw Boulevard/W. 182nd Street exceeds the level of service thresholds and requires Project-related improvements under the Existing with Ambient Growth with Project traffic conditions. However, a review of column (5) indicates that the implementation of planned and/or recommended improvements at this study intersection will help offset the Project's increment. Planned and recommended improvements are discussed in Section 10.0.

Appendix C contains the ICU/LOS calculation worksheets.

TABLE 7-1

YEAR 2024 CONDITIONS PEAK HOUR INTERSECTION CAPACITY ANALYSIS SUMMARY

Key Intersection		Time Period	(1) Existing Traffic Conditions		(2) Existing With Ambient Growth (Year 2024) Traffic Conditions		(3) Existing With Ambient Growth (Year 2024) With Project Traffic Conditions		(4) Exceed LOS Thresholds (3) – (2)		(5) Existing With A.G. (Year 2024) With Project With Mitigation	
			ICU/HCM	LOS	ICU/HCM	LOS	ICU/HCM	LOS	Increase	Yes/No	ICU/HCM	LOS
1.	Crenshaw Boulevard at	AM	0.891	D	0.899	D	**0.903**	**E**	0.004	No	0.859	D
	W. 182nd Street	PM	**1.064**	**F**	**1.074**	**F**	**1.103**	**F**	**0.029**	**Yes**	**1.044**	**F**
2.	I-405 Northbound Ramps at	AM	Caltrans Intersection, **See Section 8.0**									
	W. 182nd Street	PM										
3.	Crenshaw Boulevard at	AM	Caltrans Intersection, **See Section 8.0**									
	I-405 Southbound Ramps	PM										
4.	Western Avenue at	AM	Caltrans Intersection, **See Section 8.0**									
	I-405 Northbound Ramps	PM										
5.	Crenshaw Boulevard at	AM	**99.2 s/v**	**F**	**106.7 s/v**	**F**	**104.3 s/v**	**F**	0.0 s/v[15]	No[16]	--	--
	Crenshaw Place	PM	22.6 s/v	C	22.9 s/v	C	24.0 s/v	C	1.1 s/v	No	--	--
6.	Crenshaw Boulevard at	AM	**1.042**	**F**	**1.051**	**F**	**1.052**	**F**	0.001	No	--	--
	W. 190th Street	PM	**0.957**	**E**	**0.965**	**E**	**0.974**	**E**	0.009	No	--	--
7.	Crenshaw Place at	AM	**68.4 s/v**	**F**	**71.2 s/v**	**F**	**74.7 s/v**	**F**	0.5 s/v	No[16]	--	--
	W. 190th Street	PM	18.6 s/v	C	18.9 s/v	C	18.6 s/v	C	0.0 s/v	No	--	--

Notes:

- ICU = Intersection Capacity Utilization
- HCM = Highway Capacity Manual
- s/v = seconds per vehicle (delay)
- LOS = Level of Service, please refer to *Tables 3-1* and *3-2* for the LOS definitions
- **Bold ICU/HCM/LOS values** indicate adverse service levels based on the LOS standards mentioned in this report
- **N.F. = Not Feasible**

[15] A theoretical negative increase is due to additional traffic volumes that are added to non-critical movements.

[16] Based on LOS criteria threshold is not exceeded due to intersection not meeting signal warrant.

TABLE 7-1 (CONTINUED)
YEAR 2024 CONDITIONS PEAK HOUR INTERSECTION CAPACITY ANALYSIS SUMMARY

Key Intersection		Time Period	(1) Existing Traffic Conditions		(2) Existing With Ambient Growth (Year 2024) Traffic Conditions		(3) Existing With Ambient Growth (Year 2024) With Project Traffic Conditions		(4) Exceed LOS Thresholds (3) – (2)		(5) Existing With A.G. (Year 2024) With Project With Mitigation	
			ICU/HCM	LOS	ICU/HCM	LOS	ICU/HCM	LOS	Increase	Yes/No	ICU/HCM	LOS
8.	Project Driveway 1 at	AM	0.503	A	0.507	A	0.554	A	0.047	No	--	--
	W. 190th Street	PM	0.543	A	0.548	A	0.580	A	0.032	No	--	--
9.	Van Ness Avenue at	AM	0.615	B	0.620	B	0.654	B	0.034	No	--	--
	W. 190th Street	PM	0.535	A	0.540	A	0.557	A	0.017	No	--	--
10.	I-405 Southbound Ramps at	AM	Caltrans Intersection, **See Section 8.0**									
	W. 190th Street	PM										
11.	Western Avenue at	AM	0.805	D	0.813	D	0.829	D	0.016	No	--	--
	W. 190th Street	PM	0.786	C	0.793	C	0.801	D	0.008	No	--	--

Notes:

- ICU = Intersection Capacity Utilization
- HCM = Highway Capacity Manual
- s/v = seconds per vehicle (delay)
- LOS = Level of Service, please refer to *Tables 3-1* and *3-2* for the LOS definitions
- **Bold ICU/HCM/LOS values** indicate adverse service levels based on the LOS standards mentioned in this report
- **N.F. = Not Feasible**

8.0 STATE OF CALIFORNIA (CALTRANS) ASSESSMENT

In conformance with the current Caltrans *Guide for the Preparation of Traffic Impact Studies, dated December 2002*, existing and projected peak hour operating conditions at the four (4) state-controlled study intersections within the study area have been evaluated using the *Highway Capacity Manual* operations method of analysis. These state-controlled locations include the following study intersections:

2. I-405 Northbound Ramps at 182nd Street (Torrance/Caltrans)
3. Crenshaw Boulevard at I-405 Southbound Ramps (Torrance/Caltrans)
4. Western Avenue at I-405 Northbound Ramps (Torrance/Caltrans)
10. I-405 Southbound Ramps at W. 190th Street (Torrance/Caltrans)

Caltrans "endeavors to maintain a target LOS at the transition between LOS "C" and LOS "D" on State highway facilities"; it does not require that LOS "D" (shall) be maintained. However, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS. For this analysis, LOS D is the target level of service standard and will be utilized to assess the need for potential Project-related improvements at the state-controlled study intersections.

The Caltrans *Guide for the Preparation of Traffic Impact Studies, dated December 2002* states that if an existing State-owned facility operates at less than the target LOS (i.e. LOS D); the existing service level should be maintained. Based on Caltrans Criteria, Project-related improvements are needed if the Project causes the LOS to change from an acceptable LOS (i.e., LOS D or better) to a deficient LOS (i.e. LOS E or F).

8.1 Highway Capacity Manual (HCM) Method of Analysis (Signalized Intersections)

Based on the HCM 6th Edition operations method of analysis, level of service for signalized intersections is defined in terms of control delay, which is a measure of driver discomfort, frustration, fuel consumption and lost travel time. The delay experienced by a motorist is made up of a number of factors that relate to control, geometries, traffic and incidents. Total delay is the difference between the travel time actually experienced and the reference travel time that would result during ideal conditions: in the absence of traffic control, in the absence of geometric delay, in the absence of any incidents and when there are no other vehicles on the road.

In the HCM, only the portion of total delay attributed to the control facility is quantified. This delay is called *control delay.* Control delay includes initial deceleration delay, queue move-up time, stopped delay and final acceleration delay. Specifically, LOS criteria for traffic signals are stated in terms of the average control delay per vehicle. The six qualitative categories of Level of Service that have been defined along with the corresponding HCM control delay value range for signalized intersections are shown in ***Table 8-1***.

TABLE 8-1

LEVEL OF SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS (HCM METHODOLOGY)[17]

Level of Service (LOS)	Control Delay Per Vehicle (seconds/vehicle)	Level of Service Description
A	≤ 10.0	This level of service occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.
B	> 10.0 and ≤ 20.0	This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with LOS A, causing higher levels of average delay.
C	> 20.0 and ≤ 35.0	Average traffic delays. These higher delays may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.
D	> 35.0 and ≤ 55.0	Long traffic delays. At level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high *v/c* ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	> 55.0 and ≤ 80.0	Very long traffic delays. This level is considered by many agencies (i.e. SANBAG) to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high *v/c* ratios. Individual cycle failures are frequent occurrences.
F	≥ 80.0	Severe congestion. This level, considered to be unacceptable to most drivers, often occurs with over saturation, that is, when arrival flow rates exceed the capacity of the intersection. It may also occur at high *v/c* ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing factors to such delay levels.

[17] Source: *Highway Capacity Manual* (Signalized Intersections).

8.2 Year 2024 Conditions Intersection Capacity Analysis

Table 8-2 summarizes the AM and PM peak hour Level of Service results at the four (4) state-controlled study intersections for Year 2024 traffic conditions, based on the *Highway Capacity Manual (HCM)* Method of Analysis. The first column (1) of Delay/LOS values in *Table 8-2* presents a summary of existing AM and PM peak hour traffic conditions. The second column (2) identifies Existing with Ambient Growth traffic conditions. The third column (3) identifies Existing with Ambient Growth traffic conditions with the addition of project traffic. The fourth column (4) indicates whether the traffic associated with the Project will exceed the level of service thresholds mentioned in this report. The fifth column (5) presents the resultant level of service of Existing With Ambient Growth with Project traffic conditions with the inclusion of planned and/or recommended traffic improvements, if needed.

8.2.1 *Existing Traffic Conditions*

Review of column (1) of *Table 8-2* indicates that for existing traffic conditions, all four (4) state-controlled study intersections currently operate at acceptable level of service D or better during the AM and PM peak hours.

8.2.2 *Existing With Ambient Growth (Year 2024) Traffic Conditions*

Review of column (2) of *Table 8-2* indicates that for Existing with Ambient Growth traffic conditions, all four (4) state-controlled study intersections are forecast to operate at acceptable level of service D or better during the AM and PM peak hours.

8.2.3 *Existing With Ambient Growth (Year 2024) With Project Traffic Conditions*

Review of column (3) of *Table 8-2* indicates that for Existing with Ambient Growth with Project traffic conditions, all four (4) state-controlled study intersections are forecast to operate at acceptable level of service D or better during the AM and PM peak hours. Review of column (4) indicates that the proposed Project is not anticipated to exceed the level of service thresholds at any of the state-controlled study intersections. Therefore, no improvements are recommended.

Appendix D contains the HCM/LOS calculation worksheets for the Year 2024 Traffic Conditions.

TABLE 8-2

YEAR 2024 CONDITIONS PEAK HOUR INTERSECTION CAPACITY ANALYSIS SUMMARY – CALTRANS

Key Intersection	Time Period	(1) Existing Traffic Conditions		(2) Existing With Ambient Growth (Year 2024) Traffic Conditions		(3) Existing With Ambient Growth (Year 2024) With Project Traffic Conditions		(4) Exceed LOS Thresholds (3) - (2)		(5) Existing With A.G. (Year 2024) With Project With Circulation Enhancements	
		HCM	LOS	HCM	LOS	HCM	LOS	Increase	Yes/No	HCM	LOS
2. I-405 Northbound Ramps at W. 182nd Street	AM	15.4 s/v	B	15.5 s/v	B	15.5 s/v	B	0.0 s/v	No	--	--
	PM	20.9 s/v	C	21.3 s/v	C	22.0 s/v	C	0.7 s/v	No	--	--
3. Crenshaw Boulevard at I-405 Southbound Ramps	AM	41.2 s/v	D	42.8 s/v	D	43.4 s/v	D	0.6 s/v	No	--	--
	PM	28.9 s/v	C	29.8 s/v	C	34.2 s/v	C	4.4 s/v	No	--	--
4. Western Avenue at I-405 Northbound Ramps	AM	20.3 s/v	C	20.5 s/v	C	21.1 s/v	C	0.6 s/v	No	--	--
	PM	17.1 s/v	B	17.4 s/v	B	17.7 s/v	B	0.3 s/v	No	--	--
10 I-405 Southbound Ramps at W. 190th Street	AM	25.1 s/v	C	25.4 s/v	C	26.3 s/v	C	0.9 s/v	No	--	--
	PM	20.1 s/v	C	20.2 s/v	C	20.6 s/v	C	0.4 s/v	No	--	--

Notes:

- HCM = Highway Capacity Manual
- s/v = seconds per vehicle (delay)
- LOS = Level of Service, please refer to *Table 8-1* for the LOS definitions

8.3 Off-Ramp Queueing Assessment

A queueing analysis was prepared for all the I-405 off-ramps to determine if the off-ramp queues spillover into the freeway mainline. This evaluation utilized the HCM 95th percentile methodology. The 95th percentile vehicle queue value corresponds to a condition that is generally taken as the maximum queue for the indicated movement and is presented with each turn movement at the key intersections.

Table 8-3 presents the queueing analyses results at the freeway off-ramps for the AM and PM peak hours for Year 2024 traffic conditions. Column (1) presents results for Existing traffic conditions, column (2) presents results for Existing with Ambient Growth traffic conditions, and column (3) presents results for Existing with Ambient Growth with Project traffic conditions.

8.3.1 *Existing Traffic Conditions*

Review of Column (1) of *Table 8-3* indicates that the queues are adequate under Existing traffic conditions during both the AM and PM peak hours. Therefore, no improvements are required at the four (4) key study locations.

8.3.2 *Existing With Ambient Growth (Year 2024) Traffic Conditions*

Review of Column (2) of *Table 8-3* indicates that the queues are adequate under Existing with Ambient Growth with Project traffic conditions during both the AM and PM peak hours. Therefore, no improvements are required at the four (4) key study locations.

8.3.3 *Existing With Ambient Growth (Year 2024) With Project Traffic Conditions*

Review of Column (3) of *Table 8-3* indicates that the queues are adequate under Existing with Ambient Growth with Project traffic conditions during both the AM and PM peak hours. Therefore, no improvements are required at the four (4) key study locations.

Appendix D contains the Year 2024 Traffic Conditions queuing worksheets.

