

Traffic Impact Study
for
Proposed Walgreen's
834 West Armitage Avenue



Prepared By:



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Introduction

This report summarizes the methodologies, results and findings of a traffic impact study conducted by Kenig, Lindgren, O'Hara, Aboona, Inc. (KLOA, Inc.) for the proposed Walgreen's neighborhood market store to be located at 834 West Armitage Avenue in Chicago, Illinois. The existing site has been razed to accommodate this proposed development.

The site is bound by a public alley/residential to the north, Armitage Avenue to the south, commercial/residential to the west, and Dayton Street to the east. The site is located in the Lincoln Park area with commercial and residential buildings in the site vicinity. The Armitage CTA elevated "L" transit line serving the Brown Line and the Purple Line Express is located approximately two blocks west of the site. **Figure 1** shows the location of the site in relation to the area street system. **Figure 2** shows an aerial view of the site area.

The development proposes an approximate 15,000 square-foot Walgreen's store. Unlike the typical suburban standalone store, this Walgreen's store will serve the local, immediately surrounding neighborhood and, as such, will not provide a pharmacy drive-through facility or off-street parking.

The construction of this proposed development is planned to begin within the next year. For the purposes of this study, it is assumed that the development is completed and fully occupied in one construction phase.

The purpose of this study includes the following.

- Determine the existing traffic, pedestrian, bicycle, and public transportation conditions in the area to establish a base condition.
- Assess the impact that the proposed development will have on traffic, pedestrian, and bicycle conditions in the area.
- Determine if any street, access, bicycle, or pedestrian crossing improvements are necessary to accommodate the proposed development plan.



Site Location

Figure 1



Aerial View of Site Location

Figure 2

The following sections of this report present the following.

- Existing street conditions.
- A description of the proposed development plan.
- Directional distribution of development-generated traffic.
- Vehicle trip generation for the proposed development.
- Traffic analyses for the weekday morning, weekday evening, and Saturday midday peak hours for both the existing and future conditions.
- Recommendations with respect to circulation to the surrounding street network and pedestrian and bicycle features for the future condition.

Existing Conditions

Existing street and traffic conditions near the site were documented based on field visits and traffic counts. The following provides a detailed description of the physical characteristics of the streets including geometry and traffic control, adjacent land uses and peak hour traffic flows along area streets.

Existing Area

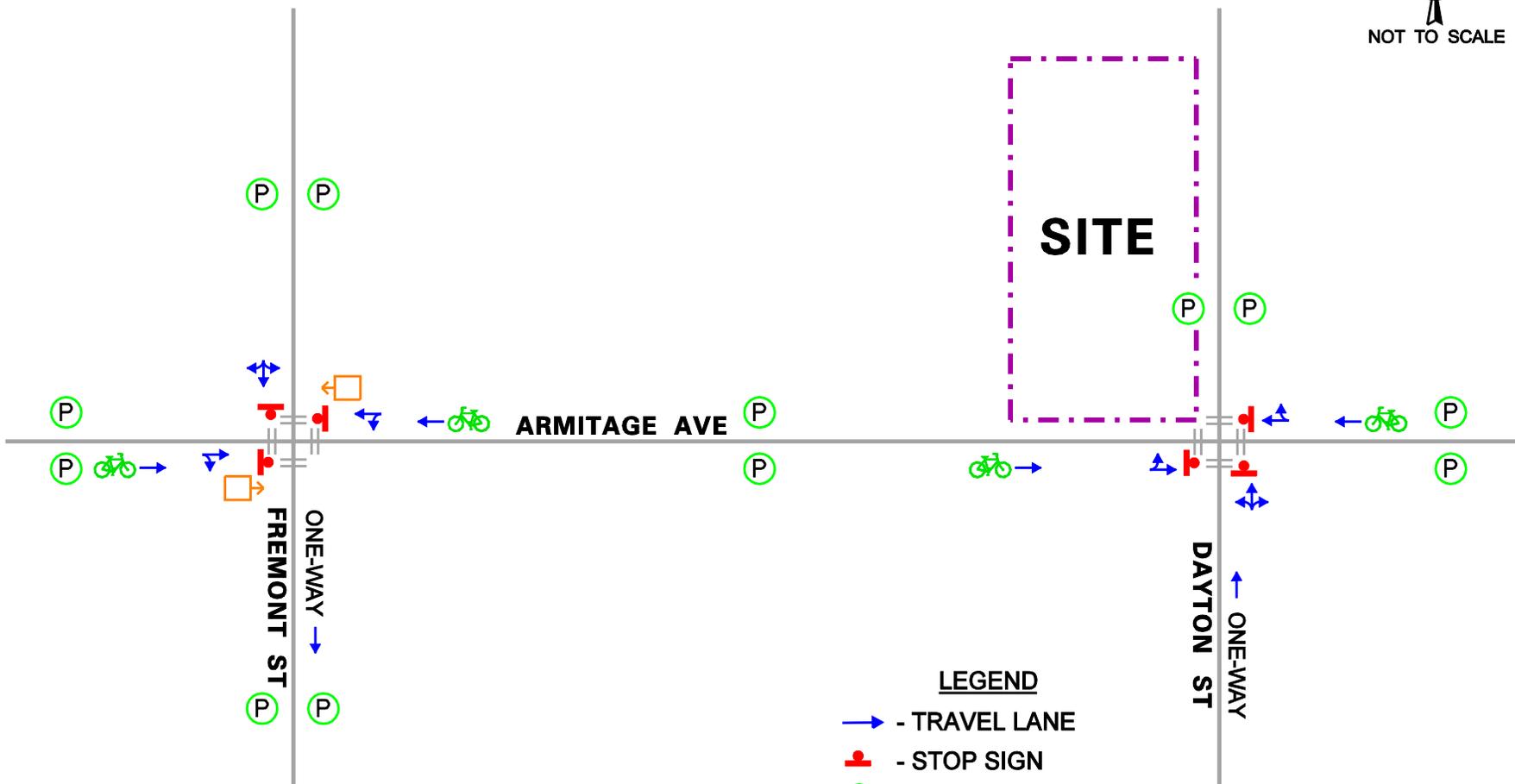
The site is located in the Lincoln Park area. Armitage Avenue, in the proximity of the site, is lined with retail shops and restaurants serving the neighborhood and the surrounding environs. Off-street parking is generally not available to these businesses. The all-way stop intersections at Fremont Street and at Dayton Street control the traffic speeds through the area and allow pedestrians and bicycles to cross at a traffic-controlled intersection.

