



APPENDIX E-1

SAFETY EVALUATION



This page intentionally left blank

DATE: March 14, 2024
TO: Blair Dahl, GLC Cypress LLC
FROM: Jose Alire/Robert Vu, Urban Crossroads
JOB NO: 15593-02 Safety Eval

GOODMAN COMMERCE CENTER SAFETY EVALUATION

The firm of Urban Crossroads, Inc. is pleased to submit the following Safety Evaluation for the Goodman Commerce Center development (**Project**), which is located at 5665 Plaza Drive in the City of Cypress. The purpose of this work effort is to provide a report summarizing the findings of the proposed Project's safety elements.

PROPOSED PROJECT

The Project consists of the development of a 191,394 square foot warehouse building. The proposed project will replace an existing 150,626 square foot office building. A preliminary site plan for the proposed Project is shown on **Exhibit 1**. The proposed Project is anticipated to have an Opening Year of 2025. Access to the Project site will be accommodated via two driveways at Plaza Drive and Douglas Drive.

SAFETY EVALUATION METHODOLOGY

The safety evaluation completed for this project included the following elements:

- Review of available collision data
- Review of potential increase presence of pedestrians and bicyclist
- Review of any proposed changes to the walking and bicycling environment and experience.
- New pedestrian and bicyclist connection desires
- Multimodal conflict points, especially at intersections and project access locations.
- Change in traffic mix such as an increase in bicyclists or pedestrians where features such as shoulders or sidewalks may not exist or are inconsistent with facility design (sidewalks, bike and multi-user paths, multimodal roadways, etc.)
- Increased traffic volumes
- Site access management (i.e., driveway sight distance, driveway or intersection spacing, project access queuing, multimodal conflict points, incomplete pedestrian, and bicycle connections)

COLLISION DATA

The collision analysis is based on the collision data received from California Highway Patrols' (CHP) Statewide Integrated Traffic Records System (**SWITRS**). The collision data includes 6 years of collision data gathered by CHP staff and members of its Allied Agencies throughout California (including the City of Cypress). However, due to the COVID-19 shutdown starting in March 2020, the 6-year data is effectively a 5-year period due to the lower sample size. This safety evaluation includes all of the 2020 crashes in order to provide a conservative estimate. The SWITRS data is provided in **Attachment A. Table 1** provides a summary of the types of collisions by intersection. It should be noted that there may be unreported collisions that were not collected into SWITRS. However, the reported collisions provide reasonable data to evaluate safety performance at these locations.

TABLE 1: COLLISION SUMMARY (JANUARY 2018 TO JANUARY 2024)

Head-On	Sideswipe	Rear-End	Broadside	Hit-Object	Overturn	Auto-Ped	Other	Not Stated
Douglas Dr./Warland Dr. & Katella Ave. (Total: 4 Collisions)								
0 (0.0%)	1 (25.0%)	1 (25.0%)	2 (50.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Douglas Dr./Dwy. 2 & Dwy. 1/Plaza Dr. (Total: 0 Collisions)								
0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Existing Driveway/McDonnell Dr. & Plaza Dr. (Total: 0 Collisions)								
0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Valley View & Plaza Dr./Chip Ave. (Total: 4 Collisions)								
1 (25.0%)	0 (0.0%)	0 (0.0%)	3 (75.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)

The CHP SWITRS collision data includes the following collision types:

- Head-On
- Sideswipe
- Rear-End
- Broadside

The Caltrans [2021 Crash Data on California State Highways](#) report (latest edition) (**2021 Crash Report**) provides data on crash reports collected by law enforcement agencies. Calculation rates by intersection are computed for various types of facilities and settings, and then are averaged statewide. The intersection crash rate is calculated by the following formula:

$$\text{Crash Rate} = \text{Crashes} / \text{Million Vehicle (MV) Entering the Intersection}$$

For the purposes of this analysis, average daily traffic (**ADT**) will be utilized to determine the crash rate. Existing weekday ADT volumes are provided in **Attachment B**. Where actual 24-hour tube count data was not available, Existing ADT volumes were based upon factored intersection peak hour counts collected by Urban Crossroads, Inc. using the following formula for each intersection leg:

$$\text{Weekday PM Peak Hour (Approach Volume + Exit Volume)} \times 11.3 = \text{Leg Volume}$$

A comparison of the PM peak hour and daily traffic volumes of various roadway segments within the study area indicated that the peak-to-daily relationship is approximately 8.9 percent. As such, the above equation utilizing a factor of 11.3 estimates the ADT volumes on the study area roadway segments assuming a peak-to-daily relationship of approximately 8.9 percent (i.e., $1/0.089 = 11.3$) and was assumed to sufficiently estimate ADT volumes for planning-level analyses. The state average crash rates for similar facilities, as determined by the 2021 crash report, to those that are a part of this Project are summarized in **Table 2**. It is not anticipated that the addition of the proposed Project will result in a significant change in collisions due to the number of trips generated or vehicle mix. A summary of the crash rate comparison, by intersection, is shown in **Table 2**.

TABLE 2: CRASH RATE COMPARISON

Intersection	Intersection Control and Setting ¹	Average Rate ²	Crash Rate
Douglas Dr./Warland Dr. & Katella Ave.	Suburban, TS, 4-leg	0.55	0.11
Douglas Dr./Dwy. 2 & Dwy. 1/Plaza Dr.	Suburban, AWS, 3-leg	0.18	0.0
Existing Driveway/McDonnell Dr. & Plaza Dr.	Suburban, CSS, 3-leg	0.22	0.0
Valley View & Plaza Dr./Chip Ave.	Suburban, TS, 4-leg	0.55	0.11

¹ AWS = All-way Stop; CSS = Cross-street Stop; TS = Traffic Signal

² Source: Intersection crash rates from the Caltrans [2021 Crash Data on California State Highways](#) report

Douglas Dr./Warland Dr. & Katella Ave. had a total of 4 reported collisions in a 5-year period. The common collisions include broadside collisions. Broadside collisions are commonly caused by failure to yield, failure to stop, or impaired/distracted driving. The 5-year average rate for this intersection is calculated as followed:

$$(4 \text{ collisions} / 5 \text{ years}) / (365 \text{ days/year} \times (41,450 \text{ ADT} / 2) / 1,000,000 \text{ MV}) = \mathbf{0.11 \text{ total crashes per MV}}$$

The intersection of Douglas Dr./Warland Dr. & Katella Ave. has a lower crash rate than the state average for similar facilities.

Valley View & Plaza Dr./Chip Ave. had a total of 4 reported collisions in a 5-year period. The common collisions include broadside collisions. The 5-year average rate for this intersection is calculated as followed:

$$(4 \text{ collisions} / 5 \text{ years}) / (365 \text{ days/year} \times (41,600 \text{ ADT} / 2) / 1,000,000 \text{ MV}) = \mathbf{0.11 \text{ total crashes per MV}}$$

The intersection of Valley View & Plaza Dr./Chip Ave. has a lower crash rate than the state average for similar facilities.

BICYCLE & PEDESTRIAN FACILITIES

The City's bike network is shown on **Exhibit 2**, which demonstrates both Katella Avenue and Valley View Street currently accommodate off-street bike paths (there are no on-street bike lanes). **Exhibit 3** illustrates the existing crosswalks and sidewalks throughout the study area. As shown, there are pedestrian facilities in place in the vicinity of the Project site along Douglas Drive, Katella Avenue, and Valley View Street. There is a 10-foot sidewalk along the west side of Douglas Drive between the proposed Project down to Katella Avenue to the south. Once the adjacent development to the east completes their project, there will be a 5-foot sidewalk along the north side of Plaza Drive providing pedestrian connectivity between the proposed Project and approximately 450-feet west of Valley View Street. The signalized intersection of Douglas Drive at Katella Avenue has striped crosswalks on all approaches with push buttons. All four corners of the intersection of Douglas Drive at Katella Avenue have tactile warning strips and curb access ramps. The intersection of Valley View Street at Plaza Drive/Chip Avenue does not have a marked crosswalk across the north leg of the intersection. All other approach legs at the intersection include striped crosswalks with the appropriate pedestrian push buttons, tactile warning strip, and curb access ramps. Since the proposed Project has an industrial component, it is not anticipated that the Project will generate a significant increase in pedestrian/bicyclists. Field observations in the study area indicate nominal pedestrian and bicyclist activity and it is expected that the addition of the Project would not change that observation.

