PANERA BREAD – SCOTTSDALE, AZ

Northeast Corner of Shea Blvd & 89th Place

8970 E Shea Blvd

TRAFFIC IMPACT MANAGEMENT ANALYSIS

Scottsdale, AZ

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DRAFT FINAL REPORT FOR CLIENT REVIEW

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1. EXECUTIVE SUMMARY

CA Group has been retained to prepare a Category 2 Traffic Impact Management Analysis (TIMA) for the proposed Panera Bread restaurant on the northeast corner of Shea Blvd and 89th Place in Scottsdale, Arizona.

1.1. PURPOSE OF THE REPORT AND STUDY OBJECTIVES

The TIMA will identify the existing traffic conditions for the study area intersections and roadway network serving the development, the traffic expected to be generated by the development, and identify any potential traffic impacts resulting from the proposed development and mitigation measures necessary to mitigate these potential impacts.

The primary objective of this TIMA is to quantify the traffic impacts of the proposed development and to determine what improvements are necessary to ensure efficient access into and out of the site.

1.2. SITE LOCATION AND STUDY AREA

The proposed development is located at the northeast corner of Shea Blvd and 89th Place in Scottsdale, Arizona. The site address is 8970 East Shea Blvd.

The study area includes the following intersections:

- Shea Blvd and 89th Place
- 89th Place and Site DWY/Becker Lane

The study area includes the following road segment:

- 89th Place, Shea Blvd to Becker Lane

1.3. DEVELOPMENT DESCRIPTION

The proposed development consists of a proposed 3,950 square foot Panera restaurant with drive-thru window. The building will replace the existing 6,957 square foot Red Robin restaurant.

Access to the site will be provided by two existing driveways on 89th Place. The primary site driveway is located approximately 315 feet north of Shea Blvd, the second driveway is located approximately 610 feet north of Shea Blvd.

1.4. PRINCIPAL FINDINGS

Based on the ITE trip generation rates the development is expected to generate 1,860 trips on a typical weekday, with 159 trips (81 entering, 78 exiting) occurring in the AM peak hour, 144 trips (74 entering, 70 exiting) during the mid-day peak hour, and 129 trips (67 entering, 62 exiting) during the PM peak hour.

The proposed development is expected to generate an additional 1,080 trips on a typical weekday, 90 trips (43 entering, 47 exiting) in the AM peak hour, 75 trips (34 entering, 41 exiting) in the mid-day peak hour, and 61 trips (25 entering, 36 exiting) during the PM peak hour than the existing site development.

All movements at the intersection of 89th Place and Becker Lane\Site Dwy are expected to operate at LOS C or better during the AM, mid-day, and PM peak hours for the 2022 total traffic condition. No improvements are needed or recommended at this intersection.

At the intersection of Shea Blvd and 89th Place the eastbound left turn and southbound right turn are expected to operate at LOS F with high delays during the AM peak hour, mid-day peak hour, and PM peak hour for the 2022 total traffic condition, similar to the 2021 existing traffic condition but incrementally worse with the addition of site traffic. Based on the poor intersection operation for the 2021 existing traffic condition, no off-site improvements are recommended at this intersection.

1.5. CONCLUSIONS AND RECOMMENDATIONS

No on-site or off-site roadway improvements are recommended for this development.

2. PROPOSED DEVELOPMENT

2.1. LAND USE AND INTENSITY

The proposed development consists of a proposed 3,950 square foot Panera restaurant with drive-thru window. The building will replace the existing 6,957 square foot Red Robin restaurant.

2.2. LOCATION

The site is located on the northeast corner of the Shea Blvd and 89th Place intersection in Scottsdale, Arizona. The site address is 8970 East Shea Blvd.

2.3. SITE PLAN

Access to the site will be provided by two existing driveways on 89th Place. The primary site driveway is located approximately 315 feet north of Shea Blvd, the second driveway is located approximately 610 feet north of Shea Blvd. The site driveways and parking are shared by Mimi's Café and Best Western Hotel. The site plan is included in Appendix A.

2.4. DEVELOPMENT PHASING AND TIMING

The development will be constructed in one construction phase and is expected to begin construction in early 2022 and open in late 2022. 2022 will be used as the design year for traffic analysis.

3. STUDY AREA CONDITIONS

3.1. STUDY AREA

The study area was discussed with City staff and includes the following intersections:

- Shea Blvd and 89th Place
- 89th Place and Site DWY/Becker Lane

The study area includes the following road segment:

- 89th Place, Shea Blvd to Site DWY/Becker Lane

The study area is shown in Figure 1.

Figure 1: Study Area and Land Uses

3.1.1. Area of Influence, Area of Significant Traffic Impact

The directions of approach for site traffic were determined using the turn percentages obtained at the study area intersections. The study area was used as the area of influence and area of significant traffic impact.

3.2. STUDY AREA LAND USES

Study area land uses are primarily commercial in nature including restaurants, hotels, a corporate plaza, and gas station. The site shares the parking lot and site driveways with a Mimi's Café and Best Western Hotel. A Chick-fil-A is located on the west side of 89th Place opposite of the site, Edwards Professional Park

is located further north on the west side of 89th Place. A large shopping center anchored by a Fry's and Home Depot is located on the south side of Shea Blvd adjacent opposite the site.

