TRAFFIC AND PARKING ANALYSIS

DLC RESIDENTIAL REDEVELOPMENT AT 66TH & YORK

EDINA, MINNESOTA

Prepared for:

City of Edina
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MARCH 2016 | V4

Kimley»Horn

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PLAN APPROVAL

Edina Community Development Department

By: _____ Dated:_____

Edina Engineering Department

By: _____ Dated:_____

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REPORT CERTIFICATION

I hereby certify that this report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

March 4, 2016

William Reynolds, P.E., AICP, PTP — Date

License No. 52627

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1.0 BACKGROUND

DLC Residential is proposing a residential redevelopment project for the site in the northwest quadrant of the intersection of York Avenue and West 66th Street. The site is currently occupied by two buildings and surface parking The Redevelopment Plan calls for implementation in phases.

During Phase I, the 62,100 sq. ft. medical/office building located on the northeast section of the site (6550 York Avenue) will remain open; the other building on site (3250 West 66th Street) is currently only partially occupied and will be removed, replaced with 230 residential units and a combination of surface and secure parking supplied at a ratio of 1.6 stalls per dwelling unit. During Phase II, the 62,100 sq. ft. medical/office building will be removed and replaced with an additional 145 residential units and surface and secure parking, also at a ratio of 1.6 stalls per dwelling unit. During both phases, the existing right-in right-out driveway configuration will be preserved, providing access to both 66th Street as well as York Avenue. The connection to the local streets north of the site will also be preserved, allowing drivers to arrive and depart the site via 64th Street.

The project location is shown in **Figure 1-1**, and the proposed site plan for the fully redeveloped site is shown in **Figure 1-2**.

During the redevelopment of the site, the adjacent parcel (3316 West 66th Street) will remain open, and access to York Avenue from the site will be preserved. A shared parking agreement is currently in place between this building and the two buildings on the redevelopment site. In order to assess the potential impacts of a reduction in surface parking on the adjacent site, current parking demands at 3316 West 66th Street are discussed in the **Parking Demand Memo**, provided in the Appendix.

CITY OF EDINA TRANSPORTATION GOALS

The following policies for transportation are included in Chapter 7 of the Edina Comprehensive Plan, Update 2008, adopted by the Edina City Council on December 2, 2008:

Goal 1: Maintain and enhance mobility for residents and businesses through creation and maintenance of a balanced system of transportation alternatives.

Goal 2: Implement a fully multi-modal transportation system that supports the land use vision and future land use plan for managing and shaping future growth.

Goal 3: Minimize the impacts of the transportation system on Edina's environment and neighborhood quality of life.

Goal 4: Reduce the overall dependence on and use of single-occupant vehicles by promoting land use patterns that allow for shorter vehicular trips and the use of alternative travel options.

Goal 5: Ensure that all Edina's residents, workers, and visitors, including those with transportation disadvantages, have viable travel options.

Goal 6: Promote a travel demand management program through a coordinated program of regulations, marketing, and provision of alternative travel options.

Goal 7: Provide multiple travel options for transit users, pedestrians, bicyclists, and rideshare users, as well as for drivers of private automobiles.

Goal 8: Support attractive and high performance transit service and connections.

Goal 9: Manage parking provision to encourage joint and shared use of facilities, ride-sharing (car pools and van pools), bicycle parking, and increased transit use.

Goal 10: Provide for efficient movement of goods within Edina, while minimizing the impacts of freight traffic on other trips and reducing negative impacts on land uses on freight corridors.

TRAFFIC AND PARKING ANALYSIS OBJECTIVES

This traffic and parking analysis details the proposed project, including the site's design, location, and access plan. It discusses existing and future parking demands, as well parking supply during each project phase. Future traffic conditions are discussed, and potential impacts of the residential redevelopment project are identified.

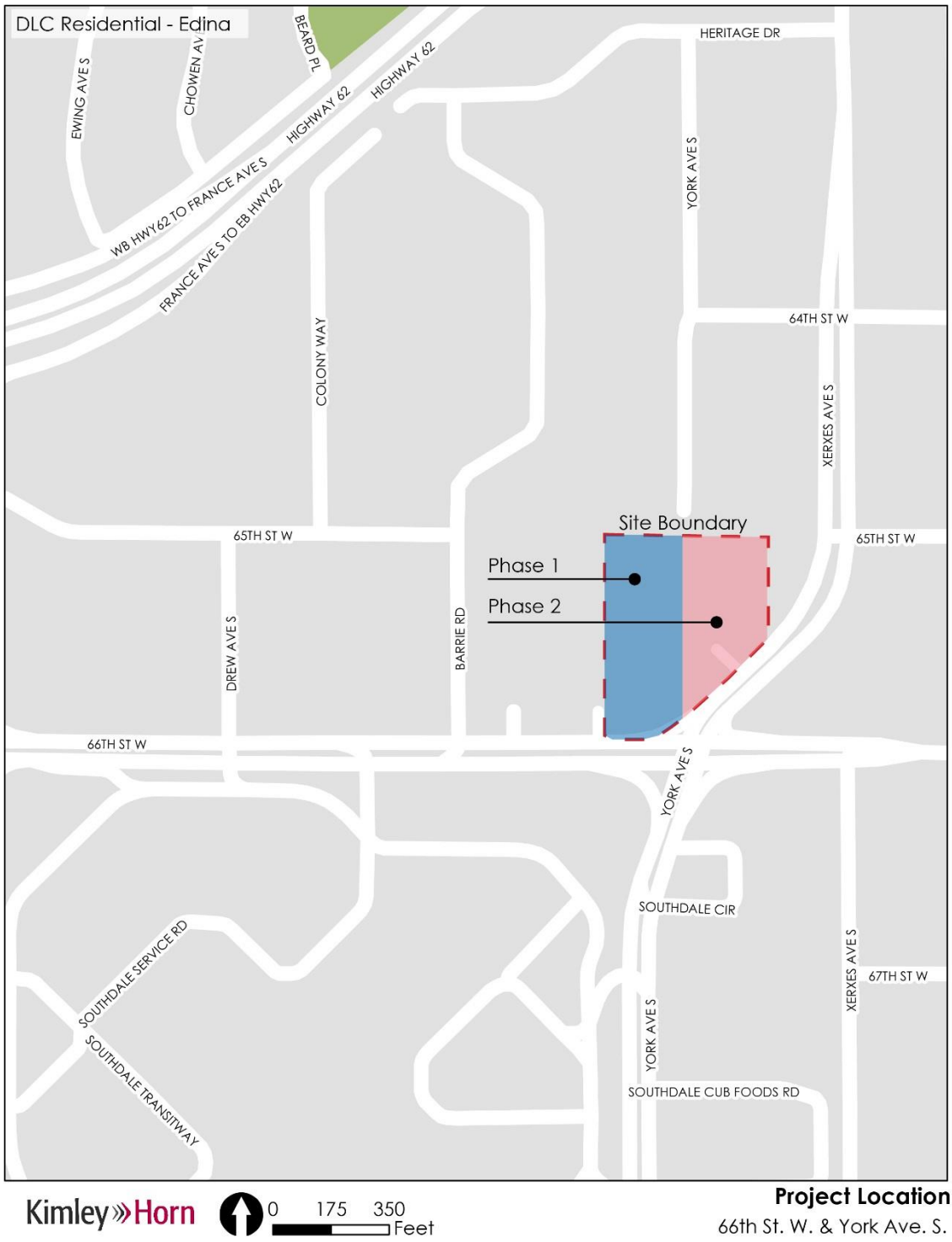


Figure 1-1: Project Location

Figure 1-2: Site Plan

2.0 PEDESTRIAN, BICYCLE, AND TRANSIT

PEDESTRIAN

The site is located adjacent to Southdale Square as well as the Southdale Shopping Center. Sheridan Park is the nearest park, and Sheridan Hill Elementary School is within ½ mile of the site. There is a sidewalk along the length of the site, including the north side of W. 66th Street and the east side of York Avenue/Xerxes Avenue, with the exception of the short (75') right turn lane into the site from York Avenue.

The intersection of W. 66th Street and York Avenue has marked crosswalks across all four legs, and pedestrian crossing pushbuttons in each quadrant. The intersection of W. 66th Street and the Southdale Shopping Center exit has a crosswalk on the east leg with pedestrian pushbuttons in the northeast and southeast quadrants. There is also a marked crosswalk on the south leg of the intersection of Xerxes Avenue and W. 64th Street.

BICYCLE

No marked bicycle facilities are available on W. 66th Street, York Avenue, or Xerxes Avenue.

TRANSIT

Four METRO Transit bus routes stop adjacent to the site. Three additional routes stop one block away from the site at the Southdale Shopping Center. Details for each route are provided below.

On W. 66th Street in the westbound direction, the rightmost lane is marked for "Bus Stopping and Right Turns Only," providing a transit advantage during times of congestion.

ADJACENT ROUTES

Route 6

- **Type**: Local Bus
- **Nearest Stop**: 66th Street & York Avenue
- **Major Destinations**: Southdale Center, Xerxes Ave, Uptown Transit Station, Downtown Minneapolis, University of Minnesota
- **Weekday Frequency**: 4 to 15 minutes
- **Weekend Frequency**: 15 minutes

Route 515

- **Type**: Local Bus
- **Nearest Stop**: 66th Street & Barrie Road
- **Major Destinations**: Southdale Center, VA Medical Center Station, Mall of America Station
  Weekday Frequency: 15 to 30 minutes
- **Weekend Frequency**: 15 to 30 minutes

Route 578

- **Type**: Express Bus
- **Nearest Stop**: 66th Street & York Avenue
- **Major Destinations**: Southdale Center, 46th Street Station (I-35W), Downtown Minneapolis
- **Weekday Frequency**: 30 minutes (peak hour only)
- **Weekend Frequency**: -

Route 579

- **Type**: Express Bus
- **Nearest Stop**: 65th Street & Xerxes Avenue
- **Major Destinations**: Southdale Center, 46th Street Station (I-35W), University of Minnesota
- **Weekday Frequency**: 4 Northbound AM trips, 3 Southbound PM trips
- **Weekend Frequency**: -

NEARBY ROUTES

Route 537

- **Type**: Local Bus
- **Nearest Stop**: Southdale Transit Center
- **Major Destinations**: Southdale Center, Normandale Community College
- **Weekday Frequency**: 60 minutes
- **Weekend Frequency**: -

Route 538

- **Type**: Local Bus
- **Nearest Stop**: Southdale Transit Center
- **Major Destinations**: Southdale Center, Best Buy Headquarters, Southtown Shopping Center, Mall of America Station
- **Weekday Frequency**: 30 minutes
- **Weekend Frequency**: 30 to 60 minutes

Route 684

- **Type**: Express Bus
- **Nearest Stop**: Southdale Transit Center
- **Major Destinations**: Chaska, Chanhassen, Southwest Station, Southdale Center, Downtown Minneapolis, University of Minnesota
- **Weekday Frequency**: 10 Westbound AM trips, 6 Eastbound PM trips
- **Weekend Frequency**: -

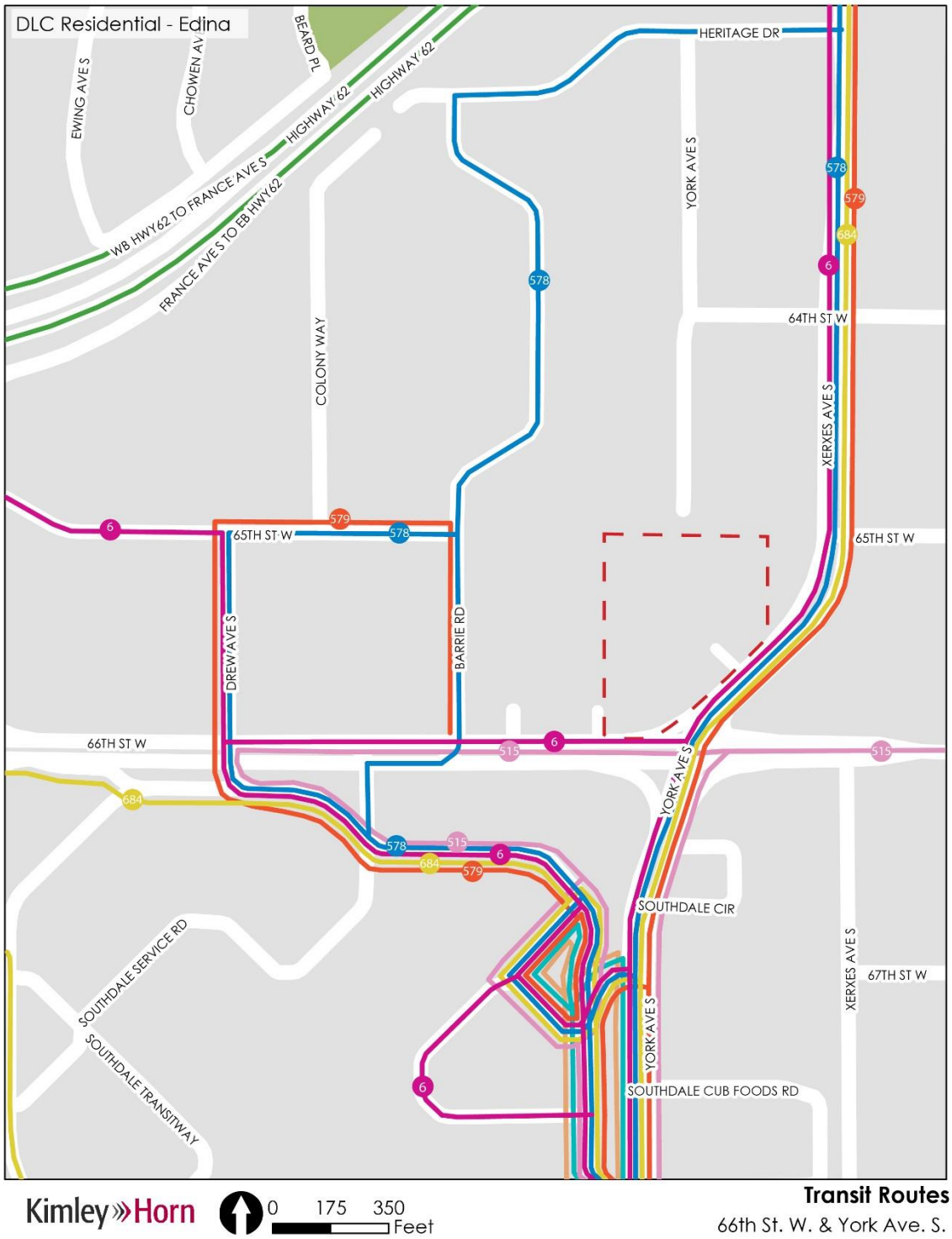


Figure 2-1: Transit Routes Near the Site

3.0 PARKING

Given the proposed phasing of development on site, a parking analysis was conducted in order to assess current demands, forecast future demands during Phase I, and confirm that the proposed parking supply will accommodate these demands. Based on field observations and a review of parking demand estimates from ITE and ULI, the proposed parking supply ratios are forecasted to adequately serve the parking demands for the office building on site as well as the office building on the adjacent site. Residential parking demand estimates were not included, but the proposed parking supply of 1.6 stalls per dwelling unit exceeds the minimum requirements for multifamily buildings in a Planned Commercial District under Edina's Code of Ordinances. A **Parking Demand Memo**, provided in the Appendix, documents the assumptions and recommendations in more detail, and the proposed parking stall counts and corresponding ratios are provided below.

Phase I

- 3250 Building - *Removed*
- 6550 Building
    - Surface: 222 stalls
    - Secure: 28 stalls
    - Total: 250 stalls
    - Ratio: 4.03 parking stalls per 1,000 sq. ft. GFA
- Phase I Residential
    - Surface: 29 stalls
    - Secure: 350 stalls
    - Total: 379 stalls
    - Ratio: 1.6 stalls per dwelling unit
- Adjacent Site (3316 Building)
    - Surface: 140 stalls
    - 4.24 parking stalls per 1,000 sq. ft. GFA

Phase II

- 6550 Building - *Removed*
- Phase I Residential – *No Change from Phase I*
- Phase II Residential
    - Surface: 9 stalls
    - Secure: 225 stalls
    - Total: 334 stalls
    - Ratio: 1.6 stalls per dwelling unit
- Adjacent Site (3316 Building) – *No Change from Phase I*

4.0 TRAFFIC OPERATIONS

An analysis of the potential traffic impacts associated with the proposed residential redevelopment project was completed. The assumptions, methodology, results, and recommended improvements are detailed in this section. The following intersections were analyzed for traffic impacts:

- West 66th Street and Southdale Shopping Center Exit
- West 66th Street and 3316 West 66th Street West Access
- West 66th Street and 3316 West 66th Street East Access
- West 66th Street and York Avenue South
- York Avenue South and 6550 York Avenue South Access
- Xerxes Avenue South and West 64th Street

The traffic conditions at these intersections were analyzed under four scenarios during the morning and evening peak hours using Synchro 9 and SimTraffic 9:

- Future Year (2018) No Build Conditions
- Future Year (2018) Build Conditions – Phase I
- Future Year (2024) No Build Conditions
- Future Year (2024) Build Conditions – Phase II

EXISTING TRAFFIC CONDITIONS

West 66th Street/County Round 53 is a four/five-lane east-west A-minor reliever arterial adjacent to the development site. Within the study area, the posted speed limit is 35 mph, and a median is present on both sides of York Avenue South. The 2014 annual average daily traffic (AADT) volume on West 66th Street east of York Avenue South was 14,700 vehicles per day, according to MnDOT's AADT map. On-street parking is prohibited, and within the five-lane segment between York Avenue South and France Avenue South/County Road 17, the rightmost lane in the westbound direction is marked for buses and right turning vehicles only. Both the access points on West 66th Street included within the analysis are right-in right-out, and a median prevents left turns into or out of each access point.

York Avenue South/Xerxes Avenue South/County Road 31 is a two-way north-south major collector street. Within the study area, the posted speed limit is 35 mph south of West 66th Street and 30 mph north of West 66th Street. A median is present on both sides of West 66th Street. The 2014 AADT on Xerxes Avenue south of Highway 62 was 17,300 vehicles per day, and the 2014 AADT on York Avenue south of West 66th Street was 22,000 vehicles per day, according to MnDOT's AADT map. Parking is allowed on both sides of Xerxes Avenue north of West 65th Street, but parking is prohibited south of West 65th Street within the study area. The access point on York Avenue included within the analysis is right-in right-out, and a median prevents left turns into or out of the access point.

The existing lane geometry and intersection control for each of the study intersections is provided in **Figure 4-1**.

EXISTING TRAFFIC VOLUMES

To analyze traffic operations at the six study intersections, turning movement counts were collected on Thursday, September 17, 2015 during both the morning and evening peak hours. These counts were supplemented with evening counts provided by the City of Edina from the Gateway Pointe Traffic and

Parking Study, which were collected at the intersection of 66th Street and York Avenue in October 2016. Traffic volumes for the westbound though movement and the southbound through movement were found to be higher in the October counts, and these volumes were therefore used, with the volume difference carried forward to adjacent intersections.

The network peak hour of these six intersections was determined to occur from 7:45-8:45AM and from 4:45-5:45PM. The average Peak Hour Factor (PHF) during these hours was calculated at 0.93 in the morning and 0.96 in the evening.

Due to the number of access points and intersections within the study area not included within the analysis, traffic volumes were not balanced between intersections. Because all six intersections were counted simultaneously in September, the volume imbalance can be attributed to these access points. The 2015 Existing Turning Movement Counts for the morning and evening peak hours, adjusted with the October counts and rounded to the nearest 5 vehicles by movement, are provided in the **Appendix** in **Figures A-1** and **A-2.**

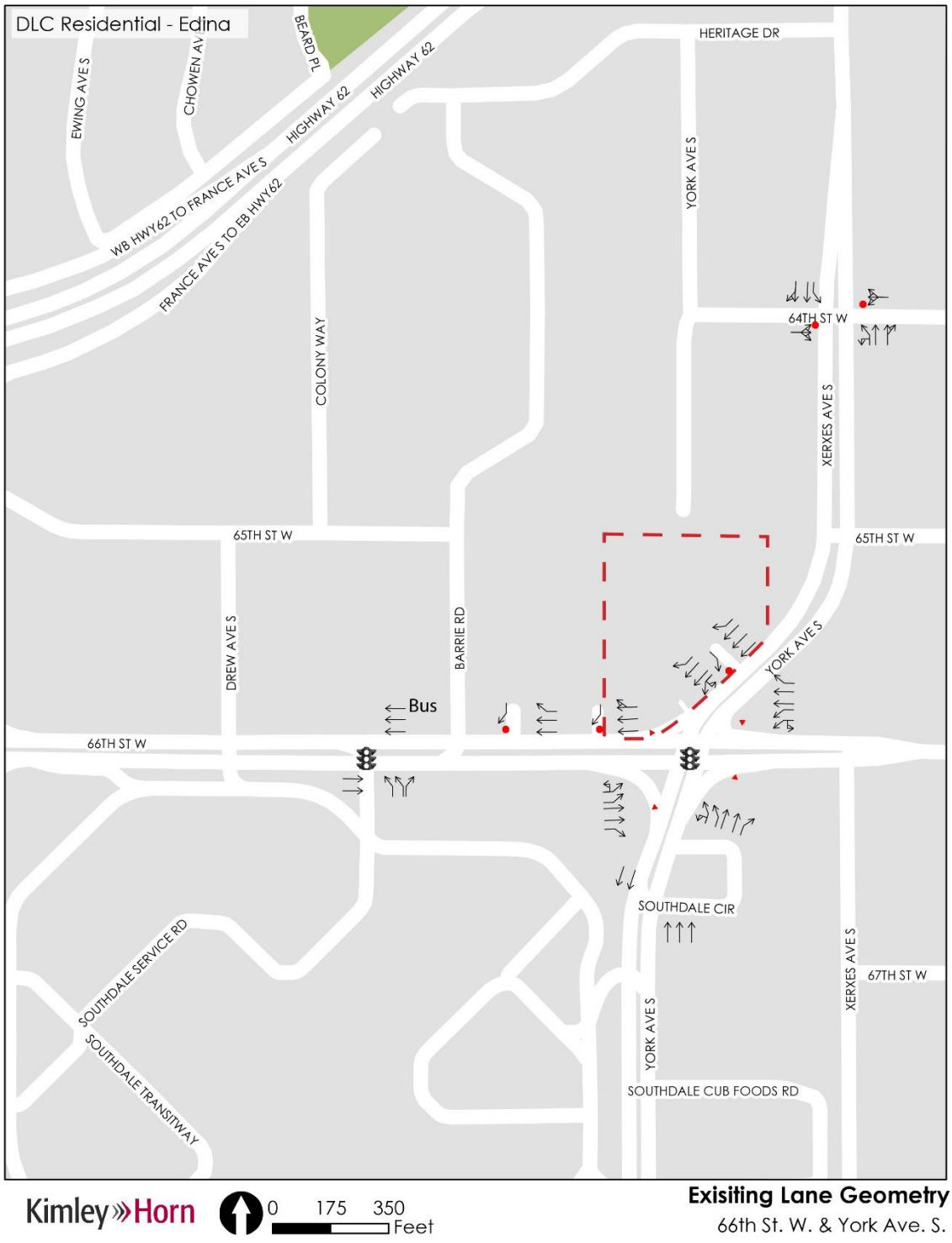


Figure 4-1: Existing (2015) Lane Geometry

BACKGROUND GROWTH AND FUTURE TRAFFIC CONDITIONS

In order to analyze traffic operations in future years, a general background growth rate was assumed to account for other development in the region. Because traffic volumes in the area decreased between 2011 and 2014, recent local trends cannot be used to forecast growth, and instead the Hennepin County State Aid traffic growth projection factor of 1.1 over a 20-year period was applied to the 2015 counts. This factor corresponds to 10 percent growth over 20 years, or 0.5 percent annual growth. This rate was confirmed with the City of Edina, and is consistent with the background growth assumed for the nearby Gateway Pointe Traffic and Parking Study.

In addition to the regional background growth, traffic associated with specific approved development projects in the area were also incorporated. These included:

- Gateway Pointe Residential Development
- Southdale One Apartments
- 6725 York Avenue

Traffic associated with these projects were incorporated by utilizing the 2017 forecasted full build traffic volumes at 66th Street and York Avenue from the Gateway Pointe Traffic and Parking Study[1], which included trips associated with these developments. Incremental increases above the background growth assumed by movement were carried forward to adjacent intersections to apply these trips to the entire study area.

The Phase I analysis year was assumed to be one year following opening of Phase I (2017), resulting in an analysis year of 2018. The 2018 background traffic for this future No Build scenario, rounded to the nearest 5 vehicles by movement, is provided in **Figures 4-2** through **4-3**.

The Phase II analysis year was assumed to be one year following opening of Phase II (2023), resulting in an analysis year of 2024. The 2024 background traffic volumes for this future No Build scenario, rounded to the nearest 5 vehicles by movement, are provided in **Figures 4-4** through **4-5**.

No geometric modifications or other changes were assumed between existing conditions (2015) and the future No Build analysis years. For the Build analysis, it was assumed that the southbound free right will be converted to an unchannelized 100' right turn lane in order to remove the island, decrease the pedestrian crossing distance across 66th Street, and improve the walking environment.

[1] Morning volumes were not reported in this study. Morning trips associated with this development were therefore calculated and assigned to the network using the same distribution assumptions used in the study for the evening peak hour.