Existing Street System Characteristics

The characteristics of the existing streets near the site are illustrated in **Figure 3** and described below. All streets are under the jurisdiction of the Chicago Department of Transportation (CDOT).

Armitage Avenue is a two-way east-west street providing one through lane in each direction and a bike lane on both the north and south sides of the street. It is under all-way stop sign control at its intersections with Dayton Street and Fremont Street. On-street parking is generally available on both sides of the street. Armitage Avenue is served by CTA Bus Route #73 that has a bus stop (sign only) at Fremont Street on the near side of the intersection for both directions of travel.

Dayton Street is a one-lane, one-way northbound local street that is under stop sign control at its intersection with Armitage Avenue. On-street parking is generally permitted on both sides of the street. Permit parking is required between 6:00 P.M. and 6:00 A.M. every day.



- LEGEND**
- TRAVEL LANE
 - STOP SIGN
 - ON-STREET PARKING
 - BIKE LANE
 - CTA BUS STOP (SIGN ONLY)
 - PEDESTRIAN CROSSWALK

PROJECT:
 Proposed Walgreen's
 834 West Armitage Ave
 Chicago, Illinois

TITLE:
 Existing Street Characteristics



Fremont Street is a one-lane, one-way southbound local street that is under stop sign control at its intersection with Armitage Avenue. On-street parking is generally permitted on both sides of the street. Permit parking is required between 6:00 P.M. and 6:00 A.M. every day.

Existing Vehicle, Pedestrian, and Bicycle Traffic Volumes

In order to determine current traffic, pedestrian, and bicycle conditions near the proposed development and on the surrounding streets, KLOA, Inc. conducted peak period traffic, pedestrian, and bicycle counts at the following two intersections:

1. Dayton Street and Armitage Avenue
2. Fremont Street and Armitage Avenue

The counts were conducted on Wednesday, December 19, 2012 during the morning (7:00 to 9:00 A.M.), and the evening (4:00 to 6:00 P.M.) peak periods, and also on Saturday, January 5, 2013 between 11:30 A.M. and 1:30 P.M. The results of the traffic counts showed that the weekday morning peak hour of traffic occurs between 7:15 and 8:15 A.M., the weekday evening peak hour of traffic occurs between 5:00 and 6:00 P.M., and the Saturday midday peak hour occurs between 12:30 and 1:30 P.M.

Figure 4A illustrates the existing peak hour vehicle traffic volumes. **Figure 4B** illustrates the existing peak hour pedestrian and bicycle volumes, showing the direction of travel.