3.2.1. Existing Land Uses

The site is currently occupied by a 6,957 square foot Red Robin restaurant. The existing building will be demolished to allow for construction of the new Panera Restaurant and drive-thru lane.

3.2.2. Trip Generation for Existing Land Use

The trip generation for the existing land use is based on ITE Land Use 932 High-Turnover Sit Down Restaurant. Average trip rates were used to calculate the site generated trips, ITE does not have fitted curve equations for this land use category. The trip generation for the existing site development is shown in Table 1.

- ITE Code 932 – High-Turnover Sit Down Restaurant

Weekday, T = 112.18*(X), 50% entering, 50% exiting
AM Peak-Hour, T = 9.94*(X), 55% entering, 45% exiting
PM Peak-Hour, T = 9.77*(X), 62% entering, 38% exiting
Where T = Trips, X = Unit of development in 1,000 square feet GLA

Table 1: Existing Site Trip Generation

				Trips				
Description	**Units**	**Amount**	**ITE Land Use Code**	**Weekday**	**AM In**	**AM Out**	**PM In**	**PM Out**
Red Robin Restaurant	1,000 SQ FT	6.957	932	780	38	31	42	26

3.2.3. Anticipated Future Development

No other future developments were identified by city staff to be included in this study.

3.3. SITE ACCESSIBILITY

The site and study area are located in a developed area of Scottsdale just east of the SR101L freeway. Access to the site is provided by two existing site driveways on 89th Place. Connections to 89th Place are provided by Shea Blvd to the south and Desert Cove Avenue to the north.

3.3.1. Area Roadway System – Existing

Shea Blvd is an east-west paved major arterial street with three travel lanes in each direction separated by a raised landscape center median. Improvements include curb, gutter, sidewalk, landscaping, and roadway lighting. The posted speed limit is 45 mph.

89th Place is a north-south paved commercial street with one travel lane and bike lane in each direction separated by a striped two-way center left turn lane. Improvements include curb, gutter, sidewalk, landscaping, and roadway lighting. The posted speed limit is 25 mph.

3.3.2. Study Area Intersections

Shea Blvd and 89th Place is a stop-controlled "T" intersection with STOP signs on southbound 89th Place. The median on Shea Blvd has an opening for an eastbound left turn lane but prohibits left turns from southbound 89th Place. The following travel and turns lanes are provided at the intersection:

- Eastbound Shea Blvd: 3 through lanes, 1 left turn lane
- Westbound Shea Blvd: 3 through lanes, 1 right turn lane
- Southbound 89th Place: 1 right turn lane

89th Place and Becker Lane is a four-legged intersection with stop control on Becker Lane and the Site Dwy. Becker Lane and the Site Dwy are wide enough to be driven as separate right and left turn lanes and were used by right and left turning vehicles during the field observations. To present a worse-case scenario, these approaches were analyzed as one-lane approaches. The following travel and turns lanes are provided at the intersection:

- Northbound 89th Place: 1 through/right turn lane, 1 left turn lane
- Southbound 89th Place: 1 through/right turn lane, 1 left turn lane
- Eastbound Becker Lane: 1 shared left/through/right turn lane
- Westbound Site Dwy: 1 shared left/through/right turn lane

3.3.3. Area Roadway System – Future

A review of the city's Capital Improvement Plan (CIP) did not identify any future roadway improvement projects within the study area.

3.3.4. Traffic Volumes

The city's 2018 Average Daily Traffic Volumes SEGMENT Map available on the City's website shows an average daily traffic volume of 67,500 vehicles per day (vpd) on Shea Blvd between SR101L and 90th Street.

The city's volume map does not include a traffic count for 89th Place. A traffic count was conducted on 89th Place between Shea Blvd and Becker Lane on December 7, 2021, to determine the amount of traffic using 89th Place on a typical weekday. The results of the traffic count are summarized in Table 2. The traffic count data is provided in Appendix B.

Table 2: 89th Place Traffic County Summary

	2021		
Location	**NB**	**SB**	**Total**
89th Place Shea Blvd - Becker Ln	3,430	2,211	5,641

3.3.5. Transit Service

Valley Metro operates the local, regional, and express bus service for the Phoenix metropolitan area, including the City of Scottsdale. Route 80 operates on Shea Blvd and connects to the city's Mustang Transit Center on 90th Street. On weekdays, Saturdays, and Sundays the route operates on 30-minute headways.

3.3.6. Existing Relevant Transportation System Management

No existing relevant transportation system management practices or strategies were identified.

4. PROJECTED TRAFFIC

Traffic volume forecasts and traffic analysis were prepared at the study intersections for the following conditions to determine the traffic related impacts of the proposed development:

- 2021 existing traffic
- 2022 total traffic (existing + site traffic)

4.1. SITE TRAFFIC

4.1.1. Trip Generation

The traffic volumes generated by the proposed development were determined from transportation planning data taken from the Institute of Transportation Engineer's (ITE) publication titled Trip Generation. This publication is considered to be the standard for the transportation engineering profession. The ITE rates and equations are based on studies that measured the trip generation characteristics for various types of land uses. The rates are expressed in terms of vehicular trips per unit of land use. 1,000 square feet of gross leasable area (GLA) is the development unit of measurement for the proposed development.

