BANNER HEALTH CENTER PLUS SCOTTSDALE

Traffic Impact and Mitigation Analysis

Prepared For: Banner Health

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Project No.: 1121151

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DIBBLE

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I. EXECUTIVE SUMMARY AND INTRODUCTION

A. Purpose of Report

The purpose of this Traffic Impact and Mitigation Analysis ("Report") is to evaluate the traffic impacts of a proposed joint Banner Health and NexCore Medical Office Building, Banner Health Center Plus ("MOB+") proposed on approximately 14.8 acres located just west of the northwest corner of Mayo Boulevard and Hayden Road (the "MOB+ Site"). The MOB+ Site constitutes a portion of a larger scale development planned for approximately 73.2 acres located at the northwest corner of Mayo Boulevard & Hayden Road in Scottsdale, Arizona ("Overall Site"). The MOB+ is designated as a critical care facility and is allowed by right within the existing Crossroads East C-2 PAD zoning. The opening year was assumed to be 2026 for the purposes of this Report. The City of Scottsdale has requested a Category II Traffic Impact and Mitigation Analysis for the MOB+ development to determine the offsite infrastructure needs for the MOB+ Site and to determine if and when traffic signals will be warranted for the MOB+ Site and during the development of the larger medical campus planned but not yet approved for the Overall Site. A Traffic Impact & Mitigation Analysis for the Overall Site was prepared by Kimley Horn & Associates and accepted by the City on June 14, 2023, and is included in **Appendix E** of this Report ("Kimley-Horn TIMA"). In the Kimley-Horn study, approximately 48 acres of the Overall Site were assumed to be developed for medical uses. The 14.2 acre MOB+ facility is a portion of the larger planned medical uses. Although this Report focuses on the MOB+, the future plans for the Overall Site are accounted for in the background traffic for a future horizon year (2040). This was done to evaluate the full buildout offsite transportation infrastructure needs, which will allow the improvements to efficiently be built with the construction of Mayo Boulevard and Miller Road along the frontage of the Overall Site.

B. Executive Summary

Site Location and Study Area

The MOB+ Site is located within the City of Scottsdale, west of Hayden Road between Loop 101 and Mayo Boulevard. This Report includes the analysis of the following intersections:

- Mayo Boulevard & 78th Street
- Hayden Road & Mayo Boulevard
- Mayo Boulevard & Miller Road
- Five access points to the medical campus

Development Description

The proposed 119,500 SF MOB+ will be developed in one phase. There is potential for a larger medical campus in the future as a part of development planned for the Overall Site. The planning level numbers from the Kimley Horn TIMA were used for the Overall Site and included as a part of the background traffic for the purposes of this Report.

Principal Findings

At full buildout of the MOB+, it is anticipated that multiple off-site improvements will be completed by the master developer of the Overall Site, including installing a traffic signal at Mayo Boulevard & Hayden Road, and at Mayo Boulevard & Miller Road. The signal at Mayo Boulevard & Hayden Road may not be installed prior to the completion of the MOB+ or, potentially, the remainder of the Overall Site. The peak hour (warrant 3) signal warrant was therefore analyzed for two scenarios.

- Scenario 1: Full buildout of the MOB+ only by 2026
- Scenario 2: Full buildout of the Overall Site by 2040 **without** the Axon development (as discussed further below)

The results of the signal warrant analysis are summarized in **Table 1**.

Table 1 –Signal Warrant Results

Intersection	Scenario	
	MOB+ Only 2026	NWC Development 2040 w/o Axon
Mayo Blvd & Miller Rd	No	Yes (Both Peaks)
Mayo Blvd & 78th St	No	Yes (Both Peaks)
Mayo Blvd & Hayden Road	Yes (PM Peak)	Yes (Both Peaks)

Development of the MOB+ Site is not anticipated to create excessive delays at the surrounding intersections. With the current site plan and recommended site access, the adjacent intersections and site driveways are anticipated to operate acceptably for the opening day of the MOB+ as well as the full buildout of the Overall Site with full access provided at driveways B, C and D as well as 78th Street and Mayo.

Recommendations

Based on the analysis of this Report there are several recommendations for the Overall Site driveways and adjacent intersections by opening day of the MOB+ that also take into consideration the additional future development surrounding the Overall Site. The recommendations are in alignment with the approved Kimley Horn TIMA.

Overall, it is recommended to provide a right turn lane for driveways A, B, C, D, E, and at 78th Street into the Overall Site. Per City of Scottsdale Design Standards & Policies Manual, the standard storage length for a right-turn lane is 150 feet as indicated in **Table 13**.

Additional recommendations for specific driveways and adjacent intersections are as follows:

Hayden Road & Driveway E

With a dedicated southbound right turn lane at Hayden Road & Driveway E, the queue length is not anticipated to extend beyond the boundary of the right turn lane. Therefore, the queue is not anticipated to have a negative impact on the operation of the Loop 101 and Hayden interchange.

Mayo Boulevard & 78th Street

A signal is not warranted from both a vehicle capacity and delay perspective for opening day of the MOB+. A signal is warranted in the future as the Overall Site is developed. It is recommended to install signal pull boxes on all four corners of Mayo Boulevard and 78th Street as well as signal conduit connections between the pull boxes for a future traffic signal for opening day of the MOB+. With the construction of the MOB+, the intersection operates at an acceptable level of service with two-way stop control and Mayo Boulevard traffic free flowing.

Mayo Boulevard & Hayden Road

Provide a southbound right turn lane at the intersection, which is already planned. Additionally, if the Axon development is delayed and the signal is not installed by the completion of the MOB+, a signal will be warranted at the intersection by opening day of the MOB+.

Mayo Boulevard & Miller Road

A signal is not warranted at this intersection from both a vehicle capacity and delay perspective for opening day of the MOB+. A roundabout is planned for this intersection with future development as the right-of-

way becomes available. If a round-about is ruled out in the future, a signal will be warranted in the future scenarios with the further development of the Overall Site. With the construction of the MOB+, the intersection operates at an acceptable level of service with two-way stop control and Mayo Boulevard traffic free flowing.

Recommended turn lane storage lengths for all new intersections and turn lanes are given in **Table 13** – **Table 14**.

II. PROPOSED DEVELOPMENT

A. Off-Site Development

In addition to the development planned for the Overall Site, there are several other off-site developments planned in the area. The Kimley Horn TIMA for the Overall Site includes planning level traffic assumptions for the Overall Site that included a planned medical campus as well as other proposed land uses such as office, retail and hotels. The Kimley Horn TIMA can be found in **Appendix E**. The Kimley-Horn TIMA also incorporates additional planned developments within the area such as Cavasson, HonorHealth Medical Campus, Axon Campus and Optima McDowell Mountain Village into the background traffic. The independent traffic studies for each of those developments was used to generate the background traffic numbers. Those same assumptions were utilized in this Report. At the time of this Report, it is unknown if or when the Axon development will be constructed. A traffic signal at Mayo Boulevard and Hayden Road was planned as a part of the Axon development. If the Axon development is delayed or is no longer built on the east side of the intersection of Mayo Boulevard and Hayden Road, the traffic signal will still be needed for the MOB+, the Overall Site and other developments in the area. This Report therefore, evaluates the need for a traffic signal at this intersection with the completion of the MOB+. Kimley Horn also provided Dibble with their total 2040 traffic numbers for the surrounding intersections that excluded the Banner Health traffic. The traffic numbers also included all the previously mentioned proposed developments in the area. These traffic numbers can be found in **Appendix D**.

B. Description of on-site Development

Land Use and Intensity

This MOB+ Site is planned to be developed with a medical office building comprised of 119,500 SF of building space. For the purposes of this Report, a future (not currently planned) 48,700 SF expansion of the MOB+ was assumed for a total of 168,200 SF on the MOB+ Site.

Location

The proposed MOB+ development is located within the City of Scottsdale, west of Hayden Road between Loop 101 and Mayo Boulevard. This location is shown in **Figure 1**.