INTERSECTION SIGHT DISTANCE

Attachment C identifies limited use areas per Orange County Standard Plan 1117 – Intersection Sight Distance. The limited use areas determine the necessary sight distance to allow 7 ½ seconds for the driver on the crossroad (or left turn pocket) to safely cross the main roadway or turn left while the approach vehicle travels at the assumed design speed of the main roadway. **Table 3** summarizes areas of limited use that currently obstruct sight distance and **Attachment C** shows areas of limited use that obstruct sight distance per Orange County Standard Plan 1117. The intersection sight distance is currently below design standards for the existing development. The lower intersection sight distance may be a factor in existing and potential collisions. It is recommended that all obstructions within the limited use areas are to be removed at this location. Trees and landscaping should be maintained to prevent overgrowth and visual obstructions.

TABLE 3: SIGHT DISTANCE SUMMARY

Intersection	Potential Visual Obstructions on: ¹
Douglas Dr./Warland Dr. & Katella Ave.	N/A
Douglas Dr./Dwy. 2 & Dwy. 1/Plaza Dr.	- Center median on Douglas Dr. - SEC of Douglas Dr./Plaza Dr.
Existing Driveway/McDonnell Dr. & Plaza Dr.	Bend along Plaza Dr.
Valley View & Plaza Dr./Chip Ave.	N/A

¹ N = North, S = South, E = East, W = West, C = Corner, N/A = Not Applicable

TRUCK ACCESS

Attachment D identifies the ingress and egress circulation for the study area (including Project driveways). Due to the typical wide turning radius of large trucks, a truck turning template has been overlaid on the site plan at Driveway 1 and Driveway 2 (at the intersection of Douglas Drive and Plaza Drive) which is anticipated to be utilized by heavy trucks in order to determine appropriate curb radii and to verify that trucks will have sufficient space to execute turning maneuvers. A WB-67 truck (53-foot trailer) has been utilized for the purposes of this analysis. As it is currently designed, Driveway 1, located on Douglas Drive, is anticipated to accommodate the ingress and egress of heavy trucks to and from the east on Plaza Drive and south on Douglas Drive. However, the northwest curb of Driveway 2 should be modified to accommodate a 25-foot curb radius to accommodate the egress of these heavy trucks. Ingress and egress of heavy trucks will also be permitted at Driveway 2 on Plaza Drive. As shown in **Attachment D**, the truck turning templates show acceptable turning movements for the various movements that trucks are anticipated to use for site access, with exception of the following:

- The northwest curb of Driveway 2 should be modified to accommodate a 25-foot curb radius to accommodate the egress of heavy trucks.

SITE ACCESS

Recommendations made in the following section are based on the minimum improvements needed to accommodate site access and maintain acceptable peak hour operations for the proposed Project. The driveway intersection recommendations and roadway improvements are summarized below.

Driveway 2/Douglas Drive & Driveway 1/Plaza Drive (#2) – Project to install a stop control on the southbound approach and eastbound approach (egress Project traffic) to implement an all-way stop-controlled intersection. Driveway 1/Driveway 2 will accommodate site access for passenger cars and trucks and will accommodate full access (no turn restrictions). The northwest curb of Driveway 2 should be modified to accommodate a 25-foot curb radius to accommodate the egress of heavy trucks.

On-site traffic signing and striping should be implemented agreeable with the provisions of the California Manual on Uniform Traffic Control Devices (CA MUTCD) and in conjunction with detailed in the master signing program and construction plans for the Project site.

Sight distance at each project access point should be reviewed with respect to standard Caltrans and City of Cypress sight distance standards at the time of preparation of final grading, landscape, and street improvement plans.

LIGHTING

Orange County Standard Plan 1411 – Street Light provides standards for safety lighting along roadways. Street lighting on local streets is justified at the intersection of two local streets or with a spacing of 300 feet. **Exhibit 2** shows the street lighting in effect at the intersection of Douglas Dr./Dwy. 2 & Dwy. 1/Plaza Dr. Nighttime field observations indicate that the existing street light configuration meets the Orange County Standard Plan 1411 requirements. Relocation of the street light is anticipated in order to accommodate the Project's Driveway 1. The relocation of the street light should be reviewed with respect to standard Orange County and City of Cypress lighting standards at the time of preparation of final grading, landscape, and street improvement plans.

EXHIBIT 2: EXISTING STREET LIGHTING



RECOMMENDATIONS

This review of available collision data indicates that the study area intersections have lower crash rates than the statewide average of intersections with similar configuration and settings. The addition of Project traffic is not anticipated to increase the crash rates by a significant margin.

Frontage improvements proposed by the Project will include sidewalk improvements, driveway modifications to accommodate site access, and landscaping improvements as required by City standards.

It is recommended that all obstructions within the limited use areas are to be removed. Trees and landscaping should be maintained to prevent overgrowth and visual obstructions.

The northwest curb of Driveway 2 should be modified to accommodate a 25-foot curb radius to accommodate the egress of heavy trucks.

Relocation of the street light is anticipated in order to accommodate the Project Driveway 1. The relocation of the street light should be reviewed with respect to standard Orange County and City of Cypress lighting standards at the time of preparation of final grading, landscape, and street improvement plans.

CONCLUSION

The addition of Project-related traffic is not anticipated to cause additional or new safety deficiencies. It is recommended that a review of intersection sight distance, pedestrian/bike facilities, and street facilities be conducted to satisfy CA MUTCD, Orange County, and City of Cypress standards. It is recommended that the Project Applicant coordinate with City staff to meet applicable CA MUTCD, Orange County, City of Cypress, and ADA standards. On-site traffic signing and striping, and sight distance evaluation should be implemented in conjunction with detailed construction plans for the Project site.

If you have any questions or comments, we can be reached at jalire@urbanxroads.com or at rvu@urbanxroads.com.

Respectfully submitted,

URBAN CROSSROADS, INC.