ITE Land Use Code 934 – Fast-Food Restaurant with Drive-Thru Window was selected as the appropriate land use code for this development. ITE defines this land use code as: *This category includes fast-food restaurants with drive-thru windows. This type of restaurant is characterized by a large drive-thru clientele, long hours of services (some are open for breakfast, all are open for lunch and dinner, some are open late night or 24 hours a day) and high turnover rates for eat-in customers. These limited service eating establishments do not provide table service.*

The trip rates are presented below for the AM and PM weekday peak-hour of the adjacent street traffic. The AM peak hour encompasses one hour between 7:00 AM and 9:00 AM while the PM peak hour encompasses one hour between 4:00 PM and 6:00 PM. Trip generation calculations were performed using the average trip rates, ITE does not provide fitted curve equations for this lane use. The ITE trip generation average trips rates used for estimating the trips generated by this development include:

- ITE Code 934 – Fast-Food Restaurant with Drive-Thru Window
  Weekday, T = 470.95*(X), 50% entering, 50% exiting
  AM Peak-Hour, T = 40.19*(X), 51% entering, 49% exiting
  PM Peak-Hour, T = 32.67*(X), 52% entering, 48% exiting
  Where T = Trips, X = Unit of development in 1,000 square feet GLA

The ITE Trip Generation Manual does not contain trip generation rates for the mid-day peak hour, the mid-day peak hour trip generation was assumed to be the average of the AM peak hour and the PM peak hour. The daily, AM peak hour, mid-day peak hour, and PM peak hour trip generation for the proposed development are shown in Table 3. The trip generation calculations can be found in Appendix C.

Based on the ITE trip generation rates the development is expected to generate 1,860 trips on a typical weekday, with 159 trips (81 entering, 78 exiting) occurring in the AM peak hour, 144 trips (74 entering, 70 exiting) during the mid-day peak hour, and 129 trips (67 entering, 62 exiting) during the PM peak hour.

Table 3: Site Trip Generation

				Trips						
Description	**Units**	**Amount**	**ITE Land Use Code**	**Weekday**	**AM In**	**AM Out**	**MD In**	**MD Out**	**PM In**	**PM Out**
Panera Bakery	1,000 SQ FT	3.950	934	1,860	81	78	74	70	67	62

4.1.2. Trip Generation Comparison

The traffic generated by the proposed development is compared to the traffic generated by the existing land use in Table 4. The proposed development is expected to generate an additional 1,080 trips on a typical weekday, 90 trips (43 entering, 47 exiting) in the AM peak hour, 75 trips (34 entering, 41 exiting) in the mid-day peak hour, and 61 trips (25 entering, 36 exiting) during the PM peak hour.

Table 4: Site Trip Generation - Comparison

				Trips						
Description	**Units**	**Amount**	**ITE Land Use Code**	**Weekday**	**AM In**	**AM Out**	**MD In**	**MD Out**	**PM In**	**PM Out**
Proposed Use	1,000 SQ FT	3.950	934	1,860	81	78	74	70	67	62
Existing Use	1,000 SQ FT	6.957	932	780	38	31	40	29	42	26
Net Trips				1,080	43	47	34	41	25	36

4.1.3. Mode Split

All the trips generated by the site were assumed to be by passenger vehicle.

4.1.4. Pass-By Traffic

No reduction in site traffic resulting from pass-by trips was assumed for this analysis.

4.1.5. Trip Distribution – Directions of Approach

Directions of approach were determined using the 2021 turning movement count data for the two study intersections. The following directions of approach were utilized for site traffic:

Entering Traffic

- From the north on 89th Place – 15%
- From the south on 89th Place – 85 %
- From the east on Shea Blvd – 55%
- From the west on Shea Blvd – 30 %

Exiting Traffic

- To the north on 89th Place – 40 %
- To the south on 89th Place – 60 %
- To the east on Shea Blvd – 60 %

The directions of approach for site traffic are shown in Figure 2.

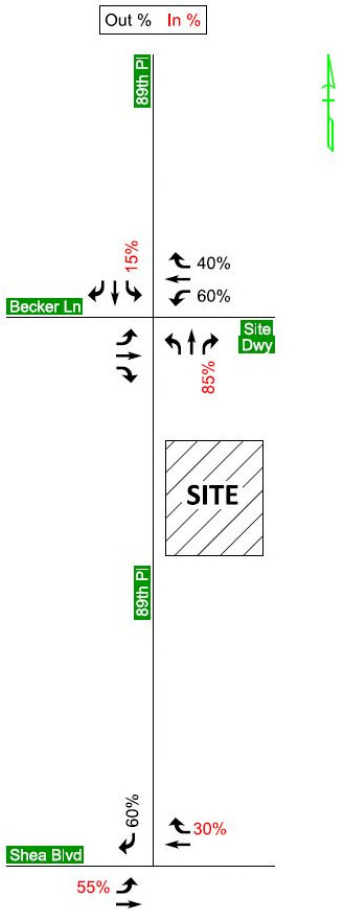

Figure 2: Directions of Approach

4.1.6. Trip Assignment

The trips generated by the development were distributed to the roadway system based on directions of approach for site traffic shown in Figure 2. The site traffic expected to be generated by the proposed development is shown in Figure 3.