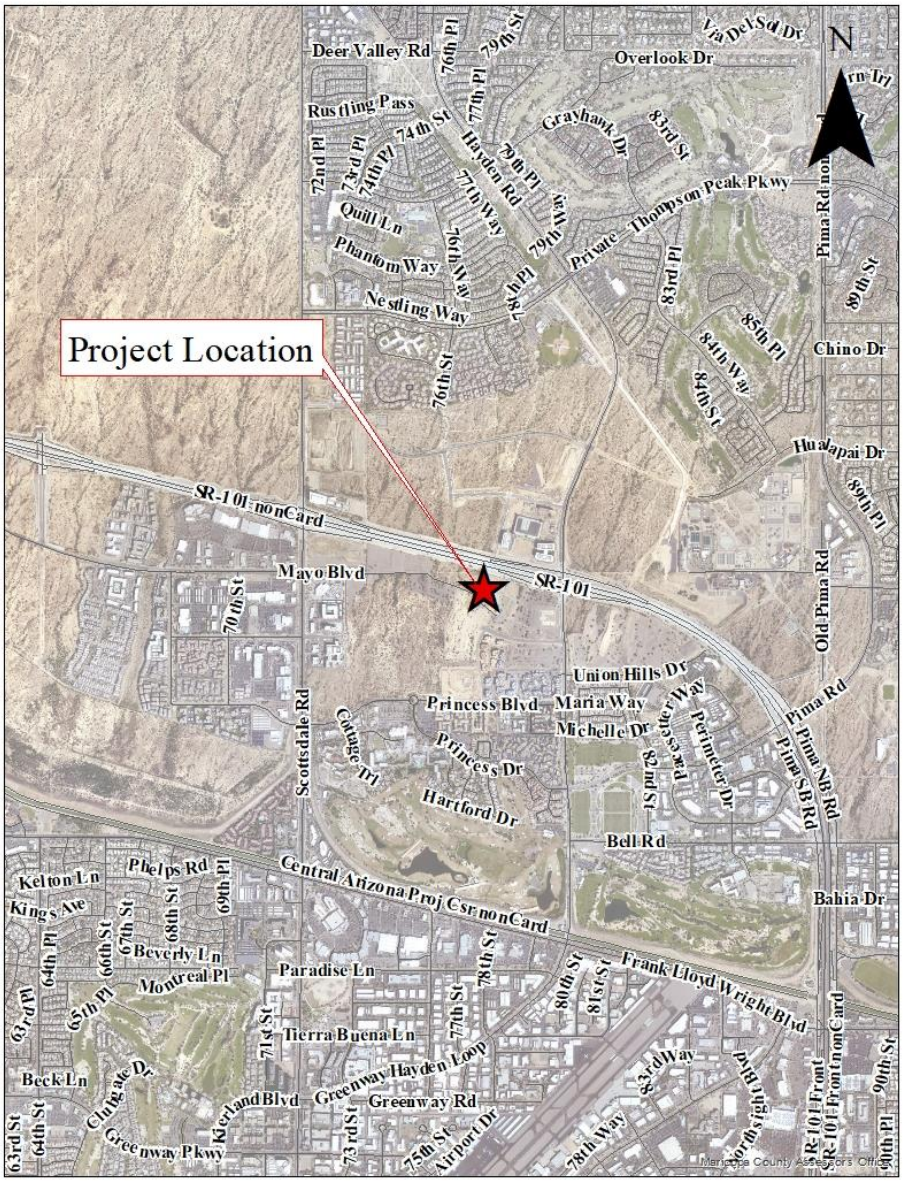

Figure 1 – Vicinity Map

Site Plan

The Overall Site is planned to have seven driveways to access the Overall Site. One driveway is planned to provide full access on Miller Road (Driveway A). Four access points are initially modeled to provide full access on Mayo Boulevard (Driveways B-D and 78th Street). The sixth proposed access point (Driveway E) is on Hayden Road to provide more direct access from the freeway. Driveway E will be a right-in only access point due to the proximity to the Loop 101 ramps as well as the Mayo Boulevard and Hayden Road intersection to prevent unsafe weaving traffic exiting the site. The proposed driveways are shown in **Figure 2** followed by the current site plan in **Figure 3**.

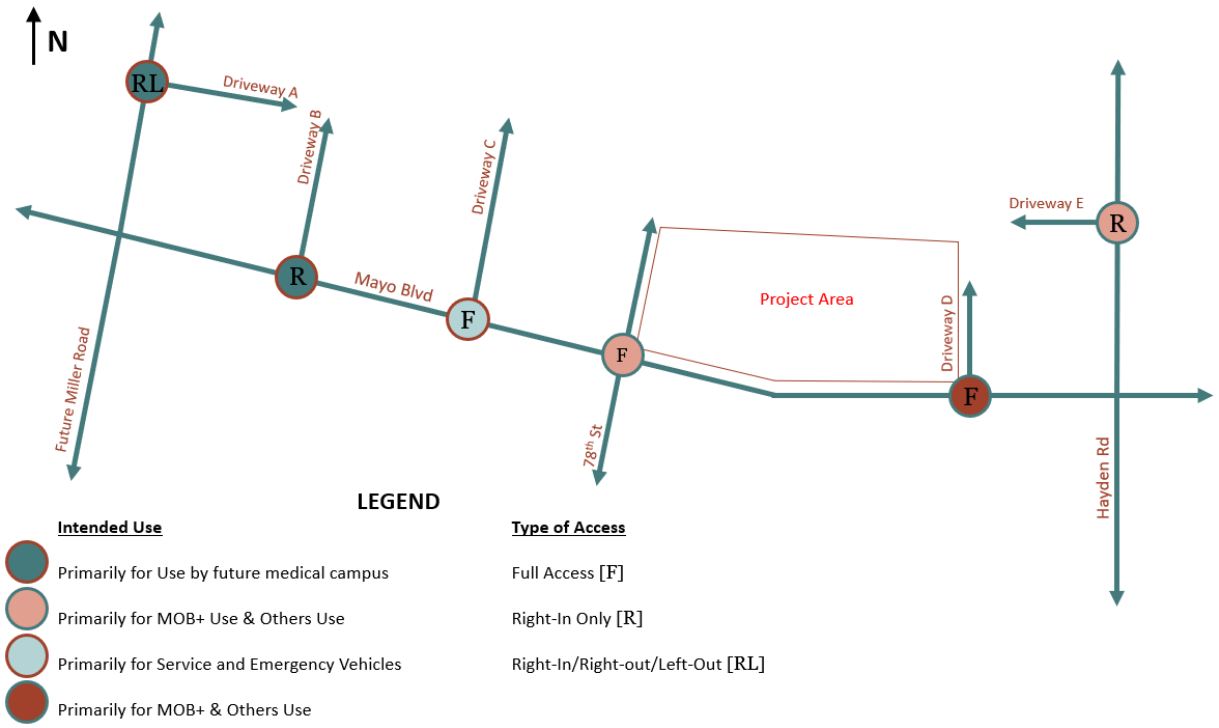

Figure 2 – Overall Site Access

Figure 3 – MOB+ Site Plan

Phasing and Timing

The MOB+ will be developed in one phase. The remainder of the medical campus development on the Overall Site will be developed at a later date. Conservative planning level numbers from the Kimley Horn TIMA are used for the future medical campus development and included as a part of the background traffic for the purposes of this Report.

III. AREA CONDITIONS

A. Study Area

Area of Influence

The MOB+ Site is located within the City of Scottsdale, west of Hayden Road between Loop 101 and Mayo Boulevard. This MOB+ Site and the larger medical campus planned for a portion of the Overall Site are anticipated to serve the surrounding population. There are several smaller clinics as well as other hospitals within a 5-mile radius of this site. This was considered for the trip distribution for the MOB+ Site as well as the medical services provided at other locations.

Area of Significant Traffic Impact

The area with the most traffic impact due to the addition of the MOB+ and the larger medical campus planned for a portion of the Overall Site will occur along Loop 101, Hayden Road, Scottsdale Road, and Mayo Boulevard roadways. These are the major travel routes that vehicles will likely take to reach and leave the site.

This study focuses on the capacity analysis for the Overall Site driveways and the following surrounding intersections:

- Mayo Boulevard & 78th Street
- Hayden Road & Mayo Boulevard
- Mayo Boulevard & Miller Road
- Five additional access points to the Overall Site

B. Study Area Land Use

Existing Land Uses and Zoning

The MOB+ Site is currently zoned as Planned Community District-Central Business District (P-C C-2).

Anticipated Future Development

As previously mentioned, the Kimley Horn TIMA included development plans for a larger medical campus on the Overall Site. The planned developments analyzed in Kimley Horn TIMA include retail, senior living, office, hotel, and restaurant land uses. The trips generated by these developments in the Kimley Horn TIMA were used in this Report as background traffic. Surrounding offsite developments include the Axon development and the Optima McDowell Mountain development. The background traffic provided from the Kimley Horn TIMA can be found in **Appendix D**. It should be noted that the Axon development may be delayed or it may not be built. At the request of the City,his Report therefore reflects scenarios that include this development and as exclude this development.

C. Site Accessibility

Existing Roadway System

Roadway Segments

Hayden Road is currently a divided, four-lane, north-south minor arterial roadway. There are two northbound and two southbound lanes with a 40-mph posted speed limit in each direction and a raised median down the middle. There is curb and gutter on both sides of the road. There is a sidewalk with large gaps and a bike lane on the west side of the road with little sidewalk and no bike lane on the east side of the road. The east side of the road has a 5-foot-wide shoulder that tapers out as it nears the intersection with Loop 101.

Miller Road is not currently built but is anticipated to be a major collector. The future Miller Road alignment is expected to connect as the north leg of the Princess Boulevard & Princess Drive intersection then extend north under Loop 101 providing a grade separation. Miller Road is anticipated to be constructed as a 4-lane roadway with a two-way left-turn lane down the middle and a bike lane in each direction. It is assumed Miller Road will have a posted speed limit of 40 mph.

78th Street is currently a 2-lane divided road with a two-way left-turn lane down the middle classified by the City of Scottsdale as a minor collector. The road is built between Princess Boulevard and Mayo Boulevard. There is curb, gutter, and sidewalk on both sides of the road. There is also a bike lane and a posted speed limit of 30 mph in each direction.

Mayo Boulevard is currently a 2-lane divided road with a two-way left-turn lane down the middle classified by the City of Scottsdale as a major collector. The road is built between Hayden Road & 78th Street. There is currently curb and gutter on the south side of the road and bike lanes on both sides of the road. This road is expected to be extended to the west to connect with the Mayo Boulevard & Scottsdale Road intersection. There is a posted speed limit of 30 mph east of Scottsdale Road.

Intersections

Mayo Boulevard & 78th Street is currently a 2-way free-flowing intersection. This results in a curved roadway with a name transition between the two directions. This intersection is anticipated to be built out with the west leg being an extension of Mayo Boulevard and the south leg being stop-controlled.

Hayden Road & Mayo Boulevard is a 3-leg stop-controlled intersection with the west leg being stop controlled and the north and south legs being free-flow. There is one dedicated left turn lane (300' storage length) and one dedicated right turn lane (170' storage length) on the eastbound approach. There is one dedicated left turn lane (150' storage length) and two through lanes on the northbound approach. There are two through lanes on the southbound approach with a dedicated right turn lane (185' storage length).

Future Roadway System

There are a few improvements already planned for this area. It is anticipated that a third southbound through lane will extend south of the Loop 101 to the Mayo Boulevard intersection where the third through lane is anticipated to transition to a right-turn only lane. Mayo Boulevard is anticipated to be constructed with two travel lanes, a bike lane in each direction and a center two-way left turn lane between 73rd Place and Hayden Road. Miller Road is anticipated to be constructed with two travel lanes and a bike lane in each direction with a two-way left-turn lane.

There are also multiple proposed developments planned in the surrounding area that are anticipated to make improvements to the surrounding roadway network. The anticipated developments and the associated improvements with each one are listed below.