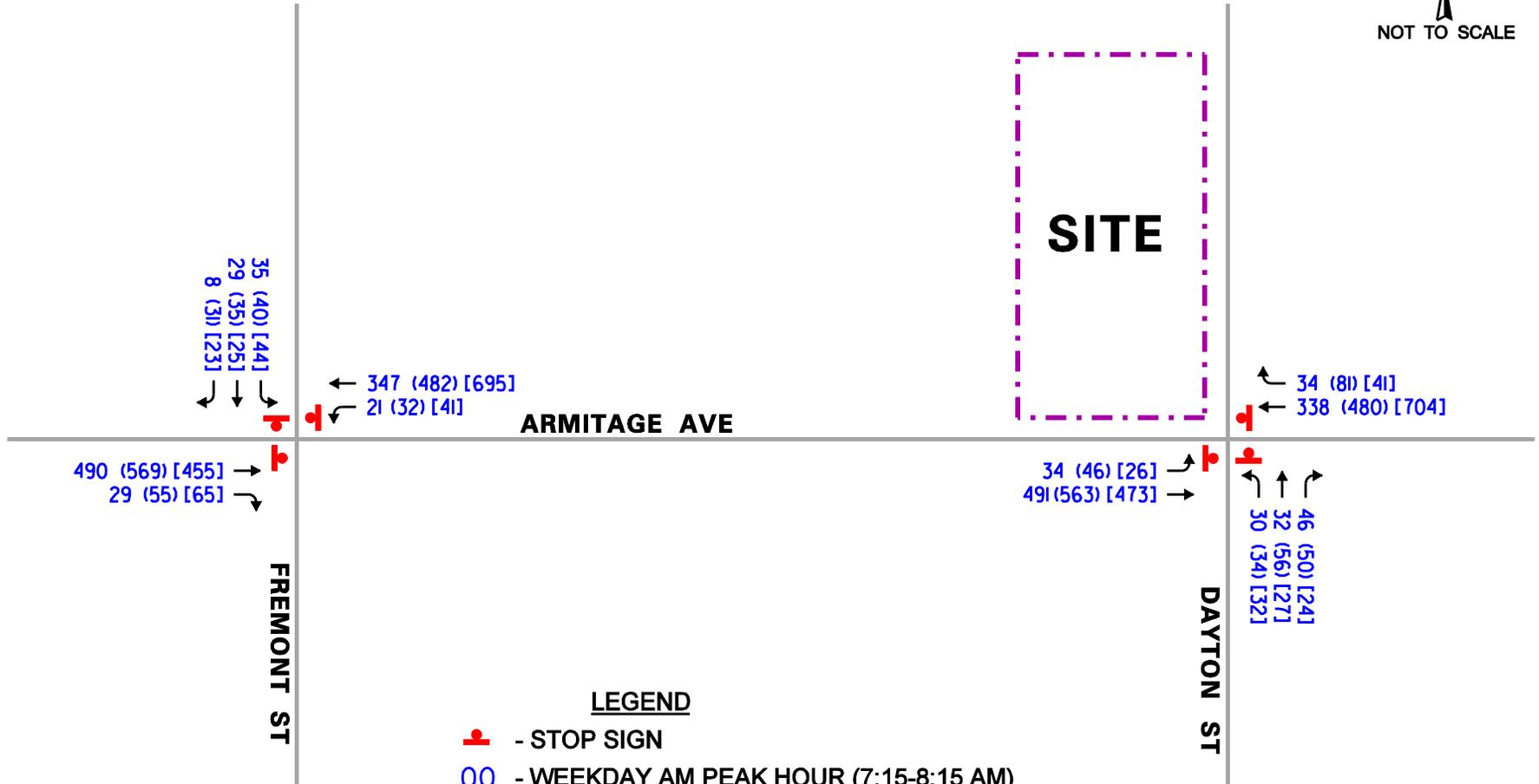
Alternative Modes of Transportation

Accessibility to and from the area is enhanced by the various alternative modes of transportation serving the area as summarized below.

Public Transportation. The CTA “L” has a local stop at the Armitage Station for the Brown Line and Purple Line Express. The “L” is located near Sheffield, which is approximately two blocks west of the site. The station provides easy access to this area and provides its residents and local commuters with direct access to and from the Loop.

Further, CTA Bus Route #73 traverses Armitage Avenue, providing a bus stop (sign only) for each direction of travel on the near side of the intersection at Fremont Street. This bus route typically runs 12 or more hours per day, every day.

Pedestrian Facilities. Crosswalks are provided on all four approaches on Armitage Avenue at its intersections with Fremont Street and Dayton Street. Sidewalks are also provided on the surrounding street network.



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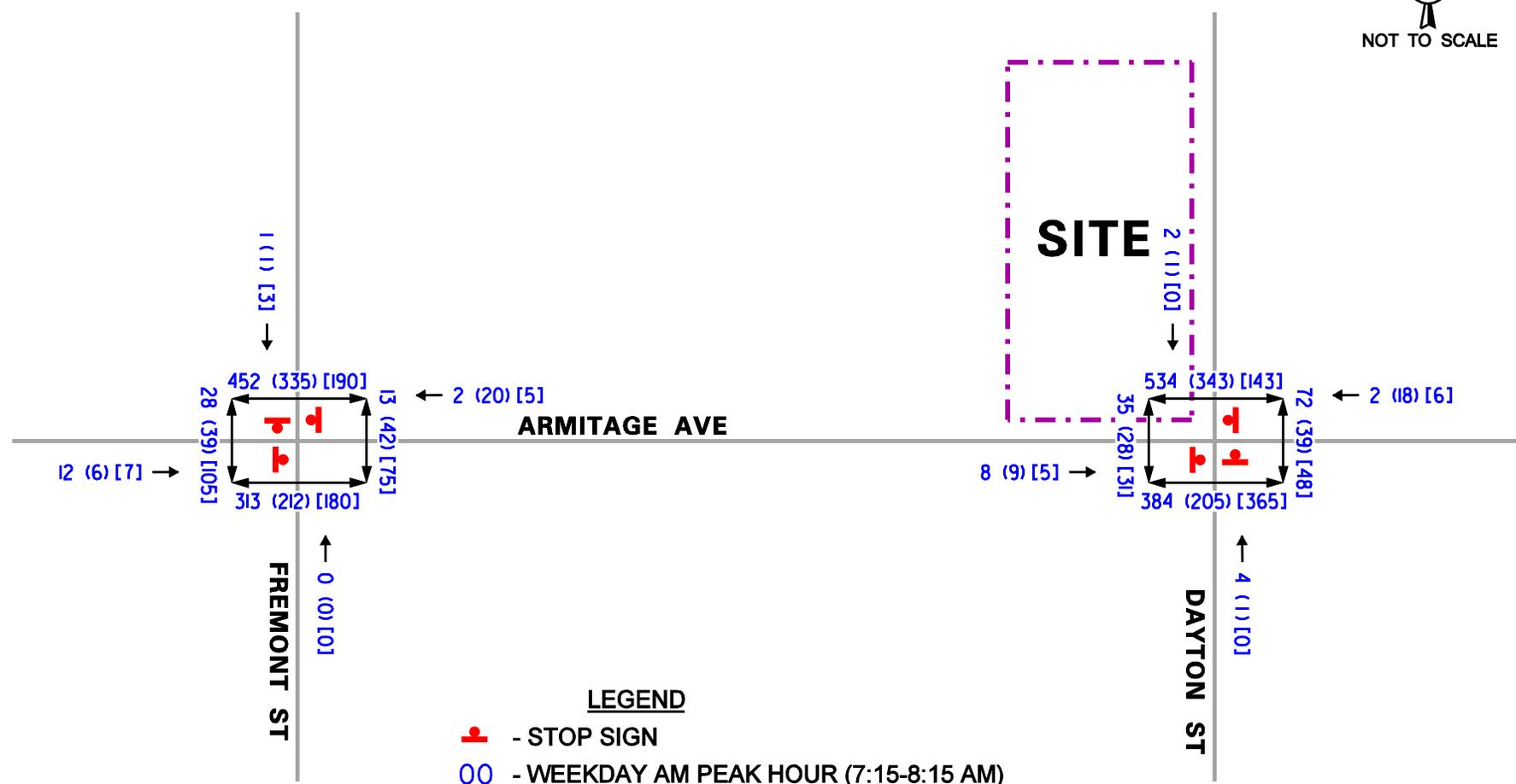
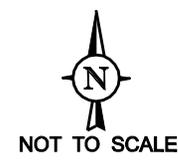
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PROJECT:
Proposed Walgreen's
834 West Armitage Ave
Chicago, Illinois

