



Aldea Centre

Traffic
Impact
Analysis

SWC 99th Avenue and
Bethany Home Road
Phoenix, Arizona

December 2009
CivTech Project No. 09-433

Prepared For:

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Revocable Trust**
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Phoenix, Arizona 85031

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EXECUTIVE SUMMARY

Introduction

This report documents a traffic impact analysis performed for a mixed residential, retail, and office development located in the southwest corner of 99th Avenue and Bethany Home Road. The development site is located within the City of Phoenix, Arizona. It should be noted that the western portion of 99th Avenue is within City of Phoenix, the central portion within Maricopa County and the eastern portion within City of Glendale. The City of Glendale maintains 99th Avenue; therefore, access points along 99th Avenue will be reviewed/approved through the City of Glendale. All access points and streets west of 99th Avenue, including the eastbound approaches to 99th Avenue, will be reviewed/approved through the City of Phoenix.

The proposed development will encompass approximately 152 gross acres consisting of 283,624 square feet of office use, 312,750 square feet of retail use, 121,125 square feet of warehousing use, a hotel consisting of 800 rooms and 455 residential dwelling units.

CivTech Inc. has been retained by John F. Long Family Revocable Trust to perform the traffic impact analysis (TIA) for the proposed Aldea Centre development during the planning process to determine necessary roadway improvements for the successful completion of the project. This TIA has been prepared per the requirements of both the City of Phoenix and the City of Glendale based on project specific scoping meetings. The specific objectives of the study are:

1. To evaluate lane requirements on all existing roadways and at all existing intersections within the study area.
2. To determine future level of service for all proposed major intersections along 99th Avenue within the study area and recommend any capacity related improvements.
3. To determine necessary lane configurations at all major intersections within the proposed development to provide acceptable future levels of service.
4. To evaluate the need for future traffic control changes within the proposed development.
5. To evaluate entry spacing along access controlled corridors.
6. To evaluate the need for auxiliary lanes at stop and signal controlled intersections.
7. To evaluate the operation of the internal intersection connecting with collector roadways.
8. To determine the likelihood that vehicles will use existing neighborhood streets (101st Avenue and 103rd Avenue) and provide recommendations for traffic calming, if necessary.

This study evaluates three horizon years: 2010, 2015 and 2032. It is assumed that full build-out of the Aldea Centre will occur during the 2032 horizon year.

Conclusions and Recommendations

General

- ◆ The intersection of 99th Avenue and Glendale Avenue operates acceptably in the existing condition (2009) at an overall level of service C in the AM peak hour and B in the PM peak hour.
- ◆ The Loop 101 at Bethany Home Road currently operates as a full-diamond interchange and at acceptable levels of service during the existing AM and PM peak hours.
- ◆ The intersection of 99th Avenue and Camelback Road operates acceptably in the existing condition at overall levels of service C and B in the AM and PM peak hours, respectively.
- ◆ Maryland Avenue and Bethany Home Road currently do not continue to the west of 99th Avenue. For purposes of this study, it was assumed that Maryland Avenue and Bethany Home Road would be constructed to the west of 99th Avenue in the 2010 horizon year. Bethany Home Road would terminate within the Aldea Centre development.
- ◆ For purposes of this study, it was assumed that Bethany Home Road will extend to the east of 91st Avenue. It is understood that this condition is only an assumption and may change in the future.
- ◆ For purposes of this study, it was assumed that the Main Street development would be proportionally built out for each horizon year.
- ◆ CivTech obtained a draft copy of the traffic impact analyses for the Glendale Corporate Center, the Cornerstone at Camelback and the CBD 101, all adjacent in proximity to the Aldea Centre site. The site traffic from each was incorporated into the Aldea Centre traffic model based on updated build-out assumptions. The site generated traffic volumes for the Cornerstone at Camelback were utilized since the counts along 99th Avenue were completed prior to its construction.
- ◆ The Glendale Corporate Center was assumed as fully occupied by the opening year of the Aldea Centre.
- ◆ The internal roadway network to the Aldea site promotes pedestrian activity due to the proposed design of the traffic circles, the on street parking and the interruption of continuous vehicular flow throughout the site. All of this is accomplished while providing adequate capacity for site generated traffic.