TABLE 8-3
CALTRANS OFF-RAMP PEAK HOUR QUEUING ANALYSIS[18]

Key Study Intersection	Storage Provided (feet)	(1) Existing Traffic Conditions				(2) Existing With Ambient Growth (Year 2024) Traffic Conditions				(3) Existing With Ambient Growth (Year 2024) With Project Traffic Conditions			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Max. Queue/ Min. Storage Required	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required	Adequate Storage (Yes/No)
2. I-405 Northbound Ramps at W. 182nd Street													
Northbound Left-Turn	435’	284’	Yes	350’	Yes	286’	Yes	352’	Yes	286’	Yes	352’	Yes
Northbound Shared Left/Right-Turn	435’	283’	Yes	350’	Yes	285’	Yes	352’	Yes	285’	Yes	352’	Yes
3. Crenshaw Boulevard at I-405 Southbound Ramps													
Eastbound Shared Left/Right-Turn	295’	74’	Yes	177’	Yes	75’	Yes	179’	Yes	78’	Yes	217’	Yes
Eastbound Right-Turn	1,270’[19]	923’	Yes	731’	Yes	951’	Yes	757’	Yes	1,043’	Yes	893’	Yes
4. Western Avenue at I-405 Northbound Ramps													
Westbound Left-Turn	230’	437’	Yes[20]	326’	Yes[20]	440’	Yes[20]	328’	Yes[20]	453’	Yes[20]	333’	Yes[20]
Westbound Shared Left/Right-Turn	1,200’[21]	452’	Yes	321’	Yes	456’	Yes	323’	Yes	469’	Yes	330’	Yes
10. I-405 Southbound Ramps at W. 190th Street													
Southbound Left-Turn	290’	293’	Yes[20]	290’	Yes	296’	Yes[20]	293’	Yes[20]	300’	Yes[20]	295’	Yes[20]
Southbound Shared Left/Right-Turn	955’[22]	286’	Yes	290’	Yes	289’	Yes	293’	Yes	292’	Yes	294’	Yes

18 Queues are based on HCM 95th Percentile methodology.
19 The eastbound right-turn pocket is striped for 295-feet; however, the on-ramp has the capacity to accommodate additional 975-feet of queue.
20 Although the queue exceeds the striped storage, the on-ramp has the capacity to accommodate the additional spillover queue.
21 The westbound shared left/right-turn pocket is striped for 230-feet; however, the on-ramp has the capacity to accommodate additional 970-feet of queue.
22 The southbound shared left/right-turn pocket is striped for 290-feet; however, the on-ramp has the capacity to accommodate additional 665-feet of queue.

9.0 SITE ACCESS EVALUATION

9.1 Site Access

Vehicular access to the Project site will be maintained at the two (2) existing unsignalized full access driveway on 190th Street, and the signalized intersection of 190th Street at Honeywell, as well as the existing unsignalized full access driveway on Crenshaw Place. A fifth unsignalized driveway, to be located on Crenshaw Place in close proximity to Crenshaw Boulevard, is proposed and will serve as the primary access for the Project's truck-related traffic; as a Project Design Feature, a northbound right-turn pocket will be constructed at this driveway.

Table 9-1 presents the level of service results at the five (5) project driveways for Existing with Ambient Growth with Project traffic conditions. Review of the *Table 9-1* indicates that the driveways are forecast to operate at acceptable levels of service in the AM and PM peak hours.

Appendix C contains the ICU/HCM/LOS calculation worksheets for Year 2024 Traffic Conditions at the Project Driveways.

TABLE 9-1
PROJECT DRIVEWAY PEAK HOUR INTERSECTION CAPACITY ANALYSIS SUMMARY

Key Intersection		Time Period	Control Type	(1) Existing With Ambient Growth (Year 2024) With Project	
				ICU/HCM	LOS
8.	Project Driveway 1 at W. 190th Street	AM	3∅ Traffic Signal	0.554	A
		PM		0.580	A
A.	Crenshaw Place at Project Driveway 4	AM	One-Way Stop	8.8 s/v	A
		PM		8.9 s/v	A
B.	Crenshaw Place at Project Driveway 5	AM	One-Way Stop	9.5 s/v	A
		PM		9.4 s/v	A
C.	Project Driveway 3 at W. 190th Street	AM	One-Way Stop	19.3 s/v	C
		PM		16.9 s/v	C
D.	Project Driveway 2 at W. 190th Street	AM	One-Way Stop	19.5 s/v	C
		PM		16.9 s/v	C

Notes:

- ICU = Intersection Capacity Utilization
- HCM = Highway Capacity Manual
- s/v = seconds per vehicle (delay)
- LOS = Level of Service, please refer to *Tables 3-1* and *3-2* for the LOS definitions
- **Bold ICU/HCM/LOS values** indicate adverse service levels based on the LOS standards mentioned in this report

9.2 Internal Circulation

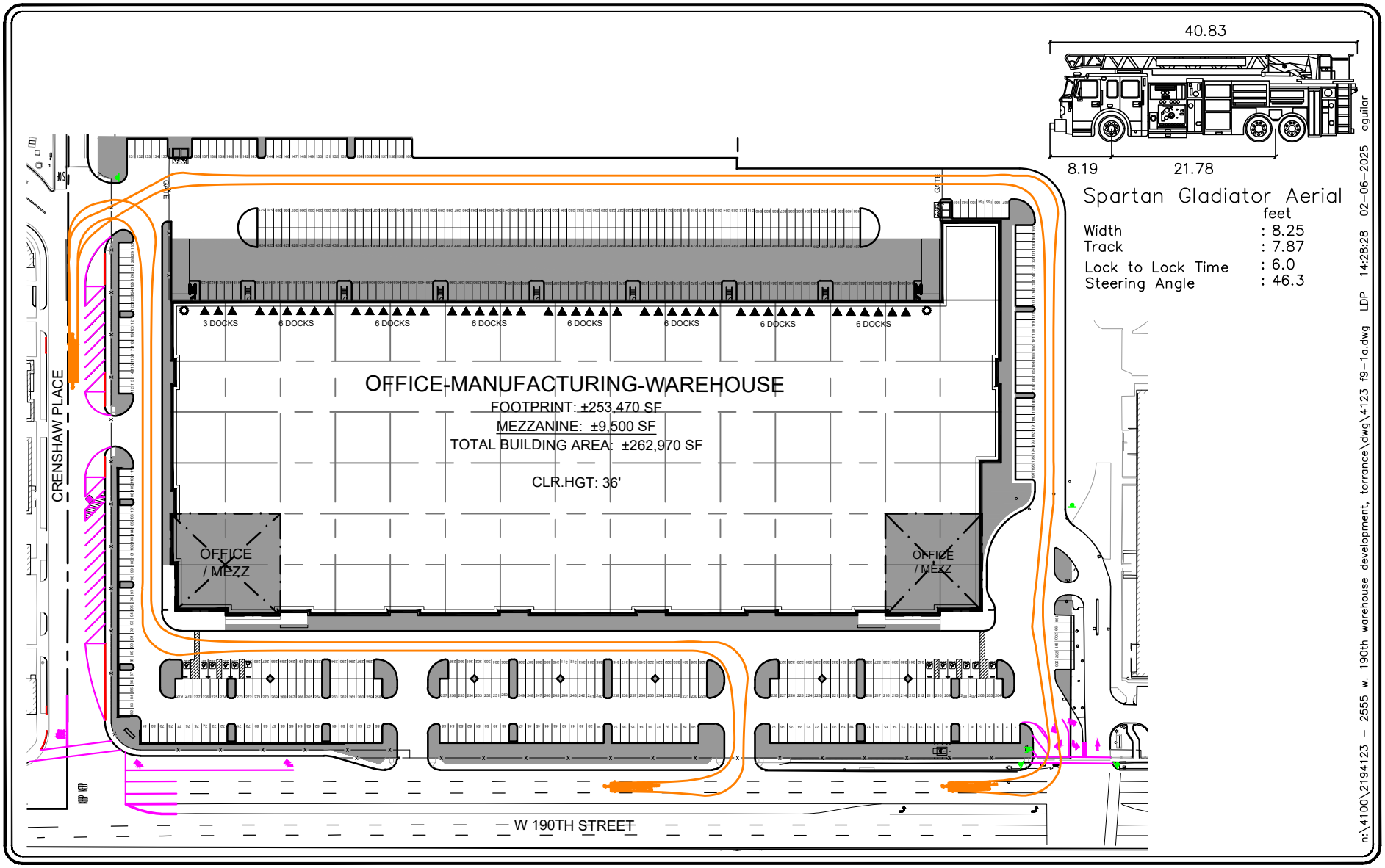
The Project driveways on W. 190th Street and Crenshaw Place will provide access to the subject property for various types of trucks and passenger vehicles. As noted earlier, Project Design Features include the construction of a westbound right-turn pocket along 190th Street at Crenshaw Place to help facilitate truck movements into the site. On-site circulation was evaluated for a fire truck and full-sized trucks (WB-67) and was performed using the *Turning Vehicle Templates*, developed by Jack E. Leisch & Associates and *AutoTURN for AutoCAD* computer software that simulates turning maneuvers for various types of vehicles.

Figures 9-1A and 9-1B illustrate the turning movements required of a fire truck as it accesses and circulates through the site, as well as the internal fire truck path.. Review of *Figure 9-1A* shows that access to and from the site via a fire truck is generally considered adequate. In addition, it should be noted that the fire plan is consistent with the City's Fire Operations manual.

Figures 9-2A through 9-2D illustrate the turning movements required of a WB-67 as it accesses the site via Crenshaw Place/190th Street, Driveway 1, and Driveway 4, respectively. Review of *Figure 9-2A through 9-2D* shows that access to and from the site via WB-67 is generally considered adequate with the exception that 75 feet of red curb shall be installed along Crenshaw Place to keep vehicles from parking in the truck swing zone. To minimize truck conflicts when existing the site from Project Driveway 1 it is recommended that a no right turn on red sign for commercial trucks be installed, R13A(CA)(MOD). It should be noted that trucks will be prohibited from entering Project Driveway 1 from 190th Street. To prevent trucks from using Project Driveway 1 way finding signage shall be added as you approach the signalized intersection to direct trucks to use Crenshaw Place. Additional signage shall be added stating no truck access. Internal to the site will be an "outbound only" gated access upstream of the truck turnaround area, as well as restricted signage noting "gated access no trucks". *Figures 2-2 and 2-3* presents the wayfinding signage and restrictive signage along with recommended red curb. *Appendix E* presents the City approved truck path exhibits, prepared by DRC Engineering (dated 9/27/24). The exhibits presented in *Appendix E* do not include the additional improvements and/or project design features identified in *Figures 2-2* and *2-3*.

9.2.1 *Crenshaw Place at Crenshaw Boulevard Truck Assessment*

Potential truck access has been assessed related to a WB-67 accessing the site via southbound left-turn inbound movement and westbound right-turn outbound movement at Crenshaw Place at Crenshaw Boulevard. ***Figure 9-3A*** presents the truck movements of a WB-67 as it tries to access the site via Crenshaw Place at Crenshaw Boulevard. Review of *Figure 9-3A* shows that the inbound and outbound movements would conflict with each other. Additionally, the inbound movement would cross onto the opposite travel lane. ***Figures 9-3B*** and ***9-3C*** present the truck movements for an SU-40 and WB-40. Review of *Figures 9-3B* and *9-3C* shows that smaller trucks are able to enter and exit without creating any conflicts. As a result, trucks with over 4-axles should be restricted from making the southbound left-turn inbound movement and westbound right-turn outbound movement at Crenshaw Place at Crenshaw Boulevard. It is recommended that the concrete median along Crenshaw Boulevard be extended by 10 feet to prevent left-turns into the site by larger trucks with over 4-axles while still



SOURCE: DRC ENGINEERING INC.

