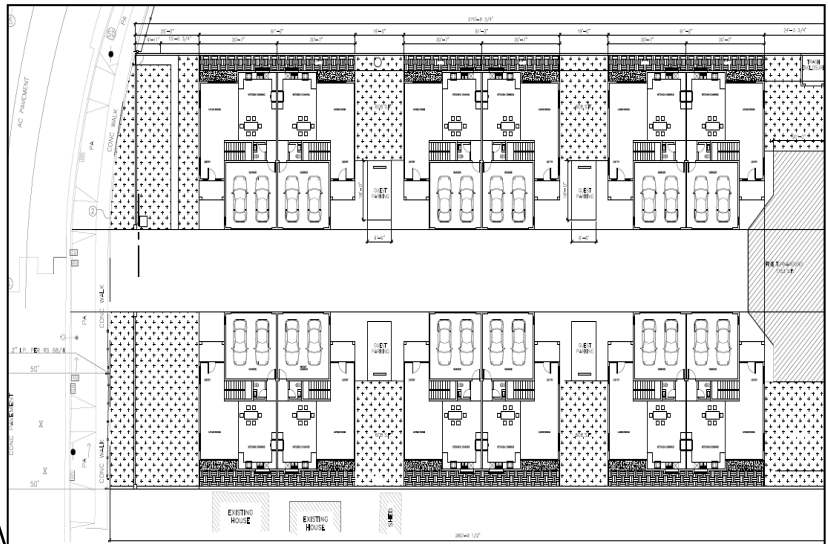
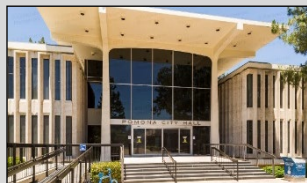


**Traffic Sight Distance Analysis Memorandum**  
for the  
**West Phillips Townhomes at**  
**1137 & 1149 West Phillips Boulevard**  
for  
**The City of Pomona, CA**



**PREPARED FOR:**



**CITY OF POMONA**

**Development Services Department**  
Planning Division  
505 South Garey Ave  
Pomona, CA 90280



**PREPARED BY:**



**MINAGAR & ASSOCIATES, INC.**

**Traffic/Civil/Electrical Engineering – ITS – Transportation Planning – CEM**  
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Web: [www.minagarinc.com](http://www.minagarinc.com)



**July 13, 2021**



## Traffic Sight Distance Analysis for the West Phillips Townhomes City of Pomona, CA

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### TECHNICAL MEMORANDUM

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**To:** Ms. Lynda Lara  
Assistant Planner  
Development Services Department  
City of Pomona  
505 South Garey Ave  
Pomona, CA 90280

**From:** Fred Minagar, MS, PE, RCE, FITE  
Principal/Senior Project Manager  
Minagar & Associates, Inc.

**Date:** July 13, 2021

**Re:** Traffic Sight Distance Analysis for the West Phillips Townhomes at 1137 and 1149 West Phillips Blvd

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#### Executive Summary:

Minagar & Associates, Inc. investigated the existing project site conditions and conducted a traffic sight distance analysis for the West Phillips Townhomes development project located at 1137 and 1149 West Phillips Blvd. One proposed driveway will provide future residents of the development access to the public street. However, given the existing roadway geometry, the City of Pomona has expressed concerns regarding potential turning movement conflicts generated by the project driveway. The intent of this traffic sight distance analysis is to identify "potential turning restrictions in and out of the project driveway" per the Traffic Public Works Condition of Approval.

The traffic sight distance analysis has been prepared using guidelines and methodologies prescribed by the City of Pomona and the American Association of State Highway and Transportation Officials (aka AASHTO). Documents used to complete the traffic sight distance analysis include, AASHTO 2018 A Policy on Geometric Design of Highways and Streets, City of Pomona Standard.