TITLE:
Existing Traffic Volumes

KLOA
 Job No: 12-192

Figure: 4A



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PROJECT:
 Proposed Walgreen's
 834 West Armitage Ave
 Chicago, Illinois

TITLE:
 Existing Pedestrian & Bicycle Volumes



Figure: 4B

Bicycle Facilities. As noted, established bike lanes are provided on Armitage Avenue for each direction of travel on both sides of the street.

Traffic Characteristics of 834 West Armitage Avenue

To evaluate the impact of the subject development on the area street system, it was necessary to quantify the number of vehicle trips the site will generate given the unique character of the proposed Walgreen's store where neither a drive-through pharmacy service nor off-street parking will be provided.

Site Location

The site, which is currently vacant, is located in the Lincoln Park neighborhood, with primarily residential land uses surrounding the site. Armitage Avenue is lined with retail stores and restaurants through this corridor. Sidewalks, crosswalks, and established bike lanes are provided on Armitage Avenue and the adjacent streets to promote pedestrian and bicycle activity.

Proposed Land Use Plan

The development proposes an approximate 15,000 square-foot Walgreen's store. Unlike the typical suburban standalone store, this Walgreen's store will serve to the local, immediately surrounding neighborhood and, as such, will not offer a pharmacy drive-through facility or any off-street parking.

Parking

Off-street parking will not be provided for this development. As such, driveway access is not proposed from either Armitage Avenue or Dayton Street. As noted, ample on-street parking is provided on both the north and south sides of Armitage Avenue, providing approximately six to eight parking spaces on either side of Armitage between Dayton Street and Fremont Street, with additional on-street parking provided east of Dayton Street towards Halsted Street, and west of Fremont Street towards Sheffield Avenue. Further, on-street parking is provided on both the east and west sides of both Dayton Street and Fremont Street between 6:00 A.M. and 6:00 P.M. every day. On-street parking on both Dayton Street and Fremont Street is restricted to permit parking only between 6:00 P.M. and 6:00 A.M. every day.

Directional Distribution of Site Traffic

The directional distribution of site-generated trips on the external streets (illustrated in **Figure 5**) considers the existing traffic patterns, the one-way orientation of both Dayton Street and Fulton Street, and the surrounding environs.

Site Traffic Generation

The estimates of traffic to be generated by the site are based upon the proposed land use type and size. The volume of traffic generated was estimated using data published in the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 8th Edition. However, the ITE trip rates are based on suburban rates where the primary mode of transportation is the automobile.

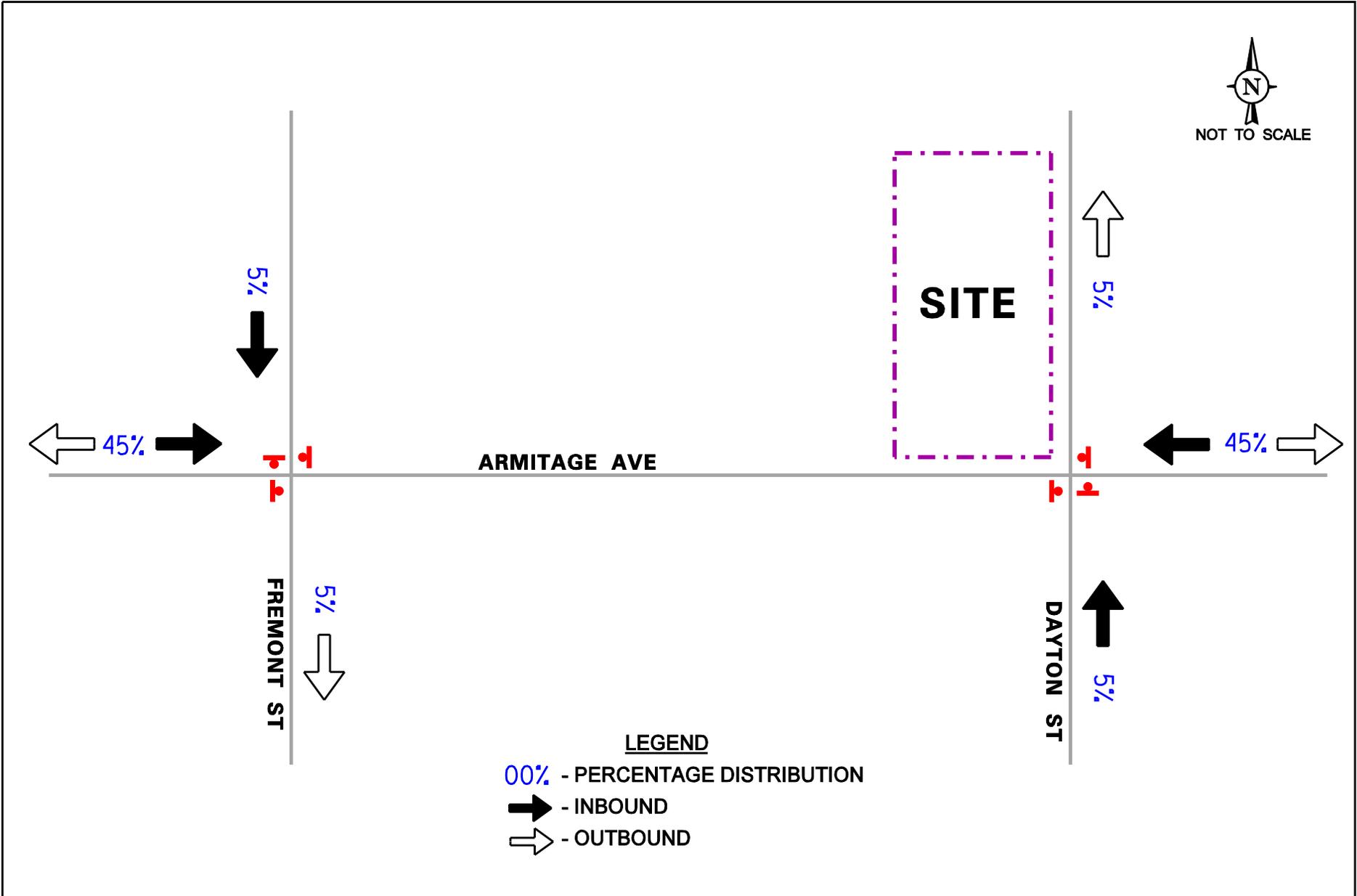
The development is served by the Armitage CTA Station (Brown and Purple Express Lines) and CTA Bus Route #73 along Armitage Avenue. Further, pedestrian and bicycle facilities are provided to encourage foot traffic to the store, rather than vehicle traffic. Lastly, the development is not proposing any off-street/convenient parking because this store is catering to the immediate surrounding environs, particularly the pedestrian commuters traversing to/from the Armitage CTA “L” station, and the residential developments surrounding the site. All of these components will greatly reduce the number of actual vehicles driving to/from the development each day.