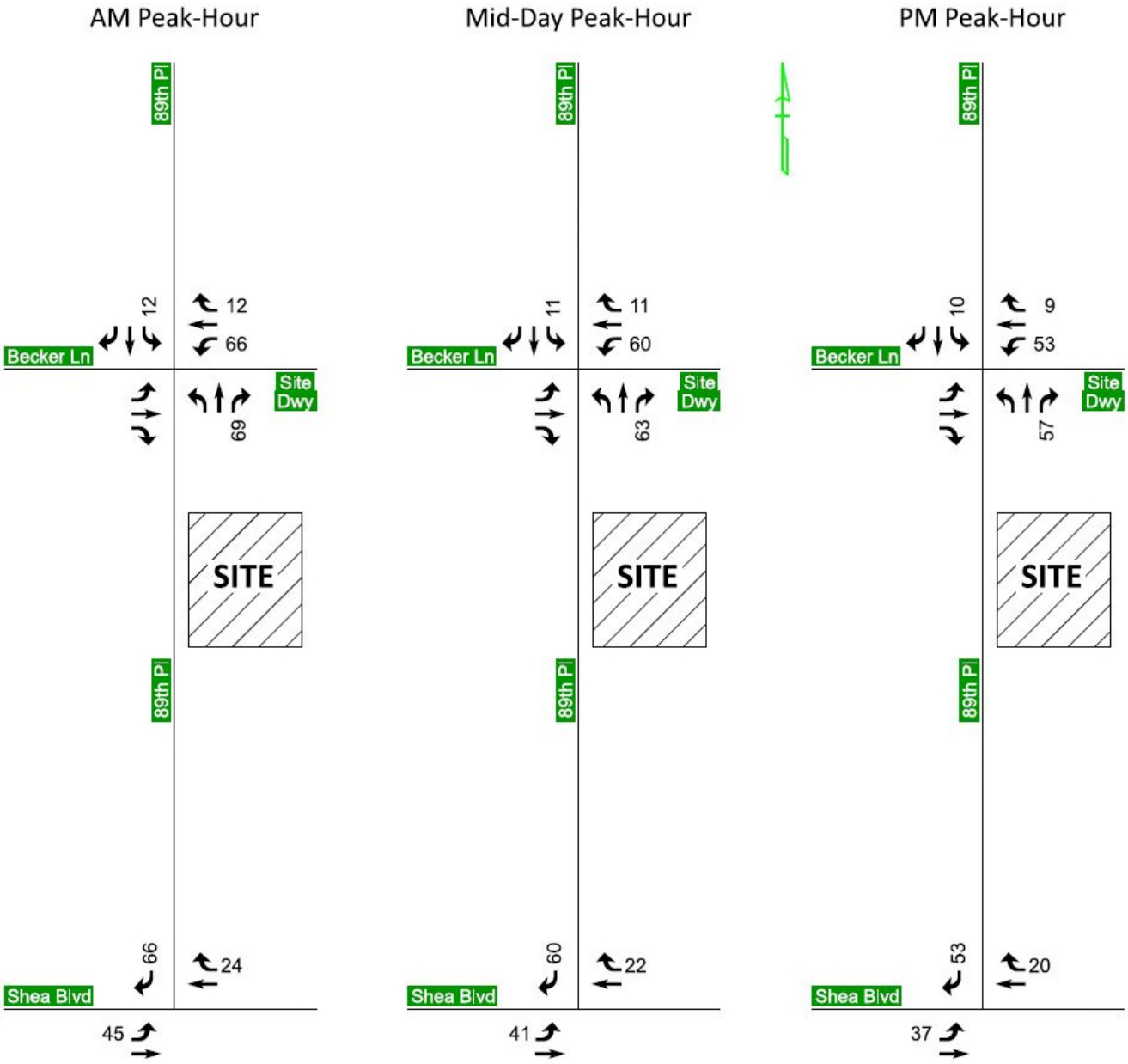

Figure 3: Site Generated Traffic

4.2. NON-SITE TRAFFIC FORECASTING

The proposed development is expected to be completed in 2022. The existing intersection traffic counted in December 2021 is shown in Figure 4. The 2021 existing intersection traffic was used as the background or non-site traffic for the 2022 horizon analysis year. The traffic count data is provided in Appendix B.