General Recommendations made in the Kimley Horn TIMA: The northbound approach at Hayden Road & Mayo Boulevard is to be remarked to provide dual northbound left lanes when this intersection becomes signalized. At Miller Road & Mayo Boulevard, the eastbound approach is to have dual left turn lanes with 400 feet of storage. The Miller Road & Mayo Boulevard intersection is recommended to have dedicated right and turn lanes with 250 feet for all approaches.

Axon Development: At Hayden Road & Mayo Boulevard, there should be a third northbound through lane that is expected to continue north to the Loop 101 WB Ramp & Scottsdale Road intersection. There should also be dual westbound right turn lanes at this intersection. Additionally, this development is anticipated to construct Mayo Boulevard east of Hayden Road with two travel lanes in each direction. It is also anticipated this development will construct a traffic signal at Mayo Boulevard and Hayden Road. If this development is delayed or it is not constructed, the traffic signal will still likely be warranted due to the other developments planned in the area.

Optima McDowell Mountain: A dedicated westbound right turn lane is anticipated to be built at Scottsdale Road & Mayo Boulevard. A third westbound lane along Mayo Boulevard is anticipated to be built along Optima McDowell Mountain's frontage. This will become a dedicated westbound right turn lane at Scottsdale Road & Mayo Boulevard.

It is assumed these roadway improvements are constructed and open for public use by 2040 since the City of Scottsdale Transportation Master Plan, 2016 mentions a few of these improvements are anticipated to be completed by 2030. This includes widening Hayden to a six-lane road in this area and constructing Mayo

Boulevard as a four-lane road in this area. For the purposes of this Report, the driveways are assumed to have a speed limit of 25 mph with two-lane roads at the driveway entrances.

Traffic Volumes and Conditions

The anticipated 2040 traffic volumes for this area were obtained and adjusted by Kimley Horn from the 2035 MAG model as described in the Kimley Horn TIMA (see **Appendix E**). These volumes were combined with the trips generated by the surrounding developments and were provided to Dibble. The combined volumes are used as the background traffic in this Report.

Transit Service

There are existing bus services along Mayo Boulevard to the west of this site, along Scottsdale Road, and along Bell Road south of this site. The closest bus stop is located at Scottsdale Road & Mayo Boulevard about 2/3 of a mile away from this site. There are no plans at this time to extend the bus route along Mayo Boulevard according to the City of Scottsdale Transportation Master Plan, 2008.

IV. PROJECTED TRAFFIC

A. Site Traffic

Trip Generation

The trip generation for this project was calculated using the ITE Trip Generation Manual, 11th edition. These values are for the typical peak hour times of the adjacent street (between 7:00 and 9:00 for the morning peak hour and between 4:00 and 6:00 for the afternoon peak hour). The medical-dental office building land use code was used for the trip generation calculations since it seems to best align with the proposed development. This corresponds with land use 720.

The trips generated by the MOB+ development is shown in **Table 2**. The total trips generated are slightly less than the trips generated in the Kimley Horn TIMA. Kimley Horn used planning level numbers prior to having a developed site plan for the development to calculate the trip generation numbers.

Table 2 –Trip Generation

General Suburban - Fitted Curve												
LUC	Description	Units	Quant	Weekday			AM Peak			PM Peak		
				Total	Ingress	Egress	Total	Ingress	Egress	Total	Ingress	Egress
720	Medical-Dental Office Building	1000 Sq. Ft. GFA	168.2	7120	3560	3560	521	412	109	681	204	477

Trip Distribution

The trip distribution was assessed based on the surrounding population within a 5-10 mile radius. It is assumed that most people will attempt to exit the same way they had entered with minor changes due to limited access driveways. When reviewing the surrounding street network, the main freeway used to access the study area is the Loop 101 with the closest exit ramps located both east and west of the site at Hayden Road and Scottsdale Road. The main arterials and collectors are Scottsdale Road, Hayden Road, and Mayo Boulevard. To access the site, the traffic will either enter from Miller Road, Mayo Boulevard, or Hayden Road. The trip distribution is summarized in **Figure 4**.

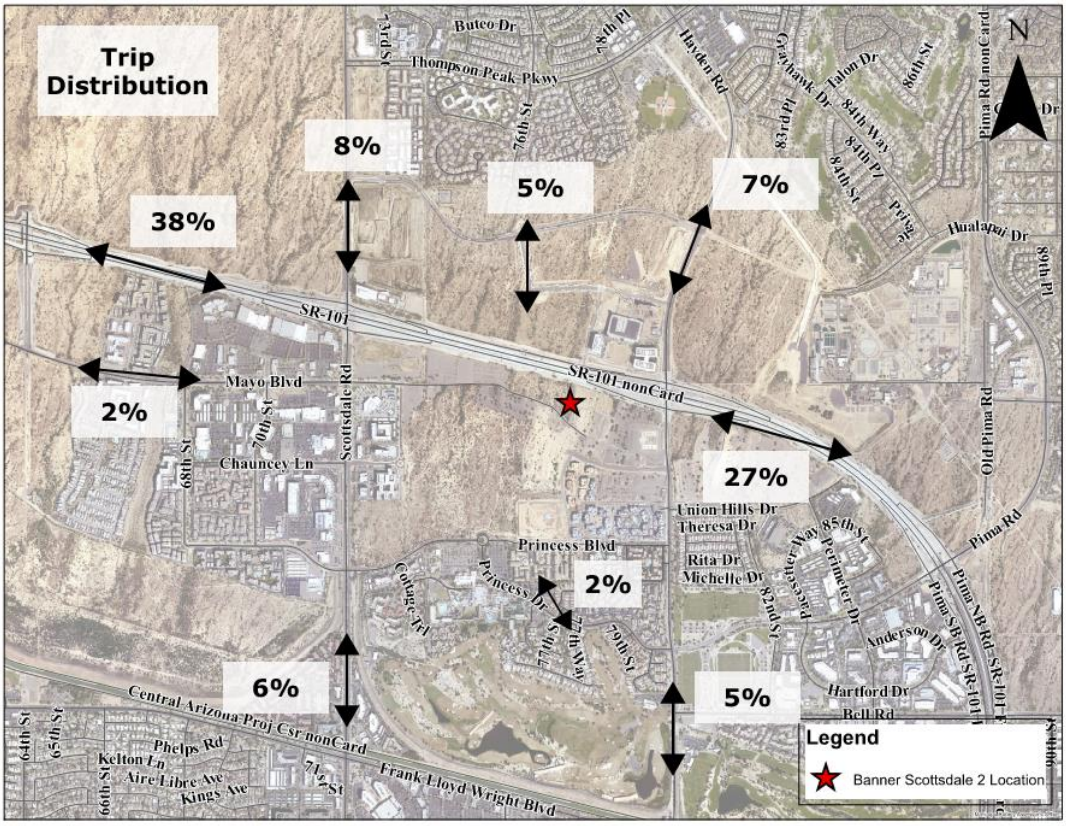

Figure 4 – Trip Distribution

Modal Split

Most traffic will likely travel to and from the site via passenger car since the surrounding area does not have heavy residential areas. If a bus route is added or extended to provide a stop near the hospital, some trips may arrive via public transportation. It is assumed in this report that all trips will be made via passenger vehicle in order to analyze the worst-case scenario.

Trip Assignment

The trip assignment is shown in **Figure 5**. The MOB+ trips will likely primarily use the 78th Street & Mayo Boulevard entrance as well as Driveway D to access the site due to the proximity of the building and it's parking lot to the two access points. It is also likely that some vehicles will use Driveway E to access the site to the MOB+ parking lot.

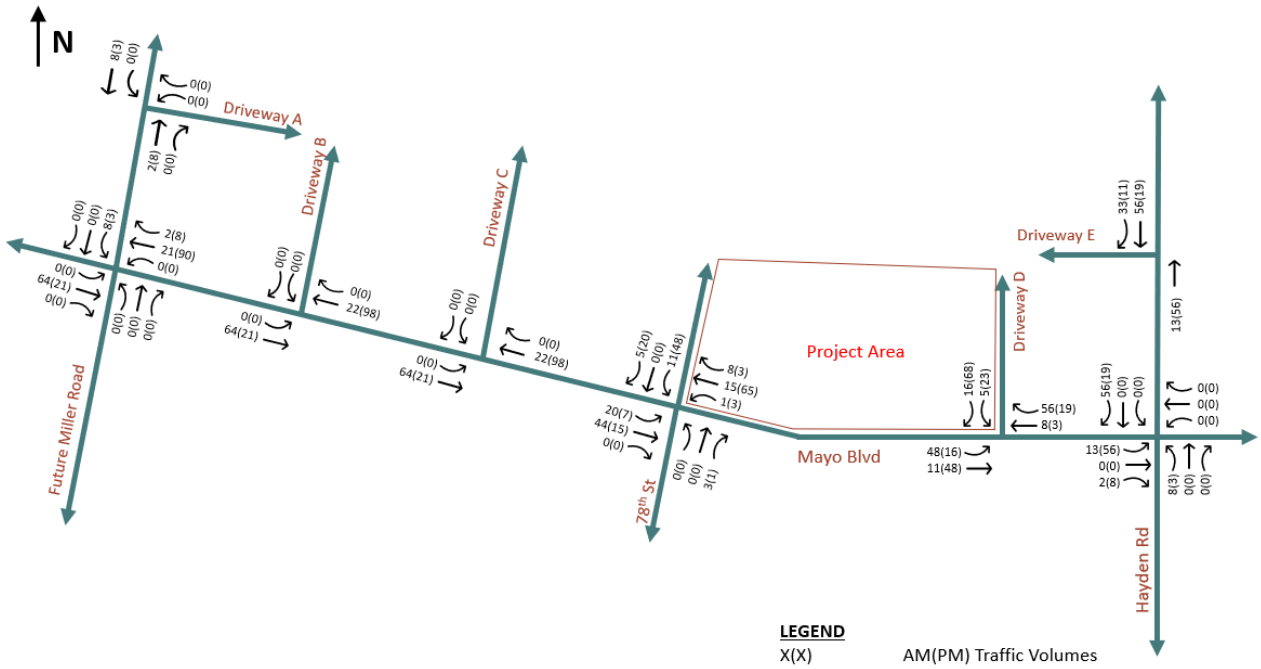

Figure 5 – Trip Assignment

B. Background Traffic

Method of Projections

There are two horizon years projected for the purposes of this Report. The first is the anticipated opening year of 2026 for the MOB+. The traffic studies for the surrounding developments from the Kimley Horn TIMA indicate that the surrounding developments are anticipated to be completed after the 2026 opening year. To account for other potential growth in the area, a 0.5% growth rate was applied to the 2022 collected counts for 4 years to determine the background traffic for 2026.