To quantify this reduction in trips that will be made to the proposed store, KLOA, Inc. utilized a previous trip generation study conducted at a use similar to the proposed Walgreen’s, as follows:

- Has a pharmacy
- No off-street parking
- No drive-through service
- Near public transportation
- Near other retail/commercial uses
- Near residential areas

The survey, which was conducted to determine how many customers drove to the site, indicated that only between nine percent of the customers on a weekday and twelve percent of the customers on a Saturday drove with the remainder captured from the pedestrian activity in the area, as well as from the residents and employees living and working within walking distance from the site.

The site of this proposed Walgreen’s, as indicated earlier, is similar and is therefore anticipated to exhibit similar travel characteristics with a similar small number of customers driving to the store.



PROJECT:
Proposed Walgreen's
834 West Armitage Ave
Chicago, Illinois

TITLE:
Estimated Directional Distribution

KLOA
Job No: 12-192
Figure: 5

Table 1 summarizes the total trips anticipated with this development during the weekday morning, weekday evening, and Saturday midday peak hour periods. The trip generation shown represents the trip generation using ITE Land Use Code 880 reduced to nine percent for the weekday and 12 percent for Saturday. As shown in Table 1, the development is estimated to generate approximately 7 new two-way vehicle trips during the weekday morning peak hour, 15 new two-way vehicle trips during the weekday evening peak hour, and 20 new two-way vehicle trips during the Saturday midday peak hour. These volumes are insignificant and will not have a detrimental impact on the traffic and pedestrian movements in the area.

Table 1
ESTIMATED SITE-GENERATED TRAFFIC VOLUMES

Land Use/Density	Weekday Morning Peak Hour		Weekday Evening Peak Hour		Saturday Midday Peak Hour	
	In	Out	In	Out	In	Out
Walgreen's – 15,000 s.f. (LUC 880) ¹	4	3	7	8	10	10

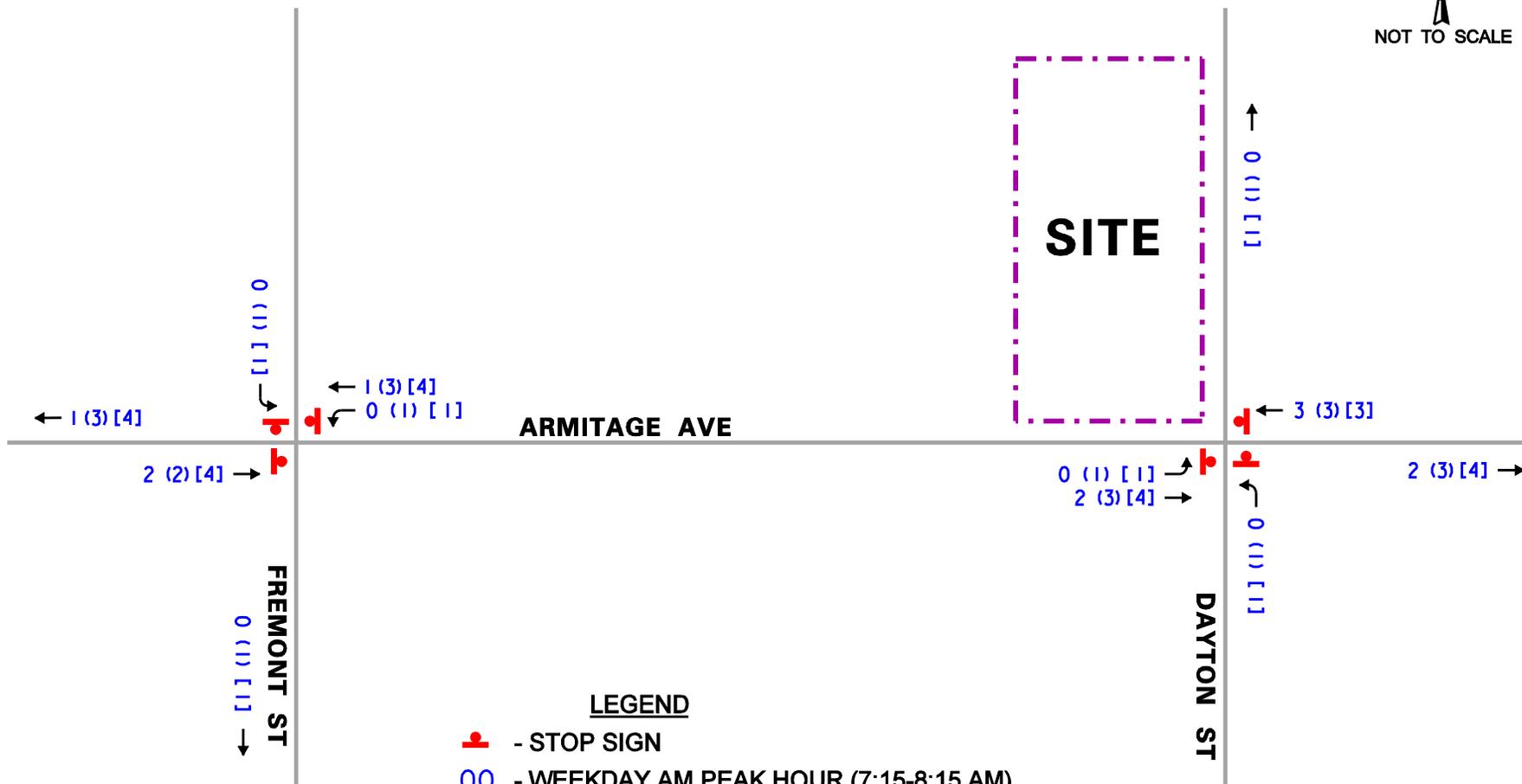
¹ITE LUC 880 trip generation reduced to 9 percent for weekday conditions and 12 percent for Saturday conditions based on a previous study conducted by KLOA, Inc.