Jose Alire, P.E.
Senior Traffic Engineer



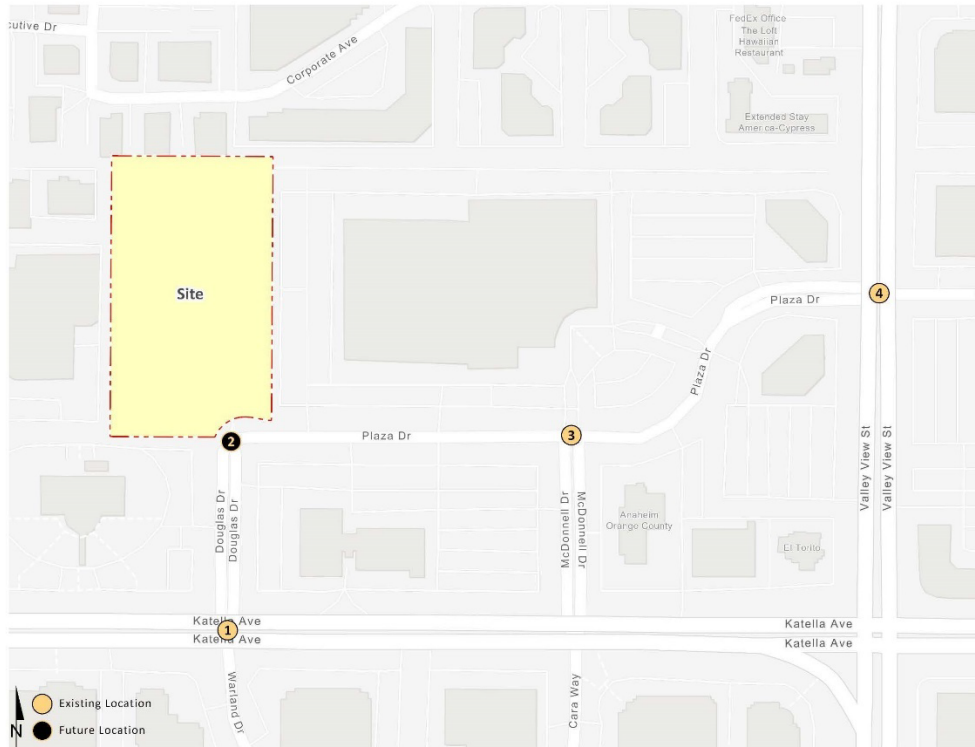
Robert Vu, P.E.
Transportation Engineer

ATTACHMENT A
SWITRS DATA

COLLISION_DATE	COLLISION_TIME	DAY_OF_WEEK	PRIMARY_RD	SECONDARY_RD	DISTANCE	DIRECTION	INTERSECTION	COLLISION_SEVERITY	NUMBER_KILLED	NUMBER_INJURED	PARTY_COUNT	TYPE_OF_COLLISION	PEDESTRIAN_ACCIDENT	BICYCLE_ACCIDENT	MOTORCYCLE_ACCIDENT	TRUCK_ACCIDENT	ALCOHOL_INVOLVED
20190317	1559		7 VALLEY VIEW ST	PLAZA DR	0		Y		3	0	2	2 D					
20190814	1800		3 KATELLA AV	WARLAND DR	0		Y		0	0	0	2 D					
20191009	1552		3 VALLEY VIEW ST	PLAZA DR	0		Y		3	0	2	2 D					
20191219	842		4 VALLEY VIEW ST	CHIP AV	0		Y		4	0	3	2 D					
20200714	853		2 KATELLA AV	DOUGLAS DR	0		Y		4	0	1	2 C					
20201104	2028		3 KATELLA	WARLAND DR	0		Y		3	0	2	2 D					
20210216	1403		2 KATELLA AV	DOUGLAS DR	0		Y		0	0	0	2 B		Y			
20230302	736		4 VALLEY VIEW ST	CHIP AV	0		Y		0	0	0	2 A					Y

ATTACHMENT B
EXISTING COUNT DATA

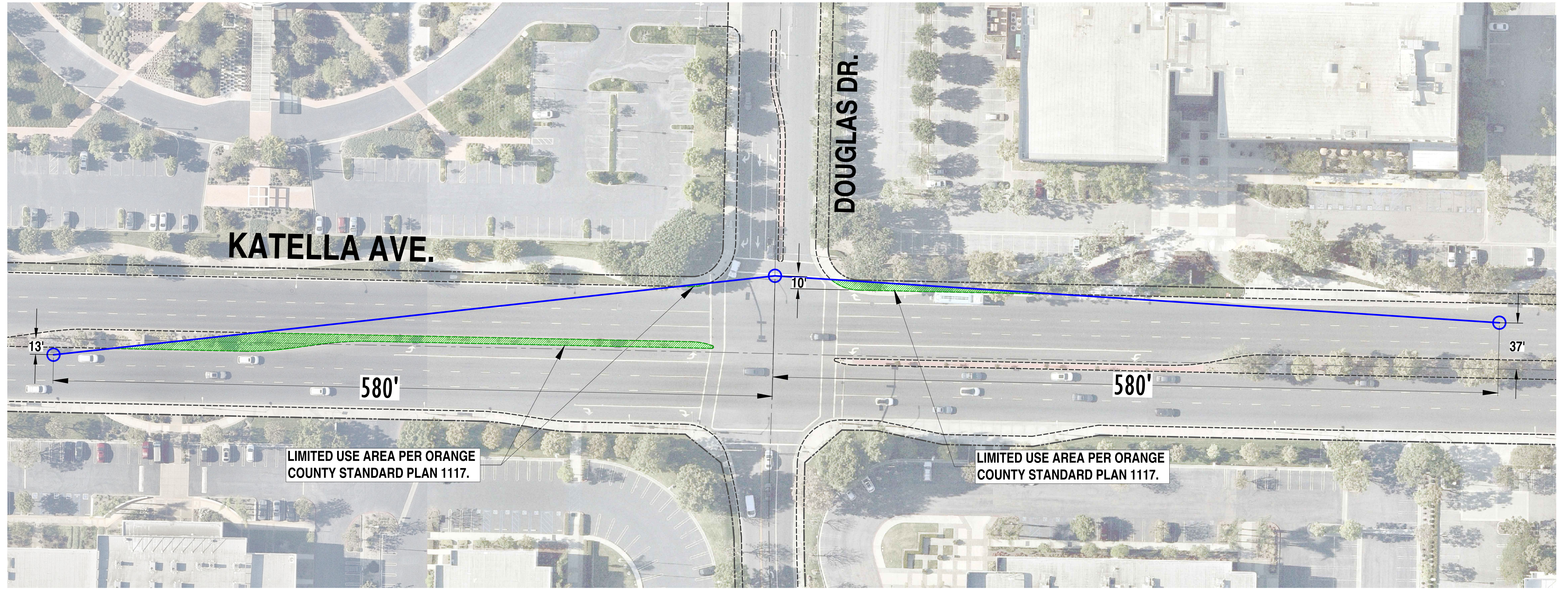
EXHIBIT 3-8: EXISTING (2023) TRAFFIC VOLUMES (PCE)



1 Douglas Dr./Warland Dr. & Katella Av.		2 Douglas Dr./Dwy. 2 & Dwy. 1/Plaza Dr.		3 McDonnell Dr. & Plaza Dr.	
1,000	39,950		1,350	Normal	800
15(47) 1(2) 2(26)	↑ 34(6) ← 1782(1608) ↖ 12(9)		↖ 53(100)	↓ 0(3)	↑ 4(0) ← 104(80) ↖ 8(11)
27(11) ↘ 1702(1963) → 72(32) ↓	↖ 26(83) ↑ 2(1) ↗ 5(7)		↗ 21(24)	23(86) → 0(2) ↓	↖ 19(5) ↑ 2(0) ↗ 77(9)
42,950	1,450		1,350	1,900	350
4 Valley View St. & Plaza Dr./Chip Av.					
42,050	6,750	###(###) AM(PM) Peak Hour Intersection Volumes			
154(23) 1551(1503) 254(52)	↑ 39(355) ← 0(30) ↖ 12(162)	## Average Daily Trips			
9(168) ↘ 9(0) → 15(61) ↓	↖ 22(4) ↑ 1516(1967) ↗ 181(12)				
3,200	41,150				

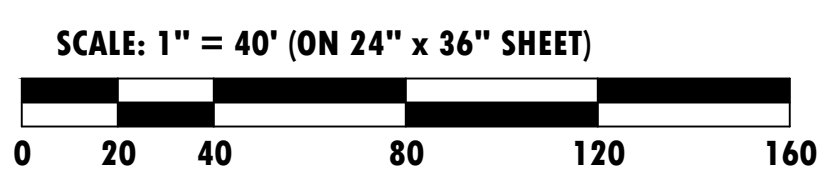
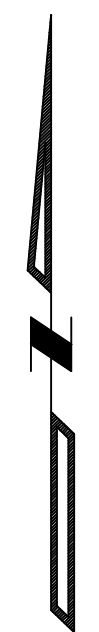
ATTACHMENT C
INTERSECTION SIGHT DISTANCE

15593 - ACAD\15593-SightDistance_A.dwg - 2/27/24 - OD



LIMITED USE AREA PER ORANGE COUNTY STANDARD PLAN 1117.