The second horizon year is for 2040 with the full build out of the Overall Site. The anticipated 2040 traffic volumes for this area were obtained and adjusted by Kimley Horn from the 2035 MAG model as described in Kimley Horn TIMA. These volumes were combined with the trips generated by the surrounding developments. These combined volumes are used as the background traffic in this Report. Note that the trips generated by the parcels to the east of this site along Hayden Road were assigned to use two of the driveways studied in this Report as well as a driveway not studied in this Report.

Estimated Volumes

Figure 6, **Figure 7** and **Figure 8** show the calculated background traffic volumes used for the anticipated Opening Day and for the Future (2040) analysis with and without the Axon development. This is when all four phases of the Overall Site are anticipated to be completed.

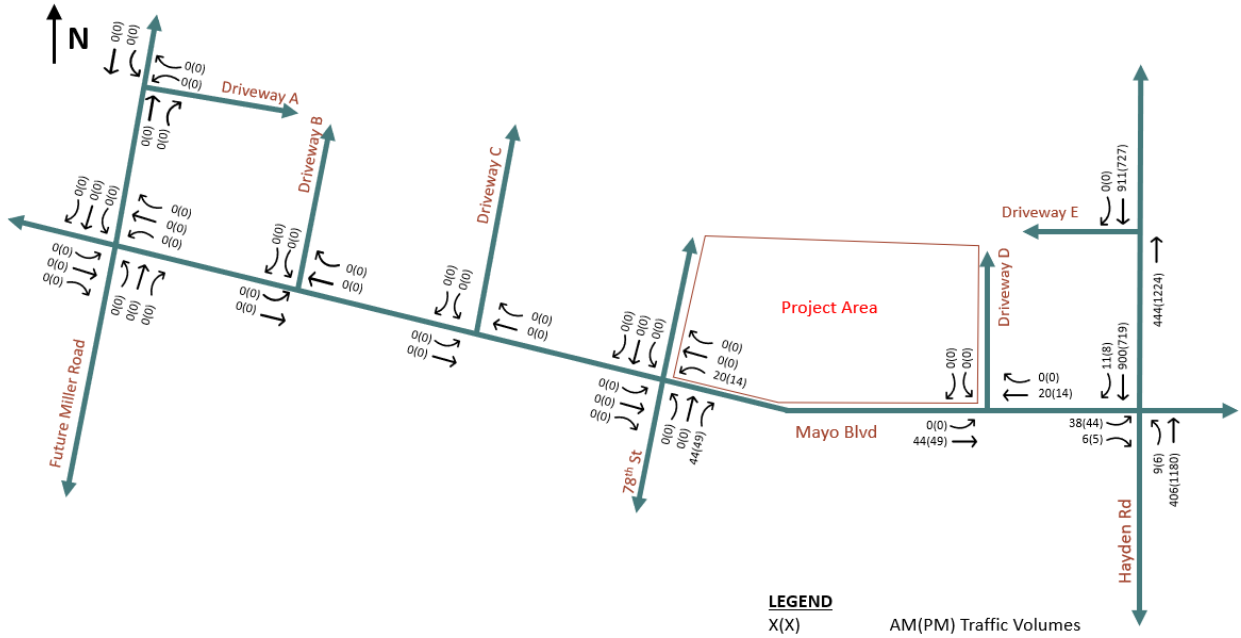

Figure 6 – Opening Day Background Traffic (2026)

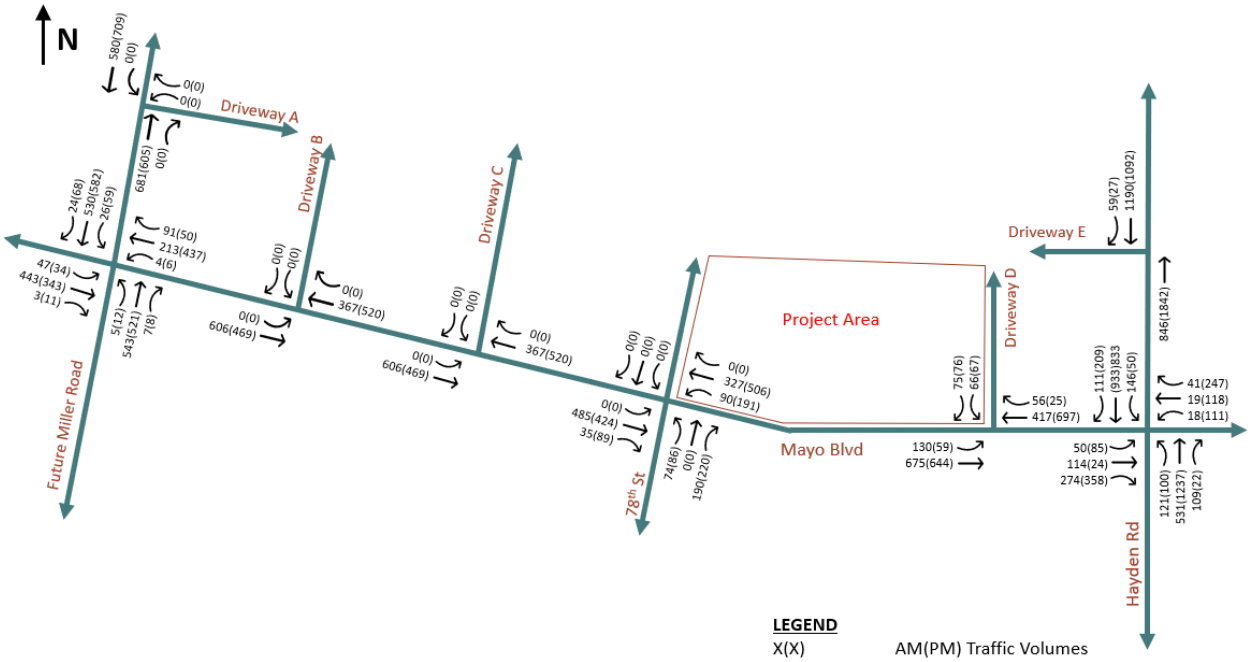

Figure 7 – Future Background Traffic w/Axon (2040)

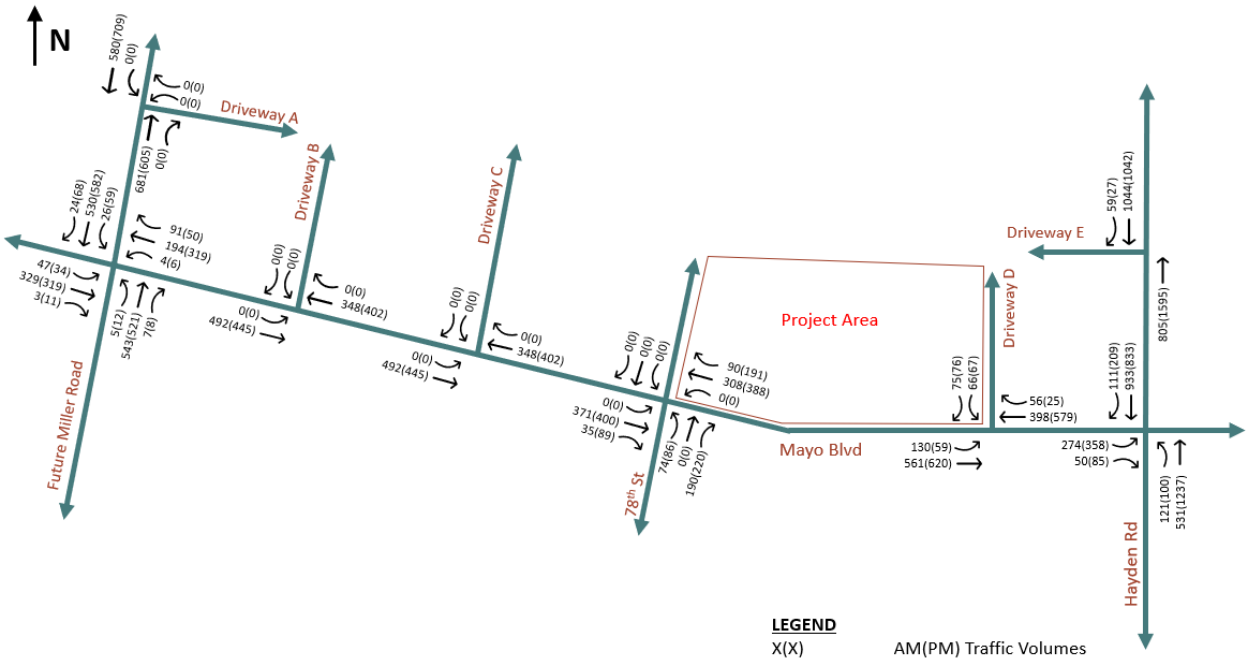

Figure 8 – Future Background Traffic w/o Axon (2040)

C. Total Traffic

The background traffic and anticipated site traffic were combined to calculate the total anticipated traffic for both horizon years. **Figure 9** and **Figure 10** show the anticipated total traffic for the two horizon years.