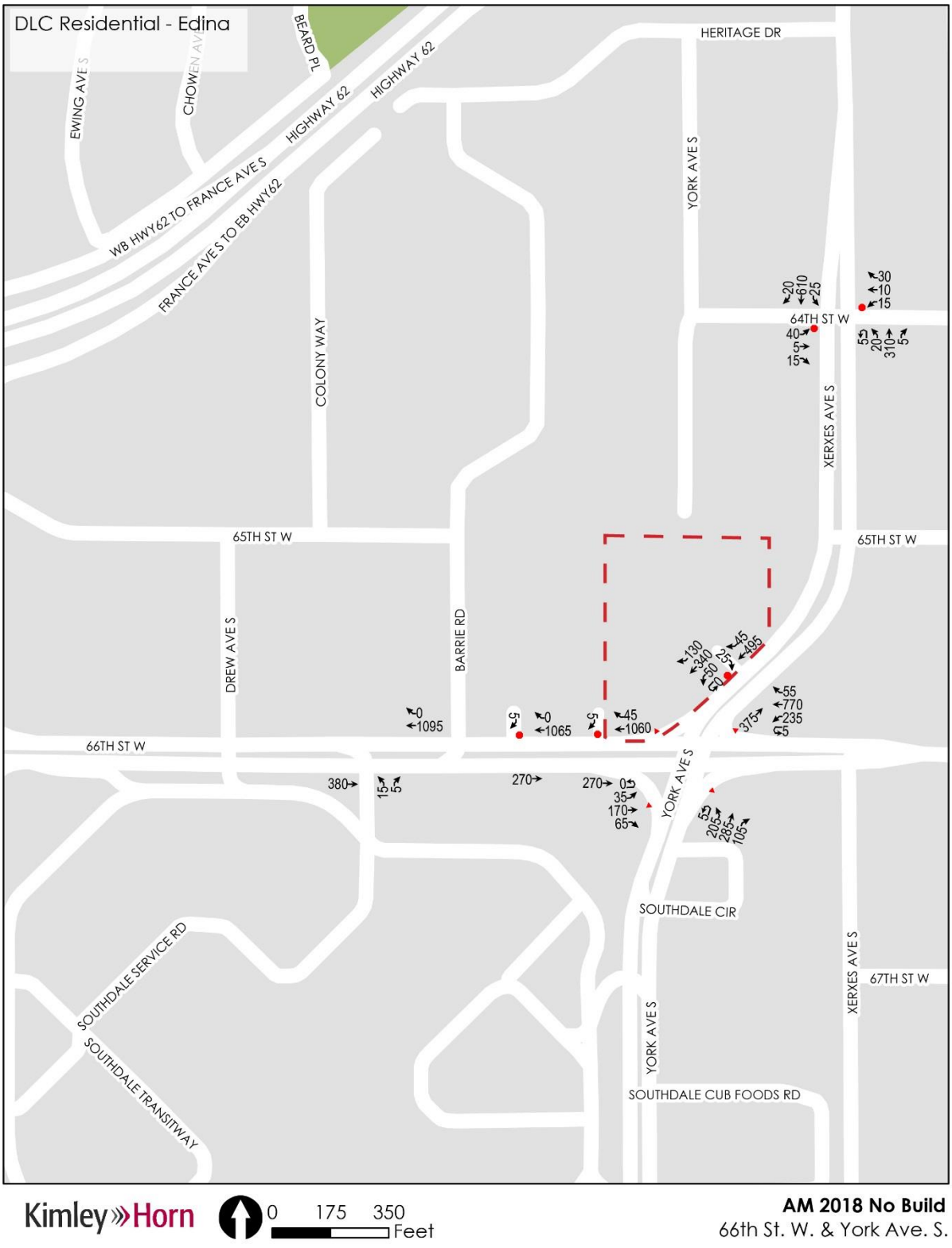


Figure 4-2: Future Year (2018) AM No Build Turning Movement Volumes

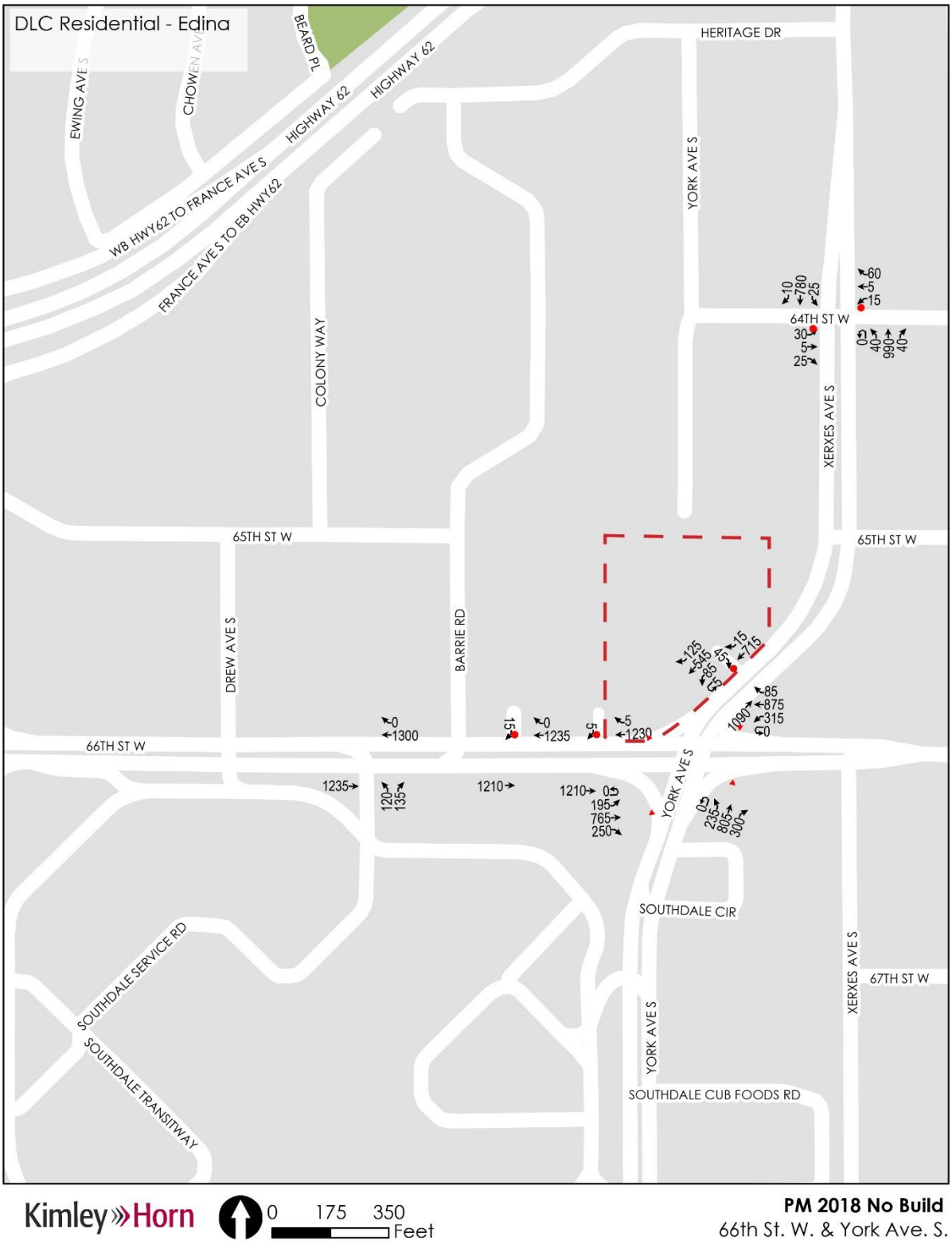


Figure 4-3: Future Year (2018) PM No Build Turning Movement Volumes

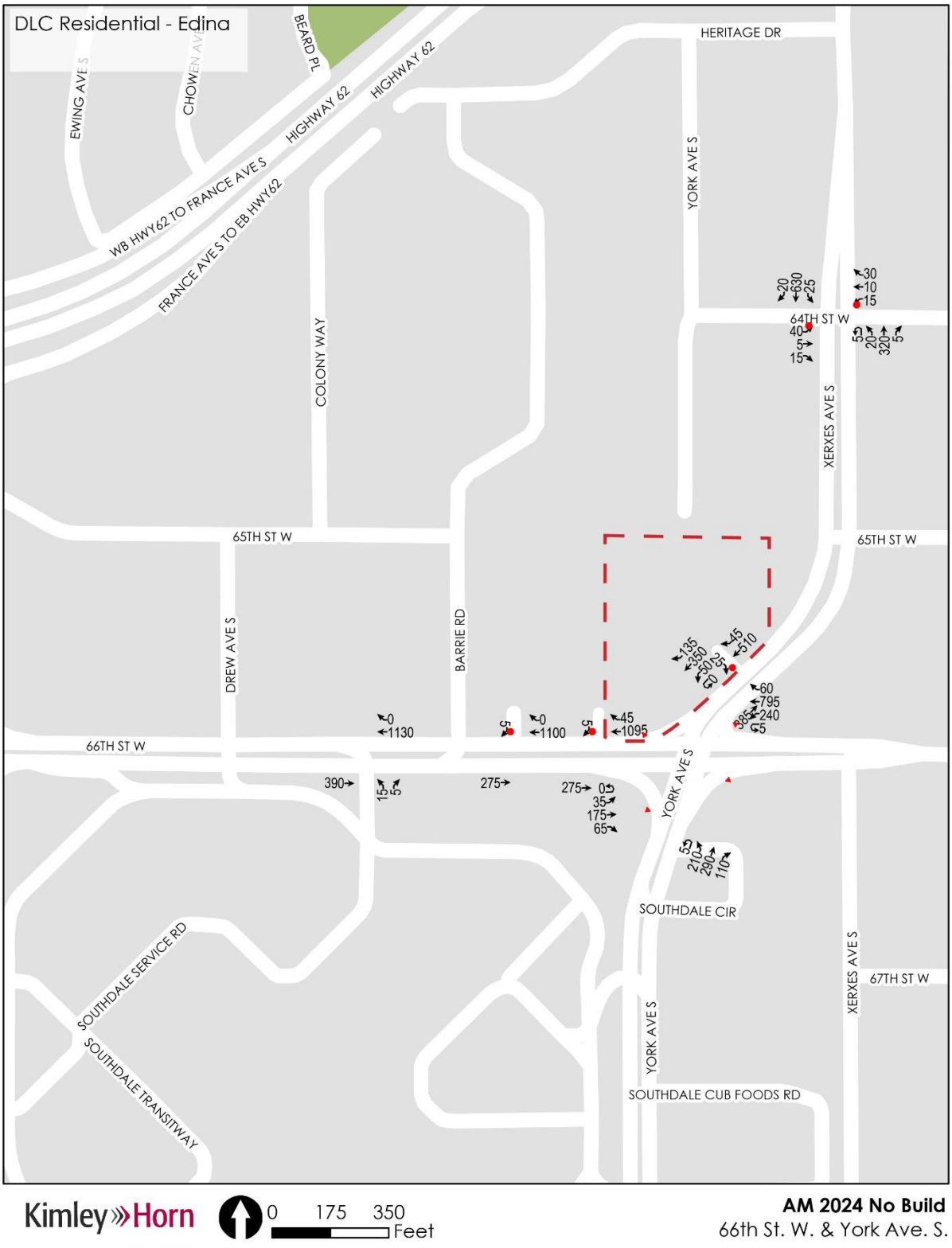


Figure 4-4: Future Year (2024) AM No Build Turning Movement Volumes

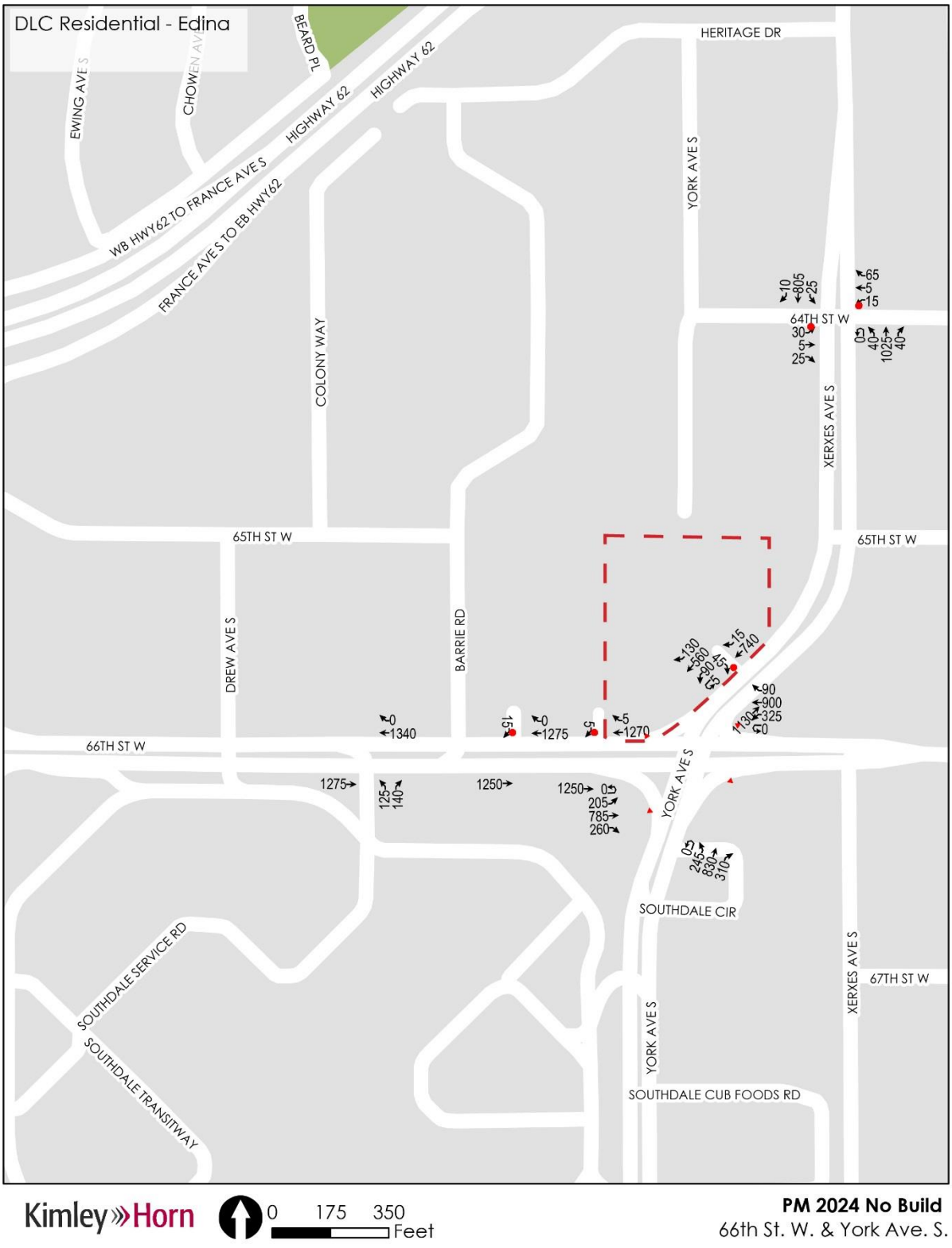


Figure 4-5: Future Year (2024) PM No Build Turning Movement Volumes

TRIP GENERATION AND DISTRIBUTION

TRIP GENERATION

Trip Generation estimates were developed based on the Institute of Transportation Engineers' (ITE) Trip Generation, 9th Edition. As these values represent estimates, all values were rounded to the nearest 5 vehicles.

Phase I

During Phase I, the 3250 Building (3250 W. 66th Street) and adjacent parking will be replaced with a 230-unit, 6-floor apartment building with secure parking. The existing 6550 Building (6550 York Avenue South) and associated surface parking will remain open, along with the existing access locations on both York Avenue South and W. 66th Street.

The apartment building is most similar to ITE's Land Use 220 ("Apartment"), and this land use code was therefore used for developing trip generation estimates:

> *"Apartments are rental dwelling units located within the same building with at least three other dwelling units…"*

For both the morning and evening peak demand estimates, the average rates associated with the peak hours of adjacent street traffic were used.

Although some vehicles were observed parked near the 3250 building at the time of the counts, the building was largely vacant, and no trips were removed from the network for the future year analyses to account for the removal of this building.

Additionally, because the 6550 Building was assumed to remain open during Phase I, the existing entries and exits from site driveways were preserved for the future analysis years. Although some degree of internal capture could be expected by co-locating a residential building on the same site as an office building, this would result in a reduction of less than 4 percent of trips according to ITE's Trip Generation Handbook, 3rd Edition, and no internal capture was assumed within the trip generation analysis.

The total net new trips added to the network for the Phase I analysis year for both the morning and evening peak periods is provided in **Tables 4-1** and **4-2**.

Table 4-1: Morning Peak Hour Trip Generation Estimates for Phase I

Code	Land Use Description	Units	No.	Rate	AM				
					AM Trips Enter (%)	AM Trips Exit (%)	AM Trips Enter	AM Trips Exit	Total AM Trips
220	Apartment	DUs	230	0.51	20%	80%	25	95	120
							25	95	120

Table 4-2: Evening Peak Hour Trip Generation Estimates for Phase I

Code	Land Use Description	Units	No.	Rate	PM				
					PM Trips Enter (%)	PM Trips Exit (%)	PM Trips Enter	PM Trips Exit	Total PM Trips
220	Apartment	DUs	230	0.62	65%	35%	95	50	145
							95	50	145

Phase II

During Phase II, the 6550 Building (6550 York Avenue South) and adjacent parking will be replaced with a 145-unit 5-floor apartment building with additional secure parking. Upon completion of Phase II, the site will have a total of 375 apartment units, 38 surface stalls, and 576 secure parking stalls. As with Phase I, the average trip generation rates were used, applied to the completed residential development.

The removal of the 6550 Building will lead to a significant reduction in the number of trips observed traveling to and from the site under existing conditions. At the time of the turning movement counts, the 62,100 sq. ft. office was approximately 71 percent occupied. Therefore, 44,100 sq. ft. was used to estimate the number of trips to remove from the network for the Phase II analysis.

Due to the variety of uses observed within the building, ITE's Land Use 710 ("General Office Building") was used for developing trip generation estimates:

> *"A general office building houses multiple tenants; it is a location where affairs of businesses, commercial or industrial organizations, or professional persons or firms are conducted. An office building or buildings may contain a mixture of tenants including professional services, insurance companies, investment brokers and tenant services, such as a bank or savings and loan institution, a restaurant or cafeteria and service retail facilities."*

The average rate rather than the fitted curve equations produced estimates most similar to observed driveway entries and exits, and this rate was therefore used for both time periods to estimate the number of trips to remove.

The total net new trips added to the network for the Phase II analysis year for both the morning and evening peak periods, including the removed office trips, is provided in **Tables 4-3** and **4-4**.

Table 4-3: Morning Peak Hour Trip Generation Estimates for Phase II

Code	Land Use Description	Units	No.	Rate	AM				
					AM Trips Enter (%)	AM Trips Exit (%)	AM Trips Enter	AM Trips Exit	Total AM Trips
220	Apartment	DUs	375	0.51	20%	80%	40	155	195
710	General Office Building (1)	1ksf	44.1	1.56	88%	12%	-60	-10	-70
							-20	145	125

Table 4-4: Evening Peak Hour Trip Generation Estimates for Phase II

Code	Land Use Description	Units	No.	Rate	PM				
					PM Trips Enter (%)	PM Trips Exit (%)	PM Trips Enter	PM Trips Exit	Total PM Trips
220	Apartment	DUs	375	0.62	65%	35%	150	80	230
710	General Office Building (1)	1ksf	44.1	1.49	17%	83%	-10	-55	-65
							140	25	165

Due to the removal of the office trips, trips entering the site during the morning peak hour represents a reduction from existing conditions, and trips exiting the site during the evening peak hour is only expected to increase by twenty-five vehicles. The greatest change in trips assigned to the network compared to existing conditions is associated with the residential trips exiting the site in the morning, and the residential trips returning to the site during the evening.

TRIP DISTRIBUTION AND ASSIGNMENT

Residential Trips

The trip distribution for the site-generated residential is shown in the Appendix in **Figure A-3**. This distribution is based on the current traffic patterns in the area as well as the driveway configuration and likely routing to and from the freeways in the area (Highway 62, I-35W, Highway 100, and I-494), as described below:

- To/From the North (Xerxes Avenue)
  - Inbound: **65%**
  - Outbound: **40%**
    - Approximately 5 U-turns were observed at 66th Street and York Avenue on the southbound approach under existing conditions. For assignment purposes, it is assumed that approximately 20% of northbound trips (8% of total) will make a U-turn at 66th Street and 80% (32% of total) will take York Avenue to 64th Street and make left turn onto Xerxes Avenue to depart to the north.

- To/From the West (West 66th Street)
    - Inbound: **5%**
        - Trips from the west and southwest are most likely to arrive via Highway 62 and Xerxes Avenue as opposed to 66th Street from the west given the site driveway configuration and proximity to Highway 62. A negligible number of U-turns were observed on the eastbound approach to York Ave (1 or 2 during the peak hour), so 5% is assumed to capture the drivers that may choose to make this movement to access the site.
    - Outbound: **25%**
        - Due to the right-in right-out driveway configuration, some drivers will choose to proceed west and access Highway 62 from France Avenue, even if headed north or east.
- To/From the East (West 66th Street)
    - Inbound: **20%**
    - Outbound: **25%**
        - Due to the right-in right-out driveway configuration, some drivers will choose to turn left onto 66th Street to access I-35W, even if headed north.
- To/From the South (York Avenue)
    - Inbound: **10%**
    - Outbound: **10%**

The corresponding site driveway assignment is shown in **Figure A-4**. Although approximately 35 percent of inbound trips are assumed to use the right in from 66th Street, all southbound, eastbound, and westbound outbound trips were assigned to the York Avenue driveway due to the site configuration and proximity of the secure parking access relative to this driveway.

Maps showing the site-generated residential trips for the morning and evening peak hours for both Phase I (2018) and Phase II (2024) are provided in **Figures A-5** through **A-8**.

Office Trips

Phase II includes the removal of the 6550 Building (6550 York Avenue South), and office trips therefore need to be removed from the network to analyze the full build scenario. The removed office trips are shown in **Figures A-9** and **A-10**, generated using a proportional reduction of the office trips identified in **Tables 4-3** and **4-3** based on existing traffic patterns.

FUTURE BUILD TURNING MOVEMENT VOLUMES

Taking into account the trip assignment described above as well as the reduction of office trips for Phase II, the estimated Full Build morning and evening peak hour turning movements for both Phase I and Phase II are shown in **Figures 4-6** through **4-9**.