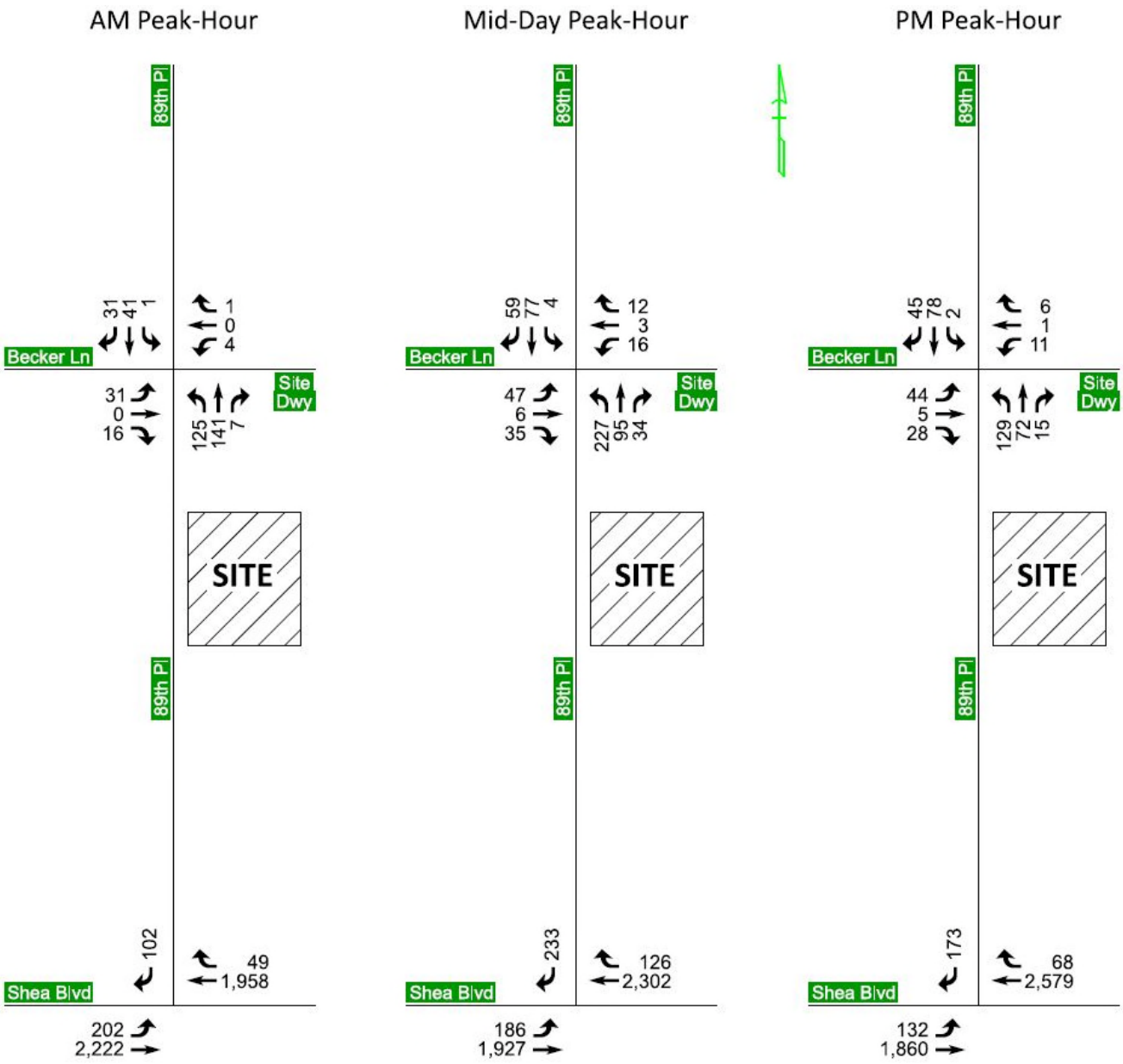

Figure 4: 2021 Existing Traffic

4.3. TOTAL TRAFFIC

The 2022 total traffic is the sum of the 2021 existing traffic and the development site traffic. The 2022 total traffic is shown in Figure 5. The 2022 total traffic calculations are summarized in Appendix D.