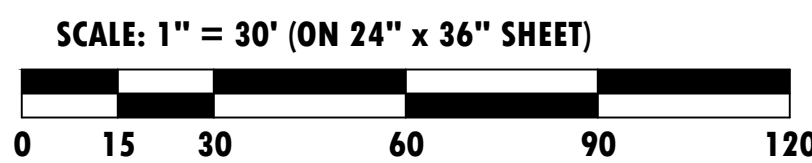
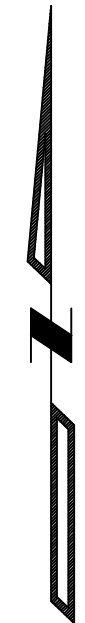
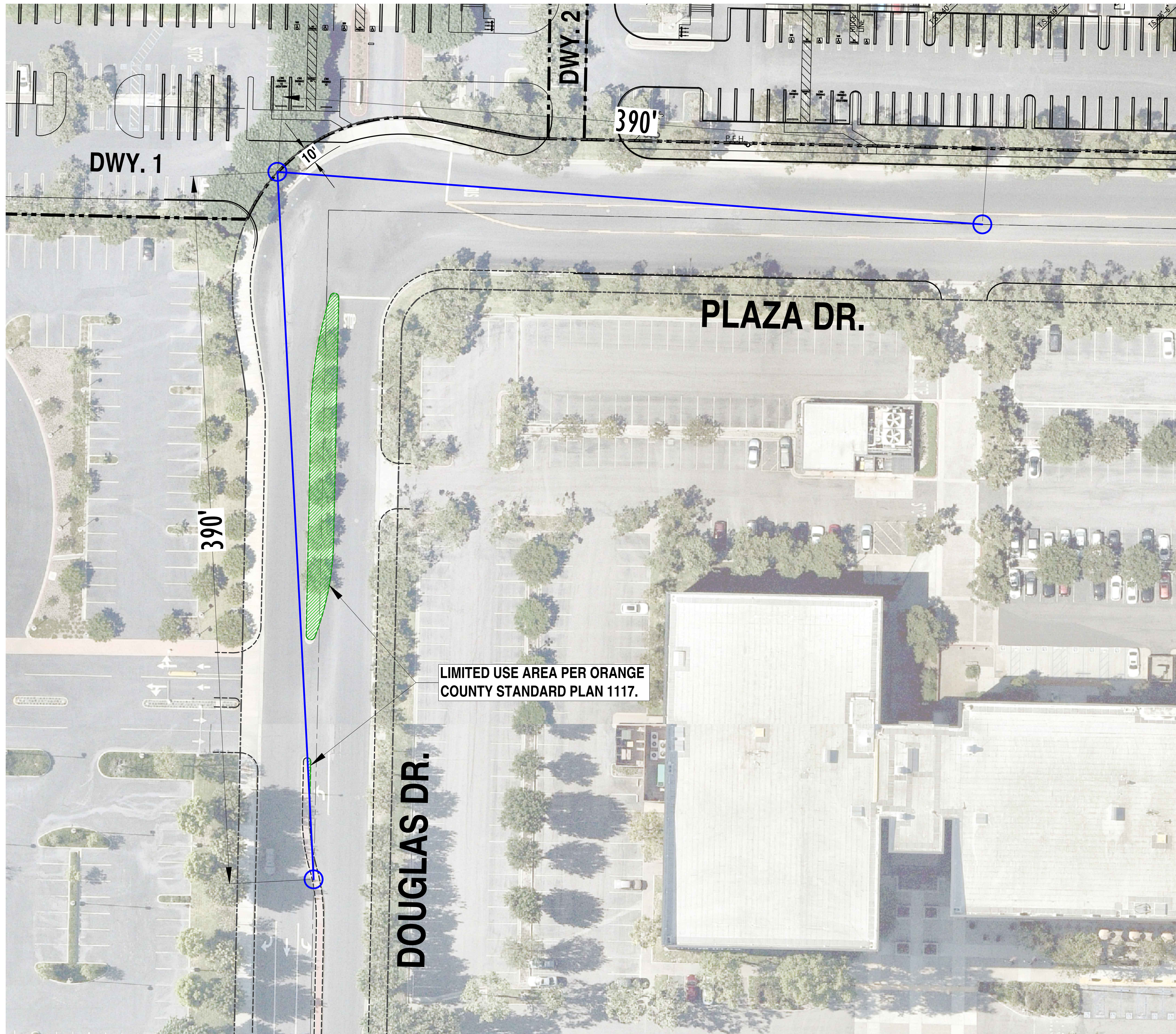
LIMITED USE AREA PER ORANGE COUNTY STANDARD PLAN 1117.