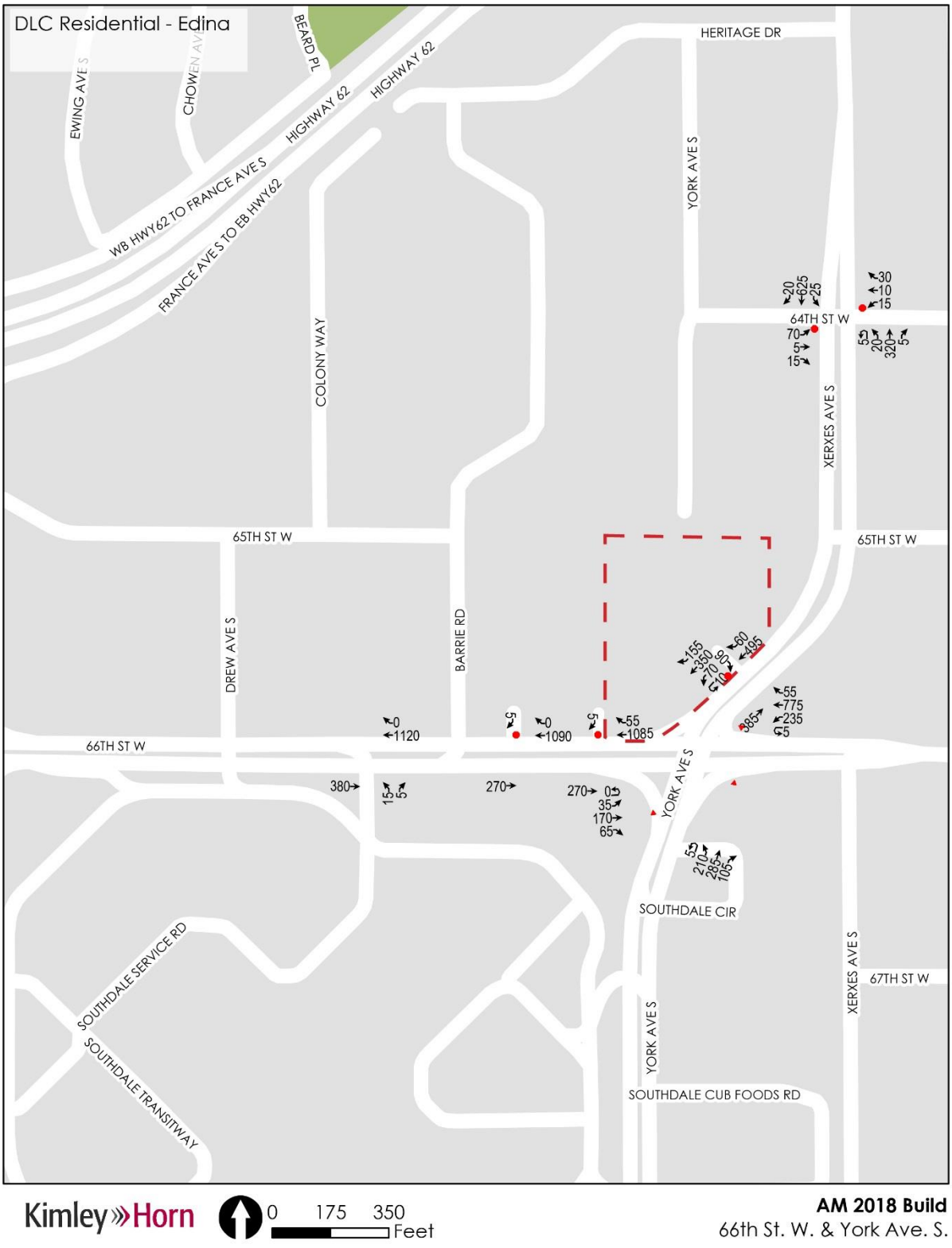


Figure 4-6: Future Year (2018) AM Phase I Turning Movement Volumes

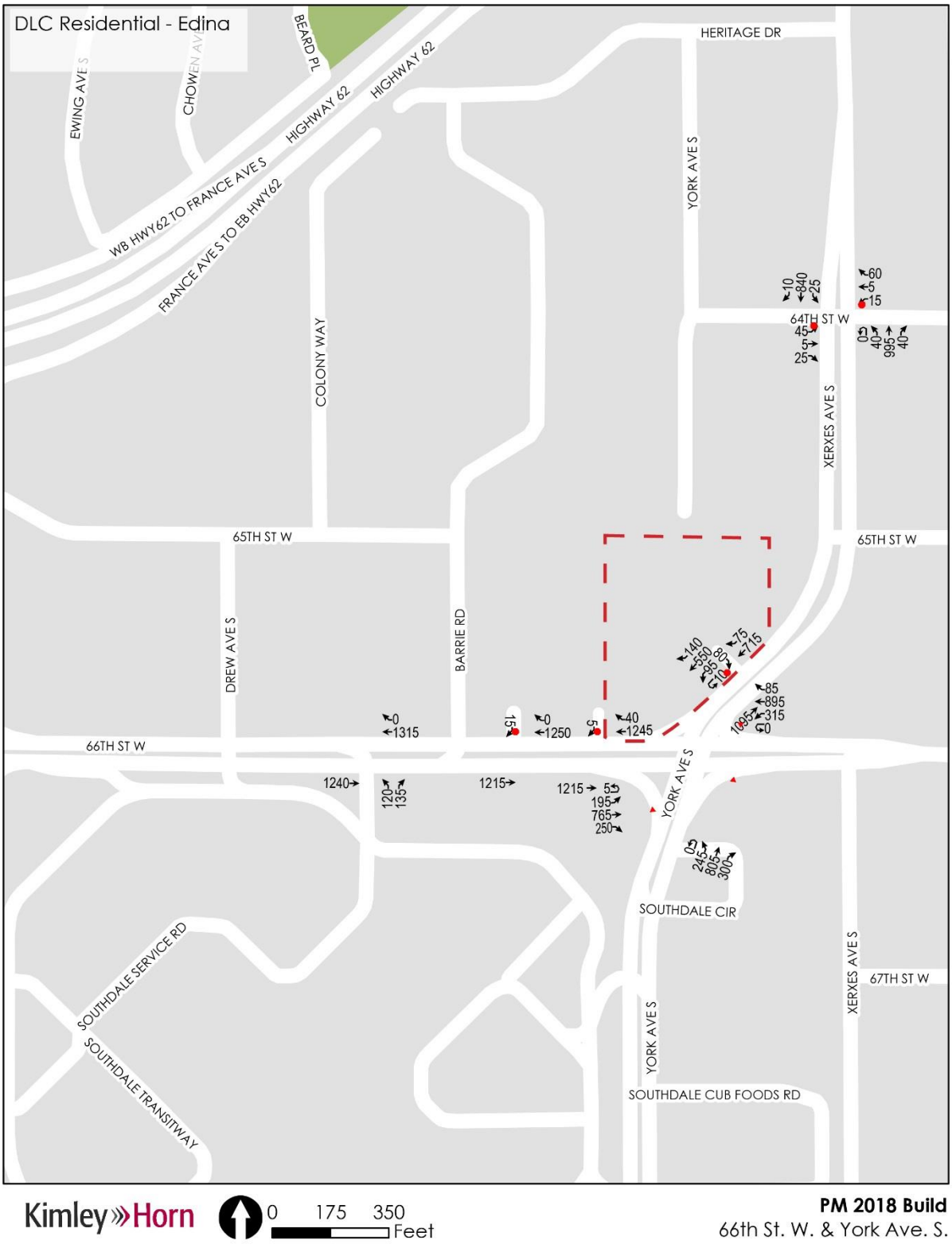


Figure 4-7: Future Year (2018) PM Phase I Turning Movement Volumes

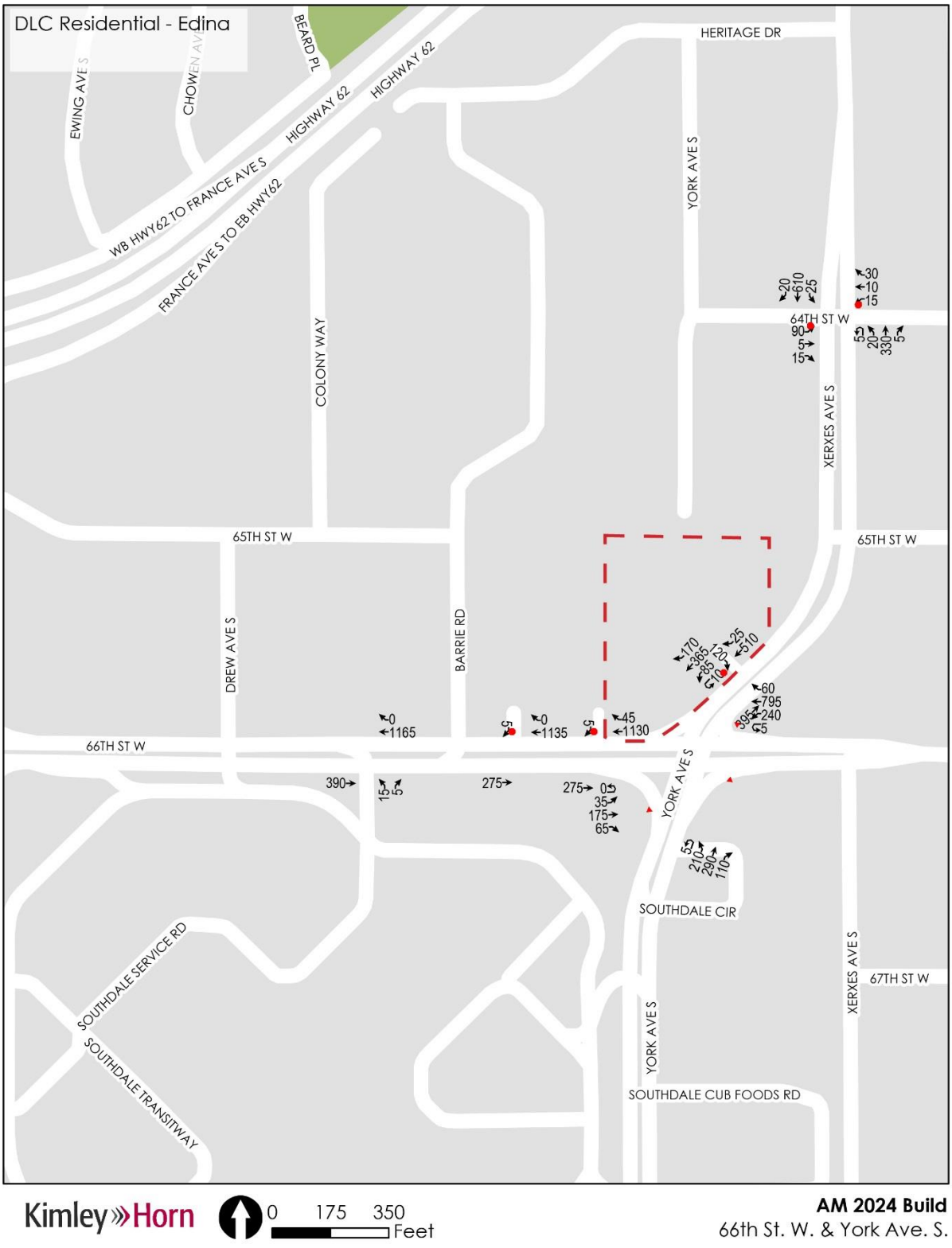


Figure 4-8: Future Year (2024) AM Phase II Turning Movement Volume

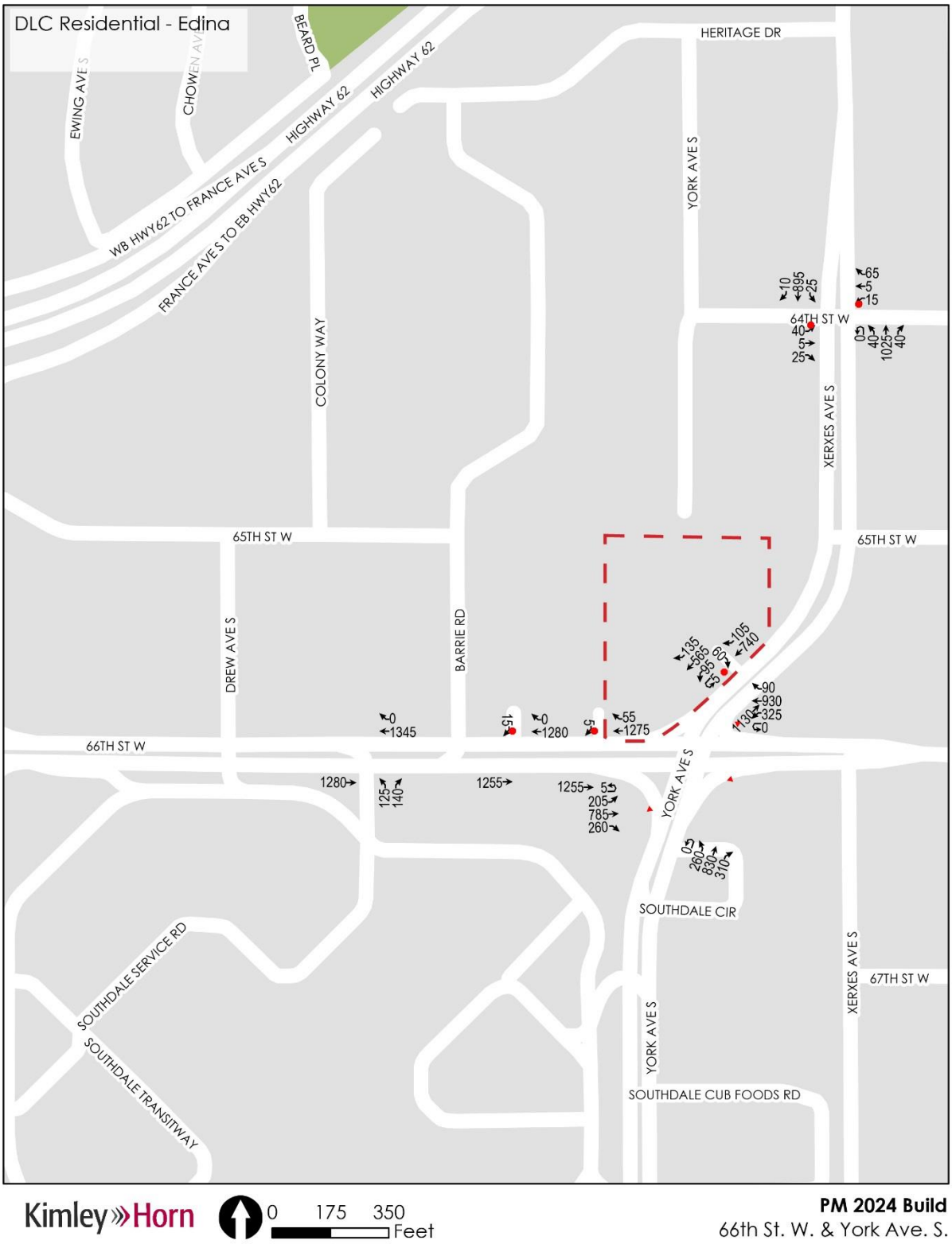


Figure 4-9: Future Year (2024) PM Phase II Turning Movement Volume

DELAY AND QUEUING ANALYSIS RESULTS

Models of each scenario were developed using Synchro, and then delay and queuing were evaluated for each scenario using the average output value from five simulations in SimTraffic. At the intersection of 64th Street and Xerxes Avenue, Highway Capacity Manual (2000) results, produced by Synchro, are provided in order to incorporate two-stage gap acceptance, which SimTraffic is unable to analyze.

The Future Year (2018 and 2024) No Build scenarios were analyzed first to provide an understanding of delay and queuing including background traffic growth, before the addition of trips generated by residential development. The Future Year (2018) Phase I Build scenario was analyzed to determine the potential impact of Phase I site traffic on the adjacent study intersections, including all existing office trips from the site. The Future Year (2024) Phase II Build scenario was analyzed to determine the potential impact of Phase II site traffic on the adjacent study intersections, including additional residential trips but accounting for the reduction of office trips.

2018 NO BUILD RESULTS

All intersections operate at a level of service (LOS) D or better under the 2018 No Build Conditions scenario, as shown in the Appendix in **Table B-1**.

Three movements exceed the LOS D threshold during the PM peak hour at 66th Street and York Avenue. The northbound, southbound, and westbound left turns at 66th Street and York Avenue have delays in excess of 55 seconds. However, these delays are very close to the D/E threshold, and delays in this range can be expected given the 130-second cycle length.

No significant queuing issues are expected during either peak hour, as shown in **Table B-2**. On the northbound approach to 66th Street and York Avenue, left turn queues are projected to reach the limit of the storage lanes, and in some cases queues in the through lanes can be expected to block entrance into the turn lanes. No significant upstream blockage is expected, however. Queues on the westbound approach can also be expected to block entrance to the turn lane during some cycles, but this will not lead to significant delays. On the southbound approach, queues will occasionally (less than 10 percent of the time during the evening peak hour) block the exit from the 6550 Driveway, but the driveway will continue to operate at LOS A.

2018 PHASE I BUILD RESULTS

With the construction of 230 residential units on site during Phase I, all intersections are expected to continue to operate at a level of service (LOS) D or better as shown in the appendix in **Table B-3**. Average intersection delay at 66th Street and York Avenue is expected to remain approximately equivalent to the No Build condition, with overall average delays increasing by less than 1 second per vehicle during both the AM and PM peak hours.

At 66th Street and York Avenue, the eastbound and southbound U-turn movements at 66th Street and York Avenue are estimated to serve 5 to 10 vehicles during the PM peak hour, and while these low volume movements are subject to significant random variability, some vehicles making these movements to access or exit the site may encounter average delays anywhere from 40 to 60 seconds.

On the southbound approach, with the conversion of the free right to a 100’ right turn lane, no significant increase in delay is expected for either the southbound through or right turn movements. Additionally, 95th

percentile queue lengths are not expected to significantly increase, with no increase in upstream driveway blockage compared to the No Build Condition.

No other movements at this intersection are expected to have a significant increase in average delay compared to the No Build condition.

At 64th Street and Xerxes Avenue, the addition of 15 vehicles per hour to the eastbound approach during the PM peak hour combined with 60 additional southbound vehicles per hour on Xerxes Avenue is estimated to increase delays from around 27 seconds per vehicle to 35 seconds per vehicle on the eastbound approach. This average delay is typically considered acceptable during peak hours, and the minor street approach volumes are lower than the minimum threshold necessary to potentially warrant signalization as a mitigation measure, based on MnDOT guidance.

2024 NO BUILD RESULTS

All intersections operate at a level of service (LOS) D or better under the 2024 No Build Conditions scenario, as shown in the Appendix in **Table B-5**. Average intersection delay at 66th Street and York Avenue is expected to increase by one second overall compared to the 2018 No Build Condition as a result of background traffic growth.

As in the 2018 No Build scenario, all left turns at 66th Street and York Avenue have delays very close to the D/E threshold of 55 seconds during the PM peak hour, but a significant increase in delay for these movements is not expected. No other movements are expected to exceed the D/E threshold.

No significant changes in queue spillback or lane blockage are expect under the 2024 No Build scenario compared to the 2018 No Build condition, as shown in **Table B-6**.

2024 PHASE II BUILD RESULTS

With the construction of 145 additional residential units on site during Phase II and the removal of the 6550 office building, all intersections are expected to continue to operate at a level of service (LOS) D or better as shown in the appendix in **Table B-7**. Average intersection delay at 66th Street and York Avenue is expected to remain approximately equivalent to the No Build condition, increasing by less than 1 second per vehicle during the PM peak hour and less than 2 seconds per vehicles during the AM peak hour.

As in the 2024 No Build scenario, both the northbound and southbound left turns at 66th Street and York Avenue, as well as the U-turn movements, have delays very close to the D/E threshold of 55 seconds during the PM peak hour, but a significant increase in delay for these movements is not expected.

On the southbound approach, the conversion of the free right to a 100’ right turn lane is not expected to lead to a significant increase in delay. While the change is expected to increase average queue lengths, leading to more blockage of the upstream site driveway during peak hours (less than 20 percent of the time during the evening peak hour, as shown in **Table B-8**), the driveway will continue to operate at LOS A.

At 64th Street and Xerxes Avenue, the net increase of 10 vehicles per hour on the eastbound approach during the PM peak hour combined with the net increase of 90 southbound vehicles per hour on Xerxes Avenue is estimated to increase delays from around 28 seconds per vehicle to 36 seconds per vehicle on the eastbound approach. With the removal of the office trips, the total eastbound approach volume is

expected to remain constant or slightly decrease (5 vehicles per hour) compared to the Phase I condition during the PM peak hour, indicating that the approach will likely continue to remain below the minimum volume threshold necessary to potentially warrant signalization as a mitigation measure, based on MnDOT guidance.

RECOMMENDATIONS

It is anticipated that the existing area lane geometry and signal timing will be adequate to support future traffic growth and the addition of site traffic at the study area intersections. The proposed conversion of the southbound free right at 66th Street and York Avenue is not expected to significantly degrade traffic operations, and the proposal would improve the pedestrian environment by decreasing the crossing distance across 66th Street. No other geometric or operational improvements are recommended at this time to support the residential redevelopment project. However, the following items are recommended for consideration within the planning horizon of this study:

- Monitor traffic volumes and delays at the intersection of 64th Street and Xerxes Avenue. Should volumes increase to a level to potentially meet one or more acceptable signal warrants as identified within the MnMUTCD, the following measures should be considered:
    - Signal installation at 64th Street and Xerxes Avenue
    - New unsignalized eastbound connection at 65th Street and Xerxes Avenue to distribute traffic between intersections
- Continue to invest in sidewalk, trail, and bicycle improvements in the area. The areas around 66th Street include significant concentrations of retail, residential, office, and medical land uses, as well as a transit center at Southdale Mall. Providing safe, comfortable, and convenient pedestrian and bicycle connections between these uses has to the potential to reduce local automobile trips, particularly home-based shopping and recreation trips.

