

Traffic Impact Study Proposed Dunkin' Drive Through

Albuquerque, New Mexico



Prepared For:

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I. Executive Summary

This report summarizes the results of a traffic impact study conducted by Kenig, Lindgren, O'Hara, Aboona, Inc. (KLOA, Inc.) for a proposed Dunkin Drive Through (Dunkin) to be located at 1600 Eubank Boulevard NE in Albuquerque, New Mexico. The objectives of the traffic study are as follows:

- Determine the existing vehicular conditions in the study area to establish a base condition.
- Assess the impact that the proposed development will have on traffic conditions in the area.
- Determine any roadway or access modifications and/or improvements that will be necessary to effectively accommodate and mitigate future conditions.

Vehicle, pedestrian, and bicycle counts were conducted during the weekday morning and weekday evening peak periods at the intersections of Eubank Boulevard NE with Hannett Avenue NE and the two existing site access drives to determine the peak hour of traffic activity during these time periods.

As proposed, the Dunkin will be approximately 1,500 square feet in size and will provide a drive through that will accommodate 16 vehicles. A total of 13 parking spaces will serve the site. Access to the site will continue to be provided via the two existing curb cuts serving the site which consist of a southerly full movement access drive and a northerly right-in/right-out access drive.

Based on the proceeding analyses and recommendations, the following conclusions have been made:

- The proposed Dunkin will be located at 1600 Eubank Boulevard NE and will be a 1,500 square foot building providing a drive-through that will accommodate 16 vehicles and a parking lot with 13 parking spaces.
- Access to the site will continue to be provided via the two existing curb cuts serving the site which consist of a southerly full movement access drive and a northerly right-in/right-out access drive.
- The volume of traffic estimated to be generated by the site will be reduced due to the high percentage of pass-by trips anticipated to be diverted from the existing traffic on Eubank Road NE.
- The traffic generated by Dunkin will have a limited impact on the intersection of Eubank Boulevard NE with Hannett Avenue NE and no roadway or traffic control improvements will be required.
- The access drives are projected to be adequate in accommodating the traffic estimated to be generated by Dunkin and will provide flexible and efficient access to the site as well as the adjacent sites that have cross access to the access drives.

- As part of the proposed development, stop signs should be provided for outbound traffic from the access drives onto Eubank Boulevard NE
- The drive-through stacking of 16 vehicles will be adequate in accommodating the peak drive-through activity for the coffee shop.

1. Introduction

This report summarizes the results of a traffic study conducted by Kenig, Lindgren, O'Hara, Aboona, Inc. (KLOA, Inc.) for a proposed Dunkin' to be located at 1600 Eubank Boulevard NE in Albuquerque, New Mexico. The site, which is currently occupied by a single-story building with a canopy, is located on the east side of Eubank Boulevard NE at Hannett Avenue NE. The scoping document for this traffic impact study can be found in the Appendix.

As proposed, the proposed Dunkin' will be approximately 1,500 square feet in size and will provide a drive through that will accommodate 16 vehicles. A total of 13 parking spaces will serve the site. Access to the site will continue to be provided via the two existing curb cuts serving the site which consist of a southerly full movement access drive and a northerly right-in/right-out access drive.

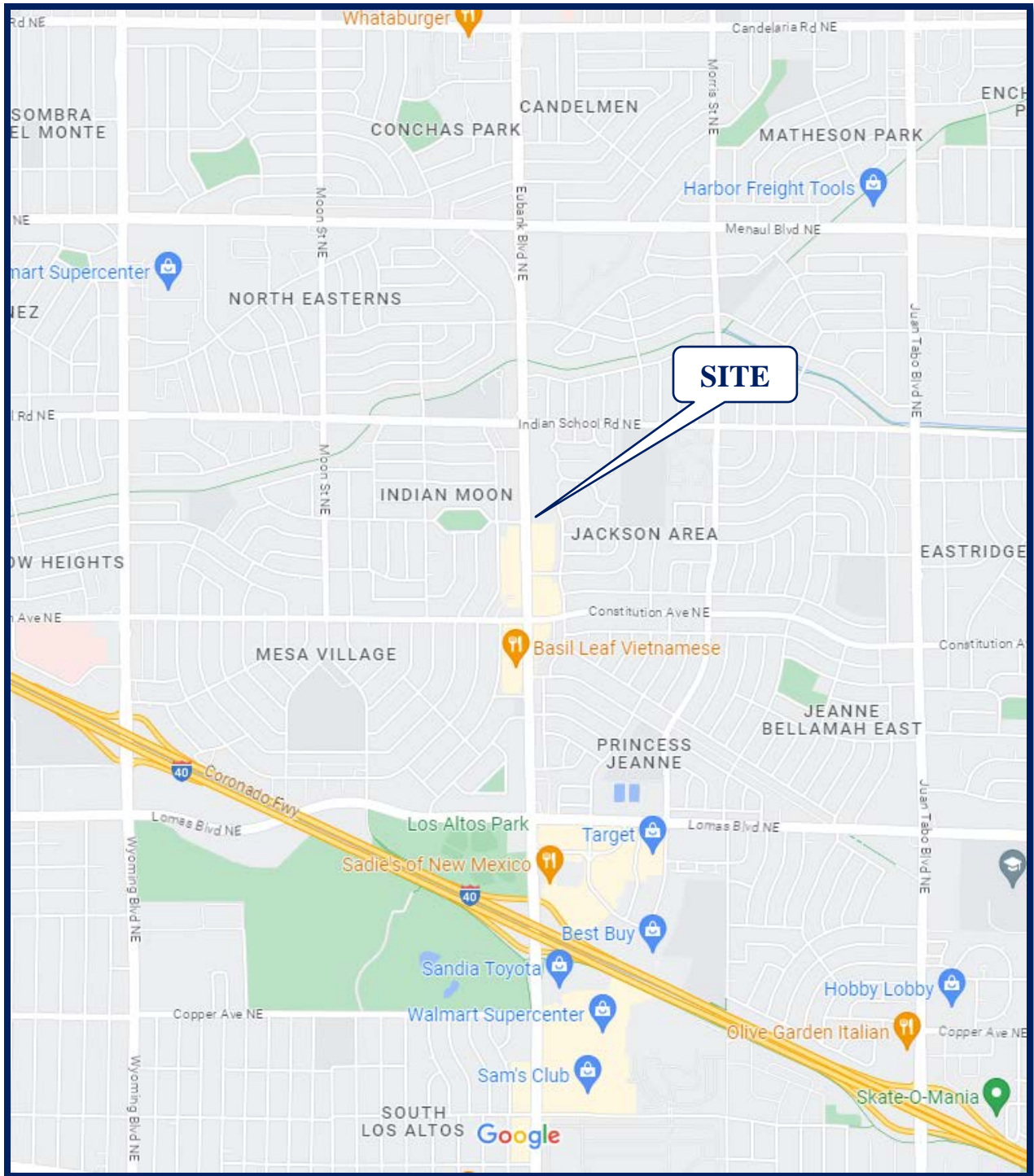
Figure 1 shows the location of the site in relation to the area roadway network. **Figure 2** shows an aerial view of the site.

The sections of this report present the following:

- Existing roadway conditions
- A description of the proposed site
- Directional distribution of the site traffic
- Vehicle trip generation for the site
- Future traffic conditions, including access to the site.
- Traffic analyses for the weekday morning and weekday evening peak hours
- Accident analyzes for the intersection of Eubank Boulevard NE with Hannett Avenue NE
- Recommendations with respect to the adequacy of site access and adjacent roadway system

Traffic capacity analyses were conducted for the weekday morning and weekday evening peak hours for the following conditions:

1. Existing Conditions – Analyzes the capacity of the existing roadway system using existing peak hour traffic volumes in the surrounding area.
2. Year 2024 No-Build Conditions – Analyzes the capacity of the existing roadway system using the ambient area growth, not attributable to any particular development.
3. Year 2024 Total Projected Conditions – Analyzes the capacity of the future roadway system using the projected traffic volumes that include the existing traffic volumes, ambient area growth, and traffic estimated to be generated by the proposed development.



Site Location
Figure 1 – Site Location

Figure 1



Aerial View of Site
Figure 2 – Aerial View of Site

Figure 2

2. Existing Conditions

The following provides a detailed description of the physical characteristics of the adjacent roadways, including geometry and traffic control, adjacent land uses, and peak hour traffic flows.

Site Location

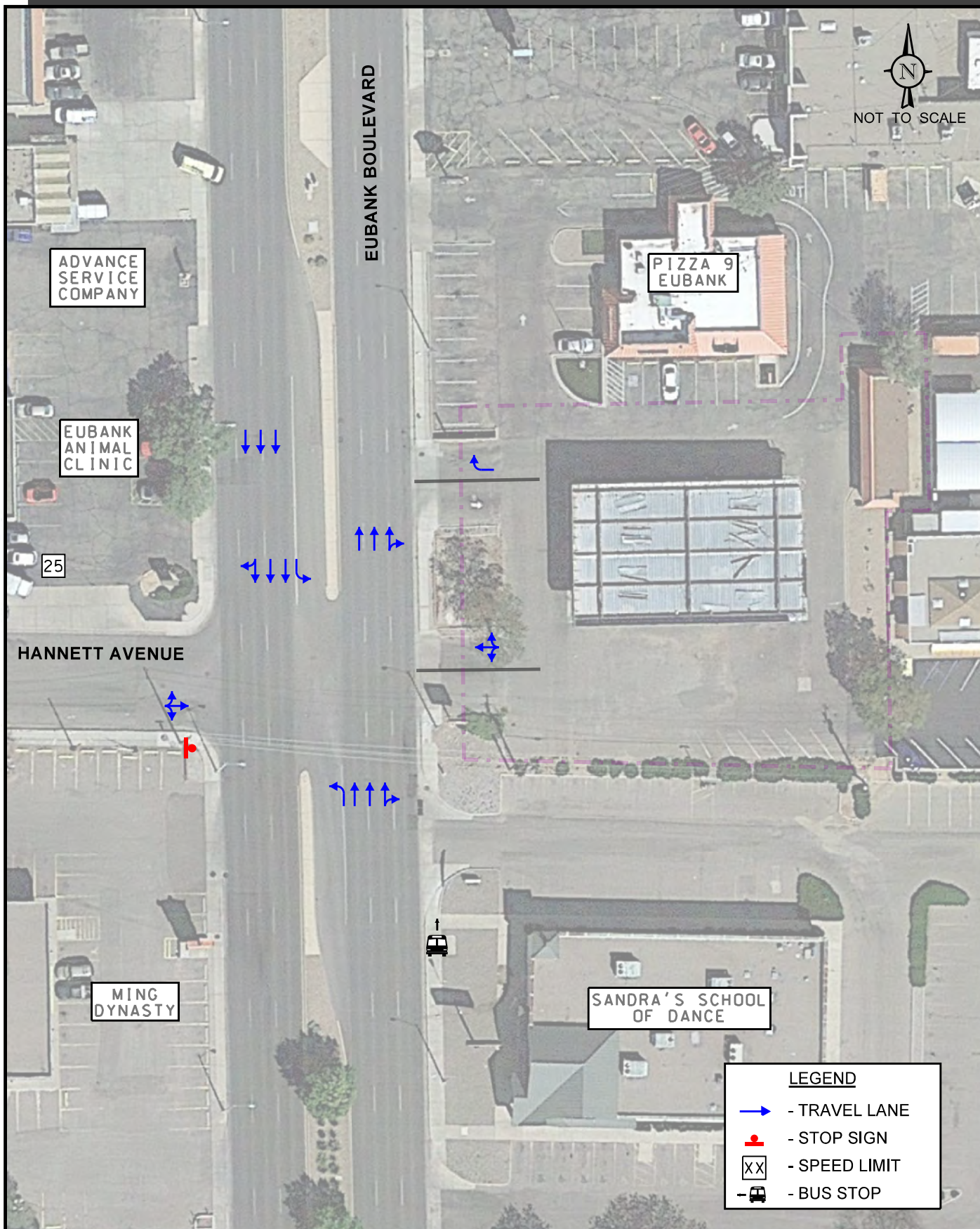
The site of the proposed is located on the east side of Eubank Boulevard NE at Hannett Avenue NE and is currently occupied by a one-story building with an overhead canopy. The building has been occupied by various commercial uses but is currently vacant. The site shares cross access with Contact Wireless to the east and Pizza 9 Eubank to the north. Land uses within the vicinity of the site are primarily commercial along the Eubank Boulevard NE corridor and include Advance Service Company, Eubank Animal Clinic, and Ming Dynasty to the west, and Sandra's School of Dance to the south. Land-uses to the east and west of the commercial corridor consists primarily of residential homes.

Existing Roadway Characteristics

Some of the key characteristics of the existing roadways within the study area are described below and illustrated in **Figure 3**. The existing site access drives serving the site will be described in the following chapter of the traffic impact study.

Eubank Boulevard NE is a north south roadway that provides three travel lanes in each direction, separated by a raised median. The roadway is classified as a principal arterial roadway by the Mid-Region Council of Governments (MRCOG). At its unsignalized intersection with Hannett Avenue NE/southerly site access drive, Eubank Boulevard NE provides an exclusive left-turn lane, two exclusive through lanes, and a shared through/right-turn lane on the northbound and southbound approaches. At its unsignalized intersection with the northerly site access drive, Eubank Boulevard NE provides two exclusive through lanes and a shared through/right-turn lane on the northbound approach. Eubank Boulevard NE is under the jurisdiction of the City of Albuquerque, carries an AADT volume of 31,748 vehicles (NMDOT 2022) and has a posted speed limit of 40 miles per hour. It should be noted that ABQ RIDE Route 2 (Eubank) traverses the roadway along the site frontage and this bus route provides weekday, Saturday and Sunday service.

Hannett Avenue NE is an east-west local roadway that provides one travel lane in each direction. At its unsignalized intersection with Eubank Boulevard NE, Hannett Avenue NE, provides a shared left/right-turn lane that is under stop-sign control. Hannett Avenue NE is under the jurisdiction of the City of Albuquerque and has a posted speed limit of 25 miles per hour.



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Existing Roadway Characteristics



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Figure: 3

Existing Traffic Volumes

In order to determine current vehicle, pedestrian, and bicycle conditions within the study area, peak period traffic, pedestrian, and bicycle counts were conducted during the weekday morning (7:00 A.M. to 9:00 A.M.) and evening (4:00 P.M. to 6:00 P.M.) peak periods on Tuesday, May 23, 2023 at the following intersections:

- Eubank Boulevard NE with Hannett Avenue NE/Site Access Drive
- Eubank Boulevard NE with Northerly Right-In/Right-Out Access Drive

The results of the traffic counts show that the peak hours generally occur from 7:30 A.M. to 8:30 A.M. during the weekday morning peak hour and 4:45 P.M. and 5:45 P.M. during the weekday evening peak hour. **Figure 4** illustrates the existing peak hour vehicle traffic volumes. Summaries of the traffic counts are included in the Appendix.