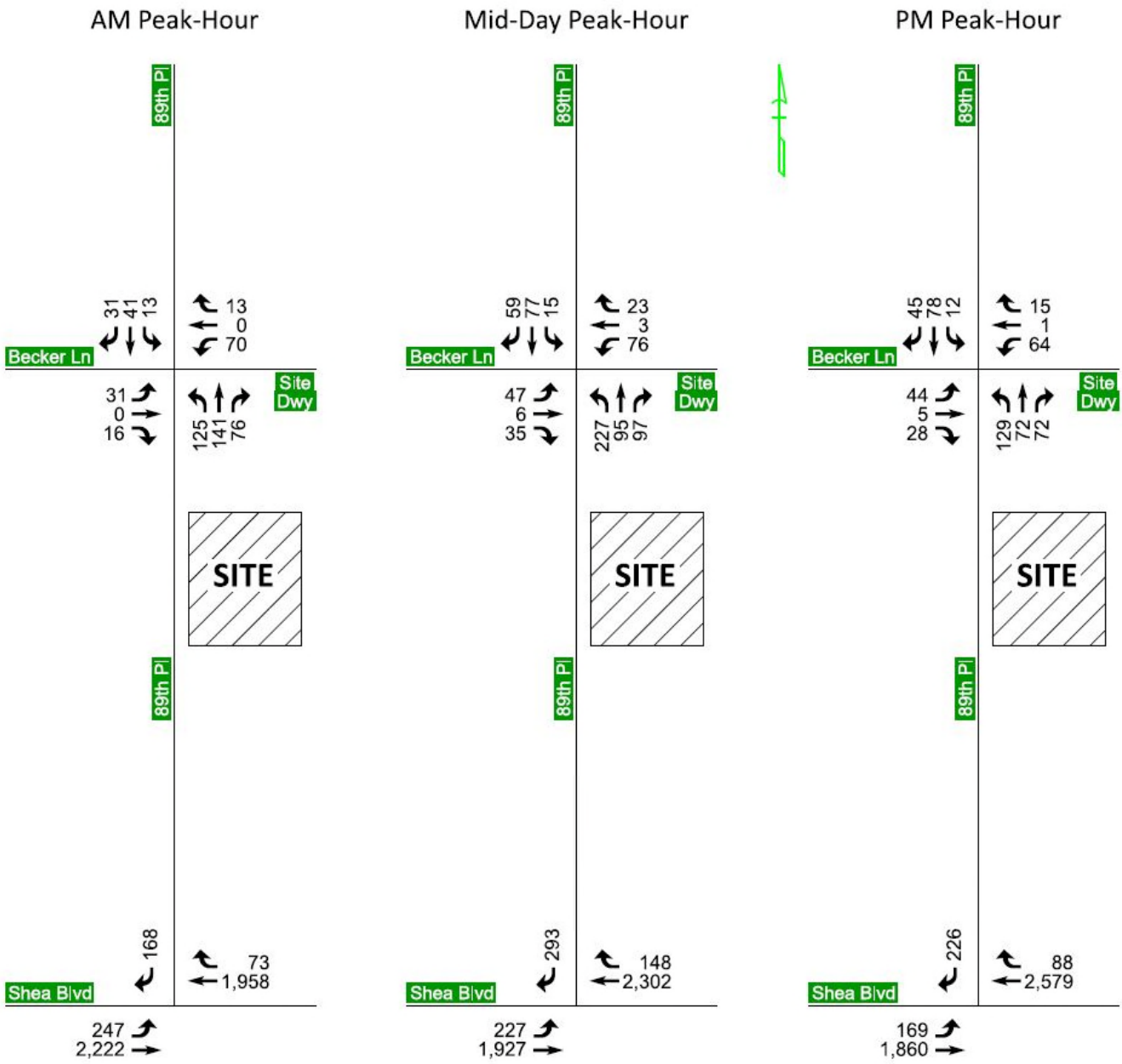

Figure 5: 2022 Total Traffic

5. TRAFFIC AND IMPROVEMENT ANALYSIS

5.1. SITE ACCESS

Site access will be provided by two existing driveways on 89th Place. Both site driveways are located north of the proposed Panera Building, all of the site traffic is anticipated to use the primary site driveway that aligns with Becker Lane.

5.2. LOS ANALYSIS

Level-of-Service (LOS) is commonly used as a qualitative description of intersection operation and is based on the type of traffic control and delay experienced at the intersection. The Highway Capacity Manual 6th Edition (HCM) analysis methodology for signalized and unsignalized intersections is utilized to determine the operating LOS of the study intersections.

The HCM analysis methodology describes the operation of an intersection using a range of LOS from LOS A (free-flow conditions) to LOS F (severely congested conditions), based on the corresponding ranges of stopped delay experienced per vehicle for unsignalized intersections shown in Table 5.

Due to the urban nature of the project, a design LOS D or better will be used for this study to evaluate the study intersection LOS for 2021 existing and 2022 total traffic conditions. For Two-Way stop controlled intersections, LOS is not defined for the major-street approaches or for the overall intersection, as major-street through and right turn vehicles are assumed to experience no delay. For All-Way stop controlled intersections, LOS for approaches and overall intersection is based solely on control delay.

Table 5: HCM LOS Criteria for Unsignalized Intersection

LOS	Control Delay (s/veh)	
	Two-Way Stop	All-Way Stop
A	0-10	0-10
B	>10-15	>10-15
C	>15-25	>15-25
D	>25-35	>25-35
E	>35-50	>35-50
F	>50	>50
Source: *HCM Exhibits 20-2 and 21-8*		

The capacity and LOS for the study area intersections were evaluated using the methodology presented in the HCM. The traffic analysis software, HCS7 TWSC module was used to perform the analyses for the unsignalized intersections. The existing geometry as described in this report was used for the analysis. Table 6 summarizes the peak-hour LOS of the study intersections. An intersection peak-hour factor of 0.92 and a truck factor of two percent were utilized in the LOS analysis for the AM, mid-day, and PM peak hours. The LOS calculations for the 2021 existing traffic conditions are included in Appendix E.

5.2.1. 2021 Existing Traffic LOS

As shown in Table 6, all movements at the intersection of 89th Place and Becker Lane\Site Dwy are expected to operate at LOS B or better during the AM, mid-day, and PM peak hours for existing traffic

volumes. No LOS is reported for the through traffic or right-turn movements on the major street since these movements are not controlled by a stop sign and are not required to yield to other traffic.

At the intersection of Shea Blvd and 89th Place the eastbound left turn and southbound right turn are expected to operate at LOS E or F with high delays during the AM peak hour, mid-day peak hour, and PM peak hour. Field observations of traffic operations at this intersection during the mid-day peak hour in mid-January 2022 observed delays for these movements, but the adjacent traffic signals at SR 101L and 90th Street created gaps in traffic and more opportunities for turning traffic than what is reflected in the HCS7 analysis results.

Table 6: 2021 Existing LOS – Intersections

Intersection	AM Peak-Hour Delay - LOS	MD Peak-Hour Delay - LOS	PM Peak-Hour Delay - LOS
1 – Shea Blvd & 89th Place			
EB Left	* - F	* - F	* - F
SB Right	48.5 - E	* - F	* - F
2 – 89th Place & Becker Ln\Site Dwy			
EB Left/Thru/Right	11.1 - B	14.5 - B	11.3 - B
WB Left/Thru/Right	11.2 - B	13.1 - B	10.7 - B
NB Left	7.6 - A	8.0 - A	7.7 - A
SB Left	7.5 - A	7.5 - A	7.4 - A

Note: * - Excessive Delay, Not Reported

5.2.2. 2022 Total Traffic LOS

LOS calculations were performed at the study intersections for the 2022 total traffic condition to evaluate the traffic impacts of the proposed development. The LOS results for the 2021 existing traffic condition and 2022 total traffic condition are shown in Table 7 for comparison purposes. The 2022 total traffic LOS calculations are included in Appendix E.