Based on the results of the analysis, there is inadequate sight distance for left-turns and crossing maneuver from the project driveway. **It is recommended to establish a stop control for southbound traffic on the private driveway, by installing a "no left turn" regulatory sign for vehicles exiting the project driveway, and restripe the center lane between Prospect Dr. and (w) S. Hamilton Blvd. into a two-way left turn lane.**



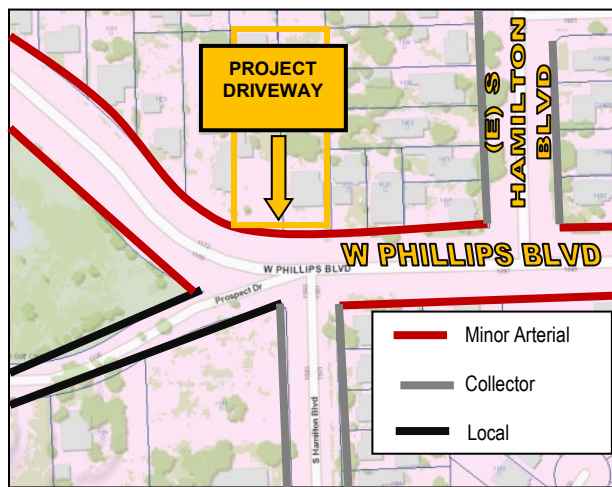


## Traffic Sight Distance Analysis for the West Phillips Townhomes City of Pomona, CA

### Background:

The proposed development project at 1137 and 1149 West Phillips Boulevard and designed by JD Design calls for the construction of twelve (12) new attached residential units. Two existing lots, totaling 37,164 square feet in size, will merge and existing single-family units on property will be demolished to provide space for the new development.

The project site is located on the north side of W. Phillips Blvd., a street which runs east and west. Adjacent cross streets in close proximity to the project site include Prospect Dr. on the west, (w) S. Hamilton Blvd. on the south, and (e) S. Hamilton Blvd. on the east. All three mentioned cross streets are STOP controlled intersections and are within 300 feet of the project site. The proposed development project will render all three existing driveways on property unserviceable. Per JD Design plans, a new 25-foot-wide private driveway and fire lane will be constructed on the south end of the property and between the two lots. The project driveway alone will provide vehicles access to and from the new development to the public street via W. Phillips Blvd.



### West Phillips Boulevard:

West Phillips Boulevard is classified as a minor arterial from the City of Pomona's 2014 Adopted General Plans. It spans from the eastern city limits and terminates at Butterfield Road in the west. Within proximity to the site, W. Phillips Blvd. is a four-lane road with two lanes in each direction. It has a posted speed of 40 MPH and varying center lane striping. There is a painted median and left-turn center lane west and east of the project driveway, respectively. The land use for this

segment of W. Phillips Boulevard consists of fronting single family residential units on the north side and a golf course on the south side of the street. On-street parking is permitted on the north side of Phillips Blvd. and partially on the south with area of red curb. There is a gradual "S-Curve" west of Prospect Dr. restricting sight distance from the project driveway, and there is no vertical curve.

A radar speed survey conducted on a typical Wednesday in 11/20/2020 yielded an 85th percentile speed of 48 MPH and 52 MPH for eastbound and westbound traffic approaching the project driveway, respectively. The high 85th percentile speed relative to the existing posted speed limit suggest a need to take a conservative approach to analyzing sight distance.

Due to the existing roadway geometry, the City of Pomona has expressed concerns regarding potential points of conflict generated by the project driveway, which will be used exclusively by all vehicles requiring access to and from the new development. The City wishes to ascertain (a) if there is adequate sight





## Traffic Sight Distance Analysis for the West Phillips Townhomes City of Pomona, CA

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distance that allows stopped vehicles approaching S. Phillips Blvd. from the project driveway to safely enter traffic or cross it and (b) if there are potential safety conflicts caused by vehicles turning into the project driveway.

### **Procedure:**

In order to ensure safe turning movements at intersections, a clear line of sight should be maintained between the stopped vehicle on the minor road and approaching driver on the major road. Areas, known as clear sight triangles, were graphically determined, and analyzed to identify potential sight obstructions. Obstructions are defined as objects above the crossroad elevation which may include trees, shrubs, buildings, fencing, and terrain.

Based on the City of Pomona Public Works Department Standard Plan No. A-34-11 for Intersection Sight Distance (**Attachment B**), the driver's eye height is assumed to be 3.50 ft and the decision point distance,  $d_{\text{vertex}}$ , is established to be 15 feet from the edge of the major road travel way (ETW). While the City Standard Plan states an object height of 4.25 ft, the assumed value used in this sight distance analysis is 3.50 ft to be consistent with AASHTO 2018 "Green Book" and to make intersection sight distances reciprocal.