Trip Generation

- ◆ A total of 900 daily trips will be generated by the first phase of the Aldea Centre. Of these, 110 trips will occur during the AM peak hour while 129 trips will occur during the PM peak hour. Phase I is anticipated to begin construction in 2010.
- ◆ During the 2015 horizon year the Aldea Centre is anticipated to generate 15,382 daily external trips. Of those, 709 trips will occur during the AM peak hour while 1,463 will occur during the PM peak hour.
- ◆ A total of 19,236 daily external trips are anticipated with the build-out of the Aldea Centre. The AM and PM peak hours are expected to generate 1,098 and 1,884 trips, respectively.

2010

- ◆ 99th Avenue will operate acceptably in the 2010 opening year with the existing two lanes in each direction of travel.
- ◆ All intersections are projected to operate with overall acceptable levels of service (LOS D or better) during both peak hours utilizing the lane configuration and stop controls illustrated in **Figure 15** with the exception of 101st Avenue and Camelback Road, which is projected to operate with poor levels of service with the addition of the site. This is common of driveways, local and collector stop controlled intersections with major arterial roadways in which the side street or driveway traffic experience delay due to the traffic on the major arterial.
- ◆ With appropriate timing of the traffic signals at 99th Avenue and 103rd Avenue, it is believed that acceptable gaps will be formed and will allow traffic exiting from 101st Avenue to enter Camelback Road. Traffic evaluation software does not accurately reflect the gaps that will be experienced.
- ◆ The poor level of service at the 101st Avenue and Camelback Road intersection is due to the large through volumes along Camelback Road. Access to 101st Avenue is not available as part of Phase I of the Aldea Centre; therefore no cut-through traffic is anticipated through the neighborhoods of D-C Ranch.
- ◆ It is anticipated that Missouri Avenue will come on-line in the horizon year 2010 as part of both the Aldea Centre and Bella Villagio developments. It is recommended that the eastbound approach at 99th Avenue and Missouri Avenue provide a dedicated left-turn lane and a shared through-right turn lane. Signalization is not warranted in 2010 as very little site traffic from Aldea's Phase 1 is anticipated to utilize Missouri for access. The westbound approach is anticipated to provide dual left-turn lanes and a shared through-right turn lane as part of the Bella Villagio development. Both northbound and southbound approaches are recommended to provide dedicated left and right turn lanes to meet future traffic demand.

- ◆ The west leg of the intersection of 99th Avenue and Maryland Avenue is recommended to have a dedicated left turn lane and a shared through-right turn lane by horizon year 2010 to accommodate the anticipated traffic volumes generated from Main Street. In addition, a dedicated northbound left-turn lane is recommended. These improvements are not necessary without development of the Main Street parcel and may be postponed until they are warranted.
- ◆ It is recommended that a third through lane in the eastbound and westbound direction be added to Camelback Road at 99th Avenue. The background volumes support the need for the additional lanes. A westbound right turn lane is also recommended to provide capacity for the background traffic volumes. This capacity related improvement is required without the addition of the Aldea Centre.
- ◆ It is recommended that a third through lane in the eastbound and westbound direction be added to Camelback Road at the Loop 101. The background volumes support the need for the additional lanes. This capacity related improvement is required without the addition of the Aldea Centre.
- ◆ It is recommended that a second southbound right-turn lane be installed at the Glendale Avenue and Loop 101 SPUI. The background traffic volumes warrant the addition of the second lane which provides the needed capacity.
- ◆ It is recommended that the eastbound approach at the intersection of 99th Avenue and Montebello Avenue provide for a dedicated left-turn lane and a dedicated right-turn lane. A southbound right turn lane and a dedicated northbound left turn lane into the Aldea Centre site are also recommended. This intersection operates with acceptable levels of service as a stop controlled intersection with the stop control on the west leg.
- ◆ It is recommended that the intersections of Access B and Access C with 99th Avenue be restricted to right-in/right-out only intersections. Southbound right-turn deceleration lanes are not recommended at the access points in horizon year 2010.