5.0 APPENDIX

A. Supplemental Exhibits
B. Level of Service Results and Queue Projections
C. SimTraffic Results
D. Parking Demand Memo

APPENDIX A: SUPPLEMENTAL EXHIBITS

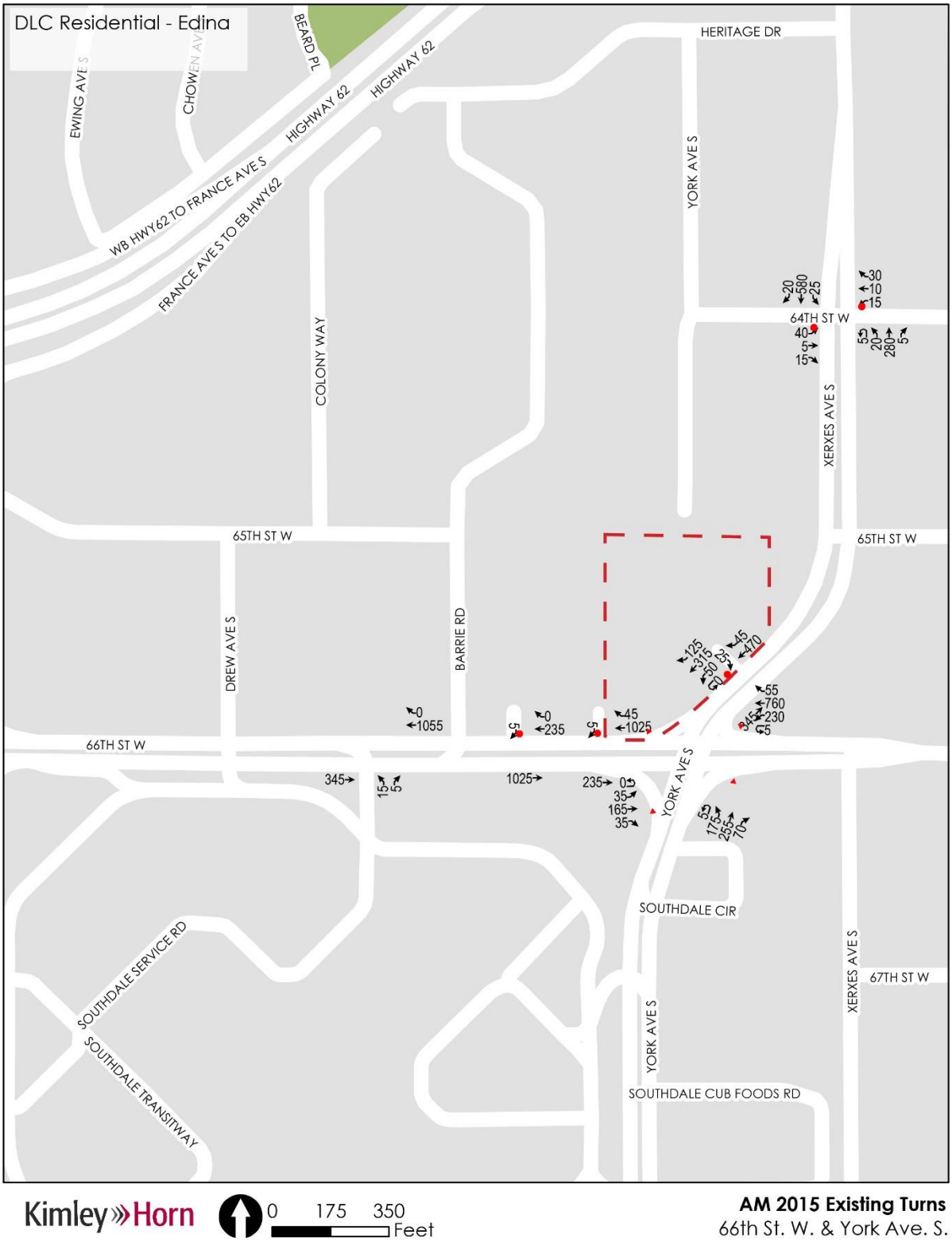


Figure A-1: Existing (2015) AM Peak Hour Turning Movement Volumes

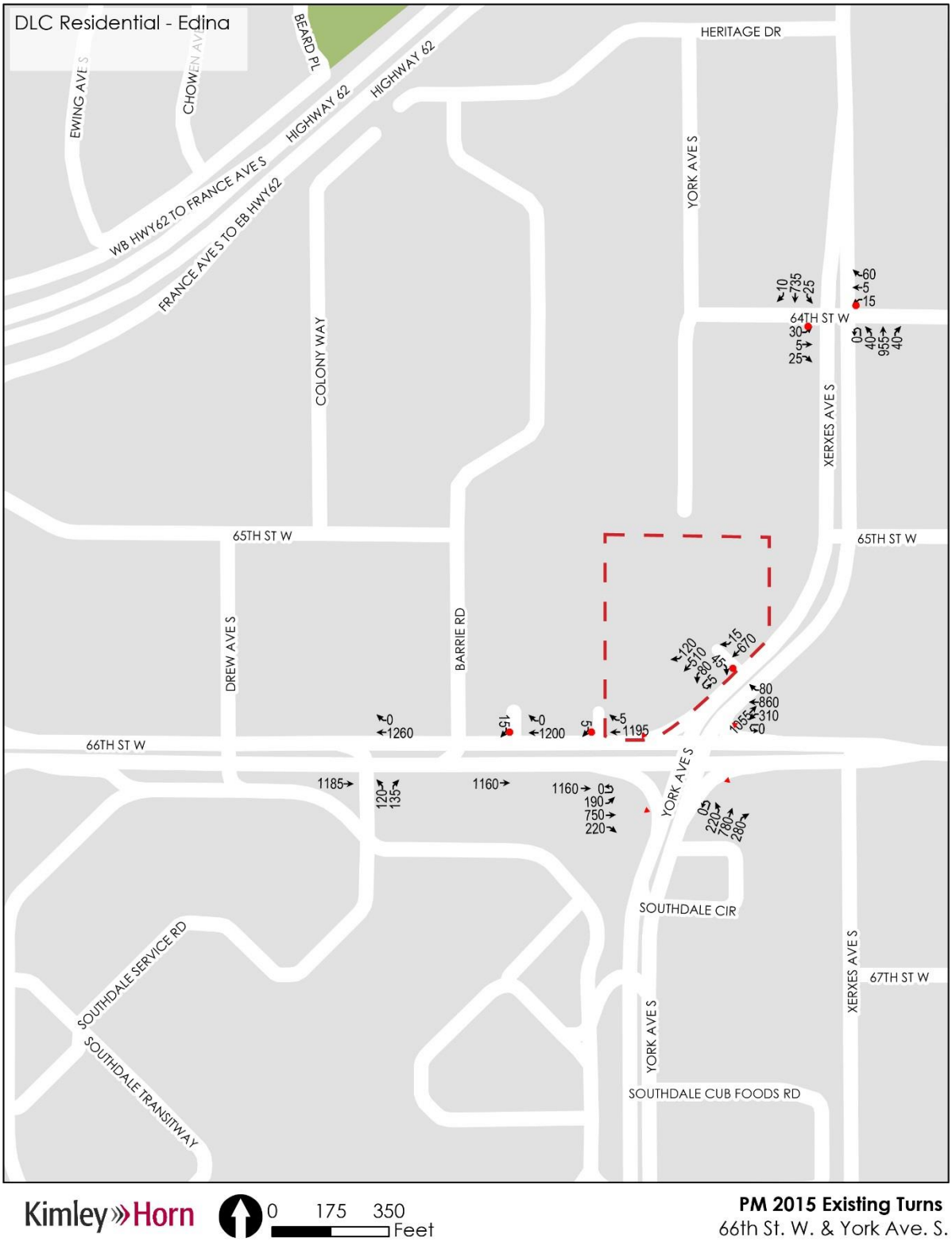


Figure A-2: Existing (2015) PM Peak Hour Turning Movement Volumes

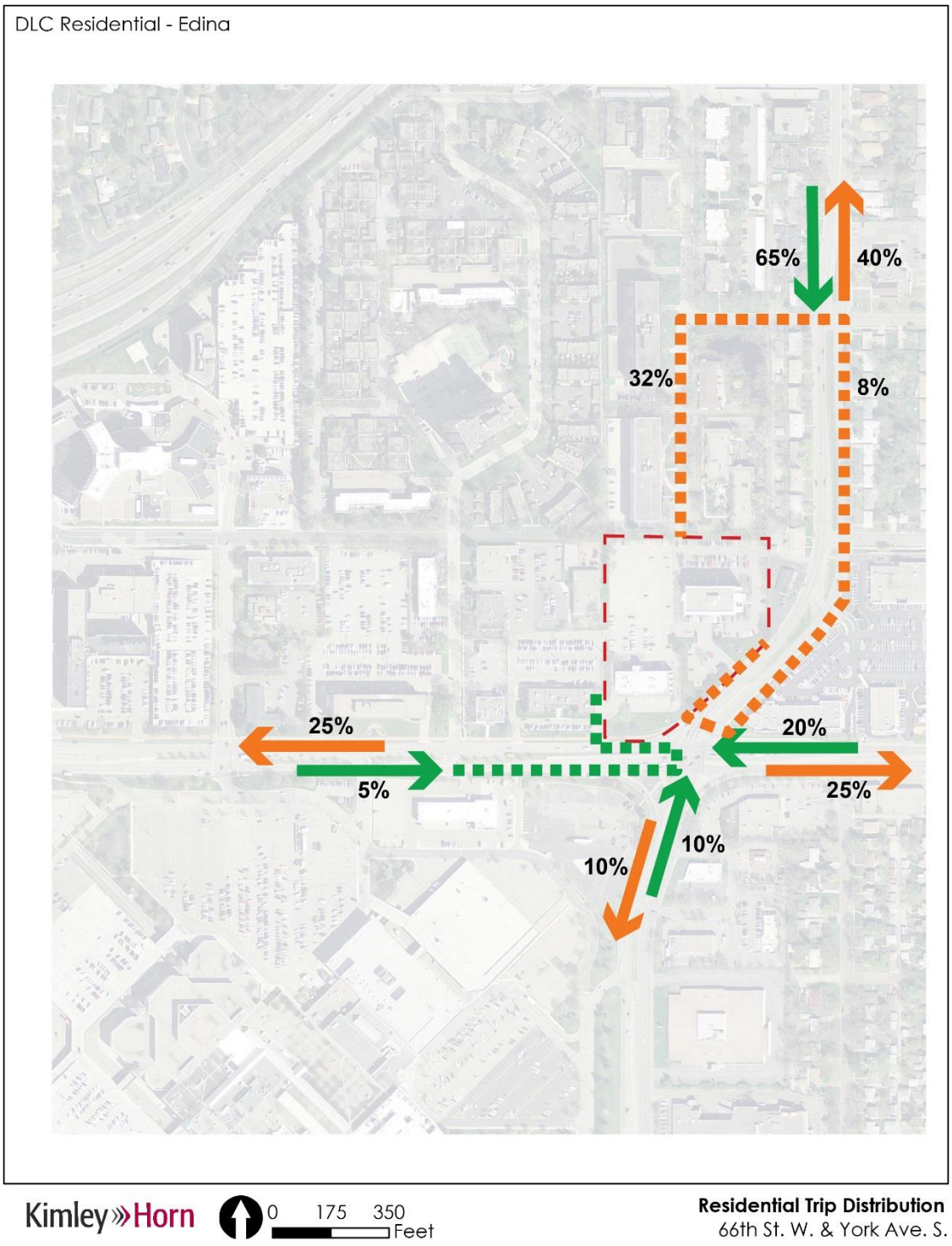


Figure A-3: Residential Trip Distribution

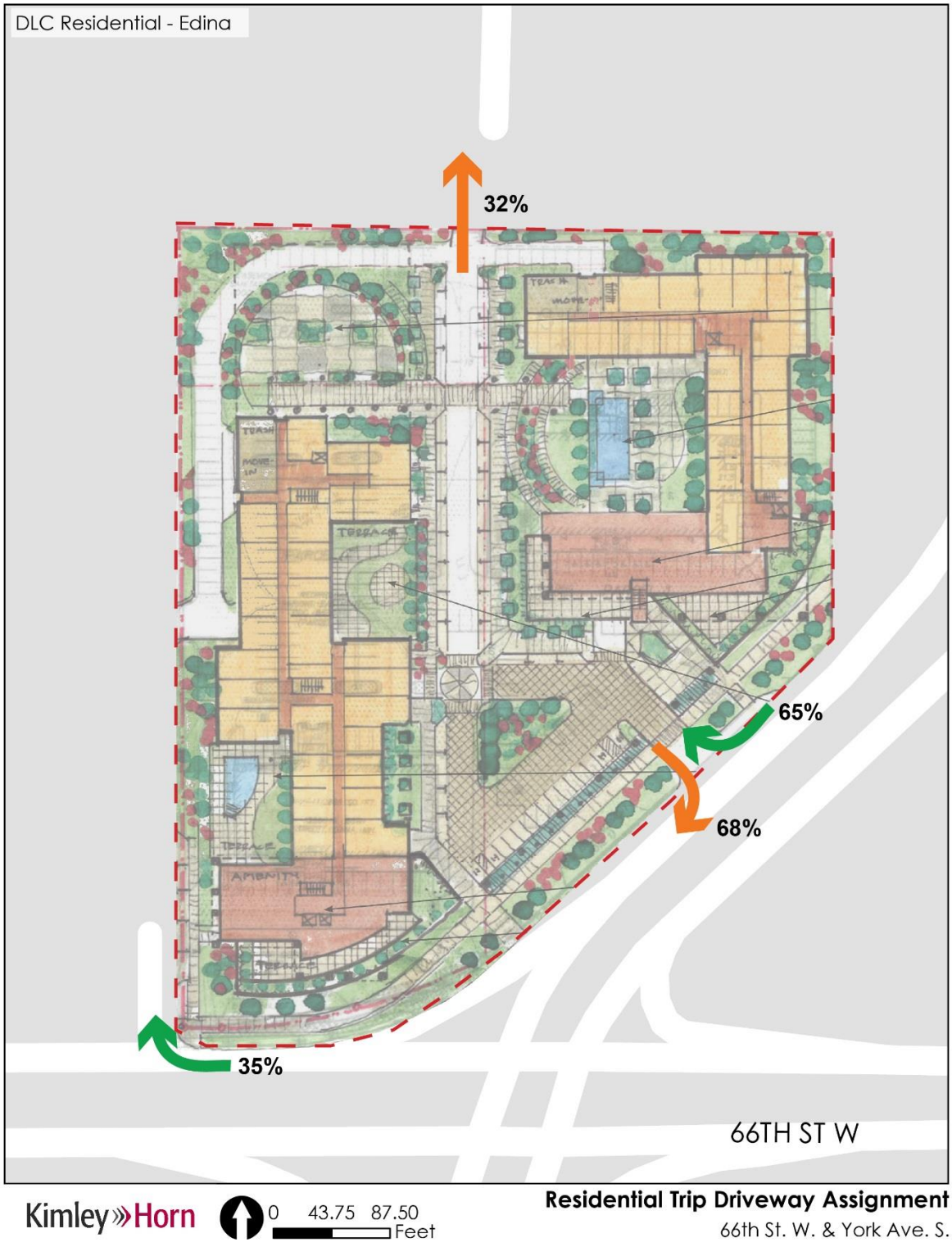


Figure A-4: Residential Trip Driveway Assignment

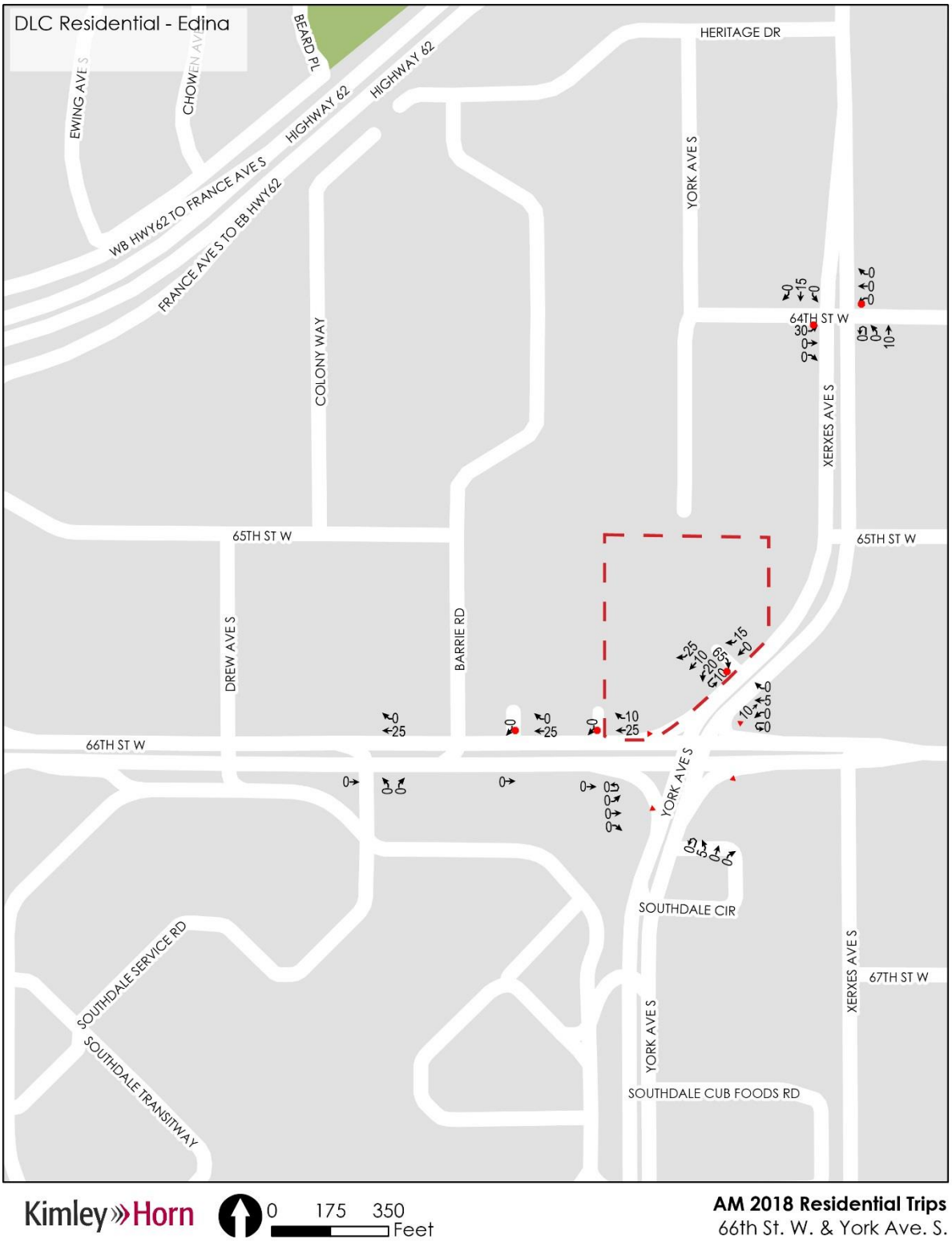


Figure A-5: Future Year (2018) Residential Trip Assignment – AM Peak Hour

Note: Due to the rounding convention and limited number of trips, approximately 50 percent of outbound trips depart to the north in this scenario after balancing and rounding.