The corner sight distance are based on roadway classification. Per the City Standard Plans the minimum corner sight distance for a public street with design speed of 40 MPH is 440 ft. Comparatively, the intersection sight distance (ISD) or corner sight distance, calculated using AASHTO equation 9-1 is 500 ft. The more conservative value for corner sight distance, in this case the AASHTO values, were plotted and used to construct clear sight distance triangles for viewing left and right approaching traffic. Calculations for ISD are shown in **Attachment A** and the clear sight distance triangle diagram used to evaluate sight distance from of the project driveway is shown in **Figure 1**.

### **Recommendation:**

Base on review of the project site and surroundings, adequate sight distance is only provided for right-turning vehicles from the project driveway provided there is no on-street parked vehicles in the eastbound direction. However, given the adjacent fronting residential land use, enforcing parking restriction on the north side of W. Phillips Blvd between the project driveway and (e) S. Hamilton Blvd. is not practical. **Therefore, it is recommended that the approach leg from the project driveway be 'STOP' controlled by installing a "STOP" (R1-1) sign to encourage drivers to take caution existing the project driveway. In addition, a "NO LEFT TURN" (R3-2) sign is recommended to be installed for the outbound approach of the project driveway, to restrict the outbound traffic from the project site to right-out only and maintain an uninterrupted flow of traffic on W. Phillips Blvd and accommodate safe maneuvers from the driveway. The placement of signs shall comply with general requirements outlined in the 2014 CA MUTCD, 5<sup>th</sup> Rev.**







## Traffic Sight Distance Analysis for the West Phillips Townhomes City of Pomona, CA

Adequate sight distance is not provided for left-turn movements out of the project driveway due to the horizontal curvature of W. Phillips Blvd. and numerous potential obstructions within the clear distance triangle, including on-street parked vehicles, utility poles, overgrown shrubs and trees and fencing on adjacent private property. **It is recommended that the single project driveway restrict vehicle egress to right turning movements by installing “no left-turns” signs (R3-2).**

Between Prospect Dr. and S. Hamilton Blvd. there is a double yellow painted median which prevents eastbound vehicles from W Phillips Blvd from making left-turn movements onto the project driveway. The length of the painted median is approximately 75 ft. Assuming an average vehicle length of 15 ft and inter-vehicle spacing of 3.5 ft, four vehicles can potentially queue within the space of the median. In order to prevent potential illegal left turns and to improve safety of ingress, **it is recommended that the solid double yellow painted median between Prospect Drive and S Hamilton be removed and replace with a two-way left turn striping.**


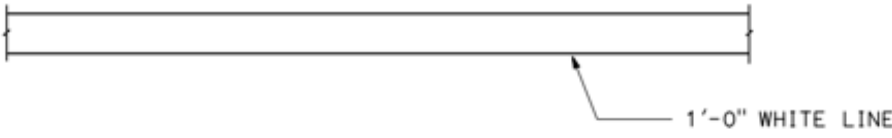

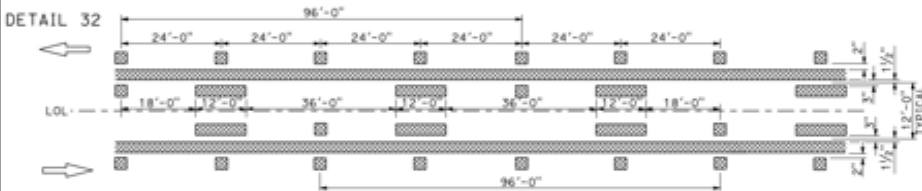





## Traffic Sight Distance Analysis for the West Phillips Townhomes City of Pomona, CA

Furthermore, it is recommended that the City request the developer provide appropriate signage and striping modifications for southbound traffic from the project driveway, including:

- “No Left-Turn” Sign: R3-2
- “STOP” Sign: R1-1
- “CROSS TRAFFIC AHEAD” Sign: W70 (CA)
- Limit Line (per Caltrans 2018 Standard Plan A24G)
- “STOP” Pavement Marking (per 2014 CA MUTCD Rev. 5)
- Two-Way Left Turn Lane: Detail 32 (per Caltrans 2018 Standard Plan A20B)