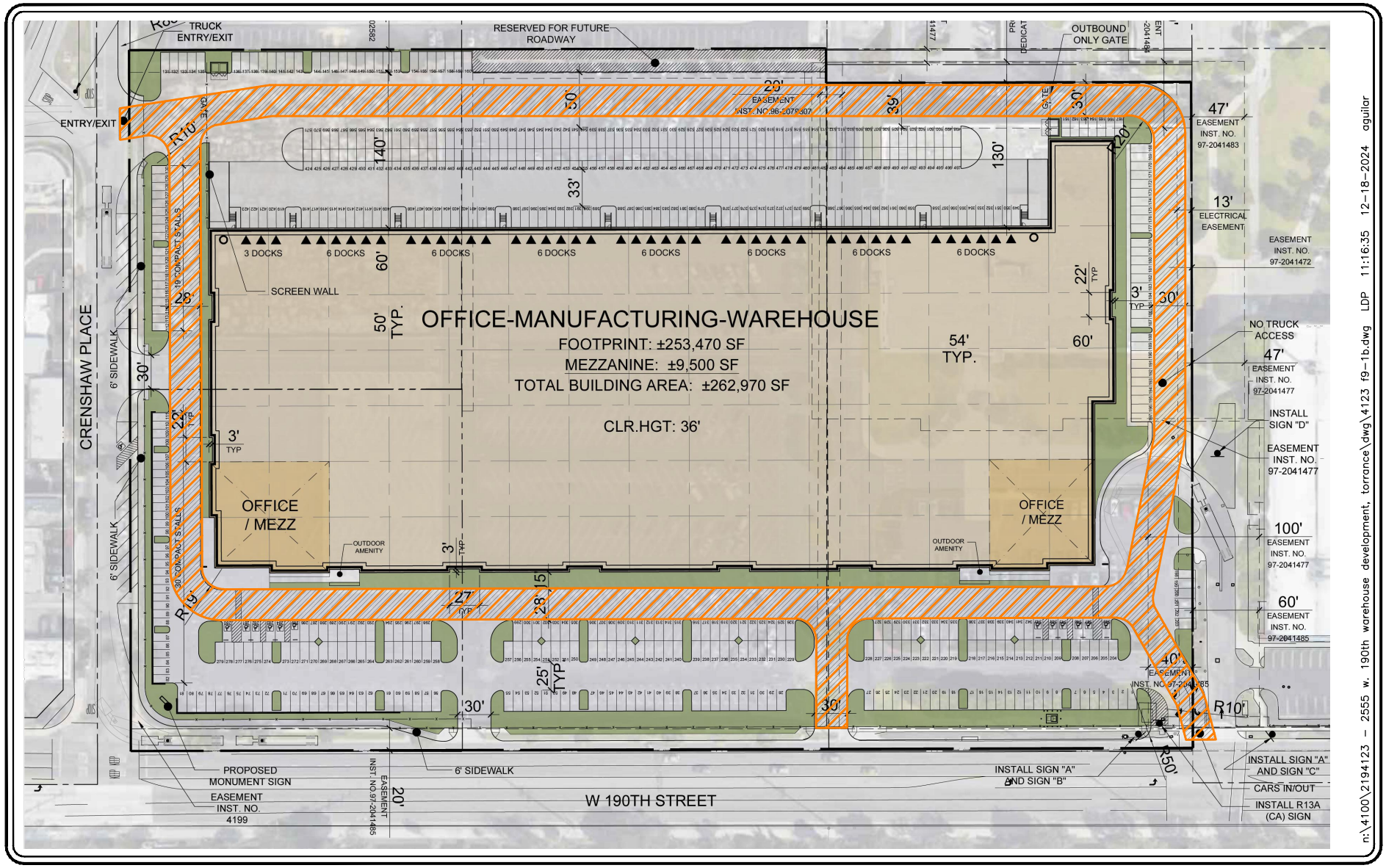
LLG

N NO SCALE

FIGURE 9-1A

FIRE TRUCK TURNING ANALYSIS

2555 W. 190TH STREET WAREHOUSE/MANUFACTURING PROJECT, TORRANCE



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SOURCE: WARE MALCOMB

KEY

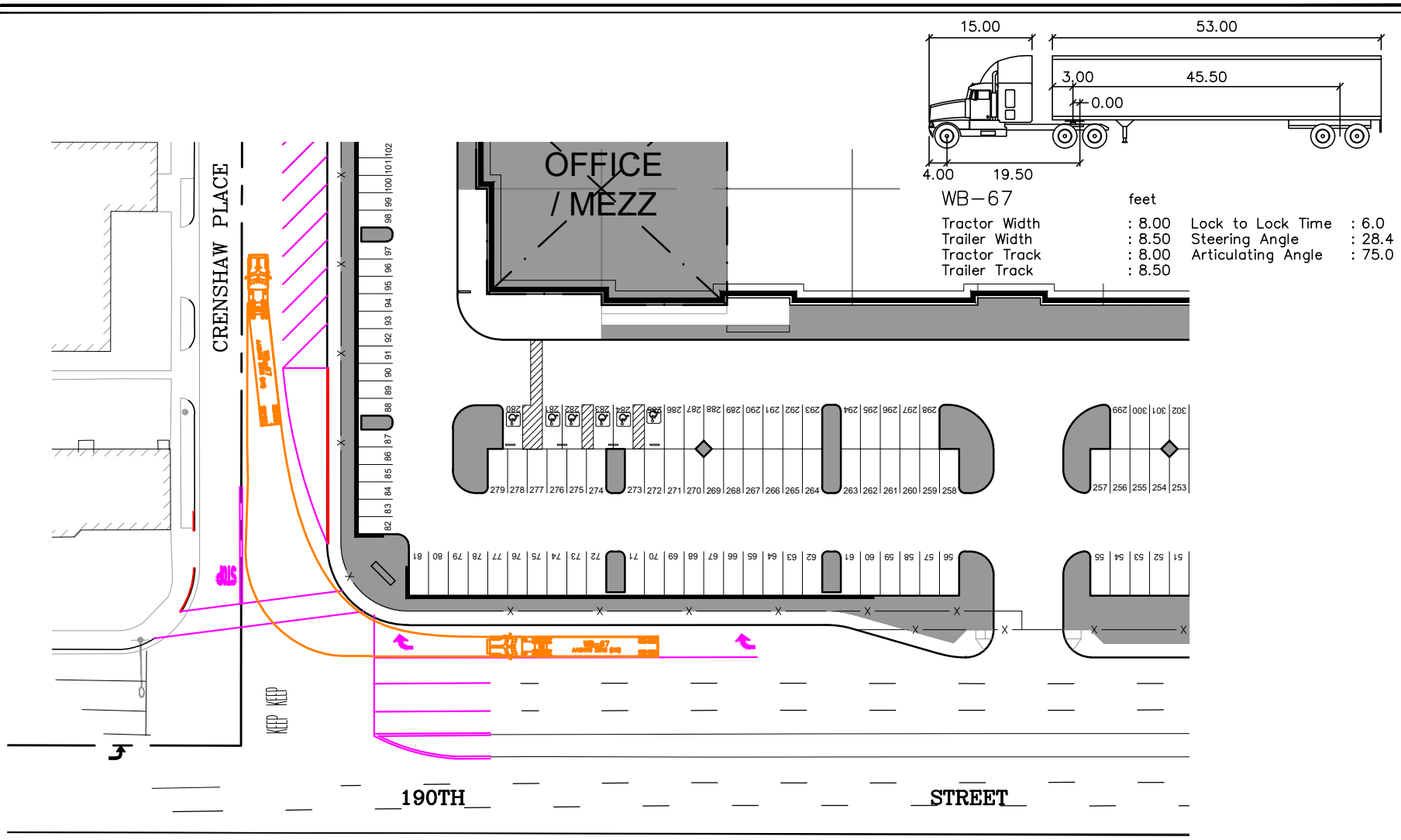
= FIRE TRUCK PATH

NO SCALE

FIGURE 9-1B

FIRE TRUCK TURNING ANALYSIS – FIRE TRUCK PATH

2555 W. 190TH STREET WAREHOUSE/MANUFACTURING PROJECT, TORRANCE



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SOURCE: DRC ENGINEERING INC.

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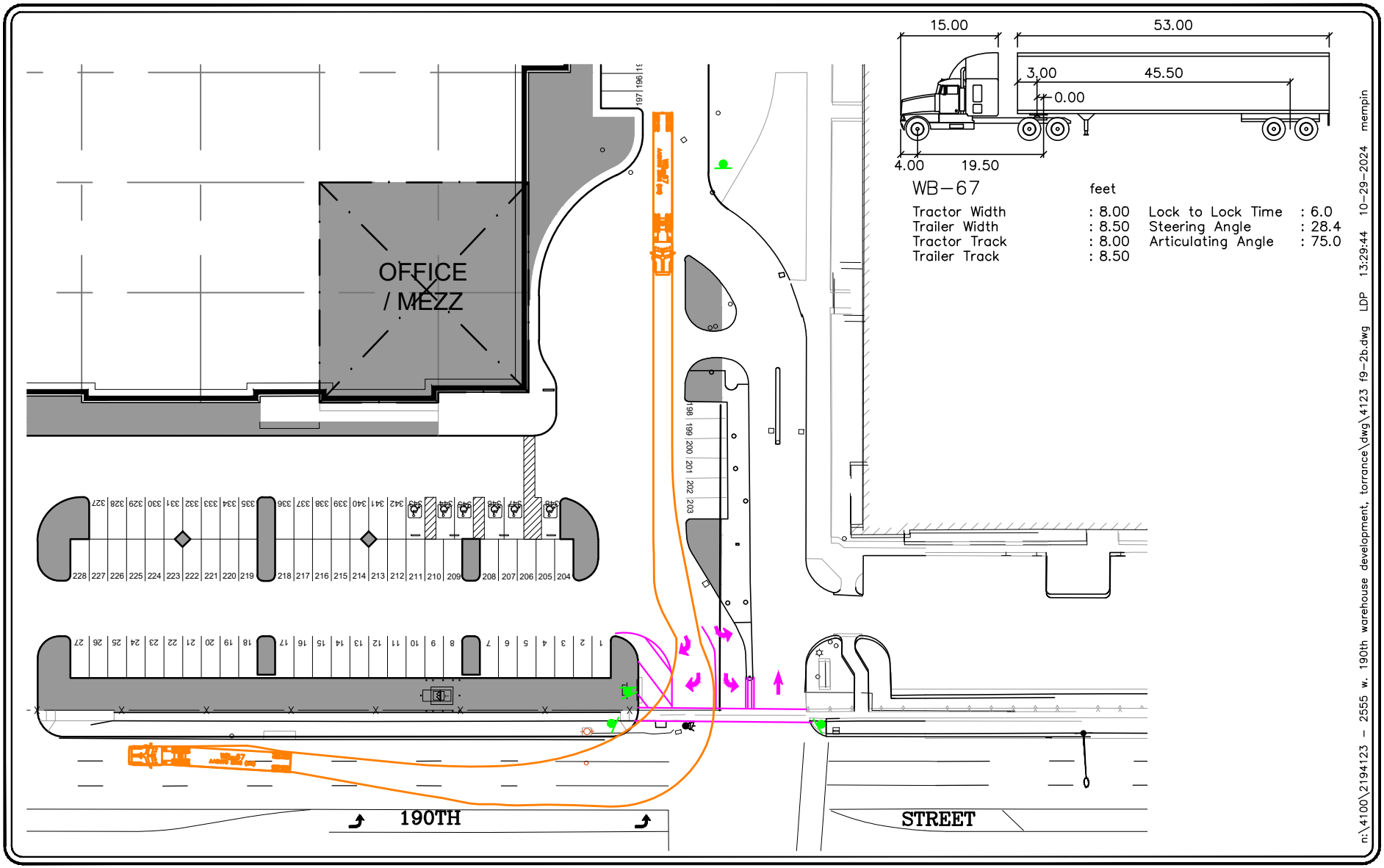
N NO SCALE

FIGURE 9-2A

CRENSHAW PLACE AT 190TH STREET
WB-67 TRUCK TURNING ANALYSIS

2555 W. 190TH STREET WAREHOUSE/MANUFACTURING PROJECT, TORRANCE



SOURCE: DRC ENGINEERING INC.

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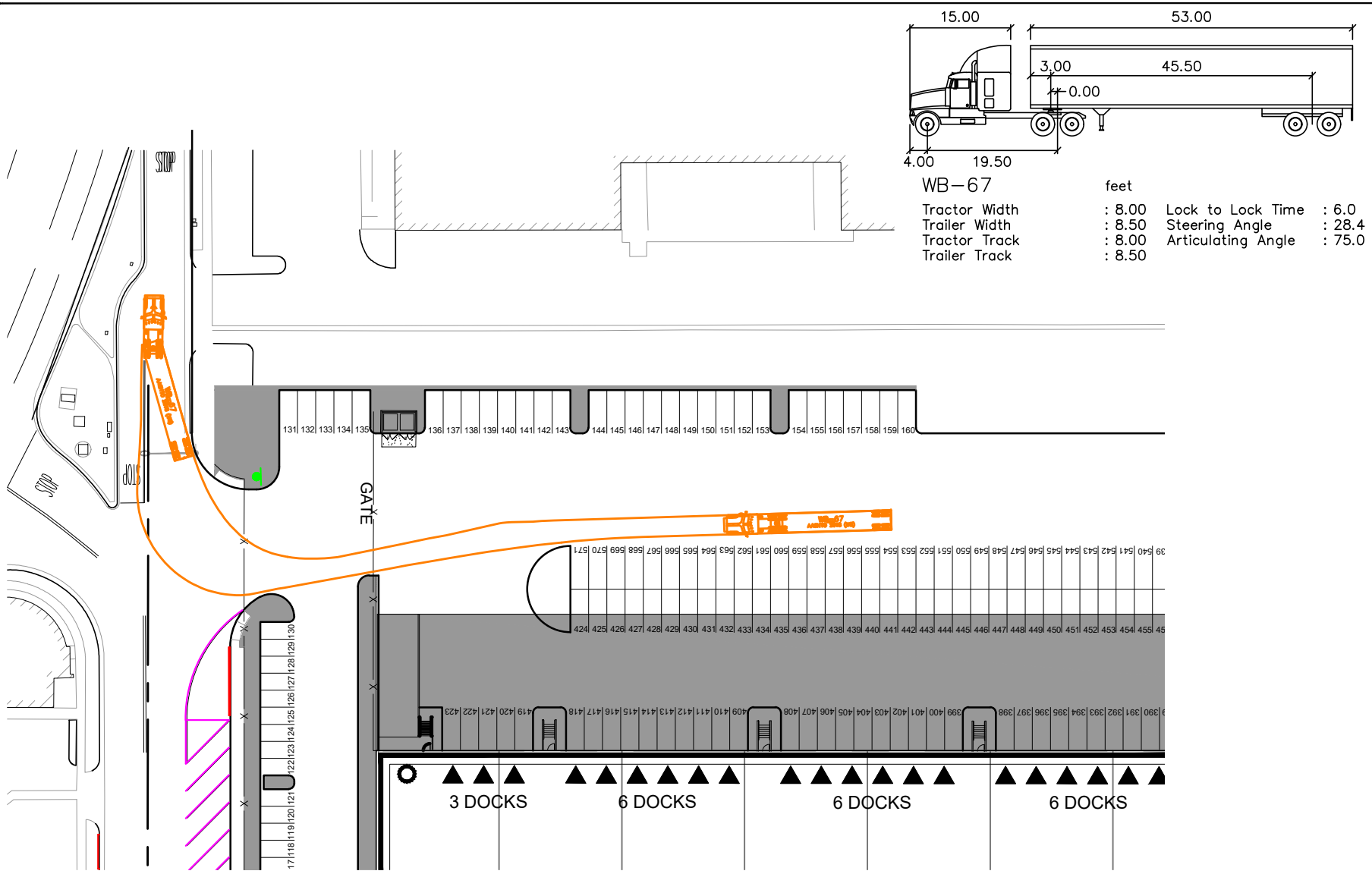
N NO SCALE

FIGURE 9-2B

WB-67 TRUCK TURNING ANALYSIS FOR DRIVEWAY 1

2555 W. 190TH STREET WAREHOUSE/MANUFACTURING PROJECT, TORRANCE



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SOURCE: DRC ENGINEERING INC.

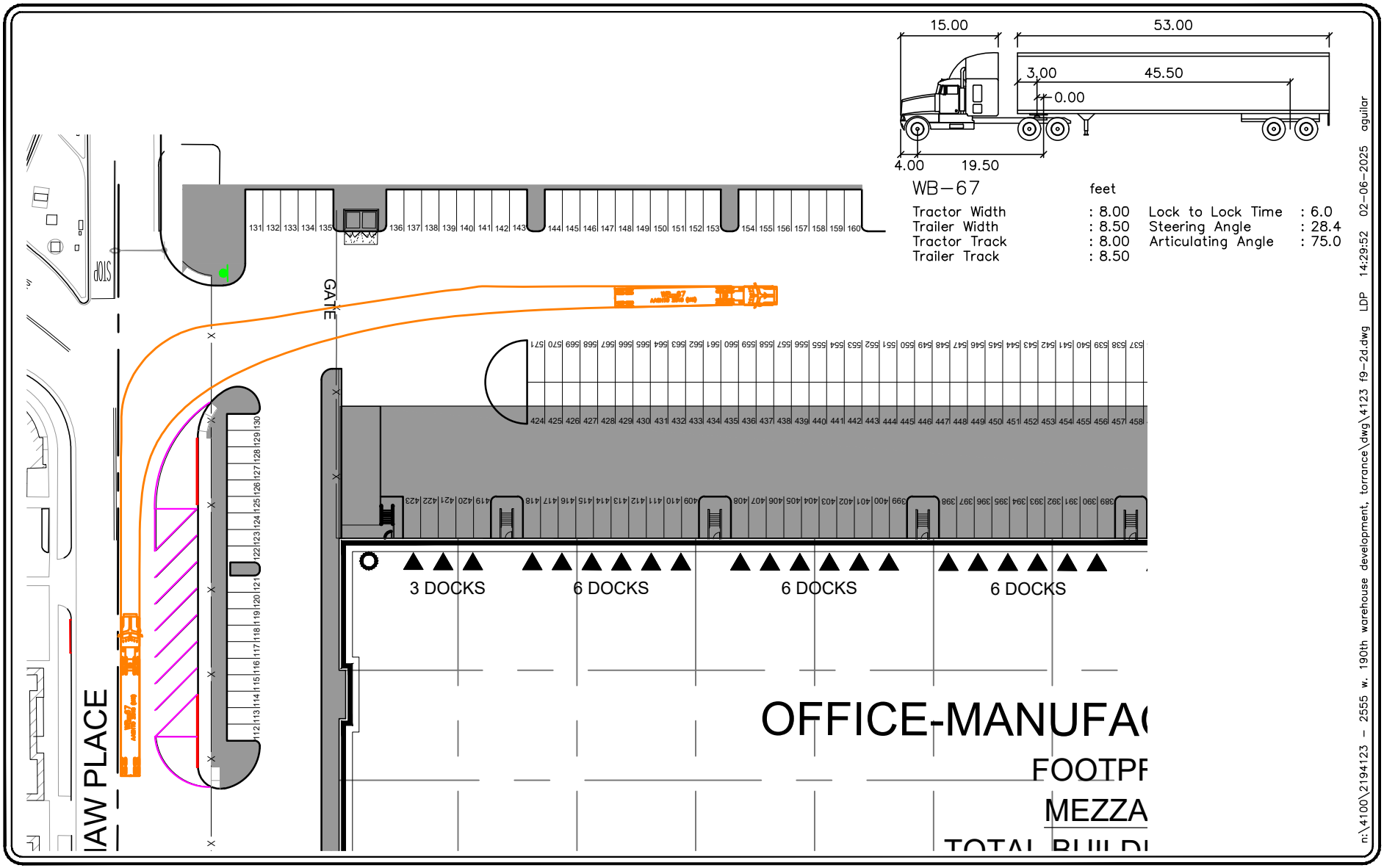
LLG

N NO SCALE

FIGURE 9-2C

WB-67 TRUCK TURNING ANALYSIS FOR DRIVEWAY 4 OUTBOUND

2555 W. 190TH STREET WAREHOUSE/MANUFACTURING PROJECT, TORRANCE



SOURCE: DRC ENGINEERING INC.