Site Traffic Assignment

The peak-hour traffic volumes projected to be generated by the current proposed subject development (refer to Table 1) were assigned to the street system based on the previously established directional distribution analysis. It was assumed for the purposes of presenting conservative analyses that all site traffic will travel through the study area. **Figure 6** shows the assignment of the estimated site-generated peak hour traffic volumes.

Total Projected Traffic Conditions

The total projected traffic volumes include the existing traffic volumes increased by a regional growth factor of two percent and the traffic that will be generated by the proposed subject development (refer to Table 1 and Figure 6) and are shown in **Figure 7A**. **Figure 7B** shows the projected pedestrian volumes that include the pedestrian trips estimated to be generated by the proposed development and the pedestrians that may park across the street and have to cross Armitage Avenue to access the store.



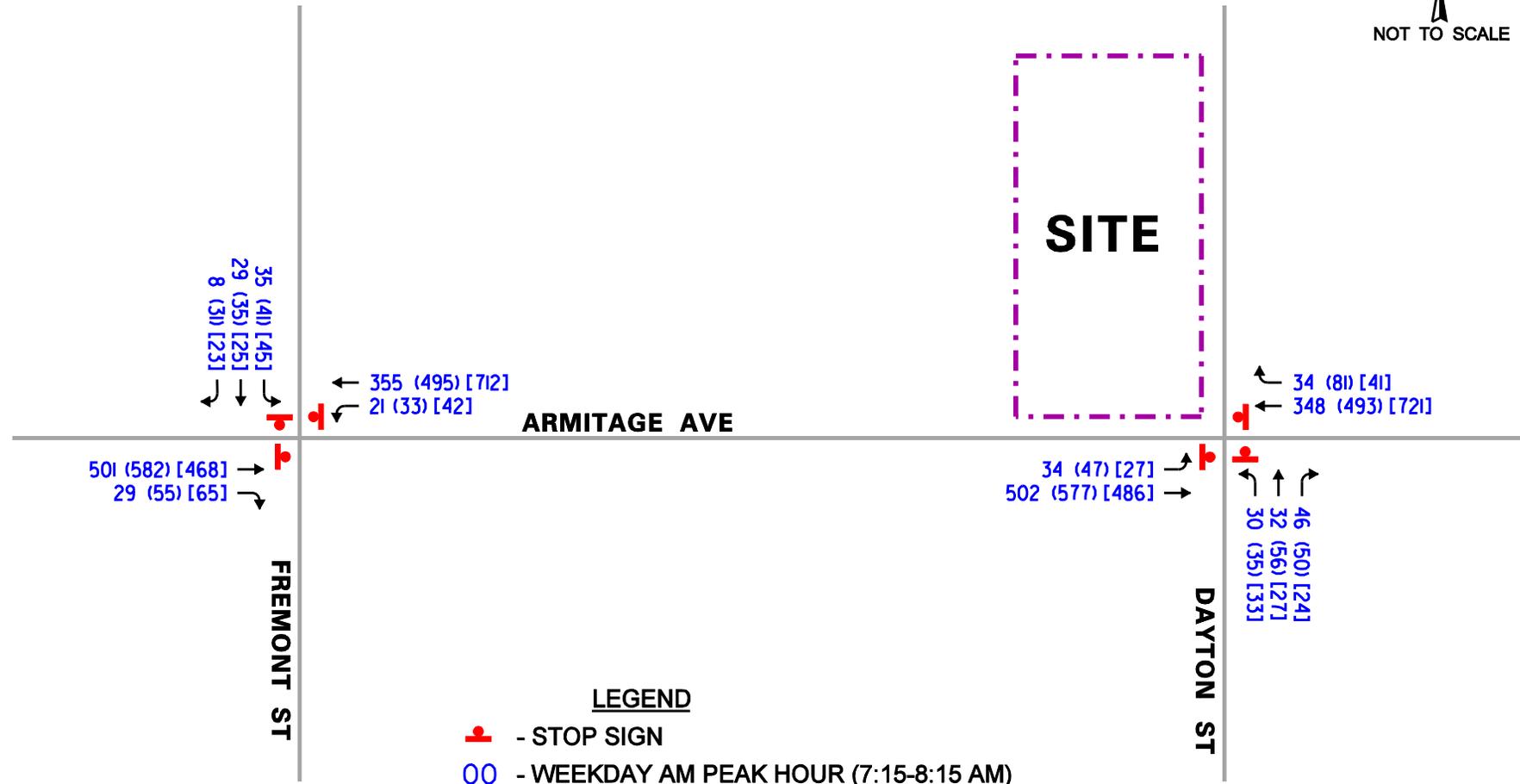
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PROJECT:
Proposed Walgreen's
834 West Armitage Ave
Chicago, Illinois