 R1-1	 <b>LIMIT LINE (STOP LINE)</b>
 R3-2	 DETAIL 32
 W70 (CA)	





**Figure 1 – Left/Right Clear Sight Triangles for Project Driveway onto WB/EB Phillips Boulevard  
(AASHTO Intersection Sight Distance (ISD) Evaluation)**





## **Attachment A**

# **Clear Departure Sight Triangle Assessment**





PROJECT ..... West Phillips Townhomes .....  
 SUBJECT ..... Traffic Sight Distance Analysis for .....  
 ..... West Phillips Blvd at Project Driveway .....  
 DATE ..... 12-31-20 .....

PAGE ..... 1 OF 1 .....  
 SHEET NO. .... 1 OF 1 .....  
 CALC BY: ..... MN .....  
 CHKD. BY: ..... FM .....

## Clear Departure Sight Triangle Assessment

### Per AASHTO Case Type B—Intersections with stop control on the minor road

Minor Road: Project Driveway

Approach grade: Flat/level  
 Design vehicle: Passenger car  
 Driver eye height: 3.5 feet  
 $d_{\text{vertex}}$ , Leg A: 15 feet

Major Road: Phillips Blvd

Travel lanes: 4 total (2 per direction)  
 Center median: Painted Median Island (w/o (w) S Hamilton Blvd)  
 Painted Centerline (e/o (e) S Hamilton Blvd)  
 $V_{\text{maj}}$ : 40 MPH Posted Speed

#### *Case B1—Left turn from minor road (project driveway)*

$t_g$  base value: 7.5 seconds  
 $t_g$  LT adjustment:  $(0.5)(+2 \text{ near lane}) = 1.0$  seconds  
ISD, Leg B:  $1.47(40)(8.5) = 500' \rightarrow 500'$  Views to the Left/Right

Potential sight obstructions: On-street parking; Utility; Trees; Fencing

Clear Departure Sight Provided? **NO (Right View Only)**

#### *Case B2—Right turn from minor road (project driveway)*

$t_g$  base value: 6.5 seconds  
 $t_g$  LT adjustment: None  
ISD, Leg B:  $1.47(40)(6.5) = 383' \rightarrow 383'$  View to the Left

Potential sight obstructions: On-street parking

Clear Departure Sight Provided? **YES**

#### *Case B3—Crossing Maneuver from the minor road (project driveway)*

$t_g$  base value: 6.5 seconds  
 $t_g$  adjustment factor:  $(0.5)(+2 \text{ near lane}) = 1.0$  seconds  
ISD, Leg B:  $1.47(40)(7.5) = 441' \rightarrow 441'$  View to the Left

Potential sight obstructions: On-street parking; Utility; Trees; Fencing

Clear Departure Sight Provided? **NO (Right View Only)**

ISD: Intersection Sight Distance (feet),  $1.47 * V_{\text{major}} * t_g$   
 $V_{\text{maj}}$ : Design speed of major road (mph)  
 $t_g$ : Time gap for minor road vehicle to enter the major road (s)  
 $d_{\text{vertex}}$ : Decision point distance