Crash Data

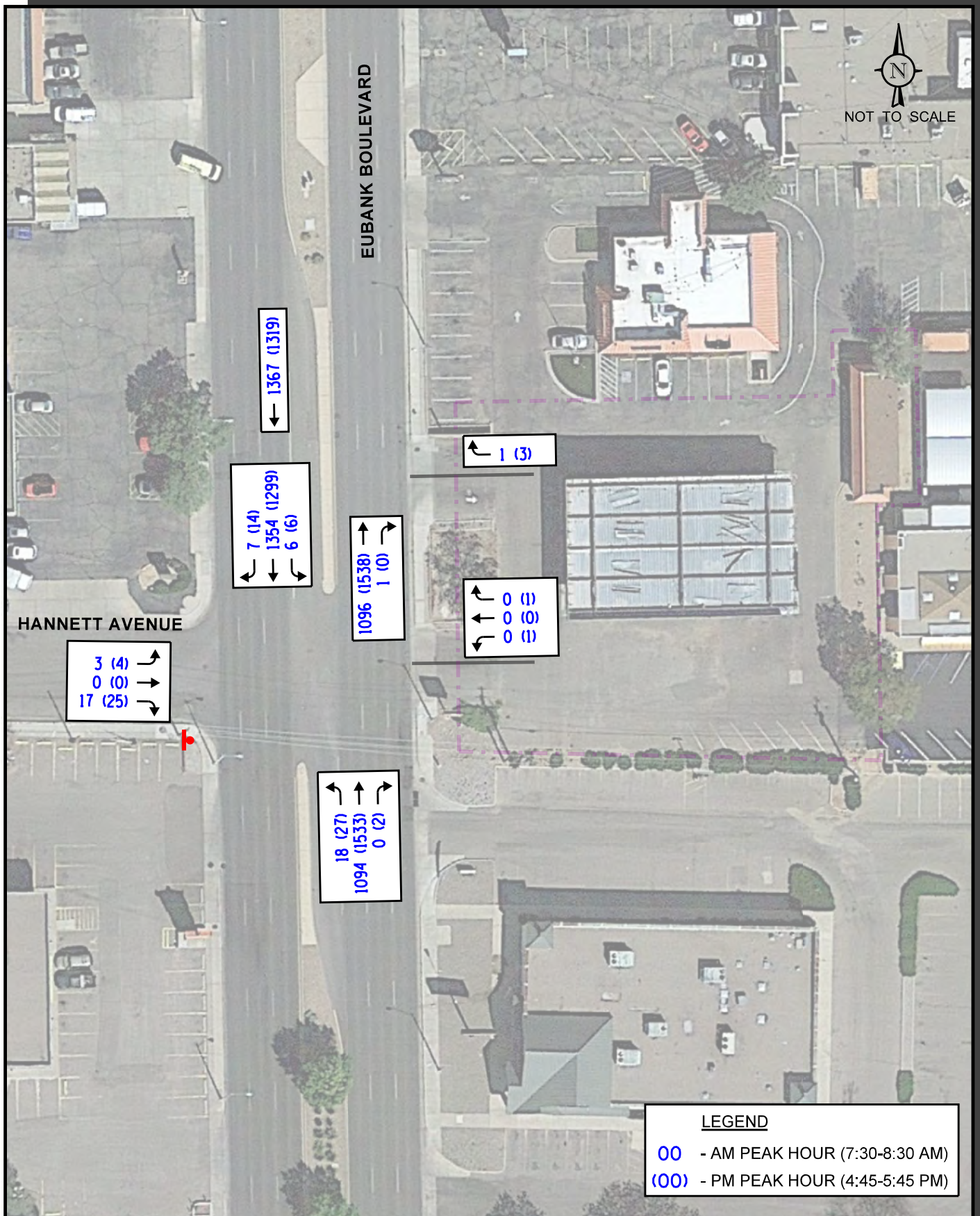
KLOA, Inc. obtained crash data from the New Mexico Department of Transportation (NMDOT) for the most recent available past five years (2017 to 2021) for the intersection of Eubank Boulevard NE with Hannett Avenue NE. The crash data for the intersection including severity and crash type by year is summarized in **Tables 1**. As can be seen from Table 1 and based on a review of the crash data, the following was determined:

- During the review period a total of 10 crashes were reported.
- Eight of the ten crashes occurred during clear weather.
- Eight of the ten crashes occurred during daylight.
- Six of the ten crashes involved property damage only while the other four resulted in injury crashes of Class B or C severity.
- No fatal crashes were reported during the review period.
- No crashes involved a pedestrian or bicyclist.
- The only repetitive crash type was From Same Direction/Both Going Straight.
- Due to the limited number of crashes occurring at the intersection, there was no commonality concluded regarding the cause.

Table 1

EUBANK BOULEVARD NE WITH HANNET AVENUE NE – CRASH SUMMARY

| Year | Type of Crash Frequency | | | | | | |
|---|-------------------------|----------|----------|----------|----------|-----------|----------|
| | 2017 | 2018 | 2019 | 2020 | 2021 | Total | Average |
| Property Damage Only | 1 | 3 | 1 | 0 | 1 | 6 | 1.2 |
| Class A Severity | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Class B Severity | 1 | 0 | 1 | 0 | 0 | 2 | < 1 |
| Class C severity | 0 | 2 | 0 | 0 | 0 | 2 | < 1 |
| Fatalities | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 2 | 5 | 2 | 0 | 1 | 10 | 2 |
| From Same Direction/ All Others | 1 | 0 | 0 | 0 | 0 | 1 | < 1 |
| Both Going Straight/ Entering at Angle | 1 | 0 | 0 | 0 | 0 | 1 | < 1 |
| From Same Direction/ Both Going Straight | 0 | 2 | 0 | 0 | 0 | 2 | < 1 |
| From Same Direction/ Vehicle Backing | 0 | 1 | 0 | 0 | 0 | 1 | < 1 |
| From Same Direction/ One Right Turn | 0 | 1 | 0 | 0 | 0 | 1 | < 1 |
| Left Blank | 0 | 1 | 0 | 0 | 1 | 2 | < 1 |
| From Opposite Direction/ Both Going Straight | 0 | 0 | 1 | 0 | 0 | 1 | < 1 |
| From Same Direction/ Rear End Collision | 0 | 0 | 1 | 0 | 0 | 1 | < 1 |



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Existing Traffic Volumes



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Figure: 4

3. Traffic Characteristics of the Proposed Development

In order to properly evaluate future traffic conditions in the surrounding area, it was necessary to determine the traffic characteristics of the proposed development including the directional distribution and volumes of traffic that it will generate.

Proposed Site and Use Plan

As proposed, Dunkin will be approximately 1,500 square feet in size and will provide a drive-through with stacking for 16 vehicles. A total of 13 parking spaces will serve Dunkin. Eight of the parking spaces are located to the south of the proposed building and the remaining five parking spaces will be located in the northeast corner of the site. Access will be provided via the two existing access drives that serve the site which consist of the following:

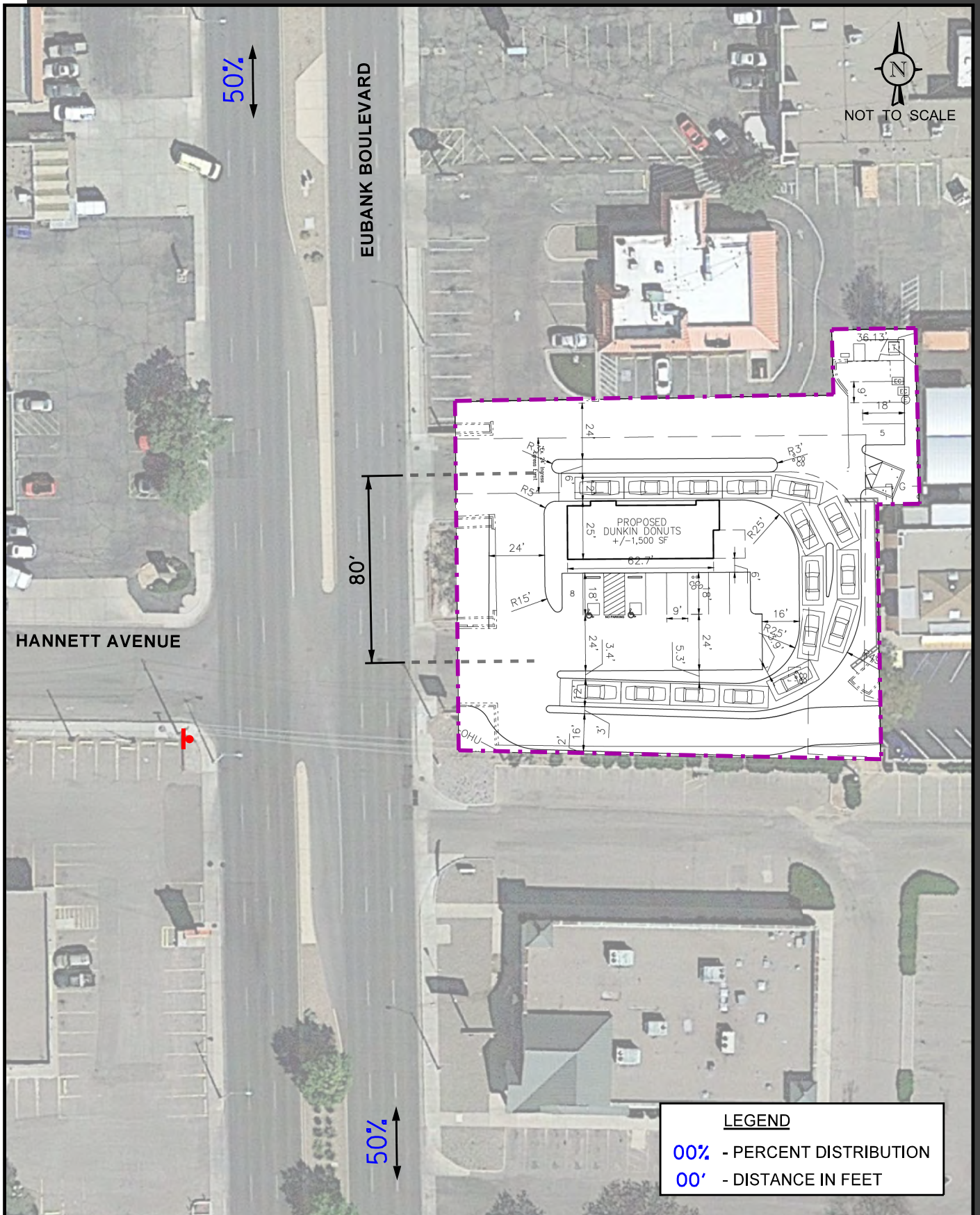
- The full movement access drive off Eubank Boulevard NE, that is aligned opposite Hannett Avenue NE. This access drive provides one inbound lane and one outbound lane.
- The existing access drive off Eubank Boulevard NE, which is located approximately 80 feet north of Hannett Avenue NE. This access drive provides one inbound lane and one outbound lane with turning movements restricted to right-turns only via the raised concrete median along Eubank Boulevard NE.

It should be noted that these access drives also provide inbound access to Contact Wireless located to the east of the site and inbound and outbound access for the Pizza 9 Eubank located to the north of the site via cross access.

A copy of the proposed site plan is included in the Appendix.

Directional Distribution of Site Traffic

The directional distribution of how traffic will approach and depart the site was estimated based on the general travel patterns through the study area derived from the peak hour traffic volumes, which indicated that approximately 50 percent of the traffic traverses the site to/from the north and 50 percent of the traffic traverses the site to/from the south. **Figure 5** shows the established directional distribution for the proposed Dunkin and illustrates the distance in feet between the two access drives.



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Directional Distribution

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Figure: 5

Proposed Site Traffic Generation

The estimate of vehicle traffic to be generated by the proposed Dunkin is based upon the proposed land use types and sizes. The vehicle trip generation was calculated using data published in the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 11th Edition. Land-Use Code 937 (Coffee/Donut Shop with Drive-Through Window) was utilized. The ITE trip generation sheets are included in the Appendix.

It is important to note that surveys conducted by ITE have shown that a percentage of trips made to coffee/donut shops with drive-through lanes are diverted from the existing traffic on the roadway system. This is particularly true during the weekday morning and weekday evening peak hours when traffic is diverted from work-to-lunch and work-to-home trips. Such diverted trips are referred to as “pass-by” trips. Based on information published by ITE for coffee/donut shops, approximately 85 to 95 percent of trips are pass-by trips. However, in order to provide a conservative analysis, only a 70 percent pass-by reduction was applied to the trips estimated to be generated by Dunkin.

Table 2 shows the estimated vehicle trip generation for the weekday morning peak hour, weekday evening peak hour, and daily trips.

Table 2
ESTIMATED PEAK HOUR VEHICLE TRIP GENERATION

| ITE Land Use Code | Type/Size | Weekday Morning Peak Hour | | | Weekday Evening Peak Hour | | | Daily Two-Way Trips | | |
|-------------------|---|---------------------------|------------|------------|---------------------------|------------|------------|---------------------|-------------|-------------|
| | | In | Out | Total | In | Out | Total | In | Out | Total |
| 937 | Coffee/Donut Shop with Drive-Through (1,500 s.f.) | 66 | 63 | 129 | 29 | 29 | 58 | 400 | 400 | 800 |
| | <i>70% Pass-By Reduction</i> | <i>-45</i> | <i>-45</i> | <i>-90</i> | <i>-20</i> | <i>-20</i> | <i>-40</i> | <i>-280</i> | <i>-280</i> | <i>-560</i> |
| | Total New Trips | 21 | 18 | 39 | 9 | 9 | 18 | 120 | 120 | 240 |

4. Projected Traffic Conditions

The total projected traffic volumes include the base traffic volumes, increase in background traffic due to growth, and the traffic estimated to be generated by the proposed development.

Development Traffic Assignment

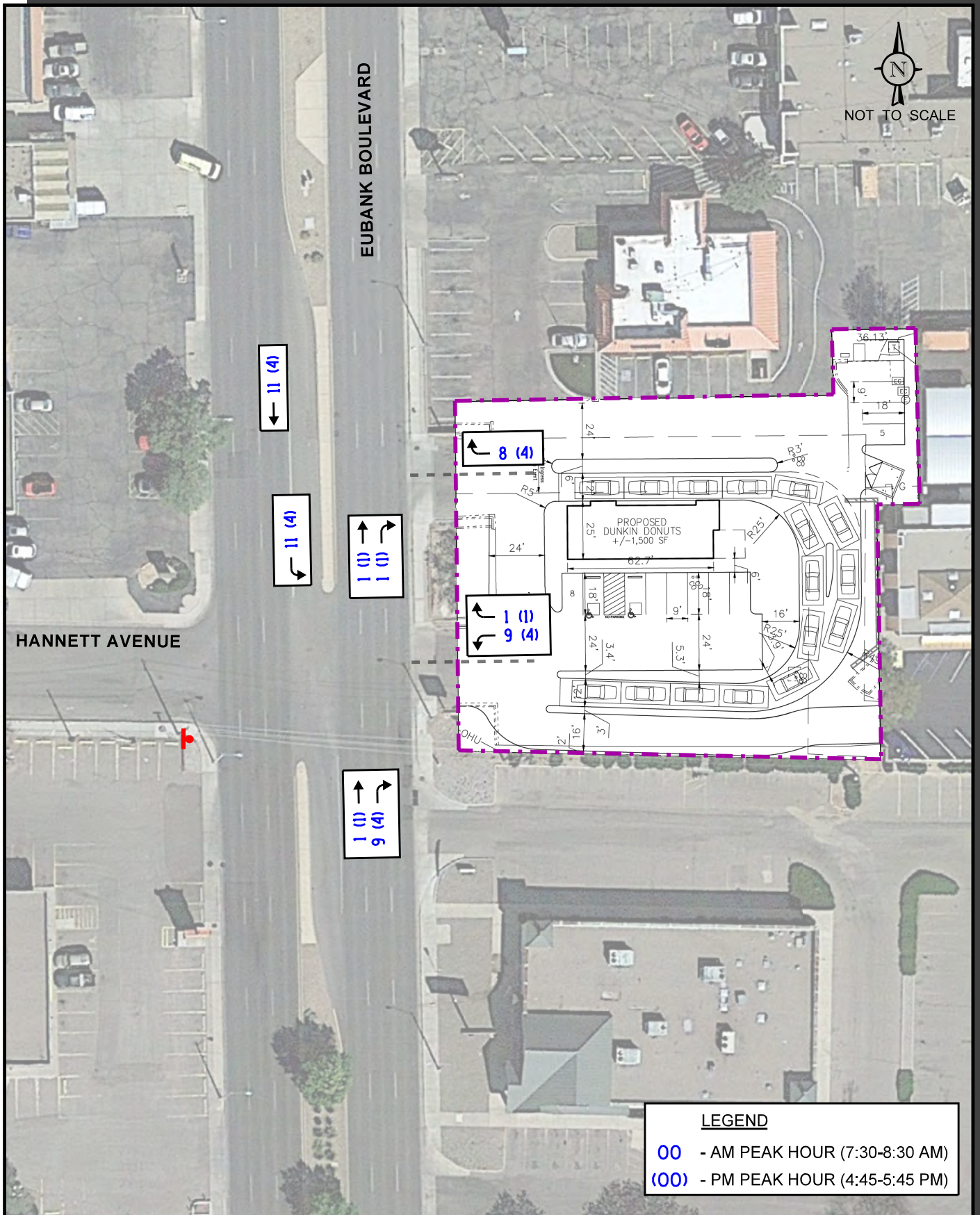
The estimated weekday morning and weekday evening peak hour traffic volumes that will be generated by the proposed Dunkin were assigned to the roadway system in accordance with the previously described directional distribution (Figure 5). **Figure 6** illustrated the traffic assignment of the new passenger vehicle trips and **Figure 7** illustrates the traffic assignment of the pass-by vehicles trips.