All movements at the intersection of 89th Place and Becker Lane\Site Dwy are expected to operate at LOS C or better during the AM, mid-day, and PM peak hours for total traffic conditions with small increases in average delay per vehicle from the 2021 existing traffic condition.

At the intersection of Shea Blvd and 89th Place the eastbound left turn and southbound right turn are expected to operate at LOS F with high delays during the AM peak hour, mid-day peak hour, and PM peak hour similar to the 2021 existing traffic condition.

Table 7: Year 2022 LOS – Intersections

Intersection	2021 Existing Traffic			2022 Total Traffic		
	AM Peak-Hour	MD Peak-Hour	PM Peak-Hour	AM Peak-Hour	MD Peak-Hour	PM Peak-Hour
	Delay – LOS	Delay – LOS	Delay – LOS	Delay – LOS	Delay – LOS	Delay – LOS
1 – Shea Blvd & 89th Place						
EB Left	* - F	* - F	* - F	* - F	* - F	* - F
SB Right	48.5 - E	* - F	* - F	* - F	* - F	* - F
2 – 89th Place & Becker Ln\Site Dwy						
EB Left/Thru/Right	11.1 - B	14.5 - B	11.3 - B	11.6 - B	15.6 - C	11.8 - B
WB Left/Thru/Right	11.2 - B	13.1 - B	10.7 - B	12.8 - B	16.5 - C	12.0 - B
NB Left	7.6 - A	8.0 - A	7.7 - A	7.6 - A	8.0 - A	7.7 - A
SB Left	7.5 – A	7.5 - A	7.4 - A	7.7 – A	7.7 - A	7.6 - A

Note: * - Excessive Delay, Not Reported

5.3. TRAFFIC SAFETY

Appropriate sight distance triangles should be provided at all site driveways and on-site intersections.

The City of Scottsdale provided a collision summary for the study intersections for the three-year period from 2018 to 2020. The collision data is shown in Table 8. During this three-year period there were a total of 35 collisions at the intersection of Shea Blvd and 89th Place. One collision involved a pedestrian fatality and a second collision resulted in a non-capacitating injury.

There were three reported collisions at the intersection of 89th Place and Becker Lane/Site Dwy with no injuries reported. The causes of these three collisions at 89th Place and Becker Lane/Site Dwy were identified a failure to yield right-of-way, improper turn, and unknown.

Table 8: Collision Data

	Number of Crashes		
Intersection	**2018**	**2019**	**2020**
Shea Blvd & 89th Place	13	12	10
89th Place and Becker Lane	1	2	0

5.4. TRAFFIC CONTROL NEEDS

Opportunities to provide mitigation alternatives to improve the traffic operation at the Shea Blvd and 89th Place intersection are limited. Installing a traffic signal would improve traffic operations for the intersection turning movements, but the intersection is too close to the signals at SR101L to the west and 90th Street to the east to allow a traffic signal at this intersection.

5.5. AVERAGE DAILY TRAFFIC

The average daily traffic using 89th Place from Shea Blvd to Becker Lane/Site Dwy was calculated and is summarized in Table 9. The 2022 total traffic volumes are the sum of the 2021 existing traffic volumes and the site traffic.

Table 9: Average Daily Traffic Summary

89th Place – Shea Blvd to Becker Lane/Site Dwy	2021 Existing	2022 Site	2022 Total
Northbound	3,430	790	4,220
Southbound	2,211	560	2,771
Total	5,641	1,350	6,991

5.6. DRIVE-THRU STORAGE

The site plan indicates the drive-thru to have the capacity to store 11 vehicles, eight vehicles in two side by side order lanes and three additional vehicles in the merged lane prior to the drive-thru window. Panera provided an estimate the 35 percent of their transactions will occur at the drive-thru window. The anticipated drive-thru volumes for the AM peak hour, mid-day peak hour, and PM peak hour are shown in Table 10. The highest forecasted drive-thru volume is 29 vehicles per hour during the AM peak hour on a typical weekday.

Panera also provided an average transaction time of five minutes, which includes 3.5 minutes of wait time in the drive-thru queue and 1.5 minutes at the drive-thru window. The 1.5 minute average service time at the drive-thru window would allow the drive-thru window to service 40 customers per hour, exceeding the highest forecasted demand of 29 vehicles per hour.

Table 10: Drive-Thru Volumes

Description	AM Peak Hour	MD Peak Hour	PM Peak Hour
Peak Hour "In" Traffic	81	74	67
Drive Thru Volume	29	26	23

Note: Drive-Thru Traffic is Estimated at 35% of Total Inbound Traffic

5.7. SITE CIRCULATION AND PARKING

On-site circulation and parking will essentially be the same as the existing condition, the new building and drive-thru lane will be constructed within the envelope of the existing building. The existing parking lot layout and drive aisle configurations were reviewed, no recommendations for improvement were identified.

6. IMPROVEMENT ANALYSIS

No off-site improvements are recommended to improve traffic operations for the 2021 existing traffic condition or 2022 total traffic condition.