TITLE:
Estimated Site-Generated Traffic Volumes

KLOA
 Job No: 12-192



LEGEND

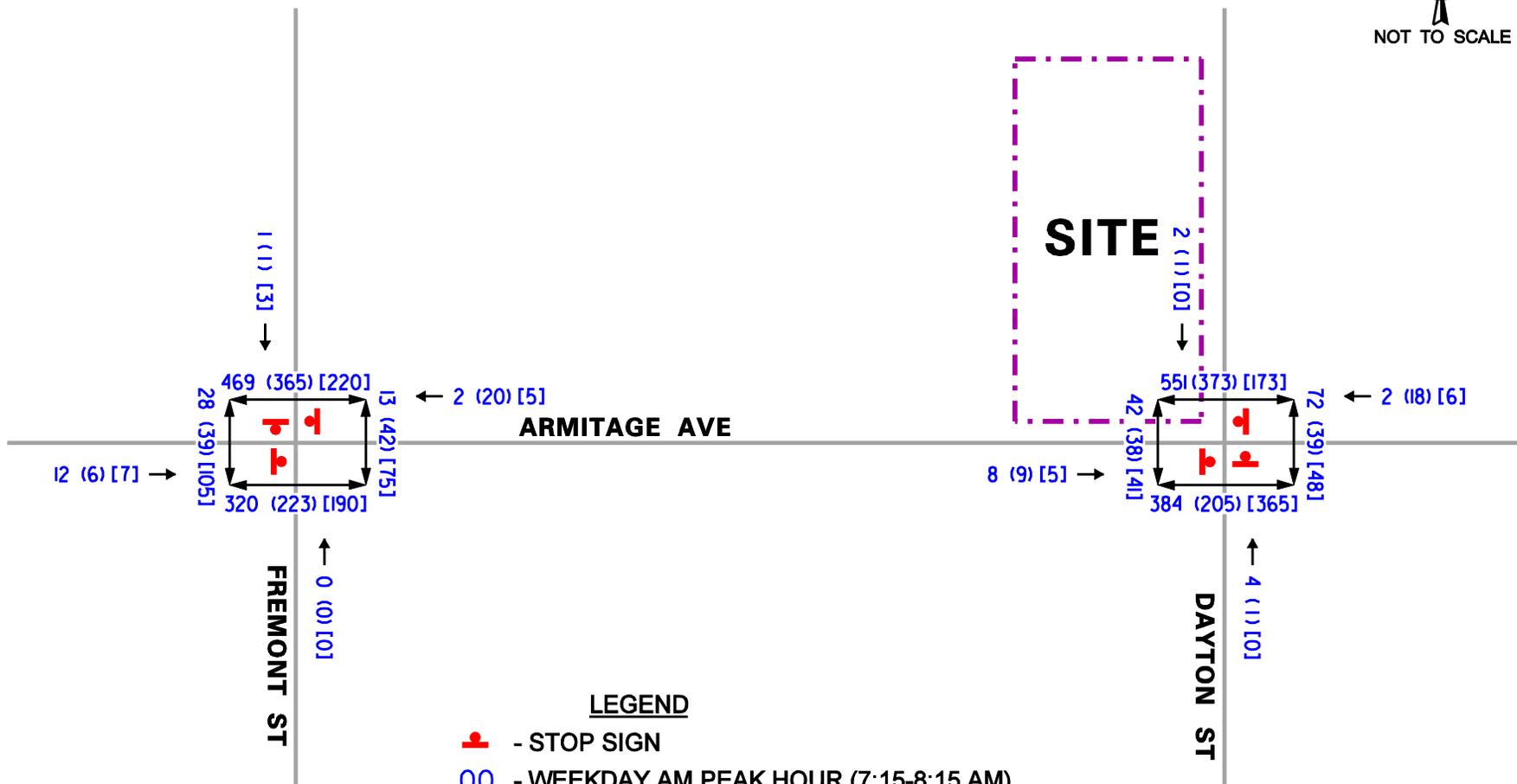
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PROJECT:
Proposed Walgreen's
834 West Armitage Ave
Chicago, Illinois

TITLE:
Total Projected Traffic Volumes



Job No: 12-192
 Figure: 7A



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PROJECT:
Proposed Walgreen's
834 West Armitage Ave
Chicago, Illinois

TITLE:
Projected Pedestrian & Bicycle Volumes



Figure: 7B

Traffic Analysis

Traffic analyses were performed to determine the operation of the existing street system, evaluate the impact of the proposed development plan, and determine the ability of the existing street system to accommodate projected traffic demands. Analyses were performed for the weekday morning, weekday evening, and Saturday midday peak hours for both the existing traffic volumes and the total projected traffic volumes upon development of the site.

The traffic analyses were performed using the methodologies outlined in the Transportation Research Board's *Highway Capacity Manual (HCM), 2010* and modeled/analyzed using Synchro/SimTraffic software.