Ambient Traffic Growth

The existing traffic volumes were increased by an ambient growth factor of 0.5 percent per year for one year (project completion year) to represent Year 2024 no-build conditions. **Figure 8** shows the Year 2024 no-build traffic volumes.

Year 2024 Total Projected Traffic Volumes

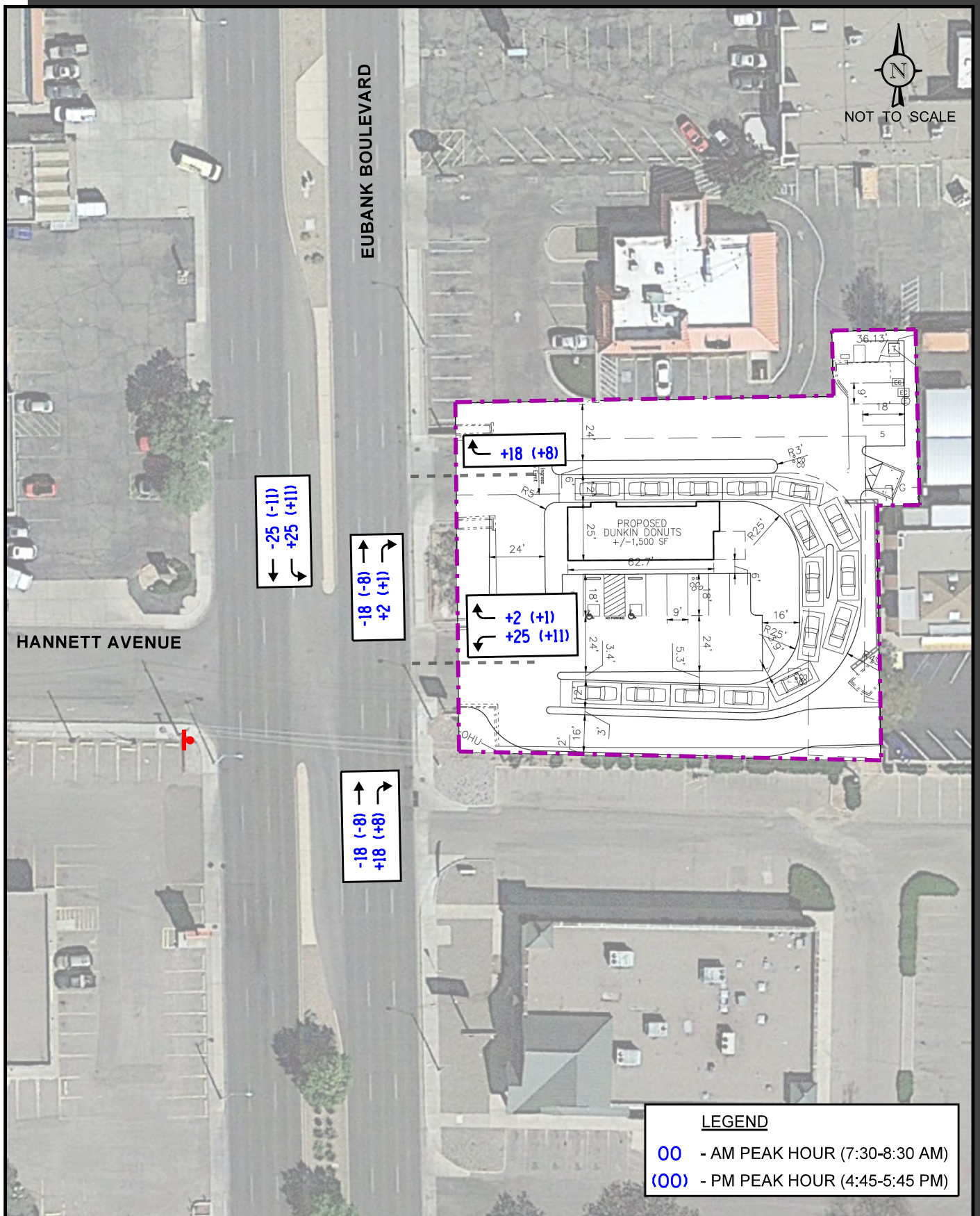
The new and pass-by development-generated traffic (Figures 6 and 7) was added to the no-build traffic volumes (Figure 8) to determine the Year 2024 total projected traffic volumes. These volumes are illustrated in **Figure 9**.



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Site-Generated Traffic Volumes - New Trips

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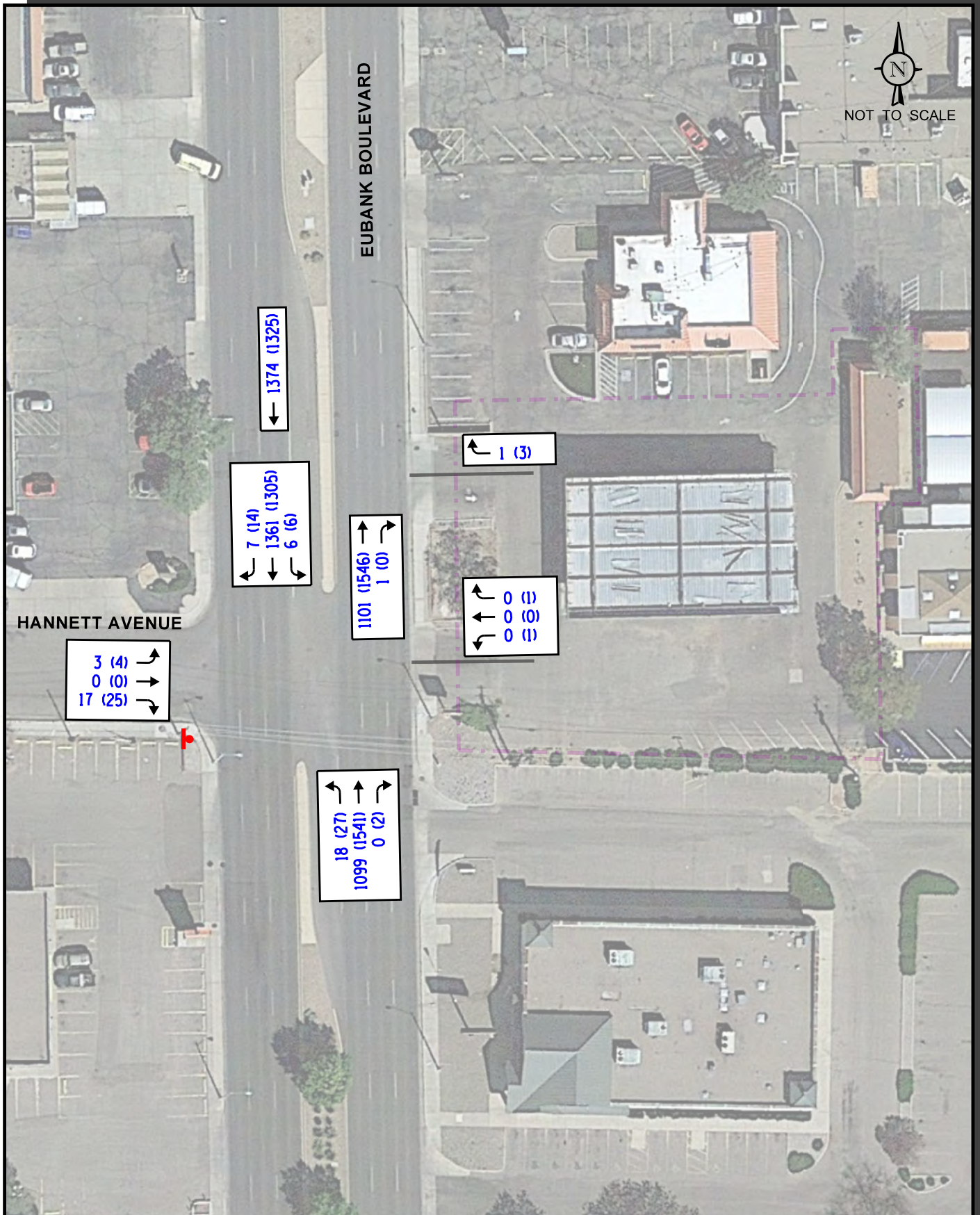
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Pass-By Traffic Volumes

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Figure: 7



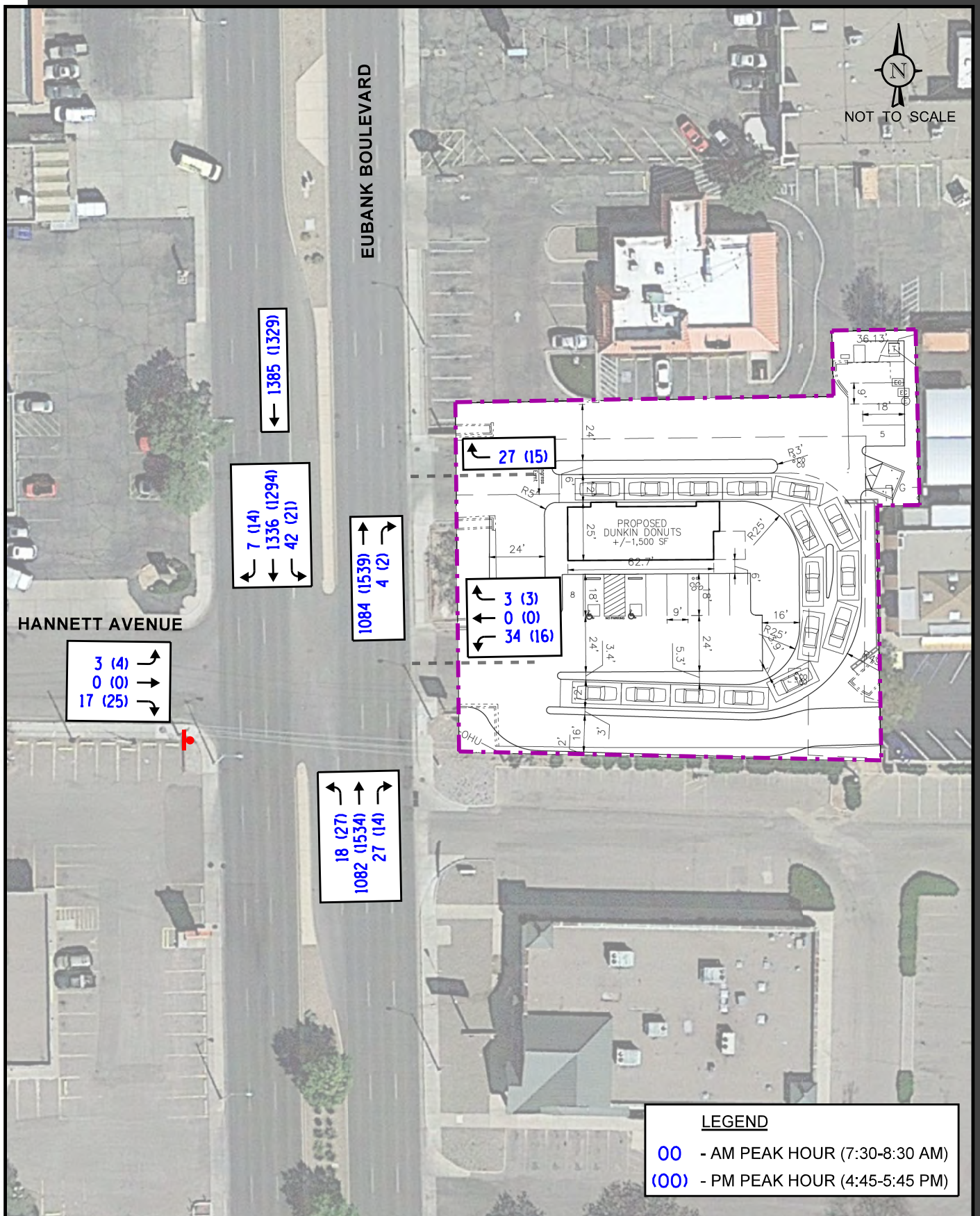
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Year 2024 No-Build Traffic Volumes



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Figure: 8



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Year 2024 Total Traffic Volumes

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Figure: 9

5. Traffic Analysis and Recommendations

The following provides an evaluation conducted for the weekday morning and weekday evening peak hours. The analysis includes conducting capacity analyses to determine how well the roadway system and access drives are projected to operate and whether any roadway improvements or modifications are required.

Traffic Analyses

Intersection analyses were performed for the weekday morning and weekday evening peak hours for the existing, no-build, and total projected (Year 2024) traffic volumes.

The traffic analyses were performed using the methodologies outlined in the Transportation Research Board's *Highway Capacity Manual (HCM)*, 6th Edition and analyzed using Synchro/SimTraffic 11 software.

The analyses for the unsignalized intersections determine the average control delay to vehicles at an intersection. Control delay is the elapsed time from a vehicle joining the queue at a stop sign (includes the time required to decelerate to a stop) until its departure from the stop sign and resumption of free flow speed. The methodology analyzes each intersection approach controlled by a stop sign and considers traffic volumes on all approaches and lane characteristics.

The ability of an intersection to accommodate traffic flow is expressed in terms of level of service, which is assigned a letter from A to F based on the average control delay experienced by vehicles passing through the intersection. The *Highway Capacity Manual* definitions for levels of service and the corresponding control delay for signalized intersections and unsignalized intersections are included in the Appendix of this report.

Summaries of the traffic analysis results showing the level of service, overall intersection delay (measured in seconds), volume-to-capacity ratios, and 95th percentile queues for the existing, no-build and Year 2024 total projected conditions are presented in **Tables 3** through **8**. A discussion of the intersections follows. Summary sheets for the capacity analyses are included in the Appendix.

Table 3

CAPACITY ANALYSIS RESULTS – EXISTING CONDITIONS

| Intersection | Weekday Morning Peak Hour | | Weekday Evening Peak Hour | |
|---|---------------------------|-------|---------------------------|-------|
| | LOS | Delay | LOS | Delay |
| Eubank Boulevard NE with Hannett Avenue NE¹ | | | | |
| • Eastbound Approach | D | 26.8 | C | 23.8 |
| • Westbound Approach | -- | -- | E | 47.9 |
| • Northbound Left Turn | C | 24.3 | C | 21.2 |
| • Southbound Left Turn | C | 19.6 | C | 24.4 |
| Eubank Boulevard with Right-In/Right-Out Access Drive¹ | | | | |
| • Westbound Approach | C | 21.5 | C | 21.3 |
| LOS = Level of Service 1 – Two-way stop control Delay is measured in seconds. | | | | |

Table 4

CAPACITY ANALYSIS RESULTS – EXISTING CONDITIONS

| Intersection | Weekday Morning Peak Hour | | Weekday Evening Peak Hour | |
|--|---------------------------|-------------------------|---------------------------|-------------------------|
| | V/C Ratio | 95 th Queues | V/C Ratio | 95 th Queues |
| Eubank Boulevard NE with Hannett Avenue NE¹ | | | | |
| • Eastbound Approach | 0.124 | 0.4 | 0.140 | 0.5 |
| • Westbound Approach | -- | -- | 0.025 | 0.1 |
| • Northbound Left Turn | 0.101 | 0.3 | 0.116 | 0.4 |
| • Southbound Left Turn | 0.028 | 0.1 | 0.034 | 0.1 |
| Eubank Boulevard with Right-In/Right-Out Access Drive¹ | | | | |
| • Westbound Approach | 0.005 | 0.0 | 0.014 | 0.0 |
| Note: Queues measured in vehicles | | | | |

Table 5

CAPACITY ANALYSIS RESULTS – NO-BUILD CONDITIONS

| Intersection | Weekday Morning Peak Hour | | Weekday Evening Peak Hour | |
|---|---------------------------|-------|---------------------------|-------|
| | LOS | Delay | LOS | Delay |
| Eubank Boulevard NE with Hannett Avenue NE¹ | | | | |
| • Eastbound Approach | D | 27.4 | C | 23.8 |
| • Westbound Approach | -- | -- | E | 49.0 |
| • Northbound Left Turn | C | 24.5 | C | 21.4 |
| • Southbound Left Turn | C | 19.8 | C | 24.6 |
| Eubank Boulevard with Right-In/Right-Out Access Drive¹ | | | | |
| • Westbound Approach | C | 21.6 | C | 21.5 |
| LOS = Level of Service 1 – Two-way stop control Delay is measured in seconds. | | | | |