2015

- ◆ 99th Avenue will operate acceptably in the 2015 horizon year with the existing two lanes in each direction of travel.
- ◆ All intersections are projected to operate with overall acceptable levels of service (LOS D or better) during both peak hours utilizing the lane configuration and stop controls illustrated in **Figure 16** with the exceptions of the intersection of 101st Avenue and Camelback Road and the intersection of Loop 101 and Camelback Road.

- ◆ The intersection of 101st Avenue and Camelback Road is projected to operate with poor levels of service during both peak hours. This is due to the southbound left turns from 101st Avenue to Camelback Road and the high through volumes along Camelback Road. This is common of driveways, local and collector stop controlled intersections with major arterial roadways in which the side street or driveway traffic experience delay due to the traffic on the major arterial.
- ◆ With appropriate timing of the traffic signals at 99th Avenue and 103rd Avenue, it is believed that acceptable gaps will be formed and will allow traffic exiting from 101st Avenue to enter Camelback Road.
- ◆ Access to 101st Avenue, 103rd Avenue and 105th Avenue are available as part of the 2015 horizon year. The intersections of 101st Avenue and 103rd Avenue with Missouri Avenue are projected to operate with an overall LOS A.
- ◆ The intersections of 103rd Avenue and 105th Avenue with Camelback Road are projected to operate with an overall LOS B or better during both peak hours.
- ◆ During a peak hour in 2015, it is estimated that approximately 12 percent of the total traffic generated by the Aldea Centre (173 vehicles) will utilize 101st Avenue and 103rd Avenue to obtain access to Camelback Road. Traffic mitigation measures that could reduce the number of trips utilizing existing neighborhood streets and slow speeds would include signage to divert truck traffic, or the installation of speed humps, bumps, or raised intersections.
- ◆ It is recommended that a third through lane in the eastbound and westbound direction be installed on Glendale Avenue at 99th Avenue due to background traffic projections. In addition, the background traffic volumes warrant a second westbound left-turn lane. This capacity related improvement is required without the addition of the Aldea Centre.
- ◆ As part of the Aldea Centre development, the west leg of 99th Avenue and Bethany Home Road will be installed and operational. As such, the westbound approach is recommended to contain one dedicated left-turn lane and a shared through-right turn lane. The northbound approach is recommended to have a dedicated left-turn lane. The southbound approach is recommended to have a dedicated right-turn lane. The southern most westbound right turn lane is recommended to be restriped to allow for a shared through-right turn lane. No additional lanes are recommended to the east leg.
- ◆ Dual left-turn lanes are recommended for the northbound and southbound approaches at the intersection of 99th Avenue and Camelback Road.
- ◆ Signalization of the 99th Avenue/Missouri Avenue intersections is anticipated with Phase II of the Aldea Centre. Lane configurations recommended for the opening year should support the traffic demand in the 2015 horizon year without the need for additional improvements.

- ◆ The intersection of 101st Avenue and Missouri Avenue will become a four legged intersection as by the horizon year 2015 as part of the Aldea Centre development. As such, it is recommended that the eastbound and westbound approaches provide stop control. In addition, it is recommended that all approaches provide for dedicated left turn lanes and shared through-right turn lanes.
- ◆ 99th Avenue and Access A is recommended to be a restricted right-in/right-out access. In addition, it is recommended that a southbound right turn lane be installed.
- ◆ The intersection of 99th Avenue and Montebello Avenue is recommended to be signalized by horizon year 2015 with the addition of the Aldea Centre development and the Bella Villagio development to the east of 99th Avenue. The westbound approach is anticipated to provide dual left turn lanes and a shared through-right turn lane. The northbound approach is anticipated to provide a dedicated right-turn lane, and the southbound approach is anticipated to provide a dedicated left-turn lane as part of the Bella Villagio development.