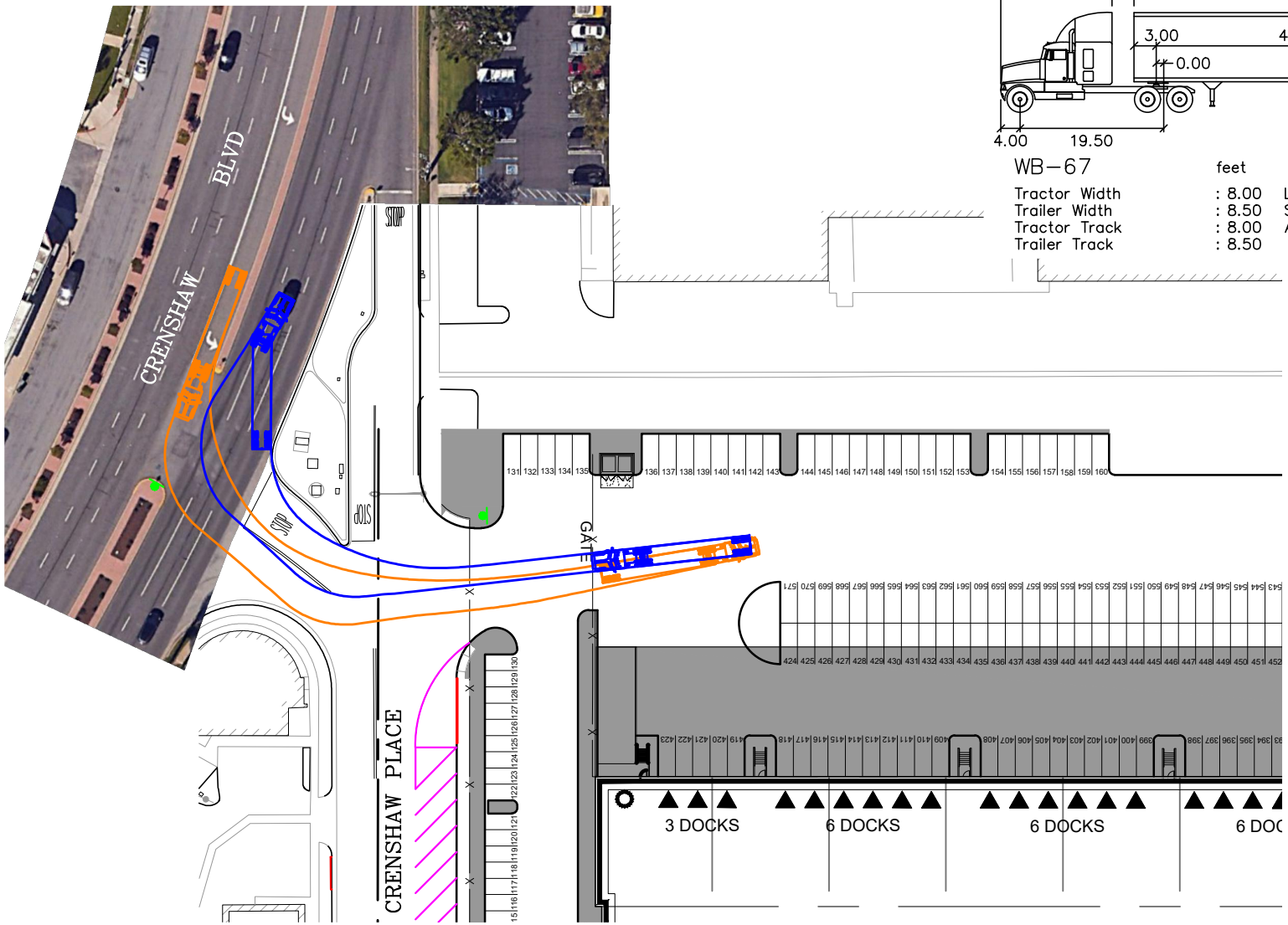
LLG

N NO SCALE

FIGURE 9-2D

WB-67 TRUCK TURNING ANALYSIS FOR DRIVEWAY 4 INBOUND

2555 W. 190TH STREET WAREHOUSE/MANUFACTURING PROJECT, TORRANCE



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SOURCE: DRC ENGINEERING INC.

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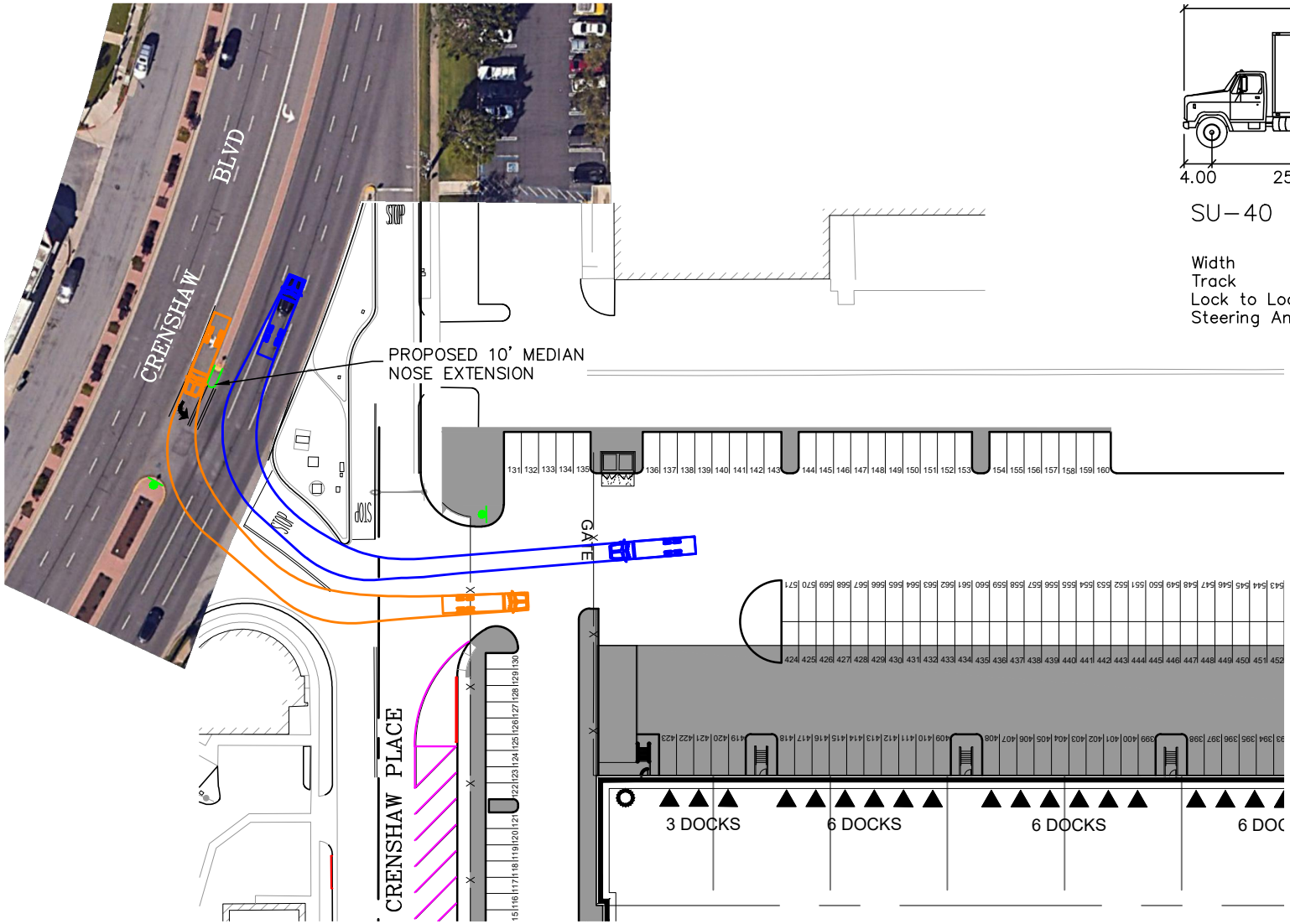
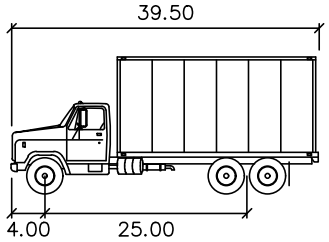
N NO SCALE

FIGURE 9-3A

CRENSHAW PLACE AT CRENSHAW BOULEVARD
WB-67 TURNING ANALYSIS

2555 W. 190TH STREET WAREHOUSE/MANUFACTURING PROJECT, TORRANCE





SU–40

	feet
Width	: 8.00
Track	: 8.00
Lock to Lock Time	: 6.0
Steering Angle	: 31.8

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SOURCE: DRC ENGINEERING INC.

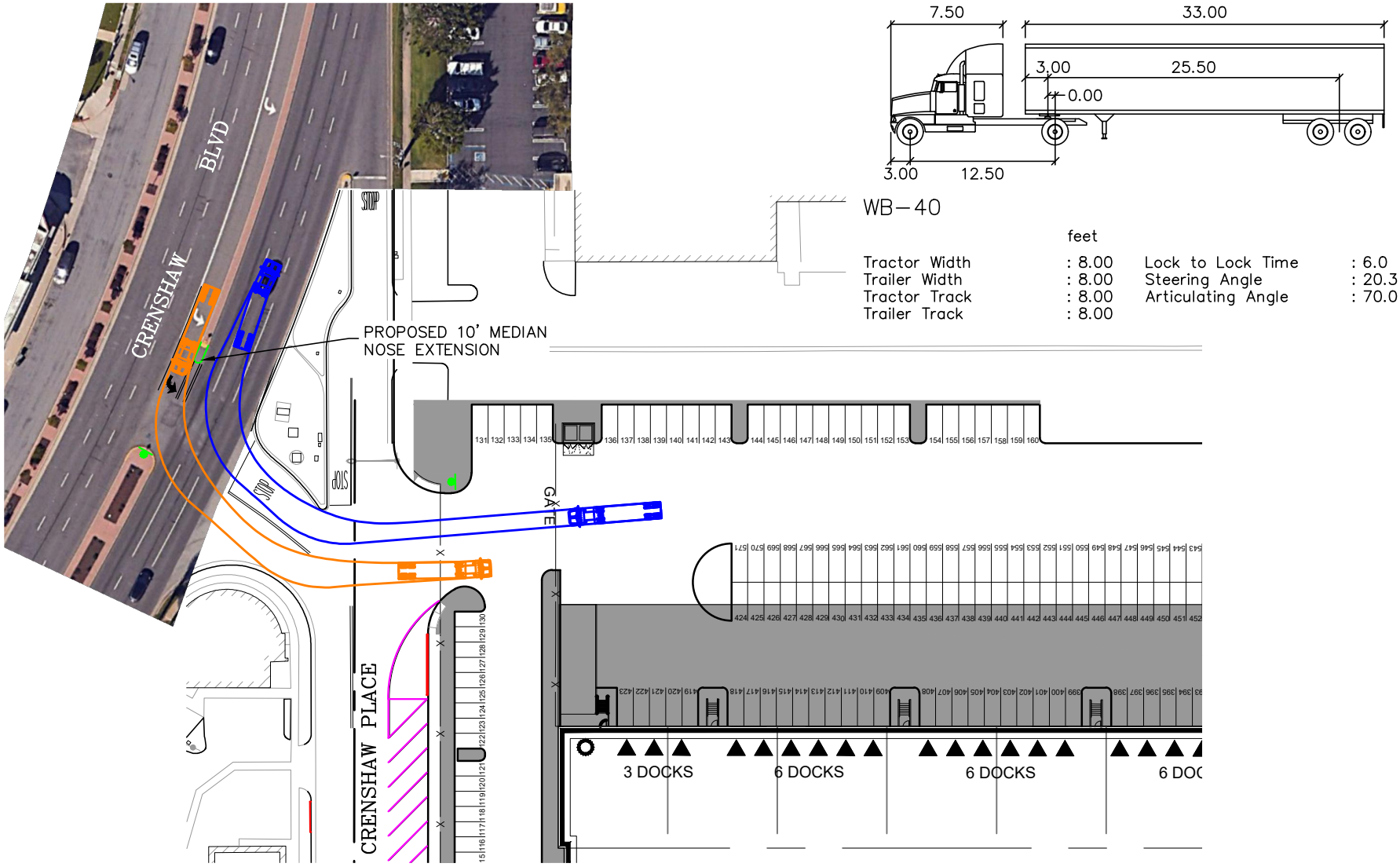
LLG

N NO SCALE

FIGURE 9–3B

CRENSHAW PLACE AT CRENSHAW BOULEVARD
SU–40 TURNING ANALYSIS

2555 W. 190TH STREET WAREHOUSE/MANUFACTURING PROJECT, TORRANCE



SOURCE: DRC ENGINEERING INC.

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FIGURE 9-3C

CRENSHAW PLACE AT CRENSHAW BOULEVARD WB-40 TURNING ANALYSIS

2555 W. 190TH STREET WAREHOUSE/MANUFACTURING PROJECT, TORRANCE

allowing left-turns for smaller trucks. ***Figure 9-4*** presents the conceptual design that would restrict truck movements along with appropriate signage.

9.3 Sight Distance Evaluation

At intersections and/or project driveways, a substantially clear line of sight should be maintained between the driver of a vehicle waiting at the crossroad and the driver of an approaching vehicle. Adequate time must be provided for the waiting vehicle to either cross all lanes of through traffic, cross the near lanes and turn left, or turn right, without requiring through traffic to radically alter their speed. A sight distance evaluation has been performed for all project driveways.

The Sight Distance Evaluation prepared for the project driveways are based on the criteria and procedures set forth by the California Department of Transportation (Caltrans) in the State's *Highway Design Manual (HDM)*. Corner sight distance was utilized for the evaluation. Corner sight distance is defined in the Caltrans HDM to be the distance required by the driver of a vehicle, traveling at a given speed, to maneuver their vehicle and avoid an object without radically altering their speed. Line of sight for corner sight distance is to be determined from a 3½ foot height at the location of the driver of a vehicle on a minor road to a 4¼ foot object height in the center of the approaching lane of the major road.