Table 6

CAPACITY ANALYSIS RESULTS – NO-BUILD CONDITIONS

| Intersection | Weekday Morning Peak Hour | | Weekday Evening Peak Hour | |
|--|---------------------------|-------------------------|---------------------------|-------------------------|
| | V/C Ratio | 95 th Queues | V/C Ratio | 95 th Queues |
| Eubank Boulevard NE with Hannett Avenue NE¹ | | | | |
| • Eastbound Approach | 0.126 | 0.4 | 0.140 | 0.5 |
| • Westbound Approach | -- | -- | 0.026 | 0.1 |
| • Northbound Left Turn | 0.102 | 0.3 | 0.117 | 0.4 |
| • Southbound Left Turn | 0.028 | 0.1 | 0.034 | 0.1 |
| Eubank Boulevard with Right-In/Right-Out Access Drive¹ | | | | |
| • Westbound Approach | 0.005 | 0.0 | 0.015 | 0.0 |
| Note: Queues measured in vehicles | | | | |

Table 7

CAPACITY ANALYSIS RESULTS – PROJECTED CONDITIONS

| Intersection | Weekday Morning Peak Hour | | Weekday Evening Peak Hour | |
|---|---------------------------|-------|---------------------------|-------|
| | LOS | Delay | LOS | Delay |
| Eubank Boulevard NE with Hannett Avenue NE¹ | | | | |
| • Eastbound Approach | D | 28.1 | C | 24.0 |
| • Westbound Approach | F | 74.6 | F | 102.4 |
| • Northbound Left Turn | C | 23.8 | C | 21.1 |
| • Southbound Left Turn | C | 23.0 | D | 26.6 |
| Eubank Boulevard with Right-In/Right-Out Access Drive¹ | | | | |
| • Westbound Approach | C | 16.0 | C | 19.7 |
| LOS = Level of Service 1 – Two-way stop control Delay is measured in seconds. | | | | |

Table 8

CAPACITY ANALYSIS RESULTS – PROJECTED CONDITIONS

| Intersection | Weekday Morning Peak Hour | | Weekday Evening Peak Hour | |
|--|---------------------------|-------------------------|---------------------------|-------------------------|
| | V/C Ratio | 95 th Queues | V/C Ratio | 95 th Queues |
| Eubank Boulevard NE with Hannett Avenue NE¹ | | | | |
| • Eastbound Approach | 0.130 | 0.4 | 0.142 | 0.5 |
| • Westbound Approach | 0.468 | 2.0 | 0.365 | 1.3 |
| • Northbound Left Turn | 0.099 | 0.3 | 0.115 | 0.4 |
| • Southbound Left Turn | 0.197 | 0.7 | 0.119 | 0.4 |
| Eubank Boulevard with Right-In/Right-Out Access Drive¹ | | | | |
| • Westbound Approach | 0.088 | 0.3 | 0.062 | 0.2 |
| Note: Queues measured in vehicles | | | | |

Discussion and Recommendations

The following summarizes how the intersections are projected to operate and identifies any roadway and traffic control improvements necessary to accommodate the generated traffic.

Eubank Boulevard NE with Hannett Avenue NE

The results of the capacity analysis indicate that the eastbound (Hannett Avenue NE) approach currently operates at level of service (LOS) D during the weekday morning peak hour and at LOS C during the weekday evening peak hour. Under Year 2024 no build conditions, the eastbound approach is projected to continue operating at LOS D during the weekday morning peak hour and at LOS C during the weekday evening peak hour with increases in delay of less than one second. Under Year 2024 total projected conditions, the eastbound approach is projected to continue operating at existing levels of service with increase in delay of approximately one second or less over existing conditions. Northbound left-turn movements are projected to continue operating at LOS C during no-build and total projected conditions with 95th percentile queues of onto vehicle which can be accommodated within the 70 feet of left-turn lane storage provided.

Outbound movements from the existing southerly access drive currently operate at LOS E during the weekday evening peak hour and will continue to operate at LOS E under no-build conditions with increases in delay of approximately one second over existing conditions. It should be noted that no traffic was observed to exit this access drive during the weekday morning peak hour and that the traffic generated at this access drive encompasses the existing traffic generated by Pizza 9 Eubank and Contact Wireless.

Under Year 2024 total projected conditions, outbound movements from the access drive are projected to operate at LOS F during both peak hours. However, this level of service is expected for access driveways that have unsignalized intersections with major arterial roadways such as Eubank Boulevard NE. Furthermore, the volume-to-capacity ratios indicate for the approach will be less than one, indicating the approach has sufficient capacity to accommodate the traffic estimated to be generated by the proposed development and the analyses do not take into consideration the gaps in the Eubank Boulevard NE traffic stream that are created by the signalized intersections of the roadway with Indian School Road NE to the north and Constitution Avenue NE to the south. The 95th percentile queues for outbound movements are projected to be one to two vehicles which will not impact the on-site circulation of vehicles. Overall, the operations of this access drive will not impact the operations of the site due to the following:

- The majority of traffic generated by coffee/donut shops are drive-through trips, given the orientation of the site and drive-through lane vehicles will access the drive-through on the south end of the site and exit the drive-through on the north end of the site.
- The majority of traffic utilizing this driveway are left-turn vehicles. Due to the orientation of the drive-through lane and provision of a northerly right-in/right-out access drive. Outbound vehicles turning right onto Eubank Boulevard are likely to utilize the northerly access drive and not interact with the outbound left-turn vehicles.

- Internal queueing of vehicles waiting to turn left onto Eubank Boulevard NE, which is projected to be one to two vehicles, will not block inbound access to the drive-through lane or to the parking lot and will not impede outbound movements from the drive-through.
- Given that the majority of outbound traffic will originate from the drive-through exit, these vehicles will be able to queue along the north-south drive aisle on the west side of the building and not block on-site circulation.

Southbound left-turn movements from Eubank Boulevard NE onto the access drive are projected to operate at C during the weekday morning peak hour and at LOS D during the weekday evening peak hour with 95th percentile queues of one vehicle, which can be accommodated by the existing 95 feet of storage provided.

As can be seen from the above, the traffic estimated to be generated by the proposed Dunkin will not impact the operations of the Hannett Avenue NE approach to Eubank Boulevard NE, the existing southbound left-turn lane will be adequate in accommodating the traffic generated by the proposed development, and the operations of outbound traffic from the site onto Eubank Boulevard NE will not impact the on-site circulation.

Overall, no roadway improvements will be required to accommodate the traffic estimated to be generated by the proposed Dunkin except for the addition of a stop sign that should be provided for outbound vehicles from the site onto Eubank Boulevard NE.

Eubank Boulevard NE with Northerly Site Access Drives

The results of the capacity analysis indicate that outbound movements from the northerly access drive onto Eubank Boulevard NE currently operates at LOS C during the weekday morning and weekday evening peak hours and is projected to continue operating at LOS C under Year 2024 no-build conditions. As previously indicated, this access drive is currently restricted to right-turn movements only via the raised concrete median along Eubank Boulevard NE and the traffic counts conducted at this access drive includes the existing traffic generated by the cross access provided to Pizza 9 Eubank and Contact Wireless.

Under Year 2024 projected conditions, outbound movements from the access drive are projected to continue operating at LOS C during the peak hours with 95th percentile queues of one vehicle. As such, this access drive will be adequate in accommodating the traffic estimated to be generated by the proposed development and the traffic currently generated by the adjacent land-uses. As part of the proposed Dunkin, a stop-sign should be provided for outbound movements from the access drive onto Eubank Boulevard NE.

On-Site Circulation and Drive-Through Stacking

Based on a review of the site plan, vehicles entering the drive-through facility for the coffee shop will enter at the southwest corner of the building facing east. Vehicles will proceed to the dual order boards, place their order, and then proceed to the pick-up window located on the north side of the building. Vehicles will then exit the drive-through and will be able to proceed west to the existing right-in/right-out access drive or south to the existing full movement access drive.

A stop sign should be provided for outbound movements from the drive-through onto the main circulation drive aisles and a “Do Not Enter” sign should be provided at the drive-through exit facing west. A barrier median will be provided separating the drive-through lane from the parking lot serving the proposed building, the cross-access connection to Contact Wireless, and from traffic utilizing the cross-access area to Pizza 9 Eubank.

Based on the site plan, the drive-through facility will provide stacking for approximately two vehicles from the pick-up window, five vehicles from the pay window, and nine vehicles from the dual order boards to the drive-through entrance for a total of 16 stacked vehicles.

Observations conducted by KLOA, Inc at existing coffee shops in the Chicagoland area indicated the following:

- During the weekday morning peak period (6:30 A.M. to 9:00 A.M.), an average queue of seven vehicles and a maximum queue of 12 vehicles were observed.
- During the weekday evening peak period (4:00 P.M. to 6:30 P.M.), an average queue of one vehicle and a maximum queue of two vehicles were observed.

As such, the proposed stacking for 16 vehicles will be adequate in accommodating the average and peak drive-through stacking anticipated for the coffee shop.

6. Conclusion

Based on the proceeding analyses and recommendations, the following conclusions have been made:

- The proposed Dunkin will be located at 1600 Eubank Boulevard NE and will be a 1,500 square foot building providing a drive-through that will accommodate 16 vehicles and a parking lot with 13 parking spaces.
- Access to the site will continue to be provided via the two existing curb cuts serving the site which consist of a southerly full movement access drive and a northerly right-in/right-out access drive.
- The volume of traffic estimated to be generated by Dunkin will be reduced due to the high percentage of pass-by trips anticipated to be diverted from the existing traffic on Eubank Boulevard NE.
- The traffic generated by Dunkin will have a limited impact on the intersection of Eubank Boulevard NE with Hannett Avenue NE and no roadway or traffic control improvements will be required.
- The access drives are projected to be adequate in accommodating the traffic estimated to be generated by Dunkin and will provide flexible and efficient access to the site as well as the adjacent sites that have cross access to the access drives.
- As part of the proposed development, stop signs should be provided for outbound traffic from the access drives onto Eubank Boulevard NE
- The drive-through stacking of 16 vehicles will be adequate in accommodating the peak drive-through activity for the coffee shop.

Appendix

Scope of Traffic Impact Study

Traffic Count Summary Sheets

Site Plan

ITE Trip Generation Summary Sheets

Level of Service Criteria

Capacity Analysis Summary Sheets

Scope of Traffic Impact Study

SCOPE OF TRAFFIC IMPACT STUDY (TIS)

TO: Brendan May, PE, PTOE
KLOA, Inc.
9575 W. Higgins Road, Suite 400
Rosemont, Illinois 60018

MEETING DATE: Wednesday, April 26, 2023 – Was a virtual meeting held

ATTENDEES: Matthew Grush, P.E. (City of Albuquerque), Brendan May, PE, PTOE (KLOA, Inc.), Luay Aboona, PE, PTOE (KLOA, Inc.), Jeff Wooten, PE, LEED AP (Wooten Engineering, LLC)

PROJECT: Dunkin Donuts 1600 Eubank Blvd NE (Eubank Boulevard/Hannett Avenue)

REQUESTED CITY ACTION: ☐ Zone Change ☒ Site Development Plan

☐ Subdivision ☐ Building Permit ☐ Sector Plan ☐ Sector Plan Amendment

☐ Curb Cut Permit ☐ Conditional Use ☐ Annexation ☐ Site Plan Amendment

ASSOCIATED APPLICATION: Coffee Shop with Drive-Through Window (1,500 s.f.)

SCOPE OF REPORT:

The Traffic Impact Study should follow the standard report format, which is outlined in the DPM. The following supplemental information is provided for the preparation of this specific study.

1. Trip Generation - Use Trip Generation Manual, 11th Edition.
2. Appropriate study area:
Signalized Intersections; N/A

Unsignalized Intersections;
 - a. Eubank Boulevard with Hannett Avenue
 - b. Eubank Boulevard with northerly site access drive
Driveway Intersections: all site drives.- confirmed
3. Intersection turning movement counts
Study Time – 7-9 a.m. peak hour, 4-6 p.m. peak hour
Consultant to provide for all intersections listed above.
4. Type of intersection progression and factors to be used.
Information to be determined from the results of the traffic counts
5. Boundaries of area to be used for trip distribution.
2 mile radius – commercial;

6. Basis for trip distribution.

Commercial - Use relationship based upon population. Use population data from 2040 Socioeconomic Forecasts, MRCOG – See MRCOG website for most current data.

Commercial -

$$Ts = (Tt) (Sp) / (Sp)$$

Ts = Development to Individual Subarea Trips

Tt = Total Trips

Sp = Subarea Population

7. Traffic Assignment. Logical routing on the major street system.

8. Proposed developments which have been approved but not constructed that are to be Included in the analyses. Projects in the area include: N/A

9. Method of intersection capacity analysis - planning or operational (see “2016 Highway Capacity Manual” or equivalent [i.e. HCS, Synchro, Teapac, etc.] as approved by staff). Must use latest version of design software and/or current edition of design manual.
Implementation Year: 2024

10. Traffic conditions for analysis:

- a. Existing analysis ☒ yes ___ no - year (2023);
- b. Phase implementation year(s) without proposed development – N/A
- c. Phase implementation year(s) with proposed development – N/A
- d. Project completion year without proposed development – 2025
- e. Project completion year with proposed development – 2025
- f. Other –

11. Background traffic growth.

Method: use 10-year historical growth based on standard data from the MRCOG Traffic Flow Maps. Minimum growth rate to be used is 1/2%.

12. Planned (programmed) traffic improvements.

List planned CIP improvements in study area and projected project implementation year:

- a. N/A

13. Items to be included in the study:

- a. Intersection analysis. Yes
- b. Signal progression - An analysis is required if the driveway analysis indicates a traffic signal is possibly warranted. Analysis Method: N/A
- c. Arterial LOS analysis; No
- d. Recommended street, intersection and signal improvements. Yes
- e. Site design features such as turning lanes, median cuts, queuing requirements and site circulation, including driveway signalization and visibility. Yes
- f. Transportation system impacts.
- g. Other mitigating measures. Yes
- h. Accident analyses ☒ yes ___ no; Location(s): Eubank/Hannett (5 years)
- i. Weaving analyses ___ yes ☒ no; Location(s): N/A

14. Other: N/A

SUBMITTAL REQUIREMENTS:

1. Number of copies of report required
 - a. ~~1 paper copy~~
 - b. 1 digital copy
2. Submittal Fee – \$1300 for up to 3 reviews plus technology fee

The Traffic Impact Study for this development proposal, project name, shall be performed in accordance with the above criteria. If there are any questions regarding the above items, please contact me at 505-924-3362.