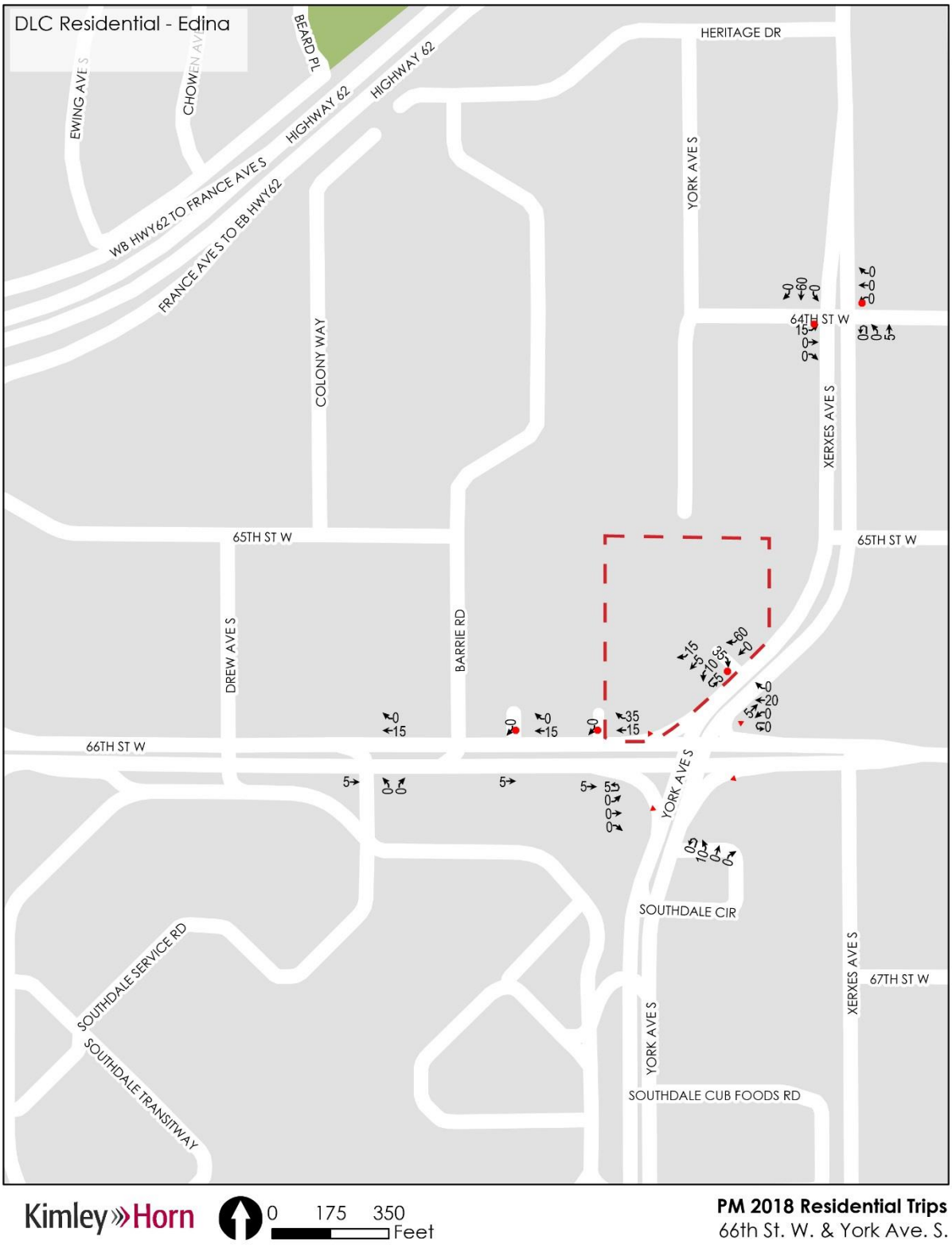


Figure A-6: Future Year (2018) Residential Trip Assignment – PM Peak Hour

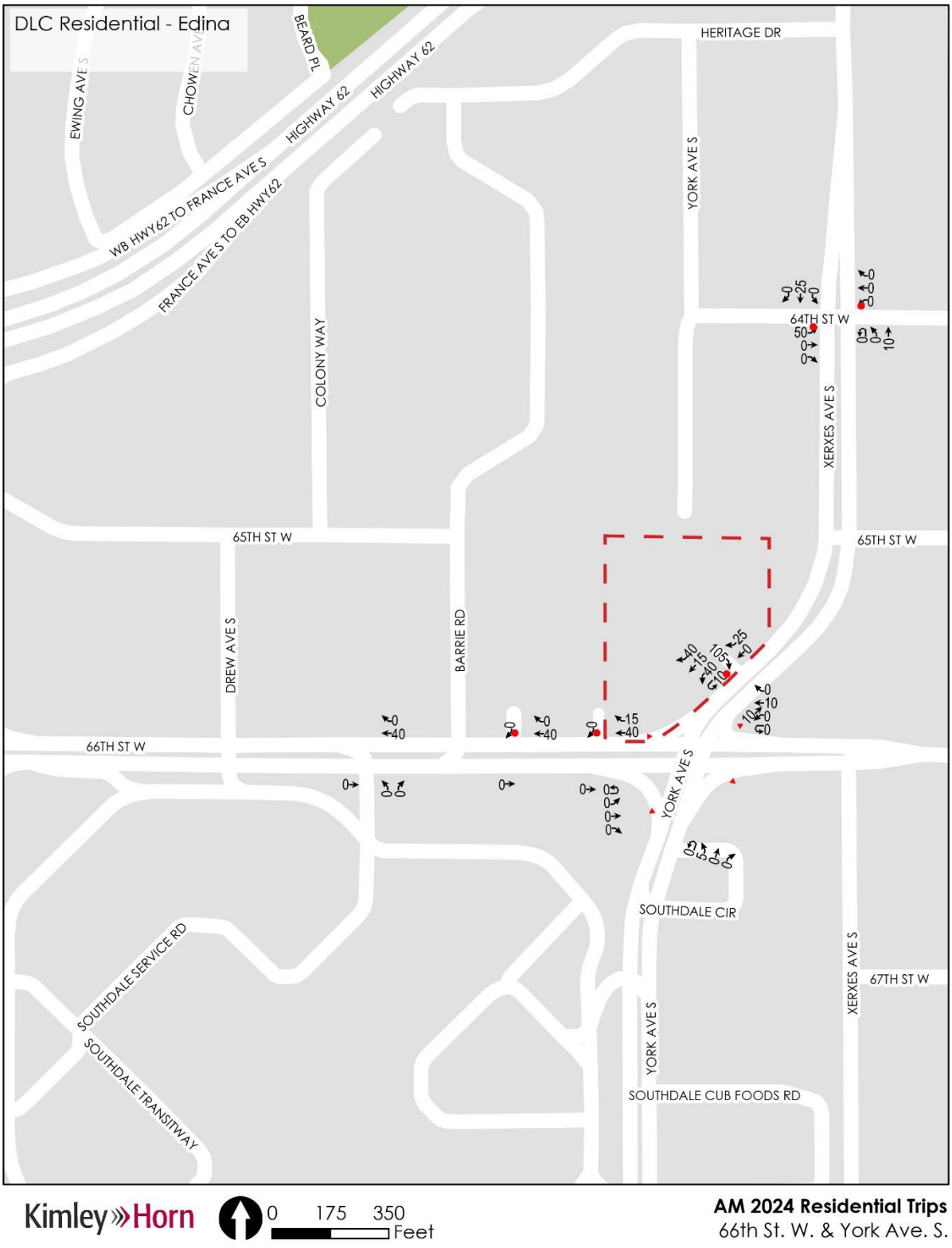


Figure A-7: Future Year (2024) Residential Trip Assignment – AM Peak Hour

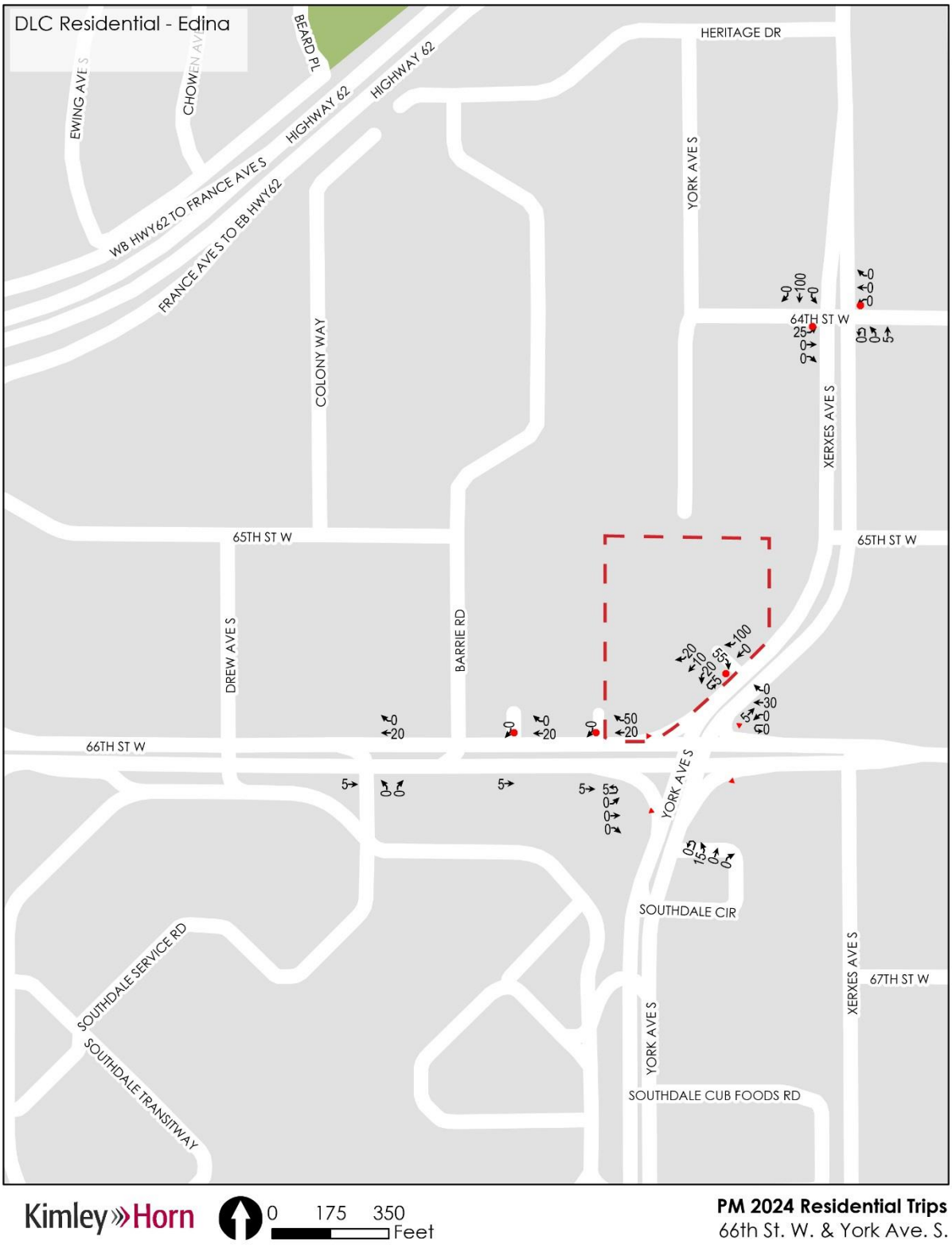


Figure A-8: Future Year (2024) Residential Trip Assignment – PM Peak Hour

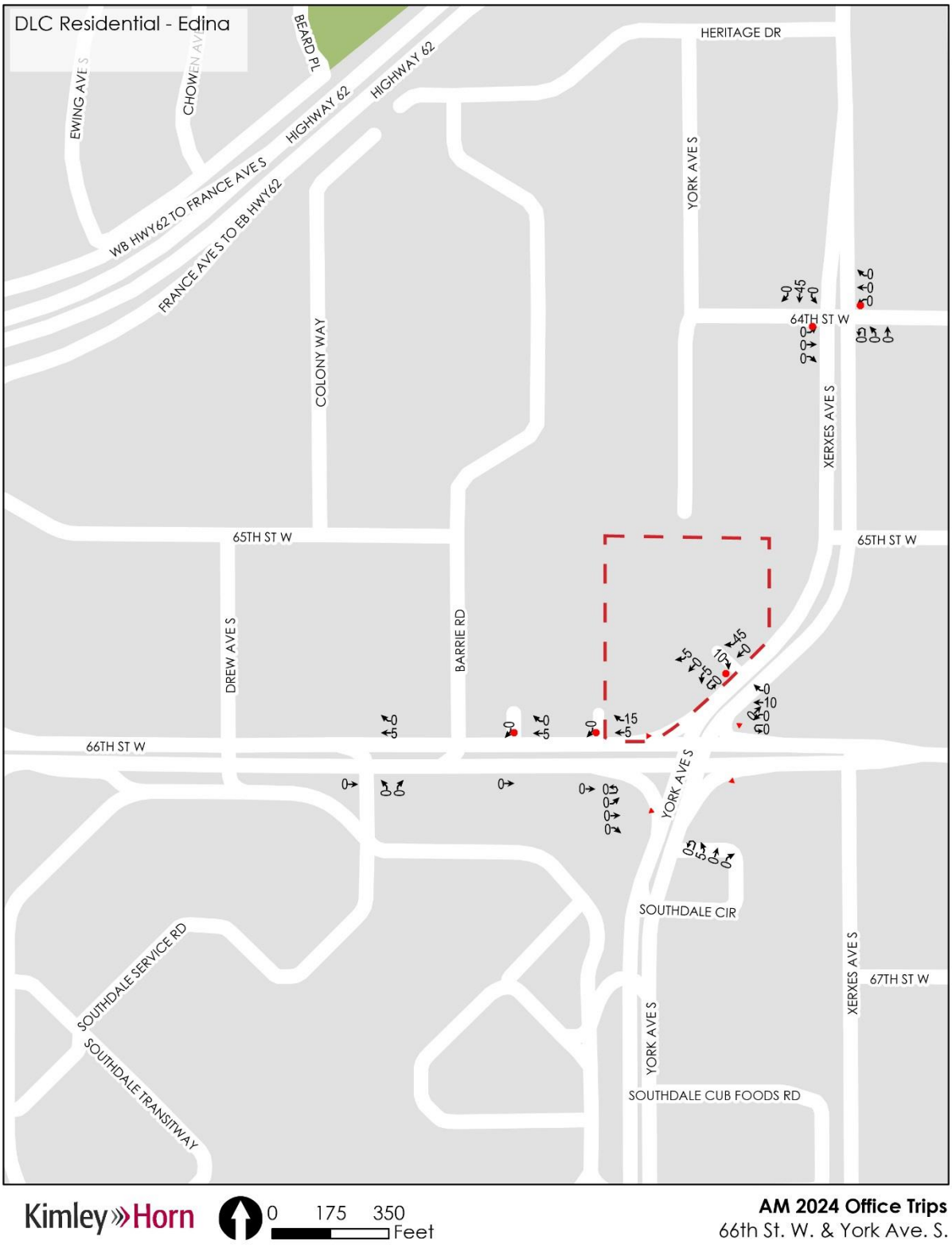


Figure A-9: Future Year (2024) Office Trips Removed – AM Peak Hour

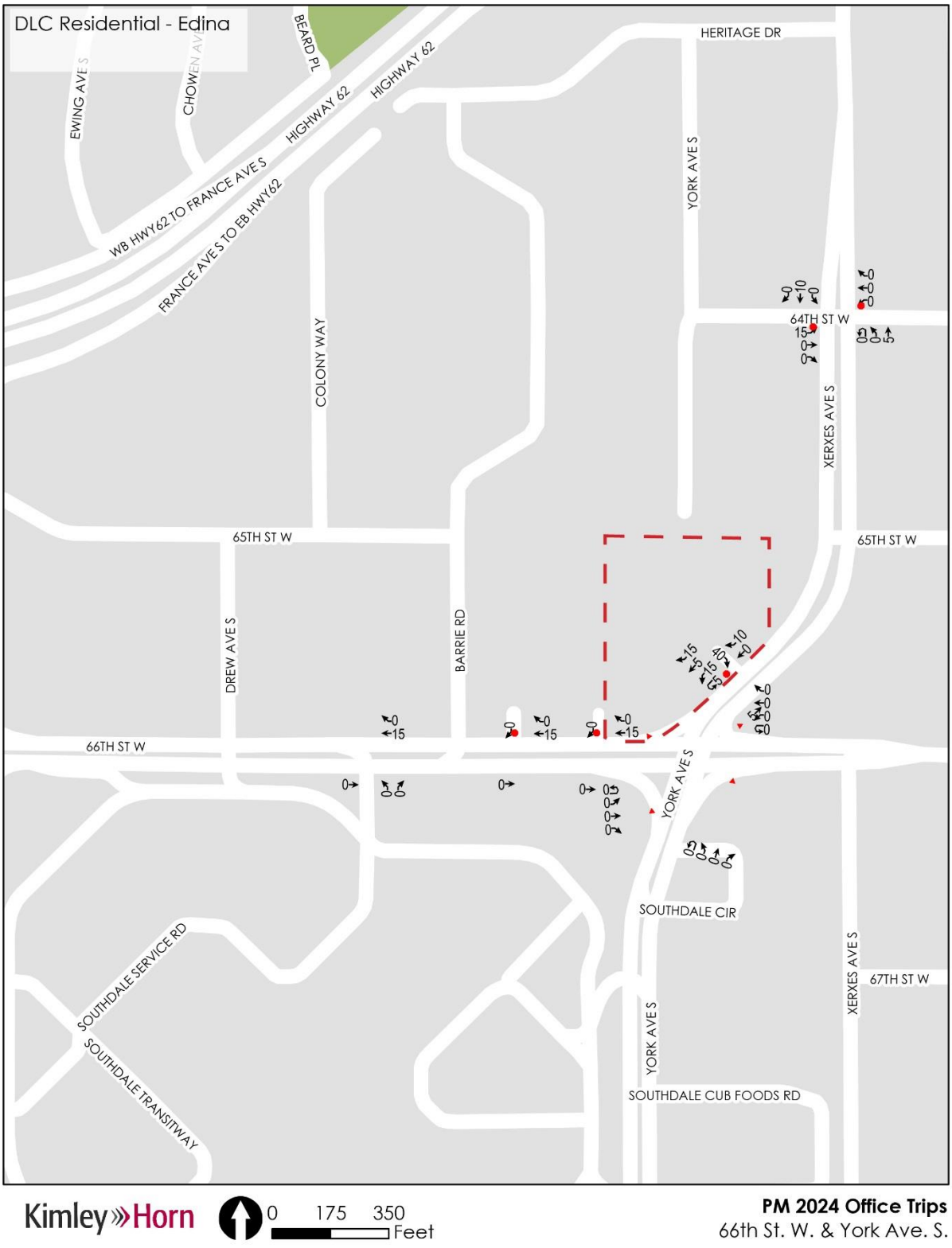


Figure A-10: Future Year (2024) Office Trips Removed – PM Peak Hour

APPENDIX B: LEVEL OF SERVICE RESULTS AND QUEUE PROJECTIONS

Table B-1: 2018 No Build Conditions Synchro/SimTraffic Summary – AM and PM Peak Hour Delay

2018 SimTraffic Summary - AM No Build Traffic

Intersection	Control	Approach	Operations by Movement								Overall Intersection	
			U-Turn		Left		Through		Right			
			Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
W 66th St & Southdale East Driveway	Signal	EB	-	-	-	-	1.1	A	-	-	1.8	A
		WB	-	-	-	-	1.7	A	-	-		
		NB	-	-	26.6	C	-	-	3.9	A		
		SB	-	-	-	-	-	-	-	-		
W 66th St & 3316 West Driveway	TWSC	EB	-	-	-	-	0.3	A	-	-	-	-
		WB	-	-	-	-	0.6	A	-	-		
		NB	-	-	-	-	-	-	-	-		
		SB	-	-	-	-	-	-	3.9	A		
W 66th St & 3316 East Driveway	TWSC	EB	-	-	-	-	0.8	A	-	-	-	-
		WB	-	-	-	-	2.9	A	1.9	A		
		NB	-	-	-	-	-	-	-	-		
		SB	-	-	-	-	-	-	7.4	A		
W 66th St & York Ave	Signal	EB	-	-	45.1	D	26.5	C	1.7	A	24.0	C
		WB	34.3	C	34.3	C	22.6	C	3.4	A		
		NB	34.3	C	36.3	D	23.3	C	2.6	A		
		SB	-	-	38.9	D	29.2	C	1.2	A		
York Ave & 6550 Driveway	TWSC	EB	-	-	-	-	-	-	3.3	A	-	-
		WB	-	-	-	-	-	-	-	-		
		NB	-	-	-	-	2.2	A	-	-		
		SB	-	-	-	-	0.4	A	0.5	A		
Xerxes Ave & W 64th St*	TWSC	EB	-	-	17.8	C	17.8	C	17.8	C	-	-
		WB	-	-	13.3	B	13.3	B	13.3	B		
		NB	9.0	A	0.0	A	0.0	A	0.0	A		
		SB	-	-	8.0	A	0.0	A	0.0	A		

2018 SimTraffic Summary - PM No Build Traffic

Intersection	Control	Approach	Operations by Movement								Overall Intersection	
			U-Turn		Left		Through		Right			
			Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
W 66th St & Southdale East Driveway	Signal	EB	-	-	-	-	6.6	A	-	-	8.2	A
		WB	-	-	-	-	8.2	A	-	-		
		NB	-	-	23.0	C	-	-	10.8	B		
		SB	-	-	-	-	-	-	-	-		
W 66th St & 3316 West Driveway	TWSC	EB	-	-	-	-	2.0	A	-	-	-	-
		WB	-	-	-	-	1.3	A	-	-		
		NB	-	-	-	-	-	-	-	-		
		SB	-	-	-	-	-	-	6.1	A		
W 66th St & 3316 East Driveway	TWSC	EB	-	-	-	-	4.5	A	-	-	-	-
		WB	-	-	-	-	3.5	A	2.2	A		
		NB	-	-	-	-	-	-	-	-		
		SB	-	-	-	-	-	-	4.5	A		
W 66th St & York Ave	Signal	EB	-	-	52.9	D	40.7	D	2.1	A	36.4	D
		WB	-	-	55.7	E	39.1	D	4.6	A		
		NB	-	-	55.3	E	39.1	D	3.4	A		
		SB	51.5	D	58.3	E	39.4	D	6.8	A		
York Ave & 6550 Driveway	TWSC	EB	-	-	-	-	-	-	7.1	A	-	-
		WB	-	-	-	-	-	-	-	-		
		NB	-	-	-	-	3.3	A	-	-		
		SB	-	-	-	-	0.9	A	0.5	A		
Xerxes Ave & W 64th St*	TWSC	EB	-	-	26.7	D	26.7	D	26.7	D	-	-
		WB	-	-	21.7	C	21.7	C	21.7	C		
		NB	-	-	9.8	A	0.0	A	0.0	A		
		SB	-	-	10.9	B	0.0	A	0.0	A		

**Synchro results presented to capture two-stage gap acceptance*

Table B-2: 2018 No Build Conditions Synchro/SimTraffic Summary – AM and PM Peak Hour Queuing

2018 SimTraffic Summary - AM No Build Queuing

Intersection	Control	Approach	Queue Length by Movement						Upstream	Bay
			Left		Through		Right		Blk %	Blk %
			Storage	95th %	Storage	95th %	Storage	95th %		
W 66th St & Southdale East Driveway	Signal	EB	-	-	350	45	-	-		
		WB	-	-	250	110	-	-		
		NB	250	65	-	-	200	40		
		SB	-	-	-	-	-	-		
W 66th St & 3316 West Driveway	TWSC	EB	-	-	400	0	-	-		
		WB	-	-	250	0	250	0		
		NB	-	-	-	-	-	-		
		SB	-	-	-	-	100	20		
W 66th St & 3316 East Driveway	TWSC	EB	-	-	650	15	-	-		
		WB	-	-	225	10	225	10		
		NB	-	-	-	-	-	-		
		SB	-	-	-	-	100	25		
W 66th St & York Ave	Signal	EB	400	45	875	105	300	0		
		WB	300	140	700	235	300	0		3%
		NB	250	135	375	115	200	0		
		SB	250	35	250	90	100	75		5%
York Ave & 6550 Driveway	TWSC	EB	-	-	-	-	100	30		
		WB	-	-	-	-	-	-		
		NB	-	-	200	0	-	-		
		SB	-	-	450	0	75	0		
Xerxes Ave & W 64th St*	TWSC	EB	400	15	400	15	400	15		
		WB	300	10	300	10	300	10		
		NB	250	0	600	0	600	0		
		SB	200	0	800	0	800	0		

2018 SimTraffic Summary - PM No Build Queuing

Intersection	Control	Approach	Queue Length by Movement						Upstream	Bay
			Left		Through		Right		Blk %	Blk %
			Storage	95th %	Storage	95th %	Storage	95th %		
W 66th St & Southdale East Driveway	Signal	EB	-	-	350	180	-	-		
		WB	-	-	250	275	-	-		
		NB	250	95	-	-	200	85		
		SB	-	-	-	-	-	-		
W 66th St & 3316 West Driveway	TWSC	EB	-	-	400	5	-	-		
		WB	-	-	250	0	250	0		
		NB	-	-	-	-	-	-		
		SB	-	-	-	-	100	35		
W 66th St & 3316 East Driveway	TWSC	EB	-	-	650	155	-	-	1%	3%
		WB	-	-	225	15	225	15		
		NB	-	-	-	-	-	-		
		SB	-	-	-	-	100	25		
W 66th St & York Ave	Signal	EB	400	135	875	430	300	60		
		WB	300	240	700	370	300	120		20%
		NB	250	190	375	330	200	30		26%
		SB	250	100	250	245	100	95	6%	29%
York Ave & 6550 Driveway	TWSC	EB	-	-	-	-	100	40		
		WB	-	-	-	-	-	-		
		NB	-	-	200	15	-	-		
		SB	-	-	450	25	75	0		
Xerxes Ave & W 64th St*	TWSC	EB	400	30	400	30	400	30		
		WB	300	30	300	30	300	30		
		NB	250	5	600	0	600	0		
		SB	200	5	800	0	800	0		

**Synchro results presented to capture two-stage gap acceptance*

Table B-3: Phase I (2018) Build Conditions Synchro/SimTraffic Summary – AM and PM Peak Hour Delay

2018 SimTraffic Summary - AM Build Traffic

Intersection	Control	Approach	Operations by Movement								Overall Intersection	
			U-Turn		Left		Through		Right			
			Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
W 66th St & Southdale East Driveway	Signal	EB	-	-	-	-	1.2	A	-	-	1.7	A
		WB	-	-	-	-	1.5	A	-	-		
		NB	-	-	28.9	C	-	-	3.8	A		
		SB	-	-	-	-	-	-	-	-		
W 66th St & 3316 West Driveway	TWSC	EB	-	-	-	-	0.4	A	-	-	-	-
		WB	-	-	-	-	0.5	A	-	-		
		NB	-	-	-	-	-	-	-	-		
		SB	-	-	-	-	-	-	3.9	A		
W 66th St & 3316 East Driveway	TWSC	EB	-	-	-	-	0.8	A	-	-	-	-
		WB	-	-	-	-	2.2	A	1.2	A		
		NB	-	-	-	-	-	-	-	-		
		SB	-	-	-	-	-	-	4.0	A		
W 66th St & York Ave	Signal	EB	-	-	44.5	D	25.2	C	1.8	A	24.6	C
		WB	32.9	C	37.0	D	23.4	C	3.5	A		
		NB	31.0	C	34.7	C	24.6	C	2.6	A		
		SB	34.8	C	40.8	D	28.9	C	4.7	A		
York Ave & 6550 Driveway	TWSC	EB	-	-	-	-	-	-	3.9	A	-	-
		WB	-	-	-	-	-	-	-	-		
		NB	-	-	-	-	2.3	A	-	-		
		SB	-	-	-	-	0.5	A	0.5	A		
Xerxes Ave & W 64th St*	TWSC	EB	-	-	21.0	C	21.0	C	21.0	C	-	-
		WB	-	-	13.5	B	13.5	B	13.5	B		
		NB	9.1	A	0.0	A	0.0	A	0.0	A		
		SB	-	-	8.0	A	0.0	A	0.0	A		

2018 SimTraffic Summary - PM Build Traffic

Intersection	Control	Approach	Operations by Movement								Overall Intersection	
			U-Turn		Left		Through		Right			
			Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
W 66th St & Southdale East Driveway	Signal	EB	-	-	-	-	6.5	A	-	-	8.2	A
		WB	-	-	-	-	8.0	A	-	-		
		NB	-	-	25.1	C	-	-	10.3	B		
		SB	-	-	-	-	-	-	-	-		
W 66th St & 3316 West Driveway	TWSC	EB	-	-	-	-	1.9	A	-	-	-	-
		WB	-	-	-	-	1.1	A	-	-		
		NB	-	-	-	-	-	-	-	-		
		SB	-	-	-	-	-	-	4.1	A		
W 66th St & 3316 East Driveway	TWSC	EB	-	-	-	-	4.0	A	-	-	-	-
		WB	-	-	-	-	2.9	A	1.4	A		
		NB	-	-	-	-	-	-	-	-		
		SB	-	-	-	-	-	-	7.8	A		
W 66th St & York Ave	Signal	EB	48.6	D	53.3	D	41.2	D	2.0	A	36.5	D
		WB	-	-	56.0	E	39.5	D	4.8	A		
		NB	-	-	56.8	E	39.2	D	3.4	A		
		SB	46.9	D	57.3	E	38.3	D	7.4	A		
York Ave & 6550 Driveway	TWSC	EB	-	-	-	-	-	-	8.1	A	-	-
		WB	-	-	-	-	-	-	-	-		
		NB	-	-	-	-	3.5	A	-	-		
		SB	-	-	-	-	0.9	A	0.7	A		
Xerxes Ave & W 64th St*	TWSC	EB	-	-	34.7	D	34.7	D	34.7	D	-	-
		WB	-	-	22.2	C	22.2	C	22.2	C		
		NB	-	-	10.1	B	0.0	A	0.0	A		
		SB	-	-	10.9	B	0.0	A	0.0	A		

**Synchro results presented to capture two-stage gap acceptance*

Table B-4: Phase I (2018) Build Conditions Synchro/SimTraffic Summary – AM and PM Peak Hour Queuing

2018 SimTraffic Summary - AM Build Queuing

Intersection	Control	Approach	Queue Length by Movement						Upstream	Bay
			Left		Through		Right		Blk %	Blk %
			Storage	95th %	Storage	95th %	Storage	95th %		
W 66th St & Southdale East Driveway	Signal	EB	-	-	350	45	-	-		
		WB	-	-	250	85	-	-		
		NB	250	65	-	-	200	35		
		SB	-	-	-	-	-	-		
W 66th St & 3316 West Driveway	TWSC	EB	-	-	400	0	-	-		
		WB	-	-	250	0	250	0		
		NB	-	-	-	-	-	-		
		SB	-	-	-	-	100	25		
W 66th St & 3316 East Driveway	TWSC	EB	-	-	650	15	-	-		
		WB	-	-	225	0	225	0		
		NB	-	-	-	-	-	-		
		SB	-	-	-	-	100	25		
W 66th St & York Ave	Signal	EB	400	55	875	100	300	0		
		WB	300	155	700	245	300	0		3%
		NB	250	130	375	125	200	0		
		SB	250	75	250	105	100	45		1%
York Ave & 6550 Driveway	TWSC	EB	-	-	-	-	100	40		
		WB	-	-	-	-	-	-		
		NB	-	-	200	5	-	-		
		SB	-	-	450	0	75	0		
Xerxes Ave & W 64th St*	TWSC	EB	400	30	400	30	400	30		
		WB	300	10	300	10	300	10		
		NB	250	0	600	0	600	0		
		SB	200	0	800	0	800	0		

2018 SimTraffic Summary - PM Build Queuing

Intersection	Control	Approach	Queue Length by Movement						Upstream	Bay
			Left		Through		Right		Blk %	Blk %
			Storage	95th %	Storage	95th %	Storage	95th %		
W 66th St & Southdale East Driveway	Signal	EB	-	-	350	165	-	-		
		WB	-	-	250	285	-	-		
		NB	250	100	-	-	200	85		
		SB	-	-	-	-	-	-		
W 66th St & 3316 West Driveway	TWSC	EB	-	-	400	5	-	-		
		WB	-	-	250	5	250	0		
		NB	-	-	-	-	-	-		
		SB	-	-	-	-	100	35		
W 66th St & 3316 East Driveway	TWSC	EB	-	-	650	140	-	-		3%
		WB	-	-	225	60	225	20		
		NB	-	-	-	-	-	-		
		SB	-	-	-	-	100	20		
W 66th St & York Ave	Signal	EB	400	135	875	405	300	35		
		WB	300	240	700	375	300	160		21%
		NB	250	210	375	325	200	115		26%
		SB	250	185	250	235	100	145	6%	15%
York Ave & 6550 Driveway	TWSC	EB	-	-	-	-	100	45		
		WB	-	-	-	-	-	-		
		NB	-	-	200	10	-	-		
		SB	-	-	450	15	75	15		
Xerxes Ave & W 64th St*	TWSC	EB	400	45	400	45	400	45		
		WB	300	30	300	30	300	30		
		NB	250	5	600	0	600	0		
		SB	200	35	800	0	800	0		

**Synchro results presented to capture two-stage gap acceptance*

Table B-5: 2024 No Build Conditions Synchro/SimTraffic Summary – AM and PM Peak Hour Delay

2024 SimTraffic Summary - AM No Build Traffic

Intersection	Control	Approach	Operations by Movement								Overall Intersection	
			U-Turn		Left		Through		Right			
			Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
W 66th St & Southdale East Driveway	Signal	EB	-	-	-	-	1.1	A	-	-	1.9	A
		WB	-	-	-	-	1.7	A	-	-		
		NB	-	-	34.0	C	-	-	4.1	A		
		SB	-	-	-	-	-	-	-	-		
W 66th St & 3316 West Driveway	TWSC	EB	-	-	-	-	0.3	A	-	-	-	-
		WB	-	-	-	-	0.6	A	-	-		
		NB	-	-	-	-	-	-	-	-		
		SB	-	-	-	-	-	-	5.1	A		
W 66th St & 3316 East Driveway	TWSC	EB	-	-	-	-	0.8	A	-	-	-	-
		WB	-	-	-	-	2.9	A	2.1	A		
		NB	-	-	-	-	-	-	-	-		
		SB	-	-	-	-	-	-	5.3	A		
W 66th St & York Ave	Signal	EB	-	-	44.1	D	26.5	C	1.8	A	23.4	C
		WB	35.6	D	33.6	C	22.1	C	3.4	A		
		NB	34.6	C	34.7	C	23.8	C	2.7	A		
		SB	-	-	41.0	D	28.4	C	1.3	A		
York Ave & 6550 Driveway	TWSC	EB	-	-	-	-	-	-	3.1	A	-	-
		WB	-	-	-	-	-	-	-	-		
		NB	-	-	-	-	2.4	A	-	-		
		SB	-	-	-	-	0.4	A	0.4	A		
Xerxes Ave & W 64th St*	TWSC	EB	-	-	18.2	C	18.2	C	18.2	C	-	-
		WB	-	-	13.5	B	13.5	B	13.5	B		
		NB	9.1	A	9.1	A	0.0	A	0.0	A		
		SB	-	-	8.0	A	0.0	A	0.0	A		

2024 SimTraffic Summary - PM No Build Traffic

Intersection	Control	Approach	Operations by Movement								Overall Intersection	
			U-Turn		Left		Through		Right			
			Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
W 66th St & Southdale East Driveway	Signal	EB	-	-	-	-	6.7	A	-	-	8.8	A
		WB	-	-	-	-	9.1	A	-	-		
		NB	-	-	23.6	C	-	-	11.2	B		
		SB	-	-	-	-	-	-	-	-		
W 66th St & 3316 West Driveway	TWSC	EB	-	-	-	-	2.0	A	-	-	-	-
		WB	-	-	-	-	1.4	A	-	-		
		NB	-	-	-	-	-	-	-	-		
		SB	-	-	-	-	-	-	4.2	A		
W 66th St & 3316 East Driveway	TWSC	EB	-	-	-	-	4.0	A	-	-	-	-
		WB	-	-	-	-	3.7	A	2.5	A		
		NB	-	-	-	-	-	-	-	-		
		SB	-	-	-	-	-	-	7.2	A		
W 66th St & York Ave	Signal	EB	-	-	52.4	D	41.7	D	2.0	A	37.0	D
		WB	-	-	55.7	E	40.2	D	4.8	A		
		NB	-	-	56.6	E	40.5	D	3.4	A		
		SB	47.7	D	58.8	E	38.3	D	7.2	A		
York Ave & 6550 Driveway	TWSC	EB	-	-	-	-	-	-	7.3	A	-	-
		WB	-	-	-	-	-	-	-	-		
		NB	-	-	-	-	3.5	A	-	-		
		SB	-	-	-	-	0.9	A	0.4	A		
Xerxes Ave & W 64th St*	TWSC	EB	-	-	28.3	D	28.3	D	28.3	D	-	-
		WB	-	-	22.6	C	22.6	C	22.6	C		
		NB	-	-	9.9	A	0.0	A	0.0	A		
		SB	-	-	11.1	B	0.0	A	0.0	A		

**Synchro results presented to capture two-stage gap acceptance*

Table B-6: 2024 No Build Conditions Synchro/SimTraffic Summary – AM and PM Peak Hour Queuing