Based on the criteria set forth in the Caltrans HDM and a posted speed limit of 45 mph on W. 190th Street, a corner sight distance of 579 feet is required for left-turn looking right, 513 feet for left-turn looking left, and 430 feet for right-turn at Project Driveway 1, 2, and 3 for passenger vehicles. A corner sight distance of 744 feet is required for left-turn looking right, 678 feet for left-turn looking left, and 562 feet for right-turn at Project Driveway 1 for trucks.

Based on the criteria set forth in the Caltrans HDM and a posted speed limit of 25 mph on Crenshaw Place, a corner sight distance of 288 feet is required for left-turn looking right, 251 feet for left-turn looking left, and 239 feet for right-turn at Project Driveway 4 and 5 for passenger vehicles. A corner sight distance of 366 feet is required for left-turn looking right, 330 feet for left-turn looking left, and 312 feet for right-turn at Project Driveway 5 for trucks.

Figure 9-5 presents the results of the sight distance evaluation for Project Driveway 1 located along 190th Street based on the application of the corner sight distance criteria applied to auto movements for right turning vehicles. The figure illustrates the limited use areas. Existing field observations were performed, and it has been confirmed that adequate sight distance is provided within the sight triangles. The existing trees located within the limited use areas are adequate in size and spacing and will not cause visibility obstructions.

Figure 9-6 presents the results of the sight distance evaluation for Project Driveway 2 located along 190th Street based on the application of the corner sight distance criteria applied to auto movements for left turning vehicles. The figure illustrates the limited use areas. Existing field observations were performed, and it has been confirmed that adequate sight distance is provided within the sight triangles.

The existing trees located within the limited use areas are adequate in size and spacing and will not cause visibility obstructions.

Figure 9-7 presents the results of the sight distance evaluation for Project Driveway 3 located along 190th Street based on the application of the corner sight distance criteria applied to auto movements for left turning vehicles. The figure illustrates the limited use areas. Existing field observations were performed, and the removal of existing trees will be required to provide adequate sight distance, as noted in *Figure 9-7.*

Figure 9-8 presents the results of the sight distance evaluation for Project Driveway 2 located along 190th Street based on the application of the corner sight distance criteria applied to auto movements for right turning vehicles. The figure illustrates the limited use areas. Existing field observations were performed, and it has been confirmed that adequate sight distance is provided within the sight triangles. The existing trees located within the limited use areas are adequate in size and spacing and will not cause visibility obstructions.

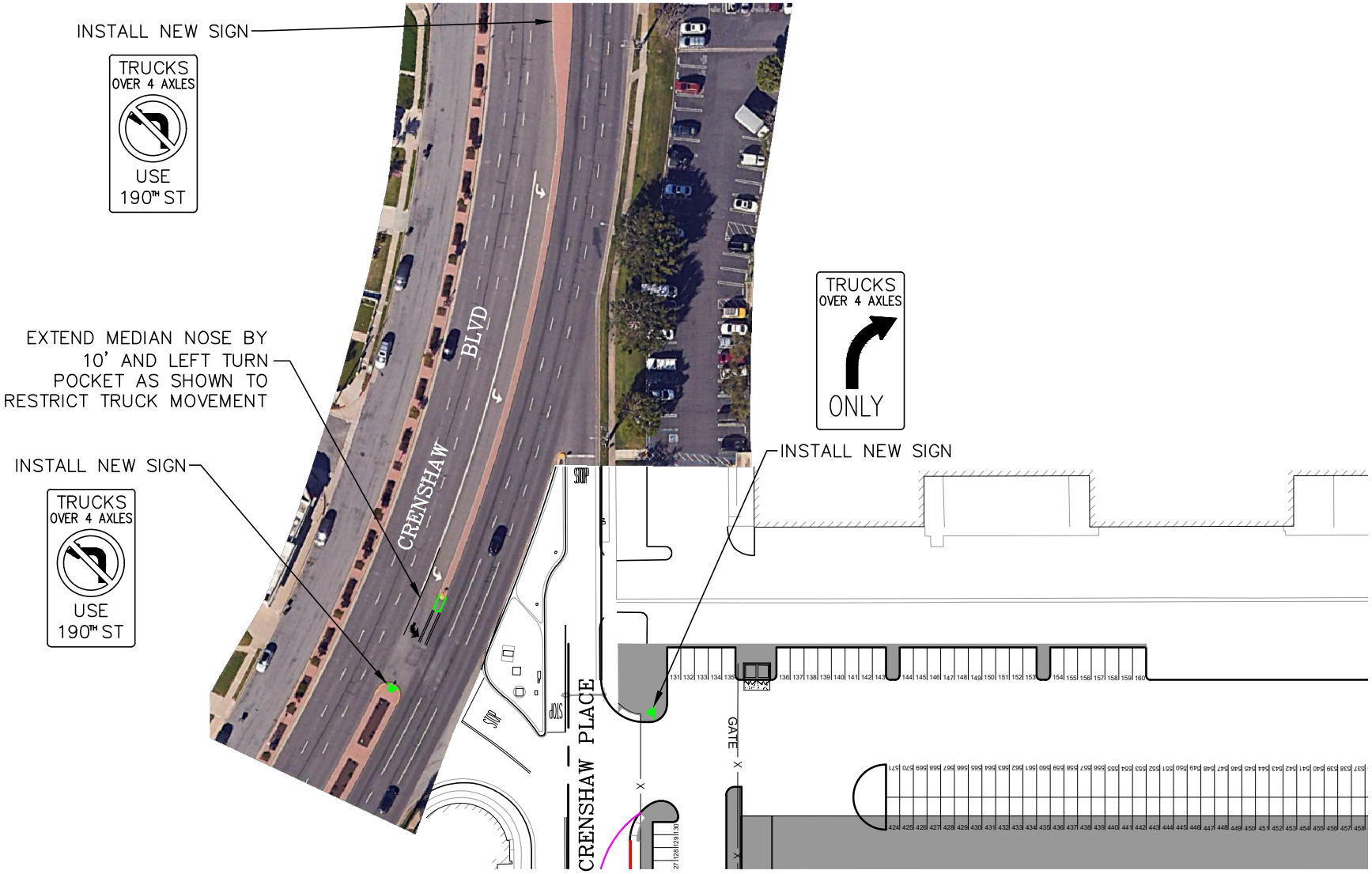
Figure 9-9 presents the results of the sight distance evaluation for Project Driveway 3 located along 190th Street based on the application of the corner sight distance criteria applied to auto movements for right turning vehicles. The figure illustrates the limited use areas. Existing field observations were performed, and the removal of existing trees will be required to provide adequate sight distance, as noted in *Figure 9-9.*

Figure 9-10 presents the results of the sight distance evaluation for Project Driveways 4 and 5 located along Crenshaw Place based on the application of the corner sight distance criteria applied to auto movements for left turning vehicles. The figures illustrate the limited use areas. As shown, the sight lines at the proposed Project driveways are expected to be adequate as long as obstructions within the sight triangles are minimized.

Figure 9-11 presents the results of the sight distance evaluation for Project Driveways 4 and 5 located along Crenshaw Place based on the application of the corner sight distance criteria applied to auto movements for right turning vehicles. The figures illustrate the limited use areas. As shown, the sight lines at the proposed Project driveways are expected to be adequate as long as obstructions within the sight triangles are minimized.

Figure 9-12 presents the results of the sight distance evaluation for Project Driveway 1 based on the application of the corner sight distance criteria applied to truck movements for right turning trucks. The figure illustrates the limited use areas. Existing field observations were performed, and it has been confirmed that adequate sight distance is provided within the sight triangles. The existing trees located within the limited use areas are adequate in size and spacing and will not cause visibility obstructions.

Figure 9-13 presents the results of the sight distance evaluation for Project Driveway 5 based on the application of the corner sight distance criteria applied to truck movements for right turning trucks. The figures illustrate the limited use areas. As shown, the sight lines at the proposed Project driveways are expected to be adequate as long as obstructions within the sight triangles are minimized.



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SOURCE: DRC ENGINEERING INC.

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FIGURE 9-4

CRENSHAW PLACE AT CRENSHAW BOULEVARD CONCEPTUAL TRUCK RESTRICTIONS

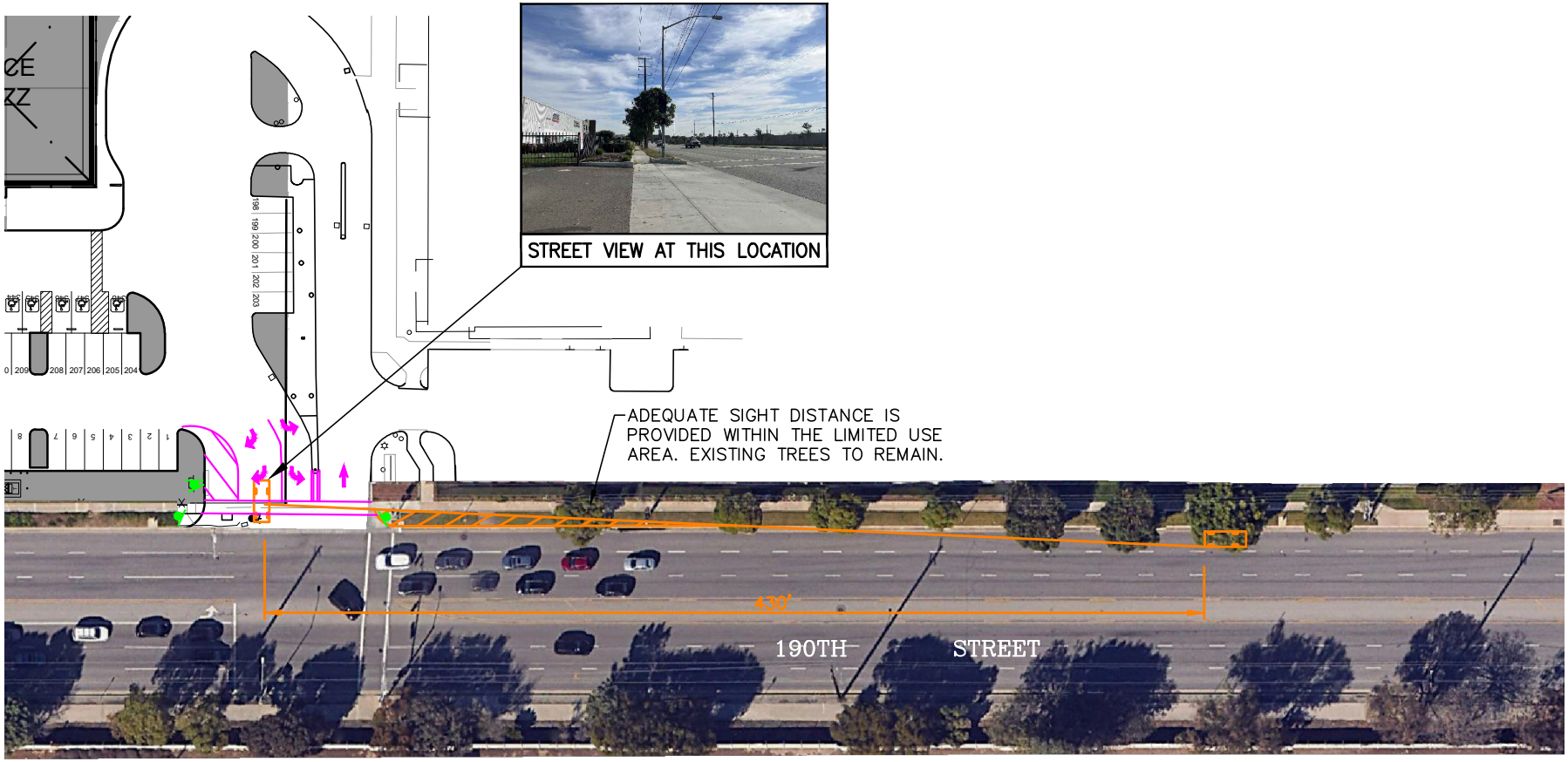
2555 W. 190TH STREET WAREHOUSE/MANUFACTURING PROJECT, TORRANCE

CORNER SIGHT DISTANCE (TRUCKS)

DESIGN SPEED LIMIT:	45 MPH
REQUIRED STOPPING SIGHT DISTANCE LOOKING LEFT:	430 FEET

LEGEND

LIMITED USE AREA: TO ENSURE ADEQUATE SIGHT DISTANCE, HARDSCAPE AND/OR LANDSCAPE SHALL NOT BE HIGHER THAN 30 INCHES. NO FENCES OR WALLS IN LIMITED USE AREA.



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SOURCE: DRC ENGINEERING INC.

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FIGURE 9–5

DRIVEWAY 1 SIGHT DISTANCE ANALYSIS – VEHICLES TURNING RIGHT

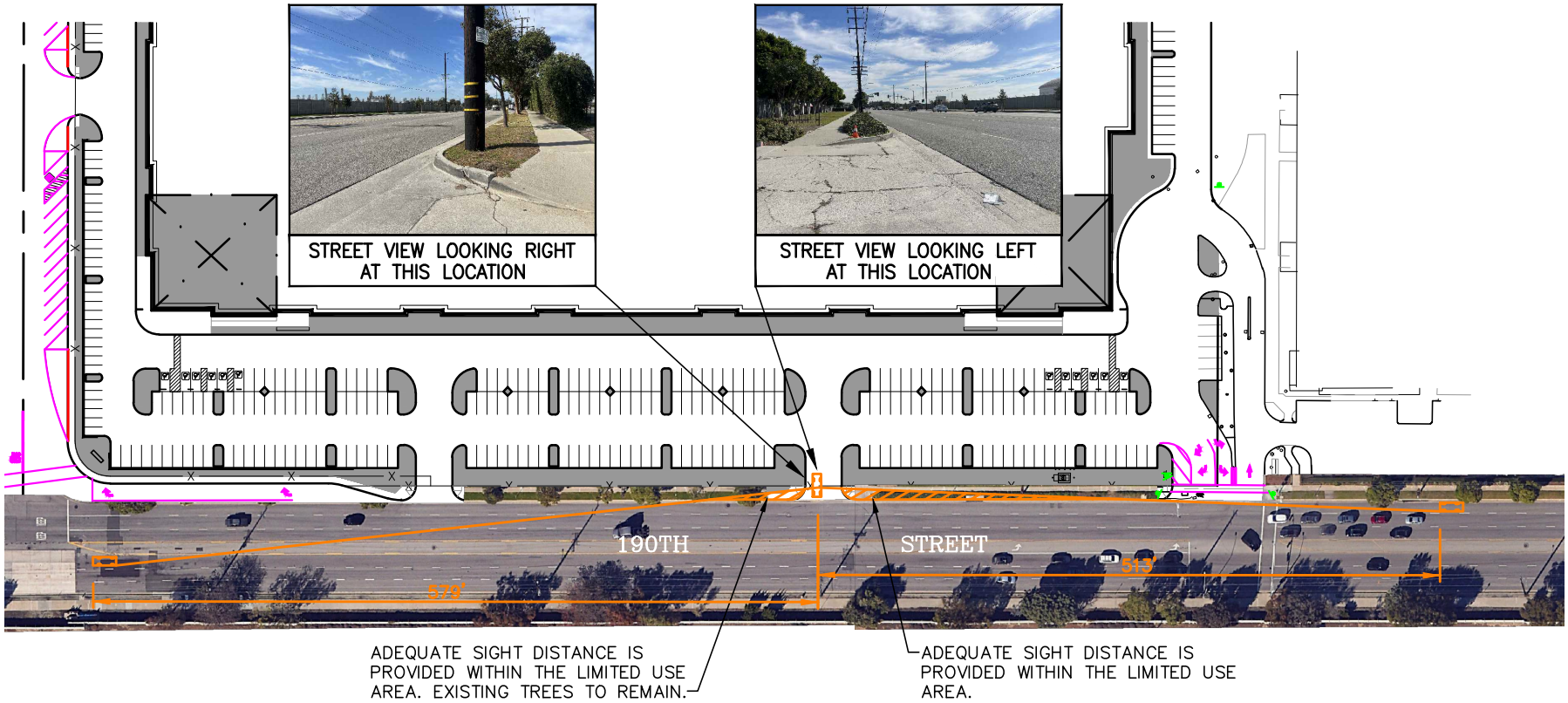
2555 W. 190TH STREET WAREHOUSE/MANUFACTURING PROJECT, TORRANCE

CORNER SIGHT DISTANCE (TRUCKS)

DESIGN SPEED LIMIT:	45 MPH
REQUIRED STOPPING SIGHT DISTANCE LOOKING LEFT:	513 FEET
REQUIRED STOPPING SIGHT DISTANCE LOOKING RIGHT:	579 FEET

LEGEND

LIMITED USE AREA: TO ENSURE ADEQUATE SIGHT DISTANCE, HARDSCAPE AND/OR LANDSCAPE SHALL NOT BE HIGHER THAN 30 INCHES. NO FENCES OR WALLS IN LIMITED USE AREA.