**EXHIBIT 1: INTERSECTION SIGHT DISTANCE
KATELLA AVENUE & DOUGLAS DRIVE**

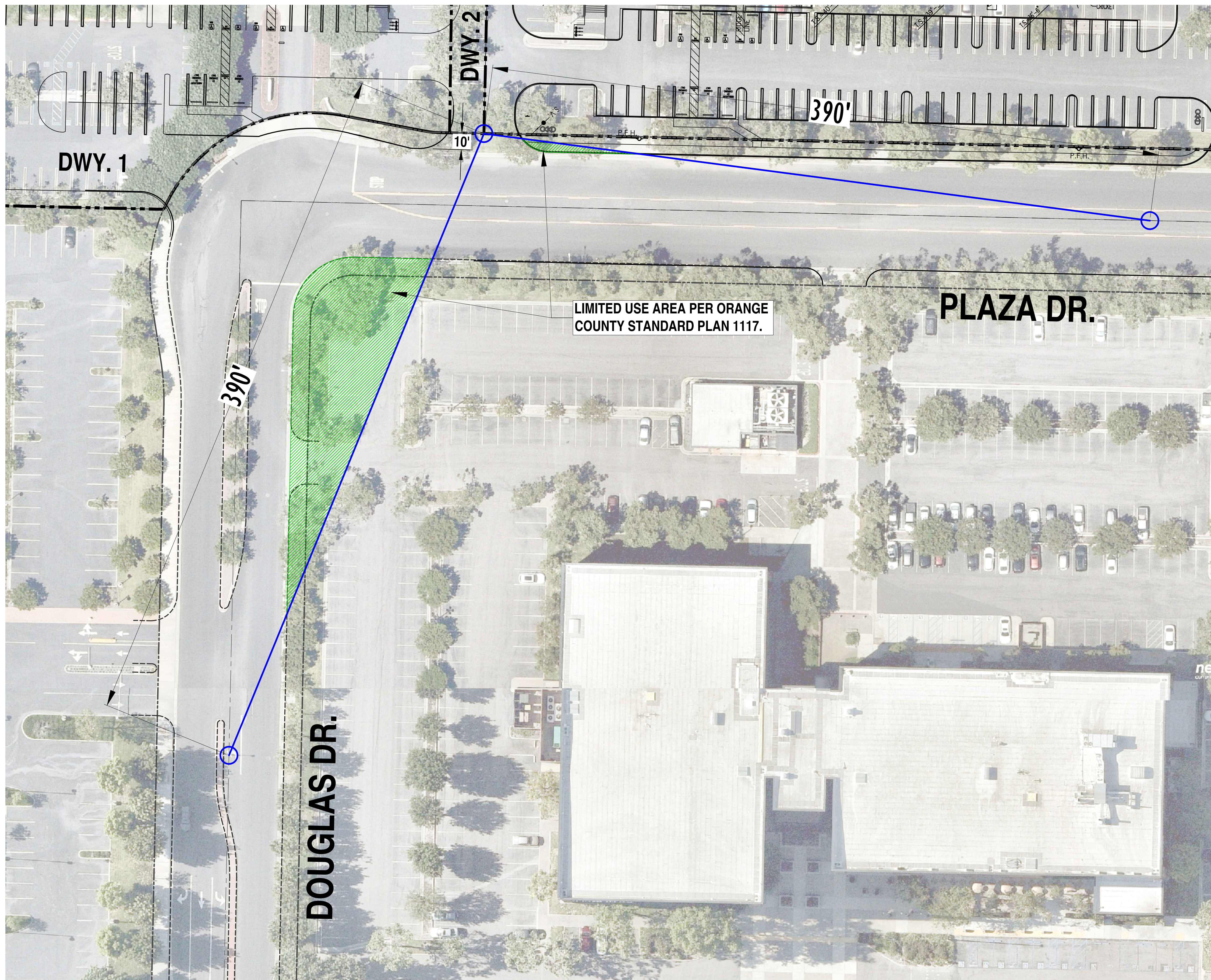


WWW.URBANROADS.COM
TELEPHONE # 949-660-1994



**EXHIBIT 2: INTERSECTION SIGHT DISTANCE
DOUGLAS DRIVE & PROJECT DRIVEWAY 1**



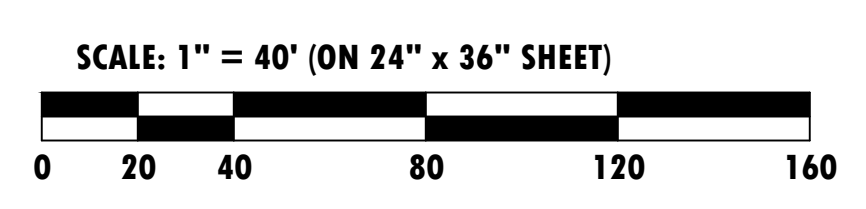
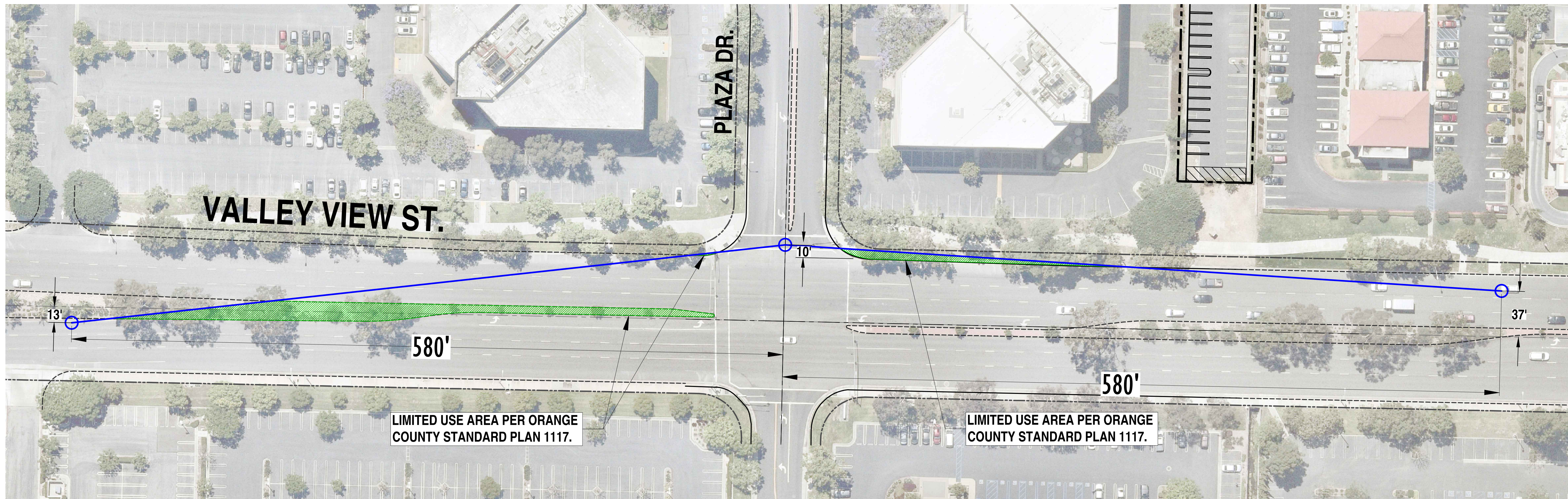


**EXHIBIT 3: INTERSECTION SIGHT DISTANCE
PLAZA DRIVE & PROJECT DRIVEWAY 2**

SCALE: 1" = 30' (ON 24" x 36" SHEET)



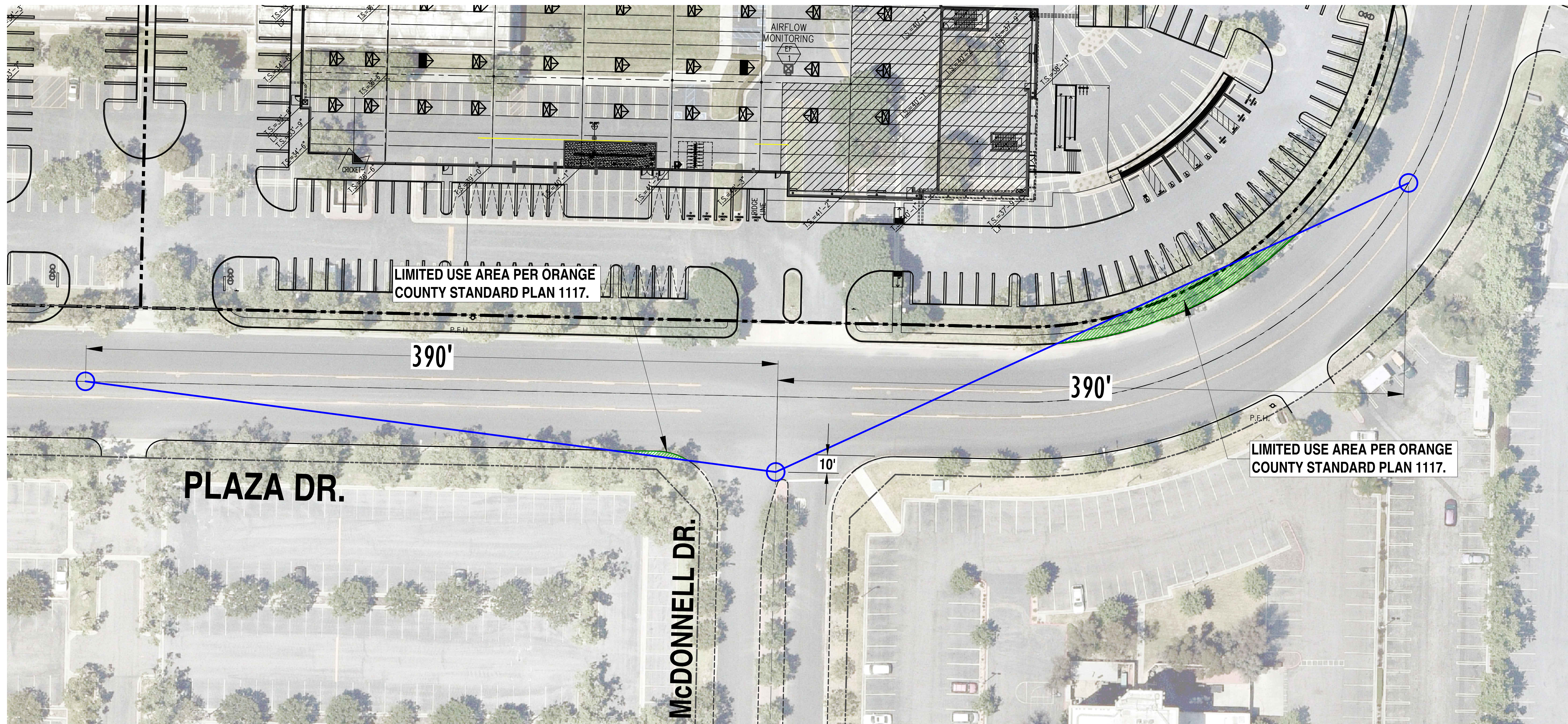
WWW.URBANROADS.COM
TELEPHONE # 949-660-1994



**EXHIBIT 5: INTERSECTION SIGHT DISTANCE
PLAZA DRIVE & VALLEY VIEW STREET**



WWW.URBANROADS.COM
TELEPHONE # 949-660-1994



PLAZA DR.

McDONNELL DR.

LIMITED USE AREA PER ORANGE COUNTY STANDARD PLAN 1117.

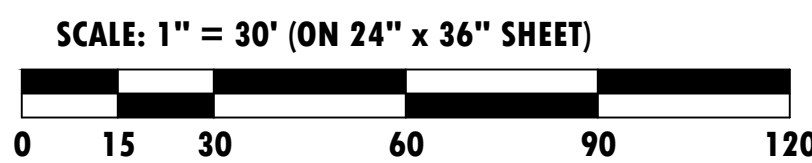
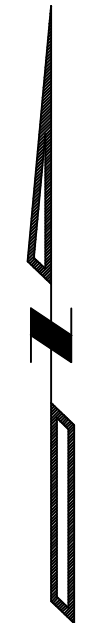
LIMITED USE AREA PER ORANGE COUNTY STANDARD PLAN 1117.