2024 SimTraffic Summary - AM No Build Queuing

Intersection	Control	Approach	Queue Length by Movement						Upstream	Bay
			Left		Through		Right		Blk %	Blk %
			Storage	95th %	Storage	95th %	Storage	95th %		
W 66th St & Southdale East Driveway	Signal	EB	-	-	350	50	-	-		
		WB	-	-	250	95	-	-		
		NB	250	75	-	-	200	35		
		SB	-	-	-	-	-	-		
W 66th St & 3316 West Driveway	TWSC	EB	-	-	400	0	-	-		
		WB	-	-	250	5	250	0		
		NB	-	-	-	-	-	-		
		SB	-	-	-	-	100	25		
W 66th St & 3316 East Driveway	TWSC	EB	-	-	650	15	-	-		
		WB	-	-	225	20	225	10		
		NB	-	-	-	-	-	-		
		SB	-	-	-	-	100	25		
W 66th St & York Ave	Signal	EB	400	50	875	100	300	0		
		WB	300	155	700	235	300	0		2%
		NB	250	125	375	115	200	0		
		SB	250	35	250	90	100	80		5%
York Ave & 6550 Driveway	TWSC	EB	-	-	-	-	100	25		
		WB	-	-	-	-	-	-		
		NB	-	-	200	0	-	-		
		SB	-	-	450	0	75	0		
Xerxes Ave & W 64th St*	TWSC	EB	400	15	400	15	400	15		
		WB	300	10	300	10	300	10		
		NB	250	0	600	0	600	0		
		SB	200	0	800	0	800	0		

2024 SimTraffic Summary - PM No Build Queuing

Intersection	Control	Approach	Queue Length by Movement						Upstream	Bay
			Left		Through		Right		Blk %	Blk %
			Storage	95th %	Storage	95th %	Storage	95th %		
W 66th St & Southdale East Driveway	Signal	EB	-	-	350	185	-	-		
		WB	-	-	250	290	-	-		
		NB	250	115	-	-	200	90		
		SB	-	-	-	-	-	-		
W 66th St & 3316 West Driveway	TWSC	EB	-	-	400	10	-	-		
		WB	-	-	250	0	250	0		
		NB	-	-	-	-	-	-		
		SB	-	-	-	-	100	35		
W 66th St & 3316 East Driveway	TWSC	EB	-	-	650	140	-	-		1%
		WB	-	-	225	20	225	15		
		NB	-	-	-	-	-	-		
		SB	-	-	-	-	100	20		
W 66th St & York Ave	Signal	EB	400	135	875	410	300	40		
		WB	300	220	700	365	300	105		24%
		NB	250	205	375	335	200	40		27%
		SB	250	110	250	245	100	95	6%	29%
York Ave & 6550 Driveway	TWSC	EB	-	-	-	-	100	35		
		WB	-	-	-	-	-	-		
		NB	-	-	200	15	-	-		
		SB	-	-	450	25	75	0		
Xerxes Ave & W 64th St*	TWSC	EB	400	30	400	30	400	30		
		WB	300	30	300	30	300	30		
		NB	250	5	600	0	600	0		
		SB	200	5	800	0	800	0		

**Synchro results presented to capture two-stage gap acceptance*

Table B-7: Phase II (2024) Build Conditions Synchro/SimTraffic – AM and PM Peak Hour Delay

2024 SimTraffic Summary - AM Build Traffic

Intersection	Control	Approach	Operations by Movement								Overall Intersection	
			U-Turn		Left		Through		Right			
			Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
W 66th St & Southdale East Driveway	Signal	EB	-	-	-	-	1.1	A	-	-	1.8	A
		WB	-	-	-	-	1.7	A	-	-		
		NB	-	-	32.8	C	-	-	4.2	A		
		SB	-	-	-	-	-	-	-	-		
W 66th St & 3316 West Driveway	TWSC	EB	-	-	-	-	0.3	A	-	-	-	-
		WB	-	-	-	-	0.5	A	-	-		
		NB	-	-	-	-	-	-	-	-		
		SB	-	-	-	-	-	-	2.5	A		
W 66th St & 3316 East Driveway	TWSC	EB	-	-	-	-	0.8	A	-	-	-	-
		WB	-	-	-	-	2.2	A	1.2	A		
		NB	-	-	-	-	-	-	-	-		
		SB	-	-	-	-	-	-	5.0	A		
W 66th St & York Ave	Signal	EB	-	-	40.1	D	26.4	C	1.8	A	24.8	C
		WB	30.1	C	36.9	D	23.2	C	3.5	A		
		NB	33.2	C	37.6	D	25.7	C	2.8	A		
		SB	34.8	C	41.0	D	29.6	C	5.3	A		
York Ave & 6550 Driveway	TWSC	EB	-	-	-	-	-	-	4.2	A	-	-
		WB	-	-	-	-	-	-	-	-		
		NB	-	-	-	-	2.5	A	-	-		
		SB	-	-	-	-	0.5	A	0.3	A		
Xerxes Ave & W 64th St*	TWSC	EB	-	-	22.8	C	22.8	C	22.8	C	-	-
		WB	-	-	13.5	B	13.5	B	13.5	B		
		NB	9.0	A	9.0	A	0.0	A	0.0	A		
		SB	-	-	8.0	A	0.0	A	0.0	A		

2024 SimTraffic Summary - PM Build Traffic

Intersection	Control	Approach	Operations by Movement								Overall Intersection	
			U-Turn		Left		Through		Right			
			Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
W 66th St & Southdale East Driveway	Signal	EB	-	-	-	-	6.3	A	-	-	8.2	A
		WB	-	-	-	-	8.4	A	-	-		
		NB	-	-	23.2	C	-	-	10.8	B		
		SB	-	-	-	-	-	-	-	-		
W 66th St & 3316 West Driveway	TWSC	EB	-	-	-	-	2.0	A	-	-	-	-
		WB	-	-	-	-	1.2	A	-	-		
		NB	-	-	-	-	-	-	-	-		
		SB	-	-	-	-	-	-	5.1	A		
W 66th St & 3316 East Driveway	TWSC	EB	-	-	-	-	4.0	A	-	-	-	-
		WB	-	-	-	-	3.0	A	1.5	A		
		NB	-	-	-	-	-	-	-	-		
		SB	-	-	-	-	-	-	5.5	A		
W 66th St & York Ave	Signal	EB	49.0	D	52.7	D	40.8	D	2.1	A	37.6	D
		WB	-	-	57.5	E	42.1	D	5.2	A		
		NB	-	-	54.9	D	40.3	D	3.7	A		
		SB	69.9	E	62.4	E	38.5	D	7.4	A		
York Ave & 6550 Driveway	TWSC	EB	-	-	-	-	-	-	9.0	A	-	-
		WB	-	-	-	-	-	-	-	-		
		NB	-	-	-	-	3.5	A	-	-		
		SB	-	-	-	-	1.1	A	0.8	A		
Xerxes Ave & W 64th St*	TWSC	EB	-	-	36.1	E	36.1	E	36.1	E	-	-
		WB	-	-	23.2	C	23.2	C	23.2	C		
		NB	-	-	10.3	B	0.0	A	0.0	A		
		SB	-	-	11.1	B	0.0	A	0.0	A		

**Synchro results presented to capture two-stage gap acceptance*

Table B-8: Phase II (2024) Build Conditions Synchro/SimTraffic – AM and PM Peak Hour Queuing

2024 SimTraffic Summary - AM Build Queuing

Intersection	Control	Approach	Queue Length by Movement						Upstream	Bay
			Left		Through		Right			
			Storage	95th %	Storage	95th %	Storage	95th %	Blk %	Blk %
W 66th St & Southdale East Driveway	Signal	EB	-	-	350	50	-	-		
		WB	-	-	250	110	-	-		
		NB	250	65	-	-	200	40		
		SB	-	-	-	-	-	-		
W 66th St & 3316 West Driveway	TWSC	EB	-	-	400	0	-	-		
		WB	-	-	250	0	250	0		
		NB	-	-	-	-	-	-		
		SB	-	-	-	-	100	20		
W 66th St & 3316 East Driveway	TWSC	EB	-	-	650	10	-	-		
		WB	-	-	225	10	225	5		
		NB	-	-	-	-	-	-		
		SB	-	-	-	-	100	20		
W 66th St & York Ave	Signal	EB	400	45	875	100	300	0		
		WB	300	170	700	250	300	0		4%
		NB	250	130	375	130	200	0		
		SB	250	85	250	120	100	50		2%
York Ave & 6550 Driveway	TWSC	EB	-	-	-	-	100	45		
		WB	-	-	-	-	-	-		
		NB	-	-	200	0	-	-		
		SB	-	-	450	0	75	0		
Xerxes Ave & W 64th St*	TWSC	EB	400	40	400	40	400	40		
		WB	300	10	300	10	300	10		
		NB	250	0	600	0	600	0		
		SB	200	0	800	0	800	0		

2024 SimTraffic Summary - PM Build Queuing

Intersection	Control	Approach	Queue Length by Movement						Upstream	Bay
			Left		Through		Right			
			Storage	95th %	Storage	95th %	Storage	95th %	Blk %	Blk %
W 66th St & Southdale East Driveway	Signal	EB	-	-	350	175	-	-		
		WB	-	-	250	305	-	-		
		NB	250	105	-	-	200	90		
		SB	-	-	-	-	-	-		
W 66th St & 3316 West Driveway	TWSC	EB	-	-	400	10	-	-		
		WB	-	-	250	0	250	0		
		NB	-	-	-	-	-	-		
		SB	-	-	-	-	100	40		
W 66th St & 3316 East Driveway	TWSC	EB	-	-	650	150	-	-		3%
		WB	-	-	225	10	225	0		
		NB	-	-	-	-	-	-		
		SB	-	-	-	-	100	20		
W 66th St & York Ave	Signal	EB	400	140	875	420	300	45		
		WB	300	300	700	405	300	120		25%
		NB	250	235	375	345	200	0		26%
		SB	250	130	250	255	250	180	17%	16%
York Ave & 6550 Driveway	TWSC	EB	-	-	-	-	100	45		
		WB	-	-	-	-	-	-		
		NB	-	-	200	10	-	-		
		SB	-	-	450	30	75	15		
Xerxes Ave & W 64th St*	TWSC	EB	400	45	400	45	400	45		
		WB	300	35	300	35	300	35		
		NB	250	5	600	0	600	0		
		SB	200	5	800	0	800	0		

**Synchro results presented to capture two-stage gap acceptance*

APPENDIX C: SIMTRAFFIC REPORTS

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	70	5	15	15	10	30	5	20	320	5	25	625
Future Volume (Veh/h)	70	5	15	15	10	30	5	20	320	5	25	625
Sign Control		Stop			Stop				Free			Free
Grade		0%			0%				0%			0%
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	75	5	16	16	11	32	0	22	344	5	27	672
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type									Raised			Raised
Median storage veh)									1			1
Upstream signal (ft)												
pX, platoon unblocked							0.00					
vC, conflicting volume	990	1130	347	799	1138	174	0	694			349	
vC1, stage 1 conf vol	737	737		390	390							
vC2, stage 2 conf vol	254	393		408	748							
vCu, unblocked vol	990	1130	347	799	1138	174	0	694			349	
tC, single (s)	7.5	6.5	6.9	7.5	6.9	6.9	0.0	4.1			4.1	
tC, 2 stage (s)	6.5	5.5		6.5	5.9							
tF (s)	3.5	4.0	3.3	3.5	4.2	3.3	0.0	2.2			2.2	
p0 queue free %	74	98	98	96	96	96	0	98			98	
cM capacity (veh/h)	290	306	655	377	264	845	0	911			1221	

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	96	59	22	229	120	27	448	246
Volume Left	75	16	22	0	0	27	0	0
Volume Right	16	32	0	0	5	0	0	22
cSH	321	484	911	1700	1700	1221	1700	1700
Volume to Capacity	0.30	0.12	0.02	0.13	0.07	0.02	0.26	0.14
Queue Length 95th (ft)	31	10	2	0	0	2	0	0
Control Delay (s)	21.0	13.5	9.1	0.0	0.0	8.0	0.0	0.0
Lane LOS	C	B	A			A		
Approach Delay (s)	21.0	13.5	0.5			0.3		
Approach LOS	C	B						

Intersection Summary				
Average Delay	2.6			
Intersection Capacity Utilization	39.2%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	20
Future Volume (Veh/h)	20
Sign Control	
Grade	
Peak Hour Factor	0.93
Hourly flow rate (vph)	22
Pedestrians	
Lane Width (ft)	
Walking Speed (ft/s)	
Percent Blockage	
Right turn flare (veh)	
Median type	
Median storage veh)	
Upstream signal (ft)	
pX, platoon unblocked	
vC, conflicting volume	
vC1, stage 1 conf vol	
vC2, stage 2 conf vol	
vCu, unblocked vol	
tC, single (s)	
tC, 2 stage (s)	
tF (s)	
p0 queue free %	
cM capacity (veh/h)	
Direction, Lane #	

1: Southdale East Driveway Performance by movement

Movement	EBT	WBT	NBL	NBR	All
Denied Del/Veh (s)	0.1	0.0	0.1	0.1	0.0
Total Del/Veh (s)	1.2	1.5	28.9	3.8	1.7

2: 3316 W 66th St West Driveway Performance by movement

Movement	EBT	WBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.0
Total Del/Veh (s)	0.4	0.5	3.9	0.4

3: W 66th St & 3316 W 66th St East Driveway Performance by movement

Movement	EBT	WBT	WBR	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0
Total Del/Veh (s)	0.8	2.2	1.2	4.0	1.9

4: York Ave & W 66th St Performance by movement

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Denied Del/Veh (s)	0.0	0.0	0.0	2.7	2.7	0.3	2.4	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	44.5	25.2	1.8	32.9	37.0	23.4	3.5	31.0	34.7	24.6	2.6	34.8

4: York Ave & W 66th St Performance by movement

Movement	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.4
Total Del/Veh (s)	40.8	28.9	4.7	24.6

5: York Ave & 6550 York Avenue Driveway Performance by movement

Movement	EBR	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.2	0.0	0.0	0.0	0.0
Total Del/Veh (s)	3.9	2.3	0.5	0.5	1.4

Total Network Performance

Denied Del/Veh (s)	0.5
Total Del/Veh (s)	25.7

Intersection: 1: Southdale East Driveway

Movement	EB	EB	WB	WB	NB	NB	NB
Directions Served	T	T	T	T	L	L	R
Maximum Queue (ft)	71	48	108	120	77	6	59
Average Queue (ft)	13	6	16	24	21	0	8
95th Queue (ft)	47	30	68	87	64	4	35
Link Distance (ft)	1123	1123	400	400	574	574	574
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 2: 3316 W 66th St West Driveway

Movement	SB
Directions Served	R
Maximum Queue (ft)	31
Average Queue (ft)	6
95th Queue (ft)	26
Link Distance (ft)	303
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 3: W 66th St & 3316 W 66th St East Driveway

Movement	EB	SB
Directions Served	T	R
Maximum Queue (ft)	25	30
Average Queue (ft)	2	5
95th Queue (ft)	15	23
Link Distance (ft)	188	296
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 4: York Ave & W 66th St

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	UL	L	T	T	UL	L	T	T	UL	L	T	T
Maximum Queue (ft)	29	65	92	93	143	179	282	267	121	170	159	129
Average Queue (ft)	6	23	51	40	41	94	158	139	46	77	72	44
95th Queue (ft)	23	53	84	78	116	157	244	224	104	130	124	100
Link Distance (ft)	152	152	152	152			1061	1061			372	372
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)					200	200			150	150		
Storage Blk Time (%)					0	0	3	0	0	0	0	
Queuing Penalty (veh)					0	0	7	0	0	1	1	

Intersection: 4: York Ave & W 66th St

Movement	SB	SB	SB	SB
Directions Served	UL	T	T	R
Maximum Queue (ft)	104	116	143	80
Average Queue (ft)	30	50	50	6
95th Queue (ft)	75	94	106	44
Link Distance (ft)	159	159	159	
Upstream Blk Time (%)	0	0	0	0
Queuing Penalty (veh)	0	0	0	0
Storage Bay Dist (ft)				100
Storage Blk Time (%)			1	
Queuing Penalty (veh)			1	

Intersection: 5: York Ave & 6550 York Avenue Driveway

Movement	EB	NB
Directions Served	R	T
Maximum Queue (ft)	48	7
Average Queue (ft)	23	0
95th Queue (ft)	41	5
Link Distance (ft)	358	159
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	40	5	15	15	10	30	5	20	310	5	25	610
Future Volume (Veh/h)	40	5	15	15	10	30	5	20	310	5	25	610
Sign Control		Stop			Stop				Free			Free
Grade		0%			0%				0%			0%
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	43	5	16	16	11	32	0	22	333	5	27	656
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type									Raised			Raised
Median storage veh)									1			1
Upstream signal (ft)												
pX, platoon unblocked							0.00					
vC, conflicting volume	969	1103	339	780	1112	169	0	678			338	
vC1, stage 1 conf vol	721	721		380	380							
vC2, stage 2 conf vol	248	382		400	732							
vCu, unblocked vol	969	1103	339	780	1112	169	0	678			338	
tC, single (s)	7.5	6.5	6.9	7.5	6.9	6.9	0.0	4.1			4.1	
tC, 2 stage (s)	6.5	5.5		6.5	5.9							
tF (s)	3.5	4.0	3.3	3.5	4.2	3.3	0.0	2.2			2.2	
p0 queue free %	86	98	98	96	96	96	0	98			98	
cM capacity (veh/h)	297	312	663	384	270	852	0	923			1232	

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	64	59	22	222	116	27	437	241
Volume Left	43	16	22	0	0	27	0	0
Volume Right	16	32	0	0	5	0	0	22
cSH	346	492	923	1700	1700	1232	1700	1700
Volume to Capacity	0.19	0.12	0.02	0.13	0.07	0.02	0.26	0.14
Queue Length 95th (ft)	17	10	2	0	0	2	0	0
Control Delay (s)	17.8	13.3	9.0	0.0	0.0	8.0	0.0	0.0
Lane LOS	C	B	A			A		
Approach Delay (s)	17.8	13.3	0.5			0.3		
Approach LOS	C	B						

Intersection Summary				
Average Delay	2.0			
Intersection Capacity Utilization	34.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	20
Future Volume (Veh/h)	20
Sign Control	
Grade	
Peak Hour Factor	0.93
Hourly flow rate (vph)	22
Pedestrians	
Lane Width (ft)	
Walking Speed (ft/s)	
Percent Blockage	
Right turn flare (veh)	
Median type	
Median storage veh)	
Upstream signal (ft)	
pX, platoon unblocked	
vC, conflicting volume	
vC1, stage 1 conf vol	
vC2, stage 2 conf vol	
vCu, unblocked vol	
tC, single (s)	
tC, 2 stage (s)	
tF (s)	
p0 queue free %	
cM capacity (veh/h)	
Direction, Lane #	

1: Southdale East Driveway Performance by movement

Movement	EBT	WBT	NBL	NBR	All
Denied Del/Veh (s)	0.1	0.0	0.1	0.1	0.0
Total Del/Veh (s)	1.1	1.7	26.6	3.9	1.8

2: 3316 W 66th St West Driveway Performance by movement

Movement	EBT	WBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.0
Total Del/Veh (s)	0.3	0.6	3.9	0.6

3: W 66th St & 3316 W 66th St East Driveway Performance by movement

Movement	EBT	WBT	WBR	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0
Total Del/Veh (s)	0.8	2.9	1.9	7.4	2.5

4: York Ave & W 66th St Performance by movement

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL
Denied Del/Veh (s)	0.0	0.0	0.0	2.8	2.7	0.3	2.6	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	45.1	26.5	1.7	34.3	34.3	22.6	3.4	34.3	36.3	23.3	2.6	38.9

4: York Ave & W 66th St Performance by movement

Movement	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.4
Total Del/Veh (s)	29.2	1.2	24.0

5: York Ave & 6550 York Avenue Driveway Performance by movement

Movement	EBR	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.0	0.0	0.0	0.0
Total Del/Veh (s)	3.3	2.2	0.4	0.5	1.1

Total Network Performance

Denied Del/Veh (s)	0.5
Total Del/Veh (s)	25.6

Intersection: 1: Southdale East Driveway

Movement	EB	EB	WB	WB	NB	NB	NB
Directions Served	T	T	T	T	L	L	R
Maximum Queue (ft)	68	39	159	169	83	10	58
Average Queue (ft)	12	5	22	29	21	0	10
95th Queue (ft)	46	24	95	111	65	0	40
Link Distance (ft)	1123	1123	400	400	574	574	574
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 2: 3316 W 66th St West Driveway

Movement	SB
Directions Served	R
Maximum Queue (ft)	31
Average Queue (ft)	5
95th Queue (ft)	22
Link Distance (ft)	303
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 3: W 66th St & 3316 W 66th St East Driveway

Movement	EB	WB	WB	WB	SB
Directions Served	T	T	T	TR	R
Maximum Queue (ft)	30	10	13	4	30
Average Queue (ft)	2	0	1	0	5
95th Queue (ft)	15	7	8	3	24
Link Distance (ft)	188	152	152	152	296
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 4: York Ave & W 66th St

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	UL	L	T	T	UL	L	T	T	UL	L	T	T
Maximum Queue (ft)	29	50	108	102	140	165	258	260	124	152	127	112
Average Queue (ft)	5	21	50	42	33	88	160	145	53	84	69	39
95th Queue (ft)	19	45	90	83	97	142	235	231	109	135	117	91
Link Distance (ft)	152	152	152	152			1061	1061			372	372
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)					200	200			150	150		
Storage Blk Time (%)						0	3	0	0	0	0	
Queuing Penalty (veh)						0	6	0	0	0	0	

Intersection: 4: York Ave & W 66th St

Movement	SB	SB	SB	SB
Directions Served	UL	T	T	R
Maximum Queue (ft)	59	112	133	70
Average Queue (ft)	9	34	33	28
95th Queue (ft)	37	80	89	74
Link Distance (ft)	155	155	155	
Upstream Blk Time (%)		0	0	
Queuing Penalty (veh)		0	0	
Storage Bay Dist (ft)				50
Storage Blk Time (%)			5	0
Queuing Penalty (veh)			6	1

Intersection: 5: York Ave & 6550 York Avenue Driveway

Movement	EB
Directions Served	R
Maximum Queue (ft)	34
Average Queue (ft)	11
95th Queue (ft)	28
Link Distance (ft)	358
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	90	5	15	15	10	30	5	20	330	5	25	610
Future Volume (Veh/h)	90	5	15	15	10	30	5	20	330	5	25	610
Sign Control		Stop			Stop				Free			Free
Grade		0%			0%				0%			0%
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	97	5	16	16	11	32	0	22	355	5	27	656
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type									Raised			Raised
Median storage veh)									1			1
Upstream signal (ft)												
pX, platoon unblocked							0.00					
vC, conflicting volume	980	1125	339	802	1134	180	0	678			360	
vC1, stage 1 conf vol	721	721		402	402							
vC2, stage 2 conf vol	259	404		400	732							
vCu, unblocked vol	980	1125	339	802	1134	180	0	678			360	
tC, single (s)	7.5	6.5	6.9	7.5	6.9	6.9	0.0	4.1			4.1	
tC, 2 stage (s)	6.5	5.5		6.5	5.9							
tF (s)	3.5	4.0	3.3	3.5	4.2	3.3	0.0	2.2			2.2	
p0 queue free %	67	98	98	96	96	96	0	98			98	
cM capacity (veh/h)	294	308	663	376	267	838	0	923			1210	

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	118	59	22	237	123	27	437	241
Volume Left	97	16	22	0	0	27	0	0
Volume Right	16	32	0	0	5	0	0	22
cSH	319	484	923	1700	1700	1210	1700	1700
Volume to Capacity	0.37	0.12	0.02	0.14	0.07	0.02	0.26	0.14
Queue Length 95th (ft)	41	10	2	0	0	2	0	0
Control Delay (s)	22.8	13.5	9.0	0.0	0.0	8.0	0.0	0.0
Lane LOS	C	B	A			A		
Approach Delay (s)	22.8	13.5	0.5			0.3		
Approach LOS	C	B						

Intersection Summary				
Average Delay	3.1			
Intersection Capacity Utilization	40.3%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	20
Future Volume (Veh/h)	20
Sign Control	
Grade	
Peak Hour Factor	0.93
Hourly flow rate (vph)	22
Pedestrians	
Lane Width (ft)	
Walking Speed (ft/s)	
Percent Blockage	
Right turn flare (veh)	
Median type	
Median storage veh)	
Upstream signal (ft)	
pX, platoon unblocked	
vC, conflicting volume	
vC1, stage 1 conf vol	
vC2, stage 2 conf vol	
vCu, unblocked vol	
tC, single (s)	
tC, 2 stage (s)	
tF (s)	
p0 queue free %	
cM capacity (veh/h)	

Direction, Lane #

1: Southdale East Driveway Performance by movement

Movement	EBT	WBT	NBL	NBR	All
Denied Del/Veh (s)	0.1	0.0	0.1	0.1	0.0
Total Del/Veh (s)	1.1	1.7	32.8	4.2	1.8

2: 3316 W 66th St West Driveway Performance by movement

Movement	EBT	WBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.0
Total Del/Veh (s)	0.3	0.5	2.5	0.5

3: W 66th St & 3316 W 66th St East Driveway Performance by movement

Movement	EBT	WBT	WBR	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0
Total Del/Veh (s)	0.8	2.2	1.2	5.0	2.0

4: York Ave & W 66th St Performance by movement

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Denied Del/Veh (s)	0.0	0.0	0.0	2.7	2.6	0.3	2.5	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	40.1	26.4	1.8	30.1	36.9	23.2	3.5	33.2	37.6	25.7	2.8	34.8

4: York Ave & W 66th St Performance by movement

Movement	SBL	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.4
Total Del/Veh (s)	41.0	29.6	5.3	24.8

5: York Ave & 6550 York Avenue Driveway Performance by movement

Movement	EBR	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.2	0.0	0.0	0.0	0.0
Total Del/Veh (s)	4.2	2.5	0.5	0.3	1.6