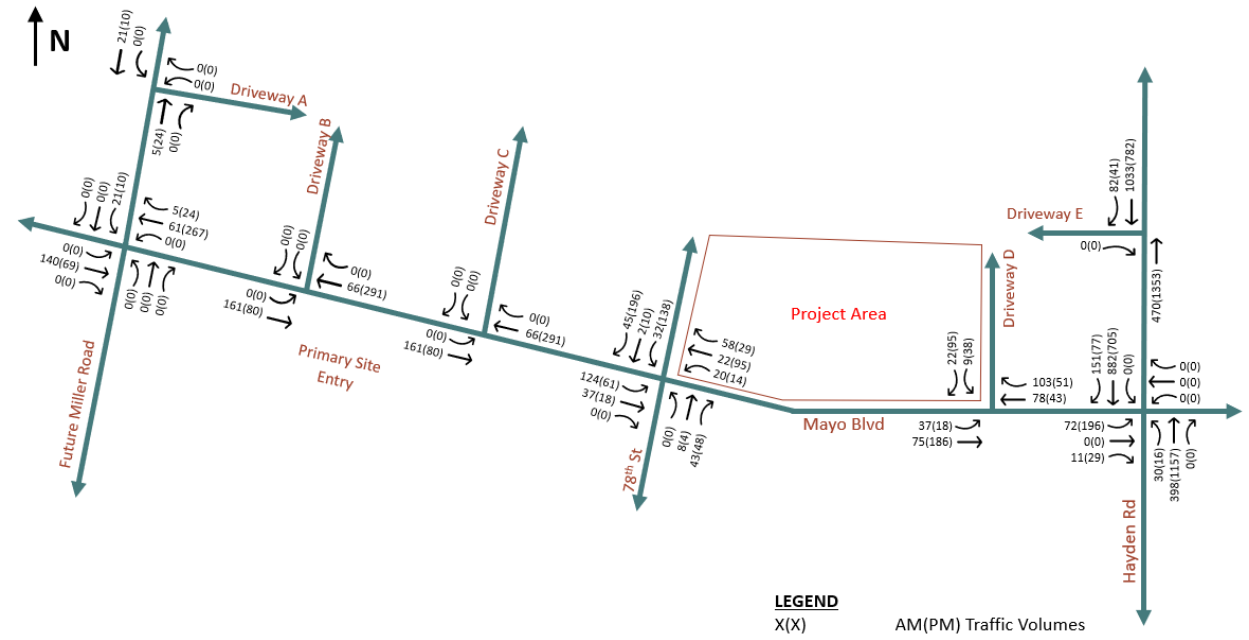

Figure 9 – Opening Day Total Traffic (2026)

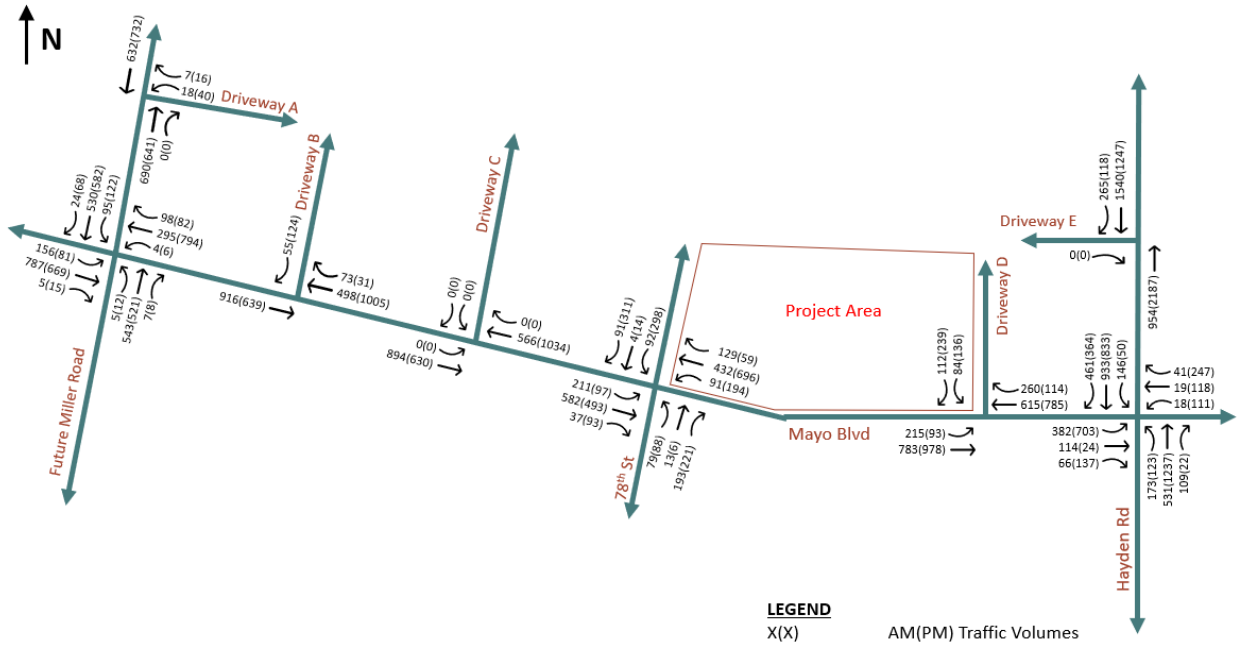

Figure 10 – Future Total Traffic (2040)

An additional 2040 scenario was also analyzed that excluded the Axon development. The total traffic anticipated for that scenario is shown in **Figure 11**.

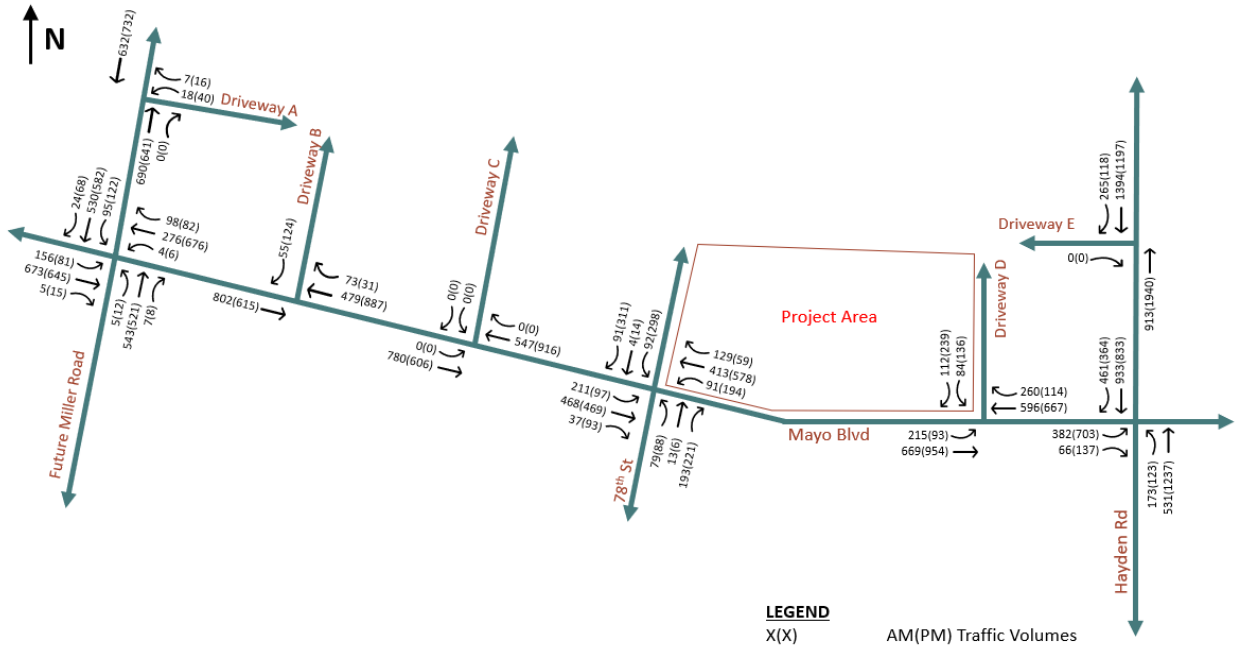

Figure 11 – Future Total Traffic w/o Axon (2040)

V. TRAFFIC ANALYSIS

A. Site Access

The Overall Site is planned to have six access points for the portion of the development bound by Miller Road, Hayden Road, Loop 101, and Mayo Boulevard. One of these is planned to provide full access from Miller Road (Driveway A). Four of these access points are planned to provide direct access from Mayo Boulevard (Driveway B, C, D and 78th Street). The Mayo Boulevard and 78th Street access is expected to primarily provide access to patients entering or exiting the site for the MOB+ in addition to Driveway D and Driveway E. Mayo Boulevard & Driveway D is a proposed full access driveway and will be shared with the future retail, office and hotel uses directly adjacent to Hayden Road. Driveway E will provide the most direct access to the future planned emergency room for hospital patients. The close proximity to the Loop 101 interchange is vital in providing quick access to the planned hospital when needed. **Figure 12** provides a schematic layout of the proposed site driveways.