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SOURCE: DRC ENGINEERING INC.

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FIGURE 9-6

DRIVEWAY 2 SIGHT DISTANCE ANALYSIS – VEHICLES TURNING LEFT

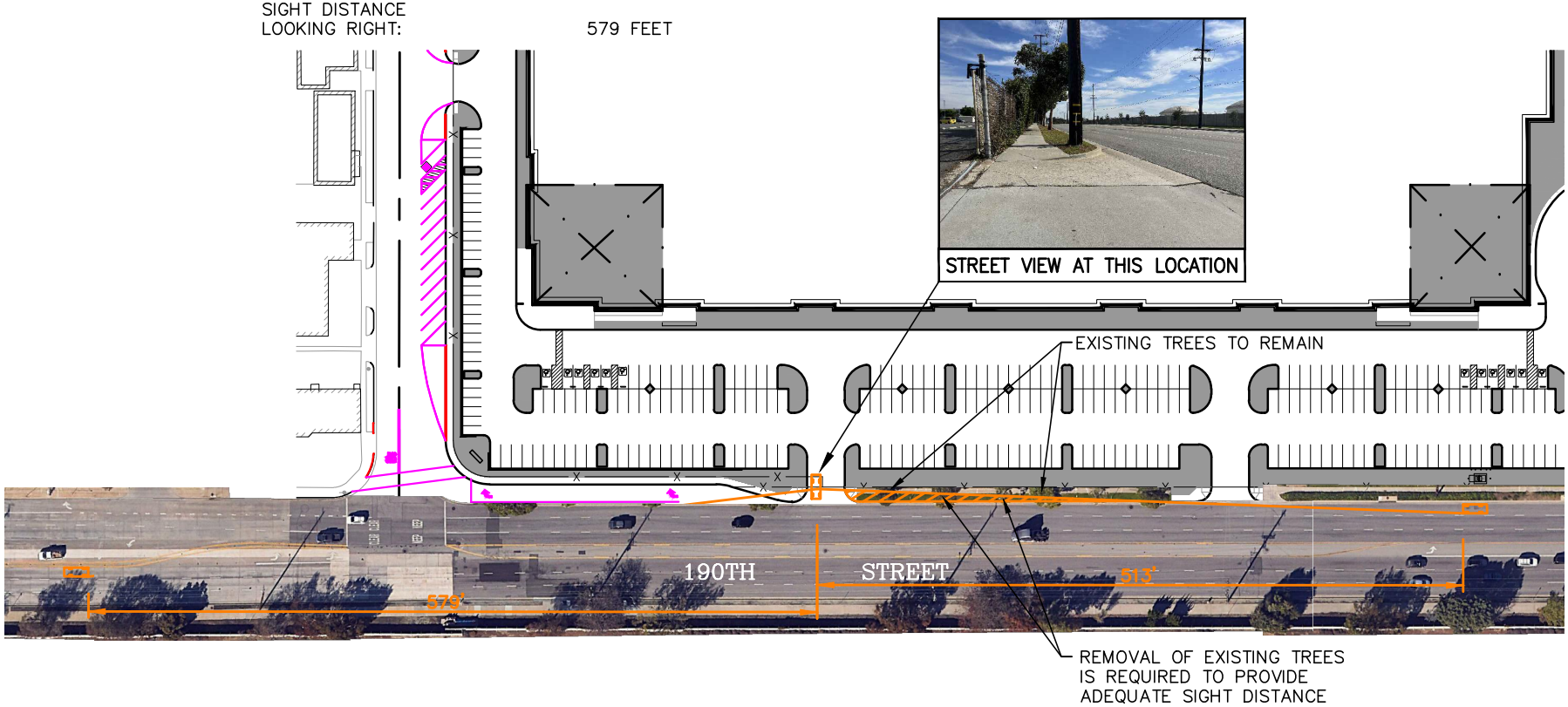
2555 W. 190TH STREET WAREHOUSE/MANUFACTURING PROJECT, TORRANCE

CORNER SIGHT DISTANCE (TRUCKS)

DESIGN SPEED LIMIT:	45 MPH
REQUIRED STOPPING SIGHT DISTANCE LOOKING LEFT:	513 FEET
REQUIRED STOPPING SIGHT DISTANCE LOOKING RIGHT:	579 FEET

LEGEND

LIMITED USE AREA: TO ENSURE ADEQUATE SIGHT DISTANCE, HARDSCAPE AND/OR LANDSCAPE SHALL NOT BE HIGHER THAN 30 INCHES. NO FENCES OR WALLS IN LIMITED USE AREA.



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SOURCE: DRC ENGINEERING INC.

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FIGURE 9-7

DRIVEWAY 3 SIGHT DISTANCE ANALYSIS – VEHICLES TURNING LEFT

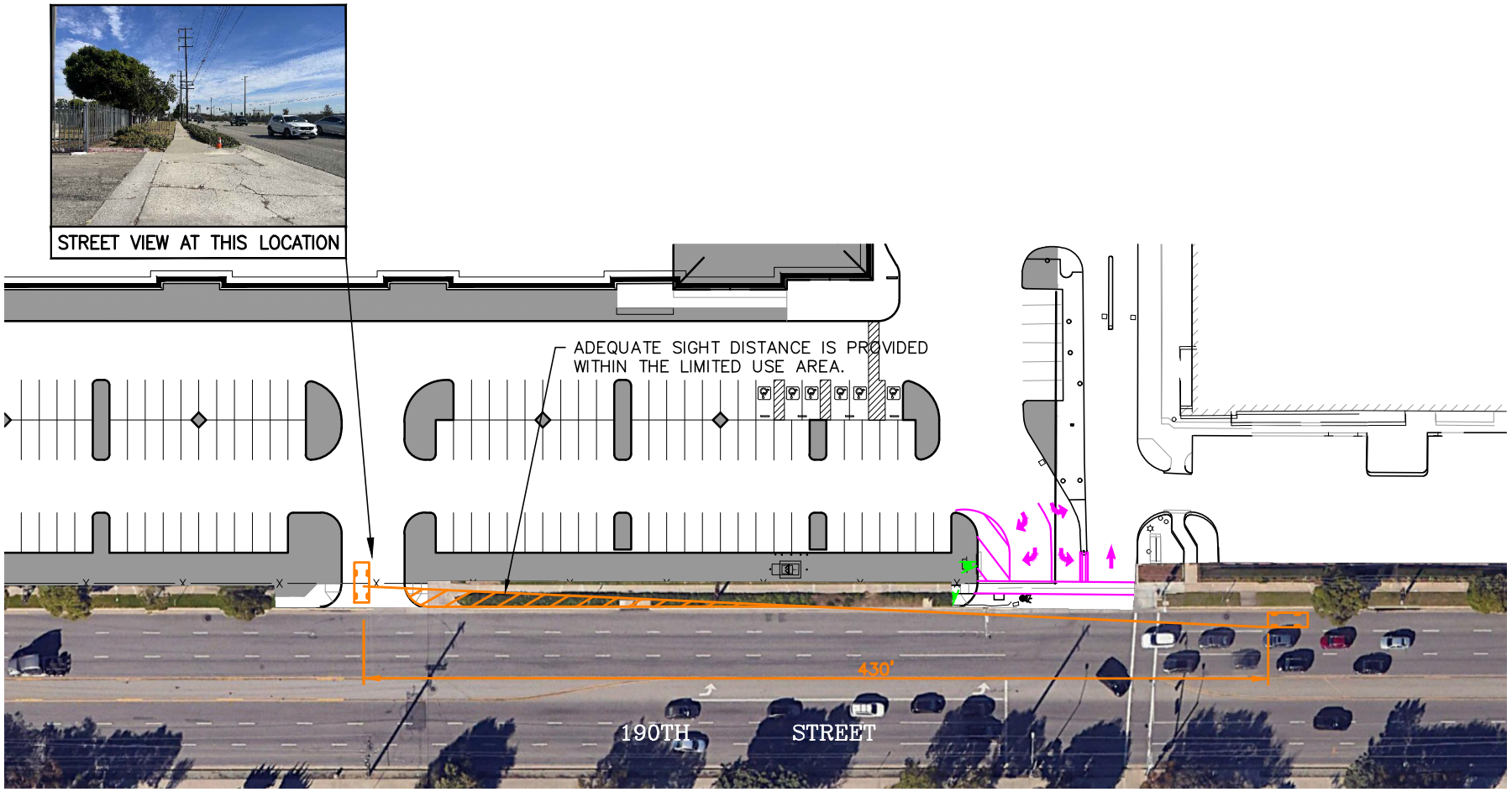
2555 W. 190TH STREET WAREHOUSE/MANUFACTURING PROJECT, TORRANCE

CORNER SIGHT DISTANCE (TRUCKS)

DESIGN SPEED LIMIT:	45 MPH
REQUIRED STOPPING SIGHT DISTANCE LOOKING RIGHT:	430 FEET

LEGEND

LIMITED USE AREA: TO ENSURE ADEQUATE SIGHT DISTANCE, HARDSCAPE AND/OR LANDSCAPE SHALL NOT BE HIGHER THAN 30 INCHES. NO FENCES OR WALLS IN LIMITED USE AREA.



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SOURCE: DRC ENGINEERING INC.

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FIGURE 9–8

DRIVEWAY 2 SIGHT DISTANCE ANALYSIS – VEHICLES TURNING RIGHT

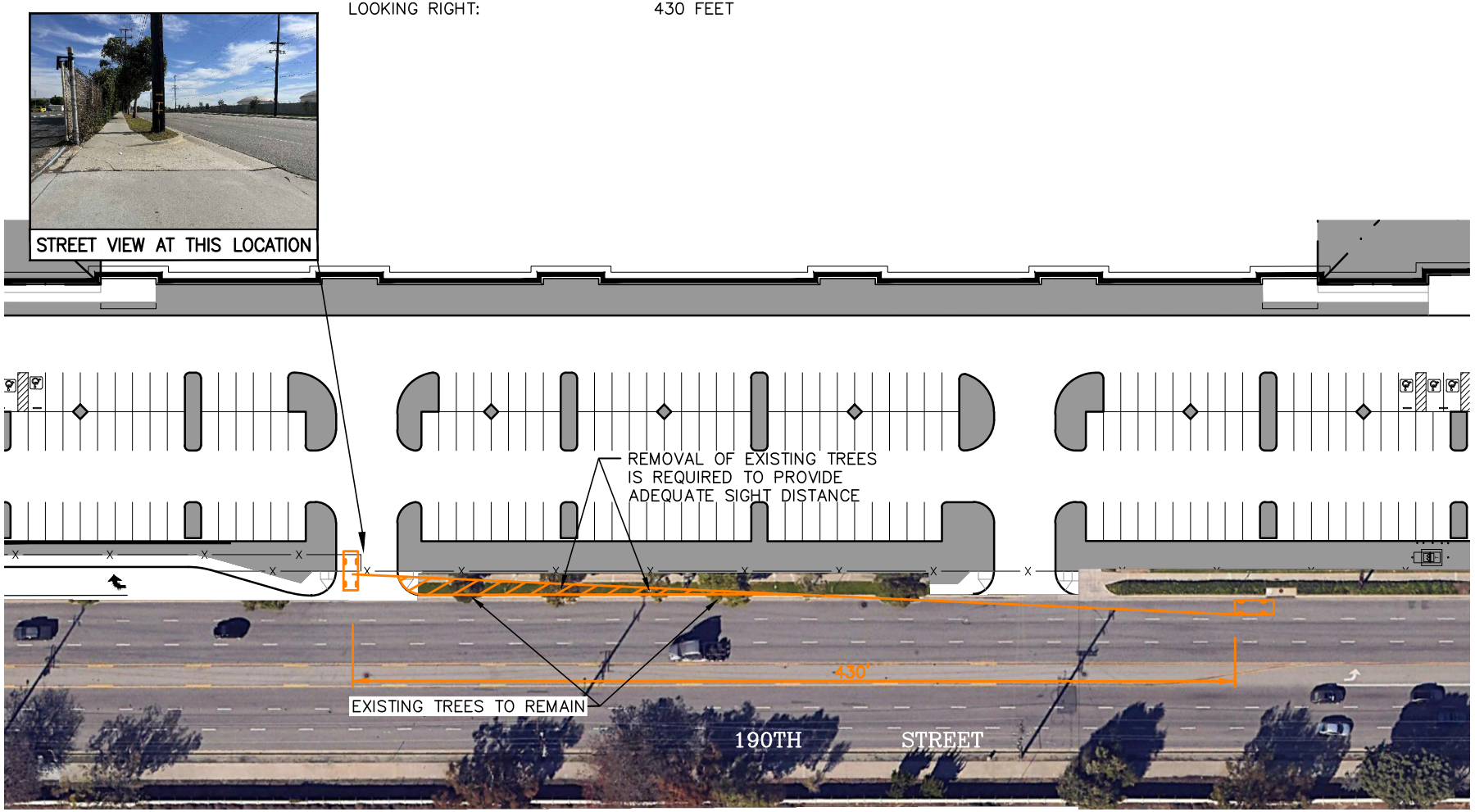
2555 W. 190TH STREET WAREHOUSE/MANUFACTURING PROJECT, TORRANCE

CORNER SIGHT DISTANCE (TRUCKS)

DESIGN SPEED LIMIT:	45 MPH
REQUIRED STOPPING SIGHT DISTANCE LOOKING RIGHT:	430 FEET

LEGEND

LIMITED USE AREA: TO ENSURE ADEQUATE SIGHT DISTANCE, HARDSCAPE AND/OR LANDSCAPE SHALL NOT BE HIGHER THAN 30 INCHES. NO FENCES OR WALLS IN LIMITED USE AREA.