The analyses for the unsignalized intersections determine the average control delay to vehicles at an intersection. 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 grade from A to F based on the average control delay experienced by vehicles passing through the intersection. Control delay is that portion of the total delay attributed to the traffic signal or stop sign control operation, and includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. Level of Service A is the highest grade (best traffic flow and least delay), Level of Service E represents saturated or at-capacity conditions, and Level of Service F is the lowest grade (oversaturated conditions, extensive delays).

The *Highway Capacity Manual* definitions for levels of service and the corresponding control delay for unsignalized intersections are shown in **Table 2**. Summaries of the traffic analysis results for the existing conditions and the future conditions are presented in **Table 3** and **Table 4**, respectively. A copy of the capacity analysis output sheets are included in the Appendix.

Table 2
LEVEL OF SERVICE CRITERIA

Unsignalized Intersections	
Level of Service	Average Control Delay (seconds per vehicle)
A	0 - 10
B	> 10 - 15
C	> 15 - 25
D	> 25 - 35
E	> 35 - 50
F	> 50

Source: *Highway Capacity Manual, 2010*.

Table 3
CAPACITY ANALYSES RESULTS—EXISTING CONDITIONS

Intersection	Weekday A.M.	Weekday P.M.	Saturday Midday
	Peak Hour	Peak Hour	Peak Hour
	LOS Delay	LOS Delay	LOS Delay
Dayton St and Armitage Ave (all-way stop sign)	C 16.2	E 35.4	E 39.7
Fremont St and Armitage Ave (all-way stop sign)	C 15.2	D 29.9	E 40.4

LOS = Level of Service

Delay is measured in seconds.

LOS represents the intersection as a whole for all-way stop sign controlled intersections.

Table 4
CAPACITY ANALYSES RESULTS—FUTURE CONDITIONS

Intersection	Weekday A.M.	Weekday P.M.	Saturday Midday
	Peak Hour	Peak Hour	Peak Hour
	LOS Delay	LOS Delay	LOS Delay
Dayton St and Armitage Ave (all-way stop sign)	C 16.9	E 40.0	E 40.1
Fremont St and Armitage Ave (all-way stop sign)	C 15.8	D 33.0	E 40.6

LOS = Level of Service

Delay is measured in seconds.

LOS represents the intersection as a whole for all-way stop sign controlled intersections.

Discussion and Recommendations

Traffic capacity analyses were conducted for both the existing conditions and the future projected condition, which considers the proposed development and an increase in existing traffic due to regional growth in the area.

Both the intersections of Armitage Avenue at Dayton Street and at Fremont Street are under all-way stop control and provide crosswalks on all four approaches with a bike lane on either side of Armitage Avenue. The analyses show that these intersections, under future conditions, will continue to operate at the same levels of service, with minimal increase in the overall delay. As such, no geometric or traffic control improvements are needed at these intersections.

A review of both the existing and projected peak hour traffic volumes at these two intersections indicates that a traffic signal is not warranted at either intersection.

Traffic observations that were made during the peak hours noted no significant queuing in either direction on Armitage Avenue, and that Dayton Street and Fremont Street remained clear. The two traffic signals at Sheffield Avenue to the west and at Halsted Street to the east effectively platoon and gap the traffic entering this particular section of Armitage Avenue.

The small increase in traffic related to both the proposed Walgreen's, as well as the increase in regional traffic through the corridor will have a low impact on these two intersections.

Parking

As noted, the Walgreen's store will not provide off-street parking, which is in character with the other retail shops/restaurants in this area. Observations during peak hours noted ample on-street parking on both sides of Armitage Avenue. Further, on-street parking is also provided on both sides of both Dayton Street and on Fremont Street and is available between 6:00 A.M. and 6:00 P.M., which would coincide with peak demand at the Walgreen's store.

Pedestrian Evaluation

The development is served by an adequate sidewalk system on the surrounding street network as well as established crosswalks to aid pedestrians/bicycles to access the development with minimal vehicle/pedestrian conflicts. The capacity analyses performed included an increase in pedestrian volumes related to the Walgreen's store development. The analyses show that with the increase in pedestrians, these intersections will continue to operate at the same levels of service.

Conclusion

The subject development, located at 834 West Armitage Avenue, is located in the Lincoln Park neighborhood, with predominantly residential and commercial uses within the vicinity of the site.

Armitage Avenue is lined with retail stores and restaurants. Further, the Armitage CTA “L” station, bus route, sidewalks, crosswalks, and bike lanes in the area help to create a pedestrian-friendly environment.

The proposed 15,000 square-foot Walgreen’s store will serve the local neighborhood and will be unique from the suburban stores in that it will not provide drive-through pharmacy service or off-street parking. As a result, no driveway curb cuts are requested or needed, thereby preserving and further promoting pedestrian activity in the area. The store will cater to pedestrians in the area either living in the nearby area or commuting to/from the Armitage CTA “L” station. As such, vehicle activity of patrons visiting the store is expected to be very low. In addition, observations of the area during peak hour conditions noted ample on-street parking to support the low volume of vehicles that may stop at the Walgreen’s store, most likely en route to another destination.

Traffic capacity analyses were conducted for both existing and future conditions. The future conditions considered the low estimated traffic expected from the Walgreen’s store, in addition to an increase in regional growth in traffic along the Armitage Avenue corridor, and an increase in pedestrians accessing the store. The results show that the two studied intersections, Armitage Avenue at Dayton Street and at Fremont Street, will continue to operate at the same overall level of service with minimal increase in overall delay. The small amount of vehicle and pedestrian traffic estimated to be added to these intersections as a result of the proposed development and regional growth is minimal, and will be imperceptible to the average driver.

In conclusion, the proposed Walgreen’s development will have a very low traffic impact on the surrounding environs. No geometric, traffic control, or pedestrian-focused improvements are needed in conjunction with this proposed development.