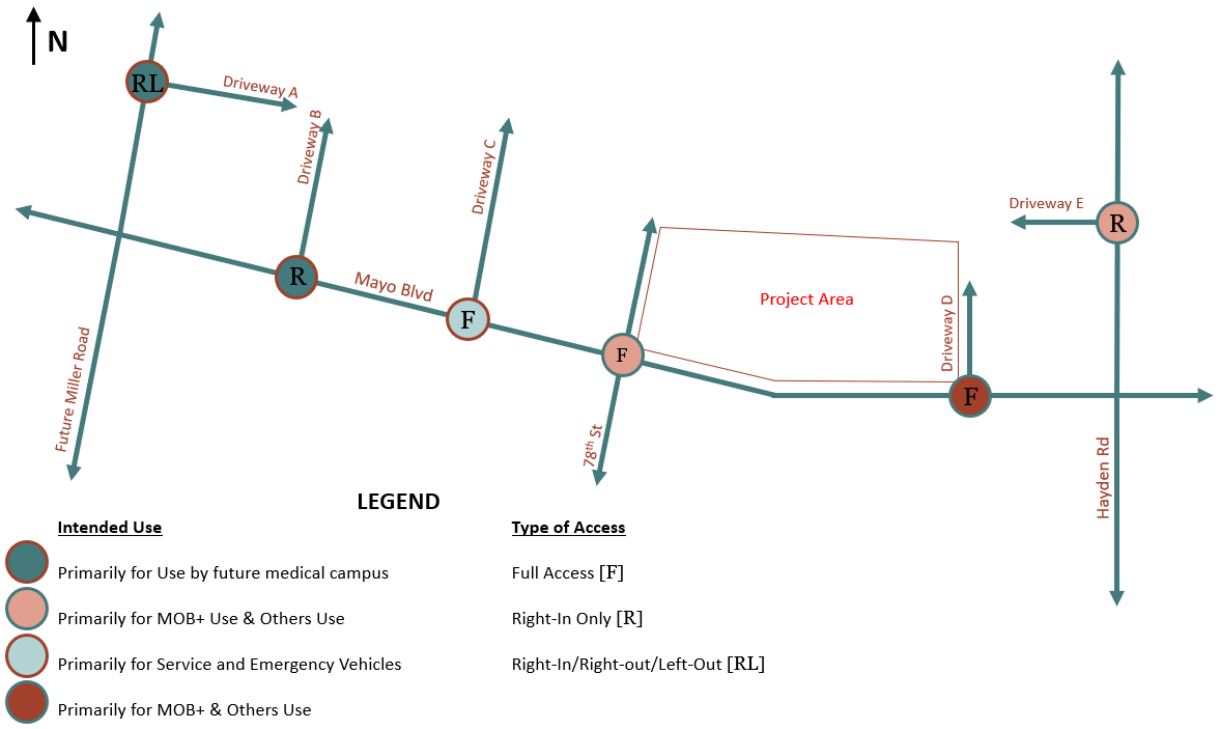

Figure 12 – Site Access

B. Turn Lane Warrants

The following turn lane warrants were completed in accordance with the City of Scottsdale 2018 Design Standards and Policies Manual Chapter 5 Section 3. The manual states that dedicated right turn lanes are required at all street intersections on major arterials while dedicated left turn lanes are required at all street intersections on major collectors and arterials. The results are summarized in **Table 3** for right turn lanes and in **Table 4** for left turn lanes. Turning movements that have an existing dedicated turn lane are not included in these tables. Dedicated turn lanes planned or warranted in the following tables were assumed to be built in the capacity analysis included in this Report. Additionally, the Kimley Horn TIMA was approved by the City of Scottsdale with comments and stipulations. One of the comments requires right turn lanes at all driveways along Mayo Boulevard and Miller Road.

Table 3 –Right Turn Lane Warrants

Intersection	Access	Turning Movement	Lane Warranted Due to City Prescriptive Requirements?
Miller Rd & Driveway A	Full	NBR	No
		SBR	No
Mayo Blvd & Driveway B	Full	EBR	No
		WBR	No
Mayo Blvd & 78th St	Full	EBR	No
		WBR	No
		NBR	No
		SBR	No
Mayo Blvd & Driveway C	Full	EBR	No
		WBR	No
Mayo Blvd & Driveway D	Full	EBR	No
		WBR	No
Hayden Rd & Driveway E	RI	EBR	No
		SBR	No
Hayden Rd & Mayo Blvd	Full	WBR	Planned*
		NBR	No
Mayo Blvd & Miller Rd	Full	EBR	Planned
		WBR	Planned
		NBR	Planned
		SBR	Planned

City Prescriptive Requirements includes a right turn lane on all major arterials and a left turn lane on all major collectors or arterials in accordance with the City of Scottsdale Design Standards and Policies Manual, 2018 Chapter 5

RI = Right-In Only

Planned = already planned by other developments, does not yet exist

**Planned to be a dual*

Table 4 –Left Turn Lane Warrants

Intersection	Access	Turning Movement	Lane Warranted Due to City Prescriptive Requirements?
Miller Rd & Driveway A	Full	NBL	Yes
		SBL	Yes
Mayo Blvd & Driveway B	Full	EBL	Yes
		WBL	Yes
Mayo Blvd & 78th St	Full	EBL	Yes
		WBL	Yes
		NBL	Yes
		SBL	Yes
Mayo Blvd & Driveway C	Full	EBL	Yes
		WBL	Yes
Mayo Blvd & Driveway D	Full	EBL	Yes
		WBL	Yes
Hayden Rd & Mayo Blvd	Full	EBL	Exists*
		WBL	Yes
		NBL	Exists*
		SBL	Planned*
Mayo Blvd & Miller Rd	Full	EBL	Planned
		WBL	Planned
		NBL	Planned
		SBL	Planned

City Prescriptive Requirements includes a left turn lane on all major arterials and a left turn lane on all major collectors or arterials in accordance with the City of Scottsdale Design Standards and Policies Manual, 2018 Chapter 5

Planned = already planned by other developments, does not yet exist

**Planned to be a dual*

Although the driveways along Mayo Boulevard and Miller Road do not warrant right turn lanes based on City guidelines, Banner Health would still like to provide right turn lanes at the heavily used driveways and the driveway closest to the Mayo Boulevard and Hayden intersection to improve traffic operations and help reduce the rear end crash potential. **Table 5** provides a summary of the driveways where right turn lanes are planned and an explanation of why providing these right turn lanes is desirable.

Table 5 – Traffic Operations Issues & Considerations

Intersection	Turning Movement	Issues & Consideration
Mayo Blvd & Driveway B	WBR	Warranted due to the high volume anticipated to be using this intersection. This dedicated right turn lane will allow space for right-turning vehicles to slow down outside of the main travel way. This will reduce the chance of a queue forming behind a right-turning vehicle. It also reduces the risk of rear-end crashes at this intersection.
Mayo Blvd & Driveway C	WBR	Warranted due to the types of vehicles anticipated to use this intersection. This dedicated right turn would allow a place for emergency vehicles to slow down in order to turn the corner gently outside of the main travel way. Additionally, large delivery trucks that are anticipated to use this driveway require more room to slow down. This would also decrease the risk of rear-end crashes at this intersection.
Mayo Blvd & Driveway D	WBR	Warranted due to the close proximity to the Hayden Road & Mayo Boulevard intersection. This dedicated right turn lane will allow space for right-turning vehicles to slow down outside of the main travel way. This will reduce the chance of a queue forming behind a right-turning vehicle which would have the potential to back up to the Hayden Road & Mayo Boulevard intersection. It also reduces the risk of rear-end crashes at this intersection.
Mayo Blvd & Driveway E	SBR	Warranted due to the close proximity to the Hayden Road & Loop 101 interchange. This dedicated right turn lane will allow space for right-turning vehicles to slow down outside of the main travel way. This will reduce the chance of a queue forming behind a right-turning vehicle which would have the potential to back up near the interchange. It also reduces the risk of rear-end crashes at this intersection.

A. Traffic Signals

It is already planned for Hayden Road & Mayo Boulevard to be signalized in the near future. It is also already anticipated that Mayo Boulevard & Miller Road will be a roundabout or signalized intersection for future developments. Based on City of Scottsdale comments for the approved Master Plan TIMA, a roundabout is to be built at the intersection once the right-of-way is available unless it is ruled out, in which case, a traffic signal would be considered.

All other intersections studied in this Report are anticipated to operate acceptably given the conditions and mitigations mentioned in this report. As previously mentioned, the Axon development may be delayed or the project may not be built. The Axon development is currently responsible for the signal at Mayo Boulevard and Hayden Road, however if the MOB+ and/or the remainder of the Overall Site is built before Axon, the signal would not exist. A signal warrant analysis was therefore conducted to determine if the MOB+ development warrants the signal at the intersection as well as the remainder of the Overall Site without the Axon development per the peak hour warrant from the Manual on Uniform Traffic Control Devices. The analysis was also conducted for both scenarios for the Miller Road and 78th Street intersections with Mayo Boulevard. The results are summarized in **Table 6**. The warrant analysis is also included in **Appendix F.**

Table 6 –Signal Warrant Results

Intersection	Scenario	
	MOB+ Only 2026	NWC Development 2040 w/o Axon
Mayo Blvd & Miller Rd	No	Yes (Both Peaks)
Mayo Blvd & 78th St	No	Yes (Both Peaks)
Mayo Blvd & Hayden Road	Yes (PM Peak)	Yes (Both Peaks)

Per City of Scottsdale's direction during a comment resolution meeting on May 22, 2024 and as outlined in the comment response form in **Appendix H**, the intersection at Mayo Boulevard and Miller Road will operate as an all-way stop control intersection until the right-of-way is obtained to construct a roundabout at the intersection.

B. Capacity and Level of Service

The capacity analysis was conducted using Synchro 11 software. **Table 7, Table 8, Table 9,** and **Table 10** summarize the level of service (LOS) results for the analyzed turning movements for opening day in 2040 both without site traffic (background traffic) and with site traffic (total traffic), respectively. Note that a level of service "E" or "F" is typically considered a "failing" level of service during peak traffic times and will sometimes require some sort of mitigation to bring the level of service back to a "D" or better, if possible. However, sometimes it is not feasible nor warranted to mitigate due to a number of considerations including the current traffic demand. Additionally, sometimes it is simply not feasible to invest in a lot of additional capacity improvements to support one or both peak hour traffic times at one or two locations. Especially, when it is put into the context of all the other capacity or capacity utilization improvements that will be provided for this proposed development.

As stated in the previous section, the intersection of Mayo Boulevard and Miller Road is to operate as an stop controlled intersection until such time that the right-of-way is obtained to construct a roundabout at the intersection or a traffic signal if the roundabout is ruled out in the future. **Table 9,** and **Table 10** assume the intersection will still be stop controlled to show how that scenario is anticipated to operate by 2040. A roundabout should be constructed by 2040, however, or a signal should be installed if the roundabout is ruled out in the future. **Table 11** and **Table 12** summarize the LOS and Delay results for both a roundabout and a signal for 2040 (with and without the Axon development).

The southbound left turning movement at Driveway D experiences what would be considered an undesirable level of service for the 2040 horizon year both with and without the Axon development. It is important to note that this delay is experienced on site and the vehicle queues do not exceed more than 2-5 vehicles (roughly 40-100 feet) depending on the peak hours.