6/9/2023

Matt Grush, P.E.
Senior Engineer
City of Albuquerque, Planning
Transportation Development Section

Date

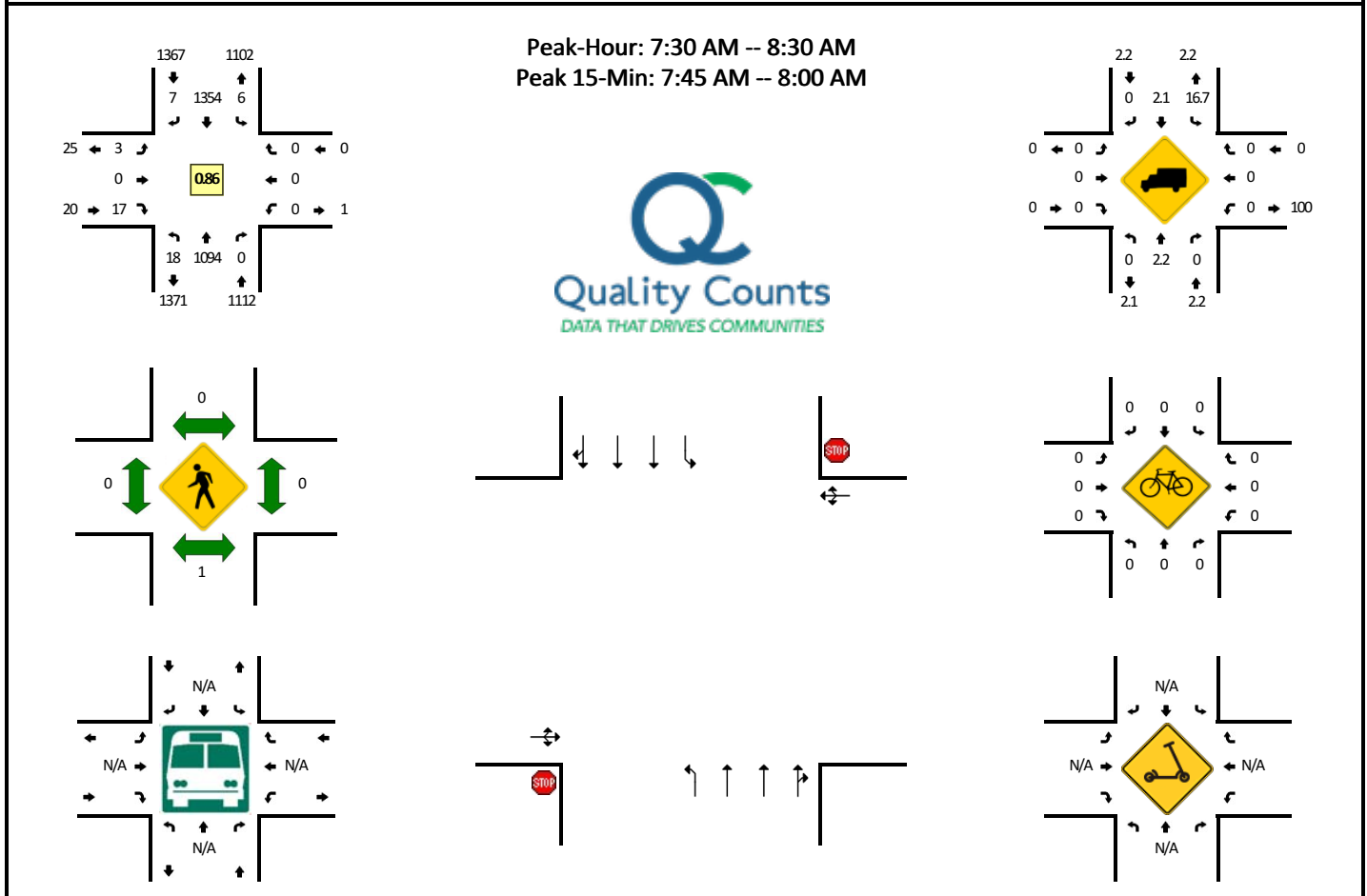
via: email

C: TIS Task Force Attendees, file

Traffic Count Summary Sheets

LOCATION: Eubank Blvd NE -- Hannett Ave NE/South Gas Station Dwy
CITY/STATE: Albuquerque, NM

QC JOB #: 16204801
DATE: Tue, May 23 2023

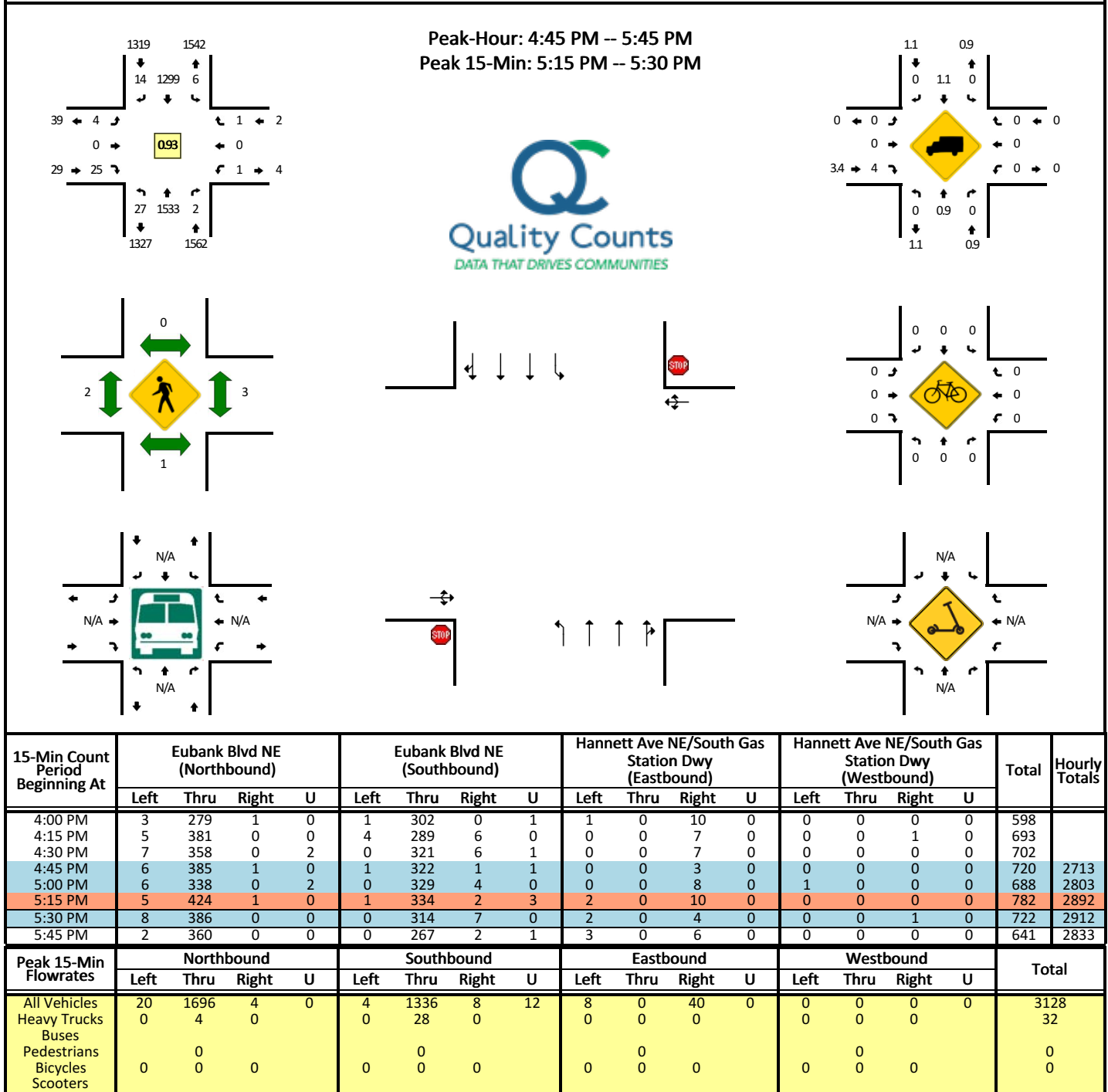


| 15-Min Count Period Beginning At | Eubank Blvd NE (Northbound) | | | | Eubank Blvd NE (Southbound) | | | | Hannett Ave NE/South Gas Station Dwy (Eastbound) | | | | Hannett Ave NE/South Gas Station Dwy (Westbound) | | | | Total | Hourly Totals |
|----------------------------------|-----------------------------|------|-------|---|-----------------------------|------|-------|---|--|------|-------|---|--|------|-------|---|-------|---------------|
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | | |
| 7:00 AM | 5 | 157 | 0 | 0 | 0 | 243 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 409 | |
| 7:15 AM | 10 | 202 | 0 | 0 | 0 | 294 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 509 | |
| 7:30 AM | 4 | 259 | 0 | 0 | 1 | 328 | 1 | 2 | 1 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 603 | |
| 7:45 AM | 5 | 360 | 0 | 0 | 0 | 354 | 2 | 2 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 727 | 2248 |
| 8:00 AM | 8 | 277 | 0 | 0 | 0 | 357 | 3 | 1 | 1 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 651 | 2490 |
| 8:15 AM | 1 | 198 | 0 | 0 | 0 | 315 | 1 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 518 | 2499 |
| 8:30 AM | 2 | 205 | 1 | 0 | 0 | 270 | 2 | 1 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 485 | 2381 |
| 8:45 AM | 2 | 211 | 0 | 0 | 0 | 256 | 2 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 476 | 2130 |
| Peak 15-Min Flowrates | Northbound | | | | Southbound | | | | Eastbound | | | | Westbound | | | | Total | |
| | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | Left | Thru | Right | U | | |
| All Vehicles | 20 | 1440 | 0 | 0 | 0 | 1416 | 8 | 8 | 0 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 2908 | |
| Heavy Trucks | 0 | 32 | 0 | 0 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 52 | |
| Buses | | | | | | | | | | | | | | | | | | |
| Pedestrians | 0 | 0 | | | 0 | 0 | | | 0 | 0 | | | 0 | 0 | | | 0 | |
| Bicycles | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | |
| Scooters | | | | | | | | | | | | | | | | | | |

Comments:

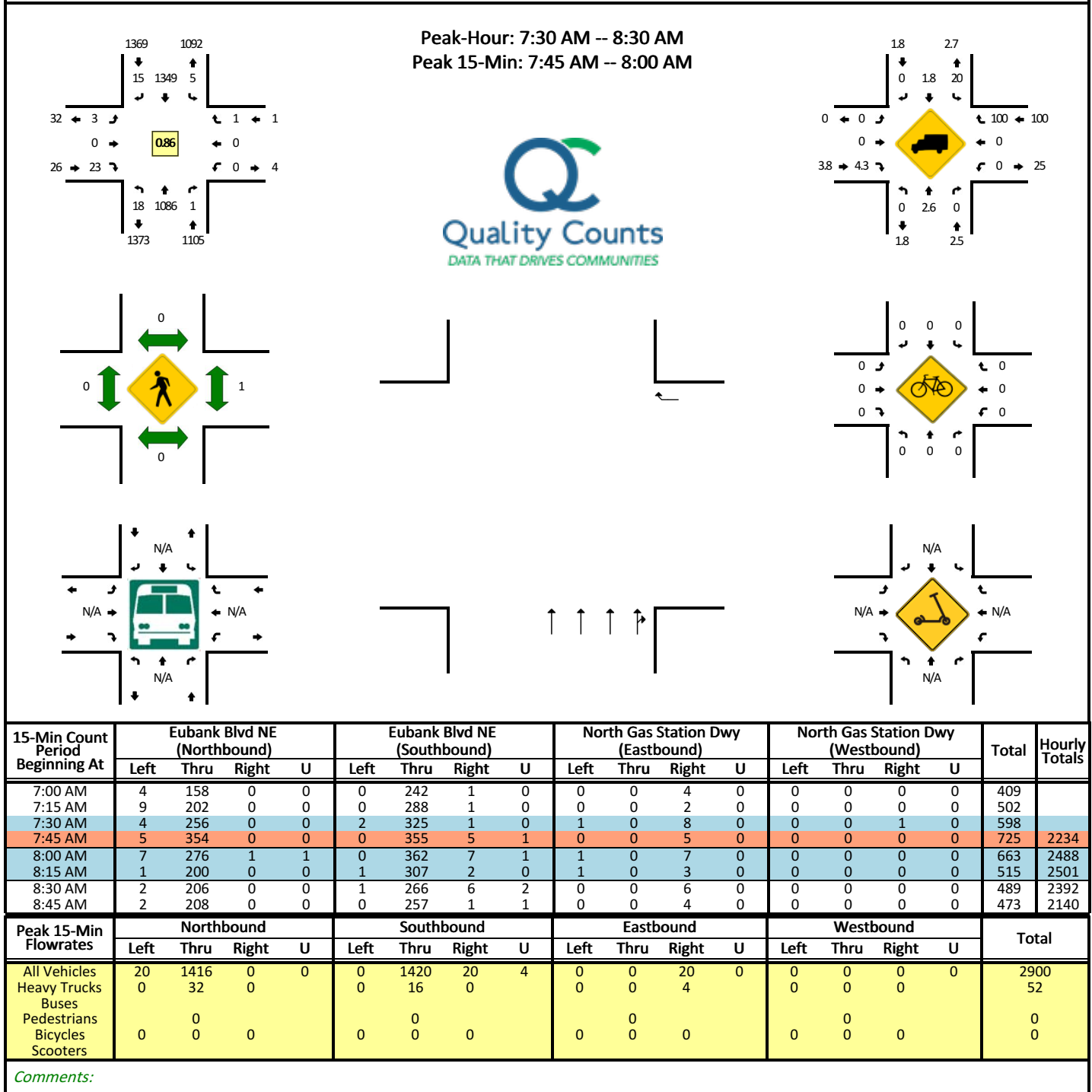
LOCATION: Eubank Blvd NE -- Hannett Ave NE/South Gas Station Dwy
CITY/STATE: Albuquerque, NM

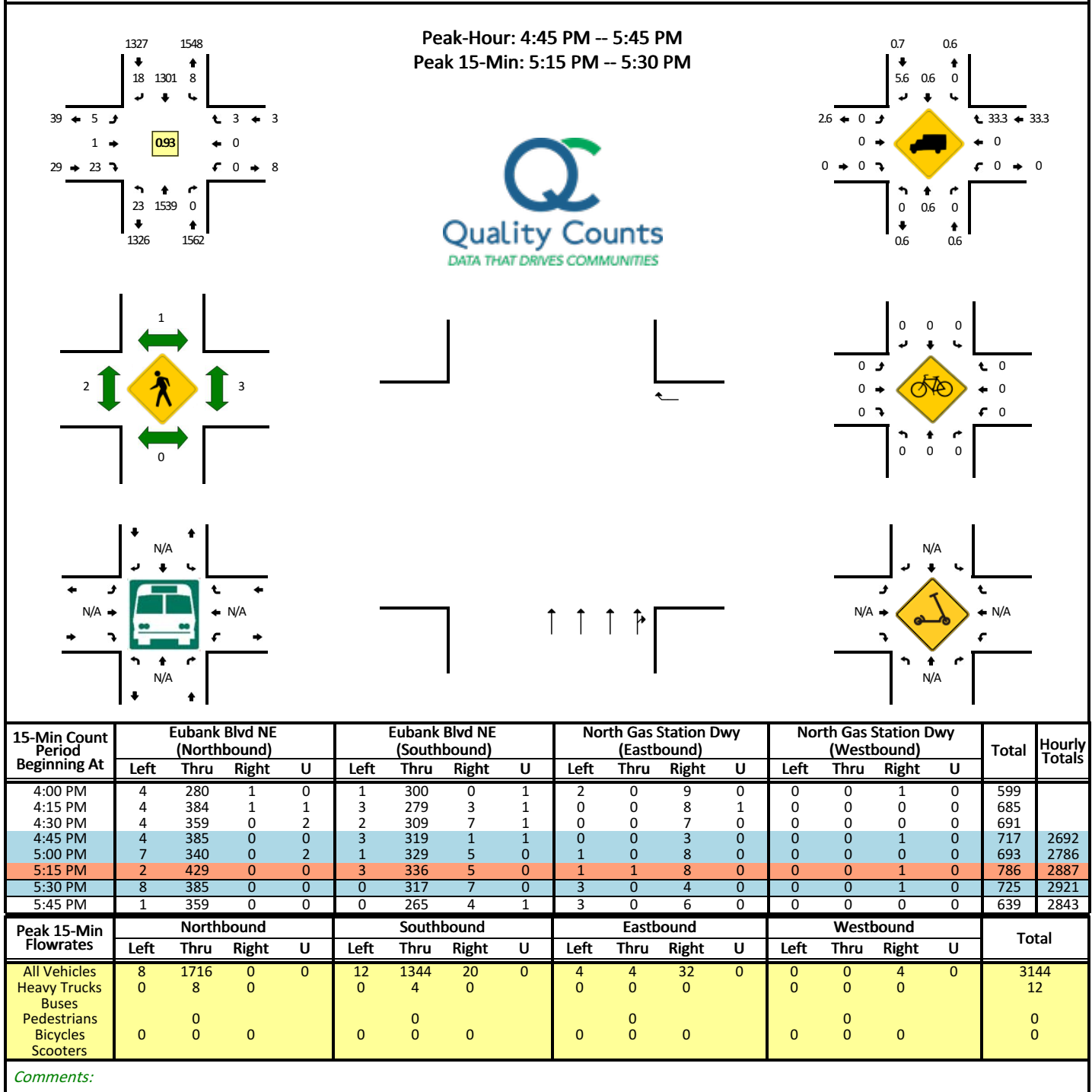
QC JOB #: 16204802
DATE: Tue, May 23 2023