6.1. IMPROVEMENS TO ACCOMMODATE BASE TRAFFIC

All movements at the intersection of 89th Place and Becker Lane/Site Dwy are expected to operate at LOS B or better during the AM, mid-day, and PM peak hours for the 2021 existing traffic condition. No improvements are needed or recommended at his intersection.

At the intersection of Shea Blvd and 89th Place the eastbound left turn and southbound right turn are expected to operate at LOS E or F with high delays during the AM peak hour, mid-day peak hour, and PM peak hour for the 2021 existing traffic condition. This is a result of the high thru volumes on westbound Shea Blvd approaching SR101L limiting opportunities for turning traffic.

Options to improve traffic operations at this intersection would include widening Shea Blvd to provide an additional westbound travel lane or installing a traffic signal. Neither of these options are feasible or within the scope of this development to provide.

6.2. ADDITIONAL IMPROVEMETNS TO ACCOMMODATE SITE TRAFFIC

All movements at the intersection of 89th Place and Becker Lane/Site Dwy are expected to operate at LOS C or better during the AM, mid-day, and PM peak hours for 2022 total traffic condition. No improvements are needed or recommended at this intersection.

At the intersection of Shea Blvd and 89th Place the eastbound left turn and southbound right turn are expected to operate at LOS F with high delays during the AM peak hour, mid-day peak hour, and PM peak hour for the 2022 total traffic condition, similar to the 2021 existing traffic condition but incrementally worse with the addition of site traffic. Based on the poor intersection operation for the 2021 existing traffic condition, no off-site improvements are recommended at this intersection.

6.3. ALTENATIVE IMPOVEMENTS

A review of the Scottdale CIP did not reveal any roadway capacity of operational improvements planned of the study area.

6.4. STATUS OF IMPROVEMENTS ALREADY FUNDED, ROGRAMMED, OR PLANNED

A review of the Scottdale CIP did not reveal any roadway capacity of operational improvements planned of the study area.

6.5. EVALUATION

No off-site improvements are recommended to improve traffic operations for the 2021 existing traffic condition or 2022 total traffic condition.

7. FINDINGS

7.1. SITE ACCESSIBILITY

All site access will be provided from two existing site driveways on 89th Place. All site traffic was assigned to the closest to the site, the primary site driveway that aligns with Becker Lane on the west side of 89th Place. No issues with site access were identified at this intersection.

7.2. TRAFFIC IMPACTS

All movements at the intersection of 89th Place and Becker Land\Site Dwy are expected to operate at LOS C or better during the AM, mid-day, and PM peak hours for the 2022 total traffic condition. No improvements are needed or recommended at this intersection.

At the intersection of Shea Blvd and 89th Place the eastbound left turn and southbound right turn are expected to operate at LOS F with high delays during the AM peak hour, mid-day peak hour, and PM peak hour for the 2022 total traffic condition, similar to the 2021 existing traffic condition but incrementally worse with the addition of site traffic. Based on the poor intersection operation for the 2021 existing traffic condition, no off-site improvements are recommended at this intersection.

8. CONCLUSIONS/RECOMMENDATIONS

8.1. SITE ACCESS / CIRCULATION PLAN

All site access will be provided from two existing site driveways on 89th Place. All site traffic was assigned to the driveway closest to the site, the primary site driveway that aligns with Becker Lane on the west side of 89th Place. No concerns with site access were identified at this intersection.

8.2. ROADWAY IMPROVEMENTS

8.2.1. On-site

The site will utilize the existing driveways, parking, and drive aisles. No on-site improvements were identified.

8.2.2. Off-site

No off-site improvements were recommended at the intersection of 89th Place and Becker Lane/Site Dwy.

No off-site improvements were recommended at the intersection of Shea Blvd and 89th Place. Due to the high westbound through traffic volumes the southbound right turn and eastbound left turn movements experience poor levels of service and intersection operations. Options to mitigate these levels of service including installing a traffic signal or widening Shea Blvd to include a fourth travel lane are either not feasible or within the scope of this development.

8.2.3. Phasing

The site development consists of a single building that will be constructed in one construction phase.

8.3. TRANSPORTATION SYSTEM MANAGEMENT ACTIONS

No transportation system management actions were identified.

Appendix A

Site Plan

Appendix B

Traffic Counts - 2021

AM/MD/PM Peak Hour Intersection Turning Movement Counts

- Shea Blvd & 89th Place
- 89th Place and Becker Lane/Site Dwy

24-hour Directional Machine Traffic Counts

- NB & SB 89th Place between Shea Blvd and Becker Ln

Appendix C

Trip Generation Calculations

Appendix D

Traffic Volume Calculations

Appendix E

Level of Service Calculations

1- Shea Blvd & 89th Place

- 2021 AM Peak Hour, Existing Traffic
- 2021 MD Peak Hour, Existing Traffic
- 2021 PM Peak Hour, Existing Traffic
- 2022 AM Peak Hour, Total Traffic
- 2022 MD Peak Hour, Total Traffic
- 2022 PM Peak Hour, Total Traffic

2- 89th Place & Becker Ln/Site Dwy

- 2021 AM Peak Hour, Existing Traffic
- 2021 MD Peak Hour, Existing Traffic
- 2021 PM Peak Hour, Existing Traffic
- 2022 AM Peak Hour, Total Traffic
- 2022 MD Peak Hour, Total Traffic
- 2022 PM Peak Hour, Total Traffic