Total Network Performance

Denied Del/Veh (s)	0.5
Total Del/Veh (s)	26.5

Intersection: 1: Southdale East Driveway

Movement	EB	EB	WB	WB	NB	NB	NB
Directions Served	T	T	T	T	L	L	R
Maximum Queue (ft)	75	47	150	156	93	6	58
Average Queue (ft)	13	5	21	27	19	0	9
95th Queue (ft)	50	24	94	110	65	4	39
Link Distance (ft)	1123	1123	400	400	574	574	574
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 2: 3316 W 66th St West Driveway

Movement	WB	SB
Directions Served	T	R
Maximum Queue (ft)	6	31
Average Queue (ft)	0	5
95th Queue (ft)	0	22
Link Distance (ft)	188	303
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: W 66th St & 3316 W 66th St East Driveway

Movement	EB	WB	WB	SB
Directions Served	T	T	TR	R
Maximum Queue (ft)	32	20	5	24
Average Queue (ft)	1	1	0	4
95th Queue (ft)	12	10	4	20
Link Distance (ft)	188	152	152	296
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 4: York Ave & W 66th St

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	UL	L	T	T	UL	L	T	T	UL	L	T	T
Maximum Queue (ft)	24	48	108	96	172	191	273	284	144	162	150	118
Average Queue (ft)	3	20	55	43	45	102	164	156	47	77	77	47
95th Queue (ft)	16	46	91	83	129	172	249	246	109	132	129	105
Link Distance (ft)	152	152	152	152			1061	1061			372	372
Upstream Blk Time (%)			0									
Queuing Penalty (veh)			0									
Storage Bay Dist (ft)					200	200			150	150		
Storage Blk Time (%)					0	0	4	1	0	0	0	
Queuing Penalty (veh)					0	0	10	1	0	1	0	

Intersection: 4: York Ave & W 66th St

Movement	SB	SB	SB	SB
Directions Served	UL	T	T	R
Maximum Queue (ft)	109	128	148	102
Average Queue (ft)	37	57	59	9
95th Queue (ft)	86	108	120	51
Link Distance (ft)	159	159	159	
Upstream Blk Time (%)	0	0	0	0
Queuing Penalty (veh)	0	0	0	0
Storage Bay Dist (ft)				100
Storage Blk Time (%)			2	0
Queuing Penalty (veh)			3	0

Intersection: 5: York Ave & 6550 York Avenue Driveway

Movement	EB
Directions Served	R
Maximum Queue (ft)	46
Average Queue (ft)	26
95th Queue (ft)	43
Link Distance (ft)	358
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	40	5	15	15	10	30	5	20	320	5	25	630
Future Volume (Veh/h)	40	5	15	15	10	30	5	20	320	5	25	630
Sign Control		Stop			Stop				Free			Free
Grade		0%			0%				0%			0%
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	43	5	16	16	11	32	0	22	344	5	27	677
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type									Raised			Raised
Median storage veh)									1			1
Upstream signal (ft)												
pX, platoon unblocked							0.00					
vC, conflicting volume	996	1135	350	802	1144	174	0	699			349	
vC1, stage 1 conf vol	742	742		390	390							
vC2, stage 2 conf vol	254	393		411	753							
vCu, unblocked vol	996	1135	350	802	1144	174	0	699			349	
tC, single (s)	7.5	6.5	6.9	7.5	6.9	6.9	0.0	4.1			4.1	
tC, 2 stage (s)	6.5	5.5		6.5	5.9							
tF (s)	3.5	4.0	3.3	3.5	4.2	3.3	0.0	2.2			2.2	
p0 queue free %	85	98	98	96	96	96	0	98			98	
cM capacity (veh/h)	288	304	652	376	263	845	0	907			1221	

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	64	59	22	229	120	27	451	248
Volume Left	43	16	22	0	0	27	0	0
Volume Right	16	32	0	0	5	0	0	22
cSH	337	482	907	1700	1700	1221	1700	1700
Volume to Capacity	0.19	0.12	0.02	0.13	0.07	0.02	0.27	0.15
Queue Length 95th (ft)	17	10	2	0	0	2	0	0
Control Delay (s)	18.2	13.5	9.1	0.0	0.0	8.0	0.0	0.0
Lane LOS	C	B	A			A		
Approach Delay (s)	18.2	13.5	0.5			0.3		
Approach LOS	C	B						

Intersection Summary				
Average Delay	1.9			
Intersection Capacity Utilization	34.8%	ICU Level of Service		A
Analysis Period (min)	15			

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	20
Future Volume (Veh/h)	20
Sign Control	
Grade	
Peak Hour Factor	0.93
Hourly flow rate (vph)	22
Pedestrians	
Lane Width (ft)	
Walking Speed (ft/s)	
Percent Blockage	
Right turn flare (veh)	
Median type	
Median storage veh)	
Upstream signal (ft)	
pX, platoon unblocked	
vC, conflicting volume	
vC1, stage 1 conf vol	
vC2, stage 2 conf vol	
vCu, unblocked vol	
tC, single (s)	
tC, 2 stage (s)	
tF (s)	
p0 queue free %	
cM capacity (veh/h)	

Direction, Lane #

1: Southdale East Driveway Performance by movement

Movement	EBT	WBT	NBL	NBR	All
Denied Del/Veh (s)	0.1	0.0	0.1	0.1	0.0
Total Del/Veh (s)	1.1	1.7	34.0	4.1	1.9

2: 3316 W 66th St West Driveway Performance by movement

Movement	EBT	WBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.0
Total Del/Veh (s)	0.3	0.6	5.1	0.6

3: W 66th St & 3316 W 66th St East Driveway Performance by movement

Movement	EBT	WBT	WBR	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0
Total Del/Veh (s)	0.8	2.9	2.1	5.3	2.4

4: York Ave & W 66th St Performance by movement

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL
Denied Del/Veh (s)	0.0	0.0	0.0	3.0	2.6	0.3	2.5	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	44.1	26.5	1.8	35.6	33.6	22.1	3.4	34.6	34.7	23.8	2.7	41.0

4: York Ave & W 66th St Performance by movement

Movement	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.4
Total Del/Veh (s)	28.4	1.3	23.4

5: York Ave & 6550 York Avenue Driveway Performance by movement

Movement	EBR	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.0	0.0	0.0	0.0
Total Del/Veh (s)	3.1	2.4	0.4	0.4	1.2

Total Network Performance

Denied Del/Veh (s)	0.5
Total Del/Veh (s)	25.2

Intersection: 1: Southdale East Driveway

Movement	EB	EB	WB	WB	NB	NB	NB
Directions Served	T	T	T	T	L	L	R
Maximum Queue (ft)	70	61	150	169	95	28	58
Average Queue (ft)	13	5	20	26	25	1	7
95th Queue (ft)	48	30	84	97	74	10	33
Link Distance (ft)	1123	1123	400	400	574	574	574
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 2: 3316 W 66th St West Driveway

Movement	WB	SB
Directions Served	T	R
Maximum Queue (ft)	10	36
Average Queue (ft)	0	5
95th Queue (ft)	7	24
Link Distance (ft)	188	303
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: W 66th St & 3316 W 66th St East Driveway

Movement	EB	WB	WB	WB	SB
Directions Served	T	T	T	TR	R
Maximum Queue (ft)	34	11	31	21	30
Average Queue (ft)	3	0	3	1	5
95th Queue (ft)	17	8	20	11	23
Link Distance (ft)	188	152	152	152	296
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 4: York Ave & W 66th St

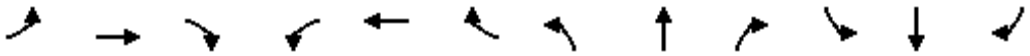
Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	UL	L	T	T	UL	L	T	T	UL	L	T	T
Maximum Queue (ft)	33	58	101	99	150	169	256	260	119	148	130	118
Average Queue (ft)	5	20	51	43	34	96	158	148	42	77	67	42
95th Queue (ft)	20	48	83	78	103	153	235	230	100	125	116	100
Link Distance (ft)	152	152	152	152			1061	1061			372	372
Upstream Blk Time (%)			0	0								
Queuing Penalty (veh)			0	0								
Storage Bay Dist (ft)					200	200			150	150		
Storage Blk Time (%)					0	0	2	0	0	0	0	
Queuing Penalty (veh)					0	0	6	0	0	0	0	

Intersection: 4: York Ave & W 66th St

Movement	SB	SB	SB	SB
Directions Served	UL	T	T	R
Maximum Queue (ft)	60	106	110	70
Average Queue (ft)	10	35	35	30
95th Queue (ft)	35	85	89	78
Link Distance (ft)	155	155	155	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				50
Storage Blk Time (%)			5	0
Queuing Penalty (veh)			6	1

Intersection: 5: York Ave & 6550 York Avenue Driveway

Movement	EB
Directions Served	R
Maximum Queue (ft)	21
Average Queue (ft)	11
95th Queue (ft)	27
Link Distance (ft)	358
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	5	25	15	5	60	40	995	40	25	840	10
Future Volume (Veh/h)	45	5	25	15	5	60	40	995	40	25	840	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	48	5	27	16	5	65	43	1070	43	27	903	11
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								Raised			Raised	
Median storage veh)								1			1	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1651	2162	457	1712	2146	556	914			1113		
vC1, stage 1 conf vol	962	962		1178	1178							
vC2, stage 2 conf vol	688	1199		535	968							
vCu, unblocked vol	1651	2162	457	1712	2146	556	914			1113		
tC, single (s)	7.5	6.5	6.9	7.5	6.9	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.9							
tF (s)	3.5	4.0	3.3	3.5	4.2	3.3	2.2			2.2		
p0 queue free %	68	96	95	89	96	86	94			96		
cM capacity (veh/h)	152	138	556	140	119	479	754			635		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	80	86	43	713	400	27	602	312
Volume Left	48	16	43	0	0	27	0	0
Volume Right	27	65	0	0	43	0	0	11
cSH	199	294	754	1700	1700	635	1700	1700
Volume to Capacity	0.40	0.29	0.06	0.42	0.24	0.04	0.35	0.18
Queue Length 95th (ft)	45	30	5	0	0	3	0	0
Control Delay (s)	34.7	22.2	10.1	0.0	0.0	10.9	0.0	0.0
Lane LOS	D	C	B			B		
Approach Delay (s)	34.7	22.2	0.4			0.3		
Approach LOS	D	C						

Intersection Summary				
Average Delay	2.4			
Intersection Capacity Utilization	50.9%	ICU Level of Service		A
Analysis Period (min)	15			

1: Southdale East Driveway Performance by movement

Movement	EBT	WBT	NBL	NBR	All
Denied Del/Veh (s)	0.3	0.1	0.1	0.2	0.2
Total Del/Veh (s)	6.5	8.0	25.1	10.3	8.2

2: 3316 W 66th St West Driveway Performance by movement

Movement	EBT	WBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.0
Total Del/Veh (s)	1.9	1.1	4.1	1.6

3: W 66th St & 3316 W 66th St East Driveway Performance by movement

Movement	EBT	WBT	WBR	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0
Total Del/Veh (s)	4.0	2.9	1.4	7.8	3.4

4: York Ave & W 66th St Performance by movement

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	2.4	0.4	2.5	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	48.6	53.3	41.2	2.0	56.0	39.5	4.8	56.8	39.2	3.4	46.9	57.3

4: York Ave & W 66th St Performance by movement

Movement	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.3
Total Del/Veh (s)	38.3	7.4	36.5

5: York Ave & 6550 York Avenue Driveway Performance by movement

Movement	EBR	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.0	0.0	0.1	0.0
Total Del/Veh (s)	8.1	3.5	0.9	0.7	2.6

Total Network Performance

Denied Del/Veh (s)	0.5
Total Del/Veh (s)	45.1

Intersection: 1: Southdale East Driveway

Movement	EB	EB	WB	WB	NB	NB	NB
Directions Served	T	T	T	T	L	L	R
Maximum Queue (ft)	190	197	296	324	118	70	112
Average Queue (ft)	104	92	138	160	58	12	47
95th Queue (ft)	166	166	254	285	100	41	85
Link Distance (ft)	1123	1123	400	400	574	574	574
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 2: 3316 W 66th St West Driveway

Movement	EB	WB	SB
Directions Served	T	T	R
Maximum Queue (ft)	6	7	40
Average Queue (ft)	0	0	12
95th Queue (ft)	4	5	37
Link Distance (ft)	400	188	303
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: W 66th St & 3316 W 66th St East Driveway

Movement	EB	EB	EB	EB	WB	SB
Directions Served	T	T	T	T	T	R
Maximum Queue (ft)	37	181	160	104	35	30
Average Queue (ft)	1	43	43	18	1	4
95th Queue (ft)	27	135	130	59	20	21
Link Distance (ft)		188	188	188	152	296
Upstream Blk Time (%)	0	0	0			
Queuing Penalty (veh)	0	1	1			
Storage Bay Dist (ft)	100					
Storage Blk Time (%)		3				
Queuing Penalty (veh)		15				

Intersection: 4: York Ave & W 66th St

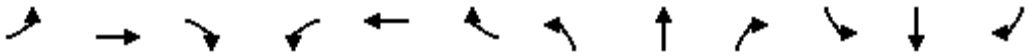
Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	UL	L	T	T	R	UL	L	T	T	R	UL	L
Maximum Queue (ft)	134	154	235	236	45	206	302	423	390	278	167	290
Average Queue (ft)	68	89	207	208	2	117	158	260	250	22	82	116
95th Queue (ft)	117	136	259	260	33	192	241	375	359	162	153	209
Link Distance (ft)	152	152	152	152	152			1061	1061			
Upstream Blk Time (%)	0	1	33	32	0							
Queuing Penalty (veh)	0	2	80	78	0							
Storage Bay Dist (ft)						200	200			250	150	150
Storage Blk Time (%)						0	1	21	9		0	3
Queuing Penalty (veh)						0	6	67	8		1	11

Intersection: 4: York Ave & W 66th St

Movement	NB	NB	SB	SB	SB	SB
Directions Served	T	T	UL	T	T	R
Maximum Queue (ft)	358	340	131	216	232	150
Average Queue (ft)	231	216	54	120	130	33
95th Queue (ft)	327	309	114	187	219	129
Link Distance (ft)	372	372	159	159	159	
Upstream Blk Time (%)	0	0	0	3	6	0
Queuing Penalty (veh)	0	0	0	8	15	0
Storage Bay Dist (ft)						100
Storage Blk Time (%)	26				15	
Queuing Penalty (veh)	64				21	

Intersection: 5: York Ave & 6550 York Avenue Driveway

Movement	EB	NB	SB	SB	SB
Directions Served	R	T	T	T	R
Maximum Queue (ft)	59	21	18	46	27
Average Queue (ft)	23	1	0	1	1
95th Queue (ft)	44	11	5	15	16
Link Distance (ft)	358	159	434	434	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					50
Storage Blk Time (%)			0	0	0
Queuing Penalty (veh)			0	0	0



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	5	25	15	5	60	40	990	40	25	780	10
Future Volume (Veh/h)	30	5	25	15	5	60	40	990	40	25	780	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	32	5	27	16	5	65	43	1065	43	27	839	11
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								Raised			Raised	
Median storage veh)								1			1	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1584	2092	425	1676	2076	554	850			1108		
vC1, stage 1 conf vol	898	898		1172	1172							
vC2, stage 2 conf vol	686	1194		503	904							
vCu, unblocked vol	1584	2092	425	1676	2076	554	850			1108		
tC, single (s)	7.5	6.5	6.9	7.5	6.9	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.9							
tF (s)	3.5	4.0	3.3	3.5	4.2	3.3	2.2			2.2		
p0 queue free %	80	97	95	89	96	86	95			96		
cM capacity (veh/h)	161	144	583	144	125	481	797			638		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	64	86	43	710	398	27	559	291
Volume Left	32	16	43	0	0	27	0	0
Volume Right	27	65	0	0	43	0	0	11
cSH	229	300	797	1700	1700	638	1700	1700
Volume to Capacity	0.28	0.29	0.05	0.42	0.23	0.04	0.33	0.17
Queue Length 95th (ft)	28	29	4	0	0	3	0	0
Control Delay (s)	26.7	21.7	9.8	0.0	0.0	10.9	0.0	0.0
Lane LOS	D	C	A			B		
Approach Delay (s)	26.7	21.7	0.4			0.3		
Approach LOS	D	C						

Intersection Summary				
Average Delay	2.0			
Intersection Capacity Utilization	47.6%	ICU Level of Service		A
Analysis Period (min)	15			

1: Southdale East Driveway Performance by movement

Movement	EBT	WBT	NBL	NBR	All
Denied Del/Veh (s)	0.3	0.0	0.1	0.2	0.2
Total Del/Veh (s)	6.6	8.2	23.0	10.8	8.2

2: 3316 W 66th St West Driveway Performance by movement

Movement	EBT	WBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.0
Total Del/Veh (s)	2.0	1.3	6.1	1.7

3: W 66th St & 3316 W 66th St East Driveway Performance by movement

Movement	EBT	WBT	WBR	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0
Total Del/Veh (s)	4.5	3.5	2.2	4.5	4.0

4: York Ave & W 66th St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Denied Del/Veh (s)	0.0	0.1	0.0	2.5	0.4	2.4	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	52.9	40.7	2.1	55.7	39.1	4.6	55.3	39.1	3.4	51.5	58.3	39.4

4: York Ave & W 66th St Performance by movement

Movement	SBR	All
Denied Del/Veh (s)	0.0	0.3
Total Del/Veh (s)	6.8	36.4

5: York Ave & 6550 York Avenue Driveway Performance by movement

Movement	EBR	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.0	0.0	0.0	0.0
Total Del/Veh (s)	7.1	3.3	0.9	0.5	2.3

Total Network Performance

Denied Del/Veh (s)	0.5
Total Del/Veh (s)	45.4

Intersection: 1: Southdale East Driveway

Movement	EB	EB	WB	WB	NB	NB	NB
Directions Served	T	T	T	T	L	L	R
Maximum Queue (ft)	195	192	281	313	106	56	104
Average Queue (ft)	113	87	138	163	56	10	51
95th Queue (ft)	181	161	261	277	95	39	84
Link Distance (ft)	1123	1123	400	400	574	574	574
Upstream Blk Time (%)				0			
Queuing Penalty (veh)				0			
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 2: 3316 W 66th St West Driveway

Movement	EB	SB
Directions Served	T	R
Maximum Queue (ft)	10	36
Average Queue (ft)	0	13
95th Queue (ft)	7	37
Link Distance (ft)	400	303
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: W 66th St & 3316 W 66th St East Driveway

Movement	EB	EB	EB	EB	WB	WB	SB
Directions Served	T	T	T	T	T	TR	R
Maximum Queue (ft)	111	190	208	72	44	38	30
Average Queue (ft)	4	47	52	15	2	1	6
95th Queue (ft)	48	138	151	53	17	15	24
Link Distance (ft)		188	188	188	152	152	296
Upstream Blk Time (%)	0	0	1				
Queuing Penalty (veh)	0	2	3				
Storage Bay Dist (ft)	100						
Storage Blk Time (%)		3					
Queuing Penalty (veh)		16					

Intersection: 4: York Ave & W 66th St

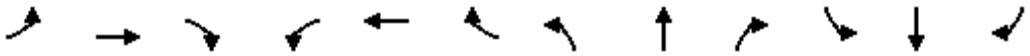
Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	UL	L	T	T	R	UL	L	T	T	R	UL	L
Maximum Queue (ft)	124	151	228	229	133	219	334	450	451	350	151	246
Average Queue (ft)	62	85	206	208	5	107	152	256	243	12	79	112
95th Queue (ft)	117	134	266	268	58	200	242	368	352	120	143	188
Link Distance (ft)	152	152	152	152	152			1061	1061			
Upstream Blk Time (%)	0	1	32	32	0							
Queuing Penalty (veh)	0	1	77	78	0							
Storage Bay Dist (ft)						200	200			250	150	150
Storage Blk Time (%)						1	2	20	7		0	2
Queuing Penalty (veh)						3	8	62	6		1	9

Intersection: 4: York Ave & W 66th St

Movement	NB	NB	NB	SB	SB	SB	SB
Directions Served	T	T	R	UL	T	T	R
Maximum Queue (ft)	426	354	40	141	222	230	70
Average Queue (ft)	231	212	1	37	114	123	48
95th Queue (ft)	331	312	29	98	201	222	95
Link Distance (ft)	372	372	372	155	155	155	
Upstream Blk Time (%)	0	0		0	4	6	
Queuing Penalty (veh)	0	0		0	9	16	
Storage Bay Dist (ft)							50
Storage Blk Time (%)	26					29	1
Queuing Penalty (veh)	60					36	4

Intersection: 5: York Ave & 6550 York Avenue Driveway

Movement	EB	NB	SB	SB
Directions Served	R	T	T	T
Maximum Queue (ft)	56	30	32	46
Average Queue (ft)	17	1	2	4
95th Queue (ft)	39	13	17	26
Link Distance (ft)	358	155	434	434
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)			0	0
Queuing Penalty (veh)			0	0



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	5	25	15	5	65	40	1025	40	25	895	10
Future Volume (Veh/h)	40	5	25	15	5	65	40	1025	40	25	895	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	43	5	27	16	5	70	43	1102	43	27	962	11
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								Raised			Raised	
Median storage veh)								1			1	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1731	2252	486	1774	2236	572	973			1145		
vC1, stage 1 conf vol	1022	1022		1210	1210							
vC2, stage 2 conf vol	710	1231		564	1027							
vCu, unblocked vol	1731	2252	486	1774	2236	572	973			1145		
tC, single (s)	7.5	6.5	6.9	7.5	6.9	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.9							
tF (s)	3.5	4.0	3.3	3.5	4.2	3.3	2.2			2.2		
p0 queue free %	69	96	95	88	95	85	94			96		
cM capacity (veh/h)	140	130	532	132	111	468	717			618		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	75	91	43	735	410	27	641	332
Volume Left	43	16	43	0	0	27	0	0
Volume Right	27	70	0	0	43	0	0	11
cSH	189	288	717	1700	1700	618	1700	1700
Volume to Capacity	0.40	0.32	0.06	0.43	0.24	0.04	0.38	0.20
Queue Length 95th (ft)	44	33	5	0	0	3	0	0
Control Delay (s)	36.1	23.2	10.3	0.0	0.0	11.1	0.0	0.0
Lane LOS	E	C	B			B		
Approach Delay (s)	36.1	23.2	0.4			0.3		
Approach LOS	E	C						

Intersection Summary				
Average Delay	2.4			
Intersection Capacity Utilization	50.2%	ICU Level of Service		A
Analysis Period (min)	15			

1: Southdale East Driveway Performance by movement

Movement	EBT	WBT	NBL	NBR	All
Denied Del/Veh (s)	0.3	0.0	0.1	0.2	0.2
Total Del/Veh (s)	6.3	8.4	23.2	10.8	8.2

2: 3316 W 66th St West Driveway Performance by movement

Movement	EBT	WBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.0
Total Del/Veh (s)	2.0	1.2	5.1	1.6

3: W 66th St & 3316 W 66th St East Driveway Performance by movement

Movement	EBT	WBT	WBR	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0
Total Del/Veh (s)	4.0	3.0	1.5	5.5	3.5

4: York Ave & W 66th St Performance by movement

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL
Denied Del/Veh (s)	0.0	0.0	0.1	0.0	2.4	0.4	2.3	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	49.0	52.7	40.8	2.1	57.5	42.1	5.2	54.9	40.3	3.7	69.9	62.4

4: York Ave & W 66th St Performance by movement

Movement	SBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.3
Total Del/Veh (s)	38.5	7.4	37.6

5: York Ave & 6550 York Avenue Driveway Performance by movement

Movement	EBR	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.0	0.0	0.0	0.0
Total Del/Veh (s)	9.0	3.5	1.1	0.8	2.5

Total Network Performance

Denied Del/Veh (s)	0.5
Total Del/Veh (s)	45.7

Intersection: 1: Southdale East Driveway

Movement	EB	EB	WB	WB	NB	NB	NB
Directions Served	T	T	T	T	L	L	R
Maximum Queue (ft)	188	177	293	307	118	73	111
Average Queue (ft)	110	83	148	174	62	12	49
95th Queue (ft)	173	156	280	303	107	45	90
Link Distance (ft)	1123	1123	400	400	574	574	574
Upstream Blk Time (%)			0	0			
Queuing Penalty (veh)			0	0			
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 2: 3316 W 66th St West Driveway

Movement	EB	EB	WB	SB
Directions Served	T	T	T	R
Maximum Queue (ft)	11	14	10	36
Average Queue (ft)	0	0	0	13
95th Queue (ft)	8	10	0	38
Link Distance (ft)	400	400	188	303
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: W 66th St & 3316 W 66th St East Driveway

Movement	EB	EB	EB	EB	WB	SB
Directions Served	T	T	T	T	T	R
Maximum Queue (ft)	38	184	184	65	19	30
Average Queue (ft)	1	48	50	13	1	3
95th Queue (ft)	27	137	139	44	10	18
Link Distance (ft)		188	188	188	152	296
Upstream Blk Time (%)	0	0	0			
Queuing Penalty (veh)	0	1	1			
Storage Bay Dist (ft)	100					
Storage Blk Time (%)		3				
Queuing Penalty (veh)		13				