390'

390'

10'

15593 - ACAD\15593-SightDistance_A.dwg - 2/27/24 - 00



**EXHIBIT 4: INTERSECTION SIGHT DISTANCE
PLAZA DRIVE & McDONNELL DRIVE**



WWW.URBANROADS.COM
TELEPHONE # 949-660-1994

ATTACHMENT D
VEHICLE TURNING TEMPLATES

EXHIBIT 1-4: INBOUND TRUCK ACCESS AT DRIVEWAY 1

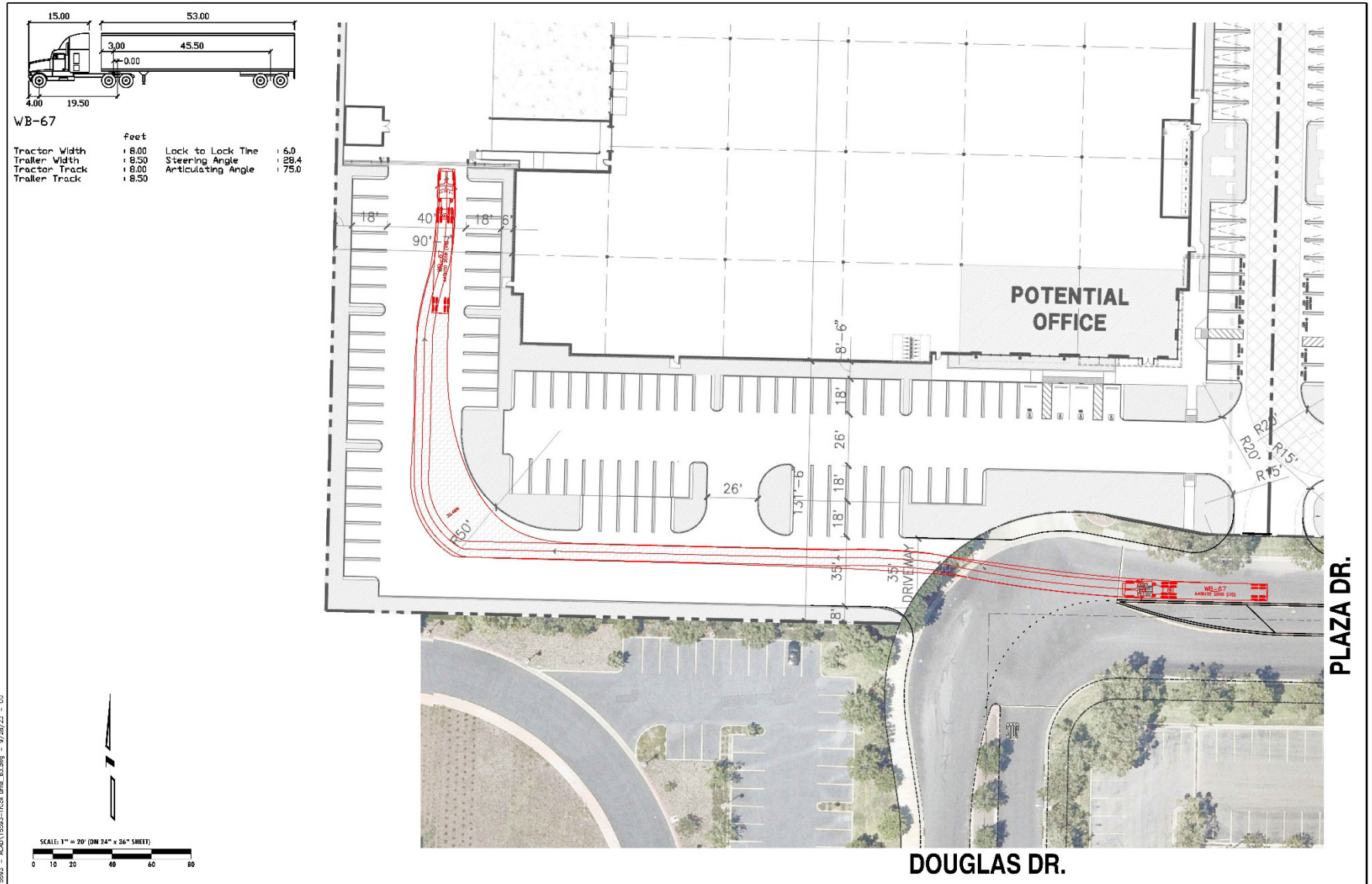


EXHIBIT 1-6: INBOUND TRUCK ACCESS AT DRIVEWAY 2

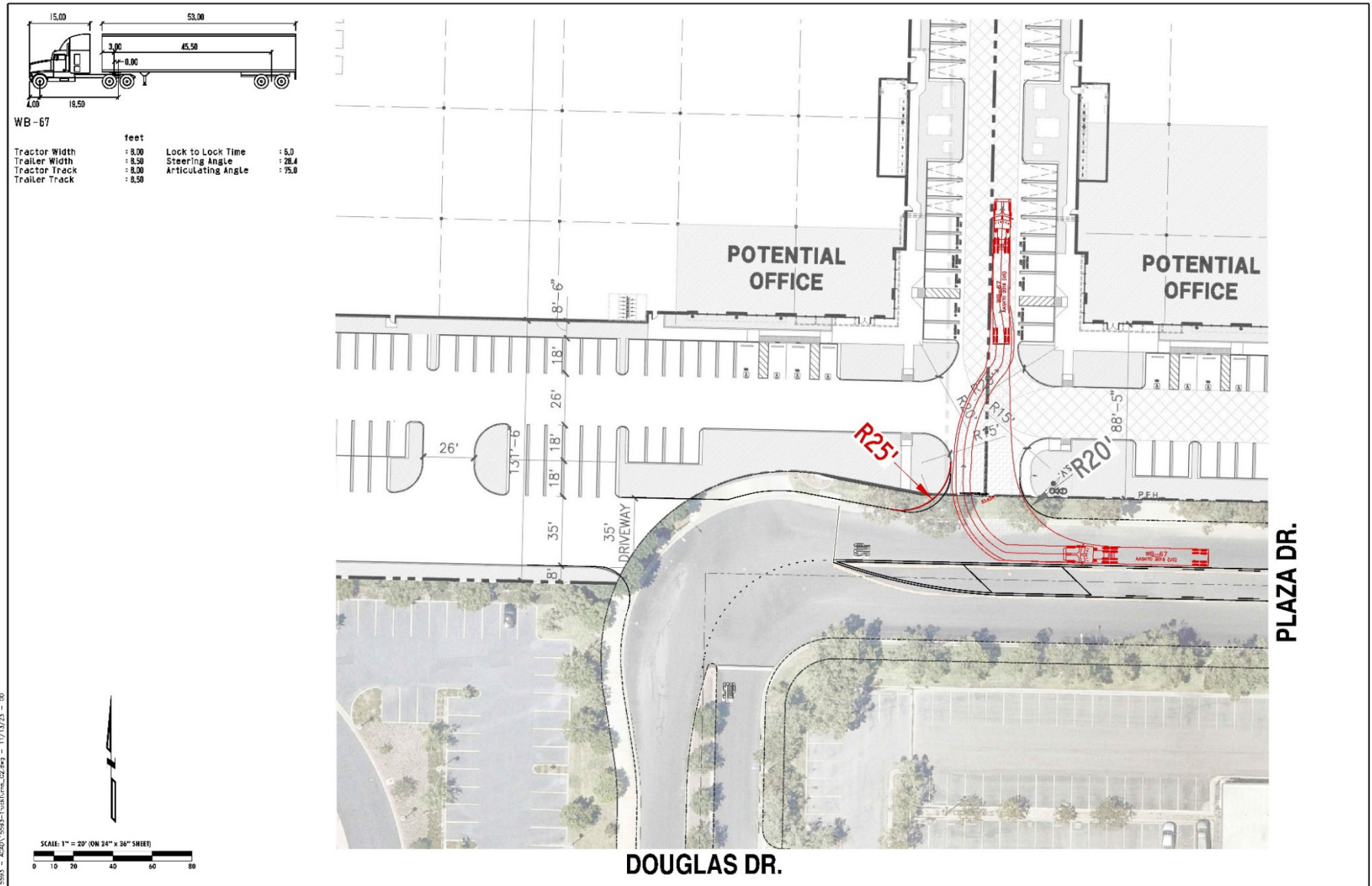


EXHIBIT 1-7: OUTBOUND TRUCK ACCESS AT DRIVEWAY 2

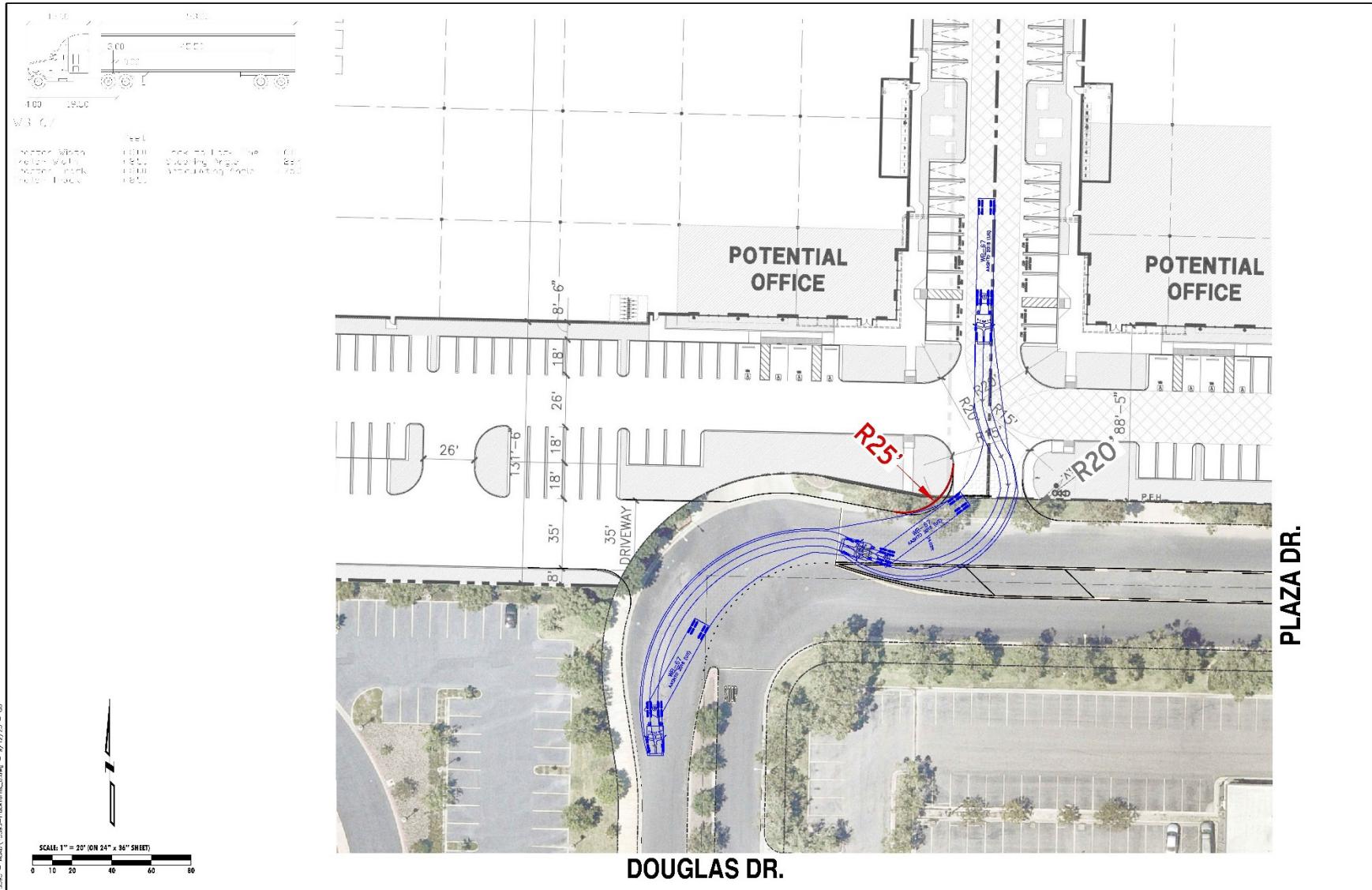


EXHIBIT 1-9: OUTBOUND ON-SITE TRUCK CIRCULATION VIA DRIVEWAY 2