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SOURCE: DRC ENGINEERING INC.

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FIGURE 9–9

DRIVEWAY 3 SIGHT DISTANCE ANALYSIS – VEHICLES TURNING RIGHT

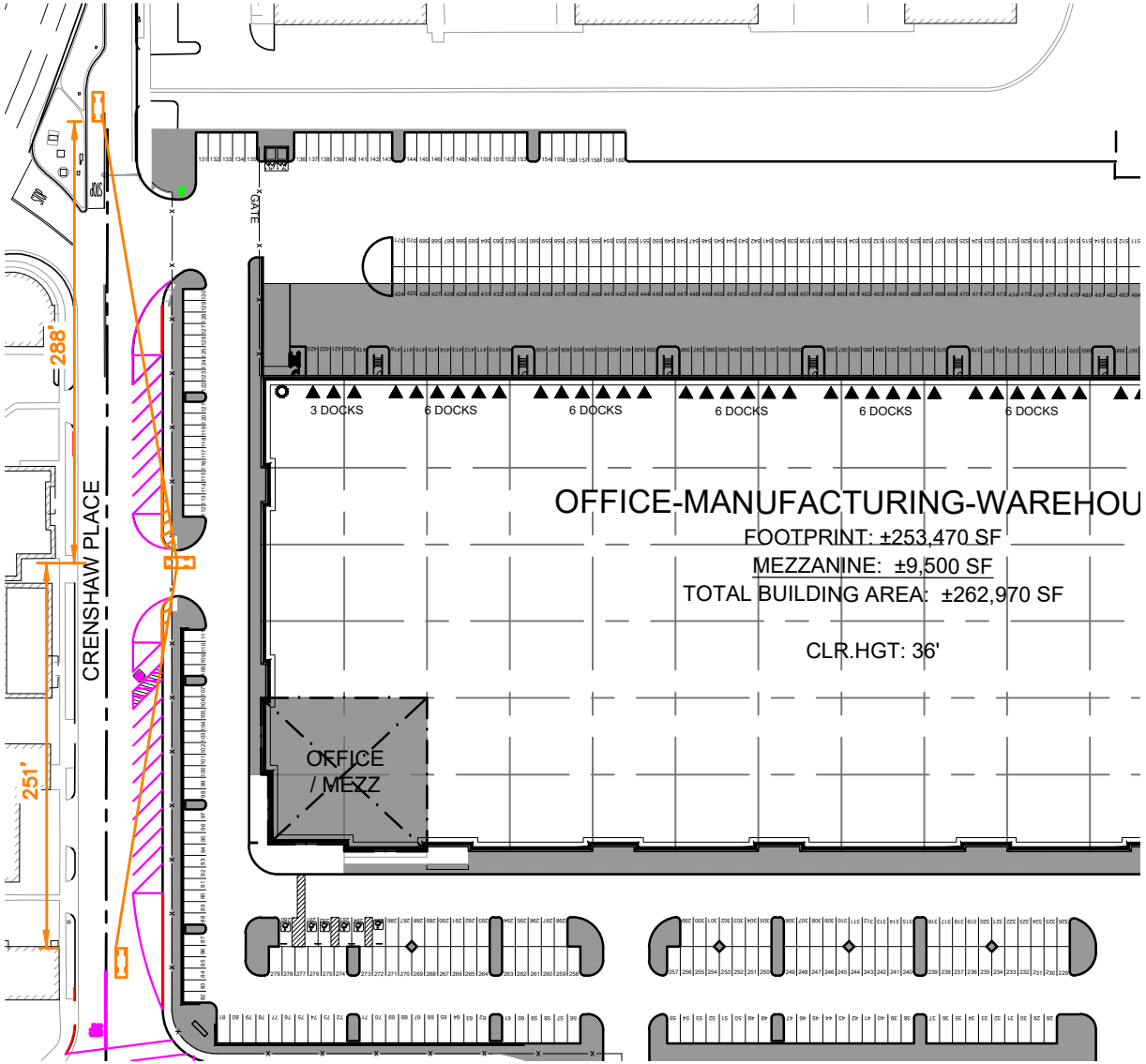
2555 W. 190TH STREET WAREHOUSE/MANUFACTURING PROJECT, TORRANCE

CORNER SIGHT DISTANCE (TRUCKS)

DESIGN SPEED LIMIT:	25 MPH
REQUIRED STOPPING SIGHT DISTANCE LOOKING LEFT:	251 FEET
REQUIRED STOPPING SIGHT DISTANCE LOOKING RIGHT:	288 FEET

LEGEND

LIMITED USE AREA: TO ENSURE ADEQUATE SIGHT DISTANCE, HARDSCAPE AND/OR LANDSCAPE SHALL NOT BE HIGHER THAN 30 INCHES. NO FENCES OR WALLS IN LIMITED USE AREA.



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SOURCE: DRC ENGINEERING INC.

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FIGURE 9–10

DRIVEWAYS 4 AND 5 SIGHT DISTANCE ANALYSIS – VEHICLES TURNING LEFT

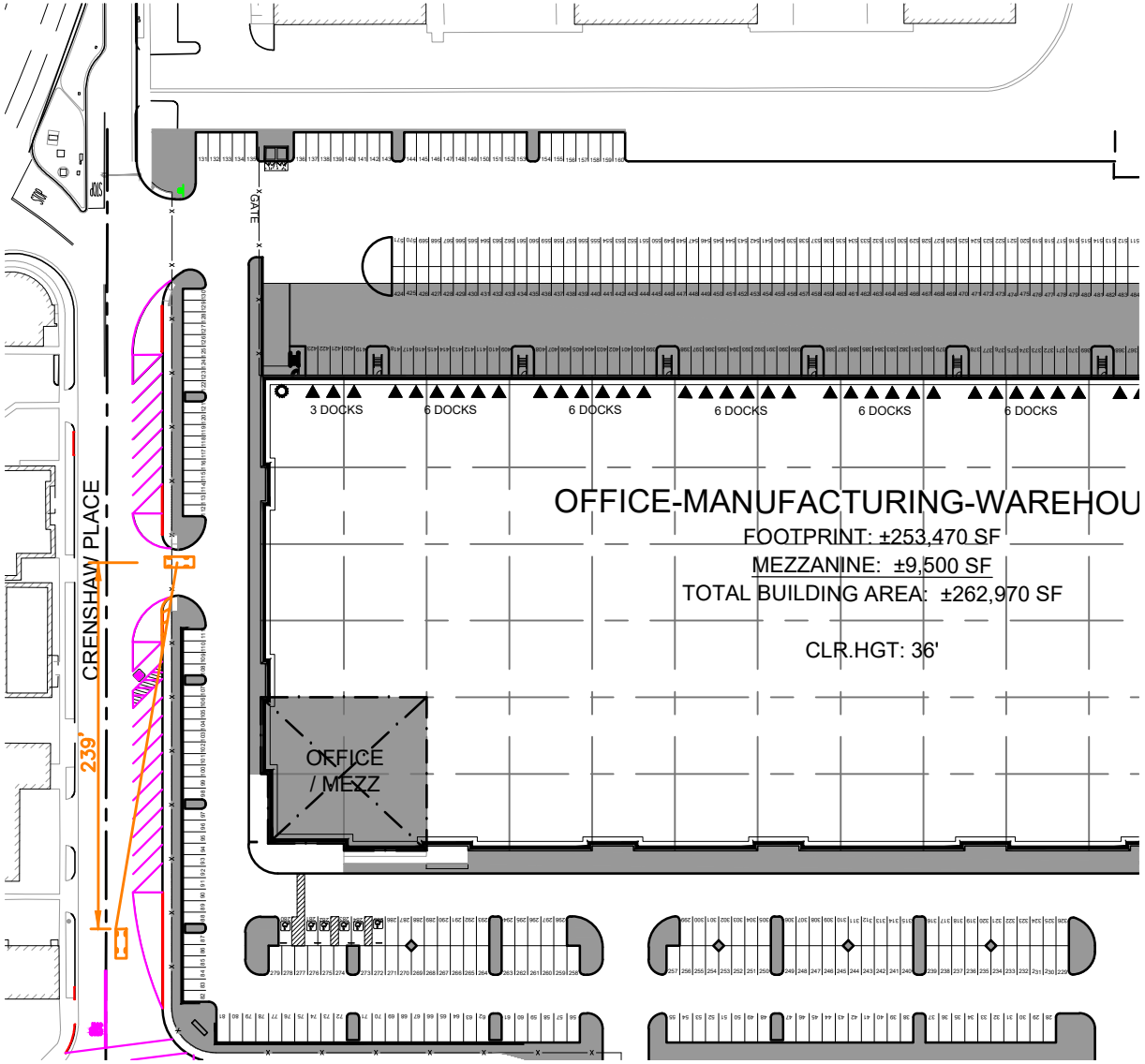
2555 W. 190TH STREET WAREHOUSE/MANUFACTURING PROJECT, TORRANCE

CORNER SIGHT DISTANCE (TRUCKS)

DESIGN SPEED LIMIT:	25 MPH
REQUIRED STOPPING SIGHT DISTANCE LOOKING LEFT:	239 FEET

LEGEND

LIMITED USE AREA: TO ENSURE ADEQUATE SIGHT DISTANCE, HARDSCAPE AND/OR LANDSCAPE SHALL NOT BE HIGHER THAN 30 INCHES. NO FENCES OR WALLS IN LIMITED USE AREA.



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SOURCE: DRC ENGINEERING INC.

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FIGURE 9–11

DRIVEWAYS 4 AND 5 SIGHT DISTANCE ANALYSIS – VEHICLES TURNING RIGHT

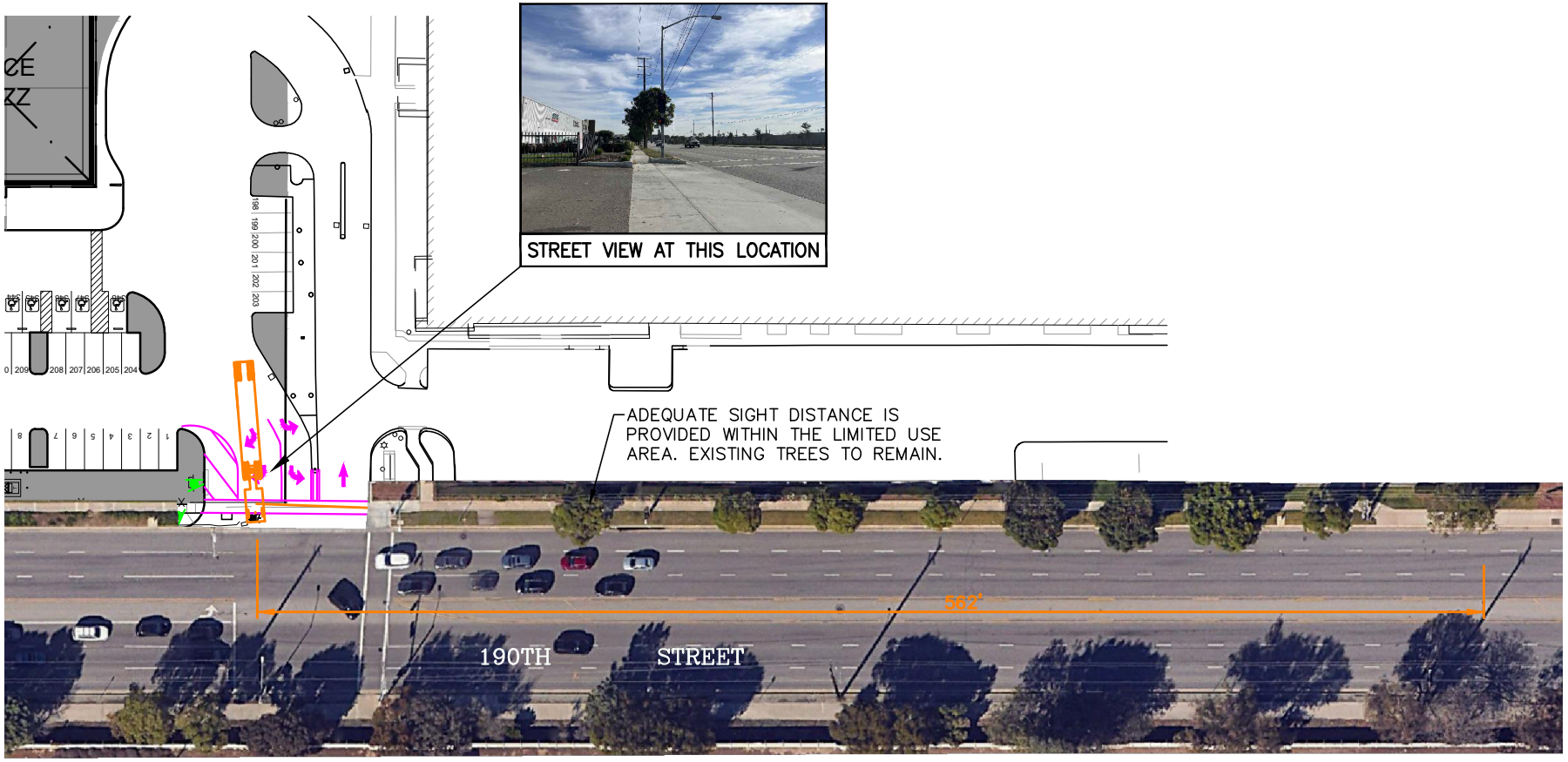
2555 W. 190TH STREET WAREHOUSE/MANUFACTURING PROJECT, TORRANCE

CORNER SIGHT DISTANCE (TRUCKS)

DESIGN SPEED LIMIT:	45 MPH
REQUIRED STOPPING SIGHT DISTANCE LOOKING LEFT:	562 FEET

LEGEND

LIMITED USE AREA: TO ENSURE ADEQUATE SIGHT DISTANCE, HARDSCAPE AND/OR LANDSCAPE SHALL NOT BE HIGHER THAN 30 INCHES. NO FENCES OR WALLS IN LIMITED USE AREA.



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SOURCE: DRC ENGINEERING INC.