Intersection: 4: York Ave & W 66th St

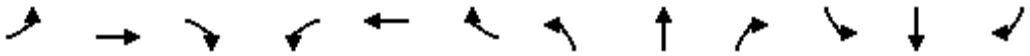
Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	UL	L	T	T	R	UL	L	T	T	R	UL	L
Maximum Queue (ft)	139	163	231	242	90	209	362	477	446	210	192	287
Average Queue (ft)	72	92	210	214	3	115	172	283	275	12	89	127
95th Queue (ft)	124	141	261	262	47	198	299	405	389	120	157	237
Link Distance (ft)	152	152	152	152	152			1061	1061			
Upstream Blk Time (%)	0	1	35	34	0							
Queuing Penalty (veh)	0	1	89	87	0							
Storage Bay Dist (ft)						200	200			250	150	150
Storage Blk Time (%)						0	2	25	13		0	3
Queuing Penalty (veh)						0	7	83	12		2	12

Intersection: 4: York Ave & W 66th St

Movement	NB	NB	NB	SB	SB	SB	SB
Directions Served	T	T	R	UL	T	T	R
Maximum Queue (ft)	369	358	89	161	206	236	150
Average Queue (ft)	239	220	0	57	131	138	44
95th Queue (ft)	346	326	0	128	198	223	151
Link Distance (ft)	372	372	372	159	159	159	
Upstream Blk Time (%)	0	0		1	5	6	0
Queuing Penalty (veh)	0	0		3	12	17	0
Storage Bay Dist (ft)							100
Storage Blk Time (%)	26					16	0
Queuing Penalty (veh)	67					22	0

Intersection: 5: York Ave & 6550 York Avenue Driveway

Movement	EB	NB	SB	SB	SB	SB
Directions Served	R	T	T	T	T	R
Maximum Queue (ft)	60	11	28	26	58	26
Average Queue (ft)	21	0	1	1	4	1
95th Queue (ft)	44	8	11	10	28	13
Link Distance (ft)	358	159		434	434	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)			25			50
Storage Blk Time (%)			0	0	0	0
Queuing Penalty (veh)			0	0	0	0



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	5	25	15	5	65	40	1025	40	25	805	10
Future Volume (Veh/h)	30	5	25	15	5	65	40	1025	40	25	805	10
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	32	5	27	16	5	70	43	1102	43	27	866	11
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								Raised			Raised	
Median storage veh)								1			1	
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1635	2156	438	1726	2140	572	877			1145		
vC1, stage 1 conf vol	926	926		1210	1210							
vC2, stage 2 conf vol	710	1231		516	931							
vCu, unblocked vol	1635	2156	438	1726	2140	572	877			1145		
tC, single (s)	7.5	6.5	6.9	7.5	6.9	6.9	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.9							
tF (s)	3.5	4.0	3.3	3.5	4.2	3.3	2.2			2.2		
p0 queue free %	79	96	95	88	96	85	94			96		
cM capacity (veh/h)	152	137	572	136	119	468	779			618		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	64	91	43	735	410	27	577	300
Volume Left	32	16	43	0	0	27	0	0
Volume Right	27	70	0	0	43	0	0	11
cSH	218	295	779	1700	1700	618	1700	1700
Volume to Capacity	0.29	0.31	0.06	0.43	0.24	0.04	0.34	0.18
Queue Length 95th (ft)	29	32	4	0	0	3	0	0
Control Delay (s)	28.3	22.6	9.9	0.0	0.0	11.1	0.0	0.0
Lane LOS	D	C	A			B		
Approach Delay (s)	28.3	22.6	0.4			0.3		
Approach LOS	D	C						

Intersection Summary				
Average Delay	2.0			
Intersection Capacity Utilization	47.9%	ICU Level of Service		A
Analysis Period (min)	15			

1: Southdale East Driveway Performance by movement

Movement	EBT	WBT	NBL	NBR	All
Denied Del/Veh (s)	0.3	0.0	0.1	0.2	0.2
Total Del/Veh (s)	6.7	9.1	23.6	11.2	8.8

2: 3316 W 66th St West Driveway Performance by movement

Movement	EBT	WBT	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.1	0.0
Total Del/Veh (s)	2.0	1.4	4.2	1.7

3: W 66th St & 3316 W 66th St East Driveway Performance by movement

Movement	EBT	WBT	WBR	SBR	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.1	0.0
Total Del/Veh (s)	4.0	3.7	2.5	7.2	3.8

4: York Ave & W 66th St Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Denied Del/Veh (s)	0.0	0.1	0.0	2.5	0.4	2.3	0.0	0.0	0.0	0.0	0.0	0.0
Total Del/Veh (s)	52.4	41.7	2.0	55.7	40.2	4.8	56.6	40.5	3.4	47.7	58.8	38.3

4: York Ave & W 66th St Performance by movement

Movement	SBR	All
Denied Del/Veh (s)	0.0	0.3
Total Del/Veh (s)	7.2	37.0

5: York Ave & 6550 York Avenue Driveway Performance by movement

Movement	EBR	NBT	SBT	SBR	All
Denied Del/Veh (s)	0.1	0.0	0.0	0.0	0.0
Total Del/Veh (s)	7.3	3.5	0.9	0.4	2.5

Total Network Performance

Denied Del/Veh (s)	0.5
Total Del/Veh (s)	46.3

Intersection: 1: Southdale East Driveway

Movement	EB	EB	WB	WB	NB	NB	NB
Directions Served	T	T	T	T	L	L	R
Maximum Queue (ft)	228	217	306	328	160	95	124
Average Queue (ft)	111	97	156	178	63	13	52
95th Queue (ft)	183	172	275	292	115	52	92
Link Distance (ft)	1123	1123	400	400	574	574	574
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 2: 3316 W 66th St West Driveway

Movement	WB	SB
Directions Served	T	R
Maximum Queue (ft)	10	31
Average Queue (ft)	0	11
95th Queue (ft)	8	35
Link Distance (ft)	188	303
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: W 66th St & 3316 W 66th St East Driveway

Movement	EB	EB	EB	EB	WB	WB	WB	SB
Directions Served	T	T	T	T	T	T	TR	R
Maximum Queue (ft)	110	173	177	80	22	60	36	30
Average Queue (ft)	4	44	45	16	1	2	2	5
95th Queue (ft)	48	127	132	50	12	20	17	22
Link Distance (ft)		188	188	188	152	152	152	296
Upstream Blk Time (%)	0	0	0					
Queuing Penalty (veh)	0	1	2					
Storage Bay Dist (ft)	100							
Storage Blk Time (%)		2						
Queuing Penalty (veh)		11						

Intersection: 4: York Ave & W 66th St

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	UL	L	T	T	R	UL	L	T	T	R	UL	L
Maximum Queue (ft)	131	147	230	237	80	216	257	413	397	209	134	277
Average Queue (ft)	67	87	210	214	3	118	152	266	257	10	78	114
95th Queue (ft)	118	137	258	261	42	195	219	363	350	105	132	204
Link Distance (ft)	152	152	152	152	152			1061	1061			
Upstream Blk Time (%)	0	1	35	34	0							
Queuing Penalty (veh)	1	2	89	85	0							
Storage Bay Dist (ft)						200	200			250	150	150
Storage Blk Time (%)						0	1	24	10		0	1
Queuing Penalty (veh)						1	5	78	9		0	6

Intersection: 4: York Ave & W 66th St

Movement	NB	NB	NB	B7	SB	SB	SB	SB
Directions Served	T	T	R	T	UL	T	T	R
Maximum Queue (ft)	394	333	67	14	136	209	222	70
Average Queue (ft)	233	217	3	0	44	119	134	54
95th Queue (ft)	337	316	42	5	109	201	222	95
Link Distance (ft)	372	372	372	810	155	155	155	
Upstream Blk Time (%)	1	0			1	3	6	
Queuing Penalty (veh)	0	0			2	8	17	
Storage Bay Dist (ft)								50
Storage Blk Time (%)	27						29	2
Queuing Penalty (veh)	66						38	4

Intersection: 5: York Ave & 6550 York Avenue Driveway

Movement	EB	NB	NB	SB	SB	SB
Directions Served	R	T	T	T	T	T
Maximum Queue (ft)	40	10	22	10	32	38
Average Queue (ft)	18	0	1	0	2	3
95th Queue (ft)	36	7	14	0	16	24
Link Distance (ft)	358	155	155		434	434
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)				25		
Storage Blk Time (%)					0	0
Queuing Penalty (veh)					1	0

APPENDIX D: PARKING DEMAND MEMO

Kimley»Horn

MEMORANDUM

To:	Cary Teague
From:	William Reynolds, P.E., AICP, PTP
	Kimley-Horn and Associates, Inc.
Date:	September 22, 2015
Subject:	West 66th Street and York Avenue Residential Redevelopment – Parking Demand Memo

The following memo documents an analysis of current parking demand, estimated future demand, and planned parking supply for the proposed residential redevelopment at the intersection of West 66th Street and York Avenue in Edina, MN.

Introduction

DLC Residential is proposing a residential redevelopment project for the site in the north-west quadrant of the intersection of York Avenue and West 66th Street. The site is currently occupied by two buildings and surface parking. The Redevelopment Plan assumes that the 62,100 sq. ft. medical/office building located on the north-east section of the site (6550 York Avenue) will remain open during Phase I. The other building on site (3250 West 66th Street) is currently only partially occupied and will be removed.

During the redevelopment of the site, the adjacent parcel (3316 West 66th Street) will remain open, and access to York Avenue from the site will be preserved. A shared parking agreement is currently in place between all three buildings, and in order to assess potential impacts of a reduction in surface parking on the adjacent site, current parking demands at 3316 West 66th Street are also included in the parking study.

Parking for the proposed residential buildings on site will include a mixture of secure, underground parking and some surface parking, supplied at a ratio of approximately 1.6 stalls per dwelling unit following both Phase I (230 units) and Phase II (145 additional units). Estimated residential parking demands are not discussed as part of this parking study.

Data Collection

On Thursday, September 3rd, 2015, a parking occupancy study was conducted every thirty minutes from 10 a.m. to 12:00 p.m. and again from 1:30 p.m. to 3:30 p.m. in order to measure parking demand and estimate the peak hour of demand. The site was divided into four areas based on observations of the typical destinations of users of each lot. These areas are shown in **Figure 1**. Note that the stall count shown in Area C includes the estimated 28 secure stalls under the building, although these were not observed on site.

Figure 1: Parking Areas

Results of the study are provided in **Figure 2**. The 28 secure stalls in Area C were not counted, and were therefore assumed to be fully occupied throughout the study.

As shown, the peak hour was observed to be between 11 a.m. and 12 p.m. Area A was typically around 70 to 75 percent full throughout the day. The building in Area B is only partially occupied; therefore, the parking demands were very low (less than 25 percent occupied). Area C had much higher utilization near the building, with a typical range around 50 to 60 percent occupied (including the assumed secure parking demand). The small lot just to the east of Area B was typically around 40 to 50 percent occupied. The area north of Area D was only used by 3 vehicles all day (less than 5 percent occupied), and these users were assumed to be headed to the 6550 Building. Finally, the shared lot (Area D) was sparsely used, but the 10 to 15 vehicles parked in this area were observed to be from users of all three buildings.

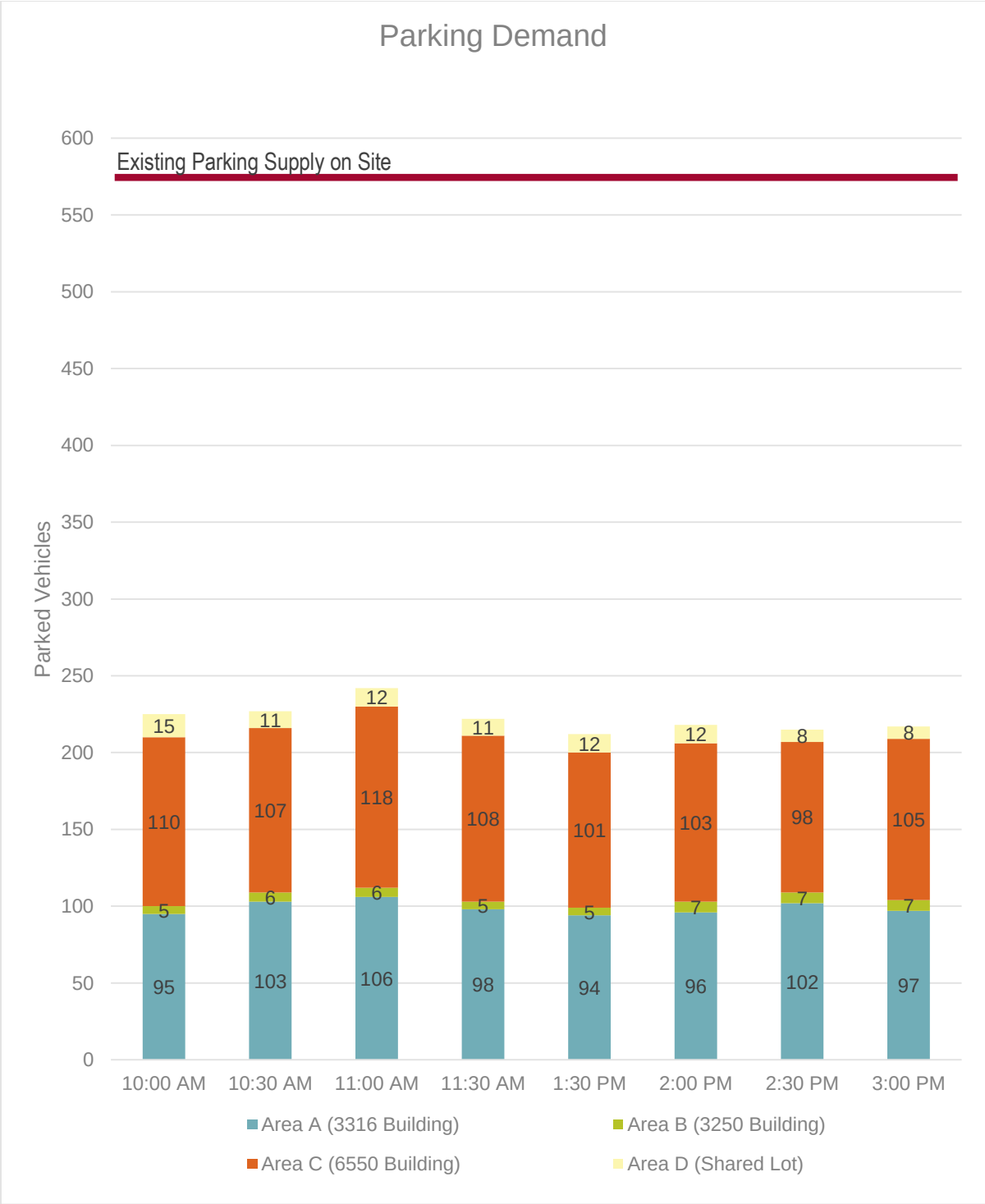


Figure 2: Parking Demand by Time of Day

3316 West 66th Street Site

Although the building located at 3316 West 66th Street and the surrounding parking will remain following the proposed residential redevelopment project on the parcels to east, the building currently has access to a shared parking lot on site. Because much of this shared parking area will be removed during the redevelopment of the site, parking demand associated with the 3316 Building was included in the study to estimate the potential for spillover demand.

The building is currently occupied by a bank with a drive-in and medical offices (dermatology). The 33,000 sq. ft. building was assumed to be fully occupied and primarily devoted to medical office space, and 5,500 sq. ft. was taken as the assumed square footage of the bank.

In order to estimate parking demand for the building, three sources were consulted:

- Parking Generation, 4th Edition. Institute of Transportation Engineers (ITE)
- Shared Parking, 2nd Edition, Urban Land Institute (ULI)
- Edina Code of Ordinances

The uses of the building match most closely with ITE's Land Use Codes 720 (Medical/Dental Office) and 912 (Drive-In Bank). ULI references these same Land Use Codes.

The estimated peak parking demand for the 3316 Building using these sources is presented in **Table 1**. While ULI exclusively uses the 85th percentile of all observations to derive the rate presented, ITE provides both the average rate observed as well as the 85th percentile rate; for context both rates are presented in the table. The Edina Code of Ordinances specifies a minimum parking supply for these uses of one vehicle for every 200 sq. ft. of gross floor area (GFA), and also specifies one additional stall for every doctor at medical office buildings. The names of 14 doctors are listed inside the building.

In addition to estimated demand and the effective parking ratio, the field observations from September 3rd, 2015, are also presented, along with the parking supply (Area A only) and corresponding ratio. ULI indicates that for banks and office uses, September is a representative month for demand observations, and therefore no seasonal adjustment factors are recommended.

Table 1: Parking Demand Estimates, Observations, and Supply for the 3316 Building

Building Uses	Reference/ Methodology	Rate/ Observation	Parking Stalls	Effective Ratio
27,500 sq. ft. Medical/ Dental Office Space (14 Doctors) 5,500 sq. ft. Drive-In Bank	**Peak Parking Demand Estimates**			
	ITE Parking Generation, Fourth Edition (Average Rate)	3.2 Veh./1,000 sq. ft. Medical/Dental	110	3.33
		4 Veh./1,000 sq. ft. Bank		
	ITE Parking Generation, Fourth Edition (85th Percentile)	4.27 Veh./1,000 sq. ft. Medical/Dental	149	4.50
		5.67 Veh./1,000 sq. ft. Bank		
	ULI Shared Parking, Second Edition (85th Percentile)	4.5 Veh./1,000 sq. ft. Medical/Dental	149	4.52
		4.6 Veh./1,000 sq. ft. Bank		
	Edina Code of Ordinances	5 Veh./1,000 sq. ft. Medical/Dental	179	5.42
		1 Veh./Doctor		
		5 Veh./1,000 sq. ft. Bank		
	Field Observations			
	Observations	106 @ 3316 Building	110	3.33
		4 @ Shared Lot (assumed)		
	Supply			
	Proposed Supply	140 @ 3316 Building	140	4.24

Based on field observations, parking demand for the 3316 Building closely matches the predicted peak parking demands from ITE's average rate for both uses. While some variability can be expected, the excess 20 percent capacity on site is likely sufficient to meet the needs of the users of the building, even with the removal of the shared parking region to the east.

66th and York Redevelopment Site

During Phase I of the residential redevelopment project, the largely vacant 3250 Building will be removed along with the shared parking lot (Area D) in order to accommodate a 230-unit apartment building and underground parking. During this first phase, the 6550 Building will remain open, and the surrounding lots will need to serve all parking demands for the building. The proposed Phase I site layout is shown in **Figure 3.**

The 62,100 sq. ft. building has a variety of tenants, including financial services, real estate services, medical and detail offices, an addiction center, and a testing center. Given the number of different uses, Land Use Code 710 (General Office Building) is most applicable. ITE defines this use as follows:

> *A general office building houses multiple tenants; it is a location where affairs of businesses, commercial or industrial organizations, or professional persons or firms are conducted. An office building or buildings may contain a mixture of tenants including professional services, insurance companies, investment brokers and tenant services, such as a bank or savings and loan institution, a restaurant or cafeteria and service retail facilities.*

The estimated peak parking demand for the 6550 Building, assuming a general office building use with full occupancy, is presented in **Table 2**. Both the average and 85th percentile rates from ITE are presented, along with the 85th percentile rate from ULI. The Edina Code of Ordinances specifies a minimum parking supply for a professional office building of this size as one stall for every 210.5 sq. ft. of gross floor area (GFA) based on the formula presented below the table.

In addition to estimated demand and the effective parking ratio, the field observations from September 3rd, 2015, are also presented. Because field observations were conducted when the building was approximately 71 percent occupied (18,000 sq. ft. of available leasable space), a forecasted peak parking demand rate is also presented, based on an adjustment to the field observations. ULI indicates that for general office uses, September is a representative month for demand observations, and therefore no seasonal adjustment factors were applied to the forecast. The final section of the table shows the projected parking supply following Phase I.

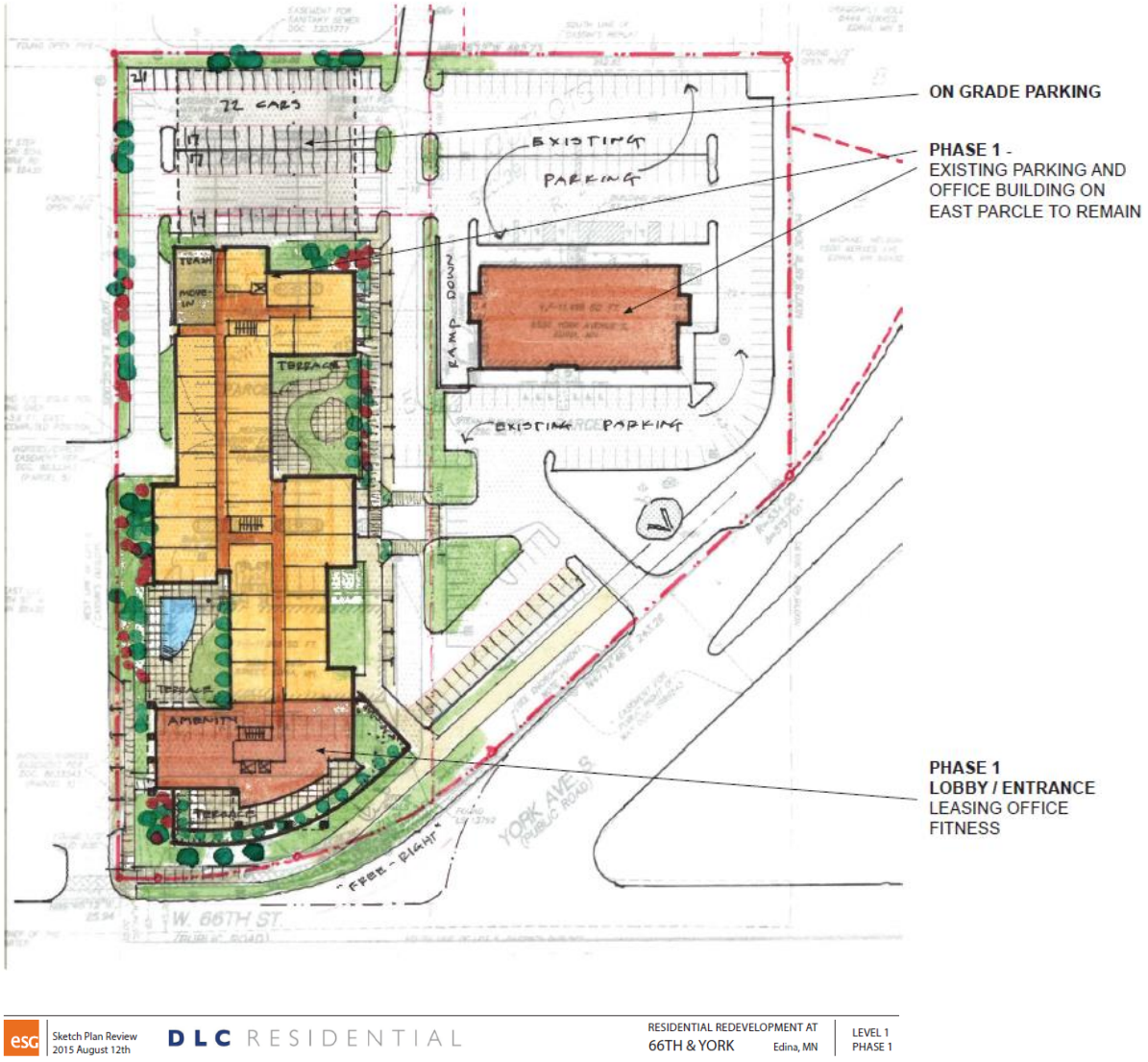


Figure 3: Phase I Site Layout

Table 2: Parking Demand Estimates, Observations, and Supply for the 6550 Building

Building Use	Reference/ Methodology	Rate/ Observation	Demand Estimate/ Observation	Effective Ratio
62,100 sq. ft. Office Space	**Demand Estimates**			
	ITE Parking Generation, Fourth Edition (Average Rate)	2.84 Veh./1,000 sq. ft. Office	176	2.84
	ITE Parking Generation, Fourth Edition (85th Percentile)	3.45 Veh./1,000 sq. ft. Office	214	3.45
	ULI Shared Parking, Second Edition (85th Percentile)[1]	3.60 Veh./1,000 sq. ft. Office	224	3.60
	Edina Code of Ordinances[2]	4.75 Veh./1,000 sq. ft. Office	295	4.75
	Field Observations			
	Observations	87 @ 6550 Building	138	2.22
		7 @ Shared Lot (assumed)		
		28 @ Secure Lot (estimated)		
	Forecast			
	Forecast[3]	3.13 Veh./1,000 sq. ft. Office	194	3.13
	Supply			
	Supply	150 @ 6550 Building	250	4.03
		72 @ Shared Lot		
		28 @ Secure Lot		

Based on field observations, forecasted parking demand for the 6550 Building under a full occupancy scenario is less than the predicted peak parking demands using the ULI and ITE 85th percentile rates for general office

[1] Rate interpolated between rate for 25,000 sq. ft. building (3.8) and rate for 100,000 sq. ft. building (3.4)
[2] Rate derived assuming 62,100 GFA and the following formula: 1,000/[(0.00025*GFA)+195]
[3] Rate derived based on the assumption that field observations were conducted when building was 71% occupied

buildings. While some variability can be expected, particularly with changes in tenants, the proposed supply of 250 parking stalls will provide sufficient parking following the completion of Phase I. This supply ratio exceeds even the conservative estimates provided using the 85th percentile rate from both ULI and ITE.

Recommendations

Based on field observations and a review parking demand estimates from ITE and ULI, the proposed parking supply ratios will adequately serve both office buildings following completion of Phase I.

Proposed Parking Supply Ratios:

- 3316 Building: 4.24 parking stalls per 1,000 sq. ft. GFA
- 6550 Building: 4.03 parking stalls per 1,000 sq. ft. GFA