2032

- ◆ 99th Avenue is recommended to be built-out with three lanes per direction by the 2032 horizon year. Therefore, all intersections along 99th Avenue are recommended to contain three through lanes per direction.
- ◆ All intersections are projected to operate with overall acceptable levels of service (LOS D or better) during both peak hours utilizing the lane configuration and stop controls illustrated in **Figure 16** with the exception of the intersections at 99th Avenue and Camelback Road, 99th Avenue and Access D, and 101st Avenue and Camelback Road.
- ◆ The intersection of 99th Avenue and Camelback Road is expected to operate with poor levels of service in the 2032 horizon year. Mitigation recommended includes dual left-turn lanes in all directions and the addition of a third through lane at all approaches. Per correspondence with the City of Glendale, a third through lane on Camelback Road is recommended; however appropriate tapers would be required to tie in with the existing four-lane roadway west of 99th Avenue. It is recommended that the signal timing be monitored at this intersection to assist with the Camelback Road corridor progression. This will assist the levels of service as the through volumes along Camelback Road are relatively high.

- ◆ The intersection of 99th Avenue and Access D is projected to operate with poor levels of service due to the westbound left turns. The westbound left turns occur as part of the Glendale Corporate Center development, which is located east of 99th Avenue and south of Missouri Avenue. This is common of driveways, local and collector stop controlled intersections with major arterial roadways in which the side street or driveway traffic experience delay due to the traffic on the major arterial. With appropriate timing of the traffic signals at Missouri Avenue and Camelback Road, acceptable gaps will be formed and will allow traffic exiting from Access D to enter 99th Avenue.
- ◆ The intersection at Loop 101 and Camelback Road was mitigated to provide dual right turn lanes from the off-ramps to Camelback Road. There appears to be sufficient right-of-way to allow for these recommendations and as such will improve the levels of service from a LOS E to the LOS D shown in **Table 13**.
- ◆ The intersection of 101st Avenue and Camelback Road is projected to operate with poor levels of service during both peak hours with and without the Aldea Centre site traffic. This is due to the southbound left turns from 101st Avenue to Camelback Road and the high through volumes along Camelback Road. This is common of driveways, local and collector stop controlled intersections with major arterial roadways in which the side street or driveway traffic experience delay due to the traffic on the major arterial. With appropriate timing of the traffic signals at 99th Avenue and 103rd Avenue, it is believed that acceptable gaps will be formed and will allow traffic exiting from 101st Avenue to enter Camelback Road.
- ◆ Access to 101st Avenue, 103rd Avenue and 105th Avenue are available as part of the 2032 horizon year. The intersections of 101st Avenue and 103rd Avenue with Missouri Avenue are projected to operate with an overall LOS A.
- ◆ The intersections of 103rd Avenue and 105th Avenue with Camelback Road are projected to operate with an overall LOS B or better during both peak hours.
- ◆ During a peak hour in 2032, it is estimated that approximately 16 percent of the total traffic generated by the Aldea Centre (273 vehicles) will utilize 101st Avenue and 103rd Avenue to obtain access to Camelback Road. Traffic mitigation measures that could reduce the number of trips utilizing existing neighborhood streets and slow speeds would include signage to divert truck traffic, or the installation of speed humps, bumps, or raised intersections.

CONCLUSIONS AND RECOMMENDATIONS

The following conclusions and recommendations have been documented in the report:

General

- ◆ The intersection of 99th Avenue and Glendale Avenue operates acceptably in the existing condition (2009) at an overall level of service C in the AM peak hour and B in the PM peak hour.
- ◆ The Loop 101 at Bethany Home Road currently operates as a full-diamond interchange and at acceptable levels of service during the existing AM and PM peak hours.
- ◆ The intersection of 99th Avenue and Camelback Road operates acceptably in the existing condition at overall levels of service C and B in the AM and PM peak hours, respectively.
- ◆ Maryland Avenue and Bethany Home Road currently do not continue to the west of 99th Avenue. For purposes of this study, it was assumed that Maryland Avenue and Bethany Home Road would be constructed to the west of 99th Avenue in the 2010 horizon year. Bethany Home Road would terminate within the Aldea Centre development.
- ◆ For purposes of this study, it was assumed that Bethany Home Road will extend to the east of 91st Avenue. It is understood that this condition is only an assumption and may change in the future.
- ◆ For purposes of this study, it was assumed that the Main Street development would be proportionally built out for each horizon year.
- ◆ CivTech obtained a draft copy of the traffic impact analyses for the Glendale Corporate Center, the Cornerstone at Camelback and the CBD 101, all adjacent in proximity to the Aldea Centre site. The site traffic from each was incorporated into the Aldea Centre traffic model based on updated build-out assumptions. The site generated traffic volumes for the Cornerstone at Camelback were utilized since the counts along 99th Avenue were completed prior to its construction.
- ◆ The Glendale Corporate Center was assumed as fully occupied by the opening year of the Aldea Centre.
- ◆ The internal roadway network to the Aldea site promotes pedestrian activity due to the proposed design of the traffic circles, the on street parking and the interruption of continuous vehicular flow throughout the site. All of this is accomplished while providing adequate capacity for site generated traffic.

Trip Generation

- ◆ A total of 900 daily trips will be generated by the first phase of the Aldea Centre. Of these, 110 trips will occur during the AM peak hour while 129 trips will occur during the PM peak hour. Phase I is anticipated to begin construction in 2010.
- ◆ During the 2015 horizon year the Aldea Centre is anticipated to generate 15,382 daily external trips. Of those, 709 trips will occur during the AM peak hour while 1,463 will occur during the PM peak hour.
- ◆ A total of 19,236 daily external trips are anticipated with the build-out of the Aldea Centre. The AM and PM peak hours are expected to generate 1,098 and 1,884 trips, respectively.

2010

- ◆ 99th Avenue will operate acceptably in the 2010 opening year with the existing two lanes in each direction of travel.
- ◆ All intersections are projected to operate with overall acceptable levels of service (LOS D or better) during both peak hours utilizing the lane configuration and stop controls illustrated in **Figure 15** with the exception of 101st Avenue and Camelback Road, which is projected to operate with poor levels of service with the addition of the site. This is common of driveways, local and collector stop controlled intersections with major arterial roadways in which the side street or driveway traffic experience delay due to the traffic on the major arterial.
- ◆ With appropriate timing of the traffic signals at 99th Avenue and 103rd Avenue, it is believed that acceptable gaps will be formed and will allow traffic exiting from 101st Avenue to enter Camelback Road. Traffic evaluation software does not accurately reflect the gaps that will be experienced.
- ◆ The poor level of service at the 101st Avenue and Camelback Road intersection is due to the large through volumes along Camelback Road. Access to 101st Avenue is not available as part of Phase I of the Aldea Centre; therefore no cut-through traffic is anticipated through the neighborhoods of D-C Ranch.
- ◆ It is anticipated that Missouri Avenue will come on-line in the horizon year 2010 as part of both the Aldea Centre and Bella Villagio developments. It is recommended that the eastbound approach at 99th Avenue and Missouri Avenue provide a dedicated left-turn lane and a shared through-right turn lane. Signalization is not warranted in 2010 as very little site traffic from Aldea's Phase 1 is anticipated to utilize Missouri for access. The westbound approach is anticipated to provide dual left-turn lanes and a shared through-right turn lane as part of the Bella Villagio development. Both northbound and southbound approaches are recommended to provide dedicated left and right turn lanes to meet future traffic demand.

