SOUTHWEST TRAFFIC
ENGINEERING, LLC

Sabine Ellis
City Traffic Engineer
City of Mesa
20 East Main Street
Mesa, Arizona 85201

## SUBJECT: WESTMOUNT ESTATES <br> MCKELLIPS ROAD, WEST OF CONSOLIDATED CANAL PRELIMINARY SIGHT DISTANCE ANALYSIS

Dear Ms. Ellis,
Please find enclosed a brief preliminary sight distance analysis (PSDA) regarding the Westmount Estates project proposed on the south side of McKellips Road, west of Consolidated Canal in Mesa, Arizona. The vicinity of the project is shown in Figure 1. The project will consist of a new 30 -unit apartment complex, as shown in Figure 2. The future site will be served by one proposed access point.

The purpose of this preliminary sight distance analysis is to preliminary identify potential sight distance issues at the proposed project access point.

## Existing Conditions

The Westmount Estates project site will be located on the south side of McKellips Road, approximately 1,400 feet from Horne Road, or approximately 170 feet west of the Consolidated Canal.

East/west McKellips Road is a seven-lane, major arterial roadway providing three lanes in each direction of travel, separated by a two-way, center left turn lane and a posted speed limit of 45 miles per hour (mph). Roadway lighting, curb, gutter, sidewalk and bike lanes are provided on both sides of the roadway in the immediate vicinity of the project site. In the immediate vicinity of the project site, McKellips Road increases in elevation, to travel over the Consolidated Canal, from west to east and appears to return to grade level approximately 170 feet west of the western edge of the Consolidated Canal. McKellips Road continues at grade east of the Consolidated Canal.

## Preliminary Sight Distance Review

The Westmount Estates site will construct one 30 -foot wide driveway on the south side of McKellips Road, approximately 1,400 feet east of Horne Road. Vehicles traveling eastbound will make use of a shared through/right turn lane while westbound traffic will utilize the existing two-way center left turn lane to enter the site. Northbound traffic exiting the site will be provided a shared left turn/right turn lane.

The preliminary sight distance evaluation, based on City of Mesa requirements, was conducted in the field using poles with flags where the proposed driveway to the project site is expected to be located. A sight distance evaluation with topographic survey data was not completed.

The City of Mesa provides sight distance and visibility guidelines in their Engineering \& Design Standards Section 211 - Sight Distance and Visibility (April 2019) which state that sight distance triangles and calculations should be based on the latest edition of the Policy on Geometric Design of Highways and Streets (AASHTO Green Book). The City of Mesa also provides a simplified figure which outlines these sight distance triangles and can be found attached to this report.

Table 1 below shows the results of the preliminary sight distance review based on aerial measurements and City of Mesa guidelines. In accordance with City of Mesa standards, the sight distance along 45 mph McKellips Road utilized the 50 mph design speed. Sight lines are based off a driver's eye height of 3.5 feet and a target object height of 3.5 feet.

Table 1 - Preliminary Sight Distance Review

| Westmount Access/McKellips Road |
| :--- | :---: | :---: |
| Sight Line |\(\left.\quad \begin{array}{c}Measured <br>

Distance from <br>
Aerial Image\end{array} $$
\begin{array}{c}\text { Distance } \\
\text { Required per } \\
\text { City of Mesa }\end{array}
$$\right]\)
*Distances in Feet, Based on 50 mph design speed

As shown in Table 1, the sight visibility triangles for the northbound left turn, looking east, and the westbound left turn from the McKellips Road analyzed are expected to be unobstructed.

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However, visibility for northbound left turns, looking west (towards nearside traffic) is limited by obstructions to approximately 300 feet of available sight distance. These obstructions include an existing roadway luminaire pole, a roadway lighting voltage meter and associated electrical equipment, and a large shrub immediately adjacent to the luminaire pole.

## Conclusion

Based on City of Mesa guidelines for stopping sight distance, the proposed intersection of Westmount Access/McKellips Road will require a minimum clear zone of 662 feet for northbound vehicles exiting the site looking east and 662 feet for northbound vehicles existing the site looking west.

Based on the existing conditions observed during a field visit in April 2021, an existing roadway luminaire pole, a roadway lighting voltage meter and associated electrical equipment, and a large shrub immediately adjacent to the luminaire pole are expected to limit sight distance for northbound vehicles exiting the site. To provide adequate sight distance at the proposed intersection of Westmount Access/McKellips Road these obstructions, located approximately 100 feet west of the proposed access driveway, should be removed or relocated.