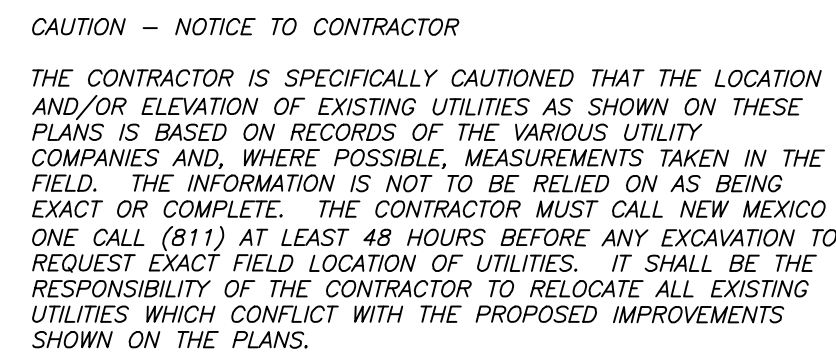
LOCATION: Eubank Blvd NE -- North Gas Station Dwy
CITY/STATE: Albuquerque, NM

QC JOB #: 16204809
DATE: Tue, May 23 2023



LOCATION: Eubank Blvd NE -- North Gas Station Dwy**QC JOB #:** 16204810**CITY/STATE:** Albuquerque, NM**DATE:** Tue, May 23 2023

Site Plan



100 Gold Ave. SW, Suite 205,
Albuquerque, NM 87102
Daniel@ariascinc.com (505) 506-2314

Dunkin Donuts
Restaurant w/ Drive-Thru
1600 Eubank Blvd. NE
Albuquerque, NM 87112

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| <i>mark</i> | <i>date</i> | <i>description</i> |
| <i>revisions</i> | | |
| <i>issue</i> | CONCEPTUAL | |
| <i>project no</i> | 2022056 | |
| <i>drawn by</i> | | |
| <i>checked by</i> | | |
| <i>date</i> | February 27, 2023 | |

N
W  E
S

Wooten Engineering
PO Box 15814
Rio Rancho, NM 87174
Phone: (505) 980-3560

C100

ITE Trip Generation Summary Sheets

Coffee/Donut Shop with Drive-Through Window (937)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA

On a: Weekday

Setting/Location: General Urban/Suburban

Number of Studies: 6

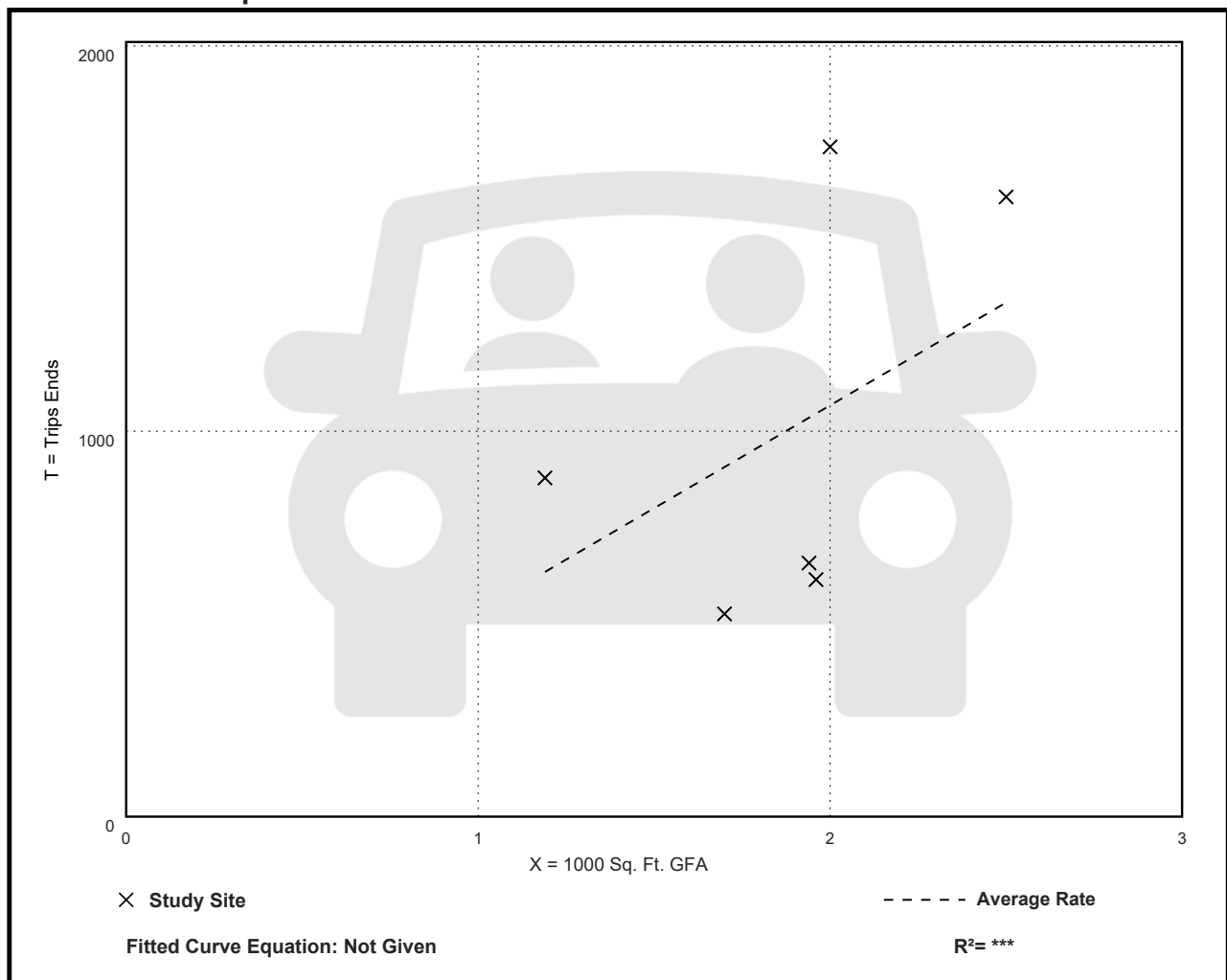
Avg. 1000 Sq. Ft. GFA: 2

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

| Average Rate | Range of Rates | Standard Deviation |
|--------------|-----------------|--------------------|
| 533.57 | 309.41 - 869.00 | 243.65 |

Data Plot and Equation



Coffee/Donut Shop with Drive-Through Window (937)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 78

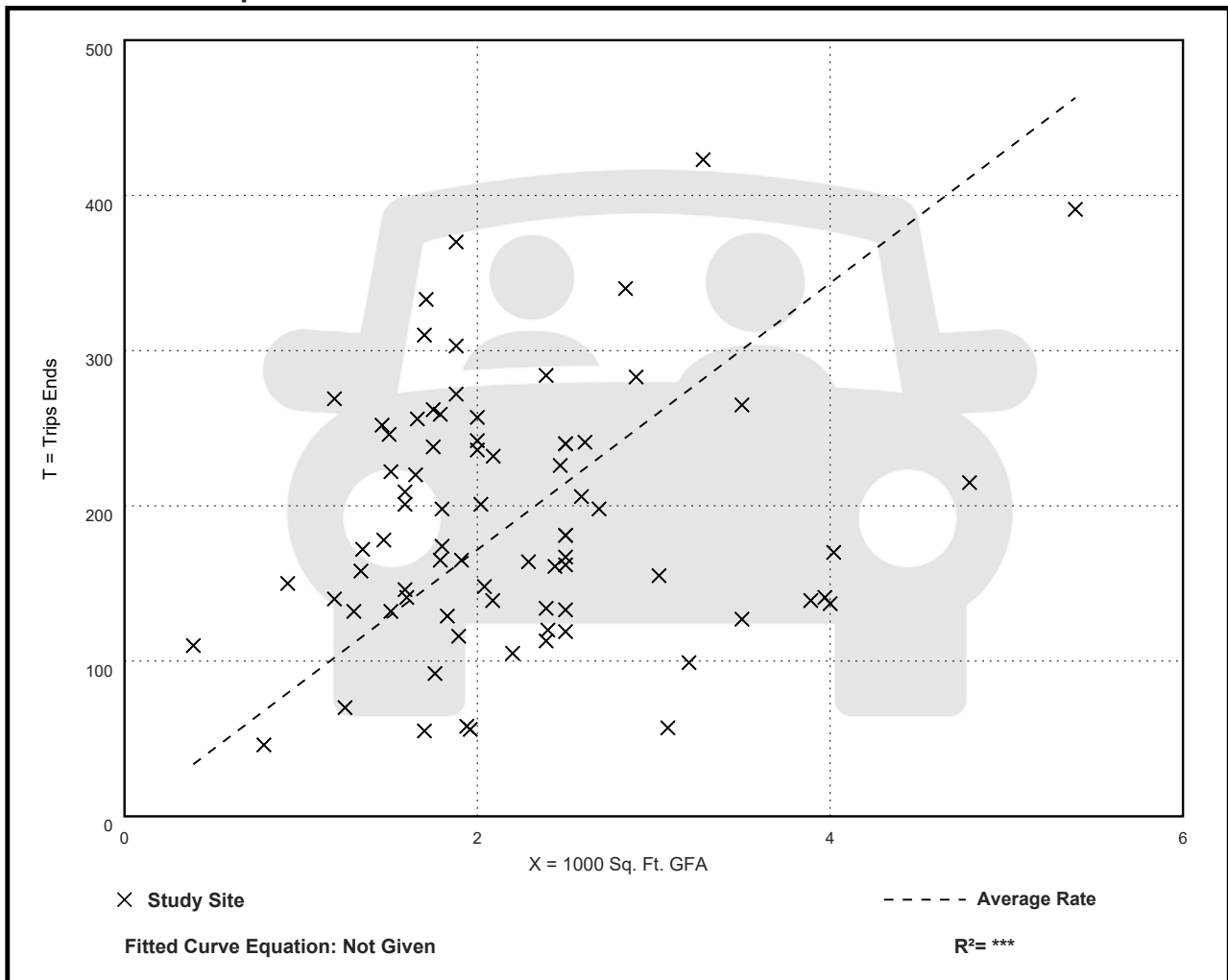
Avg. 1000 Sq. Ft. GFA: 2

Directional Distribution: 51% entering, 49% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

| Average Rate | Range of Rates | Standard Deviation |
|--------------|----------------|--------------------|
| 85.88 | 18.51 - 282.05 | 44.92 |

Data Plot and Equation



Coffee/Donut Shop with Drive-Through Window (937)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 36

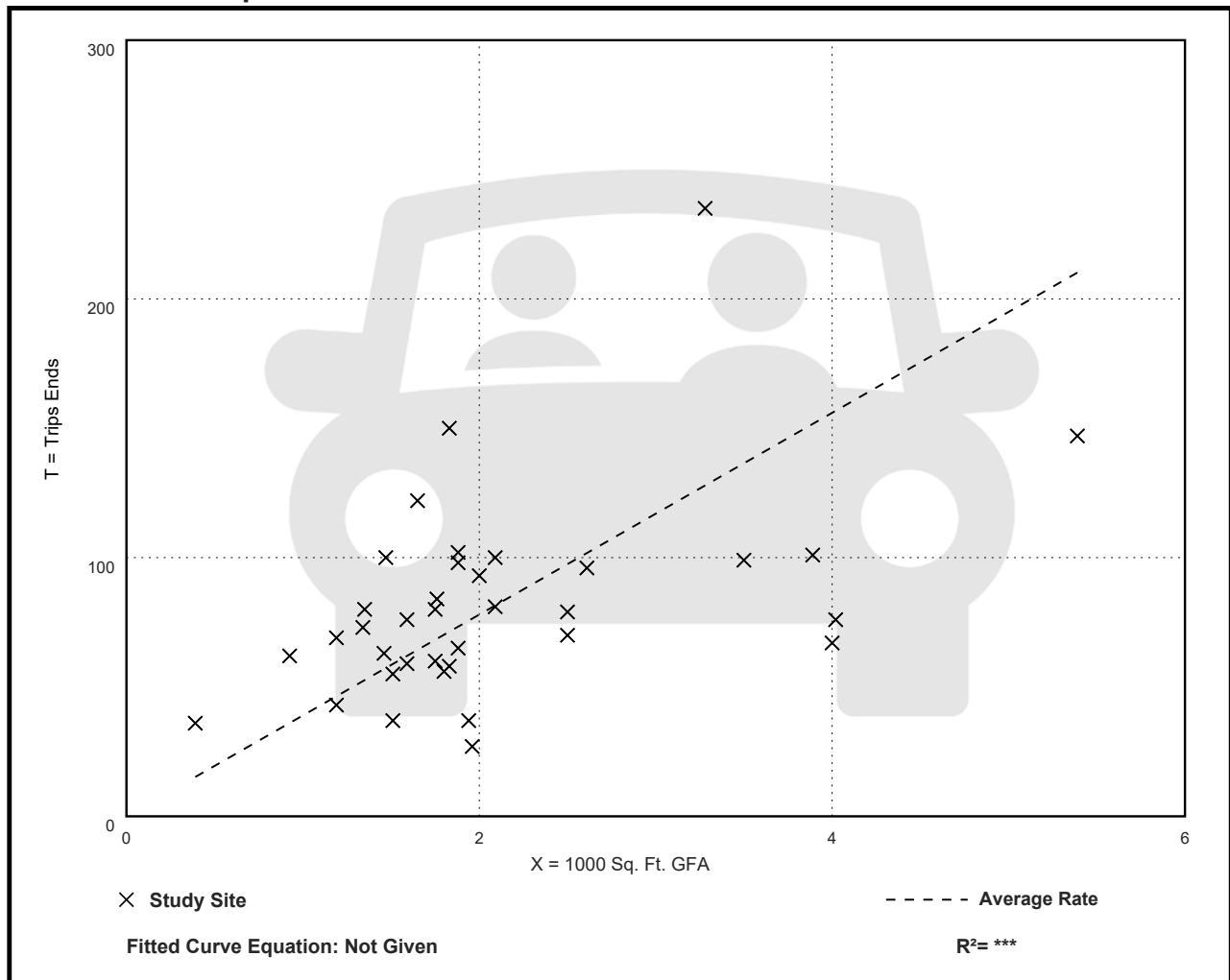
Avg. 1000 Sq. Ft. GFA: 2

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

| Average Rate | Range of Rates | Standard Deviation |
|--------------|----------------|--------------------|
| 38.99 | 13.78 - 92.31 | 17.79 |

Data Plot and Equation



Level of Service Criteria

LEVEL OF SERVICE CRITERIA

| Signalized Intersections | | |
|---|--|---|
| Level of Service | Interpretation | Average Control Delay (seconds per vehicle) |
| A | Favorable progression. Most vehicles arrive during the green indication and travel through the intersection without stopping. | ≤10 |
| B | Good progression, with more vehicles stopping than for Level of Service A. | >10 - 20 |
| C | Individual cycle failures (i.e., one or more queued vehicles are not able to depart as a result of insufficient capacity during the cycle) may begin to appear. Number of vehicles stopping is significant, although many vehicles still pass through the intersection without stopping. | >20 - 35 |
| D | The volume-to-capacity ratio is high and either progression is ineffective or the cycle length is too long. Many vehicles stop and individual cycle failures are noticeable. | >35 - 55 |
| E | Progression is unfavorable. The volume-to-capacity ratio is high and the cycle length is long. Individual cycle failures are frequent. | >55 - 80 |
| F | The volume-to-capacity ratio is very high, progression is very poor, and the cycle length is long. Most cycles fail to clear the queue. | >80.0 |
| Unsignalized Intersections | | |
| Level of Service | Average Total Delay (SEC/VEH) | |
| A | 0 - 10 | |
| B | > 10 - 15 | |
| C | > 15 - 25 | |
| D | > 25 - 35 | |
| E | > 35 - 50 | |
| F | > 50 | |
| Source: <i>Highway Capacity Manual</i> , 6 th Edition. | | |