Additionally, the

Table 7 –Opening Day Background (2040) LOS

Intersection	Peak Hour	Intersection		EBL		EBT		EBR		WBL		WBT		WBR		NBL		NBT		NBR		SBL		SBT		SBR	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Mayo Blvd & 78th St	AM	6.5	A	0.0	A	7.0	A	7.0	A	9.0	A	6.3	A	0.0	A	9.9	A	0.0	A	3.2	A	0.0	A	0.0	A	0.0	A
	PM	7.4	A	0.0	A	6.3	A	6.3	A	14.5	B	7.0	A	0.0	A	13.5	B	0.0	A	2.5	A	0.0	A	0.0	A	0.0	A
Mayo Blvd & Driveway D	AM	-	-	9.0	A	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	20.1	C	-	-	10.2	B
	PM	-	-	9.7	A	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	22.2	C	-	-	11.7	B
Hayden Rd & Mayo Blvd	AM	17.5	B	30.5	C	16.5	B	2.5	A	26.6	C	25.6	C	0.4	A	31.1	C	12.5	B	12.5	B	28.6	C	16.8	B	2.3	A
	PM	23.9	C	33.9	C	12.9	B	3.6	A	39.3	D	29.2	C	5.9	A	42.4	D	23.7	C	23.7	C	38.8	D	26.3	C	4.7	A
Mayo Blvd & Miller Rd	AM	8.8	A	9.1	A	9.6	A	0.0	A	8.2	A	8.4	A	3.4	A	7.4	A	9.2	A	0.6	A	8.2	A	9.1	A	3.1	A
	PM	8.9	A	9.6	A	9.3	A	1.5	A	8.3	A	9.9	A	3.8	A	7.8	A	8.9	A	0.9	A	9.6	A	9.3	A	3.2	A

Table 8 –Opening Day (2026) Total Traffic LOS

Intersection	Peak Hour	Intersection		EBL		EBT		EBR		WBL		WBT		WBR		NBL		NBT		NBR		SBL		SBT		SBR	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Miller & Driveway A	AM	-	-	-	-	-	-	-	-	-	-	-	-	0.0	A	-	-	0.0	A	0.0	A	-	-	0.0	A	-	-
	PM	-	-	-	-	-	-	-	-	-	-	-	-	0.0	A	-	-	0.0	A	0.0	A	-	-	0.0	A	-	-
Mayo Blvd & Driveway B	AM	-	-	0.0	A	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	0.0	A	-	-	0.0	A
	PM	-	-	0.0	A	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	0.0	A	-	-	0.0	A
Mayo Blvd & Driveway C	AM	-	-	0.0	A	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	0.0	A	-	-	0.0	A
	PM	-	-	0.0	A	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	-	-	-	-	0.0	A
Mayo Blvd & 78th St	AM	-	-	7.6	A	0.0	A	0.0	A	7.3	A	0.0	A	0.0	A	0.0	A	-	-	9.4	A	13.3	B	-	-	8.9	A
	PM	-	-	7.6	A	0.0	A	0.0	A	7.3	A	0.0	A	0.0	A	0.0	A	-	-	8.8	A	13.4	B	-	-	10.0	A
Mayo Blvd & Driveway D	AM	-	-	7.7	A	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	9.9	A	-	-	8.6	A
	PM	-	-	7.5	A	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	10.0	A	-	-	8.8	A
Mayo Blvd & Driveway E	AM	-	-	-	-	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	-	-	-	-	0.0	A
	PM	-	-	-	-	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	-	-	-	-	0.0	A
Hayden Rd & Mayo Blvd	AM	6.2	A	43.2	D	-	-	0.3	A	-	-	-	-	-	-	42.6	D	1.6	A	-	-	-	-	4.9	A	1.1	A
	PM	7.1	A	38.1	D	-	-	0.4	A	-	-	-	-	-	-	37.9	D	3.4	A	-	-	-	-	4.6	A	1.2	A
Mayo Blvd & Miller Rd	AM	-	-	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	9.6	A	0.0	A	0.0	A
	PM	-	-	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	0.0	A	11.2	B	0.0	A	0.0	A

Table 9 – Future (2040) Total Traffic LOS

Intersection	Peak Hour	Intersection		EBL		EBT		EBR		WBL		WBT		WBR		NBL		NBT		NBR		SBL		SBT		SBR	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Miller & Driveway A	AM	-	-	-	-	-	-	-	-	16.7	C	-	-	10.9	B	-	-	0.0	A	0.0	A	-	-	0.0	A	-	-
	PM	-	-	-	-	-	-	-	-	17.4	C	-	-	10.7	B	-	-	0.0	A	0.0	A	-	-	0.0	A	-	-
Mayo Blvd & Driveway B	AM	-	-	0.0	A	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	0.0	A	-	-	10.4	B
	PM	-	-	0.0	A	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	0.0	A	-	-	15.3	C
Mayo Blvd & Driveway C	AM	-	-	0.0	A	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	-	-	-	-	0.0	A
	PM	-	-	0.0	A	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	-	-	-	-	0.0	A
Mayo Blvd & 78th St	AM	7.8	A	12.0	B	7.0	A	7.0	A	8.6	A	6.4	A	1.9	A	16.4	B	5.7	A	5.7	A	17.8	B	5.7	A	5.7	A
	PM	18.9	B	24.5	C	15.8	B	15.8	B	36.3	D	17.3	B	4.4	A	21.5	C	4.1	A	4.1	A	35.2	D	13.5	B	13.5	B
Mayo Blvd & Driveway D	AM	-	-	12.4	B	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	42.1	E	-	-	11.7	B
	PM	-	-	11.0	B	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	56.7	F	-	-	16.3	C
Mayo Blvd & Driveway E	AM	-	-	-	-	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	-	-	-	-	0.0	A
	PM	-	-	-	-	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	-	-	-	-	0.0	A
Hayden Rd & Mayo Blvd	AM	23.7	C	47.4	D	27.8	C	7.3	A	52.9	D	47.1	D	1.1	A	50.0	D	14.9	B	14.9	B	51.2	D	21.4	C	3.4	A
	PM	33.7	C	40.0	D	13.2	B	2.8	A	56.0	E	40.1	D	7.6	A	48.5	D	35.2	D	35.2	D	48.9	D	43.6	D	8.4	A
Mayo Blvd & Miller Rd	AM	168.9	F	31.4	D	424.8	F	75.7	F	16.7	C	47.7	E	44.3	E	16.6	C	214.2	F	41.6	E	24.0	C	191.9	F	191.9	F
	PM	256.6	F	24.5	C	381.1	F	79.0	F	16.9	C	513.8	F	204.4	F	17.2	C	225.4	F	43.8	E	33.2	D	281.2	F	281.2	F

Table 10 – Future (2040) Total Traffic w/o Axon LOS

Intersection	Peak Hour	Intersection		EBL		EBT		EBR		WBL		WBT		WBR		NBL		NBT		NBR		SBL		SBT		SBR	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Miller & Driveway A	AM	-	-	-	-	-	-	-	-	16.7	C	-	-	10.9	B	-	-	0.0	A	0.0	A	0.0	A	0.0	A	-	-
	PM	-	-	-	-	-	-	-	-	17.4	C	-	-	10.7	B	-	-	0.0	A	0.0	A	0.0	A	0.0	A	-	-
Mayo Blvd & Driveway B	AM	-	-	0.0	A	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	0.0	A	-	-	10.3	B
	PM	-	-	0.0	A	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	0.0	A	-	-	14.1	B
Mayo Blvd & Driveway C	AM	-	-	0.0	A	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	-	-	-	-	0.0	A
	PM	-	-	0.0	A	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	-	-	-	-	0.0	A
Mayo Blvd & 78th St	AM	7.7	A	12.3	B	6.7	A	6.7	A	8.0	A	6.5	A	2.0	A	15.2	B	5.5	A	5.5	A	16.6	B	5.4	A	5.4	A
	PM	17.6	B	20.7	C	15.4	B	15.4	B	34.7	C	16.2	B	4.3	A	20.8	C	4.1	A	4.1	A	33.5	C	9.6	A	9.6	A
Mayo Blvd & Driveway D	AM	-	-	12.2	B	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	37.9	E	-	-	11.5	B
	PM	-	-	10.3	B	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	42.8	E	-	-	14.6	B
Mayo Blvd & Driveway E	AM	-	-	-	-	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	-	-	-	-	0.0	A
	PM	-	-	-	-	0.0	A	-	-	-	-	0.0	A	0.0	A	-	-	-	-	-	-	-	-	-	-	0.0	A
Hayden Rd & Mayo Blvd	AM	15.5	B	40.0	D	-	-	0.8	A	-	-	-	-	-	-	41.6	D	4.3	A	4.3	A	-	-	14.3	B	2.6	A
	PM	17.7	B	35.2	D	-	-	5.6	A	-	-	-	-	-	-	42.5	D	10.0	A	10.0	A	-	-	19.1	B	3.3	A
Mayo Blvd & Miller Rd	AM	133.0	F	30.7	D	299.9	F	49.7	E	16.5	C	41.3	E	40.7	E	16.2	C	203.3	F	39.5	E	23.0	C	179.7	F	179.7	F
	PM	215.7	F	24.0	C	352.5	F	71.2	F	16.9	C	378.4	F	145.7	F	17.3	C	224.5	F	43.9	E	31.5	D	276.4	F	276.4	F

Table 11 – Future (2040) Total Traffic Miller & Mayo Roundabout LOS

Intersection	Peak Hour	Intersection		EBL/EBT		EBT/EBR		WBL/WBT		WBT/WBR		NBL/NBT		NBT/NBR		SBL/SBT		SBT/SBR	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
With Axon																			
Mayo Blvd & Miller Rd	AM	18.1	C	23.0	27	27.1	D	10.3	B	10.4	B	21.9	C	22.8	C	8.7	A	9.3	A
	PM	20.9	C	18.8	C	20.7	C	19.4	C	22.2	C	16.2	C	16.7	C	23.5	C	26.2	D
Without Axon																			
Mayo Blvd & Miller Rd	AM	14.9	B	18.3	B	20.5	C	10.0	A	10.2	B	18.0	B	18.8	B	8.5	A	9.1	A
	PM	17.8	B	18.0	B	19.6	B	15.8	B	17.2	B	15.7	B	16.1	B	18.5	B	20.4	C