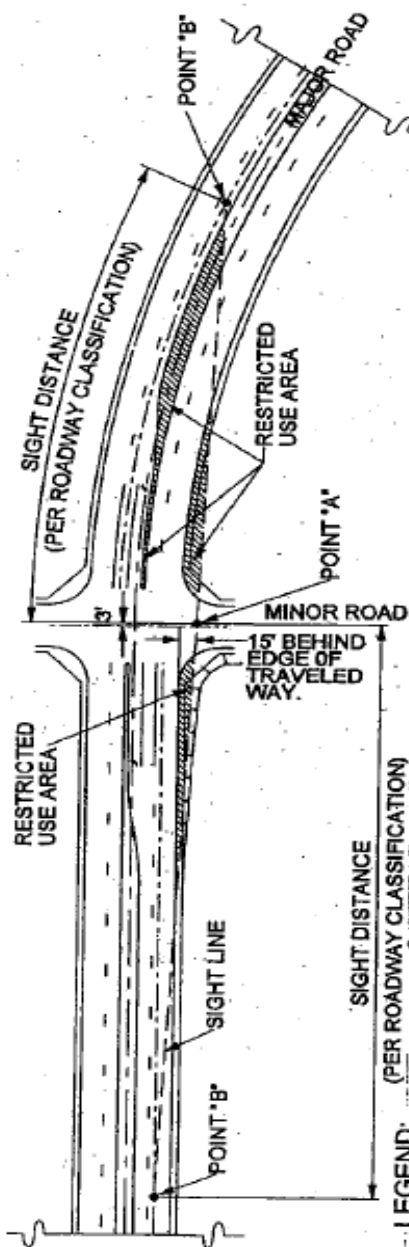


City of Pomona, CA

# **Attachment B**

## **City of Pomona Public Works Department Standard Plan No. A-34-11 Intersection Sight Distance**





POINT "A": DRIVER'S VANTAGE POINT.  
 POINT "B": THE REQUIRED SIGHT DISTANCE POINT, MEASURED ALONG THE CENTERLINE OF THE NEAREST LANE OF APPROACHING TRAFFIC.  
 RESTRICTED USE AREA  
 LIMITED USE AREA  
 SIGHT LINE  
 CENTERLINE OF ROADWAY  
 CENTERLINE OF TRAFFIC LANE

NOT TO SCALE

NOTES:

1. THE LIMITED USE AREA IS DETERMINED BY THE GRAPHICAL METHOD. IT SHALL BE USED FOR THE PURPOSE OF PROHIBITING OR CLEARING OBSTRUCTIONS TO MAINTAIN ADEQUATE SIGHT DISTANCE AT INTERSECTIONS.
2. LIMITED USE AREA TO BE KEPT CLEAR OF ALL OBSTRUCTIONS OVER 30 INCHES HIGH, INCLUDING VEGETATION.
3. NO TREES, WALLS, OR ANY OBSTRUCTIONS SHALL BE ALLOWED IN THE LIMITED USE AREA.
4. THE TOE OF SLOPE SHALL NOT ENCRUCH INTO THE LIMITED USE AREA.
5. THE SIGHT DISTANCE SHALL BE MEASURED ALONG THE CENTERLINE OF THE ROAD.
6. POINT "A" IS THE LOCATION OF THE DRIVER'S EYE, MEASURED 15 FEET BACK FROM THE EDGE OF THE TRAVELED WAY. (8 FEET FROM ETW, 1 FOOT STOP BAR, AND 8 FEET FROM FRONT BUMPER TO DRIVER.) IF THE STOP BAR IS MORE THAN 8 FEET FROM THE ETW, ADDITIONAL ALLOWANCE SHOULD BE CONSIDERED.
7. POINT "B" IS THE REQUIRED SIGHT DISTANCE POINT LOCATED ALONG THE CENTER OF THE NEAREST TRAFFIC LANE.
8. THE LINE OF SIGHT SHALL BE SHOWN AT INTERSECTIONS ON TENTATIVE MAPS, SITE PLANS, GRADING PLANS, STREET PLANS, AND LANDSCAPE PLANS.
9. CORNER SIGHT DISTANCE IS MEASURED FROM A 3.5 FOOT HEIGHT AT THE LOCATION OF THE DRIVER'S EYE ON THE MINOR ROAD, TO A 4.25 FOOT OBJECT HEIGHT IN THE CENTER OF THE NEAREST TRAFFIC LANE OF THE MAJOR ROAD.
10. WHEN AN INTERSECTION IS LOCATED ON A VERTICAL CURVE, A PROFILE OF THE SIGHT LINE SHALL BE PROVIDED.

DESIGN SPEED (M.P.H.)	PUBLIC STREETS CORNER SIGHT DIST. (FT.)	PRIV. ROADS & DRIVEWAYS STOPPING SIGHT DIST. (FT.)
20	220	125
25	275	150
30	330	200
35	385	250
40	440	300
45	495	360
50	550	430
55	605	500
60	660	580
65	715	660

CITY OF POMONA  
 PUBLIC WORKS DEPARTMENT  
 INTERSECTION SIGHT DISTANCE

DRAWN BY: M.L. CHECKED BY: M.P.  
 APPROVED  
 CITY ENGINEER DATE 7-28-11

STANDARD

1 OF 2

STD. No. A-34-11



MINAGAR & ASSOCIATES, INC.