The preliminary sight distance analysis was performed based on the site plan. It is recommended that sight distances at the proposed access points be verified during the design process.

Thank you again for your time and review of this PSDA. If you have any questions regarding the PSDA, please feel free to contact me at 602.266.7983.


Attachments:
Figure 1 - Vicinity Map
Figure 2 - Site Plan
City of Mesa Sight Distance Triangles

Figure 1 - Vicinity Map


## LEGEND:

- EXISTING ROAD
- EXISTING WATERWAY

A
PROJECT SITE

$\frac{\text { REQUESEED DELIATIONS }}{\text { 1-MINMUM BULLING SEPARATION }}$



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DOORS ADAACENT TO ONE ANOTHER.


UNITS
BELOW GRADE
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(TABLE 11-5.5)
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$15 \times 3.74=55$ UNITS PERMITTED
30 UNTS 3.774 ACRES $=$
8 UNTS $/$ ACRE PROVIDED

PARKING (11-32-3.A)
 1. COVERED SPACE PER UNTT
(30) COVERED SPACES REQURED
$\underset{(32) \text { Garage spaces }}{\text { PROUIED }}$ (32) SURARAESSAPCESES
(64) TOTAL SPACES PROVIDED


## shetindex

AA.0 SiTE PLAN
A1.1
RENDRERE SITE PLAN
a2.0 floor plans
 A.3.
A3 3.3
ELEVVATIONS
ELIONS

A4.0 Rendored Elevations

 A5.0. MODEL RENDERINGS
A5.1
MODEL RENDRRINGS A5.1 MODEE RENDRRNGS
A5. MORLL RNDERN
$\begin{array}{ll}\text { L1 } & \text { Landscape plan } \\ \text { L2 } & \text { LANoSCAPE PLAN }\end{array}$


## City Ordinances

## CITY OF MESA CODE 8.6.3 (D) STATES:

The responsible party of any property shall not allow or permit trees, shrubs, or plants on land adjacent to sidewalks or public places fronting or bordering their property to grow in a manner that impedes, obstructs, or interferes with the passage on any street, sidewalk, alley or other passageway within the city or that limits the visibility of any traffic control device or signal. Vegetation must be trimmed a minimum of 8 feet over the sidewalk and 14 feet over the street or alley. If you have any questions about vegetation and visibility, or if you have a traffic concern, contact our traffic studies staff at 480.644.2160.

## Transportation

Driving Mesa's Future
(1)

City Of Mesa
P.O. Box 1466

Mesa, AZ 85211-1466
(C) 480.644 .2160
@ transportation.info@mesaaz.gov
www.mesaaz.gov/transportation

## VEGETATION \& VISIBILITY

## What you need to know


mesa az Transportation

## VISIBILITY OF SIGNS \& SIGNALS

Stop signs, speed limit signs, yellow diamond-shaped warning signs and traffic signals are just a few of the many traffic control devices we rely on to keep traffic moving safely and efficiently.

For maximum visibility, traffic control devices need to be seen from a distance of at least 200 feet for 25 mph residential streets, and up to 600 feet for high speed arterial streets. For this reason, it is especially important to keep bushes, trees and other vegetation properly trimmed and maintained. Refer to City Code 8.6.3 (D) for more information.

## STREET \& SIDEWALK CLEARANCE

To ensure that visibility is not restricted, please trim and maintain all trees to at least eight feet over sidewalks and 14 feet over streets. See Figure 1 for an illustration. Refer to City Code 8.6.3 (D) for more


## VISIBILITY ON CORNER LOTS

Keeping bushes and trees trimmed and maintained on corners is especially important. If a corner is blocked or partially blocked by overgrown vegetation, it may be difficult to spot traffic, pedestrians and traffic control devices, such as stop signs, thus increasing the potential for crashes.

For this reason, bushes and shrubs within the 80-foot triangle on local streets (see Figure 2) should be trimmed and maintained to a height of 30 -inches or less above sidewalks and curbs. In addition, trees within this area should be trimmed so that the lowest branches do not extend below eight feet. The best test is to check for visibility.

Although vegetation is the most common visibility limitation on corners, the 80-foot triangle also applies to fences, walls, signs and any other possible obstruction. The clear area needed on collector and major streets is larger. Contact the Transportation Department for more information.