Table 12 – Future (2040) Total Traffic Miller & Mayo Signal LOS

Intersection	Peak Hour	Intersection		EBL		EBT		EBR		WBL		WBT		WBR		NBL		NBT		NBR		SBL		SBT		SBR	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Roundabout																											
Mayo Blvd & Miller Rd	AM	29.6	C	52.2	D	53.7	D	17.8	B	25.2	C	29.3	C	5.1	A	12.8	B	13.1	B	4.3	A	15.0	B	13.1	B	4.9	A
	PM	23.9	C	53.1	D	27.0	C	8.4	A	23.8	C	37.8	D	5.1	A	13.8	B	13.7	B	5.1	A	16.8	B	14.1	B	3.5	A
Signal																											
Mayo Blvd & Miller Rd	AM	25.8	C	50.2	D	47.2	D	15.6	B	28.0	C	32.8	C	5.9	A	10.6	B	10.8	B	3.6	A	12.3	B	10.7	B	4.1	A
	PM	23.3	C	54.5	D	28.3	C	9.1	A	28.8	C	41.8	D	6.1	A	10.8	B	10.7	B	4.0	A	13.0	B	11.0	B	2.8	A

C. Site Circulation and Parking

The traffic accessing the MOB+ will generally be split between 78th Street and Driveway D to access the site with a small amount of the traffic anticipated to access the site using Driveway E from Hayden Road. The remaining driveways will provide access to the potential future expansion of the medical campus and for other commercial uses on the Overall Site. See **Appendix G** for the conceptual Future Development Circulation Plan.

VI. IMPROVEMENT ANALYSIS

A. Queueing Analysis

The following queueing analysis is completed with the assumption that the recommendations made throughout this Report are completed. This analysis is also completed using the City of Scottsdale's minimum storage length requirements as outlined in the City of Scottsdale's 2018 Design Standards and Policies Manual Section Chapter 5 Section 3. The 95th percentile from Synchro 11 was used to obtain each anticipated queue length. **Table 13** provides the recommended right turn lane storage lengths and **Table 14** provides the recommended left turn lane storage lengths based on the total traffic anticipated by 2040. The intent of focusing on the 2040 vehicle queues is to determine what storage lengths will be needed for all access points to the Overall Site in the future to avoid adding additional storage at a later date after the roadways and driveways are already constructed.

Table 13 –Right Turn Lane Queues

Intersection	Turning Movement	Current Length (ft)	2040 Queue Length (ft)	City of Scottsdale Preferred Length (ft)	City of Scottsdale Minimum Length (ft)	Recommended 2040 Storage Length (ft)
Miller Road & Driveway A	NBR	-	0	150	100	150
Mayo Blvd & Driveway B	WBR	-	0	150	100	150
Mayo Blvd & Driveway C	WBR	-	0	150	100	150
Mayo Blvd & Driveway D	WBR	-	0	150	100	150
Hayden Road & Driveway E	WBR	-	0	150	100	150
Mayo Blvd & 78th St	WBR	-	23	150	100	150
Hayden Rd & Mayo Blvd	EBR	170	32	150	100	170
	WBR	-	41	150	100	150
	SBR	185	110	150	100	185
Mayo Blvd & Miller Rd	EBR	-	5	150	100	150
	WBR	-	20	150	100	150
	NBR	-	2	150	100	150
	SBR	-	17	150	100	150

Table 14 –Left Turn Lane Queues

Intersection	Turning Movement	Current Length (ft)	2040 95th Percentile Queue Length (ft)	City of Scottsdale Minimum Length (ft)	Minimum Recommended 2040 Storage Length (ft)
Mayo Blvd & Driveway B	EBL	-	20	100	100
Mayo Blvd & 78th St	EBL	-	20	100	100
	WBL	-	20	100	100
Mayo Blvd & Driveway C	EBL	-	20	100	100
Mayo Blvd & Driveway D	EBL	-	40	100	100
Mayo Blvd & Driveway E	EBL	-	20	100	100
Hayden Rd & Mayo Blvd	EBL	300	316	100	380
	WBL	-	146	100	150
	NBL	150	103	100	150
	SBL	-	91	100	100
Mayo Blvd & Miller Rd*	EBL	-	181	100	200
	WBL	-	13	100	100
	NBL	-	16	100	100
	SBL	-	111	100	150

**Queues and Recommendations if signalized*

VII. FINDINGS

A. Site Accessibility

The proposed site accesses are anticipated to operate acceptably with the given conditions and the construction of the turn lanes and traffic signals, and roundabout mentioned in the Report.

B. Traffic Impacts

The addition of this MOB+ Site is anticipated to have a minimal impact along Mayo Boulevard and Hayden Road.

C. Need for Improvements

Mayo Boulevard & 78th Street

This intersection operates with an acceptable level of service as a two-way stop-controlled intersection with Mayo Boulevard traffic free flowing for opening day of the MOB+, however, a signal will eventually be warranted as the Overall Site is developed. This intersection should maintain two egress southbound lanes for a dedicated left turn lane and a dedicated right turn lane to minimize the vehicle queue. A westbound right turn lane should be provided at this driveway.

Mayo Boulevard & Miller Road

This intersection operates with an acceptable level of service as a two-way stop controlled intersection for opening day of the MOB+, however, a roundabout will eventually be needed to mitigate traffic delays as the Overall Site is developed. If a roundabout is ruled out in the future, a signal would be warranted in its place.

Miller Road & Driveway A

This driveway operates with an acceptable level of service as a right-in/right-out and left-in only driveway. A preliminary assessment was conducted for sight visibility for a left-out at the driveway. Based on the preliminary design plans for Miller Road under Loop 101, there will be adequate visibility for a driver to

turn left from Driveway A onto Miller Road. A southbound left from Miller Road to Driveway A, is not likely to be feasible with the available width for the roadway passing under Loop 101.

In general, it is recommended to provide a dedicated right turn lane for driveways along Mayo Boulevard and Miller Road. The City of Scottsdale also approved the NWC Hayden Road and Mayo Boulevard TIMA with a comment requiring all site driveways along Mayo Boulevard and Miller Road. Therefore, a westbound right turn lane should be provided at this driveway.

Mayo Boulevard & Driveway B

This driveway operates with an acceptable level of service as a right-in/right-out only driveway. In general, it is recommended to provide a dedicated right turn lane for driveways along Mayo Boulevard and Miller Road. The City of Scottsdale also approved the NWC Hayden Road and Mayo Boulevard TIMA with a comment requiring all site driveways along Mayo Boulevard and Miller Road. Therefore, a westbound right turn lane should be provided at this driveway.

Mayo Boulevard & Driveway D

This driveway should also maintain two egress southbound lanes for a dedicated left turn lane and a dedicated right turn lane to minimize the vehicle queue. The City of Scottsdale also approved the NWC Hayden Road and Mayo Boulevard TIMA with a comment requiring all site driveways along Mayo Boulevard and Miller Road. Therefore, a westbound right turn lane should be provided at this driveway.

Hayden Road & Driveway E

This driveway shall include a southbound right turn lane to account for any potential queue for the southbound right turn lane and to avoid conflicts with the Loop 101 egress ramp traffic.

D. Compliance with Applicable City Codes

The City of Scottsdale Design Standards and Policies Manual, 2018 was referenced throughout this analysis as mentioned throughout this Report.

VIII. RECOMMENDATIONS

A. Roadway Improvements

Based on the analysis of this Report there are several recommendations for the Overall Site driveways and adjacent intersections by opening day of the MOB+ that also take into consideration the additional future development surrounding the Overall Site. The recommendations are in alignment with the approved Kimley Horn TIMA.

Overall, it is recommended to provide a right turn lane for driveways A, B, C, D, E, and at 78th Street into the Overall Site. Per City of Scottsdale Design Standards & Policies Manual, the standard storage length for a right-turn lane is 150 feet as indicated in **Table 13**.

Additional recommendations for specific driveways and adjacent intersections are as follows:

Hayden Road & Driveway E

With a dedicated southbound right turn lane at Hayden Road & Driveway E, the queue length is not anticipated to extend beyond the boundary of the right turn lane. Therefore, the queue is not anticipated to have a negative impact on the operation of the Loop 101 and Hayden interchange.

Mayo Boulevard & 78th Street

A signal is not warranted from both a vehicle capacity and delay perspective for opening day of the MOB+. A signal is warranted in the future as the Overall Site is developed. It is recommended to install signal pull

boxes on all four corners of Mayo Boulevard and 78th Street as well as signal conduit connections between the pull boxes for a future traffic signal for opening day of the MOB+. With the construction of the MOB+, the intersection operates at an acceptable level of service with two-way stop control and Mayo Boulevard traffic free flowing.

Mayo Boulevard & Hayden Road
Provide a southbound right turn lane at the intersection, which is already planned. Additionally, if the Axon development is delayed and the signal is not installed by the completion of the MOB+, a signal will be warranted at the intersection by opening day of the MOB+.

Mayo Boulevard & Miller Road
A signal is not warranted at this intersection from both a vehicle capacity and delay perspective for opening day of the MOB+. A roundabout is planned for this intersection with future development as the right-of-way becomes available. If a round-about is ruled out in the future, a signal will be warranted in the future scenarios with the further development of the Overall Site. With the construction of the MOB+, the intersection operates at an acceptable level of service with two-way stop control and Mayo Boulevard traffic free flowing.

Recommended turn lane storage lengths for all new intersections and turn lanes are given in **Table 13** – **Table 14**.

Appendix A Scottsdale Roadway Functional Classification Map

Appendix B Site Plan

Appendix C Synchro Reports

Appendix D Background Traffic Exhibit

Appendix E Kimley Horn TIMA Report

Appendix F Signal Warrant Analysis

Appendix G Conceptual Future Development Circulation Plan

Appendix H Comment Response Form