- ◆ The west leg of the intersection of 99th Avenue and Maryland Avenue is recommended to have a dedicated left turn lane and a shared through-right turn lane by horizon year 2010 to accommodate the anticipated traffic volumes generated from Main Street. In addition, a dedicated northbound left-turn lane is recommended. These improvements are not necessary without development of the Main Street parcel and may be postponed until they are warranted.
- ◆ It is recommended that a third through lane in the eastbound and westbound direction be added to Camelback Road at 99th Avenue. The background volumes support the need for the additional lanes. A westbound right turn lane is also recommended to provide capacity for the background traffic volumes. This capacity related improvement is required without the addition of the Aldea Centre.
- ◆ It is recommended that a third through lane in the eastbound and westbound direction be added to Camelback Road at the Loop 101. The background volumes support the need for the additional lanes. This capacity related improvement is required without the addition of the Aldea Centre.
- ◆ It is recommended that a second southbound right-turn lane be installed at the Glendale Avenue and Loop 101 SPUI. The background traffic volumes warrant the addition of the second lane which provides the needed capacity.
- ◆ It is recommended that the eastbound approach at the intersection of 99th Avenue and Montebello Avenue provide for a dedicated left-turn lane and a dedicated right-turn lane. A southbound right turn lane and a dedicated northbound left turn lane into the Aldea Centre site are also recommended. This intersection operates with acceptable levels of service as a stop controlled intersection with the stop control on the west leg.
- ◆ It is recommended that the intersections of Access B and Access C with 99th Avenue be restricted to right-in/right-out only intersections. Southbound right-turn deceleration lanes are not recommended at the access points in horizon year 2010.

2015

- ◆ 99th Avenue will operate acceptably in the 2015 horizon year with the existing two lanes in each direction of travel.
- ◆ All intersections are projected to operate with overall acceptable levels of service (LOS D or better) during both peak hours utilizing the lane configuration and stop controls illustrated in **Figure 16** with the exceptions of the intersection of 101st Avenue and Camelback Road and the intersection of Loop 101 and Camelback Road.

- ◆ The intersection of 101st Avenue and Camelback Road is projected to operate with poor levels of service during both peak hours. This is due to the southbound left turns from 101st Avenue to Camelback Road and the high through volumes along Camelback Road. This is common of driveways, local and collector stop controlled intersections with major arterial roadways in which the side street or driveway traffic experience delay due to the traffic on the major arterial.
- ◆ With appropriate timing of the traffic signals at 99th Avenue and 103rd Avenue, it is believed that acceptable gaps will be formed and will allow traffic exiting from 101st Avenue to enter Camelback Road.
- ◆ Access to 101st Avenue, 103rd Avenue and 105th Avenue are available as part of the 2015 horizon year. The intersections of 101st Avenue and 103rd Avenue with Missouri Avenue are projected to operate with an overall LOS A.
- ◆ The intersections of 103rd Avenue and 105th Avenue with Camelback Road are projected to operate with an overall LOS B or better during both peak hours.
- ◆ During a peak hour in 2015, it is estimated that approximately 12 percent of the total traffic generated by the Aldea Centre (173 vehicles) will utilize 101st Avenue and 103rd Avenue to obtain access to Camelback Road. Traffic mitigation measures that could reduce the number of trips utilizing existing neighborhood streets and slow speeds would include signage to divert truck traffic, or the installation of speed humps, bumps, or raised intersections.
- ◆ It is recommended that a third through lane in the eastbound and westbound direction be installed on Glendale Avenue at 99th Avenue due to background traffic projections. In addition, the background traffic volumes warrant a second westbound left-turn lane. This capacity related improvement is required without the addition of the Aldea Centre.
- ◆ As part of the Aldea Centre development, the west leg of 99th Avenue and Bethany Home Road will be installed and operational. As such, the westbound approach is recommended to contain one dedicated left-turn lane and a shared through-right turn lane. The northbound approach is recommended to have a dedicated left-turn lane. The southbound approach is recommended to have a dedicated right-turn lane. The southern most westbound right turn lane is recommended to be restriped to allow for a shared through-right turn lane. No additional lanes are recommended to the east leg.
- ◆ Dual left-turn lanes are recommended for the northbound and southbound approaches at the intersection of 99th Avenue and Camelback Road.
- ◆ Signalization of the 99th Avenue/Missouri Avenue intersections is anticipated with Phase II of the Aldea Centre. Lane configurations recommended for the opening year should support the traffic demand in the 2015 horizon year without the need for additional improvements.