Case B1 - Left Turn Maneuver From STOP

| Required Sight Distance (SD) |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Through Road Cross-Section | 2 LU* | 3 LU* | $\begin{aligned} & 4 \mathrm{LD}^{* *} \\ & 5 \mathrm{LU}^{*} \end{aligned}$ | $\begin{aligned} & \text { 6LD** } \\ & 7 \text { LU* }^{*} \end{aligned}$ |
| Through Road Width | 34', 40', 48' | 46, 48' | 68', 72' | 88', 94' |
| Time gap ( $t_{g}$ ) | 7.5" | 8.0" | 8.5 " | 9.01 |
| Design Speed |  |  |  |  |
| 30 mph | 331 | 353 | 375 | 397 |
| 35 mph | 386 | 412 | 437 | 463 |
| 40 mph | 441 | 470 | 500 | 529 |
| 45 mph | 496 | 529 | 562 | 595 |
| 50 mph | 551 | 588 | 625 | 662 |



Case F - Left Turns From Major Road

| Required Sight Distance (SD) |  |  |
| :--- | :---: | :---: |
| Through Road <br> Cross-Section | $\mathbf{4 \text { LD } ^ { * * }}$ | 6 LD** $^{* *}$ |
| Through Road <br> Width | $68^{\prime}$ | $88^{\prime}, 94^{\prime}$ |
| Time gap $\left(t_{g}\right)$ | $6.0^{\prime \prime}$ | $6.5^{\prime \prime}$ |
| Design Speed |  |  |
| 30 mph | 265 | 290 |
| 35 mph | 310 | 335 |
| 40 mph | 355 | 385 |
| 45 mph | 400 | 430 |
| 50 mph | $\mathbf{4 4 5}$ | $\mathbf{4 8 0}$ |

$$
\text { * LU = lanes undivided } \quad * * L D=\text { lanes divided }
$$

Intersection Sight Distance (SD) $=1.47^{*} V^{*} t_{g}$
$V=$ Design Speed $(\mathrm{mph})=5 \mathrm{mph}$ over the speed limit
$t_{g}=$ time gap (seconds) - Passenger Car, Level Grade
Figure 2.3 - Design Guidelines for Sight Triangles per AASHTO Green Book

Sight Visibility Triangle Approaching STOP Signs


| Cross-section of | "a" |
| :--- | :---: |
| STOP controlled road | (feet) |
| 2LU* (34') | 12 |
| 2LU* (40') | 11.5 |
| 2LU* (48') | 18 |
| 3 LU* (46') | 11.5 |
| 3 LU* (48') | 11.5 |
| 4LD** (68') | 11 |
| 4LD** (72') | 11.5 |
| 5LU* (68') | 12 |
| 6LD** (88') | 10 |
| 6LD** (94') | 11.5 |
| 7LU* (88') |  |
| 2LU* with curb extensions |  |
| narrowing travel way to |  |
| single lane in each |  |
| direction |  |
| *LU = lanes undivided |  |
| **LD = lanes divided | 5 |


| Speed Limit <br> of street <br> approaching <br> STOP sign (mph) | Minimum <br> Stopping <br> Sight Distance <br> (feet) |
| :---: | :---: |
| 25 | 200 |
| 30 | 250 |
| 35 | 305 |
| 40 | 360 |
| 45 | 425 |
| 50 | 495 |

Minimum Stopping Sight Distances in this table are for 5 mph over the posted speed limit.

## STOP Sign Locations for Attached and Detached (or Absent) Sidewalks

STOP sign location when sidewalk is detached or absent


* Sign Size per latest Edition of the Manual on Uniform Traffic Control Devices

Figure 2.4 - Sight Distance Requirements for Stop Signs


## LEGAL DESCRIPIION (per title report)


ALTA/ACSM
 RUMWNG THENCE WEST TO THE RGGH OF WAY OF THE UTAH CANLL:

## LAND TITLE SURVEY



Thence norteastral allong the raht of war of the said consoloated canal to the place of eegnnnc.


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HEENE SOUTHWESTERLY ALLONG THE EAST BANK OF THE UTAH CANLL, 65 F FEET;








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\# APPLICABLE SCHEDULE B ITEMS











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LINE OF THE UTAH CANCL

## wna

 LOCATED IN THE NORTHEAST QUARTER OF SECTION 11, SALT RIVER BASE AND MERIDIAN. MARICOPA COUNTY - SALT RIVER BASE AND MERIDAA.- 

$M A P$


BASIS OF BEARINGS


BENCHMARK

$\qquad$



 EXCAVATON OR CONSTRUCTON





 7.



CERTIFICATION
T0: THOMAS AHDOOT CLEAR TITE ACECY Oo ARZONA, Luc