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FIGURE 9-12

DRIVEWAY 1 SIGHT DISTANCE ANALYSIS – TRUCK TURNING RIGHT

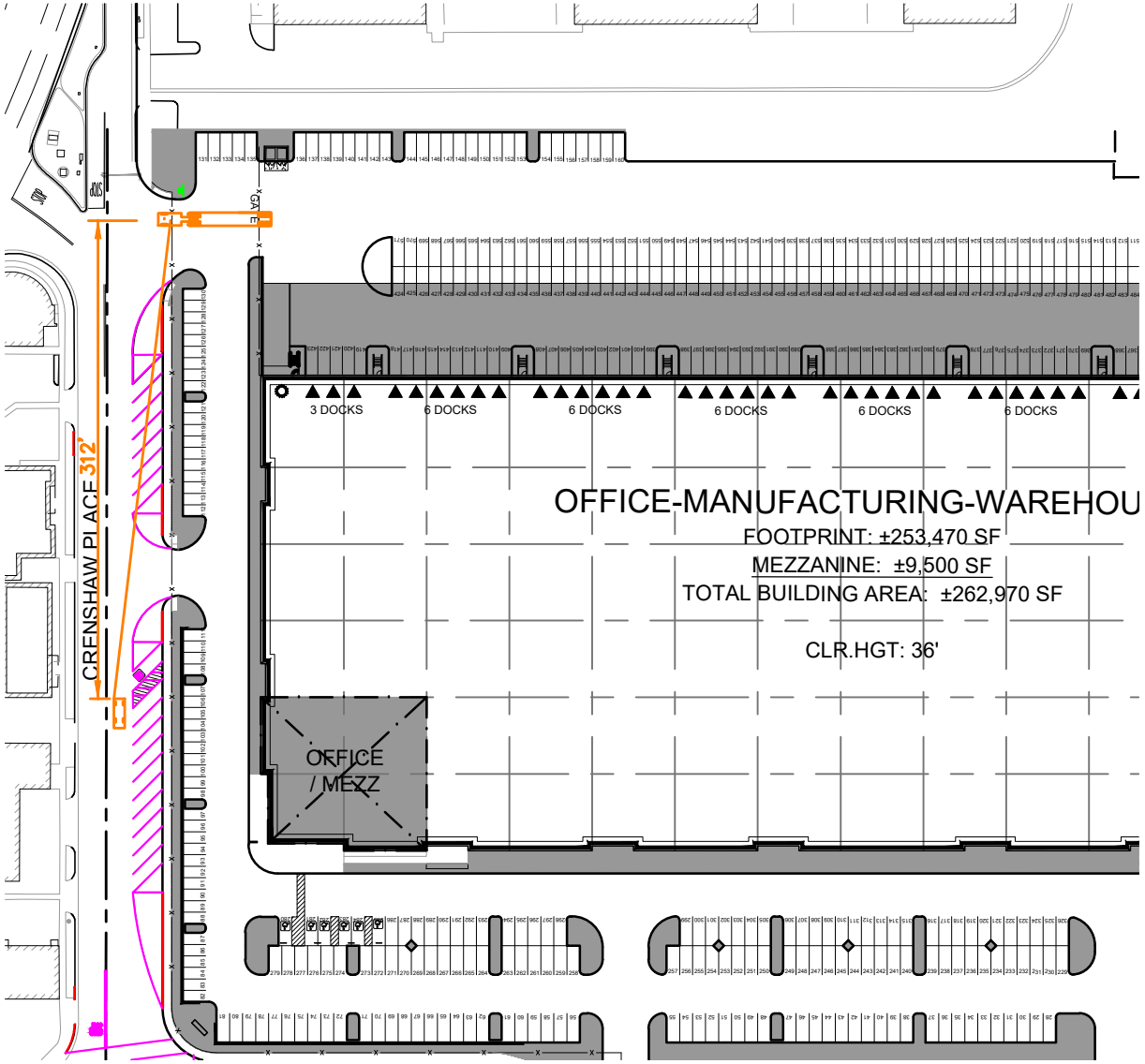
2555 W. 190TH STREET WAREHOUSE/MANUFACTURING PROJECT, TORRANCE

CORNER SIGHT DISTANCE (TRUCKS)

DESIGN SPEED LIMIT:	25 MPH
REQUIRED STOPPING SIGHT DISTANCE LOOKING LEFT:	312 FEET

LEGEND

LIMITED USE AREA: TO ENSURE ADEQUATE SIGHT DISTANCE, HARDSCAPE AND/OR LANDSCAPE SHALL NOT BE HIGHER THAN 30 INCHES. NO FENCES OR WALLS IN LIMITED USE AREA.



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SOURCE: DRC ENGINEERING INC.

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FIGURE 9–13

DRIVEWAY 5 SIGHT DISTANCE ANALYSIS – TRUCK TURNING RIGHT

2555 W. 190TH STREET WAREHOUSE/MANUFACTURING PROJECT, TORRANCE

9.4 Crenshaw Place Truck Assessment

Crenshaw Place is an existing 40-foot wide two-lane roadway with parking on both sides. The proposed Project will widen Crenshaw Place by 17 feet and restripe the intersection of Crenshaw Place at 190th Street to include a pedestrian crosswalk on the north leg. Review of *Figures 9-2A, 9-2C, and 9-2D* shows the truck turning maneuvers required along Crenshaw Place to facilitate ingress and egress to the site. As a result, it is recommended that a 50-foot center double yellow strip also be added along Crenshaw Place at 190th Street along with centerline striping. Additionally, 75 feet of red curb shall be installed along Crenshaw Place to keep vehicles from parking in the truck swing zone.

10.0 CIRCULATION ENHANCEMENTS

For those intersections where projected traffic volumes are expected to exceed the LOS criteria thresholds, this report recommends traffic improvements that change the intersection geometry to increase capacity. These capacity improvements involve roadway widening and/or re-striping to reconfigure roadways to specific approaches of a key intersection. The identified improvements are expected to improve levels of service at the locations which exceed the LOS criteria thresholds.

10.1 Project-Specific Circulation Enhancements

The following improvements are to be implemented as part of the proposed Project to enhance access to the Project, particularly for truck-related access. The Project is expected to pay the full construction costs and collaborate with City of Torrance on project design features.

- **Intersection 7 – Crenshaw Place at W. 190th Street:** Widen Crenshaw Place by 17 feet and restripe the intersection of Crenshaw Place at 190th Street to include a pedestrian crosswalk on the north leg. Widen and provide the additional right-of-way required to construct an exclusive 14-feet wide westbound right-turn lane with 160-feet of storage and 90-feet of transition on W. 190th Street. Install 75 feet of red curb along Crenshaw Place to keep vehicles from parking in the truck swing zone. In addition, install 50 feet of double yellow center line as noted in *Figures 2-2* and *2-3.* This improvement, which has been incorporated in the Project site plan as a Project "design feature" is subject to the review and approval of the City of Torrance.

- **Intersection 9 – Project Driveway 1 at W. 190th Street:** Modify the northwest curb radii to a radius of 12'. Restripe to provide an exclusive southbound left-turn and right-turn lane. Install way finding signage along with restrictive signage as noted in *Figures 2-2* and *2-3*. This improvement should be incorporated in the Project site plan as a Project "design feature" and is subject to the review and approval of the City of Torrance.

- **Project Driveway 4 at Crenshaw Place:** Modify the northeast curb radii to a radius of 25' Install restrictive signage as noted in *Figures 2-2* and *2-3*. This improvement should be incorporated in the Project site plan as a Project "design feature" and is subject to the review and approval of the City of Torrance.

- **Crenshaw Place, between 190th Street and Project Driveway 4:** As a result of the proposed street widening on the east side of Crenshaw Place along the Project frontage, the Project is proposing to install angled parking and a centerline striping along Crenshaw Place.

10.2 Planned and Recommended Circulation Enhancements

10.2.1 *Existing With Ambient Growth (Year 2024) With Project Traffic Conditions*

The results of the intersection capacity analyses summarized in *Table 7-1* indicates that Project-related improvements necessary at one (1) study intersections under Existing with Ambient Growth with Project traffic conditions are as follows:

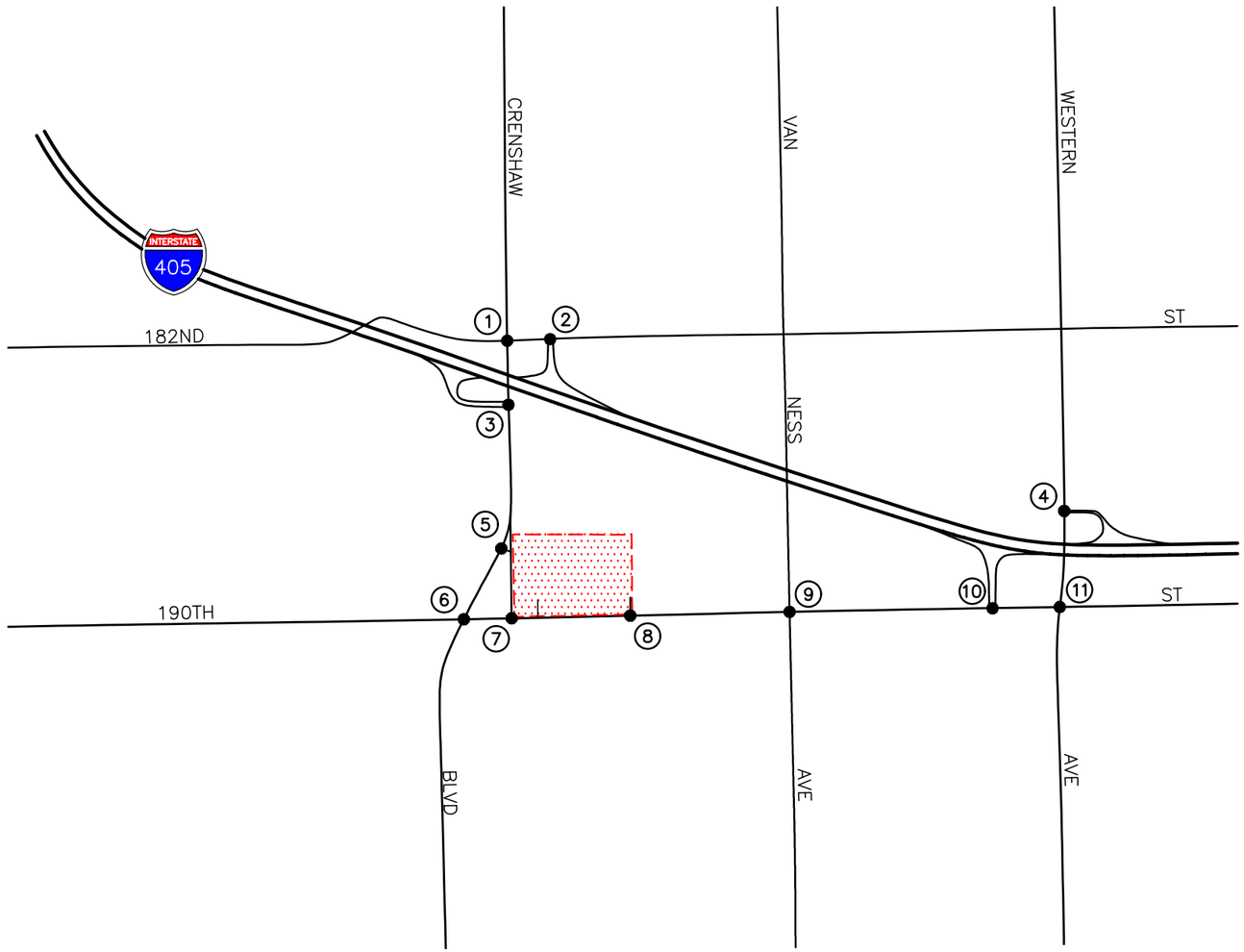
- **Intersection 1 – Crenshaw Boulevard at W. 182nd Street:** Planned improvements at the intersection include constructing an exclusive westbound right-turn lane. Additional right-of-way will be required to construct this improvement. Modify the existing traffic signal as necessary. This planned improvement, which has been approved and funded, is consistent with the improvements identified in the *I-405 at Crenshaw Boulevard/182nd Street Interchange Improvement Project Final Initial Study/Environmental Assessment Report*. It should be noted that at the time this traffic study was initiated in 2022, the City was in the process of constructing these improvements. It is our understanding that this improvement has been completed as of 2024.

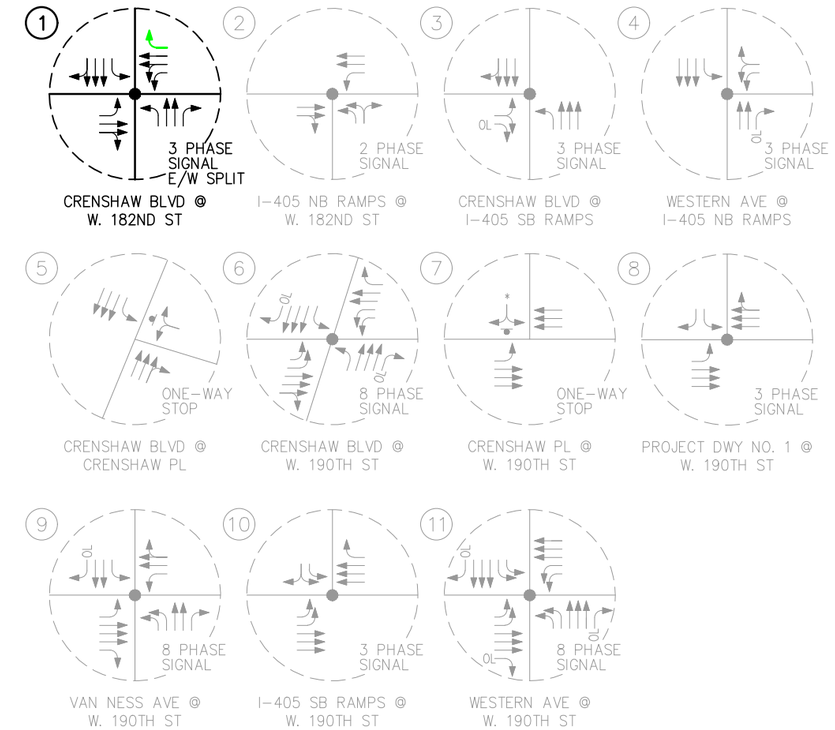
10.3 Caltrans Recommended Circulation Enhancements

10.3.1 *Existing With Ambient Growth (Year 2024) With Project Traffic Conditions*

The results of the intersection capacity analyses summarized in *Table 8-2* indicates that the proposed Project will not exceed the level of service thresholds at any of the four (4) state-controlled study intersections under Existing With Ambient Growth (Year 2024) With Project traffic conditions. Therefore, no improvements are required under this traffic scenario.

Figure 10-1 presents the planned and recommended improvements for the key study intersections.





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KEY

(#) = STUDY INTERSECTION
= APPROACH LANE ASSIGNMENT
= PLANNED IMPROVEMENT
● = TRAFFIC SIGNAL, ☛ = STOP SIGN
* = NO LEFT-TURN BETWEEN 4:00PM TO 6:00PM
OL = OVERLAP
= PROJECT SITE

FIGURE 10-1

PLANNED AND RECOMMENDED IMPROVEMENTS

2555 W. 190TH STREET WAREHOUSE/MANUFACTURING PROJECT, TORRANCE