- ◆ The intersection of 101st Avenue and Missouri Avenue will become a four legged intersection as by the horizon year 2015 as part of the Aldea Centre development. As such, it is recommended that the eastbound and westbound approaches provide stop control. In addition, it is recommended that all approaches provide for dedicated left turn lanes and shared through-right turn lanes.
- ◆ 99th Avenue and Access A is recommended to be a restricted right-in/right-out access. In addition, it is recommended that a southbound right turn lane be installed.
- ◆ The intersection of 99th Avenue and Montebello Avenue is recommended to be signalized by horizon year 2015 with the addition of the Aldea Centre development and the Bella Villagio development to the east of 99th Avenue. The westbound approach is anticipated to provide dual left turn lanes and a shared through-right turn lane. The northbound approach is anticipated to provide a dedicated right-turn lane, and the southbound approach is anticipated to provide a dedicated left-turn lane as part of the Bella Villagio development.

2032

- ◆ 99th Avenue is recommended to be built-out with three lanes per direction by the 2032 horizon year. Therefore, all intersections along 99th Avenue are recommended to contain three through lanes per direction.
- ◆ All intersections are projected to operate with overall acceptable levels of service (LOS D or better) during both peak hours utilizing the lane configuration and stop controls illustrated in **Figure 16** with the exception of the intersections at 99th Avenue and Camelback Road, 99th Avenue and Access D, and 101st Avenue and Camelback Road.
- ◆ The intersection of 99th Avenue and Camelback Road is expected to operate with poor levels of service in the 2032 horizon year. Mitigation recommended includes dual left-turn lanes in all directions and the addition of a third through lane at all approaches. Per correspondence with the City of Glendale, a third through lane on Camelback Road is recommended; however appropriate tapers would be required to tie in with the existing four-lane roadway west of 99th Avenue. It is recommended that the signal timing be monitored at this intersection to assist with the Camelback Road corridor progression. This will assist the levels of service as the through volumes along Camelback Road are relatively high.

- ◆ The intersection of 99th Avenue and Access D is projected to operate with poor levels of service due to the westbound left turns. The westbound left turns occur as part of the Glendale Corporate Center development, which is located east of 99th Avenue and south of Missouri Avenue. This is common of driveways, local and collector stop controlled intersections with major arterial roadways in which the side street or driveway traffic experience delay due to the traffic on the major arterial. With appropriate timing of the traffic signals at Missouri Avenue and Camelback Road, acceptable gaps will be formed and will allow traffic exiting from Access D to enter 99th Avenue.
- ◆ The intersection at Loop 101 and Camelback Road was mitigated to provide dual right turn lanes from the off-ramps to Camelback Road. There appears to be sufficient right-of-way to allow for these recommendations and as such will improve the levels of service from a LOS E to the LOS D shown in **Table 13**.
- ◆ The intersection of 101st Avenue and Camelback Road is projected to operate with poor levels of service during both peak hours with and without the Aldea Centre site traffic. This is due to the southbound left turns from 101st Avenue to Camelback Road and the high through volumes along Camelback Road. This is common of driveways, local and collector stop controlled intersections with major arterial roadways in which the side street or driveway traffic experience delay due to the traffic on the major arterial. With appropriate timing of the traffic signals at 99th Avenue and 103rd Avenue, it is believed that acceptable gaps will be formed and will allow traffic exiting from 101st Avenue to enter Camelback Road.
- ◆ Access to 101st Avenue, 103rd Avenue and 105th Avenue are available as part of the 2032 horizon year. The intersections of 101st Avenue and 103rd Avenue with Missouri Avenue are projected to operate with an overall LOS A.
- ◆ The intersections of 103rd Avenue and 105th Avenue with Camelback Road are projected to operate with an overall LOS B or better during both peak hours.
- ◆ During a peak hour in 2032, it is estimated that approximately 16 percent of the total traffic generated by the Aldea Centre (273 vehicles) will utilize 101st Avenue and 103rd Avenue to obtain access to Camelback Road. Traffic mitigation measures that could reduce the number of trips utilizing existing neighborhood streets and slow speeds would include signage to divert truck traffic, or the installation of speed humps, bumps, or raised intersections.