Capacity Analysis Summary Sheets
Existing Weekday Morning Peak Hour

HCM 6th TWSC

1: Eubank Boulevard NE & Hannett Avenue NE/South Access Drive

06/16/2023

| Intersection | | | | | | | | | | | | |
|--------------------------|--------|------|--------|------------|--------|-------|--------|------|------|-------|------|------|
| Int Delay, s/veh | 0.4 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↕ | | | ↕ | | ↵ ↑↑↑ | | | ↵ ↑↑↑ | | |
| Traffic Vol, veh/h | 3 | 0 | 17 | 0 | 0 | 0 | 18 | 1094 | 0 | 6 | 1354 | 7 |
| Future Vol, veh/h | 3 | 0 | 17 | 0 | 0 | 0 | 18 | 1094 | 0 | 6 | 1354 | 7 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | 70 | - | - | 95 | - | - |
| Veh in Median Storage, # | - | 1 | - | - | 1 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 17 | 2 | 0 |
| Mvmt Flow | 3 | 0 | 20 | 0 | 0 | 0 | 21 | 1272 | 0 | 7 | 1574 | 8 |
| | | | | | | | | | | | | |
| Major/Minor | Minor2 | | Minor1 | | Major1 | | Major2 | | | | | |
| Conflicting Flow All | 2143 | 2906 | 791 | 1958 | 2910 | 636 | 1582 | 0 | 0 | 1272 | 0 | 0 |
| Stage 1 | 1592 | 1592 | - | 1314 | 1314 | - | - | - | - | - | - | - |
| Stage 2 | 551 | 1314 | - | 644 | 1596 | - | - | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.5 | 7.1 | 6.4 | 6.5 | 7.1 | 5.3 | - | - | 5.64 | - | - |
| Critical Hdwy Stg 1 | 7.3 | 5.5 | - | 7.3 | 5.5 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.7 | 5.5 | - | 6.7 | 5.5 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.8 | 4 | 3.9 | 3.8 | 4 | 3.9 | 3.1 | - | - | 3.27 | - | - |
| Pot Cap-1 Maneuver | 53 | 16 | 289 | 69 | 16 | 364 | 207 | - | - | 253 | - | - |
| Stage 1 | 78 | 169 | - | 122 | 230 | - | - | - | - | - | - | - |
| Stage 2 | 448 | 230 | - | 394 | 168 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 48 | 14 | 289 | 58 | 14 | 364 | 207 | - | - | 253 | - | - |
| Mov Cap-2 Maneuver | 63 | 89 | - | 93 | 83 | - | - | - | - | - | - | - |
| Stage 1 | 70 | 164 | - | 110 | 207 | - | - | - | - | - | - | - |
| Stage 2 | 403 | 207 | - | 357 | 163 | - | - | - | - | - | - | - |
| | | | | | | | | | | | | |
| Approach | EB | | WB | | NB | | SB | | | | | |
| HCM Control Delay, s | 26.8 | | 0 | | 0.4 | | 0.1 | | | | | |
| HCM LOS | D | | A | | | | | | | | | |
| | | | | | | | | | | | | |
| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1WBLn1 | SBL | SBT | SBR | | | | | |
| Capacity (veh/h) | 207 | - | - | 188 | - | 253 | - | - | | | | |
| HCM Lane V/C Ratio | 0.101 | - | - | 0.124 | - | 0.028 | - | - | | | | |
| HCM Control Delay (s) | 24.3 | - | - | 26.8 | 0 | 19.6 | - | - | | | | |
| HCM Lane LOS | C | - | - | D | A | C | - | - | | | | |
| HCM 95th %tile Q(veh) | 0.3 | - | - | 0.4 | - | 0.1 | - | - | | | | |




HCM 6th TWSC

2: Eubank Boulevard NE & North Access Drive

06/16/2023

Intersection

Int Delay, s/veh 0

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|--------------------------|------|---|---|------|------|---|
| Lane Configurations | |  |  | | |  |
| Traffic Vol, veh/h | 0 | 1 | 1096 | 1 | 0 | 1367 |
| Future Vol, veh/h | 0 | 1 | 1096 | 1 | 0 | 1367 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 0 | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 86 | 86 | 86 | 86 | 86 | 86 |
| Heavy Vehicles, % | 0 | 100 | 3 | 0 | 0 | 2 |
| Mvmt Flow | 0 | 1 | 1274 | 1 | 0 | 1590 |

| Major/Minor | Minor1 | Major1 | Major2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | - | 638 | 0 |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |
| Critical Hdwy | - | 9.1 | - |
| Critical Hdwy Stg 1 | - | - | - |
| Critical Hdwy Stg 2 | - | - | - |
| Follow-up Hdwy | - | 4.9 | - |
| Pot Cap-1 Maneuver | 0 | 219 | - |
| Stage 1 | 0 | - | - |
| Stage 2 | 0 | - | - |
| Platoon blocked, % | - | - | - |
| Mov Cap-1 Maneuver | - | 219 | - |
| Mov Cap-2 Maneuver | - | - | - |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |

| Approach | WB | NB | SB |
|----------------------|------|----|----|
| HCM Control Delay, s | 21.5 | 0 | 0 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBT |
|-----------------------|-----|----------|-------|
| Capacity (veh/h) | - | - | 219 |
| HCM Lane V/C Ratio | - | - | 0.005 |
| HCM Control Delay (s) | - | - | 21.5 |
| HCM Lane LOS | - | - | C |
| HCM 95th %tile Q(veh) | - | - | 0 |

Capacity Analysis Summary Sheets
Existing Weekday Evening Peak Hour

HCM 6th TWSC

1: Eubank Boulevard NE & Hannett Avenue NE/South Access Drive

06/16/2023

Intersection

Int Delay, s/veh 0.5

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------|------|------|------|------|------|------|-------|------|------|-------|------|------|
| Lane Configurations | | ↕ | | | ↕ | | ↕ ↑↑↑ | | | ↕ ↑↑↑ | | |
| Traffic Vol, veh/h | 4 | 0 | 25 | 1 | 0 | 1 | 27 | 1533 | 2 | 6 | 1299 | 14 |
| Future Vol, veh/h | 4 | 0 | 25 | 1 | 0 | 1 | 27 | 1533 | 2 | 6 | 1299 | 14 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | 70 | - | - | 95 | - | - |
| Veh in Median Storage, # | - | 1 | - | - | 1 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 |
| Heavy Vehicles, % | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| Mvmt Flow | 4 | 0 | 27 | 1 | 0 | 1 | 29 | 1648 | 2 | 6 | 1397 | 15 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | Major2 | | | | | |
|----------------------|--------|------|--------|------|--------|-----|--------|---|---|------|---|---|
| Conflicting Flow All | 2134 | 3125 | 706 | 2278 | 3131 | 825 | 1412 | 0 | 0 | 1650 | 0 | 0 |
| Stage 1 | 1417 | 1417 | - | 1707 | 1707 | - | - | - | - | - | - | - |
| Stage 2 | 717 | 1708 | - | 571 | 1424 | - | - | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.5 | 7.18 | 6.4 | 6.5 | 7.1 | 5.3 | - | - | 5.3 | - | - |
| Critical Hdwy Stg 1 | 7.3 | 5.5 | - | 7.3 | 5.5 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.7 | 5.5 | - | 6.7 | 5.5 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.8 | 4 | 3.94 | 3.8 | 4 | 3.9 | 3.1 | - | - | 3.1 | - | - |
| Pot Cap-1 Maneuver | 54 | 11 | 321 | 44 | 11 | 274 | 251 | - | - | 192 | - | - |
| Stage 1 | 103 | 205 | - | 64 | 148 | - | - | - | - | - | - | - |
| Stage 2 | 356 | 148 | - | 436 | 204 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | - | - | - |
| Mov Cap-1 Maneuver | 48 | 9 | 321 | 36 | 9 | 274 | 251 | - | - | 192 | - | - |
| Mov Cap-2 Maneuver | 77 | 74 | - | 51 | 71 | - | - | - | - | - | - | - |
| Stage 1 | 91 | 199 | - | 57 | 131 | - | - | - | - | - | - | - |
| Stage 2 | 314 | 131 | - | 387 | 198 | - | - | - | - | - | - | - |

| Approach | EB | | WB | | NB | | SB | |
|----------------------|------|--|------|--|-----|--|-----|--|
| HCM Control Delay, s | 23.8 | | 47.9 | | 0.4 | | 0.1 | |
| HCM LOS | C | | E | | | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1WBLn1 | SBL | SBT | SBR |
|-----------------------|-------|-----|-----|------------|-------|-------|-----|
| Capacity (veh/h) | 251 | - | - | 223 | 86 | 192 | - |
| HCM Lane V/C Ratio | 0.116 | - | - | 0.14 | 0.025 | 0.034 | - |
| HCM Control Delay (s) | 21.2 | - | - | 23.8 | 47.9 | 24.4 | - |
| HCM Lane LOS | C | - | - | C | E | C | - |
| HCM 95th %tile Q(veh) | 0.4 | - | - | 0.5 | 0.1 | 0.1 | - |

HCM 6th TWSC

2: Eubank Boulevard NE & North Access Drive

06/16/2023

| Intersection | | | | | | |
|--------------------------|--------|----------|------|--------|------|---------|
| Int Delay, s/veh | 0 | | | | | |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | | ↗ ↘ ↘ ↘ | | | | ↗ ↘ ↘ ↘ |
| Traffic Vol, veh/h | 0 | 3 | 1538 | 0 | 0 | 1319 |
| Future Vol, veh/h | 0 | 3 | 1538 | 0 | 0 | 1319 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 0 | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 93 | 93 | 93 | 93 | 93 | 93 |
| Heavy Vehicles, % | 0 | 33 | 1 | 0 | 0 | 1 |
| Mvmt Flow | 0 | 3 | 1654 | 0 | 0 | 1418 |
| Major/Minor | Minor1 | Major1 | | Major2 | | |
| Conflicting Flow All | - | 827 | 0 | 0 | - | - |
| Stage 1 | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - |
| Critical Hdwy | - | 7.76 | - | - | - | - |
| Critical Hdwy Stg 1 | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - |
| Follow-up Hdwy | - | 4.23 | - | - | - | - |
| Pot Cap-1 Maneuver | 0 | 224 | - | - | 0 | - |
| Stage 1 | 0 | - | - | - | 0 | - |
| Stage 2 | 0 | - | - | - | 0 | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | - | 224 | - | - | - | - |
| Mov Cap-2 Maneuver | - | - | - | - | - | - |
| Stage 1 | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - |
| Approach | WB | NB | | SB | | |
| HCM Control Delay, s | 21.3 | 0 | | 0 | | |
| HCM LOS | C | | | | | |
| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | | SBT | | |
| Capacity (veh/h) | - | 224 | | - | | |
| HCM Lane V/C Ratio | - | 0.014 | | - | | |
| HCM Control Delay (s) | - | 21.3 | | - | | |
| HCM Lane LOS | - | C | | - | | |
| HCM 95th %tile Q(veh) | - | 0 | | - | | |

Capacity Analysis Summary Sheets
Year 2024 No-Build Weekday Morning Peak Hour

HCM 6th TWSC

1: Eubank Boulevard NE & Hannett Avenue NE/South Access Drive

06/16/2023

| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|-------|------|------|-------|------|------|
| Int Delay, s/veh | 0.5 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↕ | | | ↕ | | ↕ ↑↑↑ | | | ↕ ↑↑↑ | | |
| Traffic Vol, veh/h | 3 | 0 | 17 | 0 | 0 | 0 | 18 | 1099 | 0 | 6 | 1361 | 7 |
| Future Vol, veh/h | 3 | 0 | 17 | 0 | 0 | 0 | 18 | 1099 | 0 | 6 | 1361 | 7 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | 70 | - | - | 95 | - | - |
| Veh in Median Storage, # | - | 1 | - | - | 1 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 17 | 2 | 0 |
| Mvmt Flow | 3 | 0 | 20 | 0 | 0 | 0 | 21 | 1278 | 0 | 7 | 1583 | 8 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | Major2 | | | | | |
|----------------------|--------|------|--------|------|--------|-----|--------|---|---|------|---|---|
| Conflicting Flow All | 2154 | 2921 | 796 | 1967 | 2925 | 639 | 1591 | 0 | 0 | 1278 | 0 | 0 |
| Stage 1 | 1601 | 1601 | - | 1320 | 1320 | - | - | - | - | - | - | - |
| Stage 2 | 553 | 1320 | - | 647 | 1605 | - | - | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.5 | 7.1 | 6.4 | 6.5 | 7.1 | 5.3 | - | - | 5.64 | - | - |
| Critical Hdwy Stg 1 | 7.3 | 5.5 | - | 7.3 | 5.5 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.7 | 5.5 | - | 6.7 | 5.5 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.8 | 4 | 3.9 | 3.8 | 4 | 3.9 | 3.1 | - | - | 3.27 | - | - |
| Pot Cap-1 Maneuver | 52 | 16 | 287 | 68 | 15 | 363 | 205 | - | - | 251 | - | - |
| Stage 1 | 76 | 167 | - | 121 | 228 | - | - | - | - | - | - | - |
| Stage 2 | 447 | 228 | - | 392 | 166 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | - | - | - |
| Mov Cap-1 Maneuver | 47 | 14 | 287 | 57 | 13 | 363 | 205 | - | - | 251 | - | - |
| Mov Cap-2 Maneuver | 61 | 88 | - | 92 | 82 | - | - | - | - | - | - | - |
| Stage 1 | 68 | 162 | - | 109 | 205 | - | - | - | - | - | - | - |
| Stage 2 | 401 | 205 | - | 355 | 161 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|----------------------|------|----|-----|-----|
| HCM Control Delay, s | 27.4 | 0 | 0.4 | 0.1 |
| HCM LOS | D | A | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1WBLn1 | SBL | SBT | SBR |
|-----------------------|-------|-----|-----|------------|-----|-------|-----|
| Capacity (veh/h) | 205 | - | - | 184 | - | 251 | - |
| HCM Lane V/C Ratio | 0.102 | - | - | 0.126 | - | 0.028 | - |
| HCM Control Delay (s) | 24.5 | - | - | 27.4 | 0 | 19.8 | - |
| HCM Lane LOS | C | - | - | D | A | C | - |
| HCM 95th %tile Q(veh) | 0.3 | - | - | 0.4 | - | 0.1 | - |




HCM 6th TWSC

2: Eubank Boulevard NE & North Access Drive

06/16/2023

Intersection

Int Delay, s/veh 0

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|--------------------------|------|---|---|------|------|---|
| Lane Configurations | |  |  | | |  |
| Traffic Vol, veh/h | 0 | 1 | 1101 | 1 | 0 | 1374 |
| Future Vol, veh/h | 0 | 1 | 1101 | 1 | 0 | 1374 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 0 | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 86 | 86 | 86 | 86 | 86 | 86 |
| Heavy Vehicles, % | 0 | 100 | 3 | 0 | 0 | 2 |
| Mvmt Flow | 0 | 1 | 1280 | 1 | 0 | 1598 |

| Major/Minor | Minor1 | Major1 | Major2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | - | 641 | 0 |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |
| Critical Hdwy | - | 9.1 | - |
| Critical Hdwy Stg 1 | - | - | - |
| Critical Hdwy Stg 2 | - | - | - |
| Follow-up Hdwy | - | 4.9 | - |
| Pot Cap-1 Maneuver | 0 | 218 | - |
| Stage 1 | 0 | - | - |
| Stage 2 | 0 | - | - |
| Platoon blocked, % | - | - | - |
| Mov Cap-1 Maneuver | - | 218 | - |
| Mov Cap-2 Maneuver | - | - | - |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |

| Approach | WB | NB | SB |
|----------------------|------|----|----|
| HCM Control Delay, s | 21.6 | 0 | 0 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBT |
|-----------------------|-----|----------|-------|
| Capacity (veh/h) | - | - | 218 |
| HCM Lane V/C Ratio | - | - | 0.005 |
| HCM Control Delay (s) | - | - | 21.6 |
| HCM Lane LOS | - | - | C |
| HCM 95th %tile Q(veh) | - | - | 0 |