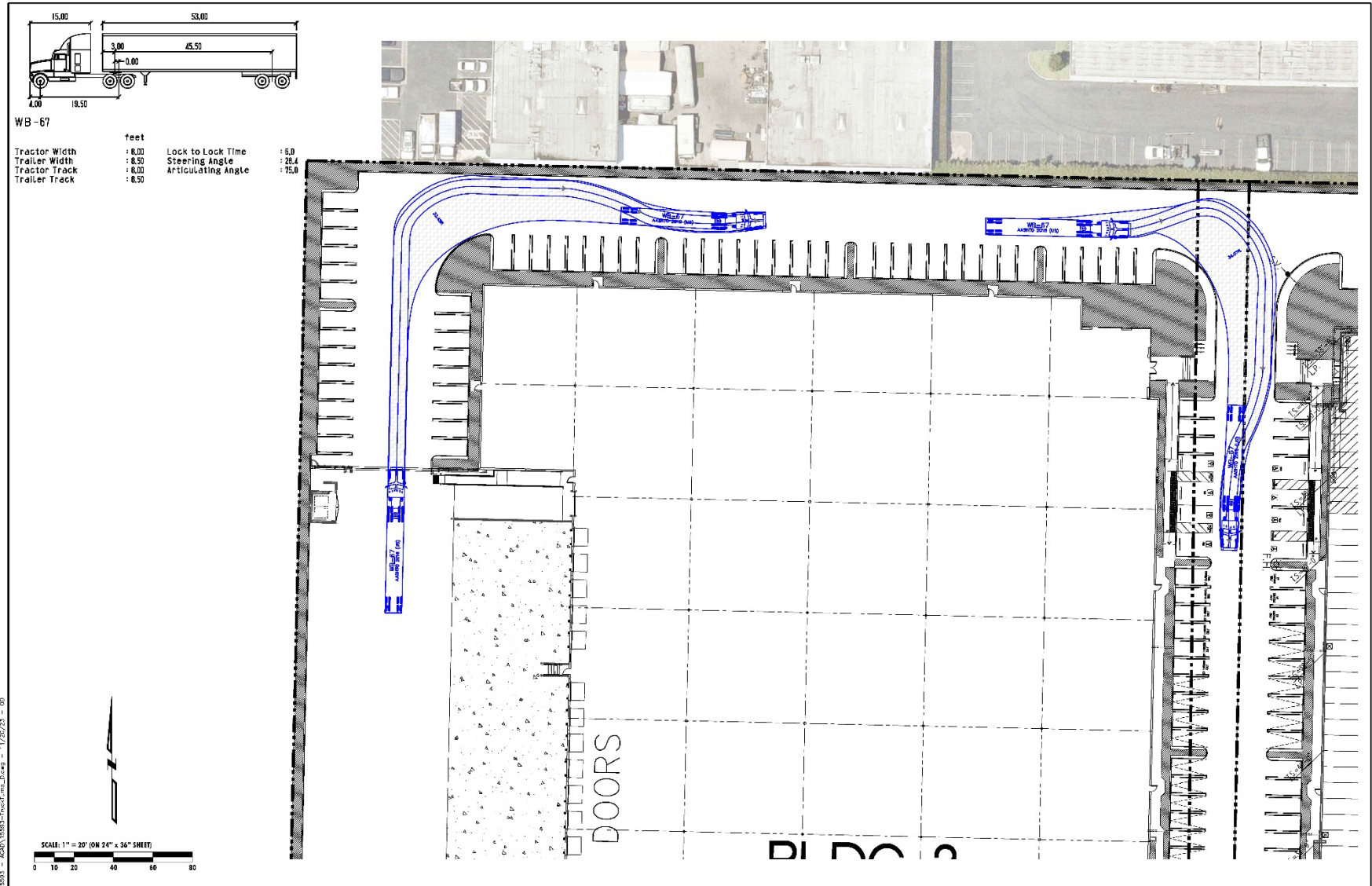


EXHIBIT 1-10: LOADING DOCK TRUCK CIRCULATION

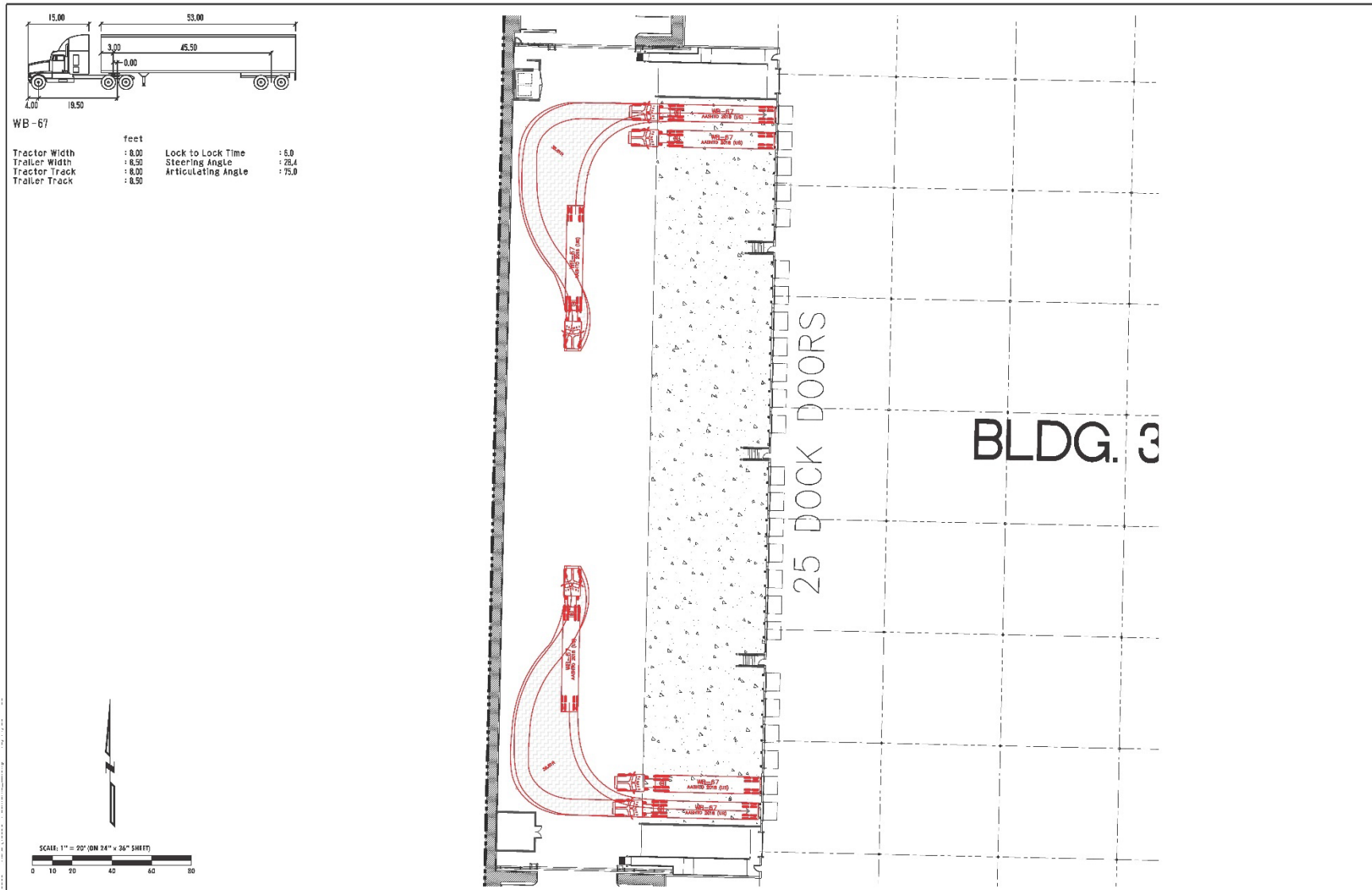
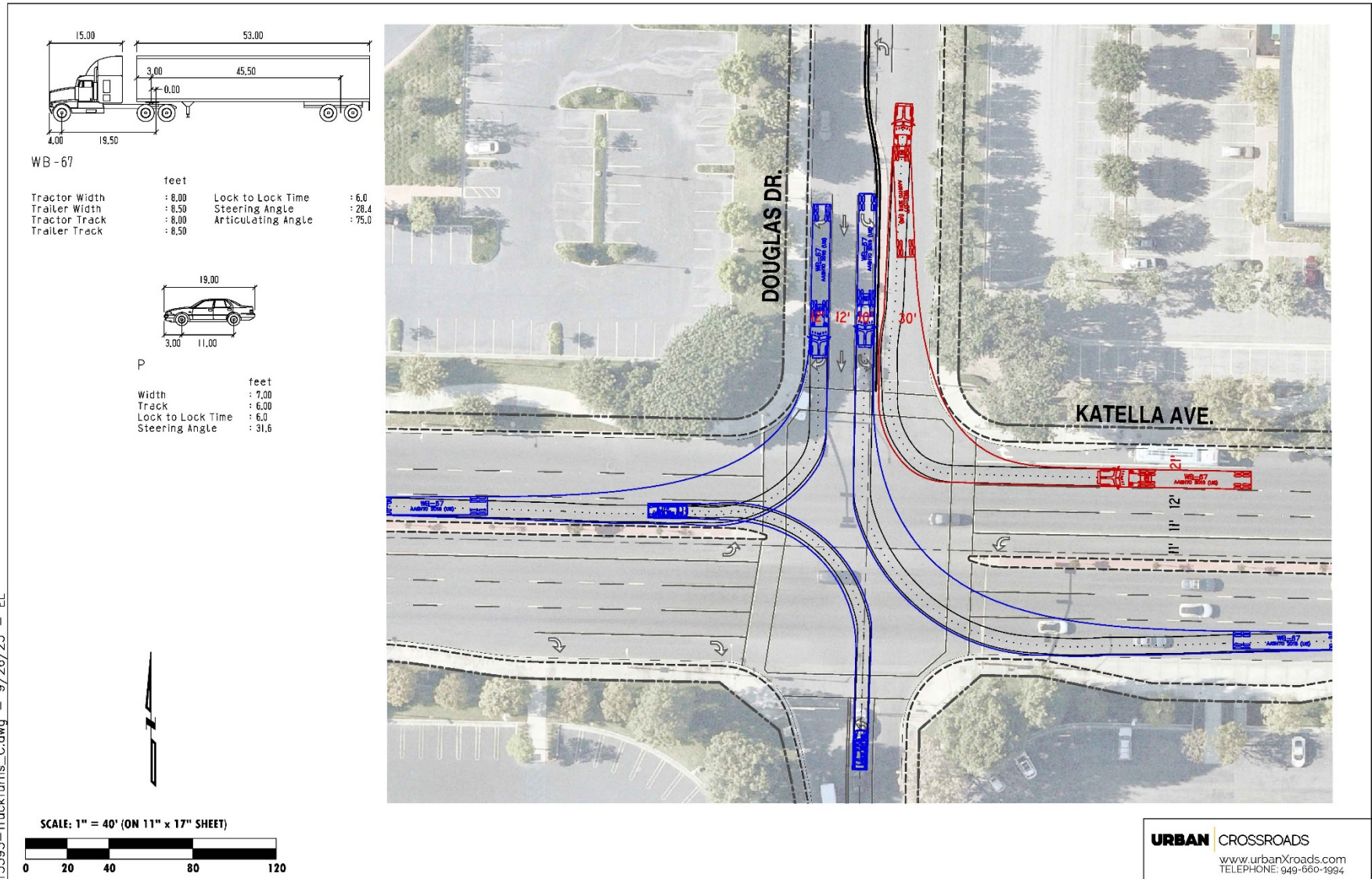


EXHIBIT 1-11: TRUCK ACCESS AT DOUGLAS DR./WARLAND DR. & KATELLA AV.





This page intentionally left blank