Capacity Analysis Summary Sheets
Year 2024 No-Build Weekday Evening Peak Hour

HCM 6th TWSC

1: Eubank Boulevard NE & Hannett Avenue NE/South Access Drive

06/16/2023

| Intersection | | | | | | | | | | | | |
|--------------------------|--------|------|--------|------------|--------|-------|--------|------|------|-------|------|------|
| Int Delay, s/veh | 0.5 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↕ | | | ↕ | | ↵ ↑↑↑ | | | ↵ ↑↑↑ | | |
| Traffic Vol, veh/h | 4 | 0 | 25 | 1 | 0 | 1 | 27 | 1541 | 2 | 6 | 1305 | 14 |
| Future Vol, veh/h | 4 | 0 | 25 | 1 | 0 | 1 | 27 | 1541 | 2 | 6 | 1305 | 14 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | 70 | - | - | 95 | - | - |
| Veh in Median Storage, # | - | 1 | - | - | 1 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 |
| Heavy Vehicles, % | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| Mvmt Flow | 4 | 0 | 27 | 1 | 0 | 1 | 29 | 1657 | 2 | 6 | 1403 | 15 |
| | | | | | | | | | | | | |
| Major/Minor | Minor2 | | Minor1 | | Major1 | | Major2 | | | | | |
| Conflicting Flow All | 2144 | 3140 | 709 | 2289 | 3146 | 830 | 1418 | 0 | 0 | 1659 | 0 | 0 |
| Stage 1 | 1423 | 1423 | - | 1716 | 1716 | - | - | - | - | - | - | - |
| Stage 2 | 721 | 1717 | - | 573 | 1430 | - | - | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.5 | 7.18 | 6.4 | 6.5 | 7.1 | 5.3 | - | - | 5.3 | - | - |
| Critical Hdwy Stg 1 | 7.3 | 5.5 | - | 7.3 | 5.5 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.7 | 5.5 | - | 6.7 | 5.5 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.8 | 4 | 3.94 | 3.8 | 4 | 3.9 | 3.1 | - | - | 3.1 | - | - |
| Pot Cap-1 Maneuver | 53 | 11 | 319 | 43 | 11 | 272 | 249 | - | - | 190 | - | - |
| Stage 1 | 102 | 204 | - | 63 | 146 | - | - | - | - | - | - | - |
| Stage 2 | 354 | 146 | - | 435 | 202 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | | - | - |
| Mov Cap-1 Maneuver | 47 | 9 | 319 | 35 | 9 | 272 | 249 | - | - | 190 | - | - |
| Mov Cap-2 Maneuver | 77 | 73 | - | 50 | 70 | - | - | - | - | - | - | - |
| Stage 1 | 90 | 197 | - | 56 | 129 | - | - | - | - | - | - | - |
| Stage 2 | 312 | 129 | - | 386 | 196 | - | - | - | - | - | - | - |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| Approach | EB | | WB | | NB | | SB | | | | | |
| HCM Control Delay, s | 23.8 | | 49 | | 0.4 | | 0.1 | | | | | |
| HCM LOS | C | | E | | | | | | | | | |
| | | | | | | | | | | | | |
| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1WBLn1 | SBL | SBT | SBR | | | | | |
| Capacity (veh/h) | 249 | - | - | 223 | 84 | 190 | - | - | | | | |
| HCM Lane V/C Ratio | 0.117 | - | - | 0.14 | 0.026 | 0.034 | - | - | | | | |
| HCM Control Delay (s) | 21.4 | - | - | 23.8 | 49 | 24.6 | - | - | | | | |
| HCM Lane LOS | C | - | - | C | E | C | - | - | | | | |
| HCM 95th %tile Q(veh) | 0.4 | - | - | 0.5 | 0.1 | 0.1 | - | - | | | | |

HCM 6th TWSC

2: Eubank Boulevard NE & North Access Drive

06/16/2023

| Intersection | | | | | | |
|--------------------------|--------|----------|--------|------|------|---------|
| Int Delay, s/veh | 0 | | | | | |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | | ↗ ↘ ↘ ↘ | | | | ↗ ↘ ↘ ↘ |
| Traffic Vol, veh/h | 0 | 3 | 1546 | 0 | 0 | 1325 |
| Future Vol, veh/h | 0 | 3 | 1546 | 0 | 0 | 1325 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 0 | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 93 | 93 | 93 | 93 | 93 | 93 |
| Heavy Vehicles, % | 0 | 33 | 1 | 0 | 0 | 1 |
| Mvmt Flow | 0 | 3 | 1662 | 0 | 0 | 1425 |
| Major/Minor | Minor1 | Major1 | Major2 | | | |
| Conflicting Flow All | - | 831 | 0 | 0 | - | - |
| Stage 1 | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - |
| Critical Hdwy | - | 7.76 | - | - | - | - |
| Critical Hdwy Stg 1 | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | - | - | - | - | - | - |
| Follow-up Hdwy | - | 4.23 | - | - | - | - |
| Pot Cap-1 Maneuver | 0 | 222 | - | - | 0 | - |
| Stage 1 | 0 | - | - | - | 0 | - |
| Stage 2 | 0 | - | - | - | 0 | - |
| Platoon blocked, % | | | - | - | | - |
| Mov Cap-1 Maneuver | - | 222 | - | - | - | - |
| Mov Cap-2 Maneuver | - | - | - | - | - | - |
| Stage 1 | - | - | - | - | - | - |
| Stage 2 | - | - | - | - | - | - |
| Approach | WB | NB | SB | | | |
| HCM Control Delay, s | 21.5 | 0 | 0 | | | |
| HCM LOS | C | | | | | |
| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBT | | | |
| Capacity (veh/h) | - | - | 222 | - | | |
| HCM Lane V/C Ratio | - | - | 0.015 | - | | |
| HCM Control Delay (s) | - | - | 21.5 | - | | |
| HCM Lane LOS | - | - | C | - | | |
| HCM 95th %tile Q(veh) | - | - | 0 | - | | |

Capacity Analysis Summary Sheets
Year 2024 Total Projected Weekday Morning Peak Hour

HCM 6th TWSC

1: Eubank Boulevard NE & Hannett Avenue NE/South Access Drive

06/16/2023

Intersection

Int Delay, s/veh 1.8

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|--------------------------|------|------|------|------|------|------|-------|------|------|-------|------|------|
| Lane Configurations | | ↕ | | | ↕ | | ↕ ↑↑↑ | | | ↕ ↑↑↑ | | |
| Traffic Vol, veh/h | 3 | 0 | 17 | 34 | 0 | 3 | 18 | 1082 | 27 | 42 | 1336 | 7 |
| Future Vol, veh/h | 3 | 0 | 17 | 34 | 0 | 3 | 18 | 1082 | 27 | 42 | 1336 | 7 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | 70 | - | - | 95 | - | - |
| Veh in Median Storage, # | - | 1 | - | - | 1 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 |
| Heavy Vehicles, % | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 17 | 2 | 0 |
| Mvmt Flow | 3 | 0 | 20 | 40 | 0 | 3 | 21 | 1258 | 31 | 49 | 1553 | 8 |




| Major/Minor | Minor2 | | Minor1 | | Major1 | | Major2 | | | | | |
|----------------------|--------|------|--------|------|--------|-----|--------|---|---|------|---|---|
| Conflicting Flow All | 2200 | 2986 | 781 | 2035 | 2975 | 645 | 1561 | 0 | 0 | 1289 | 0 | 0 |
| Stage 1 | 1655 | 1655 | - | 1316 | 1316 | - | - | - | - | - | - | - |
| Stage 2 | 545 | 1331 | - | 719 | 1659 | - | - | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.5 | 7.1 | 6.4 | 6.5 | 7.1 | 5.3 | - | - | 5.64 | - | - |
| Critical Hdwy Stg 1 | 7.3 | 5.5 | - | 7.3 | 5.5 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.7 | 5.5 | - | 6.7 | 5.5 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.8 | 4 | 3.9 | 3.8 | 4 | 3.9 | 3.1 | - | - | 3.27 | - | - |
| Pot Cap-1 Maneuver | 49 | 14 | 293 | 62 | 14 | 360 | 212 | - | - | 248 | - | - |
| Stage 1 | 70 | 157 | - | 122 | 229 | - | - | - | - | - | - | - |
| Stage 2 | 452 | 226 | - | 355 | 156 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | - | - | - |
| Mov Cap-1 Maneuver | 38 | 10 | 293 | 45 | 10 | 360 | 212 | - | - | 248 | - | - |
| Mov Cap-2 Maneuver | 56 | 68 | - | 86 | 67 | - | - | - | - | - | - | - |
| Stage 1 | 63 | 126 | - | 110 | 206 | - | - | - | - | - | - | - |
| Stage 2 | 403 | 204 | - | 266 | 125 | - | - | - | - | - | - | - |

| Approach | EB | | WB | | NB | | SB | |
|----------------------|------|--|------|--|-----|--|-----|--|
| HCM Control Delay, s | 28.1 | | 74.6 | | 0.4 | | 0.7 | |
| HCM LOS | D | | F | | | | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1WBLn1 | SBL | SBT | SBR |
|-----------------------|-------|-----|-----|------------|-------|-------|-----|
| Capacity (veh/h) | 212 | - | - | 179 | 92 | 248 | - |
| HCM Lane V/C Ratio | 0.099 | - | - | 0.13 | 0.468 | 0.197 | - |
| HCM Control Delay (s) | 23.8 | - | - | 28.1 | 74.6 | 23 | - |
| HCM Lane LOS | C | - | - | D | F | C | - |
| HCM 95th %tile Q(veh) | 0.3 | - | - | 0.4 | 2 | 0.7 | - |

Intersection

Int Delay, s/veh 0.2

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|--------------------------|------|---|---|------|------|---|
| Lane Configurations | |  |  | | |  |
| Traffic Vol, veh/h | 0 | 27 | 1084 | 4 | 0 | 1385 |
| Future Vol, veh/h | 0 | 27 | 1084 | 4 | 0 | 1385 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 0 | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 86 | 86 | 86 | 86 | 86 | 86 |
| Heavy Vehicles, % | 0 | 4 | 3 | 0 | 0 | 2 |
| Mvmt Flow | 0 | 31 | 1260 | 5 | 0 | 1610 |

| Major/Minor | Minor1 | Major1 | Major2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | - | 633 | 0 |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |
| Critical Hdwy | - | 7.18 | - |
| Critical Hdwy Stg 1 | - | - | - |
| Critical Hdwy Stg 2 | - | - | - |
| Follow-up Hdwy | - | 3.94 | - |
| Pot Cap-1 Maneuver | 0 | 358 | - |
| Stage 1 | 0 | - | - |
| Stage 2 | 0 | - | - |
| Platoon blocked, % | - | - | - |
| Mov Cap-1 Maneuver | - | 358 | - |
| Mov Cap-2 Maneuver | - | - | - |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |

| Approach | WB | NB | SB |
|----------------------|----|----|----|
| HCM Control Delay, s | 16 | 0 | 0 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBT |
|-----------------------|-----|----------|-------|
| Capacity (veh/h) | - | - | 358 |
| HCM Lane V/C Ratio | - | - | 0.088 |
| HCM Control Delay (s) | - | - | 16 |
| HCM Lane LOS | - | - | C |
| HCM 95th %tile Q(veh) | - | - | 0.3 |

Capacity Analysis Summary Sheets
Year 2024 Total Projected Weekday Evening Peak Hour

HCM 6th TWSC

1: Eubank Boulevard NE & Hannett Avenue NE/South Access Drive

06/16/2023

| Intersection | | | | | | | | | | | | |
|--------------------------|------|------|------|------|------|------|-------|------|------|-------|------|------|
| Int Delay, s/veh | 1.3 | | | | | | | | | | | |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations | | ↕ | | | ↕ | | ↕ ↑↑↑ | | | ↕ ↑↑↑ | | |
| Traffic Vol, veh/h | 4 | 0 | 25 | 16 | 0 | 3 | 27 | 1534 | 14 | 21 | 1294 | 14 |
| Future Vol, veh/h | 4 | 0 | 25 | 16 | 0 | 3 | 27 | 1534 | 14 | 21 | 1294 | 14 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | 70 | - | - | 95 | - | - |
| Veh in Median Storage, # | - | 1 | - | - | 1 | - | - | 0 | - | - | 0 | - |
| Grade, % | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 | 93 |
| Heavy Vehicles, % | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| Mvmt Flow | 4 | 0 | 27 | 17 | 0 | 3 | 29 | 1649 | 15 | 23 | 1391 | 15 |

| Major/Minor | Minor2 | | Minor1 | | Major1 | | Major2 | | | | | |
|----------------------|--------|------|--------|------|--------|-----|--------|---|---|------|---|---|
| Conflicting Flow All | 2163 | 3167 | 703 | 2317 | 3167 | 832 | 1406 | 0 | 0 | 1664 | 0 | 0 |
| Stage 1 | 1445 | 1445 | - | 1715 | 1715 | - | - | - | - | - | - | - |
| Stage 2 | 718 | 1722 | - | 602 | 1452 | - | - | - | - | - | - | - |
| Critical Hdwy | 6.4 | 6.5 | 7.18 | 6.4 | 6.5 | 7.1 | 5.3 | - | - | 5.3 | - | - |
| Critical Hdwy Stg 1 | 7.3 | 5.5 | - | 7.3 | 5.5 | - | - | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.7 | 5.5 | - | 6.7 | 5.5 | - | - | - | - | - | - | - |
| Follow-up Hdwy | 3.8 | 4 | 3.94 | 3.8 | 4 | 3.9 | 3.1 | - | - | 3.1 | - | - |
| Pot Cap-1 Maneuver | 51 | 11 | 322 | 41 | 11 | 271 | 253 | - | - | 189 | - | - |
| Stage 1 | 99 | 199 | - | 63 | 147 | - | - | - | - | - | - | - |
| Stage 2 | 355 | 145 | - | 417 | 197 | - | - | - | - | - | - | - |
| Platoon blocked, % | | | | | | | | - | - | - | - | - |
| Mov Cap-1 Maneuver | 42 | 9 | 322 | 31 | 9 | 271 | 253 | - | - | 189 | - | - |
| Mov Cap-2 Maneuver | 74 | 64 | - | 49 | 66 | - | - | - | - | - | - | - |
| Stage 1 | 88 | 175 | - | 56 | 130 | - | - | - | - | - | - | - |
| Stage 2 | 311 | 128 | - | 336 | 173 | - | - | - | - | - | - | - |

| Approach | EB | WB | NB | SB |
|----------------------|----|-------|-----|-----|
| HCM Control Delay, s | 24 | 102.4 | 0.4 | 0.4 |
| HCM LOS | C | F | | |

| Minor Lane/Major Mvmt | NBL | NBT | NBR | EBLn1WBLn1 | SBL | SBT | SBR |
|-----------------------|-------|-----|-----|------------|-------|-------|-----|
| Capacity (veh/h) | 253 | - | - | 220 | 56 | 189 | - |
| HCM Lane V/C Ratio | 0.115 | - | - | 0.142 | 0.365 | 0.119 | - |
| HCM Control Delay (s) | 21.1 | - | - | 24 | 102.4 | 26.6 | - |
| HCM Lane LOS | C | - | - | C | F | D | - |
| HCM 95th %tile Q(veh) | 0.4 | - | - | 0.5 | 1.3 | 0.4 | - |

HCM 6th TWSC

2: Eubank Boulevard NE & North Access Drive

06/16/2023

Intersection

Int Delay, s/veh 0.1

| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
|--------------------------|------|---------|---------|------|---------|---------|
| Lane Configurations | | ↗ ↘ ↘ ↘ | ↗ ↘ ↘ ↘ | | ↗ ↘ ↘ ↘ | ↗ ↘ ↘ ↘ |
| Traffic Vol, veh/h | 0 | 15 | 1539 | 2 | 0 | 1329 |
| Future Vol, veh/h | 0 | 15 | 1539 | 2 | 0 | 1329 |
| Conflicting Peds, #/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | - | 0 | - | - | - | - |
| Veh in Median Storage, # | 0 | - | 0 | - | - | 0 |
| Grade, % | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 93 | 93 | 93 | 93 | 93 | 93 |
| Heavy Vehicles, % | 0 | 7 | 1 | 0 | 0 | 1 |
| Mvmt Flow | 0 | 16 | 1655 | 2 | 0 | 1429 |

| Major/Minor | Minor1 | Major1 | Major2 |
|----------------------|--------|--------|--------|
| Conflicting Flow All | - | 829 | 0 |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |
| Critical Hdwy | - | 7.24 | - |
| Critical Hdwy Stg 1 | - | - | - |
| Critical Hdwy Stg 2 | - | - | - |
| Follow-up Hdwy | - | 3.97 | - |
| Pot Cap-1 Maneuver | 0 | 261 | - |
| Stage 1 | 0 | - | - |
| Stage 2 | 0 | - | - |
| Platoon blocked, % | - | - | - |
| Mov Cap-1 Maneuver | - | 261 | - |
| Mov Cap-2 Maneuver | - | - | - |
| Stage 1 | - | - | - |
| Stage 2 | - | - | - |

| Approach | WB | NB | SB |
|----------------------|------|----|----|
| HCM Control Delay, s | 19.7 | 0 | 0 |
| HCM LOS | C | | |

| Minor Lane/Major Mvmt | NBT | NBRWBLn1 | SBT |
|-----------------------|-----|----------|-------|
| Capacity (veh/h) | - | - | 261 |
| HCM Lane V/C Ratio | - | - | 0.062 |
| HCM Control Delay (s) | - | - | 19.7 |
| HCM Lane LOS | - | - | C |
| HCM 95th %tile Q(veh) | - | - | 0.2 |